The Effects of Terrorism and Bias against Muslims and Evangelical Christians in an Online Adult Sample: A Test of Terror Management Theory

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THE EFFECTS OF TERRORISM AND BIAS AGAINST MUSLIMS AND
EVANGELICAL CHRISTIANS IN AN ONLINE ADULT SAMPLE: A TEST OF
TERROR MANAGEMENT THEORY

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Dissertation Approval

This is to certify that the thesis presented to us by [signature] on the 21st day of May, 2014, in partial fulfillment of the requirements for the degree of Doctor of Psychology, has been examined and is acceptable in both scholarship and literary quality.

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Abstract

Considering the sociopolitical events of the past decade, the effect of terrorism on the behavior of others has gathered interest in the field of social psychology. Terror Management Theory has been used to conceptualize responses to individual’s fears of mortality. Because one of the goals of terrorism is to generate fear in a specific population, using Terror Management Theory to conceptualize responses to terrorism is appropriate. The current study attempts to ascertain if participants’ responses to stimuli that are indirectly related to Islam can be conceptualized using Terror Management Theory. The results of the study did not support this interpretation. The findings of the current study are discussed vis-a-vis previous Terror Management Theory research and research on implicit attitudes related to race.
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Chapter 1: Statement of the Problem & Purpose of the Study

Statement of the Problem

Innumerable dangers have plagued humankind for millennia. Today, many individuals are becoming increasingly aware of a new threat in the form of modern terrorism. Of particular interest is the relationship between what the perpetrators themselves claim is Islam-inspired terrorism and its effects on Americans. Prior to 2001, the Federal Bureau of Investigation (FBI) did not track incidents of global terrorism in its yearly reports (Federal Bureau of Investigation, 2002). This was due to the fact that the FBI was explicitly prohibited from conducting surveillance outside the US.

Consequently, the only terrorist acts that were documented in the FBI’s annual reports before 2001 were those carried out on American soil (Federal Bureau of Investigation, 2002). The earliest FBI report on terrorism in the US was released in 1996, which documented exactly three attacks on domestic targets that year, and 14 terrorist incidents on US soil between 1990 and 1995, most notably the bombing of the World Trade Center in February 1992 (Federal Bureau of Investigation, 1997). These attacks included the pipe bombing at the 1996 Atlanta Olympics and robberies and bombings carried out by the Phineas Priesthood – clearly acts that were not motivated by Islam or perpetrated by Muslims (Federal Bureau of Investigation, 1997).

In an attempt to prevent future acts of terrorism, the United States National Counterterrorism Center was created in 2004. By 2011, the United States National Counterterrorism Center reported that over 10,000 terrorist attacks occurred in 70 countries, resulting in 45,000 victims, with 12,500 deaths during that year alone (National Counterterrorism Center, 2012). The combined number of attacks in Iraq, Pakistan, and
Afghanistan accounted for 6,573 of the documented incidents (National Counterterrorism Center, 2012). In the span of a few decades, we have witnessed a remarkable intensification of governmental attention to terrorism.

The literature on individuals’ responses to that threat is expanding, and is of particular interest considering the change in geopolitical dynamics ushered in by the increasing prominence of international terrorism in the wake of September 11th, 2001. Terror Management Theory (TMT; Pyszczynski, Greenberg & Solomon, 1999) was developed as a means of understanding human reactions to existential threats. Specifically, TMT posits that the fear of death influences a number of behaviors in ways that are qualitatively different from those arising from fears unrelated to death. The basis for the claim that fear of death is implicated in these reactions is evidenced in TMT research on a variety of topics. The dread of personal mortality has been shown to influence cognition and behavior in myriad ways, including setting bail bonds (Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989), willingness to donate to charity (Jonas, Schimel, Greenberg, & Pyszczynski, 2002), and affinity for modern art (Landau, Greenberg, Solomon, Pyszczynski, & Martens, 2006). TMT proposes that these reactions are an unconscious process designed to mitigate the distress that arises when death anxiety is present (Pyszczynski et al., 1999).

For example, due to advanced human cognitive abilities, complex systems of meaning can be created to form a cultural worldview, which Greenberg et al., (1994) define as a “set of concepts that imbue subjective reality with order, meaning, and permanence; a set of standards through which one can attain a sense of personal value,” (p. 627). This worldview exists in part to give those who share in it a sense that they
contribute to a set of consensual cultural ideals that will continue to exist even after their death.

A variety of research in the field supports the basic hypotheses of TMT, which have been implicated in a variety of different behaviors and attitudes. Since the turn of the new millennium, the changing global sociopolitical climate has turned the field’s attention to how terrorism and its associated political phenomena can be explained by terror management principles. Cooper (2001) defines terrorism as an “… intentional generation of massive fear by human beings for the purpose of securing or maintaining control over other human beings” (p. 883). However, this definition makes no distinction between acts of war and acts of terror. To this end, the U.S. State Department defines terrorism as “premeditated, politically motivated violence perpetrated against noncombatant targets… usually intended to influence an audience” (Congressional Research Service, 2002; Office of the Coordinator for Counterterrorism, 2003). This definition was exemplified by the carnage and destruction in New York City and Washington D.C. on September 11th, 2001 and by subsequent attacks in Madrid in 2004 and London in 2005. Because TMT hypothesizes that the underlying motivation for certain behaviors is the fear of death, researching individual responses to terrorism within this framework is appropriate. One of the main purposes of terrorism is to instill fear through acts of lethal violence (Fletcher, 2006).

Recent studies have attempted to explore the forms of psychological change real or hypothetical terror attacks engender, particularly individuals’ political opinions. The findings suggested that terror management principles conceptualize the psychological and political effects of terrorism. According to TMT, terrorist acts have been associated with
increased support for President George W. Bush among US students in a hypothetical 2004 presidential election (Landau et al., 2004); an increased likelihood of German participants viewing their society as just and fair (Ullrich & Cohrs, 2007); and an increase in the preference for members of the same cultural in-group in a Dutch population (Das, Bushman, Bezem, Kerkof, & Vermeulen, 2009). In each of these instances, the participants demonstrated a stronger endorsement of their cultural worldview, whether that is support for their country’s sitting president, viewing their society as fair and just, or displaying preference for their culture over others.

Considering the amount of media coverage of terrorism since the turn of the 21st century, the extent to which individuals have been influenced by the public discourse on politics and terrorism is an area of interest in the current study. Overall, terrorist acts do appear to have an effect on behavior and political attitudes. Despite voluminous current research, how terrorist acts cause these effects is still not well understood. Of particular importance to the current experiment, a prior study indicated that increased awareness of terrorist acts had an influence on attitudes toward out-group members (Das et al., 2009). In-group participants tended to show more hostility to the out-group after being informed of a terror attack on their country, and a heightened preference for in-group participants compared to controls (Das et al., 2009). In these studies, violent terrorism primes are often used to evoke images of terrorism in participants. If explicitly violent primes are not used, participants have been exposed to stimuli that are closely associated with acts of terrorism, such as subliminally priming the initials “WTC” or the numbers “911” to participants (Landau et al., 2004). What has yet to be investigated by researcher is if the prominence of the topic over the past decade and the breadth and depth of the public
discourse about terrorism by Islamist extremists has created an association between Islam and terrorism strong enough to engender thoughts of terrorism even when individuals are primed with an indirect Islamic reference. While Islam and terrorism are not identical constructs, it is worth investigating whether the American public has conceived a relationship between them from the increased national interest in both topics and their frequent concurrent presentation. In light of these factors, it is possible that much of the public has been classically conditioned to associate Islam with terrorism.

Moreover, prior research has demonstrated that the psychological effects, and by extension the political consequences of terrorist acts can be explained through terror management principles (Landau et al., 2004). However, it is unclear whether this proposed conditioning would produce the same types of responses to both explicitly violent Islamist terrorism and non-violent Muslim primes.

Purpose of the Study

The aims of the current study are twofold. First, the current study attempts to determine whether non-violent Muslim primes will yield in an increase in thoughts related to death similar to other images or ideas closely associated with mortality (Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994) or terrorism (Landau et al., 2004). If individuals indeed associate Islam and terrorism, it should result in more frequent thoughts of immortality. Moreover, TMT posits that terror management strategies can be employed to reduce the resulting existential anxiety.

The results will be used to pursue the study’s second aim, which is to test the hypothesis that non-violent Muslim primes will increase thoughts related to death, in turn engendering a defensive worldview. If the results indicate the existence of such a
conditioned association between Islam and terrorism, the next step is to learn if political preferences, e.g. liberal or conservative views, influence responses to the aforementioned primes as examples of culturally determined worldviews.
Chapter 2: Literature Review

The inspiration that led to the development of Terror Management Theory (TMT) originated in the work of Ernest Becker (1973). Becker postulated the premise that the fear of death is the key to understanding much of human behavior. Originally using psychoanalytic principles as the foundation for his theory, Becker explained what he believed was the irony of human existence: although humans want to minimize the anxiety that arises from acknowledging their own mortality to live meaningful lives without being paralyzed by that fear, life itself serves as a constant reminder of their mortality. Becker argued that an awareness of life’s fragility would produce a terror that would be difficult to assuage. Because no satisfying solution exists to humanity’s awareness of the inevitability of its own mortality, Becker postulated that psychological defenses could mitigate these existential fears. Becker argued that the origin of all psychological defenses is the fear of death. Without these defenses, he contended, individuals would be overwhelmed by the prospect of death.

To epitomize the irony of attempting to alleviate the anxiety of death-related thoughts, Becker offered Humanistic psychology and the work of Maslow (1943). Becker argued that Maslow’s idea of true self-actualization is a fallacy. According to Becker’s argument, full actualization requires an awareness of death, resulting in fears that the individual would attempt to suppress, but this suppression would make full self-actualization impossible. Contrary to Maslow, Becker argued that these defenses against thoughts of death are needed to protect human beings from the “full and open psychosis,” that would be caused by awareness of their mortality.
Evolution of the Theory

Becker’s (1973) theory of human motivation is the foundation for TMT. Over the last quarter-century, more than four hundred scholarly articles have elaborated and refined TMT theory. As new findings have modified the theory over time, in its current form TMT’s basic tenets (Pyszczynski, Greenberg, & Solomon, 1999) still draw heavily on Becker’s early influence. TMT is rooted in the Darwinian assumption that humans, like other animals, have an innate drive to survive. But unlike other animals, humans have evolved more complex cognitive abilities to improve their chances of survival. However, this advantage comes at a cost. Alone among earth’s species, these cognitive abilities allow humans to contemplate their own mortality, and this existential awareness has the potential to engender crippling terror. TMT posits that this fear of death can be mitigated through identifying with the shared customs, traditions, and belief systems that come to define an individual’s particular culture. If the individuals who comprise a culture believe that they are making significant contributions that benefit and sustain a shared set of beliefs, it gives meaning to their actions while alive and eases the anxiety caused by contemplating their own mortality. This process requires two distinct concepts, the cultural worldview and self-esteem (Pyszczynski, Greenberg, and Solomon, 1999).

The cultural worldview. Culture is notoriously difficult to define, but recent attempts at a definition characterize it as “a socially transmitted or socially constructed constellation consisting of such things as practices, competencies, ideas, schemas, symbols, values, norms, institutions, goals, constitutive rules, artifacts, and modifications of the physical environment,” (Fiske, 2002, p. 85). The foundation of a culture must be shared among its constituents, who transmit it to posterity. Culture is a social-cognitive
entity that provides the consensual rules and guidelines that identify ways through which individuals may meaningfully contribute to it (Pyszczynski, Greenberg, & Solomon, 1999). The cultural worldview is a collection of beliefs about the self, others, and the world influenced by that culture’s norms.

**Self-esteem.** According to TMT, one of the most important aspects of the cultural worldview is that it affords those who embrace it the opportunity to contribute to something that endures beyond the limit of their individual mortality or offers them the perceived possibility of existence after death, a promise of literal immortality (Pyszczynski, Greenberg, & Solomon, 19990) contingent upon their adherence to the tenets of the belief system. Organized religions are obvious examples of cultural worldviews that have promised eternal life to followers. In contrast, other cultural worldviews offer symbolic immortality, which entails reaching a subjective sense of accomplishment while still alive as part of a comprehensive belief system. Such cultural worldviews create a standard or set of ideals by which a citizen, parent, employee, or professional can be judged (Pyszczynski, Greenberg, & Solomon, 1999). Attaining those societal standards of achievement in ways that the individual finds meaningful enables them to contribute to something larger than themselves, and imparts meaning to daily actions that would otherwise be absent.

Self-esteem is inherent to this evaluative process, which is particularly important to TMT. According to TMT, self-esteem is the result of the evaluation of an individual’s attempt to adhere to a cultural worldview. Those who believe that they are adequately meeting their cultural standards hypothetically experience less distress when contemplating their own mortality. Consequently, self-esteem is hypothesized as the
indicator of how meaningful an individual finds their life to be. In brief, an individual’s subjective worldview is the benchmark against which societal worth and self-esteem are evaluated (Pyszczynski, Greenberg, & Solomon, 1999).

In conclusion, the basic tenets of TMT are that culture provides the framework for a meaningful existence, and self-esteem is the measure of achievement of these cultural ideals. Self-esteem eases the inevitable anxieties brought on by the awareness of death, and provides the comforting ideas of meaningful contributions in life or eternal existence after death. Pyszczynski, Greenberg, and Solomon (1999) also outline intricacies in the reward theory that are important to work in this field. They point to the sheer diversity of cultures as proof that few if any universal standards or norms exist. The myriad cultures, each with its own ideals, often differ, and are sometimes contradictory. There is no intercultural consensus about what constitutes a meaningful existence. The establishment of cultural worldviews is an arbitrary process, and those worldviews require consistent external validation to maintain the allegiance of their adherents. Without that validation, those adherents would lack a cultural framework for interpreting ambiguous information. Validating those beliefs provides the necessary feedback to legitimize and reinforce the worldview.

The empirical research on TMT spans more than 25 years and has accumulated a large body of knowledge to support the theory’s basic tenets. The following review of the TMT literature will outline these tenets and the theory’s evolution. Because self-esteem is hypothesized to play an instrumental role as an anxiety-buffering mechanism for death-related thoughts, the majority of the studies in the TMT literature have attempted to study
the phenomenon empirically. Alternative hypotheses address self-esteem maintenance and worldview defense in other terms.

**Self-Esteem Maintenance, Worldview Defense and Mortality Salience**

Worldview defense and self-esteem are central constructs of TMT. Much of the early TMT literature attempted to empirically test these basic tenets of the theory. Many early TMT works endeavored to determine which aspects of culture are salient in the development of an individual’s self-esteem, and how these cultural beliefs assuage the fears of death.

**Self-esteem maintenance.** TMT research into self-esteem offers a theoretical basis for the generation and maintenance of self-esteem. As previously discussed, TMT posits that self-esteem exists as a buffer against the fear of death. The first study in the TMT literature to demonstrate experimentally the effect of self-esteem on anxiety symptoms attempted to directly investigate self-esteem and the dread of mortality by presenting death-related primes (Greenberg et al., 1992). Self-esteem was experimentally evaluated by providing participants with varying responses to a sham personality measure. The neutral personality condition classification was told that they were able to compensate for their personality flaws, but the positive personality classification was informed that their personality was fundamentally strong. The death prime in this study was a video depicting either an autopsy or the electrocution of a condemned criminal. The control was an innocuous video. Participants designated with the neutral personality classification and exposed to the death prime showed significantly higher rates of anxiety on a self-report measure than participants who were informed that they had desirable personality characteristics, or were not exposed to the death prime. This finding
supported the proposition that self-esteem buffers anxiety resulting from stimuli related to death. If self-esteem had no effect on anxiety, the participants with the positive personality classification would also have manifested a rise in baseline anxiety levels when exposed to the death-related videos. Although this supported TMT hypotheses, the authors of the study attempted to replicate their results, while controlling for other factors that could explain the phenomenon. Possible confounds included changes in anxiety attributed to a viewing a video that was disturbing but omitted depiction of death. (Greenberg et al., 1992)

The second study in the same article (Greenberg et al., 1992) attempted to provide further support for TMT’s conceptualization of the impact of self-esteem by manipulating self-esteem, the threat of electric shock, and the time of measurement. The outcome variable was physiological arousal, which was operationalized with a measure of skin conductance. Self-esteem was manipulated by informing participants that they either scored in the 90th percentile of a cognitive measure given during the study (the high self-esteem condition), or that their results could not be determined until after the study was complete (control). The threat was manipulated by informing participants that a light in the examination room would indicate when they could expect one of two physical sensations, a mildly painful shock or light air waves emanating from the light. No shocks were administered to participants, but their data were collected both before and during the times when these sensations were supposed to occur. Those in the neutral self-esteem condition showed significantly more physiological arousal than participants who received positive self-esteem evaluations, or those who were informed that they would not receive a painful shock. This study’s results supported the first (Greenberg et al., 1992), and also
controlled for methodological or design limitations. The potential confounds included the possibility of error in the self-report measures of anxiety and the exclusive use of death-specific primes. The major finding was that changes in self-esteem appeared to buffer anxiety, which was operationalized as physiological reactions to a stressor. These studies utilizing both self-report and physiological data to provide converging evidence for the role of self-esteem in reducing anxiety resulting from fears of death.

The final study in the article replicated the first, but used skin conduction to measure physiological arousal, and attempted to control for changes in affect as an explanation for the results (Greenberg et al., 1992). Their findings were again replicated, providing further evidence that self-esteem has as an anxiety-buffering function. Additionally, the participants’ scores on a measure of affect did not appear to be implicated in their results, ruling out a rival hypothesis’ explanation of their findings and strengthening TMT’s conceptualization of self-esteem’s function as a buffer for anxiety.

In a series of follow-up studies, Greenberg et al., (1993) strengthened support for the idea that high self-esteem acts as a buffer for anxiety and anxiety-related behavior. In this study, participants were assigned to either death prime or neutral conditions. Prior to completing the measure, the participants were informed that either high or low emotional lability was associated with an early death. The purpose of the study was to determine if an assertion of a relationship between emotion and mortality, in combination with the effects of the death prime, would influence the participants’ responses on the subsequent measure of emotional lability. For example, after being informed that individuals who are less emotionally expressive live longer, participants subsequently described themselves as less emotional, indicating denial of the possibility of early death. Scores on the
emotionality measure therefore indicated whether the death manipulation influenced participants’ responses.

Participants who were given positive feedback designed to induce high self-esteem were less likely to deny the possibility of an early death (Greenberg et al., 1993). Those who were provided neutral feedback exhibited a greater likelihood of death denial (Greenberg et al., 1993). As in prior studies, the experimental design also controlled for the participant’s affect, so their emotional reactions did not appear to be implicated in the outcome. The second study in the article demonstrated similar results with trait self-esteem that was not experimentally manipulated. In that study, those low in trait self-esteem displayed a greater tendency to deny the possibility of an early death.

In all of these early studies in the TMT literature, self-esteem has the effect of reducing anxiety arising from fear of death or physical harm. The authors of these studies use this evidence to support one of the main hypotheses of TMT: that self-esteem is generated and maintained in part to reduce anxiety resulting from the awareness of death. Moreover, according to TMT’s position on the function of culture, these studies indicated that there is inherent cultural value to having desirable personality characteristics; these characteristics reduced existential anxiety or anxiety caused by the threat of physical harm.

**Mortality Salience and Worldview Defense.** More studies were needed to strengthen support for the hypothesis that self-esteem not only serves as a buffer against general anxiety but particularly against existential anxiety. To accomplish this, study designs needed to include a manipulation that would bring an awareness of death to an individual’s consciousness. This manipulation would generate the kind of existential
anxiety that TMT proposes as the motivating factor in self-esteem maintenance. The thought of death would hypothetically trigger attempts to generate meaning in life to reduce the fear of mortality. To accomplish this, the mortality salience (MS) manipulations were developed in the early TMT literature (e.g. Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989; Greenberg et al., 1990). Typically, the mortality salience manipulation consists of two open-ended questions on the topic of the participant’s own death. Participants are typically asked what they believe will happen to them when they physically die, and what emotions they experience as they contemplate their own death.

To address the function of MS manipulations in the TMT literature, it is important to keep in mind the socially constructed nature of self-esteem maintenance. TMT contends that because cultural norms are relative, and the establishment of cultural worldviews is an arbitrary process, individuals will embrace the values of their culture when faced with an existential threat. Avowing central cultural values validates the larger cultural framework from which self-esteem derives, strengthening and reinforcing these cultural norms. This process is crucial, because faulty, inaccurate, or non-concurrent social norms would have limited effect in ordering, structuring, and adding meaning to life. Understanding this theoretical framework is crucial to interpreting the TMT literature. Compared to the previously cited research that manipulated the construct of self-esteem directly, much of the TMT literature focuses on the effect of death anxiety on individual’s efforts to validate cultural belief systems.

Such is the case in the earliest studies of TMT. These studies focused on participants’ reaction to individuals who upheld or rejected their cultural standards of
morality (Rosenblatt et al., 1989), or how participants reacted to individuals who are culturally different (Greenberg et al., 1990). Rosenblatt et al., (1989) conducted a series of experiments that aimed at validating the MS manipulation and providing support for TMT. The first of the experiments found that compared to controls, municipal judges who had undergone MS manipulations were more likely to post higher bonds for a prostitute who had been arrested (Rosenblatt et al., 1989). Prostitution was targeted by this study, because the authors believed it would activate the participants’ sense of morality associated with their cultural worldview. Moreover, municipal court judges were selected as participants to increase external validity of the theory; judges are generally expected to make impartial judgments and less likely to be influenced by emotional reasoning. The remaining studies in Rosenblatt et al. (1989) attempted to control for potentially confounding variables that may have increased adherence to the worldview, such as physiological arousal, self-awareness, and differing MS manipulations. All studies found significant effects of MS on the heightened adherence to the cultural worldview. In addition, more robust effects were observed among individuals who held more negative views of prostitution. Using TMT to explain these results, those with preexisting negative attitudes towards prostitution would recommend higher bond rates following MS, because doing so would demonstrate ideological consistency and commitment to their worldview, exactly as TMT would predict.

Greenberg et al., (1990) used different outcome measures to determine if MS effects could be generalized to other conditions. Similar results were found in a number of other circumstances, including a less favorable view of Jews by Christian students following MS manipulation (Greenberg et al., 1990). In addition, notable results were
found regarding the interaction between personality styles and derogation of out-groups. Students found to be either high or low in authoritarian traits (as measured by the F-scale; Adorno, Frenkel-Brunswick, Levinson, & Sanford, 1950), were asked about their liking for others who differed from them in these traits. These responses were measured in MS and control conditions. The high-authoritarian participants’ dislike of dissimilar others significantly increased following MS; however, low-authoritarian participants did not display a significant increase in their dislike of dissimilar others (Greenberg et al., 1990). The authors explained these results by suggesting that those high-authoritarian traits may display a greater tendency to derogate out-groups, an observation pertinent to the current study. Conversely, for low-authoritarian trait participants, degrading others dissimilar to them was inconsistent with their cultural values, which presumably include tolerance for out-group members (Greenberg et al, 1990).

Finally, participants were more likely to view an anti-US interviewee more negatively and a pro-US interviewee more positively after mortality salience. These results also support TMT; the participants in this and the other studies increased their commitment to and defense of their cultural worldview following MS manipulations (Greenberg et al., 1990).

Later studies corroborated the idea that the mechanism responsible for these results was the accessibility of death-related thoughts rather than the competing hypotheses. Greenberg et al., (1995) attempted to identify potentially confounding variables such as priming value systems, an increasing in worrisome thoughts, or general increases in affect. However, studies that controlled for these variables did not produce the worldview defense responses seen in other MS studies. In a partial replication of
Rosenblatt et al. (1989) study, the results of the first study found no significant difference between priming participants’ values and other control conditions in their influence on setting bond for a prostitute (Greenberg et al., 1995). The MS condition resulted in setting a higher bond, as was expected. This result increases support for the idea that death anxiety resulting from MS manipulations results in worldview defense, but not solely because of priming participants’ value systems.

Greenberg et al., (1995) also found no significant effects from worrisome proximal and specific thoughts, such as anxiety associated with an upcoming exam, or distal and global thoughts, such as not achieving an ideal standard of living over the course of one’s lifetime. A separate study supported these findings, noting that other aversive conditions, such as experiencing significant pain or giving a speech in front of a large audience fail to engender the same worldview defense strategies that MS manipulations produce (Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994). This finding continued to be replicated in other studies that have used aversive conditions, such as dental pain (e.g. Jonas & Fischer, 2006; Schmeichel et al., 2009). In aggregate, these results indicate that MS and its effects on attitudes, cognition and behavior are unique, which cannot be as easily explained by other processes (e.g. aversive experiences or non-existential worries) studied to date.

Specificity of the Threat of Death In Support of TMT

Although there is substantial support for TMT’s hypothesized interaction between death anxiety, self-esteem, and acts of worldview defense, more recent studies have offered alternative explanations for the effects of MS manipulations that deemphasize the role of mortality awareness in self-esteem maintenance and worldview defense. In
particular, other research has proposed that more specific aspects of MS manipulations may be responsible for effects, not simply thoughts of death alone. These include the Uncertainty Model of worldview defense (van den Bos, Poortvliet, Mass, Miedema, & van den Ham, 2005) and the Meaning Maintenance Model (Heine, Proulx, & Vohs, 2006).

**Uncertainty Model.** One of the proposed mechanisms of action for worldview defense strategies is the uncertainty that may be elicited by MS manipulations (van den Bos & Miedema, 2000; van den Bos, et al., 2005). This proposition hypothesizes that one of the central features of typical MS conditions in TMT is the uncertainty it may generate in participants. Although thinking about death provokes anxiety, feelings of general uncertainty are the mechanism of action leading individuals to engage in self-esteem maintenance and worldview defense. In testing this model experimentally, its proponents used similar language to evoking uncertainty as traditional MS manipulations in TMT research. Participants were asked to “briefly describe the emotions that the thought of being uncertain arouses in you” and to “please write down, as specifically as you can, what you think physically will happen to you as you feel uncertain,” (van den Bos et al., 2005, p.95). Using methodology similar to previous TMT studies, proponents of this argument have shown experimentally that individuals primed in uncertainty salience or MS conditions show similar worldview defense effects (Study 3 & 4; van den Bos et al., 2005). Van den Bos et al., (2005) demonstrated that college students who underwent uncertainty salience manipulations were more likely to derogate an essayist’s negative depiction of the university they were attending in ways that were statistically similar to those prompted by MS manipulation. The results of this study questioned MS effects
unique ability to elicit worldview defense; MS was no more effective in engendering this response than uncertainty.

**Meaning Maintenance Model.** An attempt to integrate similar fields of research, the Meaning Maintenance Model (MMM) argues that TMT is an element of a more inclusive conceptualization of how individuals attempt to generate meaning in their lives (Heine, Proulx, & Vohs, 2006). The premise of the theory states that individuals develop meaning to organize the relationships that exist between themselves and their environment. When existing meaning structures are disrupted, as in the case of existential threat, efforts are made to reaffirm those beliefs. MMM postulates that the efforts of individuals engaging in worldview defense and self-esteem maintenance in TMT studies are one of many examples of how relevant meaning structures are maintained.

Using some of the methodology from the earliest TMT research (Rosenblatt et al., 1989), Proulx, Heine, & Vohs, (2010) determined that individuals were more likely to support meaning structures in ways that were previously unexpected and not hypothesized to occur in TMT or uncertainty literature. For example, participants were randomly assigned to one of two groups: one in which they were asked to read an absurd parable (characterized by unfamiliarity, unexpected outcomes, or irrational features), the other in which they were asked to read a traditional story with an expected ending (Proulx, Heine, & Vohs, 2010). Participants were more likely to more strongly assert aspects of their cultural identity in reaction to the absurd parable condition than to the traditional story condition (Proulx, Heine, & Vohs, 2010). Participants in MS and abstract art conditions also scored higher on a scale measuring personal need for structure than participants in representational art or control conditions (Proulx, Heine, & Vohs, 2010).
In summary, when exposed to absurd stories or abstract art, individuals were more likely to endorse their cultural worldview or increase their need for structure. The unfamiliarity, uncertainty, or irrationality associated with absurd/abstract art in comparison to the more predictable or traditional art forms are hypothesized to elicit this response.

In a study that strongly supports MMM hypotheses, participants were assigned to one of three conditions: reading an absurd story, a predictable story, or informed of the content of the absurd story before reading it (Proulx, Heine, Vohs, 2010). Participants set a higher bond for a prostitute in the absurd short story condition in contrast to the other two (Proulx, Heine, & Vohs, 2010). This experimental design was one of the first that supported the theoretical propositions of TMT (Rosenblatt et al., 1989). Neither short story included any content relating to mortality, nor any self-relevant uncertainty manipulations (Proulx, Heine, & Vohs, 2010). The results supported MMM; threatening participants’ meaning frameworks activated other meaning structures, manifested in the higher bond set by those in the absurd story condition. Contrary to TMT, setting the bond higher occurred without the invocation of mortality threats, but rather was an unexpected experience not congruent with an existing conceptual framework.

The uncertainty hypothesis and MMM both offer alternative explanations for worldview defense, though these studies are not necessarily contrary to the fundamental argument that TMT proposes. Although TMT maintains that the problem of death is central to the maintenance of the cultural worldview, the theory does not posit existential anxiety as the only source of worldview defense (Pyszczynski, Greenberg, Solomon, & Maxfield, 2006). Empirical evidence exists for all three theories. However, death
thoughts are the mechanism that best explains the maintenance of both the cultural worldview and self-esteem (Pyszczynski, Greenberg, Solomon, & Maxfield, 2006). Attempts to reduce uncertainty or maintain meaning structures most likely serve important and overlapping roles compared to MS responses. Nevertheless, TMT acknowledges that MS explains important qualitative and theoretical differences that more recent research has attempted to crystalize.

A recent meta-analysis found that while both meaning/certainty and MS primes increased worldview defense after a short delay, meaning/certainty threats were less robust and comparable to the effects of commonly used controls (television watching and imagined dental pain) after a long-delay (Martens, Burke, Schimel, & Faucher, 2011). In contrast, the MS conditions produced even stronger effects on worldview defense after a long delay. Long and short delays were coded by the number of distractor tasks assigned by the experiment, with one distractor task coded as short, and two or more coded as long. If all conditions had equivalent effects on worldview defense, it would be expected that they would all affect this construct in similar ways. However, this meta-analysis supported the argument that although similar, mortality threats have unique, more consistent, and temporally distinct effects on worldview defense in contrast to either meaning or uncertainty manipulations (Martens et al., 2011). Though the precise mechanism of action is not known, researchers hypothesized that the specificity of death is important to interpreting these differences in response (Martens et al., 2011).

The Dual Model Process of Defense against Death Thoughts. The dual-process model of defense is a possible explanation for the persistence of worldview defense specific to MS conditions (Pyszczynski, Greenberg, & Solomon, 1999). According to this
model, responses to thoughts of death may differ according to the nature and timing of the threat. Depending on the temporal nature of the threat, individuals can engage in either proximal or distal defenses.

**Proximal Defenses.** Proximal defenses may be activated by explicit thoughts of death at the conscious level. This defense would serve to remove death-related thoughts from consciousness. One study already cited supports this portion of the hypothesis; individuals who underwent MS manipulations reported either high or low levels of emotionality, depending on which of these factors were associated with an early death (Greenberg et al., 1993). In this study, participants were informed that either high or low levels or emotionality led to an early death. When given the opportunity to provide a self-report of the kind of emotionality they believed they displayed, participants were most likely to select the option associated with a longer life. This is an example of how death anxiety can change behavior, as proximal defenses were activated to reduce the anxiety of the possibility of an early death.

In another study testing the effect of death-related cue proximity (Greenberg, Arndt, Simon, Pyszczynski, & Solomon, 2000), participants first underwent an MS prime, then exposed to one of two other manipulations that varied the temporal salience of MS effects. In the “death reinstatement condition,” participants were first presented an innocuous word search followed by death cues. The “death distraction condition” reversed the order, with the death cues presented first followed by the word search. The two conditions controlled for the order effects of the word search and the death cues. In the same study, participants completed an emotional lability measure after being informed that high or low emotional lability was associated with a longer life, as in the
Greenberg et al. (1993) study. Greenberg et al., (2000) found that individuals were more likely to deny the possibility of an early death in the death reinstatement condition, indicating that this condition activated more proximal defenses than the death distraction condition. Simply stated, the participants were more likely to deny the possibility of death when thoughts of death were most salient. These findings support the dual-process hypothesis (Greenberg et al., 2000), which entails that when the inevitability of death is presented at the conscious level, individuals will cope with this threat in a direct manner. Other studies have conceptually replicated these findings. Each of these studies suggests that when given a chance to immediately respond to the conscious thought of death, individuals will cope with the anxiety in a rational and direct manner. For example, participants are more likely to report a stronger intention to exercise following MS, regardless of whether physical fitness was an important part of their self-esteem (Arndt, Schimel, & Goldenberg, 2000); young and middle-aged participants were more likely to endorse heightened efforts to improve their health after MS (Taubman-Ben-Ari & Findler, 2005); and participants were more likely to protect themselves from the dangers of sun exposure immediately after MS, but demonstrated less interest in protection after a delay (Routledge, Arndt, & Goldenberg, 2004). All of these studies suggested that when given a chance to immediately respond to the conscious thought of death, individuals will cope with the anxiety in a rational, more direct manner than they would to unconscious or less immediate reminders of death.

**Distal defenses.** In contrast to proximal defenses, the alternative defense for unconscious or implicit thoughts of death is termed distal defenses (Pyszczynski et al., 1999). This strategy is hypothesized to occur when the thought of death is highly
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accessible, but outside of one’s awareness. This is often tested experimentally by imposing a delay between the MS condition and the relevant outcome measures to reduce the salience of death thoughts, a terror management strategy found more commonly in the literature to date. Distal defenses arise when a person encounters an existential threat, and then engages in activity that generates meaning in their existence to reduce anxiety resulting from this threat. These strategies are not considered rational, because they do not address the problem of death directly but are more casuistic in nature, providing an individual with the comforting sense that their life has meaning without evoking a specific response to the problem of death.

In their study of proximal and distal terror management defenses, Greenberg et al. (2000) also tested the distal terror management strategy hypothesis. The dual-process hypothesis posited that participants were less likely to engage in worldview defense if they were aware of death thoughts. As noted earlier, participants were assigned to rather death distraction or death reinstatement conditions, and order effects were manipulated as participants were measured for either proximal or distal defenses first. In this study, engagement in worldview defense was operationalized as either support or derogation of an essayist. Which essay was provided to the participants was dependent on their experimental group; one half of the participants received a positive commentary on the US, the other half a negative critique. The results supported the researchers’ hypothesis. Participants in the death reinstatement condition showed less pro-United States bias. If a distal defense strategy were used, TMT dictates that the individual would engage in heightened worldview defense, which in this experiment was operationalized as increased support for the US among American students. Immediately measuring the use of distal
strategies and finding less US support indicated that distal defenses were not employed in this condition.

A separate study investigated the temporal-defense strategy relationship, to determine if providing participants with a cognitive task (word search puzzles) according to MS conditions prevented them from engaging in proximal strategies that would normally reduce the thoughts of death (Pyszczynski et al., 1999). The results supported this hypothesis, as participants exhibited more death thought accessibility if distracted. In addition, the same study found that if participants were prevented from engaging in worldview defense strategies, they exhibited more death thought accessibility than those who were not (Arndt et al., 1997). These results support the dual-process model; distal defenses reduce death thought accessibility when distraction with a cognitive task deflected death thoughts from consciousness.

Based on the evidence currently presented, the dual model process of defense against death thoughts could explain the difference between the effects of MS and similar conditions, such as uncertainty salience or meaning maintenance conditions. It seems that while these other conditions may share some important qualities, the specificity of the problem of death can be generalized to more concepts (Friedman & Arndt, 2005; Landau et al., 2006) and have longer-lasting effects (Martens et al., 2011) than uncertainty or meaning manipulations. It is worth reiterating that TMT theorists do not propose that awareness of death is the only condition that can result in striving for self-esteem or worldview defense. However, the specific results of MS conditions were particular effects that are unique due to their existential nature (Pyszczynski et al., 2006). The crux of the TMT position is that the specific problem of death and the finality it represents are
more complex and troublesome than other forms of uncertainty or disruptions of established meaning systems (Pyszczynski et al., 1999). The literature strengthens that argument, because subtle but important differences exist in the effects of death-related thoughts and other conditions that result in some form of worldview defense.

**TMT, Politics, and Terrorism**

With the central hypotheses of TMT established and evidence supporting the theory in hand, the focus of the current review will narrow to politics and terrorism in the TMT literature. The topic has garnered significant interest in the new millennium, with many of the articles on the subject generated after 2001. The reason for this increased interest is obvious, as both the world and social psychologists contended with the psychological phenomena following the events of September 11th, 2001.

The clinical toll of the terror attacks was striking, particularly among those living in southern Manhattan. Up to 20% of those living in Manhattan at the time of the attacks reported symptoms of PTSD, and 16% reported symptoms of depression two months after the attacks (Galea et al., 2002). Nationwide, the incidents of PTSD after the attacks were similar, with 17% of the US population outside of New York City reporting symptoms of PTSD in the two months following the attacks (Silver, Holman, McIntosh, Poulin, & Gil-Rivas, 2002). Two years after the attacks, 44% of New York City residents reported being “very concerned” about the possibility of another terrorist attack occurring, with similar percentages found for fear of specific types of attacks, including biological (44%), nuclear (40%), and chemical (44%) attacks (Boscarino, Adams, Figley, Galea, & Foa, 2006). The evidence suggests that many Americans, if not showing psychological distress, expressed significant concern about their future and safety. More
recently, opinion polls have shown that concern about international terrorism has waned, compared to worry about the American economy and the national deficit (Pew Research Center, 2012). Despite this change in public opinion, the effects of terrorism on the behavior of those targeted remains a prominent area of interest. The extent of psychological harm done to many Americans in the years after the attacks has intensified the need to understand how terrorism affects cognition and behavior.

Many of the TMT studies investigating the impact of terrorism searched for a common link between MS conditions and terrorist attacks. TMT maintains that one’s worldview and self-esteem exist in large part to mitigate death anxiety. Did the events of September 11 create the kind of death anxiety typically seen after MS procedures in TMT studies? If so, were there significant ways in which this anxiety manifests in regard to worldview defense and self-esteem maintenance? Is the political nature of terrorism implicated in how terror management strategies are utilized? The following review will attempt to answer these questions, and address how acts of terrorism increases death thoughts and the complex ways these phenomena are manifested in individuals with differing political worldviews.

**Definition of Terrorism.** The definition of terrorism is vital to the study of the interaction of psychological phenomena, politics, and terrorism itself. The definition of terrorism remains a politically charged and hotly debated topic. Cooper (2001) defines terrorism as “the intentional generation of massive fear by human beings for the purpose of securing or maintaining control over other human beings,” (p. 883) but also acknowledges that this definition is flawed and lacks the specificity needed to express the nature of the phenomenon commonly called terrorism.
More recent attempts at definition expand on the difficulty of defining the term. Fletcher (2006) argues that terrorism can be defined through a constellation of eight features common to terrorist acts, noting that not all of these eight features must be present to fit the definition. According to Fletcher (2006), these eight features of terrorism are the use of violence, a political intent, the intentional targeting of innocents or civilians, a distinction from that actions of a state, a belief that the cause justifies the violent means, an organization, the purposeful public nature of attacks, and a lack of remorse.

For example, Fletcher (2006) indicates that intent is usually cited in definitions of terrorism, and terrorist acts often have a specific purpose, such as change in political policies or religious affiliations. However, this is not always applicable; Fletcher (2006) observes that the true purpose of terrorist acts is frequently not explicitly stated. Although statelessness is also commonly cited as a requisite for terrorism, as long-established terror groups gain political power within states, e.g. Northern Ireland, more ambiguity exists in the distinction between terrorist and state actions (Fletcher, 2006). Fletcher (2006) provides arguments and counterarguments for six other characteristics of terrorism to demonstrate the difficulty in establishing a standard definition of the term. Fletcher (2006) notes that using a general and rigid definition of terrorism results in the inclusion of actions that are not historically viewed as terrorism, such as the Boston Tea Party or the nuclear bombings of Hiroshima and Nagasaki. Certainly, these events were meant to persuade a state to take action, with the actors believing the desired ends justified the violent means. Fletcher (2006) ultimately suggests that each of the eight characteristics
she lists should be considered frequent but not necessary qualities of terrorism and terrorist groups.

The problem of definition is important in the study of terrorism, particularly if a theory attempts to explain and predict human behavior in response to these events. The work within this field is international in nature, with studies conducted in a diverse set of populations outside of the United States, including but not limited to Germany (Fischer, Greitmeyer, Kastenmüller, Jonas & Frey, 2006; Jonas & Greenberg, 2004), Iran (Abdollahi, Henthorn & Pyszczynski, 2006; Pyszczynski et al., 2006), Israel (Hirschberger & Ein-Dor, 2006), The Ivory Coast (Chatard et al., 2011), Lebanon (Henry, Sidanius, Levin, Pratto, & Nammour, Unpublished), The Netherlands (Das, Bushman, Bezemer, Kerkof, & Vermeulen, 2009, Dechesne, van den Berg, & Soeters, 2007), and Turkey (Kökdemir & Yeniçeri, 2010).

With the recognition that terrorist tactics have many origins and forms (Fletcher 2006), the current study focuses narrowly on individuals in the US and their reactions to what the perpetrators explicitly claim is Islam-inspired terrorism. Clearly, there are unique aspects of Islamist terrorism and its tactics (Sageman, 2004). However, before discussing the unique link between Islam and terrorism, a rationale for studying this relationship is needed, as well as a means of conceptualizing it using TMT.

**Terrorism Primes as MS Manipulations.** In order to establish the applicability of terror management principles to individuals after terror attacks, there must be an increase in death-related thoughts when they are exposed to stimuli related to these events. As previously explained, worldview defense is a distal terror management strategy that occurs in the delay following an MS event (Greenberg et al., 2000). After
this delay, death thoughts, though unconscious, are still highly accessible (Arndt et al., 1997; Greenberg et al., 1994). If terror attacks function in a manner similar to traditional MS manipulations used in 'TMT, there should be similar attempts at either self-esteem maintenance or worldview defense strategies.

Following the events of September 11, a number of studies investigated the similarities of terrorism primes vis-a-vis MS manipulations. The first study to contrast terrorist acts and MS manipulations attempted to examine the effects of MS conditions on anxiety in college students exhibiting either well or poorly formed identities (Dunkel, 2002). After manipulating MS in half the participants, the results showed that participants with poorly formed identities exhibited more anxiety when faced with MS conditions over controls. More pertinent to the current discussion, this same effect was replicated in the second study (Dunkel, 2002), in which participants were asked to read a short vignette about the terror attacks of September 11 instead of a traditional MS manipulation. In either condition, participants who lacked well-formed identities displayed more anxiety (Dunkel, 2002). This demonstrated that similar processes could be at work in both typical MS conditions and 9/11 primes. The implication is that both increase awareness of mortality.

TMT posits that in response to awareness of their mortality, individuals will engage in worldview defense by more strongly endorsing the relevant belief structures in literal or symbolic immortality (Pyszczynski et al., 1999). Consequently, TMT argues that religious individuals who believe in some form of literal immortality would be less affected by thoughts of death; their faith would mitigate the effects of death anxiety with the promise of an afterlife (Pyszczynski et al., 1999). However, research has
demonstrated that religious populations are heterogeneous in a number of interesting ways. For example, prior research indicated that the faith of extrinsically religious persons is more utilitarian in nature, because they use their religious beliefs as a means to obtain safety and social standing (Allport, 1966). In contrast, intrinsic religiosity is characterized by the search for spiritual meaning and value for its own sake (Allport, 1966). The beliefs of intrinsically religious persons are more instrumental in shaping their worldview. Recent studies have contended that in comparison to the extrinsically religious, those identifying as intrinsically religious do not exhibit as much anxiety after terrorism salience manipulations (Fisher et al., 2006; Jonas & Fischer 2006). These findings supported the hypothesis that with their belief in literal immortality, the intrinsically religious experienced the least anxiety. This is probably because the anxiety and terror of death predicted by TMT is assuaged by their belief that they will live on after death. This suggests a buffering effect for individuals who most strongly self-identify with the tenets of their religion, such as literal immortality.

Conversely, symbolic immortality is also hypothesized to mitigate death anxiety as well. Symbolic immortality is defined as a subjective sense of accomplishment that is existentially meaningful (Pyszczynski et al., 1999). An example of symbolic immortality commonly used in TMT research is an individual’s patriotism. Patriotism is a particularly salient way to clearly delineate the parameters of an in-group from which one draws a source of identity, and it manifests in surprising and subtle ways. For instance, individuals from the United States who underwent MS conditions and then read a vignette about an accident involving a particular model of car were significantly more likely to place blame on a foreign automobile manufacturing company rather than a US
company (Nelson, Moore, Olivetti, & Scott, 1997). No difference in blame appeared in controls that did not undergo MS manipulations (Nelson et al., 1997). Preference for the in-group in the MS condition suggests that worldview defense strategies were active. Participants’ support of the domestic auto manufacturer indicates of the kind of cultural defenses that TMT predicts. Research into political and religious responses to terrorism is particularly intriguing, because terrorist acts are a direct and violent attack against a nation and/or culture. As one would expect, studies have found that after terrorism salience conditions, there is an increase in the strength of participants’ patriotism and religious allegiance (Das et al., 2009; Ullrich & Cohrs, 2007). In one German study, participants were more likely to characterize their society and politics as just and fair following terrorism salience manipulations (Ullrich & Cohrs, 2007).

Research conducted in the Netherlands is particularly important to the current study; it investigated the effects of terrorism salience on the prejudice toward out-group members as well as the accessibility of death-related thoughts (Das et al., 2009). The study was initially designed to identify the accessibility of death-related thoughts in response to television programs. The programs shown to participants in the study were either a report of a terrorist attack or related to recent Olympics games. Fortuitously, the data collection in this study was contemporaneous with the murder of Theo van Gough, a Dutch filmmaker, by a self-described Islamist in 2004.

The authors chose to split the data in their first study to utilize the murder as a naturally occurring independent variable. Death-related thoughts were gauged with a word-stem completion measure (Greenberg et al., 1994) modified for use in Dutch. The measure consisted of word fragments that could be completed to spell either a death-
related word or a neutral word. For example, the word fragment “c o f f _ _” can be completed to spell the word “coffee” or “coffin.” The formation of more death-related words indicated increased accessibility of death thoughts. The study showed a non-significant increase in death thought accessibility in participants in the terrorism salience condition before the murder (Das, et al., 2009). Following the murder, death thought accessibility was high in both groups, with no significant differences between the terrorism report and control conditions (Das et al., 2009).

Das et al. (2009) also measured prejudice against Muslims with a modified scale presenting prejudicial attitudes against Muslims used by Bushman & Bonacci (2004). This scale included 11 Likert-scale items that asked the participants to indicate the degree to which they agreed with each statement presented to them. Examples of these statements included “It is wrong for Arab-Americans and non-Arab-Americans to intermarry” and “If there are too many Arab-Americans in America, our country will be less safe,” (Bushman & Bonacci, 2004). The results indicated that before the murder, death thoughts were not associated with stronger prejudicial attitudes; however, after the murder there was a significant increase in the prejudice among all participants (Das et al., 2009). The authors postulated that the pre-murder terrorism salience measures had produced non-significant results because the vignettes depicted attacks in countries other than the Netherlands (Das et al., 2009). The victims in the vignettes may have been perceived as out-group members. Additionally, the self-report measure of prejudicial attitudes could have biased the responses of the participants. The response of the participants following the murder implied that attacks that are personally, or in this case, culturally relevant to individuals from that culture resulted in more death-related thoughts
and worldview defense (Das et al., 2009). In other words, once the Dutch began to perceive themselves as potential victims of Islamist terrorism, it became more difficult for them to deny the threat, increasing both death thought accessibility and prejudice.

In two subsequent studies, Das et al. (2009) addressed these potential methodological confounds (e.g., unspecific target groups in vignettes) as well as other TMT hypotheses. The authors used a more sensitive measure of prejudicial attitudes that was not as susceptible to a number of biases inherent to survey methods, the Implicit Association Test (Greenwald, McGhee, & Schwartz, 1998). They also tested the self-esteem buffering hypothesis of TMT. There were other notable changes in experimental procedures; the terrorism salience condition was modified to include the description of a hypothetical terror attack that targeted an Amsterdam train station. With this change in methodology, they again explored the influence of terrorism salience on death-related thoughts and prejudicial attitudes. Results indicated that the country-specific terror salience manipulation significantly increased death-related thoughts, in contrast to the general terrorism news condition used in the first study, which did not find a significant increase (Das et al., 2009). Death-related thoughts correlated with stronger prejudicial attitudes towards Arabs, but only among individuals who were low in self-esteem (Das et al., 2009). In their final study, the Das et al. (2009) recruited both Dutch and Arab-European participants to investigate the differences in prejudicial attitudes of Arab-Europeans to the same experimental design as study 2. Results of the terrorism prime condition indicated an increased preference for European stimuli among Dutch participants and an increased preference for Arab stimuli among Arab-European participants compared to controls, even after a terrorism prime in which the target was
the country of their residence (Das et al., 2009). It should be noted that there were differences in the country of origin between the Muslim and non-Muslim participants. Strong correlations emerged between the location where the participants’ parents were born and the experimental groups, with the vast majority of non-Muslims reporting a northern European background, and nearly all Muslims reporting a North African or Middle Eastern background (Das et al., 2009).

The latter two studies of Das et al. (2009) are particularly important, because they demonstrate some of the central hypotheses of TMT. In the second study, after terrorism salience manipulations, prejudicial attitudes against Arabs increased in Dutch participants who exhibited low self-esteem compared to participants in control conditions or participants with high-self esteem, which supported the anxiety-buffering effects of self-esteem. Individuals who contribute to society in ways that they find meaningful were less bothered by the thought of death, and their positive view of the self would serve to reduce the need to engage in worldview defense. The final study indicated that death thoughts resulting from geographically salient terrorism primes polarized in-group preference (Das et al., 2009). Although the vignette depicted an act of Islamist terrorism against a Dutch target, Arab-Europeans demonstrated a greater preference for Arab primes in the IAT. Since TMT posits that individuals will engage in worldview defense when mortality is made salient, the salient worldview for the Arab-Europeans in this sample was an Arab or possibly Islamic identity.

In all conditions, the above studies show that terror salience conditions act as effective MS manipulations, with participants generally responding in ways expected according to the outcomes of prior TMT experiments. This supported the position that
terrorism does increase the salience of one’s mortality, particularly if the worldview that the individual identifies with is under direct attack (Das et al., 2009). Studies of intrinsic religiosity and high self-esteem demonstrated that these appeared to buffer the kind of death anxiety caused by terrorist attacks (Fischer et al., 2006; Jonas & Fischer et al., 2006; Das et al., 2009).

**The Perceived Relationship Between Islam and Terrorism.** Islam-inspired terrorism and its associated stimuli are central to the current study and warrant special discussion. In his review of terrorist networks Sageman (2004) offered a detailed view of mujhadin (“holy warriors” or jihadists). Sageman (2004) identified and delineated various schools of thought on jihad, highlighting divergent opinions within Islam. Greater jihad is a nonviolent striving for Islam’s ideals, including following God’s will and adherence to the five pillars of Islam: the declaration of faith (shahadah), daily prayers (salat), charity, fasting during the month of Ramadan, and the pilgrimage to Mecca (hajj) (Sageman, 2004). Lesser jihad is the violent struggle for Islam, which is further distinguished by its defensive and offensive varieties (Sageman, 2004). Jihad can be a response to invasion (defensive) or an “attack the land of the infidels... to submit it to Sharia, the strict Quranic law,” (offensive; Sageman, 2004, p. 2) espoused by terror networks like Al-Qaeda. The relationship between hyper-religiosity and jihad is strong; 99% of mujhadin reported an escalation in their devotion to Islam prior to joining terrorist cells (Sageman, 2004).

Some have argued that Islam is an inherently violent religion, whose tenets call for jihad against non-believers (Gabriel, 2002). In contrast, Moghadam (2003) posits that a variety of factors, not just religiosity, are implicated in the motivation for suicide attacks including personal and organizational factors (Moghadam, 2003). Although the
overwhelming majority of documented terror attacks occurring in 2011 originated in Muslim nations, nearly 2/3 of all attacks were concentrated in Iraq, Afghanistan and Pakistan (The National Counterterrorism Center, 2012). Because there are many other nations with strong identification with Islam, it is clear that religiosity alone cannot solely predict who is willing to engage in a suicide attack. In a review of Palestinian suicide bombers’ motives for participating in these attacks, a number of other factors influenced these individuals, including personal factors (e.g., financial benefits to family after death, elevated status after death), nationalist motives, and access to organizations with the means to carry out these attacks (Moghadam, 2003).

With these results in mind, religiosity appears a necessary but insufficient motivation for participation in jihad. Recent research attempted to identify psychological correlates to the support of terrorism, lending depth to the question of who is willing to support terrorist acts. Social dominance theory (Sidanius & Pratto, 1999) explains that individuals vary in the degree to which they are comfortable with or desire hegemonic relationships between differing cultural groups. Social dominance theory dictates that a preference for hegemonic relationships is salient when forming opinions on actions that would affect these dynamics. For example, one study found that Lebanese Muslims were significantly more likely to support terrorist acts, and Lebanese Christians were significantly more likely to support anti-terror efforts (Henry et al., Unpublished). However, through further statistical analysis, the authors of this study found that ratings on a social dominance orientation (SDO) scale remained consistently strong when controlling for religious affiliation (Henry et al., Unpublished). The participants’ SDO was a more powerful indicator of support for either terrorist or anti-terrorist efforts than
religious affiliation (Henry et al., Unpublished). This finding supported previous research indicating that individuals scoring high on SDO measures were more likely to support actions (violent or otherwise) that maintain hegemonic relationships between cultural groups (Henry, Sidanius, Levin, Pratto, 2005). Conversely, those scoring low on SDO measures were more likely to support actions (violent or otherwise) against the perceived dominant groups (Henry et al., 2005). In summary, some research suggests that a desire for power over or equality with other cultural groups dictates support for terrorist actions more than religious affiliation. This evidence supports that notion that religious affiliation alone cannot predict support for terrorist acts. Support for or participation in terrorist acts is too complex to be explained simply by cultural/religious group affiliation.

This review of the Islamic-inspired terrorism and its’ relationship to religiosity is not intended to be comprehensive, but to serve as an example of the complex relationship between terrorism and Islam. If research and scholarly work indicates that participation in Islamist terrorism involves more than hyper-religiosity (e.g., Henry et al., Unpublished, Moghadam, 2003), the saliency of group membership is hard to ignore (Gabriel, 2002; Henry et al., Unpublished; Sageman 2004). As in the famous Robber’s Cave study (Sherif, Harvey, White, Hood, Sheirf, 1988), when in- and out-groups are easily defined, stereotyping and hostility can be expected. Such polarization can be hypothesized to exist in both the terrorists and their victims. Although other factors contribute to participation in violent jihad, one of the most easily identifiable qualities of this interaction is religious affiliation, especially when the perpetrators claim responsibility in the name of their religion. Pertaining to the current study, the most important portion of this review is the saliency of the cultural groups. It is hypothesized that, as result of countless media
accounts, a classically conditioned emotional response has formed between the constructs of terrorism and Islam.

A classically conditioned relationship forming as a result of media accounts is not unique to the Muslim community. The same process applies to a number of other religious/ethnic groups. For example, there is some evidence of media bias against other religious groups (Kerr, 2003). One study investigating the content of nightly news reports found that the reports on evangelical Christians tended to be slightly negative, and most commonly presented in a political context (Kerr, 2003). Other less common portrayals were mixed, as news reports tended to characterize evangelical Christians as racist, patriotic, and growing in numbers (Kerr, 2003). Research devoted to the topic of bias and prejudice against this group is scant. There are some academic papers, specifically in the field of social work, which argue that the prevailing views of sexuality in this field make the practice of social work difficult for evangelical Christians (Ressler & Hodge, 2000, 2003).

Many Americans increasingly identify the country as a “Christian nation,” and this sentiment is stronger among evangelical Christians (Straughn & Feld, 2010). Offering a more complex view of the nexus of Christianity, privilege, and prejudice, Larson and Shady (2012) argued that Christians simultaneously benefit from and are marginalized by the structure of American society. Examples of Christian privilege include the plentiful locations in which to practice Christianity, a work schedule that does not interfere with some Christian holidays, and the prevalence of knowledge of the Christian faith in the United States (Larson & Shady, 2012). Despite some level of societal privilege, some Christians find that their views, values, and beliefs are not
welcomed but ridiculed and oppressed, particularly on college campuses (Bryant, 2005; Moran, Lang, & Oliver, 2007), in the media (Kerr, 2003), and in the helping professions (Ressler & Hodge, 2000, 2003).

A Classically Conditioned Emotional Response between Islam and Terrorism? As previously demonstrated, current evidence suggests that terrorism primes can be used as effective MS stimuli (Das et al., 2009; Dunkel, 2002; Fisher et al., 2006; Jonas & Fischer 2006; Landau et al., 2004; Ullrich & Cohrs, 2007). It is hypothesized that these primes are effective because the content of the primes leads individuals to consider their own death (Pyszczynski et al., 1999). Each of these studies either had their participants think explicitly about a terrorist act (Das et al., 2009; Dunkel, 2002; Fisher et al., 2006; Jonas & Fischer 2006; Ullrich & Cohrs, 2007) or subliminally primed participants with stimuli associated with a specific terror attack, such as the subliminal priming of the letters “WTC” (Landau et al., 2004). The results of these studies suggested that the general American public had established a relationship between Islamic stimuli and terrorism. If this assertion were true, then the mechanism of action in the previously cited studies may be the explicit mention of terrorism and/or the implicit relationship between Islam-related stimuli and terrorism.

Some already published studies attempt, directly or indirectly, to demonstrate a perceived relationship between Islam and terrorism in research participants. One study found that American’s explicit attitudes about Muslims remained relatively constant, based on public opinion polling both before and after September 11th, 2001, with more respondents reporting that they had a favorable view of the community (Panagopoulos, 2006). Other measures of the treatment of the Muslim community following September
11\textsuperscript{th} offer a different view of American’s attitudes toward Muslims. More recent opinion polling indicates that more Americans have an unfavorable view of Muslims, with 38\% reporting an unfavorable view, and 30\% reporting a favorable view (Pew Research Center, 2010). Opinion polling of Muslim-Americans found that 55\% of those polled indicated that it is more difficult to be a Muslim in America since September 11\textsuperscript{th} 2001, as compared to 37\% of Muslim-Americans who believe conditions have not changed (Pew Research Center, 2011). One study investigated prejudice among different cultural groups following the September 11\textsuperscript{th} terror attacks (Padela & Heiler, 2010). This study found that Muslims were significantly more likely than Christians to experience prejudice after the attacks, with 15\% of participants reporting some adverse experiences related to their religion (Padela & Heiler, 2010).

One study used the Implicit Attitudes Test (Greenwald, McGhee, & Schwartz, 1998) to measure reactions to Muslim-Arab stimuli compared to other ethnic groups (Park, Felix, & Lee, 2007). The results of this study found that American college students demonstrated a preference for white or African-American stimuli over Arab stimuli. When participants in this study were asked what information had formed their view of Muslim-Arabs, terrorism was the most commonly cited response, followed by deep religiosity, personality traits, and discrimination against women (Park, Felix, & Lee, 2007). Though not many studies have measured implicit associations between terrorism and Islam, these few studies imply that such a relationship may exist between these constructs.

**Terrorism and Politics: Conservative Shift or Worldview Defense?**

According to Cooper (2001), the purpose of terrorist acts is to instill fear in a population
to achieve the desired systemic or political change. With this in mind, it would be expected that some relationship would exist between existential fear, terrorist acts and political attitudes. Specifically referencing the previously cited literature, it is currently hypothesized that due to the salience of group membership coupled with the explicitly stated religious motivation of Islamist terrorists and the frequency of media accounts of these groups, a relationship has formed between Islam and terrorism. Before discussing the TMT literature regarding terrorism and politics, it is important to review the studies examining political preferences within the framework of TMT before the events of September 11.

One of the earliest TMT studies investigated individuals’ negative reactions following MS manipulations (Greenberg, Simon, Pyszczynski, Solomon, & Chatel, 1992b). Greenberg et al. (1992b) included political preferences as one of their independent variables, reasoning that liberals in western democracies tend to be more tolerant of dissimilar others (Stone, 1980). More specifically, current research identifies two specific ways in which liberal and conservative political perspectives differ: in their attitudes towards equality and in their attitudes towards change and tradition (Jost et al., 2003). It is the former construct that is of more importance here, as Jost et al. (2003) argues that the liberal position tends to hold more egalitarian views and will attempt to seek equality for all in society, but the conservative position tends to view individuals as unequal and due unequal rewards. However, it is important to note that liberals and conservatives may view the concept of equality differently. Termed the good fortune schema by Bryan et al. (2009), the concept of liberal equality is generally seen as recognizing the external factors needed to achieve one’s goals, and minimizing these
external barriers, so each individual has a similar chance of success. Bryan et al. (2009) outlined what they term as the personal merit schema, indicating that conservative ideology values equality based on meritocracy, that individuals’ hard work and shrewd decision making should be recognized, and that this recognition should be commensurate with their effort.

Referring to TMT, individuals are expected to increase their support of their particular worldview in response to an existential threat. If, during this threat, individuals’ political preference is made salient, or best serves to reduce the anxiety experienced, it would be expected that strengthening their commitment to their political position would reduce the perception of threat. Pursuing this aspect of the theory, Greenberg et al., (1992b) demonstrated that liberal participants showed an increase in tolerance of a politically dissimilar other and conservatives a decrease in tolerance in the same condition. In this study, participants were split into two groups by political orientation (liberal and conservative) and then underwent either MS or control conditions. Next, they were informed that they would read two political attitude surveys depicting extreme liberal and conservative positions, which the participants believed were completed by another student. The dependent variable of interpersonal evaluations was measured with the Interpersonal Judgment Scale (IJS; Byrne 1971) as well as a set of simple Likert scale responses to positive and negative personality traits. In the control conditions, both groups displayed more favorability to a politically similar target and were less favorable to dissimilar targets. However, under mortality salience conditions, conservatives became significantly more polarized in their opinions, increasing their favorability ratings of conservative targets and decreasing ratings of liberal targets.
Although not reaching statistical significance, opposite effects were observed among the liberal participants, with increased favorability towards dissimilar and decreased favorability towards similar targets.

Having demonstrated conditions in which MS does not always promote intolerance of dissimilar others, Greenberg et al. (1992b) investigated whether priming tolerance values moderated MS effects. Tolerance was primed by having participants read five statements in support of tolerance in contrast to five benign control statements. Participants first underwent either MS or control conditions, and then rated a positive or negatively skewed essay on the United States. Results indicated that the tolerance prime achieved its effect; individuals displayed significantly more favorability of an anti-US target when tolerance was induced, as opposed to MS and neutral prime conditions. Differences in favorability ratings were non-significant between control and tolerance prime conditions (Greenberg et al., 1992b). Typically, one would expect polarized responses under MS conditions, but non-significant differences between the control and tolerance prime conditions indicated that priming tolerance prevented this polarization in interpersonal evaluation from occurring. In summary, Greenberg et al. (1992b) demonstrated that the effects of MS do not always result in derogation of out-group members. As the first TMT study to investigate the relationship between mortality salience and political preferences, these results are important;

These mixed and sometimes nonsignificant results reveal the ambiguity in the literature on the topic of MS and political preferences. It would be expected that if tolerance were salient to the liberal worldview, Greenberg et al. (1992b) would have found significant effects for liberals in their research, though there was a non-significant
trend in this direction. Future studies might find flaws in the argument that liberals and conservatives will more strongly endorse their political values when presented with an existential threat, particularly when this threat derives from terrorist acts. One of the more relevant studies on the topic examined the support for the president as a response to terrorism primes (Landau et al., 2004). This study investigated the support former President George W. Bush received shortly after the Operation Iraqi Freedom had begun. The first study in the article demonstrated that participants significantly increased their agreement with a positive vignette supporting President Bush and his policies after traditional MS manipulation compared to control conditions (Landau et al., 2004).

In their second study, Landau et al. (2004) attempted to demonstrate empirically an increase in death thought accessibility in response to subliminal primes of the September 11 terrorist attacks. Their procedure used a computer program that displayed either “911,” “WTC,” or “573” for 28.5ms during an otherwise innocuous word-relation task, and then measured death thought accessibility with a word fragment completion task (Greenberg et al., 1994). Both the experimental “911” and “WTC” subliminal prime conditions resulted in significantly more death thought accessibility than the control “573” prime (Landau et al., 2004). The third study compared traditional MS, a September 11 prime, and a control condition, as they affected participants’ agreement with the positive vignette of President Bush’s policies used in study 1. Results were as the authors expected; both the September 11 and MS primes resulted in the participants’ increased agreement over control conditions with the positive opinion of the former president expressed in the vignette and no significant differences between the participant’s opinions in the September 11 and MS conditions (Landau et al., 2004).
Having established that September 11 primes increased death thought accessibility and that the existential threat had manifested in increased support for the sitting president, Landau et al., (2004) then attempted to determine if there would be differences in support for the president between individuals with different political preferences. This was measured in both the liberal and conservative participants’ support for the sitting conservative president, or in their voting behavior when given a choice between President Bush and 2004 Democratic presidential candidate Senator John Kerry. In this study, although liberal participants tended to disagree more with the positive vignette about President Bush in comparison to conservatives, both groups expressed more support for then-President Bush under both MS and September 11 salience conditions (Landau et al., 2004). No significant differences existed in participants’ opinions of the vignette in the 9/11 condition. In conclusion, when primed with a specific terrorist attack or traditional MS manipulations, both liberals and conservatives expressed more support for then-President Bush.

Their final study had participants undergo MS or an aversive pain salience control condition to determine MS effects on voting behavior (Landau et al., 2004). Participants underwent MS or aversive pain control conditions, and then were given the option of supporting President Bush or Senator Kerry in a hypothetical election. In the pain control condition, participants were significantly more likely to support Kerry over Bush (Landau et al., 2004). Conversely, MS conditions resulted in a significant reversal of support, as more participants stated their intent to vote for President Bush (Landau et al., 2004). This study demonstrated that the conservative shift seen in these studies was not due simply to exposure to an aversive stimulus, such as intense pain, but rather to the salience of death.
This increased support for the hypothesis that there are unique effects of MS on voting behavior, in this case between the candidates in a hypothetical 2004 presidential election condition.

The importance of this study lies in the context of the effects of death anxiety specifically deriving from terrorist acts and its effects on political preferences. Although the former study investigating political preferences and MS suggested that participants may demonstrate polarization in their political views when confronted with death anxiety (Greenberg et al., 1992b), the latter study suggests otherwise, as participants were more likely to support a sitting conservative president when their mortality was made salient by either traditional MS manipulations or the priming of the September 11 terror attacks (Landau et al., 2004). These studies are notable examples of the conservative shift (Jost et al., 2007) and worldview defense (Burke, Kosloff, & Landau, in press) debate in the literature. The worldview defense argument was earlier defined as one of the main components of TMT (Pyszczynski et al., 1999). In the context of political preferences, the worldview defense hypothesis would posit that when primed with death-related stimuli, individuals would engage in distal worldview defense strategies that would include heightening their commitment to their pre-existing political orientation. The conservative shift hypothesis, succinctly explained, is that there is a unique quality to political conservatism that offers anxiety-buffering qualities (Jost, Glaser, Kruglanski, & Sulloway, 2003). This results in individuals embracing a more conservative position than they normally would when their mortality is made salient (Jost et al., 2003). The following discussion of the literature will outline the research supporting each hypothesis, starting first with the conservative shift hypothesis.
Political preference and the conservative shift hypothesis. In a study published soon after Landau et al. (2004), Cohen, Ogilvie, Solomon, Greenberg, & Pyszczynski, (2005) replicated these results with a sample of college students, having collected their data approximately two months before the US presidential election in 2004. Placing participants in either a television salience control (in which participants are asked to consider the thoughts and emotions that arise from watching television) or MS conditions, the results were similar to Landau et al. (2004), as the participants in the control condition demonstrated greater intent to cast their vote for Senator Kerry, and participants in the MS condition displayed greater support for President Bush (Cohen et al., 2005). The authors of the study noted that MS effects are surely not the only factor that led to support for one candidate over the other, but used these results along with evidence from prior studies to suggest that individuals may be influenced by the salience of terrorist acts when making voting decisions (Cohen et al., 2005).

Another study found that after priming with MS conditions, participants increased support for President Bush’s foreign policy in Iraq (Ogilvie, Cohen, & Solomon, 2008). Although not directly contrasting participants with differing political positions, the participants were more likely to support the sitting conservative president after MS conditions (Ogilvie, Cohen & Solomon, 2008). A study of the 2008 presidential election continued to find that MS conditions resulted in increased support for the more conservative candidate in the election, Senator John McCain, over then-Senator Barrack Obama (Vail, Arndt, Motyl, & Pyszczynski, 2009). This particular finding began to build the argument that the conservative shift seen in prior studies could not be explained by individuals increasing support of a sitting president in response to existential threat.
One study obtained two independent samples of political attitudes of participants in 2000 and in 2001, the latter of which collected two months after the terror attacks of September 11 (Nail & McGregor, 2009). Endorsement of political viewpoints was measured by asking participants to indicate to what extent they supported particular groups, entities, or policy positions on a 10-point Likert scale. Each of these targets was commonly associated with a traditionally liberal (socialized medicine, the American Civil Liberties Union, etc.) or conservative (increased military spending, George W. Bush, etc.) construct. The information was first obtained for a separate study on racism, but following the attacks, using the data for the purpose of examining terrorism’s influence on political positions became more relevant. The results indicated that although self-identified liberal, moderate and conservative participants continued to support their respective political positions before and after the attacks, there were significant changes in the degree to which they supported these positions, with all participants demonstrating a more conservative shift in opinion as compared to controls (Nail & McGregor, 2009).

A study which used a sample of September 11 survivors, who were within a few blocks of the World Trade Center during the attacks, also investigated changes in the political positions of these individuals after the attacks (Bonanno & Jost, 2006). This study found that among those who were not reporting symptoms of depression or post-traumatic stress disorder (PTSD), there was no significant shift in political ideology after the attacks (Bonanno & Jost, 2006). Conversely, individuals who reported these psychological symptoms were also more likely to report that their political views had become more conservative (Bonanno & Jost, 2006). In addition, on the Right-Wing
Authoritarianism Scale (Altemeyer & Hunsberger, 1992), those with PTSD were more likely to respond in a manner similar to political conservatives. (Bonanno & Jost, 2006). Intriguing new research in the field of neuropsychology produced provocative findings that suggested that there are differences in neuroanatomical structure and function between liberals and conservatives. One study found that individuals who exhibited higher physiological reactions to sudden noises and threatening visual images were more likely to support conservative positions and policies (Oxley et al. 2008). Conversely, those exhibiting less physiological reactions to these stimuli were more likely to support liberal positions and policies (Oxley et al., 2008). Moreover, liberal participants demonstrated greater activity in the anterior cingulate cortex in a Go/No-Go task (Amodio, Jost, Master, & Yee, 2007). Succinctly described, the Go/No-Go task requires participants to provide a specified response when the “go” command is given, but withhold this response when the “no-go” command is given. The anterior cingulate cortex is believed to serve a self-regulatory role of conflict monitoring, which is a “general mechanism for detecting when one’s habitual response tendency is mismatched with the responses required by the current situation,” (Amodio, et al., 2007, p. 1).

Providing added support for findings of the prior study, Kanai et al. (2011) found that liberalism was associated with a larger anterior cingulate cortex. Also, Kanai et al. (2011) found that conservatism is associated with larger right amygdala volume, a structure related to the behavioral and physiological responses to threat. Although not included in the studies specifically addressing the conservative shift, taken in aggregate these studies provide support for the assertion of a relationship between political conservatism and sensitivity to the perception of threat (consistent with amygdala
function). In contrast, liberals were more able to respond quickly to simple environmental stimuli but were less likely to respond to mild threats (consistent with anterior cingulate activity).

As illustrated above, many studies on the subject tend to split participants into liberal and conservative experimental groups. This is most often accomplished by having these participants indicate their political preference on a continuum by way of a Likert scale with extreme liberalism and conservatism at the poles. However, other studies on the topic attempted to identify individuals based on personality characteristics that may be representative of conservatism. One of these constructs is personal need for structure (PNS; Neuberg & Newsom, 1993). Generally, PNS is the extent to which an individual is comfortable with complexity (Neuberg & Newsom, 1993). Those who exhibit a greater PNS generally prefer simplicity and predictability in their environment, while those who score lower on PNS scales prefer and may actually seek out complexity. For example, individuals who scored higher on scales of PNS were more likely to reject information that is inconsistent with a previously established worldview (Tetlock, 1998). In this study, participants were asked to make an educated guess about the outcome of political and international scenarios. Those high in PNS were more likely to insist that their conceptualization of the problem was accurate, even if they had been informed that they were wrong (Tetlock, 1998).

In addition, after being presented an essay disparaging the university that student participants were attending, high PNS participants were more likely to defend the university and denigrate the writer of the essay (Dechesne, Janssen, & van Knippenberg, 2000). Low PNS participants showed the opposite tendency; they were more likely to
support the writer’s opinions and alter their view of the university (Dechesne, Janssen, & van Knippenberg, 2000). One interpretation of these findings is that existing group affiliation and maintaining psychological order was more important to the high PNS participants, but the low PNS participants were less inclined to maintain their worldview of the university and displayed tolerance of the views of the writer of the negative vignette about their school (Dechesne, Janssen, & van Knippenberg, 2000).

PNS and its variants have been the focus of attention in a number of studies involving MS conditions and political preferences, mainly because of how this personality style correlates with important concepts in the literature. In a meta-analysis of political conservatism in a variety of countries, a conservative political position was most strongly positively correlated with with dogmatism, intolerance of ambiguity, reactance to MS effects and system instability, or a crisis in the individual’s society (Jost et al., 2003). Large-sized effects were also found for the negative correlation between conservatism and openness to experience. The authors’ interpretation of this meta-analysis was that political conservatism satisfies a need for structure that may be in part the outcome of a reaction to uncertainty and the perception of threat (Jost et al., 2003). As hypothesized, a later study found that uncertainty avoidance and the perception of threat remained significant predictors of political conservatism (Jost et al., 2007). Extrapolating from that finding, the change in some US citizens’ political attitudes after 9/11 can be explained by these processes. After the attacks threatened their security, the threat may have triggered a need for more traditionally conservative views, which could provide more security and less ambiguity. An example of this phenomena can be seen in an Israeli study indicating that Israeli participants were more likely to endorse a violent
reaction (e.g., supporting attacks on Iran’s nuclear installations, supporting nuclear attacks on Iran, or opposing diplomacy) to Iran after learning that Iran’s leaders had engaged in rhetoric that would escalate the conflict between the two nations (Hirschberger, Pyszczynski, & Ein-Dor, 2009). The participants made a conservative shift in response to the perception of viable threat.

**Political preference and the worldview defense hypothesis.** Although there is support for the conservative shift argument, other evidence lends weight to the idea that the effects of MS can be more context-specific, and cause attitude changes that do not reflect conservative positions. Some previously cited sources offer partial support of the conservative shift hypothesis, but the totality of the results should be placed in a larger context. A previously cited study concerning the 2008 election found that individuals were more likely to support Senator McCain than Senator Barack Obama following MS effects (Vail et al., 2009). However, the same study also found significant support for Senator Obama in the following specific circumstances: when participants were asked to read statements emphasizing the importance of caring for others before undergoing MS manipulations, support shifted (Vail et al., 2009). It is believed that the priming of such messages may have activated the cultural relevance of compassion, and the participants’ worldview at the time of data collection (Vail et al., 2009). Attenuating factors for MS were also found in a study that focused on the role of attachment style. Weise, et al. (2008), found that securely attached participants were more likely to support a liberal presidential candidate. Moreover, when relationship attachment was manipulated by asking participants to think of a secure personal relationship, they were less likely to support violent action in response to terrorism following MS (Weise et al., 2008).
Other studies have focused on attitudes towards particular out-groups; previous MS research indicated that reminders of mortality increased prejudice towards out-groups in general. However, some evidence exists that MS produces no significant difference even increased tolerance of out-groups if certain situational contingencies are met. The previously cited Israeli study found that individuals who had direct experience of war exhibited less support for military action against Iran when informed that Iranian leadership was engaging in rhetoric escalating the confrontation between the nations (Hirschberger, et al., 2009). This was in contrast to those with no experience of war, who tended to supported violent action in both the escalating or deescalating conditions. This suggests that experience of war results in less support for military actions towards out-groups if the individual is convinced that this action is not needed.

The extent of religiosity was also implicated in attenuating the effects of MS. In one study, American fundamentalist Christians were less likely to support to support violent actions against terrorists, and Iranian fundamentalist Muslims were less likely to support violent action against the West, when their religious beliefs were primed prior to MS (Rothschild, Abdollahi, & Pyszczynski, 2009). These values were primed by asking the participants to read statements from the Bible or Koran that highlighted the value of compassion. These statements included, “The Holy Koran [4:36] says: do good to parents, kinfolk, orphans, those in need, neighbors who are near neighbors who are strangers, the companion by your side, the wayfarer (you meet) and what you right hand possesses” (Rothschild, Abdollahi, & Pyszczynski, 2009, p. 823), and “Be kind and compassionate to one another, forgiving each other, just as Christ forgave you,” Ephesians 4:32” (Rothschild, Abdollahi, & Pyszczynski, 2009, p.819).
In addition, the influence of social consensus also appears to affect MS results. In another study, Iranian students displayed no differences in MS or control conditions when asked about their support of martyrdom attacks against the West, if they believed that the majority of those in their country did not support these attacks (Abdollahi et al., 2010). The authors of this study contended that although the existence of threat generally overrode the values of compassion and peaceful co-existence espoused by each religion’s sacred texts, priming these values affected attitudes about the out-group faith.

In regard to political preferences, there were differences in the ways liberals and conservatives responded to MS under certain conditions. For instance, one study attempted to identify support for “extreme military solutions,” (Pyszczynski et al., 2006, p. 531) to terrorist attacks, even if these responses meant that there would be significant civilian casualties (Pyszczynski et al., 2006). For example, some of these solutions stated that “it is entirely appropriate to engage in preemptive attacks on countries (e.g., Iran, Syria, North Korea) that may pose a threat to the United States in the future, even if there is no evidence that they are planning to attack us right now,” (Pyszczynski et al., 2006, p. 531), and “if necessary, the United States should use nuclear weapons to defend our interests at home and abroad,” (Pyszczynski et al., 2006, p. 531). Liberals’ support for extreme military solutions significantly differed from the conservatives; they did not endorse these actions, even under MS conditions (Pyszczynski et al., 2006). According to TMT hypotheses of worldview defense, these results imply differences in liberal and conservative participants’ worldviews (in this case, their political worldview) that was salient at the time of data collection.
Furthermore, a notable study investigated the relationship between threat and the number of judicial death sentences (McCann, 2008). Participants were individuals in either liberal- or conservative-leaning states. In this case, the threat was operationalized as an index of homicide rates, violent crime rates, and non-white percentages of the states’ populations. US states with low threat indexes showed no significant intergroup differences in the number of death sentences (McCann, 2008). However, there were significant differences between liberal- and conservative-leaning states with high threat indexes, Conservative states sentenced more individuals to death than liberal states (McCann, 2008). Despite not utilizing an experimental design, it was argument that the political worldview of the judicial system in these states was upheld more stringently under threat, just as TMT predicts (McCann, 2008).

Previous studies have demonstrated that after MS, individuals will show a significantly greater preference for a charismatic political candidate than a task-oriented or relationship-oriented candidate (Cohen, Solomon, Maxfield, Pyszczynski, & Greenberg, 2004). Interestingly, without MS individuals of differing political persuasions evinced divergent preferences for characteristics of political candidates. For example, liberals tended to support charismatic candidates. In contrast, conservatives chose candidates along political lines, with little regard for charisma. If individuals were attracted to a political candidate following MS, there were differences in attraction when charisma and political ideology were identified in these candidates. Specifically, after MS, liberals and conservatives showed an increased preference for a charismatic candidate who supported their positions, and significantly lower preference for charismatic candidates who did not share their positions (Kosloff, Greenberg, Weise, &
Solomon, 2010). These results corroborated the worldview defense hypothesis. Moreover, although both liberals and conservatives reported more polarized political preferences following the death of a loved one, conservatives evinced a stronger commitment to their political preferences than liberals (Chatard, Arndt, & Pyszczynski, 2010).

In conclusion, there is evidence supporting both the conservative shift hypothesis and the worldview defense hypothesis in the relationship between political position and reminders of death. Although the research currently doesn’t clarify the issue enough to draw definitive conclusions, it appears there are specific conditions in which each hypothesized response is more likely to occur. Recently, in their meta-analysis of the literature, Burke et al. (in press) found empirical support for both hypotheses. Burke et al., (in press) indicated that there is a tendency for individuals to exhibit a conservative shift in political opinion in response to existential threats, but the salience of an individual’s worldview can moderate these effects. This debate is important in the context of the current study, particularly because it pertains to predictions regarding liberal and conservative participants’ responses to an out-group member after an MS manipulation.

**Literature Summary**

Overall, the current review elucidated support for TMT: the role of existential fear, and why the fear of death yields unique responses; how terrorism primes can be used as effective MS manipulations; and how terror management principles relate to the nexus of terrorism and political preference. Based on the literature, it is clear that terror management strategies are utilized following acts of terror. What is less clear is
under what conditions will individuals exhibit a conservative shift or more steadfastly avow their political preferences when faced with existential threat. Although clarity is lacking regarding the precise effect of existential threats on political preference, there is more evidence for the effect of terrorism primes causing individuals to engage in terror management strategies to reduce the resulting anxiety.

In light of these findings, the current study attempts to contribute to the literature by investigating associations between non-violent Muslim primes and terrorism. To equate Muslim and terrorism is unreasonable and hateful. However, the possibility exists that these terms have become associated since the events September 11th, 2001. Having established both the evidence for TMT and the possibility that TMT is the lens through which we can begin to understand political reactions to the threat of terrorism, the current study attempts to identify the strength of this association through responses to violent terrorism primes.
Chapter 3: Hypotheses

The main goal of the current project is to determine if evidence exists for the existence of a classically conditioned relationship between the perception of Islam and terrorism in an American sample, and if that relationship can be conceptualized using TMT. The current project has been split into two studies to adequately address all hypotheses (see tables 1 and 2 for a list of hypotheses, their rationale, and formulae to operationalize procedures).

Prior research indicated that stimuli related to September 11th and other stimuli associated with terrorist attacks are similar to other mortality salience (MS) conditions, in that exposure to these primes increases death thought accessibility and worldview defense strategies (Das et al., 2009; Landau et al., 2004; Pyszczynski et al., 2006; Ullrich & Cohrs, 2007; Vail et al., 2012). The manipulations used in these studies included explicit mention of terror-related stimuli (Das et al., 2009, Pyszczynski et al., 2006; Ullrich & Cohrs, 2007), hypothetical terror attacks (Landau et al., 2004), or pictures of damaged buildings (Vail et al., 2012). Because prior research indicated that explicit (Das et al., 2009; Landau et al., 2004; Pyszczynski et al., 2006; Ullrich & Cohrs, 2007) and implicit (Landau et al., 2004; Vail et al., 2012) primes associated with terrorism increase death thought accessibility, the current study first attempts to identify if exposure to a non-violent Muslim prime results in increased death thought accessibility. A prior unpublished pilot study found participants (graduate students in psychology) endorsed greater tolerance for a “devout Muslim” employer’s discomfort with a female job applicant’s “immodest” dress in comparison to the same reaction attributed to an “evangelical Christian” employer (Rosenfield, personal communication, October 3,
2011). If stimuli related to Islam increase death thought accessibility, the results of this unpublished study may support TMT, if the sample used in this unpublished study was largely politically liberal, because prior research indicated that college students typically hold liberal views (Pryor et al., 2011), and that students pursuing advanced degrees are even more likely to hold liberal positions (Gross & Fosse, 2012). If those participants held liberal positions prior to exposure to the vignette, and the indirect Islamic primes in the employer vignette increased death thought accessibility, their tolerance of an out-group member can be interpreted as upholding an egalitarian worldview.

**Study 1**

Considering the impact of the sociopolitical events since September 11\textsuperscript{th} 2011 and how these events have been portrayed in the media, the study’s first hypothesis is that when presented with a non-violent Muslim prime, participants will experience an increase in death-related thoughts compared to control participants. Second, the number of death-related thoughts resulting from the non-violent “fundamentalist Muslim” prime will not differ from the violent September 11\textsuperscript{th} stimuli condition. Third, the measure of death thoughts in the non-violent “Evangelical Christian” prime condition will not differ from the results of standard control condition which is commonly used in other TMT research.
Table 1.

Study 1 Hypotheses

<table>
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<tr>
<th>Hypotheses Summary</th>
<th>Rationale</th>
<th>Formula</th>
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<tr>
<td>(Study 1) H₁: When presented with a non-violent “fundamentalist Muslim” prime, participants will experience an increase in death-thought accessibility in comparison to “evangelical Christian” and pain salience controls</td>
<td>If a classically conditioned relationship exists between Islamic stimuli and the construct of terrorism, death-related thoughts will increase in response to stimuli related to Islam.</td>
<td>The number of death-related words completed in a word-stem completion measure used in previous TMT research (Greenberg et al., 1994) between the “fundamentalist Muslim” vignette and control conditions.</td>
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<tr>
<td>(Study 1) H₂: There will be no significant difference in death-thought accessibility between the non-violent “fundamentalist Muslim” and 9/11 terrorism conditions for all participants in these conditions.</td>
<td>If a perceived relationship exists between Islam and terrorism in participants, effects on death thoughts will be similar to results of previous research demonstrating increased death-thought accessibility after exposure to explicit terrorism primes.</td>
<td>Differences in the level of death thought accessibility as measured by the word-stem completion measure (Greenberg et al., 1994) between Muslim and 9/11 terrorism prime conditions.</td>
</tr>
<tr>
<td>(Study 1) H₃: There will be no significant difference in death-thought accessibility between the non-violent “evangelical Christian” prime and the common control conditions.</td>
<td>Other elements of the “evangelical Christian” prime are not believed responsible for increasing death thought accessibility, and its effects are similar to common controls used in previous TMT research (Greenberg et al., 1994).</td>
<td>Differences in the level of death thought accessibility between “evangelical Christian” and pain prime (e.g. Pyszczynski et al., 2006) conditions.</td>
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Study 2

Study 2 attempts to replicate prior results showing differential effects of MS in individuals with differing political preferences (Greenberg, Pyszczynski, Solomon, & Chatel, 1992; Landau et al., 2004, Pyszczynski, et al., 2006; Weise et al., 2008). It is hypothesized that TMT accounts for these differing results by asserting that political preferences shape worldview. Following MS conditions, participants with different political preferences respond in accordance with these belief systems by strengthening their commitment to their worldview.
The current study will attempt to replicate these results conceptually by using a non-violent Muslim prime condition (a news story about a Islamic community center) to determine if participants with different political preferences strengthen their commitment to their particular worldviews following MS. Conversely, the “evangelical Christian” community center prime will be used as a control, if this prime has been demonstrated to have no relationship with death thought accessibility. Based on the worldview defense hypothesis, it is hypothesized that liberals will show more tolerance toward the clearly defined out-group (e.g., Muslims), and conservatives would show the opposite tendency, demonstrating more bias against this out-group (Greenberg et al., 1992). If the results support the hypotheses of the first study, the use of non-violent Muslim primes as an effective MS manipulation would be validated for further research. Under these conditions, the current study will attempt to replicate prior results showing differential effects of MS in individuals with differing political preferences (Greenberg, Simon Pyszczynski, Solomon, & Chatel, 1992; Landau et al., 2004, Pyszczynski, et al., 2006; Weise et al., 2008). TMT will account for these differing results by explaining that political preferences shape one’s worldview, and after exposure to MS conditions, participants with different political preferences will respond by strengthening their commitment to their worldview. The current study will attempt to replicate these results conceptually by using the non-violent Muslim prime condition to determine if participants with different political preferences strengthen their commitment to their worldview following MS.
Table 2.  
*Study 2 Hypotheses*

<table>
<thead>
<tr>
<th>Hypotheses Summary</th>
<th>Rationale</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Study 2) H4: The “fundamentalist Muslim” condition will result in increased worldview defense compared to the “evangelical Christian” condition.</td>
<td>Previous research has demonstrated an increase in worldview defense following exposure to death-related stimuli. If the “fundamentalist Muslim” vignette result in increased death thought accessibility as expected, individuals will increase their commitment to their worldview after reading the vignette.</td>
<td>The effect of “fundamentalist Muslim” and “evangelical Christian” community center vignettes on participants and results in the Interpersonal Judgment Scale (Byrne, 1971), with liberals displaying more observed tolerance and conservatives less observed tolerance of the target of the “fundamentalist Muslim” vignette.</td>
</tr>
</tbody>
</table>

| (Study 2) H5: Liberal and conservative participants will demonstrate bias towards Christian and Muslim religious/cultural groups respectively | The perceptions of the targets of the vignette could be conceptualized as the result of the participants’ political biases and not a function of terror management principles. This hypothesis measures this phenomenon and predicts liberals will demonstrate more tolerance to out-group members (e.g., Muslims) than conservatives. | This will be measured with the bias scales used by Bushman & Bonacci (2004). Because this scale was used to measure bias against Muslim targets, it will be modified to measure bias against Christian targets as well. Higher scores on this measure indicate more bias. |
Chapter 4: Methods

Overview

The current study has two goals. First, although prior studies have explicitly asked individuals to consider the events of September 11th (Landau et al., 2004; Pyszczynski et al., 2006), and exposed individuals to news reports of terrorism (Das et al., 2009), the current study is designed to determine if there is an increase in death-related thoughts when individuals are exposed to a non-violent Muslim prime. Recent research has demonstrated that other abstract stimuli can elicit death thought accessibility, such as pictures of damaged buildings (Vail et al., 2012). The current study proposes that other less explicit, indirectly associated primes also increase death thought accessibility, such as newspaper-style reports including references of Islamic culture. As the review of the literature theoretically asserted and empirically supported, it is hypothesized that individuals may be more likely to equate stimuli related to Islam with terrorism and ultimately death in response to the salience of terrorist attacks and the prevalence of media reports implying a connection between terrorism and Islam. A non-violent Muslim prime will be used in the current study to test this hypothesis.

Furthermore, consistent with prior research regarding the relationship between political preferences and observed tolerance for out-groups (Greenberg et al., 1992; Pyszczynski et al., 2006), the second purpose of the study is to use the non-violent Muslim prime in the same fashion as MS manipulations, in an attempt to demonstrate how differing worldview defense strategies are used by individuals with divergent political orientation.
Design

**Study 1.** The first study used a posttest-only control group experimental design, with random assignment into one of four experimental conditions (see Table 3). In two of these conditions, participants were asked to read a vignette depicting the grand opening of a religiously based community center in their locality. In the vignette, a leader of the community center is interviewed, followed by a brief description of the events planned for its opening weekend. In one of these conditions, the community center is affiliated with “fundamentalist Islam,” and the person interviewed is identified as the Imam. Conversely, the second group read a similar vignette, with the difference that the community center is affiliated with “evangelical Christianity,” and the person interviewed is identified as the pastor.

<table>
<thead>
<tr>
<th>Independent Variables (1X4)</th>
<th>Dependent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Fundamentalist Muslim” Community Center Vignette</td>
<td></td>
</tr>
<tr>
<td>“Evangelical Christian” Community Center Vignette</td>
<td>Word-stem Completion Measure (Greenberg et al., 1992).</td>
</tr>
<tr>
<td>September 11th Prime</td>
<td></td>
</tr>
<tr>
<td>Pain Salience Prime</td>
<td></td>
</tr>
</tbody>
</table>

The third group was assigned to a September 11th prime condition, in which they were asked to consider the thoughts that come to mind about the terror attacks that occurred that day in 2001. This condition was empirically selected for its consistent
effects of increasing death thought accessibility (Landau et al., 2004). The fourth group was used as a control condition; participants were asked about the thoughts they have when experiencing dental pain. This condition is commonly used within the TMT literature as a control for aversive experiences (Greenberg et al., 1992, Pyszczynski et al., 2006).

Following all four conditions, the participants were asked to complete a word-stem completion measure to determine the accessibility of death-related thoughts (Greenberg et al., 1992). A posttest-only experimental design was selected for use by the control group, so the effects of the two community center vignette conditions could be compared against both the empirically established September 11th prime and the standard pain salience control. The use of a pretest is believed to be unnecessary, because the study planned to include sufficient participants assigned randomly to experimental groups to minimize differences between the groups prior to the experimental conditions.

**Study 2.** The second study utilized a 2x2 factorial design, with political preference and exposure to the community center vignettes as the independent variables and scores on the Interpersonal Judgment Scale (Byrne, 1971) as the dependent variable (see table 4). There will be four groups in total, and participants self-identified as either liberal or conservative in their political affiliation based on their response to a 1-9 point Likert scale question on the topic. Participants in both groups were then randomly assigned to one of two conditions: to read either the “fundamentalist Muslim” or the “evangelical Christian” community center vignette. After reading the vignettes, all participants study the Interpersonal Judgment Scale (Byrne, 1971) designed to determine the participants’ impressions of the person interviewed in the vignette. The design of this study was
selected primarily to investigate the interaction of the effect of political preference with the effect of the vignettes on participants’ impressions of the targets in the vignettes. It is hypothesized that differences in death thought accessibility is contingent upon how participants differ in these variables. As in the first study, it is assumed that the number of participants in the study and random assignment should minimize the effects of individual differences between participants on relevant outcome measures, reducing the need for pre-testing.

Table 4. Study 2 Experimental Design

<table>
<thead>
<tr>
<th>Independent Variables (2x2)</th>
<th>Dependent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political Preference</td>
<td>Vignette Condition</td>
</tr>
<tr>
<td>Conservatives</td>
<td>“Fundamentalist Muslim” Community Center Vignette</td>
</tr>
<tr>
<td>Liberals</td>
<td>“Fundamentalist Muslim” Community Center Vignette</td>
</tr>
<tr>
<td></td>
<td>“Evangelical Christian” Community Center Vignette</td>
</tr>
</tbody>
</table>

Participants and Recruitment

It is important for the current study to solicit individuals with well-formed political preferences. Using the Internet to contact these individuals may result in more effective recruitment of research participants, since specific websites, message boards, or groups on social media sites formed because of an explicit interest in public policy will provide access to the necessary population. It is a reasonable assumption that those who have joined or participated in these sites may have well-formed political beliefs. For
example, identifying politically oriented Facebook groups may provide participants with clearly defined political preferences.

Moreover, recent research has indicated that in conducting Internet-based research, participants who are interested in the study’s topic are more likely to complete the study (Shropshire, Hawdon, & Witte, 2009). By sampling the populations identified above (as well as similar populations), the study can improve its response rate as well the generalization of results of the study to the larger population. In addition, Internet-based research tends to have very low response rates, with recent research estimating 11% responses on average (Kaplowitz, Hadlock, & Levine, 2004). Appealing to groups who are more likely to complete the survey may increase the response rate.

With these factors in mind, the current study chose to use social media as its main medium for recruitment. Recruitment took place via the Internet, utilizing three methods: approaching contacts of the responsible investigator on social media, contacting politically oriented social media groups, and using a college list-serv. A recruitment post was drafted by the responsible investigator providing information about the study and allowing potential participants to click on a link that would take them to Survey Monkey, where they could access the survey. The responsible investigator of the study provided an electronic copy of the recruitment post to each Facebook contact, so they could participate in the study.

In an attempt to increase the diversity and representation of the general population of the sample, politically oriented “open groups” on Facebook were also targeted for recruitment. Facebook “groups” are similar to online message boards; users who are interested in a particular topic can join a “group” to engage in discussion of the topic with
others. Groups can be “open,” meaning anyone can join and create posts for others in the group to read or “closed,” meaning the group and its posts are not visible to those outside the group, and access to the group can only be gained via invitation from existing members. “Open” Facebook groups with declared political interests have been selected as sites for recruitment, because it is likely that the members of these groups have more firmly established political beliefs. Using Facebook’s search feature, the terms “Republican” and “Democrat” were used to generate a list of “open” Facebook groups, where these terms are prominently featured in the group’s title. Five groups for each term were solicited to participate in the study by posting the recruitment post to the group’s “wall.

Finally, recruitment extended to individuals who are a part of a college list-serv. The recruitment post was included in an e-mail disseminated on the list-serv, asking recipients to consider participating in the study. Snowball sampling was used in all three methods of recruitment. In the recruitment post, potential participants were asked to forward the post to others via Facebook, e-mail, or other means. This recruitment method helped broaden the potential sample for the study.

Both studies were administered via the Internet through Survey Monkey, a commonly used website for Internet-based research. There are no limitations on the geographic location of the potential participants. Using this method expands the pool of potential participants, allowing the study to select from a more diverse population. A sample of individuals already using Internet websites such as Facebook should reduce the risk of recruiting individuals unfamiliar with such common Internet features as option buttons, check boxes, and text boxes, all of which are used in the study.
Inclusion Criteria

Participants were required to be 18 years of age or older. It is important for participants in the study to be politically informed, with well-defined political beliefs. Because individuals age 18 and older have the right to vote in elections, and many may have already voted, the current project presumes that they have more well-defined political beliefs than those under 18.

Exclusion Criteria

Individuals under the age of 18 were excluded from both studies; it is important for the study to optimize the chances of selecting individuals with well-formed political beliefs. Because the novelty of the prime is important to the study, care was taken to ensure that individuals could participate in only one of the two studies. This was accomplished by randomizing the link included in the recruitment post sent to potential participants. One link was included in each recruitment post, with individuals having an equal chance of inclusion in each study.

Measures

Study 1. The measures that were utilized for the first study include the PANAS (Watson, Clark, & Tellegen, 1988), a word-stem completion measure (Greenberg et al., 1994), a measure of bias against Muslim and Christian groups (as modified from Bushman & Bonacci, 2004), and a brief demographics questionnaire (see Appendix for all measures). The PANAS (Watson, Clark & Tellegen, 1988) is a self-report measure of positive and negative affect. This measure was included as a buffer between the attempted MS conditions and the outcome measures. Previous research had indicated that the effects of MS conditions are most notable after a period of delay (Greenberg et al.,
THE EFFECTS OF TERRORISM AND BIAS

1994; Greenberg et al., 2000; Martens, Burke, Schimel, & Faucher, 2011); therefore the PANAS was utilized in this capacity.

The word-stem completion task is a widely accepted measure in the TMT literature of implicit death thought accessibility (e.g., Greenberg et al., 1994; Landau et al., 2004). This measure consists of 20 word fragments that participants complete by filling in two letters missing from each word. Six of the 20 word fragments are intended to examine death thought accessibility, since the fragments can be completed to spell either death-related or innocuous words. For example, participants will be presented with the word stem “C O F F _ _.” This stem could be completed to spell either coffee or coffin. The potential death-related words include coffin, grave, dead, skull, buried, and killed. The tendency of participants to complete the word-stems with words associated with death indicates greater death-related cognition accessibility.

Bias against Muslim and Christian religious/cultural groups was assessed with a modified version of an anti-Arab bias measure employed by Bushman & Bonacci (2004). Participants were asked to rate their level of agreement with 11 different statements, such as “Arab-Americans have moral standards they apply in dealing with each other, but with non-Arab-Americans, they are unscrupulous, ruthless, and undependable.” The level of agreement with each item is rated on a 10-point Likert scale ranging from 1 - strongly disagree to 10 - strongly agree. No established measure of bias against evangelical Christians was available at the time of the current study; the decision was made to modify the Bushman & Bonacci (2004) for application to Christians. The items were altered; each reference to “Arab-Americans” was replaced by “Muslims” or “evangelical
Christians,” to adapt the measure to the groups identified in the current study. Higher scores on this measure indicated more bias against the target religious/cultural groups. Participants were also completed a brief demographic questionnaire that asks for the participant’s level of education, ethnicity, gender, religious affiliation, and political orientation. Political orientation was determined by a one-item measure of political preference. This measure utilized a 9-point Likert scale on a continuum of liberalism and conservatism. This approach is widely accepted in the social psychological literature as an accurate indication of political preference that is strongly correlated with participants’ past voting (e.g. Landau et al., 2004, Nail & MacGregor, 2009, Vail et al., 2012).

**Study 2.** In the second study, several measures were utilized. The first is the 9-point Likert measure of political preference. The PANAS (Watson, Clark, & Tellegen, 1988) was also administered in this study as a filler questionnaire between the primes and collection of outcome data. The dependent measure administered in this study was the Interpersonal Judgment Scale (IJS; Byrne, 1971), used to assess the participants’ attraction to the subject of the vignettes. The IJS is a six-item questionnaire in which participants rated the religious leader depicted in the vignette on six variables: intelligence, knowledge of current events, morality, flexibility and whether they would like or dislike working with the person. Following presentation of the PANAS (Watson, Clark, & Tellegen, 1988) and the IJS (Byrne, 1971), participants completed the measures of anti-Muslim or anti-Christian bias described above.

**Procedure**

**Study 1.** Participants were invited to participate in a study of “decision-making and political attitudes” via e-mail and/or social media. The author recruited from his
existing social media contacts, politically affiliated “open” Facebook groups, and a college list-serv. Each contact was randomly selected to participate in either study 1 or study 2. Potential participants received a copy of the recruitment post inviting them to participate in the study. The e-mail and/or social media post included a hyperlink to Survey Monkey, where the survey was available.

Once they arrived at the website that hosted the study, participants in all conditions were informed that they would be participating in a study investigating factors that may affect their decision-making. At that time, participants were assigned to one of the four experimental conditions. Participants were then requested to provide demographic information, specifically gender, ethnicity, religion, age, highest level of education completed, and political orientation. Other demographic information was solicited to disguise the study’s intent. Political orientation was determined with the question “How would you describe your political orientation?” Participants provided their answer on a 9-point scale (1 = very liberal, 5 = neutral, 9 = very conservative). Participants were then randomly assigned to either the dental pain, September 11th, “evangelical Christian” community center, or “fundamentalist Muslim” community center primes. In the ”fundamentalist Muslim” and “evangelical Christian” community center conditions, participants were informed that they would be reading a short story and asked to respond to the questions that followed. Participants read the story about the community center and asked to answer the questions “Please describe the emotions that the thought of this vignette arouses in you,” and “Describe as specifically as you can what you think will occur at the community center on the weekend described.” Participants were given the opportunity to record their response to this question in an on-
screen text box. Participants next completed the PANAS (Watson, Clark, Tellegen, 1988), which served as a filler questionnaire. Participants then completed the word-stem completion task (Greenberg et al., 1992), in which they supplied two letters missing from each of the 20 word stems; six could be completed to form death-related words. Following the word-stem completion task, participants responded to either the anti-Muslim and anti-evangelical Christian measures (modified from Bushman & Bonacci, 2004). Determination of which measure of bias the participants received was randomized; each participant had an equal chance of being administered the anti-Muslim or anti-evangelical Christian measure (modified from Bushman & Bonacci, 2004). Participants in the September 11th, 2001 prime condition were asked two open-ended questions: “Please describe the emotions that the thought of the terrorist attacks on September 11th, 2001 arouses in you,” and “Describe as specifically as you can what you think happened during the terrorist attacks on September 11th, 2001.” Participants were asked to document their answers by typing into text boxes on-screen. Participants in the dental pain prime condition went through a similar procedure, departing from the prior condition only in the content of the prime. In this condition, participants were asked, “Please describe the emotions that the thought of dental pain arouses in you,” and “Describe as specifically as you can what you think will happen to you as you physically experience dental pain.” These participants were also asked to document their answers to these questions by writing into an on-screen text box. Mirroring the community center prime conditions, the September 11th and dental pain conditions concluded with the administration of the PANAS, the word-stem completion task, one of the measures of bias, and the one -tem measure of political preference.
Study 2. Participants were invited to participate in a study of “decision making and political attitudes” via e-mail and/or social media post, which included a link to the site where the survey was hosted. Participants were asked to provide demographic information, specifically gender, ethnicity, religion, age, highest level of education completed, and political orientation. Other demographic information was solicited to disguise the study’s intent. Political orientation was determined with the question, “How would you describe your political orientation?” Participants answered on a 9-point scale (1 = very liberal, 5 = moderate, 9 = very conservative; Landau et al., 2004). Scores of 1 - 4 were assigned to the liberal experimental group, and scores of 6 - 9 were assigned to the conservative group. Participants who responded with a “5” on this scale were randomized and added to the liberal or conservative groups, with an equal chance of inclusion in either. It is assumed that those reporting a “neutral” political orientation have an equal chance of responding as a liberal or conservative participant would, justifying their randomization to either experimental group.

Participants were then randomly assigned to one of two vignette conditions. In the “fundamentalist Islamic” or “evangelical Christian” community center vignette conditions, the instructions were the same. Each participant was instructed to read a short paragraph detailing the opening of a new religiously affiliated community center in the local area. Participants read the vignette and answered the following questions in the text box below it: “Please describe the emotions that the thought of this vignette arouses in you,” and “Describe as specifically as you can what you think will occur at the community center on the weekend described.” After the presentation of the vignette, participants were instructed to complete the PANAS. Participants were next asked to
complete the Interpersonal Judgment Scale (IJS; Byrne, 1971) as a measure of the participants’ impressions of the person interviewed in the vignette (either the evangelical Christian pastor or the fundamentalist Muslim imam). Participants were then randomized to receive one of the measures of bias against Christian or Muslim cultural groups.
Chapter 5: Results

Data collection for both studies occurred between February 10\textsuperscript{th}, 2014 and April 10\textsuperscript{th} 2014. The members of five “open” Facebook groups were invited to participate in the study. A snowball sampling procedure was employed, and each of the author’s 326 Facebook contacts were invited to participate and encouraged to forward the recruitment post to others. A total of 278 participants began one of the two studies. Of the 278 participants who began either study, 92 participants’ responses were discarded due to incomplete data. The cause of the incomplete responses was apparent abandonment of the study or unanswered items in an otherwise complete response. Because of the missing data in these 92 responses, they were not included in the statistical analysis. In sum, 84 participants were included in study 1, and 102 responses in study 2 in their respective statistical analyses.

Study 1

To review, the hypotheses for study 1 were: 1) when presented with a non-violent Muslim prime, participants will experience an increase in death-related thoughts compared to control participants; 2) the number of death-related thoughts resulting from the non-violent “fundamentalist Muslim” prime will not differ from the violent September 11\textsuperscript{th} stimuli condition; and 3) the measure of death thoughts in the non-violent “evangelical Christian” prime condition will not differ from the results of standard control condition which is commonly used in other TMT research.
Table 5.
Study 1: Demographics of Participants

<table>
<thead>
<tr>
<th>Gender</th>
<th>Religious Affiliation</th>
<th>Gender</th>
<th>Religious Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>62 (73.8%)</td>
<td>Male</td>
<td>22 (26.2%)</td>
</tr>
<tr>
<td></td>
<td>Christian</td>
<td></td>
<td>Jewish</td>
</tr>
<tr>
<td></td>
<td>41 (48.8%)</td>
<td></td>
<td>21 (25.3%)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>80 (95.1%)</td>
<td>Hispanic/ Latino</td>
<td>3 (3.6%)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td></td>
<td>Buddhist</td>
</tr>
<tr>
<td></td>
<td>4 (4.8%)</td>
<td></td>
<td>1 (1.2%)</td>
</tr>
<tr>
<td>Other</td>
<td>1 (1.2%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: In the table are the number of participants who fit each labeled diagnostic category. Percentage of participants in each category are represented in parentheses.*

The demographics of the participants in study 1 can be viewed in Table 5. There was one response of “other” in the race category. This response was “Jewish.” No participants in study 1 identified their race as African/Black, American Indian, Asian, or Middle Eastern. There were 4 responses of “other” in the religious affiliation category. These responses ranged from a combination of multiple religious, Deism, to specific denominations of Christianity. No participants in study 1 identified their religious affiliation as Islam or Hindu.

All 84 participants (62 female, 22 male; mean age = 34.0) were randomly assigned to one of four experimental conditions: the dental pain prime (n = 20), a September 11th prime (n = 23), the Christian community center prime (n = 18), and the Muslim community center prime (n = 23). The religious make-up of the group was
primarily Christian (48.8%), followed by those identifying as Jewish (25.3%),
atheist/agnostic (19.3%), other (4.8%), and Buddhist (1.2%). The racial background of
the participants was predominantly white (95.1%), with some Hispanic/Latino (3.6%)
participants and one identifying as other (1.2%).

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F</th>
<th>n</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>3</td>
<td>1.575</td>
<td>4</td>
<td>.202</td>
</tr>
<tr>
<td>Within groups</td>
<td>80</td>
<td></td>
<td>84</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>83</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The study’s first hypothesis (when presented with a non-violent Muslim prime,
participants will experience an increase in death related thoughts compared to control
participants) was not supported. A one-way independent ANOVA did not yield
significant differences between experimental conditions on the word-stem completion
measure, $F (3, 80) = 1.575, p = .202$. As gauged by the word-stem completion measure,
(Greenberg et al., 1994) the mean death thought accessibility of participants in the
September 11th ($M = 1.35, SD = 0.98$) and the Muslim community center primes ($M =
1.39, SD = 0.89$) was not significantly different from the dental pain ($M = 1.10, SD =
0.91$) and the Christian community center primes ($M = 0.83, SD = 0.86$). Other TMT
studies have observed clear differences in death thought accessibility using the same
outcome measures in experiments with nearly identical procedures (Cohen, Soenke,
Solomon & Greenberg, 2013; Landau et al., 2004, Vail et al., 2012). With this
information taken into account, the study’s first hypothesis (when presented with a non-
violent Muslim prime, participants will experience an increase in death-related thoughts compared to control participants) was not supported.

The second and third hypotheses, that there would be no significant differences in death thought accessibility between the Muslim community center and 9/11 conditions \( (t(80) = -0.16, p = .872) \) and between Christian community center and dental pain conditions \( (t(80) = -1.79, p = .082) \) was supported. However, this finding should be interpreted with the results of the first hypothesis in mind. Since no differences in death thought accessibility were observed in any experimental conditions, it is expected that no individual group would significantly differ from any other in the outcome measure.

**Study 2**

To review, the two hypotheses in Study 2 were: 1) participants differing in political orientation will respond to the non-violent Muslim prime condition in a manner that would strengthen their commitment to their respective worldviews; 2) that liberals and conservatives will demonstrate bias toward evangelical Christians and Muslims respectively.

Overall, 102 complete protocols were used for statistical analysis of Study 2. The 102 participants (75 female; 27 male; mean age = 41.0) were self-selected into liberal \( (n = 49) \) and conservative \( (n = 53) \) groups. As previously explained, those identifying their political orientation as “neutral” \( (n = 39) \) were randomly assigned to liberal and conservative groups. All participants were randomly assigned to either the Muslim community center prime (conservative \( n = 24 \); liberal \( n = 27 \)) or the evangelical Christian community center prime (conservative \( n = 29 \); liberal \( n = 22 \)).
The demographics of the participants in study 2 can be seen in Table 7. There was one response of “other” in the race category. This response was “mixed race.” No participants in study 2 identified their race as African/Black or Middle Eastern. There were five “other” responses in the religious affiliation category. These responses ranged from having multiple beliefs, Agnosticism, secularism, to specific denominations of Christianity. No participants in study 2 identified their religious affiliation as Buddhism or Hindu.

An independent factorial ANOVA found statistically significant results ($F_{3, 98} = 3.084, p < .05$). As depicted in graph 1, there was a significant interaction effect of the two independent variables (political orientation and exposure to the prime) on the Interpersonal Judgment Scale scores ($F = 5.119, p < .05$). On the IJS, higher scores...
indicate greater attraction to the target. Post hoc analyses were completed to determine the effects of exposure to the prime in conservatives and liberals. As demonstrated in Table 9, a simple effect analysis determined that there was a significant difference among conservatives in their ratings of the Christian and Muslim targets ($F_{1, 98} = 4.09, p < .05$); however, there was no difference observed among liberals in their ratings of either target ($F_{1, 98} = 1.43, ns$). These results suggest that conservative participants who were exposed to the Christian community center prime were more likely to display a higher level of attraction to the pastor interviewed in that vignette in comparison to conservatives’ ratings of the Muslim Imam or liberals’ ratings of either religious leader.

Table 8.

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>F</th>
<th>n</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political Preference</td>
<td>1</td>
<td>3.531</td>
<td>2</td>
<td>.063</td>
</tr>
<tr>
<td>Prime</td>
<td>1</td>
<td>0.290</td>
<td>2</td>
<td>.591</td>
</tr>
<tr>
<td>Political Preference * Prime</td>
<td>1</td>
<td>5.119</td>
<td>2</td>
<td>.026*</td>
</tr>
</tbody>
</table>

*Note:* The asterisk indicates that the F test reached statistical significance.
Although significant differences were found the IJS between experimental groups, these results were in opposition to the proposed hypotheses. The fourth hypothesis was that the Muslim community center prime would raise death thought accessibility, resulting in politically relevant worldview defense strategies. In fact, there were no significant differences between liberals and conservatives in their ratings of the Imam depicted in the Muslim community center condition. The fourth hypothesis is therefore not supported.
Table 9

*Study 2 Interpersonal Judgment Scale Differences in Attraction to Clergy by Political Preference*

<table>
<thead>
<tr>
<th>Political Preference</th>
<th>Prime Exposure</th>
<th>Simple Effects: F df (1, 98)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Evangelical Christian</td>
<td>Fundamentalist</td>
</tr>
<tr>
<td>Liberals</td>
<td>24.91 (3.66)</td>
<td>26.74 (5.32)</td>
</tr>
<tr>
<td>Conservatives</td>
<td>29.31 (6.41)</td>
<td>26.33 (5.21)</td>
</tr>
</tbody>
</table>

Simple Effects: F df (1, 98) 8.51* 0.07

*Note: Mean IJS scores. Asterisks indicate statistically significant results at the p ≤ .05 level. Standard deviations are in parentheses.*

The study’s fifth hypothesis was that conservatives and liberals would demonstrate bias toward Muslims and evangelical Christians respectively on the measure of bias that was modified for the present study (Bushman & Bonacci, 2004). Higher scores on this measure are indicative of greater bias. Overall, no significant differences were found between liberals and conservatives on either measure of bias. The comparison of liberal and conservative Muslim bias scores failed Levine’s test of equal variances ($F_{1, 49} = 4.20$, $p < .05$), indicating wide variability in conservatives’ self-reported bias against Muslims ($M = 37.43$, $SD = 28.38$) in comparison to liberals ($M = 31.52$, $SD = 18.67$).

When the analysis was conducted with equal variances not assumed, no difference was found between the two groups ($t (49) = -.891$, $p = .38$). Similarly, the measure of bias against Christians found no significant differences between conservative ($M = 35.32$, $SD = 19.34$) and liberal ($M = 33.31$, $SD = 17.15$) groups ($t (49) = -.394$, $p = .70$). In conclusion, the study’s fifth hypothesis was also not supported.
After observing conservative’s increase in support for the Christian pastor in study 2, there was interest in determining if this response was somehow the result of TMT processes. If conservatives’ response to the pastor could be conceptualized as a worldview defense strategy, the presupposition for this interpretation would be that the Christian community center prime would have resulted in an increase in death thought accessibility among conservatives. Given this possible interpretation, the results of study 1 were reviewed a second time, post-hoc, looking for differences in death thought accessibility among those with differing political orientations. Two t-tests were conducted to identify if these differences exist. Results of this analysis indicated there is no evidence for increased death thought accessibility among conservatives. However, as demonstrated in table 10, there were significant differences in death thought accessibility among liberals and conservatives in response to the Muslim community center prime ($t = 2.388; p < .05$), though, surprisingly, the increase in death thought accessibility was found among liberals. With this result taken into account, it appears that conservatives’ heightened endorsement of the pastor in study 2 may not be a function of death thought accessibility and worldview defense strategies as TMT would predict. Only another well controlled study testing for effects of similarity compared to controls and/or other factors would be able to identify the mechanism of action for this result.

Of note is the increase in death thought accessibility among liberals after exposure to the Muslim community center prime. If the Muslim community center prime does result in an increase in death thought accessibility among liberals, according to TMT, then these participants may have engaged in worldview defense strategies if given the opportunity to do so. An argument can be made that since there were no main effects for
political preference in study 2 ($F = 3.531, p < .063$), that this may be evidence of liberals
upholding egalitarian values (Greenberg et al., 1990), as the Muslim target was rated
similarly to the Christian target among liberal participants.

<table>
<thead>
<tr>
<th>Table 10</th>
<th>Study 1: Differences in number of death words on word-stem completion measure among liberals and conservatives on both community center (CC) primes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Christian CC Prime</td>
</tr>
<tr>
<td>Liberals</td>
<td>1.00 (0.88)</td>
</tr>
<tr>
<td>Conservatives</td>
<td>0.25 (0.50)</td>
</tr>
</tbody>
</table>

*Note:* Subscripts denote t-test where p value < .05. Standard deviation in parentheses

As mentioned in Chapter 4, political preferences were operationalized on a 9
point Likert scale. Those reporting a “neutral” political preference were randomly
selected into liberal and conservative experimental groups. Implicit in this decision is the
assumption that those reporting a “neutral” political orientation are equally likely to
respond as liberals or conservatives. To identify if this decision had an impact on the
results of study 2, the factorial ANOVA was run again with those “neutral” participants
excluded. Ultimately, no statistical difference was noted, as this analysis still produced
significant results ($F_{3, 63} = 5.08, p < .01$), with significant difference in conservatives
ratings between the Muslim and Christian targets ($F_{1, 59} = 8.10, p < .01$), and no observed
difference in liberals ratings of the Muslim and Christian targets ($F_{1, 59} = 2.03, ns$). Since
the inclusion or exclusion of those reporting a “neutral” response resulted in no
significant statistical differences in the results, the decision to randomize those
participants into liberal and conservative groups appears sound.
### Table 11

*Study 1 – Comparing Liberals’ and Conservatives’ Death Thought Accessibility in response to Christian CC Prime*

<table>
<thead>
<tr>
<th>Levine’s Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
</tr>
<tr>
<td>Equal Variances Assumed</td>
<td>1.88</td>
</tr>
<tr>
<td>Equal Variances Not Assumed</td>
<td>2.18</td>
</tr>
</tbody>
</table>

### Table 12

*Study 1 – Comparing Liberals’ and Conservatives’ Death Thought Accessibility in response to Muslim CC Prime*

<table>
<thead>
<tr>
<th>Levine’s Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
</tr>
<tr>
<td>Equal Variances Assumed</td>
<td>1.20</td>
</tr>
<tr>
<td>Equal Variances Not Assumed</td>
<td>2.61</td>
</tr>
</tbody>
</table>
Chapter 6: Discussion

The purpose of this study was twofold. Based on the previous results of a small study suggesting the possibility of worldview defense in response to a non-violent Muslim prime (Rosenfield, personal communication, October 3, 2011) as well as previous TMT research indicating the effects of terrorism on worldview defense strategies (Cohen et al., 2013, Das et al., 2009, Landau et al., 2004), the current study attempted to determine if a non-violent Muslim prime resulted in increased death thought accessibility. The secondary goal of this study was to determine if the increases in death thought accessibility evoked worldview defense, with political preference as the salient worldview.

Overall, the results of the current study did not support either proposition. However, the results are interesting in their divergence from expectations. The results of study 2 are particularly interesting, which found an interaction effect between political preference and exposure to vignettes measuring participants’ attraction were to Muslim or Christian targets presented in the vignettes. Although the current study did expect to find a difference between liberals’ and conservatives’ views of stimuli related to Islam, the results did not support this prediction. The liberal and conservative participants did not differ in how they viewed the Muslim target in the Islamic community center vignette. This finding was notable, considering that previous studies have found that conservatives largely reject “out-group” members under mortality salience conditions, with some studies specifically including Muslims as the putative “out-group” (Das et al., 2009, Greenberg et al., 1992).
It’s possible that research into implicit and explicit racism can explain these null findings. Those in the Muslim community center condition were asked to rate an out-group member (because the overwhelming majority of respondents were white and identified themselves as either Christian, Jewish or atheist/agnostic, the assumption that the target represented an out-group member seems justified). This was an explicit measure designed to rate an out-group member across a number of traits. Emphasizing the measure’s explicit nature is important, considering the relevant research on implicit cognitions as it relates to racism. Nosek, Hawkins and Frazier (2011) discuss the dual-process model of cognition, noting that implicit attitudes are more impulsive and reflexive in nature, in contrast to explicit attitudes that are more systematic, controlled, and consciously derived. Helping us to understand how these attitudes are manifested in social situations, research into implicit and explicit racist attitudes has found a difference in the effects of these attitudes on behavior. Gaetner and Dovidio (2005) highlight what they term contemporary racism, noting that although explicitly racist views have become less socially acceptable over time, implicit attitudes about racial and cultural groups continue to affect our behavior, albeit in more subtle ways. These attitudes are becoming the most prevalent way in which discriminatory beliefs are expressed in society. The prejudicial beliefs held by those in the majority are normally held in check by prevailing egalitarian social norms. However, these beliefs can be easily expressed when minority group members act in ways that violate the social norms of the majority (Gilliam & Iyengar, 2000). Considering prevailing social norms intolerant of prejudice and their effects on explicit racism, it is possible that the participants in this study, when afforded an opportunity to rate an out-group member who is engaging in a prosocial behavior
(building a new community center that enriches the lives of those in the local area), did not want to appear explicitly racist by denigrating the Muslim target in a face-valid measure of attraction.

Anti-prejudicial norms may also help explain the interaction effects between political preference and exposure to the community center primes. If participants in the study were consciously modifying their negative responses to the religious leaders to reflect antiprejudicial norms (or to avoid appearing overtly prejudiced), their positive responses to the targets in the vignette would not be tempered in the same fashion. Therefore, the conservatives in Study 2, who were overwhelmingly white and most likely Christian, may have been more apt to explicitly state their attraction to a target that shares their values.

One notable finding was the increase in death thought accessibility among politically liberal participants. An intriguing question is why the Muslim community center prime would have a differential effect on the accessibility of death thoughts for liberals and conservatives. This differential response to threat is inconsistent with previous TMT research, which has not found differences in death thought accessibility in participants with differing political orientations following MS procedures (Landau et al., 2004; Pyszczynski et al., 2006; Vail et al., 2012). It is also inconsistent with neuropsychological research findings that suggest conservatives may be more responsive to threat in comparison to liberals (Kanai et al., 2011; Oxley et al., 2008). Considering that the current study’s results differ from previous research findings, one reasonable explanation for this difference is that the relatively low sample size in this study may have affected the results. The significant findings in Study 1 were found in an analysis
that included 23 participants spread across two conditions. Due to the relatively small number of individuals included in this t-test, the group means would be very sensitive to individual differences among participants. Because differential effects in death thought accessibility between liberals and conservatives have not been found in any previously published, well-powered TMT study, it appears likely that the finding in the current study could be attributed to a type I error.

Assuming that this finding can be replicated in another well-powered study, there are a number of potential explanations of why this particular prime would result in differential death thought accessibility effects between liberals and conservatives. One such explanation could be a third variable that would better explain these findings. A previous study was unable to detect significant differences in death thought accessibility following a terrorism salience prime until a sociopolitical event occurred (the murder of Theo van Gogh) in the country where data collection was taking place (Das et al., 2009). This finding implied that what could be affecting results is how easily participants are able to call to mind information relevant to terrorism when presented with a stimulus related to terrorism. The availability heuristic (Tversky & Kahneman, 1973) may explain the current study’s findings, if those in the liberal group were somehow more likely to associate an indirectly associated Islamic prime with terrorism. One possibility that might make this information more available for some participants is the frequency and duration of politicized media consumption. Participants who stay informed about political news via TV, newspapers, the Internet, radio or other means may have had more opportunities to be presented with information that strengthens the hypothesized relationship between
Islam and terrorism. It could be that in this sample, liberals in this condition have been have been exposed to this pairing of constructs due to their media consumption habits. Moreover, it should be noted that a previously cited study reporting increased denigration of out-group members following terrorism salience conditions only reached statistical significance after a terror attack had occurred during the process of data collection (Das et al., 2009). Supporting Gaetner and Dovidio’s (2005) position that the presence of threat or anti-social behavior may suppress existing antiprejudicial norms that otherwise discourage explicit disclosure of bias against minority groups, had Theo van Gogh not been murdered during the course of data collection by Das et al. (2009), it is possible that these authors would have found null results. The importance of this point to the current study is in regard to the salience of terrorism in an American population. More than 12 years removed from the events of September 11th, 2001, it’s possible that the sense of impending threat is no longer potent enough to violate anti-prejudicial norms. If Americans indeed hold negative or ambiguous attitudes about Muslims as the Pew Research Group’s (2010) findings suggest, a face-valid measure of attraction to a target may not reveal these beliefs.

**Limitations**

The current study’s findings are striking when contrasted with the results of a recently published study that used very similar methodology (Cohen, Soenke, Solomon & Greenberg, 2013). The current study attempted to assess the extent to which death-related thoughts could be induced from stimuli indirectly associated with Islam and terrorism with a vignette depicting the opening of an Islamic community center in the participants’ community. Cohen et al. (2013) used a design similar to the word-stem completion
measure as their main dependent measure (Greenberg et al., 1994) and exposure to a prime concerning a mosque under construction in the participant’s neighborhood as the independent variable. Unlike the current study, Cohen et al. (2013) found significant differences between experimental and control conditions of this measure. The finding of Cohen et al. (2013) suggest that stimuli indirectly related to Islam do increase implicit thoughts of death, which is in contrast to the present study’s results and conclusions. In reviewing the methodology for both studies, some clear differences exist between the current study and Cohen et al. (2013) that might help us understand the divergent results of two very similar experiments.

The first difference is the recruitment, the drop out rate of the participants, and their relation to statistical power. The current study recruited participants online via social media and relied on snowball sampling methods to broaden its reach. Only 65.9% of participants who began the study answered all questions and completed all aspects of the study. Because approximately 1 in 3 participants provided incomplete data subsequently excluded from the analysis, the missing data may have affected the results. Determining the point at which participants tended to drop out may also prove important to analysis of the results. Survey Monkey is able to track the percentage of items completed by each participant. This study’s sequence began with a greeting to the participant, followed by requests for demographic information, exposure to the selected primes, and finished with the remaining measures in the study. Of the 46 participants who provided incomplete data in Study 1, 95.7% completed the demographic page, but only 30.4% completed instructions associated with the either the dental pain, Sept. 11th, or community center primes. Participation rates continued to drop as the study progressed.
There is no data available to explain why most participants tended to drop out when they reached the page where the primes were presented. One possible explanation is that the primes presented to these individuals were aversive, leading them to discontinue the study. Two of the four primes in this study either were previously shown to increase death-related thoughts (Landau et al. 2004) or were developed to achieve the same effect. It therefore raises the question whether participants disturbed by the content of the primes who subsequently dropped out influenced the results of the word-stem completion measure in a way that caused an underreporting of the effects of these primes. In contrast, Cohen et al., (2013) used a college student population who were given the opportunity to earn credit toward graduation by participating in the study. The incentive for student participants to complete the Cohen et al. (2013) study was greater than for participants in the current study, who were offered no incentive at all.

Another possible explanation for the divergent results of the two studies could be differences in the delay between the primes and the presentation of the word-stem questionnaire compounded by the use of the Internet in the current study. Previous TMT research has demonstrated that distal and implicit attempts at mitigating thoughts of death occur after a delay in presenting stimuli that generate these thoughts (Greenberg et al., 2000; Martens, Burke, Schimel, & Faucher, 2011). Attempts to measure implicit attempts at mitigating death anxiety too soon have resulted in null findings in previous experiments (Greenberg et al., 2000). According to TMT, if thoughts of death are still conscious, individuals may engage in proximal defenses to address this discomfort (Pyszczynski, Greenberg & Solomon, 1999). To the author’s knowledge, there is no published TMT-based study using the Internet for recruitment and study participation.
This is an important point; it pertains to both the timing of the presentation of the primes and the collection of unexpressed thoughts related to death. Although the PANAS (Watson, Clark, & Tellegen, 1988) has been commonly used in other TMT studies (e.g. Greenberg et al., 1990) more recent studies use an updated, longer version of this measure, which is unpublished and unavailable for use in the current study. It is possible that the briefer PANAS (Watson, Clark, Tellegen, 1988) administered via the Internet may have not allowed the time necessary for implicit thoughts of death to be accessible and thus measurable with the word-stem questionnaire. This contrasts with methodology of Cohen et al. (2013), who used the longer form of the PANAS, in addition to a filler questionnaire between presentation of the prime and word-stem measures. Future Internet-based TMT studies may consider this difference in design; additional or alternative measures may be needed to achieve the appropriate delay to permit measurement of implicit thoughts of death and observation of distal worldview defense strategies.

In addition to the differences in methodology in comparison to a similar study, the current study does have other limitations. One is the operationalization of political preferences in the second study. Participants were asked to rate their political preferences on a 9-point Likert scale and subsequently included in the liberal and conservative groups by dividing the “high” and “low” responses along the mid-point of the Likert scale. Although similar studies have operationalized political preference in this manner (Bonnano & Jost, 2006; Chatard, Arndt, & Pyszczynski, 2010; Kosloff et al., 2010; Landau et al., 2004; Pyszczynski et al., 2006), it can be argued can be that this self-report of political preference is inexact. It is possible that political preference is a multifactorial
construct that includes preferences in government taxation/spending, foreign policy, and cultural ideologies, just to name a few examples. An individual self-identifying as libertarian may be very conservative on tax policy, liberal on foreign policy, and without a strong preference in cultural issues. This individual’s preferences may not be adequately borne out in a simple, one-item Likert response, an example of how such a complex construct such may not be accurately measured in this manner.

Another possible limitation resulting from the operationalization of political preferences was the decision to randomly assign participants who reported a “neutral” political orientation into the liberal and conservative groups. To determine if this decision had an impact on the results of Study 2, in which political preference was an independent variable, the factorial ANOVA was run again with the neutral participants excluded. Ultimately, no statistical difference was noted, since this analysis still produced significant results ($F_{3, 63} = 5.08, p < .01$), with significant difference in conservatives’ ratings of the Muslim and evangelical Christian targets ($F_{1, 59} = 8.10, p < .01$), and no observed difference in liberals’ ratings of the Muslim and evangelical Christian targets ($F_{1, 59} = 2.03, \text{ns}$). Because the inclusion or exclusion of those reporting a “neutral” response resulted in no significant statistical differences in the results, the decision to randomize those participants into liberal and conservative groups appears sound.

Moreover, the author’s choice to recruit his existing social media contacts for the study presents a problem for both the validity and generalizability of the results. While efforts were made to reach a wider sample via snowball sampling procedures, there remains a possibility that the pre-existing relationship between the author and a portion of the participants included in the study could have affected the results. Despite the fact that no
identifying information was taken from participants in the study, which was communicated to participants in on-screen instructions prior to the study, these individuals were still asked to participate in a study by someone with whom they had a prior relationship. In typical recruitment procedures, there is no existing relationship between participants and the researchers, eliminating a potential source of bias in the results. There is no direct evidence of individuals altering their responses out of concern that the author could view them, or trying to be a “good participant” by providing “correct” answers. However, this potential effect cannot be ruled out.

Possible Implications

The results of the study may be important, considering the perception of a relationship between terrorism and Islam in this sample of American participants, and its relation to the file drawer problem. First, the results of the current research contrast with previously published TMT studies of terrorism (e.g. Das et al., 2009; Landau et al., 2004; Vail et al., 2012), which found no increase in death-related thoughts or attempts to mitigate death anxiety through worldview defense in response to images related to terrorism. One possibility that the passage of time has diminished the salience of the threat that terrorism poses to the western world. At the time of data collection, more than 12 years had passed since the terrorist attacks of September 11th, 2001, and though terrorism, Islamist extremism, and military conflicts related to these issues continue and persist in public discourse, it’s possible that the author’s theory that Americans have formed a classically conditioned relationship between Islam and terrorism has been overstated. Recent polling data support this possibility, as Americans view domestic concerns as more important than fighting international terrorism (Pew Research Center,
2012). Additionally, recent public polling indicates that Americans are consuming news as lower rates than in prior years (Gallup, 2014). Since exposure to Islam and terrorism via mainstream media would presuppose the hypothesized classical conditioning, if Americans are consuming media less, there would be less opportunity to establish this relationship.

It is possible that the relationship between terrorism and Islam-associated symbols has weakened over time, but Cohen et al. (2013) provide some evidence to the contrary. The salience of this relationship may vary among the samples used for these studies. Using a sample of university students in New York City, Cohen et al. (2013) found evidence for a relationship between Islam-associated symbols and terrorism. The current study was conducted online, and no information about participants’ residence was collected. Previous research indicated that two years after Sept 11th, 2001, those dwelling closest to the attacks showed high levels of concern related to future attacks (Boscarino et al., 2006). A sample of individuals living in New York City may be more likely to associate symbols related to Islam and terrorism given their proximity to recent terror attacks. In addition, Cohen et al. (2013) conducted their study at a time of considerable controversy over a Muslim community center being built near the World Trade Center site. Public debate and news reports about the issue may have particularly salient for those living in New York City at that time. Research has established that majority perceptions of anti-social behavior by minority groups may be perceived as justifying violations of anti-prejudicial norms (Gilliam & Iyengar, 2000); it’s possible that participants sampled in Cohen et al. (2013) so perceived the proposed construction of the Muslim community center near World Trade Center site.
Although one interpretation of the current study’s results are that Americans’ association of Islam with terrorism is less potent now than prior studies on the topic had found, it should be considered that the prime used may have been too indirectly associated to activate participants’ schemas related to terrorism. Prior research indicating that damaged buildings elicited death-related thoughts (Vail et al., 2012) implied that participants were able to use context to guide their interpretations of pictures of buildings in various conditions. These interpretations are thought to influence in the availability of death thoughts. For example, participants in Vail et al. (2012) responded differently to pictures of destroyed buildings than to buildings under construction. Those in the destroyed-buildings condition demonstrated higher death thought accessibility than those in the building-construction condition (Vail et al., 2012), implying that the context of buildings that were not intact was important. Context may also be important in relation to the current study, because the prime that was generated to elicit death-related thoughts was ostensibly, a positive article about a local community center. If thoughts of terrorism were tangential in nature or otherwise not as potent as pictures of destroyed buildings as in Vail et al. (2012), it could explain the modest but statistically nonsignificant results found in Study 1. The prime may have been more effective if it was less subtle and indirectly associated with Islam or terrorism. In additional, before Theo van Gogh’s murder, Das et al. (2009) found results similar to the current study in their measures of death thought accessibility following terrorism salience procedures. Like the current study, Das et al.’s (2009) results trended in the expected directions, but were not robust enough to achieve statistical significance before the political event that occurred during their data collection.
Also, as evidenced in the Das et al., (2009) study, the prominence of the relationship between terrorism and Islam may affect the strength of the relationship between these variables. As argued above, those who have been exposed to reports of terrorism or under constant threat of terror attacks themselves may be more likely to associate death with perpetrators of these attacks. The current study did not control for effects of media consumption or participant’s perceived threat from terror attacks. The current study’s results were thus unable to control for effects of saliency bias on death thought accessibility following a MS prime. Future studies can help elucidate the relationship between the availability of information related to terrorism and the effects of terrorism salience primes on death thought accessibility.

Finally, there remains the file drawer problem. TMT has been well researched for over 25 years, with hundreds of articles supporting its basic premises. The authors who have generated the theory report robust findings across a variety of contexts. However, support for the theory is lacking outside of labs that do not specialize in TMT research (Poteau, personal communication, April 30, 2014). It is therefore possible that their findings may be unique to their methods, since few published studies on TMT lack diverse authorship. One possible explanation is the file drawer problem, which refers to the tendency for scientific publications to publish studies that show significant results. Researchers who are not affiliated with the labs that have helped develop TMT have been unable to replicate the findings reported by these founders; thus these studies remain unpublished. In light of the current study’s results, this is a pertinent possibility to investigate.
Future Work

The results of the current study raise a number of important questions that future studies can address. Specifically, implicit measures of attraction, modifying methodology to permit a longer interval between the MS conditions and data collection, and making a greater effort to obtain an unbiased sample all warrant serious consideration.

As mentioned earlier, there is a question about the extent to which asking for explicit attitudes toward an out-group member may have activated participant schemas related to non-discriminatory values. If this is so, it is possible that explicit measures of attraction toward a target may underestimate effects. In this case, it is possible that when asked to rate a Muslim target, participants censored their responses for fear of being perceived as holding racist beliefs. Moreover, recent studies of TMT reporting that exposure to stimuli related to terrorism resulted in increased prejudice against out-groups obtained that result by using an implicit measure of participants’ views of out-group members as their main dependent variable (Das et al., 2009). One study showed increased support among Iranian Shiite Muslim undergraduates for martyrdom attacks against outgroup the United States under MS conditions (Abdollahi et al., 2010). However, there was diminished support for martyrdom attacks when the students were primed with an essay that suggested most Iranians do not support these attacks (Abdollahi et al., 2010). This seems to suggest that individuals in this study were less likely to promote an unpopular opinion, even under MS conditions. Using this information to help interpret the results of the current study, it is possible that prevailing social norms may influence participants’ explicit responses, even under MS conditions that would otherwise result in worldview defense strategies. Future studies using implicit measures of attraction could
illuminate whether participants may be adhering to prevailing cultural norms by self-censoring their responses to an explicit measure.

Additionally, the Cohen et al., (2013) study was discussed in contrast to the current study due to its similarity. One important difference between the studies was in the delay between MS procedures and collection of the dependent variable. As previously noted, increases in death thought accessibility are theorized to be a unconscious process that occurs after a delay following the death-related stimulus (Greenberg et al., 2000). Although previous studies used nearly identical procedures and found support for increased death thought accessibility among those exposed to MS primes (Greenberg et al, 1990), it is possible that the ease with which participants were able to complete an Internet-based version of a commonly used TMT study design may not have allowed this established effect to manifest. Future TMT studies using the Internet must be careful to ensure that enough time has elapsed between MS procedures and collection of their data. This can be done by adding other filler measures in addition to the PANAS, as is seen in the measures that Cohen et al. (2013) employed. One area of interest that was not addressed in the current study was how media exposure may affect the formation of a relationship between Islam and terrorism. Current opinion polling suggests that individuals are consuming media from traditional sources less frequently, and are becoming less confident in television and print media as trusted sources of news (Gallup, 2014). Further research on how individuals perceive religious references should consider including a measure of media consumption to determine the nature of the relationship between news consumption and the formation of beliefs associated with specific religions. Concurrent exposure to terrorism and Islamic references is necessary for a
classically conditioned relationship to develop, the latter of which was a guiding assumption for the current study.

Finally, if this study’s methods are to be used again in similar research, efforts are necessary to obtain a more diverse sample. It is possible that the expected results were not found due to demand characteristics that had influenced participants’ responses. Although using existing social media contacts eased the burden of recruitment, it introduced a significant source of bias that may have affected the results. One unexplored possibility for recruitment was using existing professional psychology list-servs, which is a commonly used method for dissertation recruitment.
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