Is There a Fate Worse than Death?

A Comparison of Social Exclusion and Terror Management Theory:

Employing Cultural Primes to Elicit Cultural Worldviews

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Abstract

Two experiments were conducted to explore the impact of individualistic and collectivistic priming on participants’ cultural worldviews under both mortality and social isolation salience. Participants were subjected to either individualistic or collectivistic cultural primes followed by one of three subprimes: death, social isolation, or neutral salience. Using an ambiguous word stem task designed to evaluate concept accessibility, Experiment 1 examined the cognitive relationship between death and social isolation. Results revealed no relationship between the subprimes and the accessibility of death and social isolation thoughts. Experiment 2 explored the extent to which participants assumed and defended their primed cultural identity on two culturally-sensitive, cognitive measures—the Embedded Figures Test and an attribution task—after mortality and social isolation subpriming. Although the cultural primes affected attributional style in the predicted direction (individualists were more dispositional and collectivists more situational), mortality and social isolation salient participants did not defend their primed cultural identity more than controls. Both experiments failed to provide support for either terror management or social exclusion theory. Implications and possible methodological concerns are explored.
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Students spend months writing their theses, parents spend years obsessing over their children’s emotional well-being, artists spend decades creating, and businesspeople spend a lifetime seeking fortune but, in the end, all are offered the same fate—death. Intuitively, knowledge of our own impending demise should undermine the drive to fully immerse ourselves in these mundane as well as significant cultural activities. In reality, however, death-related thoughts and anxieties rarely disturb our rituals, routines, and general cultural involvement. Death constantly looms; yet, we spend a negligible part of each day considering this inevitable truth. In fact, in the United States, at least, society goes to great lengths to avoid reminders of death. After September 11th, for example, Marvel Comics and Columbia Pictures removed all Twin Tower references from the trailers and footage of the 2002 Spider-Man movie. The companies even discontinued a promotional poster subtly depicting the towers reflected in Spider-Man’s eyes (Spider-Man Movie, n.d.; Appendix A). Terror management theory (TMT) seeks to explain the discrepancy between how society should intuitively deal with death and how society does deal with death. Although the concept of death seems as if it should paralyze the human race with fear, simple observation reveals that despite approaching doom, humans function largely un-paralyzed.

Although TMT is a well-researched psychological theory of culture, relatively few studies have investigated the relationship between TMT and cross-cultural cognition. Employing a largely western sample, the present study explores the relationship between TMT and independent/interdependent self-construals. Independent self-construals are generally
characteristic of western cultures, and tend to encourage analytic thinking. By contrast, interdependent self-construals, generally characteristic of eastern cultures, tend to result in holistic thinking (Nisbett, Peng, Choi, & Norenzayan, 2001). By priming an individual’s independent or interdependent self, and defining this salient self-construal as an individual’s temporary “cultural worldviews,” the present study seeks to examine the relationship between TMT and social exclusion theory. Social exclusion theory, one of TMT’s most formidable challengers, takes a more evolutionary-driven approach to culture, and suggests that social exclusion anxiety rather than death anxiety guided the formation of culture (Baumeister & Tice, 1990). Recent research exploring social exclusion theory has yielded starkly conflicting results (Navarrete, Kurzban, & Fessler, 2004; Schimel et al., 1999). By comparing social exclusion and terror management theory, the present study seeks to resolve this on-going debate.

In order to further expand upon the TMT literature, the researchers also explore the ways in which mortality salience affects participants’ cognitive performance on two dependent measures which have received little attention in the context of the TMT literature—spatial field dependence and attributional style. Performance on both measures is sensitive to an individual’s self-construal; interdependent self-construals tend to result in greater field dependence and a more situational attribution style whereas independent self-construals tend to encourage lower levels of field dependence and a more dispositional attribution style.

_Terror Management as a Theory of Culture_

Although there is a general consensus among scholars about what culture is, there is lively debate about what forces drive the formation of culture. Lehmen, Chiu, and Schaller (2004) provide a well-agreed upon definition of culture, “[Culture] represents a coalescence of discrete behavioral norms and cognitions shared by individuals within some definable population that are
distinct from those shared within other populations” (p. 690). There is, however, much disagreement over the origins of culture and why cultures differ. Theories describing the formation of culture are difficult to quantitatively study because they rely on hypotheses about imperceptible changes which likely took place over thousands if not millions of years. Dynamic social impact theory, for example, suggests that influential individuals gradually shaped the development of culture until culturally distinct beliefs and practices emerged (Latané, 1996 as cited in Lehmen et al., 2004). Though interesting, this theory is challenging to study in a laboratory setting.

Although it is not possible to go back in time to study cultural formation, researchers often look for indirect evidence in present-day populations to support several theories of culture. Evolutionary theory, derived from the work of Darwin (1859), is one of the most dominant theories of culture, and can be indirectly studied by examining evolution’s effects on present-day animal, plant, and human populations. The theory suggests that cultural norms, beliefs, and behaviors became ingrained in the fabric of society because, in ancestral times, they proved adaptive to the survival of the individuals in that society. A society in which food was acquired by individual hunters, for example, might value independence and competition whereas a culture that depended on communal agriculture might value cooperation and harmony (Lehmen et al., 2004; Nisbett et al., 2001).

Unlike the evolutionary approach, which focuses on the needs of entire populations, psychological theories of culture focus on what are hypothesized to be the basic emotional and cognitive needs of individual members in a given society. In determining the nature of these psychological needs, psychological theories do heavily rely on the overarching principals of evolutionary theory, suggesting that psychological mechanisms such as anxiety “evolved” to
protect individuals from threats within the environment (Solomon, Greenberg, & Pyszczynski, 1997).

The “shared reality” psychological theory of culture, for example, suggests that culture affirms the validity of an individual’s metaphysical understanding of the world. The theory operates under the fundamental assumption that a shared reality is psychologically essential for human existence (Latané, 1996 as cited in Lehmen et al., 2004). Similar to the “shared reality” theory, social exclusion theory posits that humans have a psychological need for group membership (Baumeister & Tice, 1990). The terror management theory of culture also operates under a fundamental psychological assumption about human needs—the assumption that human survival is contingent on the development of mechanisms to deal with death-related terror. In bringing in the notion of survival, TMT draws on evolutionary theory, and many theorists claim that TMT in no way undermines the principles of evolution (e.g., Solomon et al., 1997).

Although not as intuitively logical as other theories of culture, TMT garnered substantial experimental support throughout the late 1980s and 1990s. Although Sheldon Solomon, Jeff Greenberg, and Tom Pyszczynski (Solomon, Greenberg, & Pyszczynski, 2004) were among the first to empirically test the theory, it is based on the work of several existential thinkers including Becker (1973), Freud (1929), Lifton (1976), and Rank (1941) (Heine, Harihara, & Niiya, 2002). Most influential among these thinkers was Ernest Becker who won a Pulitzer Prize for his 1973 book, *The Denial of Death*. As of 2004, more than 170 experiments across nine countries have been conducted supporting various TMT derived hypotheses (Pyszczynski, Greenberg, & Solomon, 2004).

TMT is based on the critical assumption that humans differ from all other living species in their profound awareness of their own mortality. This conscious understanding of impending
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demise is thought to instill a great deal of “terror” in humans—terror which, unmitigated, paralyzes the individual (Pyszczynski et al., 2004). Terror management theorists suggest that culture evolved as a means of easing death-related terror, performing this function in several ways: First, cultural values and beliefs give individuals a sense of meaning and importance (i.e., self-esteem) by validating that individual’s sense of reality—a notion very much consistent with the “shared reality” explanation of culture. Terror management theorists posit that anxiety, which results from the fear of death, is the emotional opposite of high self-esteem. A shared sense of reality and the high self-esteem resulting from this worldview validation therefore serve to buffer death-related anxiety.

Second, TMT theorists suggest that culture distracts individuals from the conscious fear of death. Participation in a variety of cultural activities including education, politics, and work allow individuals to immerse themselves in earthly endeavors and, for the most part, consciously ignore impending demise. Third, culture allows community members to achieve “symbolic immortality” through societal contributions which will presumably survive after physical death. These societal contributions can take the form of works of art, political legislation, scientific discoveries, or personal and academic writing. In his renowned Persian Letters, the great political thinker, Baron de Montesquieu (1721/2004) cynically yet astutely points out the ways in which books immortalize their authors, “Nature, in her wisdom, seems to have arranged it so that men’s stupidities should be ephemeral, and books make them immortal. A fool…insists on tormenting future generations” (p. 134).

Perhaps most commonly, individuals achieve symbolic immortality though their children, who share not only their phenotypic characteristics, but in many cultures, also share the same name. Finally, culture provides a means for community members to deal with death during times
when the “terror” is impossible to consciously ignore (Pyszczynski et al., 2004). Both religious and secular burial ceremonies, for example, provide a structured opportunity for individuals to cope with the passing of a community member.

TMT requires several fundamental assumptions, and researchers seek to evaluate the theory by exploring two distinct hypotheses: The anxiety-buffer hypothesis and the mortality salience hypothesis. The typical methodological paradigm used to test these hypotheses requires participants to undergo a “death prime” preceding participation in some culturally-related task (See section: “Mortality Salience Induction” (p.13) for more details; Solomon et al., 2004).

The anxiety-buffer hypothesis suggests that individuals will seek to minimize death-related anxiety by participating in cultural activities which validate their self worth (e.g., getting good grades in school). The mortality salience hypothesis extends the anxiety-buffer hypothesis by describing how the endeavor to maintain self-esteem affects an individual’s beliefs, attitudes, and actions. Because thoughts of death provoke fear or anxiety and culture serves to buffer this anxiety, terror management theorist contend that individuals primed to think about death will “cling” to their cultures by partaking in “cultural worldview defense” (CWD). Clinging to cultural worldviews boosts self-esteem which, in turn, buffers against the anxiety created by thoughts of death (Solomon et al., 2004).

The Anxiety Buffer Hypothesis

The anxiety buffer hypothesis relies on the assumption that positive participation in culture undermines death anxiety by allowing individuals to validate their conception of the living world, and by furthering providing them personal significance within that world (Solomon et al., 2004). As Pyszczynski et al. (2004) describe, “…individuals must perceive themselves as
valuable and significant participants in the cultural drama to which they subscribe in order to qualify for the security-providing sense of death transcendence” (p. 22).

According to terror management theorists, self-esteem and culture are intimately interwoven. The association between culture and self-esteem is relatively intuitive: Without cultural standards against which to measure behavior, it would be difficult to know whether or not a certain behavior is worthwhile. In a society which values deference to authority, for example, displaying obedience might increase an individual’s self-esteem; however, in a society which values a questioning of authority, displays of obedience might detract from an individual’s self-esteem. These sets of values so intimately connected to self-esteem are referred to as “cultural worldviews” by terror management theorists. Harmon-Jones et al. (1997) provide a particularly eloquent description of cultural worldviews:

“a set of beliefs about the nature of reality shared by groups of individuals that provides meaning, order, permanence, stability, and the promise of literal and/or symbolic immortality to those who live up to the standards of value set by the worldview” (p. 24).

In describing self-esteem as a sociometer—a measure of an individual’s relationship to his/her social group—Leary, Tambor, Terdal and Downs (1995) provide a useful framework within which to understand cultural worldviews. The more central an individual is, the higher his/her self-esteem but the more peripheral, the lower his/her self-esteem (Leary et al., 1995 as cited in Navarrete et al., 2004). Given this definition of self-esteem, the relationship between cultural worldviews and self-esteem is clear: The more an individual embraces the values espoused by his/her cultural worldviews, the more central he/she is to the group, and thus the higher his/her self-esteem. Self-esteem is therefore defined by “how well one lives up to the standards of value set by the worldview” (Harmon-Jones et al., 1997, p.24).
Terror management theorists posit that anxiety is largely derived from death fears, and that high self-esteem serves to undermine that anxiety. Numerous studies have demonstrated an indirect relationship between high self-esteem and anxiety; to use the TMT jargon, these studies show that high self-esteem serves to “buffer” anxiety (i.e., Greenberg, Solomon et al., 1992). If high self-esteem does buffer anxiety, in threatening situations, namely exposure to thoughts of death, high self-esteem should reduce anxiety. Greenberg, Solomon and colleagues (1992) sought to explore the relationship between self-esteem and threatening situations by temporarily inducing high self-esteem. In the study, participants were randomly assigned to one of two priming conditions—a neutral prime or a death prime. Those assigned to the neutral prime condition watched a mundane seven minute video clip; however, those in the mortality salience condition watched a video depicting a real electrocution and autopsy. After the death manipulation, participants were further randomly assigned to either receive neutral or positive false feedback on a personality test. Demonstrating the relationship between self-esteem and anxiety, participants in the low self-esteem condition reported heightened anxiety after viewing the gruesome video while those in the positive feedback condition did not experience any changes in anxiety level (Greenberg, Solomon et. al., 1992). In a second experiment, the researchers replicated these results using skin conductance, a physiological measure of anxiety, as the dependent measures (Greenberg, Solomon et al., 1992).

**Self-serving attributions.** Illustrating the anxiety-buffer hypothesis, Mikulincer and Florian (2002) studied the relationship between self-serving attributions and mortality salience. Individuals use self-serving attributions in order to maintain self-esteem in situations which pose a threat to self-worth. When faced with failure, individuals can either attribute this failure to flaws in their personality—a dispositional attribution—or to environmental/external
circumstances beyond their control (Arkin, Gleason, & Johnson, 1976). If a student fails an exam, for example, he/she can attribute the failure to his/her own lack of intelligence (a dispositional attribution) or to the difficulty of the exam (a situational attribution). While the dispositional attribution in the case of failure would clearly be more detrimental to self-esteem, if the student received an “A” on the exam, a dispositional attribution would serve to enhance self-esteem. A self-serving bias, therefore, is an attribution, either dispositional or situational, which serves to enhance an individual’s self-esteem in a given situation.

Mikulincer and Florian (2002) were interested in exploring the relationship between the self-serving bias and mortality salience. The researchers hypothesized that exposure to mortality salience would cause individuals anxiety, which they would seek to buffer by enhancing their own self-esteem. Participants in the mortality salience condition were therefore expected to display a greater self-serving bias than those exposed to a neutral prime. In order to test this hypothesis, the researchers divided participants into two conditions: A low self-esteem condition in which the participants engaged in an unsolvable task or a high self-esteem condition in which success on the task was likely.

As compared to the neutral salience group, the mortality salient participants were more likely to engaged in self-serving attributions in order to enhance self-esteem: In the failure group (low self-esteem manipulation), mortality salient participants were more likely than controls to blame their failure on external factors (e.g., the difficulty of the task). In the success group (high self-esteem manipulation), mortality salient participants were more likely than controls to attribute success to their own intelligence. Mikulincer and Florian (2002) also discovered that when participants did not have the opportunity to participate in an attribution task during which they could rationalize the cause of failure, death-related thoughts became more accessible. This result
suggests that the shear act of making attributions—a mechanism which promotes higher self-esteem—decreases anxiety-provoking, death-related thoughts.

Additional self-esteem research. A multitude of experiments using a variety of self-esteem related activities as dependent measures have demonstrated that individuals seek to enhance self-esteem under mortality salience. One study revealed that romantic relationships serve to buffer anxiety in the face of mortality salience because such relationships tend to increase an individual’s self-esteem (Florian, Mikulincer, & Hirschberger, 2002). Another study focusing on body image found that under mortality salience, those with high body-esteem became significantly more concerned with their own physical appearance, demonstrated a greater interest in sex, and identified more with their own bodies. When faced with mortality salience, these participants drew on their physical appearance to enhance self-esteem. Those with low body-esteem, however, demonstrated the opposite effect, suggesting participants with a negative body image could not use their bodies as a source of self-esteem. In the face of mortality salience, these participants may have had to rely on alternative sources of self-esteem such as personal intelligence (Goldenberg, McCoy, Pyszczynski, Greenberg, & Solomon, 2000).

The Mortality Salience Hypothesis

The mortality salience hypothesis, the second widely-tested theoretical assumption of terror management theory, suggests that thoughts of death cause individuals to cling to that which enhances their self-esteem and thus protects them from their anxiety—namely, cultural worldviews. Not only do mortality primed participants favor their own cultural worldview more than controls, but they also show a tendency to act aggressively towards those who threaten their worldviews. McGregor et al. (1998) found that compared to controls, participants who underwent mortality salience added more hot sauce to the food of a partner (actually a
confederate) who they thought disagreed with their political views. The fact that mortality salience participants still administered more hot sauce when told that their “partner” dislikes hot foods, elucidates the aggressive nature of their actions.

In addition to the fairly artificial lab-based studies demonstrating CWD, researchers have also undertaken more authentic studies outside of the laboratory setting. An early, often cited TMT study established that mortality salience increases an individual’s aversion to moral transgressors—those who undermine established notions of culture. Rosenblatt, Greenberg, Solomon, Pyszczynski, and Lyon (1989) found that municipal court judges primed with mortality salience set significantly higher bail for prostitutes than control judges. While the mortality primed judges set bail at an average of $455, control judges set bail at only $50. In a replication of the experiment with student participants, the same researchers found that mortality salience increased bail requirement only if the student considered prostitution a threat to his/her cultural worldview (Rosenblatt et al., 1989). Mortality salience has a multitude of other effects on cultural worldviews including a greater tendency to stereotype out-groups (Schimel et al., 1999), and to favor cultural heroes (Rosenblatt et al., 1989).

Although studies of municipal judges and hot sauce distribution are quite interesting and compelling, most TMT studies rely on more mundane dependent measures. Many studies ask American participants to respond to essays—ostensibly written by foreign students—which either support or criticize the United States (i.e., Greenberg, Pyszczynski, Solomon, Simon, and Breus, 1994). Greenberg, Simon, Pyszczynski, Solomon, and Chatel (1992) recruited very liberal and very conservative participants to study the effects of mortality salience priming on their level of tolerance for differing political ideologies. The researchers hypothesized that because liberals, compared to conservatives, tend to favor inclusiveness, mortality salience would encourage
liberals to become more accepting of conservative values and conservatives to become even more conservative. This is indeed what Greenberg, Simon and colleagues (1992) found.

Other political research has shown that in the face of mortality salience, participants tend to cling to patriotic symbols such as the American flag (Greenberg, Porteus, Simon, & Pyszczynski, 1995) and the president of the United States (Landau et al., 2004). In an article released before the 2004 presidential election, Landau et al. (2004) studied the relationship between death-related thoughts and September 11th as well as the political preferences of those primed to think about 9/11. Using a word completion task, the researchers found that subliminally priming participants to think about “9/11” and “WTC,” indeed increased the accessibility of death-related thoughts. In another study Landau and colleagues (2004) found that participants who were asked to write about 9/11 were more likely than controls to express favorable attitudes towards the incumbent president, George W. Bush—a figure representing cultural worldviews.

**Induction of Mortality Salience**

The experimental manipulation in all terror management studies involves the induction of mortality salience; however, not all researchers employ the same induction technique.

Pyszczynski and colleagues (1996) successfully induced death-related thoughts by conducting their study in front of a funeral parlor (as cited in Solomon et al., 2004). Greenberg, Solomon, and colleagues (1992) required male participants (they claimed females were too squeamish) to watch a seven minute death-related video depicting a real electrocution and autopsy. Although these creative mortality induction techniques were successful in eliciting CWD, most recent TMT literature employs one of two priming techniques—supraliminal priming or subliminal priming. During supraliminal priming participants answer two open-ended questions about their own death. By contrast, during subliminal priming participants are actually unaware of the
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prime; typically experimenters repeatedly flash a death-related word on a computer screen so quickly that participants cannot consciously perceive it.

**Supraliminal priming.** Supraliminal priming is usually presented to participants under the guise of a personality evaluation (e.g., Harmon-Jones et al., 1997). Nearly all studies using this induction technique word the primes as follows: “Please briefly describe the emotions that the thought of your own death arouses in you” and “Jot down, as specifically as you can, what you think will happen to you as you physically die” (Solomon et al., 2004, p.21). Control participants not exposed to mortality salience are generally asked similarly worded questions about a neutral activity, unlikely to cause death-related thoughts, including TV watching and eating a meal (Solomon et al., 2004). Because critics of TMT originally argued that all aversive stimuli including thoughts of death would cause individuals to cling to cultural worldviews, terror management researchers routinely include different aversive conditions as controls. Several studies seeking to show that aversive stimuli in general do not invoke CWD ask participants to write about “experiencing intense pain” or “giving a speech to a large audience” (Greenberg et al., 1994). Studies have also required participants to write about dental pain (McGregor et al., 1994), the stress of an exam, and a variety of other aversive events (Arndt, Greenberg, Solomon, Pyszczynski, & Simon, 1997). These studies consistently demonstrate that aversive events do not elicit CWD on several different dependent measures.

**Explicit vs. subtle supraliminal primes.** Greenberg and colleagues (1994) discovered that participants displayed the strongest CWD when the mortality salience manipulation was subtle rather than explicit. In order to create an “explicit” death salience condition, the researchers encourage participants to imagine they had just received a diagnosis of advanced-stage cancer. Participants were then instructed to answer several death-related, open-ended questions
including: “The one thing I fear most about my death is…” and “My scariest thoughts about death are…” (Greenberg et al., 1994, p. 628). Participants exposed to traditional supraliminal mortality salience (jotting down what you think happens to you when you die etc.), exhibited more CWD than those participants who were asked to describe their “deepest emotions” surrounding death (Greenberg et al., 1994).

Further supporting the notion that subtle supraliminal priming is more effective than explicit death priming, studies find that a non-death-related delay task between the mortality salience manipulation and dependent measures results in exaggerated CWD. In one such study participants in the non-death-related delay condition showed more CWD than those who participated in a death-related task between the priming and dependent measure. These results suggest that when death thoughts are made conscious, CWD decreases; however, when thoughts of death are suppressed below conscious awareness (which presumably occurs during a delay task), CWD is strong (Greenberg et al., 1994). Generally researchers administer the PANAS (Watson, Clarke, & Tellegen, 1988) after the mortality salience manipulation. The PANAS serves as a neutral, non-death-related delay task and also allows researchers to use mood as a covariate in data analysis. The majority of studies reveal that CWD occurs independent of mood.

Greenberg et al. (1994) also explored the role of consciousness in CWD by allowing participants to write about anything that came to mind between the death priming and the dependent measures. Americans who chose to write about existential, death-related issues showed a pro-US bias on the dependent measure of only +4 (the scale ranged from -24 to +24, with + indicating US preference). Those who wrote about a positive feeling or a mundane issue showed greater CWD on the dependent measures (+7.5 and +9 respectively; Greenberg et al., 1994).
Terror management researchers explain this somewhat non-intuitive finding that explicit primes are less effective than subtle ones by suggesting that mortality salient participants engage in both proximal and distal defenses. As soon as thoughts of death are made salient through mortality priming, participants engage in proximal psychological defense—that is individuals suppress conscious thoughts of death. This suppression is thought to be a means of mitigating the terror associated with explicit contemplations of death. After a few minutes, however, suppression efforts cease and, distal defenses occur—individuals defend their cultural worldviews because death thoughts, while not necessarily conscious, are still accessible in the unconscious. During the distal defense period participants essentially “let their guard down.” Because they are no longer actively working to suppress death thoughts, the thoughts actually have a greater influence on their attitudes and behaviors (Pyszczynski, Solomon, & Greenberg, 2002). Arndt, Greenberg, Solomon, and colleagues (1997) suggest: “cultural worldview defense occurs when thoughts of death are highly accessible but are outside of current focal attention” (p. 6).

*Psychological mechanisms underlying proximal and distal defenses.* In a series of studies, Arndt, Greenberg, Pyszczynski, and Solomon (1997) attempted to explore the cognitive mechanism responsible for distal and proximal defenses. The researchers based their explanation on the ironic mental process theory (Wegner, Erber, & Sophia, 1993), which suggests that under a normal cognitive load, it is possible to suppress thought and emotion; however, when mental capacity is somehow taxed (due to stress, cognitive load, or time pressure), actively suppressing a thought or emotion becomes increasingly difficult. Wegner and colleagues (1993) provided support for their theory in a study in which they asked participants to remember a 9-digit number while attempting to suppress a certain emotion. Those who were not required to remember the
number (the low cognitive load condition) could suppress the emotion while those who had to remember the number (high cognitive load condition) were less successful at suppressing the emotion and even displayed the opposite emotion.

Paralleling these results, Arndt, Greenberg, Solomon, and colleagues (1997) studied the suppression of death thoughts but unlike Wegner and colleagues (1993), who explicitly told participants to suppress emotion, Arndt, Greenberg, Solomon, and colleagues (1997) assumed that death thoughts are automatically suppressed due to their highly “terrifying” nature. Employing the traditional TMT paradigm, participants received a supraliminal death prime followed by a word completion task. In order test the ironic process model, individuals in the experimental condition were asked to remember an 11-digit number throughout the study. Results revealed that participants in the high cognitive load condition were unable to engage in proximal defenses immediately after the death prime and thus completed significantly more ambiguous word stems with death words than control participants. After a delay task, however, the high cognitive load participants showed low death accessibility. The control participants—those who did not have to remember the number—demonstrated the normal pattern of proximal/distal defenses. These participants first suppressed death thoughts and then allowed them to come into consciousness after a delay. These results suggest that participants work to suppress death thoughts after mortality salience but under a high cognitive load such suppression is not possible (Arndt, Greenberg, Solomon et al., 1997).

Subliminal priming. Several studies have suggested that the subliminal priming of death-related words is also an effective means of inducing mortality salience (Arndt, Greenberg, Pyszczynski, & Solomon, 1997). One study revealed that repeatedly flashing the word “dead” on a screen for 42.8 ms (below the level of conscious perception) elicited CWD whereas flashing
the word “dead” for 356.3ms (well above conscious level of perception) did not produce these effects. The researchers suggest that because subliminal priming involves unconscious awareness of death, participants do not attempt to suppress death-related thoughts after subliminal priming, rendering distal and proximal defenses unnecessary. A delay task, therefore, is not employed in studies which use the subliminal priming technique. Research suggests that subliminal mortality priming proves as effective as supraliminal mortality salience in provoking CWD (Arndt, Greenberg, Pyszczynski, et al., 1997).

Importantly, participants subjected to subliminal priming seem completely unaware of the presence of the prime. Even when told to imagine a word had been flashed on the screen and given the choice of “pain” or “dead,” participants choose the correct word only 51.5% of the time—not significantly better than chance. Additionally, studies demonstrate that subliminally primed aversive stimuli (i.e., pain) do not produce exaggerated CWD (Arndt, Greenberg, Pyszczynski et al., 1997).

Although terror management theorists have developed a complex, empirically supported understanding of the conscious and unconscious mechanisms which produce terror management behaviors and cognition, there is a substantial literature challenging many of the methodological techniques and underlying assumptions of TMT. Dynamic social impact theory, for example, undermines TMT simply by suggesting an alternative cultural hypothesis whereas others theories including evolutionary and social exclusion theory, launch a direct and, at times, ferocious attack on terror management research.

**Critiques of Terror Management Theory: Alternative Theories**

Proponents of other cultural theories challenge many of the explicit and implicit assumptions of TMT. Critics commonly argue, for example, that little evidence exists to suggest that humans
are truly the only species consciously aware of their own death (e.g., Buss, 1997; Navarrete et al., 2004). Evolutionary psychologists broadly argue that the “existential crisis” described by terror management theorists is not the most parsimonious explanation of culture (Buss, 1997). Buss (1997)—the modern father of evolutionary psychology— is particularly critical of the fact that TMT disregards sex differences which are so integral to evolutionary theory. Although vague sex differences have been found in some TMT studies (e.g., Arndt, Greenberg, & Cook, 2002), most studies have not found major sex differences.

Evolutionary theorists further argue that though TMT addresses survival, it fails to account for reproductive fitness, which is different, and in some ways, more important than sheer survival (Buss, 1997). Along these same lines, Buss (1997) claims that TMT ignores the role of several mechanisms instrumental to reproductive success: “mating, parenting, reciprocal alliance formation, status striving, and kin altruism” (p.23). Countering this argument, terror management theorists suggest that while they may have underemphasized the purely physical motivation for sex, evolutionary theorists underemphasize the importance of survival. Solomon and colleagues (1997) do concede, “We were wrong to imply…that people are motivated only to stay alive; clearly they are motivated to experience pleasure and growth as well” (p. 60).

Finally, Buss (1997) is critical of the assumption that self-esteem evolved solely to allay death-related anxiety, and further criticizes that TMT does not provide an explanation of how anxiety, as understood by TMT, could have evolved.

Navarrete and colleagues (2004) suggest that a mechanism designed to alleviate death-related anxiety simply could not have evolved through natural selection because reducing anxiety through CWD does not actually help individuals avoid death. The researchers give the clever example of a man sitting on train tracks as a train approaches. While thinking patriotic thoughts
might reduce his anxiety, they argue, such thoughts will not prevent him from being squashed.

Flight, in this case, is the only mechanism which could prevent his demise, and therefore the only mechanism capable of evolving through natural selection (Navarrete et al., 2004). Buss (1997) and Solomon and colleagues (1997) have engaged in extensive point-counterpoint arguments regarding the theoretical underpinnings of terror management and evolutionary theory. Out of these evolutionary-derived theories comes one of TMT’s greatest challengers—social exclusion theory (Baumeister & Tice, 1990).

Social Exclusion Theory

Although TMT has roots in evolutionary theory, the link between terror management responses and evolution is an indirect one. To reiterate the connection, terror management theorists contend that cognitive awareness provided humans with many new strategies for survival while also crippling the species with the ability to recognize its own demise. In ancestral times, those humans who found a way to buffer this crippling fear—presumably by taking part in culture—were those who survived and evolved. Supporting the notion that culture serves the evolutionary purpose of self-preservation, studies find that participants asked to contemplate the death of a loved one do not demonstrate an exaggerated tendency to cling to cultural worldviews (Greenberg et al., 1994).

Baumeister and Tice (1990) proposed social exclusion theory—a theory strongly resembling TMT—which suggests that the root cause of human anxiety is not death but social exclusion. They argue that this fear of social exclusion is an “innately prepared fear” (p.166) derived from the evolutionary and thus psychological need for group membership. Social exclusion theory suggests that death is not the primary cause of anxiety; rather, cues which indicate to an individual that he/she may be undesirable to a group are those that produce
anxiety: “Grey hairs or bad grades, discovered in private, may bring anxiety because they carry the implications that in the future one will be more vulnerable to social rejection” (Baumeister & Tice, 1990, p.168). These cues prove so threatening because social exclusion compromises both survival and reproductive fitness—the two goals which evolutionary theory posits all living organisms are motivated to fulfill (Baumeister & Tice, 1990).

Because an understanding of the concept of death develops much later in life than a fear of social exclusion, social exclusionists argue that isolation fears are more innately built into the human species than death fears (Baumeister & Tice, 1990). Although there is little evidence to suggest that a fear of death exists at birth, that infants form attachments to their mothers immediately after birth suggests that social exclusion fear may indeed be innate (Bowlby, 1973 as cited in Baumeister & Tice, 1990). In response to this argument, TMT researchers maintain that social exclusion is not an innate response but an apprehension that grows out of a fear of death (Greenberg, Pyszczynski, & Solomon, 1990).

Drawing on past evolutionary research and theory, Baumeister and Tice (1990) and Navarrete and colleagues (2004) suggest that CWD has little if anything to do with an existential fear of death. Rather, individuals cling to their worldviews in the face of death because social groups and their resulting set of values and morals were, in ancestral times, integral to survival. Indeed, in ancestral times and to some extent today, groups provide mating opportunities, protection against predation, and means of obtaining adequate food and shelter. Buss (1990) also emphasizes that groups provide individuals with access to kin who share their genetic makeup. Physical proximity to kin provides constant occasion to protect those who share one’s own genes—a behavior integral to evolutionary success (Baumeister & Tice, 1990; Buss, 1990).

Navarrete et al. (2004) summarize their challenge to TMT:
“We suggest that, rather than being the sole and central focus on the phenomenon at issue, the contemplation of death elicits increased ideology defense primarily because the likely common causes of death in ancestral environments (dire illness, sever bodily harm, and starvation) were conditions in which successfully acquiring increased social support would have had significant fitness consequences” (p. 373).

Because the group is so integral to survival, members tend to internalize its values and beliefs (Baumeister & Tice, 1990; Navarrete et al., 2004). Navarrete and colleagues (2004) contend:

“…internalization of cultural standards is crucial for individual adaptive coordination within groups, a notion consistent with evolutionary game-theoretical models that emphasize the adaptive utility of conformity to social norms in order to enhance the efficiency of coordination among self-interested actors engaged in mutualistic cooperation” (p.373).

Indeed acts which compromise the survival and reproductive fitness of others in the group such as murder, adultery, and aggression are often associated with social exclusion (Buss, 1990). Also indicating that group membership is important to survival and reproductive success, societies have developed complex strategies to deal with the costs of group-living; primarily societies have developed strategies for dealing with competition between group members (Buss, 1990).

Overlap between TMT and social exclusion theory. Although social exclusion theory, proposes that anxiety does not come from fears of death, social exclusion theory does not totally undermine the theoretical pillars of TMT. The theories overlap in two important ways: First, if survival is contingent on group membership, then social exclusion produces anxiety, in part, because it elicits thoughts of death. These thoughts of death in turn create terror, which causes CWD meant to increase self-esteem and mitigate paralyzing death-related fear. Second,
Baumeister and Tice (1990) point out that death is, in a way, the ultimate form of social exclusion. Once dead, an individual is completely social excluded from not only his/her primary social groups but from the entire human race.

**Conflicts between TMT and social exclusion theory.** Despite the fact that Baumeister and Tice (1990) find terror management somewhat compelling, they maintain that the theory is overly simplistic and limited in its explanation of culture, suggesting that TMT researchers would “benefit from frank recognition of social exclusion as a potent source of anxiety” (p. 176). Baumeister and Tice (1990) argue that the fear of social exclusion is far more accessible in daily life than the fear of death, which they contend becomes relegated to nursing homes and hospitals. As the life span continues to increase, the frequency with which any individual must face the realities of death inevitably decreases (Baumeister & Tice, 1990). Baumeister and Tice (1990) contend that while death thoughts play a minimal role in daily cognition, individuals frequently attend to issues of social exclusion. Often concerned with body image, dress, and the perceptions of others, Baumeister and Tice (1990) suggest that the human race perpetually grapples with fears of social exclusion. Because social exclusion is continually on the mind of individuals, Baumeister and Tice (1990) suggest that social exclusion theory presents a more parsimonious and compelling explanation as to the causes of anxiety.

In an article responding to Baumeister and Tice’s (1990) social exclusion theory, Greenberg and colleagues (1990) take issue with the assumption that social exclusion consumes more attention than death. They suggest that social exclusion is actually far less of a concern than Baumeister and Tice (1990) contend, pointing to the fact that individuals are rarely kicked out of their core social groups, namely their families.
Greenberg and colleagues (1990) also challenge the underlying assumptions of social exclusion theory, suggesting that the theory fails to explain several important variations in social behavior. The theory, they argue, does not explain why some individuals are more gregarious than others as well as why certain social bonds are more important to a given individual than others. Terror management theorists argue that unlike social exclusion theory, which suggests that social bonds are important in general, TMT provides a framework for understanding which social bonds are important. Those bonds which serve to raise self-esteem by bolstering an individual’s worldview are most important whereas those bonds not integral to one’s cultural worldview prove less important. Social exclusion from a political group, for example, would only prove anxiety-provoking to an individual who considers politics to be a significant piece of his/her worldviews. To someone who cares little about politics, rejection from a political party may prove largely inconsequential (Greenberg et al., 1990).

Countering Greenberg et al. (1990), Baumeister and Tice (1990) suggest that TMT also leaves some issues unresolved. They argue that TMT does not, for example, explain the derivation of agoraphobia and other fears unrelated to death. They question why anxiety—supposedly based on the fear of death and the desire to avoid it—would drive those with anxiety disorders to suicide with more frequency than the population at large.

*Testing the Social Exclusion Hypothesis: Navarrete and Colleagues (2004)*

Although social exclusion proponents and terror management theorists engaged in deep theoretical argument in the early 1990s, little, if any, experimental research was conducted over the course of the decade to address the social exclusion challenge. TMT researchers have shown that various non-death-related aversive stimuli such as failing an exam or intense dental pain do not result in CWD (Arndt, Greenberg, Solomon et al., 1997; McGregor et al., 1998). Navarrete
and colleagues (2004), however, challenge the nature of these aversive events, arguing that none elicit fears that group membership could mitigate. Group membership, for example, would do little to alleviate a fear of public speaking.

Navarrete et al. (2004) proposed two novel aversive scenarios which, though not related to death, could be alleviated through group membership. Paralleling the traditional mortality salience paradigm, participants were asked to write about social isolation (because Navarrete et al. (2004) refer to social exclusion as “social isolation” and social exclusion theory as “coalitional psychology,” the terms will be used interchangeably). Furthermore, Navarrete and colleagues (2004) propose that a threat to an individual’s personal resources—a threat which could have been significantly mitigated by supportive group members in ancestral times—would also elicit greater CWD. In order to explore this resource hypothesis, Navarrete et al. (2004), created a theft salience condition which asked participants to imagine being the victim of a theft. Confirming their hypothesis, both the social isolation and theft salience conditions were as effective and, in some samples, more effective in eliciting CWD. The theft salience but not the social isolation salience was effective in eliciting CWD in a US sample. In a Costa Rican sample, however, social isolation salience elicited CWD more effectively than mortality salience.

Navarrete and colleagues (2004) extended their study to a Costa Rican sample, a particularly interesting population because, as compared to Europeans and Americans, Costa Ricans tend to be more collectivistic (also termed allocentric). In short, collectivist societies tend to put a greater emphasis on group membership and social connectedness (see section: “Collectivism and Individualism” (p. 29) for a more detailed explanation). Navarrete et al. (2004) suggest that a population focused on group membership should demonstrate weaker CWD after exposure to mortality salience, and stronger CWD after social isolation priming.
Navarrete and colleagues (2004) also suggest that mortality salience may be less influential in Costa Rica because death is more openly discussed, and a strong belief in the afterlife may mitigate some of the fear surrounding death. Supporting their hypothesis, among the Costa Rican sample, social isolation salience did indeed result in more CWD than both the mortality and control salience conditions. Further supporting their contention, the effect of the prime was mediated by a participant’s level of allocentrism. For both mortality and social isolation salience, those who showed more collectivistic tendencies demonstrated more CWD. Importantly, mortality salience only increased CWD among Costa Ricans when allocentrism was inherently high. Partially contradicting these results, however, Heine et al. (2002) found that in Japan, a generally collectivist country, mortality salience was effective in eliciting CWD regardless of dispositional allocentrism. Participants in the mortality salience condition expressed stronger aversion to an essay, ostensibly written by a foreign student, attacking Japan. In addition, these participants expressed a slight preference for high status consumer products as compared to low status products, suggesting that products like Toraya (an expensive Japanese sweet) served as a cultural icon in this sample (Heine et al., 2002).

Navarrete and colleagues’ (2004) suggestion that the results of almost two decades worth of terror management research can be explained by the evolutionarily indispensable nature of group membership proves a serious challenge to TMT. Despite the strength of Navarrete and colleagues’ (2004) finding, previous TMT research has shown that threats of social exclusion do not produce exaggerated CWD. Schimel et al. (1999) employed “social exclusion” as a control condition, asking participants to “ Briefly describe the thoughts and emotions that the thought of being socially excluded by your circle of friends arouses in you.” And “Please describe in as much detail as possible what you think will happen to you as you are socially rejected (against
your desires) by your circle of friends” (p. 916). In the study, which used gender roles as a gauge of cultural worldviews, results revealed that the threat of social exclusion did not heighten CWD. As compared to the social exclusion group, the mortality salience group showed more aversion to resumes which undermined traditional gender roles (Schimel et al. 1999).

This inconsistency in the literature showcases the importance of further exploring the notion of social isolation. Navarrete and colleagues’ (2004) work with the Costa Rican sample begs more questions than answers, impelling researchers to examine how group attitudes and collectivism fit into the TMT paradigm. In order to identify both the obvious and nuanced cultural differences which may impact the manifestations of TMT in eastern populations, the following section will explore well-studied, consistent, cognitive differences between East Asian and western samples.

*Collectivism and Individualism*

With few exceptions (Halloran & Kashima, 2004; Heine, 2002; Kashima, Halloran, Yuki, & Kashima, 2003) most TMT research has focused on individualistic rather than collectivistic societies. In their study, Navarrete and colleagues (2004) hypothesize and find support for the notion that collectivistic cultures may not be as sensitive to mortality salience.

“…we suspect that these patterns reflect real differences between cultures….specifically, social isolation may be a more significant threat in societies that emphasize collective as opposed to individual response to challenges…”(p.391).

Navarrete et al. (2004) raise a vital question: does the terror management paradigm apply to more collective societies? While Navarrete and colleagues (2004) did not find strong support for TMT in their study of Costa Ricans (a collectivistic society), the results of several other studies employing collectivistic samples do reveal CWD in response to mortality salience (Heine et al.,
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2002; Kashima et al., 2003). These conflicting results clearly suggest that the relationship between collectivism and TMT deserves further attention.

The Origins of Cognitive Differences Between the East and West

A large body of research suggests that there are significant cognitive differences between members of East Asian and western European countries. Most western cultures (United States and Europe) can be traced back to Ancient Greek civilization whereas eastern cultures (China, Japan, Korea, etc.) can generally be traced back to ancient Chinese society. Researchers hypothesize that the demands of the environment in the two civilizations caused the societies to develop divergent notions of what Nisbett and colleagues (2001) term “metaphysics…beliefs about the nature of the world and causality” (p.291).

Comprehensively reviewing the research of cross-cultural scholars, Nisbett and colleagues (2001) propose that geography may, at least partially, explain the metaphysical differences between Greek-derived and Chinese-derived cultures. Organized around agriculture, economic success in Chinese society depended on cooperation between neighbors (this was especially true for raising rice in south China). Because cooperation proved integral to success, harmony and social order became a core value of Chinese society. This harmony was maintained through a strict social hierarchy that continually informed individuals of their role in society and prevented power clashes. Deferring to authority, for example, became a vital component of the Chinese value system. Present-day cognitive tendencies characteristic of eastern countries have been described by researchers as allocentric, collectivistic, or interdependent (Nisbett et al., 2001).

Ancient-Chinese derived, collectivist cultures are often compared to individualistic (also termed independent) societies derived from ancient Greek civilization. Greece is physically characterized by mountainous terrain, largely not conducive to farming. As a result, Greek
society was organized around individualized sustenance activities including herding, hunting, fishing, and trading. Because dissenters could readily access water-escape routes, Greece’s geography allowed individuals more political and social autonomy. Cross-cultural researchers have suggested that Greece’s political decentralization and its geographic situation contributed to the formation of independent values characteristic of present-day western cultures (Nisbett et al., 2001).

Analytic Versus Holistic Cognition

Cross-cultural researchers propose that these geographic and thus cultural differences between the east and the west significantly impact the metaphysical orientation of modern eastern and western societies. Whereas members of eastern cultures consider the world in more holistic terms, members of western cultures tend to be more analytical (Nisbett et al., 2001). Holistic thought is characterized by what Nisbett et al. (2001) call “an orientation towards the context or field as a whole” (p.293), and concomitantly, the belief that the environment greatly influences the behavior of the object and vice versa. Members of holistic cultures demonstrate “[a] preference for explaining and predicting events on the basis of such relationships” (p.293). By contrast, Nisbett et al. (2001) characterize analytic thought as “detachment of the object from its context” (p. 293). Analytic individuals focus on the specific characteristics of an object and demonstrate “a tendency to focus on attributes of the object to assign it to categories, and a preference for using rules about the categories to explain and predict the object’s behavior” (p.293).

Nisbett and colleagues (2001) propose that eastern and western cultures possess divergent “naïve metaphysical systems” (p. 291)—systems which describes how individuals broadly conceive reality and “the nature of causality” within that reality. Additionally, they suggest that
these differing systems of thought effect “tacit epistemologies” defined as individuals’ theories of knowledge. These contrasting notions of metaphysics and divergent tacit epistemologies result in several cognitive differences apparent in quantititative experiments and even obvious from qualitative examination of culture. Many studies find that holistic thought patterns guide attention in a different direction than analytic thought patterns.

Chui (1972) examined the way Chinese and American elementary school students organize stimuli using a Cognitive Style Test—a task which asks participants to group objects into categories and provide a rationale for their choices. Results revealed significant differences in cognitive styles. Compared to Chinese children, American children made more “descriptive-analytic” categorizations whereas Chinese children gave more “descriptive-whole” answers. In grouping human figures, for example, American children were more likely to focus on single features of the figures such as “‘because they both are holding a gun” (p. 237).

Chinese children also made more “relation-contextual style” categorizations, meaning they were more likely than American children to make categorization choices based on the relationship between the figures. The Chinese children, for example, were more likely to say that the mother figure should be grouped with the baby figure because the mother takes care of the baby. By contrast, American children were more likely to group objects based on the “class name” (e.g., all are fruit), “attribution selection” (e.g., both a boat and a jet have a motor), and “location” (e.g., both a cow and horse live on a farm; Chui, 1972, p. 237).

Cross-cultural studies reveal many other significant differences in perception between analytic and holistic cultures including the tendency to display hindsight bias. Because eastern cultures take into account a multitude of environmental and contextual factors, more outcomes to a given situation seem feasible and thus predictable. Hindsight bias—the tendency to think a
given outcome was inevitable after the fact (Fischhoff, 1975 as cited in Nisbett et al., 2001)—is therefore more prominent among members of eastern cultures. Additionally, eastern participants tend to focus more on experiential knowledge (having to experience an event) whereas westerners are more dependent on logical arguments, and tend to accept such arguments as true without direct experience (Nisbett et al., 2001). Although there is a vast literature concerning cognitive differences between eastern and western cultures, the current review will focus on two specific phenomena—spatial field dependence and attributional processes.

Field dependence. Field dependence refers to the extent to which an individual can separate an object from its environment. Divergent notions of metaphysics draw individuals’ attention to differing aspects of their environment. Easterners generally attend to the relationship between the object and the environment whereas westerners attend more to the object, relying less on the environment (Nisbett et al., 2001). Witkins and Berry (1975) suggest that cross-cultural differences in field dependence may, in part, result from the divergent food gathering techniques once employed in Ancient Greece and China. Because the Greeks acquired food through hunting, their physical and economic survival was contingent on hunters’ ability to visually separate their prey from its environment. Chinese sustenance, which depended on agriculture rather than hunting, did not require such field independence (Witkins & Berry, 1975 as cited in Masuda & Nisbett, 2001). Chui’s (1975) exploration of categorization patterns among Chinese and American children is consistent with the claim that easterners tend to be more field dependent: Chinese children in the study focused on the relationships between objects (e.g., mother and infant) whereas American children focused more on the individual attributes of the figures (e.g., both have a gun; Chiu, 1975).
In a more recent study of field dependence comparing Japanese and American university students, Masuda and Nisbett (2001) found that American students are indeed more field independent. The researchers presented a series of scenes which depicted fish (objects) swimming in a complex ocean background (field). In simply describing the scene, Japanese participants were significantly more likely to mention background information compared to American participants who were more likely to mention the fish. Japanese participants were twice as likely as Americans to refer to the field as a whole in their first descriptive statement of the scene. Even more compelling, Japanese students made twice as many statements referring to the relationship between the moving fish and the sedentary background.

In a follow up study, Masuda and Nisbett (2001) found that recall ability is connected to field dependence. The researchers presented Japanese and American students with a series of animals situated in a background, and later asked participants to recall whether or not they had previously seen the animal. During the recall task, however, the researchers changed the background scenes in which the animals were depicted. Further demonstrating cross-cultural difference in field dependence, recognition of the animals after the background shift significantly deteriorated among Japanese participants but did not deteriorate in the American sample. Additionally, Japanese students were faster at identifying objects in their original context compared to a new context whereas Americans showed no difference in reaction time. These results suggest that not only do Japanese participants focus more on the field but their ability to recall an object partially depends on environmental cues.

*Fundamental attribution error.* Although Masuda and Nisbett (2001) examined very specific cognitive abilities in recognition, the principles of field dependence also effect the causal attributions that individuals make in social situations. Also called the “correspondence bias,” the
fundamental attribution error (FAE) refers to the tendency of individuals to overemphasize the dispositional causes of an event and underemphasize the situational ones (Ross, 1977 as cited in Choi, Nisbett, & Norenzayan, 1999). Because FAE results from an overemphasis on the object and an underemphasis on the field, the extent to which an individual commits the FAE is related to his/her level of field dependence. In general, field independent individuals should demonstrate the FAE more than field dependent individuals. Although research has established that all cultures seem to make some dispositional attributions, East Asians—those who are more field dependent—are less likely to do so than westerners when situational information is available. Generally, East Asians focus on the importance of context, and tend to suggest that personal disposition is fairly flexible (Choi et al., 1999; Nisbett et al., 2001).

Demonstrating this cross-cultural difference in the FAE, Morris and Peng (1994) analyzed 22 articles from the *New York Times* (a western, English-language newspaper) and the *World Journal* (an eastern, Chinese-language newspaper). The articles all followed the story of a man (Mr. Lu in China and Mr. McIivane in America), who, in seeking revenge for the loss of his job, killed several individuals responsible for his discharge. Results revealed that American reporters tended to attribute the murder to dispositional characteristics of the murderer whereas Chinese reporters were more likely to discuss the situational factors surrounding the killings. The Chinese reporters described contextual issues such as: Mr. Lu “did not get along with his advisor,” and had experienced “isolation from [the] Chinese community” (p. 961). The American reporter, however, emphasized Mr. Lu’s “very bad temper,” and referred to him as a “darkly disturbed man” (p.961).

Interestingly, results revealed a significant difference in attributional style among American reporters writing about the Chinese murderer as compared to the American murderer. The FAE
was quite pronounced in articles written by American reporters about the Chinese murderer (Mr. Lu); however, the FAE was less pronounced in articles written by Americans about the American murderer (Mr. McIivane). Chinese reporters did not show a similar in-group bias. When asked to imagine whether the murder would have occurred had the situation been different, Chinese participants were likely to believe the murder could have been averted whereas Americans felt that the murder’s dispositional qualities rendered his actions inevitable (Morris & Peng, 1994).

**Cultural Frame Switching**

Although countless studies have demonstrated “unusually large” (Nisbett et al., 2004, p. 305) cross-cultural differences between East Asian and western participants (see Choi et al., 1999 and Nisbett et al., 2001 for a comprehensive review), research suggests that analytic and holistic modes of thinking are not exclusive to any particular culture. Within a given culture, there is significant variability among individuals in the population. Perhaps even more importantly, an individual’s cultural orientation proves sensitive to social context, suggesting that easterners and westerners inherently possess both individualistic and collectivistic selves (Lehmen et al., 2003). “…culture does not rigidity determine the responses of its group members. Instead, culture provides interpretive perspective for making sense of reality” (Lehmen et al., 2003, p. 701). This “interpretive perspective,” can be manipulated in both natural and laboratory settings, resulting in cultural frame switching. Those with more cultural experience have what Lehmen and colleagues (2003) call more interpretive perspective “tools in their toolbox” (p. 702) with which to perform cultural frame switching.

A series of studies, in fact, demonstrate that simple priming techniques can shift individuals’ cognitive orientation, affecting their social values and level of field dependence. Whether an
individual is operating independently (analytically) or interdependently (holistically) depends on the accessibility of the independent or interdependent self-construal. Research suggests that culture is a “chronic source of activation of relevant self-construals” (Kuhnen, Hannover, & Schnubert, 2001, p.398). In ambiguous situations such as the murder scenarios (Morris & Peng, 1994), the most relevant self-construal is applied. When asked to make an attribution, westerners will typically rely on dispositional information and easterners situational information. If, however, the relevant self-construal is manipulated, individuals will no longer fall back on their cultural dictated models (Gardner, Gabriel, & Lee, 1999).

Kuhnen and colleagues (2001) propose the semantic-procedural interface (SPI) model of the self, which seeks to explain how these different orientations can be elicited. The model supposes that semantic priming can shift individuals’ procedural mode of thinking on a non-semantic task. In testing the model, Kuhnen and colleagues (2001) found that asking participants to think about how they are the same or how they are different from their families (Trafimow, Silverman, Mei-Tai Fan, & Fun Law, 1997), changed their performance on the Embedded Figures Test (EFT)—a spatial measure of field dependence (success on the task indicates higher field independence). Another popular priming technique draws attention to the independent or interdependent self by requiring participants to read and circle pronouns in the context of a neutral story about a trip to the city. In the interdependent condition all pronouns are collective (e.g., “we” “us” “ours”) while in the independent condition all pronouns are singular (e.g., “I” “me” “mine”; Brewer & Gardner, 1996).

In a series of studies, those participants who received the independent prime performed significantly better on the EFT than those who received the interdependent prime (Kuhnen et al., 2001). Kuhnen and colleagues (2001) explain, “Priming independent self-construals induces a
cognitive style in which stimuli are perceived as independent from the given field” (p.401). The researchers also found that the opposite was true; priming interdependent self-construals created a cognitive style which elicited field dependence. The emergence of independent and interdependent self-construals through semantic priming also affects social values and judgments (Gardner et al., 1999).

Although Kuhnen and colleagues (2001) used culturally homogeneous samples to demonstrate the effectiveness of their SPI model, cross-cultural research comparing participants from eastern and western countries show a similar pattern of results. In a study employing participants from America and Hong Kong, researchers found that those individuals who received self-construal primes which conflicted with their cultural framework were more affected by the prime than those who received a prime consistent with their cultural framework (Gardner, et al., 1999).

Gardner et al. (1999) found that priming interdependent and independent self-construals influenced participants’ response style on the Twenty Statement Task (TST)—a instrument which asks participants to describe themselves using “I” statements. American participants in the independent prime condition described personal qualities (e.g., “I am intelligent”) whereas Americans in the interdependent prime condition described themselves in relation to others (e.g., “I am engaged to marry Scott”; p. 322). Additionally, on a social judgment task, participants assigned to the interdependent condition suggested that a fictional character, “Lisa” was obligated to help her friend more than those assigned to the independent priming condition (Gardner et al. 1999).

Although there are clear qualitative and quantitative differences in the ways members of eastern and western cultures perceive their world, cultural priming and frame switching studies
suggest that cultural orientation is largely malleable (Brewer & Gardner, 1996; Gardner et al., 1999; Kuhnen et al., 2001; Trafimow et al., 1997). It is clear that within these eastern and populations, individuals possess both an independent and interdependent self.

Integration of the Terror Management and Cross-Cultural Literatures

Terror management theory assumes cultural worldview defense in the face of mortality salience to be an evolutionary universal. Despite this assumption, the values that a given individual chooses to defend are extremely specific to that individual’s conception of culture. As Rosenblatt and colleagues (1989) illustrate in their study of prostitution as a moral transgression, CWD only occurs when the participant considers the moral transgression culturally offensive. This study showcases an important point: Even within cultures, cultural worldviews vary widely. Participants attending the same university, for example, exhibit starkly different political worldviews. Some consider liberal ideology integral to their cultural worldview whereas others regard conservative politics as culturally fundamental (Greenberg, Simon et al., 1992). The fact that even culturally homogeneous samples vary significantly in their definition of cultural worldviews compels researchers to examine how well-studied cultural differences are manifested within a TMT paradigm.

Several studies have sought to integrate the TMT and cross-cultural cognition literatures using non-western samples and cultural priming. One study found that in response to mortality salience manipulations, Japanese and American participants exhibited CWD of comparable magnitudes (Heine et al., 2002). In a study using cultural priming, Halloran and Kashima (2004) investigated participant’s notion of cultural worldviews in a population of Aboriginal Australians considered to be highly susceptible to cultural frame switching. Aboriginal Australians hold two distinct cultural identities: the traditional, collectivistic identity of their ancestors, and the more
individualistic values characteristic of mainstream Australian culture. Mortality salience, coupled with the random priming of one of their two cultural identities, resulted in the rejection of the non-primed identity, and the defense of the primed identity (Halloran & Kashima, 2004).

The assumption that self-esteem maintenance is integral to terror management proves particularly problematic in generalizing TMT across cultures. Studies employing western samples consistently find that participants with low self-esteem are particularly vulnerable to death-related terror (i.e., Harmon-Jones et al., 1997) but few studies have addressed how TMT manifests itself in cultures in which individuals exhibit perpetually low levels of self-esteem. Cross-cultural studies reveal that individuals in eastern cultures tend to score lower on measures of self-esteem than individuals in western cultures (Mezulis, Abramson, Hyde, & Hankin, 2004). According to the anxiety-buffer hypothesis, therefore, eastern cultures should be even more susceptible to mortality salience than western cultures. In Japan as well as other eastern countries, self-enhancement—a mechanism which serves to enhance self-esteem—proves less frequent. Western cultures, for example, demonstrated a large self-serving bias whereas the bias is significantly less apparent in East Asian countries. A meta-analysis reveals that Japanese and Pacific Islanders show no self-serving bias at all (Mezulis et al., 2004).

Kashima and colleagues (2003) found that in eastern cultures, where group-esteem is considered more important than self-esteem, participants exhibited exaggerated CWD when group death as opposed to individual death was made salient. Instead of the traditional mortality salience manipulation, the researchers asked participants to imagine a giant meteorite had descended on their country, killing all inhabitants. Participants were then asked to respond in writing to questions about group death (e.g., “What emotions does the thought of your death and the death of your country arouse in you”; Kashima et al., 2003, p. 386).
Finally, Kashima and colleagues (2003) found that compared to controls, mortality salient participants from Australia were more likely to endorse individualistic values whereas mortality salient Japanese participants were less likely to endorse individualism. Interestingly, however, the difference was only significant in participants with low self-esteem (Kashima et al., 2003). These results suggest that self-esteem plays an equally important role in TMT across eastern and western cultures. Despite this finding, the researchers admit that there were certain inconsistencies in their data—inconsistencies which preclude any strong conclusions about the universality of the anxiety-buffer hypothesis.

The Present Research

The present studies seek to explore three major inconsistencies in the TMT literature brought to light through the work of Navarrete and colleagues (2004). First, the researchers will consider the cognitive relationship between death and social isolation, exploring whether social isolation elicits thoughts of death and whether death elicits thoughts of social isolation. Second, the present studies ask whether social isolation salience truly does elicit cultural worldview defenses parallel to the defenses elicited through death salience. Third, the studies explore whether the TMT paradigm, which supposes that individuals (not groups) are terrified of death, applies to interdependently primed participants. Finally, in Experiment 2 only the researchers seek to extend the TMT literature by examining the effects of mortality salience on cognitive behavior.

EXPERIMENT 1

Before exploring whether social isolation produces the same attitudinal changes which take place under mortality salience, it is imperative to understand the cognitive relationship between the concepts of social isolation and death. Experiment 1 aims to address a major dispute in the TMT literature: Schimel and colleagues (1999) suggest that social exclusion does not elicit CWD
whereas Navarrete and colleagues (2004) maintain that social isolation does, in fact, lead to CWD (see p. 26 for detailed study description). The debate does not seem to result from methodological differences as the authors phrase their social exclusion and social isolation writing prompts almost identically. Complicating matters even more, coalitional psychologists and terror management theorists (Navarrete et al., 2004; Schimel et al., 1999) both suggest that thoughts of social isolation do not elicit thoughts of death. Yet, the same terror management theorists have refuted the claims of social exclusion theory by suggesting that social isolation salience may induce thoughts of death (Greenberg et al., 1990).

Although Navarrete and colleagues (2004) demonstrate that thoughts of social isolation do not elicit thoughts of death, the researchers failed to address whether or not the opposite is true: do thoughts of death elicit thoughts of social isolation? Experiment 1 also seeks to fill in this vital piece of the TMT puzzle. If indeed mortality salience elicits thoughts of social isolation or social isolation salience elicits thoughts of death, Navarrete and colleagues’ (2004) contention that social isolation produces CWD independent of death-related cognition would be significantly complicated.

Experiment 1 examined the relationship between social isolation and death by subjecting participants to a series of primes, and then administering a word completion task. After receiving two consistent independent or interdependent self-primes, participants were subjected to one of the following writing conditions: death salience, social isolation salience, or neutral salience (regarding TV watching). The word completion task was used to measure the extent to which each of the three writing tasks render the concepts of death, social isolation, and fear accessible.

As a result of the inconsistencies in the literature (Greenberg et al., 1990; Navarrete et al., 2004; Schimel et al., 1999), it is difficult to make specific predictions about the relationship
between thoughts of death and thoughts of social isolation. Although both coalitional psychologists and terror management theorists would agree with the obvious—that death salience will result in the completion of more death-related words and social isolation salience will result in the completion of more social isolation-related words—the following research questions demand further exploration:

Research question 1a: Mortality salience condition. Will mortality salient participants complete significantly more social isolation words than control participants?

Research question 1b: Social isolation salience condition. Will social isolation salient participants complete significantly more death-related words than control participants?

Research question 1c: Social isolation/self-construal. How will the independent and interdependent self-primes influence the responses on the word completion task?

In addition to examining the cognitive relationship between death and social isolation, Experiment 1 serves to verify the effectiveness of the writing technique used to induce social isolation salience. This is especially important considering the fact that few studies have explored whether or not a social isolation writing prompt actually renders thoughts of social isolation more accessible.

Method

Participants and Design

The design was a 2x3x3 mixed factorial. All participants received either two independent or two interdependent semantic self-primes followed by one of three subprimes: mortality salience, social isolation salience, or neutral salience. After a delay task, participants completed an ambiguous word completion task that included references to death, social isolation, and fear.
Participants consisted of 86 undergraduates who attended either Haverford or Bryn Mawr College. Although 90 students were originally included in the study, four were eliminated for failing to follow directions. All students from introductory psychology received course credit for their participation and all other participants were entered into two $50 lotteries. Of the final participants, 55 (64%) were female and 30 (34.9%) were male. One student did not specify a sex. Participants ranged in age from 18 to 22 ($M=19.38$, $SD=1.39$).

Because the study explored cross-cultural differences, participants were asked to respond to several detailed questions about ethnicity, country of origin, and country of residence. The sample was 70.9% White/Caucasian, 11.6% Asian/Asian American, 10.5%, other/multiracial, 4.7% Hispanic/Latino, and 1.2% Black/African American. One participant did not specify a race. The majority of participants were born in the United States (81.4%), and the remaining approximately 20% of the sample listed one of the following nations as country of birth: Belgium, Canada, Dominican Republic, England, France, India, Japan, Nepal, Puerto Rico, South Korea, and Taiwan.

Participants were also asked to record their “country of general residence for the past 10 years.” The majority of students had resided primarily in the United States (84.9%), and several participants identified two countries of general residence: England/USA, India/USA, and Norway/USA. Finally, four participants identified a single country other than the United States as their primary country of residence. These countries included Austria, Italy, Jamaica, Japan, Nepal, and Puerto Rico.

Participants were recruited through several introductory level classes including introductory psychology. Upon signing up for the study on the Experimetrix website, participants received an online survey. The survey contained a baseline measure of collectivism and individualism.
(Appendix B), a measure of self-esteem (Appendix C), and standard demographic questions. Participants were asked to include their student ID number which served to confidentially connect their pre-laboratory data with their laboratory data. After completing the online survey and the lab portion of the study, all participants were either entered into a lottery or received course credit.

Measures and Stimulus Materials

Baseline individualism/collectivism measure. Before the lab portion of the study, participants completed baseline measures of both individualism and collectivism (Triandis, 1995). The combined measure consists of 32 statements to which participants responded using a 9-point Likert-type scale, with a “1” indicating strong disagreement and a “9” indicating strong agreement (Appendix B). A separate individualism ($\alpha=.65$) and collectivism ($\alpha=.71$) score was computed for each participant. Mean scores for both collectivism and individualism fell in the middle of the scale and scores on both measures were normally distributed: collectivism ($M=6.10, SD=.84$), individualism ($M=5.93, SD=.79$).

Rosenberg self-esteem scale. The pre-lab survey also included 10 questions ($\alpha=.91$) from the Rosenberg Self-Esteem Scale to which participants responded using a 5-point Likert-type scale, with “1” denoting “always false” and “5” denoting “always true” (Rosenberg, 1965; Appendix C).

Independent and interdependent self-primes. Participants received two consistent semantic self-primes (either interdependent or independent)—a strategy employed in several past studies using these priming techniques (i.e., Gardner et al., 1999; Trafimow et al., 1997). The dual priming technique served to both strengthen the priming condition as well as ensure that priming
differences were not a result of “idiosyncratic effects of the primes themselves” (Gardner et al., 1999, p.322).

The first prime, described to participants as a two-minute writing task, required those assigned to the interdependent prime to write about the similarities between themselves and their families while those in the independent condition wrote about how they differ from their families (Trafimow, Triandis, & Goto 1991; Appendix F). The second task, presented as a “proofreading and word search task” (Brewer & Gardner, 1996, p.86), required participants to read a paragraph describing a trip to the city written in either the independent voice (using singular pronouns) or the interdependent voice (using plural pronouns). To draw attention to the independent or interdependent nature of the passage, participants were asked to circle all pronouns. The pronouns, “I, me, mine” etc. were used in the independent condition and “we, our, us” etc. in the interdependent condition (Brewer & Gardner, 1996; Appendix G). The writing task was presented before the pronoun identification task in order to minimize interference effects.

**Salience manipulations.** The mortality, social isolation, and neutral writing subprimes were disguised as a “Projective Life Attitudes Assessment” (Landau et al., 2004; Appendix H). Mortality salience was induced by asking participants to respond to two questions regarding death from an emotional and physical perspective: “Please briefly describe the emotions that thoughts of your own death arouse in you.” And “Jot down, as specifically as you can, what you think will happen to you as you physically die and once you are physically dead.” The social isolation (Navarrete et al., 2004) and TV (neutral) salience conditions were formulated using parallel sentence structure and similar wording (Appendix H).

**PANAS.** The PANAS (Watson et al., 1998) requires participants to rate the extent to which they currently feel 10 positive and 10 negative emotions on a 5-point Likert-type scale, with “5”
representing “extremely” and “1” denoting “very slightly or not at all.” A separate positive emotion ($\alpha=.87$) and negative emotion ($\alpha=.80$) score was computed. Because the content of the PANAS is not death-related, it serves as an appropriate delay. The results of the PANAS were also used to evaluate the mood of participants at the time of testing across conditions (Appendix I).

Word completion task. Based on a strategy employed in many past TMT studies aimed at evaluating the effectiveness of both supraliminal (Navarrete et al., 2004) and subliminal death priming (Landau et al., 2004), the word completion task consisted of four different classes of ambiguous word stems. Six word stems could be completed using a death-related word or a neutral word (e.g., Coff_ _ could be completed as “Coffin” or “Coffee”). The other death words were Corpse, Dead, Skull, Decay, and Funeral (Greenberg et al., 1994). A second set of six word stems could be completed using a “social isolation” word or a neutral word (e.g., Lo_ely could be completed as “Lonely” or “Lovely”). Other social isolation words included: Solo, Outcast, Exclude, Hermit, and Single). A set of six fear words were also presented to examine whether death and social isolation are associated with fear (e.g., _anic could be completed with either “Panic” or “Manic”). Other fear words included Fear, Scare, Dread, Fright, and Horror. Finally, fourteen neutral words were added in order to disguise the purpose of the task (e.g., King, Table, Paper; Greenberg et al., 1994; Appendix J). All target words (death, social isolation, and fear) were matched with a neutral word which appears with approximately the same frequency in the English language (Frequency Lists, n.d.). Word lengths were also kept relatively consistent among the four classes of words; words ranged from four to seven letters in length.

Suspicion probe. Because Haverford College is a rather small community and information travels quickly, the suspicion probe questionnaire served to ensure participants had not been
previously made aware of the purpose of the experiment. The probe consisted of one question which asked participants to describe the purpose of the experiment. Although several participants recognized the relationship between the death and social isolation subprimes and the word completion task, no participant revealed a familiarity with terror management theory and thus no participants were excluded from analysis.

*Randomization.* Past research using a Haverford College population shows a normal distribution of scores on Triandis’ (1995) baseline collectivism/individualism measure (Le, 2005). Le’s (2005) results suggested that random assignment to the interdependent/independent semantic prime conditions would yield an equal number of inherently collectivistic and inherently individualistic participants in each condition. Even if the present sample had proven overwhelmingly either collectivistic or individualistic, studies find that primes which oppose an individual’s natural cultural orientation are as effective if not more effective than consistent primes (Gardner et al., 1999). As expected collectivism and individualism scores were normally distributed and mean scores fell within average ranges for both scales.

All participants were randomly assigned to one of six groups (A=individualistic prime/death salience, B=individualistic prime/social isolation salience, C=individualistic prime/neutral salience, D=collectivistic prime/mortality salience, E=collectivistic prime/social isolation salience, F=collectivistic prime/neutral salience).

*Apparatus*

Experimenters used a stopwatch in order to time participants’ progress on the two independent/interdependent semantic primes (Brewer & Gardner, 1996; Trafimow et al., 1997) as well as the salience manipulations (death, social isolation, or neutral). The pre-lab questions were presented online while all laboratory materials were presented to participants on paper.
Procedure

After completing the pre-laboratory survey, participants signed up for the lab portion up of the experiment in groups of two to four. Upon entering the lab, all participants were randomly assigned to one of the six conditions, and received a consent form which explained the experiment as a series of pre-tests, the results of which will provide the researchers with baseline measures of student performance. Participants were assured that their work would not be individually analyzed and that all responses would be kept completely confidential. They were also reminded that, should they feel uncomfortable, they could leave at any time without penalty.

The experiment took place in two small room containing two work stations each. In order to avoid distraction, which could interfere with the primes, the stations were well spaced. After taking a seat at one of four stations, participants received a paper packet containing: directions (Appendix E), two consistent independent/interdependent self-primes, two consistent salience questions (mortality, social isolation, or neutral), the PANAS, a word completion task, and the brief suspicion probe form. The experimenter instructed all participants to follow the directions carefully, and asked them not converse with one another during the experiment. Participants were also instructed not to skip ahead or turn back in their paper packets.

The experiment began with the 2-minute family writing task (e.g., independent or interdependent prime). Once finished with the writing task, participants took a maximum of two minutes to complete the second semantic pronoun prime, which served to reinforce the first independent or interdependent prime. After completing the two semantic self-primes, participants were instructed to take 2-minutes to respond to the each of writing prompts regarding death, social isolation, or TV watching. After responding to their respective salience manipulation, the experimenter instructed participants to continue the rest of the experiment at
their own pace. Before proceeding to the PANAS, word completion task, and suspicion probe, participants were once again reminded to complete the packet in order and not to skip ahead.

After handing in their packet, participants were thanked for their time, and reminded to refrain from discussing the experiment with their peers. Before leaving the lab, participants were assured that they would receive a debriefing form via email at the conclusion of experiment.

Results

A 2x2x3 Analysis of Variance (ANOVA) was conducted to examine the impact of cultural prime (individualism or collectivism) and subprime (death, social isolation, or neutral) on the percentage of death, social isolation, and fear words participants created on a word completion task. Results revealed no main effect for culture \(F(2,150) = .88, p > .05\). On average, participants in the individualistic condition created the same percentage of death, social isolation, and fear words as participants in the collectivistic condition (see Table 1 for means).

Table 1. Mean percentage of words completed in the individualism and collectivism priming conditions. Standard deviations are indicated in parentheses.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Death Words</th>
<th>Social Isolation Words</th>
<th>Fear Words</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individualism (N=43)</td>
<td>.38 (.23)</td>
<td>.40 (.17)</td>
<td>.46 (.24)</td>
<td>.41 (.21)</td>
</tr>
<tr>
<td>Collectivism (N=43)</td>
<td>.33 (.22)</td>
<td>.42 (.21)</td>
<td>.43 (.20)</td>
<td>.39 (.21)</td>
</tr>
<tr>
<td>Total (N=86)</td>
<td>.35 (.22)</td>
<td>.41 (.19)</td>
<td>.45 (.22)</td>
<td></td>
</tr>
</tbody>
</table>

Results revealed one main effect for subprime \(F(4,150)=2.65, p<.05\). A set of post-hoc Tukey comparisons demonstrated that participants primed to think about TV completed significantly more social isolation words \((M=.51, SD=.18)\) than death words \((M=.31, SD=.20)\). No other main effects were found for subprime; participants in both the death and social isolation
subpriming condition created death, social isolation, and fear words with the same frequency (see Table 2 for means).

Table 2. Mean percentage of words completed in the death, social isolation, and neutral subpriming conditions (* indicates significance at p<.05). Standard deviations are indicated in parentheses.

<table>
<thead>
<tr>
<th></th>
<th>Death Words</th>
<th>Social Isolation Words</th>
<th>Fear Words</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death Prime (N=30)</td>
<td>.39 (.23)</td>
<td>.36 (.17)</td>
<td>.42 (.25)</td>
<td>.39 (.22)</td>
</tr>
<tr>
<td>Social Isolation Prime (N=28)</td>
<td>.35 (.24)</td>
<td>.38 (.20)</td>
<td>.46 (.22)</td>
<td>.40 (.22)</td>
</tr>
<tr>
<td>Neutral Prime (N=28)</td>
<td>.31 (.20)*</td>
<td>.51 (.19)*</td>
<td>.45 (.18)</td>
<td>.42 (.19)</td>
</tr>
<tr>
<td>Total (N=86)</td>
<td>.35 (.22)</td>
<td>.41 (.19)</td>
<td>.45 (.22)</td>
<td></td>
</tr>
</tbody>
</table>

Furthermore, contrary to our hypothesis, there was no significant interaction between cultural prime (independent/interdependent) and subprime (death/social isolation/neutral) on participant performance on the word completion task ($F(4, 150) = .67, p > .05$; see Table 3 for means).

Table 3. Mean percentage of words completed by cultural prime and subprime. Standard deviations are indicated in parentheses.

<table>
<thead>
<tr>
<th></th>
<th>Death Words</th>
<th>Social Isolation Words</th>
<th>Fear Words</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Individualism</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Death (N=15)</td>
<td>.47 (.21)</td>
<td>.37 (.16)</td>
<td>.43 (.28)</td>
</tr>
<tr>
<td>Social Isolation (N=14)</td>
<td>.36 (.22)</td>
<td>.33 (.19)</td>
<td>.50 (.25)</td>
</tr>
<tr>
<td>Neutral (N=14)</td>
<td>.30 (.23)</td>
<td>.51 (.12)</td>
<td>.45 (.18)</td>
</tr>
<tr>
<td><strong>Collectivism</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Death (N=15)</td>
<td>.32 (.24)</td>
<td>.36 (.19)</td>
<td>.41 (.24)</td>
</tr>
<tr>
<td>Social Isolation (N=14)</td>
<td>.33 (.26)</td>
<td>.42 (.20)</td>
<td>.43 (.19)</td>
</tr>
<tr>
<td>Neutral (N=14)</td>
<td>.32 (.17)</td>
<td>.50 (.24)</td>
<td>.45 (.18)</td>
</tr>
</tbody>
</table>
Finally, none of the covariates significantly influenced participant performance on the word completion task. These variables included self-esteem, positive mood, negative mood, baseline collectivism, and baseline individualism.

Experiment 1 Discussion

Given that terror management theory relies on a connection between supraliminal death priming and the accessibility of death thoughts, the results of Experiment 1, which suggest no relationship between the mortality/social isolation subprimes and the accessibility of related words, are somewhat troubling. Contrary to our results, Navarrete and colleagues (2004), for example, found that participants in a supraliminal mortality salience condition were more likely to complete ambiguous word stems with death-related words than control participants and participants primed to contemplate social isolation.

Although inconsistent with both social exclusion and terror management theory, analysis of the word completion task employed in Experiment 1 revealed that participants in the TV (neutral salience condition) completed significantly more social isolation words than death words. This significant result suggest that participants associated TV watching—an activity in which many people partake alone—with social isolation significantly more than with death. In fact, several control participants explicitly referenced themes of loneliness and isolation in their responses to the TV-related prompts.1 Because, overall, TV salient participants did not complete significantly more social isolation words than social isolation salient or mortality salient participants, there is little evidence to suggest that the TV salience condition served as its own

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1 Participant who referenced social isolation themes on the TV prompts: 1) “I think [TV] is so detrimental to society. It isolates people…” 2) “Watching TV makes me angry…this is especially true…when I watch it alone.” 3) “I feel lazy for sitting there, when I could do HW, see people, or otherwise be social…” 4) “It’s a great feeling watching a little TV by myself. I don’t tend to watch TV with others very much.” 5) “My brain is turned off, especially if I’m watching alone.” 6) “TV is rarely a social thing for me but rather a way to take a break from the world” [all emphasis added].
social isolation prime. Nevertheless, researchers seeking to study social isolation should consider formulating a different neutral salience condition, carefully considering whether the prospective neutral prime will actually serve to evoke neutral thoughts.

Also a subject of investigation in Experiment 1 was the interaction between the cultural primes and subprimes on participant performance on the word completion task. Although no concrete predictions were made, our analyses failed to answer research question “1c”, which explored the influence of cultural priming. While Navarrete and colleagues’ (2004) study of Costa Ricans suggest that collectivistic populations tend to respond more strongly to social isolation salience than mortality salience, Heine et al. (2002) found that a collectivistic Japanese sample did, in fact, engage in CWD in the face of mortality salience. The results of Experiment 1 do not shed any light on this discrepancy.

The theory of implicit memory suggests that while death priming should render death words more accessible, social isolation salience should render social isolation words more accessible. Although both terror management theorists and coalitional psychologists would endorse this relatively rudimentary prediction, our results did not reveal any association between subprime and word accessibility.

Implicit memory involves the unconscious retrieval of information acquired during a past episode or task. In the laboratory, researchers often gauge the impact of implicit memory just as we did in Experiment 1—by evaluating participants’ choices in the “completing of a graphematic fragment of a word” (Schacter, 1987, p. 501). Our results seem to suggest that the mechanisms responsible for implicit memory were somehow not activated during Experiment 1. In light of the theories of terror management, social exclusion, and implicit memory, our results seem both troubling and surprising. A closer examination of our methodology, however, reveals
that our findings may be quite consistent with the theoretical underpinnings of terror management theory.

*Role of Proximal and Distal Defenses*

Terror management theory hinges on the critical assumption that, after a death prime, individuals engage in both proximal and distal defenses (see section: “*Psychological mechanisms underlying proximal and distal defenses*” (p.18) for detailed explanation). According to the theory of proximal defenses, following mortality salience, individuals become so overwhelmed with anxiety that they completely suppress death-related cognition and behavior. After a brief distracter task, however, suppression efforts cease and death thoughts seep closer to the surface of consciousness, becoming readily accessible. This inevitable failure to engage in suppression is referred to as distal defenses. In order to help participants cognitively move past the proximal defense stage, following a supraliminal death prime, experimenters generally administer the PANAS. According to terror management theorists, the benign nature of the PANAS serves to quell the inevitable suppression efforts in which participants engage following an explicit reminder of death. Nearly all the TMT literature suggests that only after entering the distal defense stage do participants demonstrate cultural worldview defense (Arndt, Greenberg, Pyszczynski et al., 1997; Arndt, Greenberg, Solomon et al., 1997; Greenberg et al., 1994).

“Only…when thoughts of death are outside of consciousnesses but are still highly accessible, does the intensified worldview defense occur” (Greenberg et al., 1994, p.636).

In Experiment 1, we followed the typical methodological paradigm—administering the PANAS between supraliminal death/social isolation priming and the word completion task with the intention of cognitively transitioning participants from the proximal to the distal defense stage. Despite this effort, the aversive nature of our word completion task may have
unintentionally launched distal participants back into the proximal defense stage. Unlike the instruments utilized in past TMT studies, which generally embed six death-related word stems in 25 neutral stems, in Experiment 1 we embedded 18 aversive stems in only 14 neutral words. Although not all experimenters use the same number of death and neutral words, most TMT researchers adhere to a similar death stem to neutral stem ratio, ensuring that neutral words significantly outnumber death words. Arndt, Greenberg, Solomon and colleagues (1997), for example, embedded only four death-related words in 20 neutral words.

If participants were actively working to suppress death thoughts during the word completion task, they would have created fewer aversive words. Supporting this contention, the results of the suspicion probe questionnaire administered at the end of Experiment 1 suggest strongly that many participants were aware of the “dark” nature of the word completion task. One participant in the mortality salience condition wrote the following when asked about the nature of the experiment: “I have no idea! The words could easily be made into rather dark ones and the essays were about death. So maybe you want to know if Haverford students are depressed?” [emphasis added]. Though this participant was under the false impression that the experiment dealt with depression, he/she was quite aware of the insidious nature of the word stems. According to terror management theorists, participants who are aware of death-related content generally engage in suppression (Arndt, Greenberg, Pyszczynski et al., 1997; Arndt, Greenberg, Solomon et al., 1997; Greenberg et al., 1994). Upon taking the word completion task, participants may have been propelled back into the proximal stage during which they actively suppressed death-related thoughts, rendering death-related words less accessible on the word completion task.
The comments of one mortality salient participant on the suspicion probe provides further anecdotal evidence that the word completion task did, in fact, serve as an additional death prime which may have elicited proximal defenses: “I think this experiment was testing whether thinking about something distressing would lead me to choose words/feelings that are in turn more distressing like death.” In this statement, the participant reveals that not only was the initial death prime somewhat distressing but the sheer act of taking the word completion task created further distress.

Several studies have indeed demonstrated the power of participants to suppress death thoughts during proximal defenses. Greenberg and colleagues (1994) found, for example, that very explicit death priming actually failed to elicit CWD. Participants who answered a series of vivid death-related questions as well as participants who chose to write about a death-related topic during the delay task did not demonstrate CWD. Like the death-related delay task, the word completion task created for use in Experiment 1 may have served as an explicit reminder of death.

Although Experiment 1 did not succeed in demonstrating whether or not social isolation and death thoughts are interconnected, if indeed social isolation and fear words do remind participants of death, participants may have received up to 18 reminders of death during the word completion task. While the connection between the concepts of death and social isolation has been disputed in the literature (Greenberg et al., 1990; Navarrete et al., 2004; Schimel et al., 1999), the concept of fear should, intuitively, remind people of a previous death prime. According to TMT, anxiety—an emotion highly associated with fear—serves as the driving force behind cultural worldview defense. Even if social isolation words do not remind people of
death, between the fear and death words, participants still received 12 possible reminders of death.

*Methodological Concerns*

Contributing to the unconscious proximal defense problem, participants had ample time on the word completion task to consciously monitor their answers. Not only was the word completion task un-timed, but participants were provided erasers with which they could edit their answers. Although the general TMT methodological paradigm does not call for a timed word completion task, researchers do mention that participants should go with their first instinct: As Arndt, Greenberg, Solomon and colleagues (1997) explain in their methods section: “…participants were to complete with the first word that came to mind” (p. 8). These instructions were not written on our word completion task and only some participants received these instructions orally. It is therefore possible that this inconsistency on our part significantly impacted the ultimate results of the experiment.

Because the purpose of the experiment was relatively apparent to certain participants, the temptation to engage in impression management may have been very high (Paulhus, 1984). A participant in the collectivistic/social isolation condition, for example, guessed at the purpose of the subprimes fairly accurately: “I think that this experiment was testing if thinking about being alone would make us fill in words involving being alone/lonely.”

Furthermore, presumably because the subprimes (death/social isolation/neutral) were disguised as personality tests (“Your responses to this survey will be content analyzed in order to assess certain dimensions of your personality”; Appendix H), many participants believed the word completion task also served to evaluate their personality. A total of 26 participants reported in the suspicion probe that they thought the experimenters were attempting to somehow evaluate
their individual personalities. It is likely that participants who believed their personalities were being judged—no matter how confidentially—engaged in impression management and thus eschewed the more aversive word choices (Paulhus, 1984).

**Directions for Future Research**

In order to gain an understanding of how the notions of death, social isolation, and fear are cognitively related or unrelated, researchers should attempt to remedy some of the methodological difficulties which characterized Experiment 1. In order to avoid the problem of proximal defenses, researchers could consider conducting the experiment using subliminal priming. In a pre-test of Experiment 1, we did, in fact, employ a subliminal priming paradigm; however, possibly due to technological constraints, we were unable to replicate other studies which have shown subliminal priming to be effective (e.g., Landau et al., 2004).

Even though the subliminal priming technique would remedy some of the death suppression problems which may have plagued Experiment 1, it would be important to essentially “water-down” the word completion task. Even coupled with subliminal priming, a very aversive word completion task similar to the one employed in Experiment 1 could easily evoke proximal defenses. Future researchers should consider eliminating the fear words in favor of exclusively studying the relationship between death and social isolation. Although the relationship between death, social isolation, and fear deserves more attention, an understanding of the cognitive role of fear is not immediately integral to a study of the relationship between death and social isolation.

Finally, future researchers, instead of including six death word stems and six social isolation word stems, should consider employing three or four of each category of word. Because a dependent measure containing only four death-related stems may not provide enough statistical variability, some researchers have administered two word completion tasks and distributed eight
death words across these two tasks (Arndt, Greenberg, Solomon, et al., 1997). Using this technique, researchers are able to double the number of death-related stems while still disguising the purpose of the word completion task and avoiding proximal defenses.

**Proceeding to Experiment 2**

Although it is abundantly clear that the cognitive relationship between notions of death and social isolation deserves further attention and research, because the theories underlying the design of Experiment 2 have received such strong support in the literature, we feel we can legitimately proceed.²

We do acknowledge, however, that any results relating to social exclusion theory must be interpreted loosely until further research exploring the cognitive differences between death and social isolation has been conducted. Because our study extends the TMT literature in meaningful ways unrelated to social exclusion theory by exploring, for example, how death and cultural primes affect performance on cognitive measures of field dependence, we feel compelled to continue our research with Experiment 2.

**EXPERIMENT 2**

Experiment 2 seeks to reconcile a stark, yet unacknowledged discrepancy in the literature: Navarrete and colleagues (2004) find that social isolation priming results in strong CWD; however, Schimel et al. (1999) find that social exclusion priming does not elicit CWD. Referencing Schimel and colleagues (1999), Pyszczynski and colleagues (2004) write matter-of-factly:

² Gardner et al. (1999), Kuhnen et al. (2001), and Trafimow et al. (1997) show the legitimacy of cultural priming. Halloran and Kashima (2004) and Kashima et al. (2003) integrate studies of collectivism and individualism and TMT. Kashima et al. (2003) show that cultural priming can effectively shift participants’ notion of cultural worldviews and thus the values they choose to defend in the face of mortality salience. Kuhnen et al. (2001) demonstrate that semantic cultural primes can affect performance on spatial measures of field dependence.
“Parallel conditions in which subjects contemplate other aversive events such as social exclusion...do produce parallel effects, even though these other condition sometimes produce negative affect” (p. 44).

This is precisely the opposite result suggested by Navarrete and colleagues (2004). Expanding upon Navarrete and colleagues’ (2004) work, the present study directly challenges Schimel and colleagues’ (2004) findings and in so doing, challenges the underlying framework of TMT.

Although Pyszczynski and colleagues (2004) boast of 170 studies across nine countries supporting TMT derived hypotheses, the majority of the research has been conducted in individualistic countries including the United States, Germany, Canada, and Israel (Heine et al., 2002). As Heine and colleagues (2002) propose: “One reasonable possibility is that TMT captures a motivational system of individualists” (p.189). Although several studies suggest that CWD does occur in collectivistic participants subjected to mortality salience (Halloran et al., 2004; Heine et al., 2002; Kashima et al., 2003), there is strong evidence to suggest that TMT may not generalize to collectivistic cultures (Kashima et al., 2003; Mezulis et al., 2004; Navarrete et al., 2004). Navarrete and colleagues (2004) have, in fact, found evidence that collectivistic cultures are more sensitive to social isolation salience than mortality salience. The concept that self-esteem enhancement reduces anxiety is one of the key underlying assumptions of TMT; however, in eastern countries self-esteem enhancement is significantly less prevalent. Although Experiment 2 will employ a largely western sample, self-construal semantic priming will serve to elicit the collectivist and individualistic components of participants’ cultural orientations. Cultural priming has proven effective in studies of westerns (e.g., Kuhnen et al., 2001) as well as studies of cultures undergoing a transition from collectivistic to individualistic values (Halloran & Kashima, 2004).
Experiment 2 expands upon past research which has integrated the cross-cultural and TMT literatures (Halloran & Kashima, 2004; Kashima et al., 2003; Navarrete et al., 2004). Unlike past research which has employed cultural priming in transitional populations (Halloran & Kashima, 2004) and compared eastern and western samples (Kashima et al., 2003), the present research uses a largely western sample to explore how cultural priming affects CWD. The study addresses the question of whether, for example, collectively primed westerners assume collectivism as a cultural worldview.

The present experiment also introduces a new set of dependent measures into the TMT literature. TMT studies have already defined “cultural worldviews” using a variety of attitudinal measures (e.g., Schimel et al. (1999) studied politics, Rosenblatt et al. (1989) studied moral transgressors, Greenberg et al. (1995) and Landau et al. (2004) studied cultural symbols). Because past research indicates that field dependence is sensitive to cultural priming (Kuhnen et al., 2001), Experiment 2 extends the TMT literature by defining cultural worldviews as an individual’s level of field dependence. More specifically, instruments gauging attributional style and spatial field dependence serve as dependent measures of cognitive behavior. Through semantic cultural priming, the experimenters intend to render either the independent or interdependent self an integral part of a participant’s cultural worldview.

The design of Experiment 2 replicated that of Experiment 1 except instead of the word completion task, participants took the Embedded Figures Test (EFT), which served as a spatial measure of field dependence and an attribution task (AT), which served as a social measure of field dependence. According to the TMT paradigm, death and not social isolation salience should cause participants to cling to their assigned cultural prime (Halloran & Kashima, 2004; Kashima, 2003), and thus demonstrate a cognitive style characteristic of that cultural prime. Those
receiving the independent (individualistic) prime should demonstrate less field dependence after
mortality salience while those receiving the interdependent (collectivistic) prime should
demonstrate greater field dependence. In stark contrast to the predictions which follows from
terror management theory, coalitional psychologist would suggest that both mortality and social
isolation salience would cause all participants to embrace holistic cognitive strategies
characteristic of collectivistic cultures. The power of mortality salience to elicit cultural
worldview defense would be significantly attenuated among the collectively primed participants.
More specifically stated:

*Hypothesis 3a: TMT hypothesis.* Compared to the control subprime group, mortality salient
participants will demonstrate a polarization in field dependence: Independently primed
participants will become less field dependent while interdependently primed participants will
become more field dependent. The social isolation salience condition will not significantly differ
from the control.

*Hypothesis 3b: Coalitional hypothesis.* Compared to the control group, mortality salient *and
social isolation salient participants* will demonstrate a polarization in field dependence:
Independently primed participants will become less field dependent while interdependently
primed participants will become more field dependent. Level of cultural worldview defense will
be a function of cultural prime:

- Independent primed participants: Mortality and social isolation salient participants will
defend their individualistic identity significantly more than control participants.

Specifically, compared to controls, mortality and social isolation salient participants will
score higher on the EFT and make more dispositional attributions.
• Interdependently primed participants: Participants will cling to their assigned cultural worldview under social isolation salience significantly more than under mortality salience. Mortality salient participants will defend the collective cultural worldview significantly more than controls. Specifically, participants should perform worse on the EFT and make more contextual attributions under social isolation salience as compared to mortality salience. Control participants should perform best on the EFT and make significantly fewer situational attributions than both the social isolation and mortality salient participants.

Method

Participants and Design

The design was a 2x3x3 mixed factorial. All participants received either two independent or two interdependent semantic self-primes followed by one of three priming conditions: death salience, social isolation salience, or neutral salience. Finally, all participants completed two dependent measures—the attribution task and the Embedded Figures Test.

Participants were 97 undergraduates attending either Haverford or Bryn Mawr College. Although 101 students were originally included in the study, three were eliminated for failing to take the pre-laboratory study, and one for having already participated in Experiment 1. Although the majority of students were awarded $5 for their participation, several participants received introductory psychology credit. No subject who participated in Experiment 1 was permitted to partake in Experiment 2. Of the final participants, 62 (63.9%) were female and 32 (33%) were male. Three students did not specify a sex. Participants ranged in age from 18 to 22 (M=19.6, SD=1.31).
Racially, ethnically, and nationally, the sample employed in Experiment 2 was similar to that of Experiment 1. The sample was 68% White/Caucasian, 12.4% Asian/Asian American, 9.3% other/multiracial, 3.1% Black/African American, 3.1% Hispanic/Latino, and 1% Pacific Islander. Three participants did not specify a race. The majority of participants were born in the United States (87.6%). Other countries of birth included: Bangladesh, China, Dominican Republic, India, Italy, Japan, Peru, South Africa, and Thailand.

The majority of students had, over the last 10 years, resided primarily in the United States (88.7%); however, several participants identified two or more countries of general residence: Bangladesh/USA, China/USA, Costa Rica/USA, Dominican Republic/USA, India/USA, India/RSA/USA, and South Korea/USA. Finally, one participant identified only Italy as his primary country of residence.

Stimulus Materials

The researchers required participants to fill out the same online survey used in Experiment 1 prior to coming to the lab. The survey included basic demographic questions, the Rosenberg Self Esteem Scale (1965) (α=.92), and a baseline measure of collectivism (α=.75) and individualism (α=.76) (Triandis, 1995). A separate individualism and collectivism score was computed for each participant. Mean scores for both collectivism and individualism fell in the middle of the nine point scale and the sample was normally distributed: collectivism (M=6.08, SD=.78), individualism (M=5.93, SD=.84). In the lab, participants received the same cultural priming materials as in Experiment 1. After the salience manipulations (death, social isolation, or neutral), participants received the PANAS (positive emotion (α=.88), negative emotion (α=.80)). Finally, participants received two cognitive tasks—the Embedded Figures Test and an attribution task.
Embedded figures test (EFT). Participants were allotted five minutes to complete 23 field dependence puzzles created by Witkin (1950). Although the original task included 24 items, puzzle number 12 was eliminated because it was deemed unsolvable by the researchers. The EFT requires participants to find and trace a small shape presented on the left side of the page, within a larger more complex figure presented on the right side of the page. Participants were provided with a blue pen with which to trace the embedded figures and a red pen with which to make corrections. Responses were scored as either right or wrong and no partial credit was assigned. Two experimenters reviewed each test and any disagreements were discussed until a final score out of 23 was determined (See Appendix K).

Attribution task. Inspired by McArthur’s (1972) attributional instrument, the researchers created an attribution task consisting of nine ambiguous statements to which participants were asked to respond. Three of the statements were of a negative nature (e.g., “Miranda showed up over an hour late for her appointment”), three were positive (e.g., “Darren smiled happily”), and three were neutral (e.g., “Markus received a “B” on his biology exam”). Participants were instructed to write down the first thought that came to mind. The task was coded by two experimenters who evaluated only the first statement the participant wrote down. Dispositional statements were assigned a score of “1” and situational statements were assigned a score of “2.” Inter-rater reliability on each of the nine items ranged from kappa=.50 to kappa=.87, indicating moderate to high agreement between coders (See Appendix L). Because the inter-rater reliability was relatively high, the scores recorded by the first and second rater were averaged for data analysis.

Randomization. The same A-F randomization scheme described in Experiment 1 was also employed in Experiment 2. The order in which the dependent measures (EFT and attribution...
task) were presented was counterbalanced such that half of the participants received the EFT first and half received the attribution task first. Results revealed no meaningful order effects.

Procedure

The procedure employed in Experiment 2 largely replicated that of Experiment 1; however, the experiment was presented to participants slightly differently: Participants were told the study explored “how individual differences impact the way individuals think about and respond to different situations and complete various cognitive exercises” (See Appendix D). Based on the same randomization scheme used in Experiment 1, participants received a series of either independent or interdependent self-primes followed immediately by two death, social isolation, or neutral salience writing subprimes. After the salience manipulation, participants completed the PANAS, and both dependent measure (attribution style and the EFT). Because of the complex nature of the EFT, experimenters took extra time prior to its administration to review the directions and field questions. Once they completed all tasks, participants were thanked, paid (if applicable), and told to expect a debriefing form via email.

Results

A 2x2x3 Analysis of Variance (ANOVA) was conducted to determine the impact of cultural primes (individualism/collectivism) and subpriming (death/social isolation/neutral) on participant performance on the EFT and attribution task. Results revealed a significant main effect for culture on the attribution task \( (F(1,91)=6.0, p=.016) \). As expected, participants who received the individualistic prime were more likely to make dispositional attributions \( (M=1.42, SD=.19) \) whereas participants who received the collectivistic prime were more likely to make situational attributions \( (M=1.52, SD=.21) \).
There was no significant difference in EFT scores between participants in the collectivistic condition ($M=12.65$, $SD=5.09$) and participants in the individualistic condition ($M=11.44$, $SD=4.20$), ($F(1,91)=1.60, p>.05$).

There were no significant main effects for the subprime (death/social isolation/TV) on the EFT ($F(2, 91)=.69, p>.05$): Death prime ($M=12.64, SD=5.38$), social isolation prime ($M=11.28, SD=4.26$), neutral prime ($M=12.22, SD=4.36$). There were also no main effects for subprime on the AT ($F(2, 91)=.59, p>.05$): Death prime ($M=1.50, SD=.22$), social isolation prime ($M=1.48, SD=.23$), neutral prime ($M=1.44, SD=.16$).

Contradicting both the TMT and coalition hypotheses, there was no interaction between culture and subprime on the AT ($F(2, 91)=1.06, p>.05$) (see Table 4 for AT means) or the EFT ($F(2,91)=.36 p>.05$) (see Table 5 for EFT means).

Table 4. Means for the attribution task (1= dispositional attributions and 2= contextual attributions). Standard deviations are indicated in parentheses.

<table>
<thead>
<tr>
<th></th>
<th>Individualism</th>
<th>Collectivism</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death (N=16)</td>
<td>1.45 (.21)</td>
<td>1.55 (.23)</td>
<td>1.5 (.22)</td>
</tr>
<tr>
<td>Social Isolation (N=16)</td>
<td>1.39 (.22)</td>
<td>1.56 (.21)</td>
<td>1.47 (.23)</td>
</tr>
<tr>
<td>Neutral (N=16)</td>
<td>1.43 (.16)</td>
<td>1.46 (.16)</td>
<td>1.45 (.16)</td>
</tr>
<tr>
<td>Total (N=48)</td>
<td>1.42 (.19)</td>
<td>1.52 (.20)</td>
<td>1.47 (.20)</td>
</tr>
</tbody>
</table>
Table 5. *Means for the EFT (Maximum possible score=23). Standard deviations are indicated in parentheses.*

<table>
<thead>
<tr>
<th></th>
<th>Individualism</th>
<th>Collectivism</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death (N=16)</td>
<td>12.44 (4.87)</td>
<td>12.82 (5.97)</td>
<td>12.64 (5.38)</td>
</tr>
<tr>
<td>Social Isolation (N=16)</td>
<td>10.12 (3.20)</td>
<td>12.44 (4.94)</td>
<td>11.28 (4.26)</td>
</tr>
<tr>
<td>Neutral (N=16)</td>
<td>11.75 (4.28)</td>
<td>12.69 (4.53)</td>
<td>12.22 (4.36)</td>
</tr>
<tr>
<td>Total (N=48)</td>
<td>11.44 (4.20)</td>
<td>12.65 (5.09)</td>
<td>12.05 (4.69)</td>
</tr>
</tbody>
</table>

Finally, none of the covariates significantly impacted the dependent measures. These variables included self-esteem, positive affect, negative affect, baseline collectivism, and baseline individualism.

**Experiment 2 Discussion**

Experiment 2 failed to provide support for both terror management and social exclusion theory. Past TMT research explicitly suggests that mortality salient participants should defend their respective cultural prime significantly more than both social isolation salient and control participants (Schimel et al., 1999). Despite the fact that the cultural primes did significantly affect participants’ attributional style in the predicted direction, contrary to the TMT hypothesis, the death subprime did not exaggerate the influence of the cultural primes on the dependent measures.

In contrast to terror management theory, social exclusion theory predicts that contemplation of social isolation—the supposed true driving force behind cultural worldview defense—should cause participants to cling to their primed culture significantly more than those in the collectivistic/mortality and collectivistic/control conditions. Despite past empirical support for this notion (Navarrete et al., 2004), our results failed to confirm the coalitional/social exclusion hypothesis.
As expected from past research comparing eastern and western populations (Morris & Peng, 1994; Nisbett et al., 2001), participants in the individualistic condition were significantly more likely to make dispositional attributions whereas those who received collectivistic primes were significantly more likely to make situational attributions. Although past research has demonstrated that eastern and western cultures tend to differ in attribution style, ours is the first study (to our knowledge) that has shown that this difference in attributional style can be elicited through culturally priming in a largely homogenous sample. While not the primary purpose of Experiment 2, establishing a relationship between cultural priming and attributional style proves an important addition to the cultural priming literature.

Because Experiment 2 sought to combine TMT and cross-cultural research—two very complex areas of study—it is important to explore each theoretical step of the experiment in order to gain a clearer understanding of our experiment’s possible failings.

Can Cultural Priming Create Cultural Worldviews?

Experiment 2 hinged on the fundamental assumption that cultural primes do temporarily alter an individual’s definition of cultural worldviews. Based on past research, we not only assumed we could elicit either the independent or interdependent self through priming (Gardner et al., 1999; Kuhnen et al., 2001; Trafimow et al., 1997) but we also believed that participants would temporarily embrace this primed identity as a cultural worldview (Halloran & Kashima, 2004; Kashima et al., 2003). Although past research provides empirical support for both of these theoretical assumptions, our methodology differed slightly from that of past studies. Halloran and Kashima (2004), for example, were able to use cultural priming to temporarily alter their participant’s cultural worldviews; however, they recruited participants from a very unique cultural population. Using a “semitraditional Aboriginal community” which participates “in a
range of practices associated with both traditional Aboriginal and mainstream Australian cultures” (p. 917), Halloran and Kashima (2004) made a deliberate effort to study a group of people with highly flexible notions of culture.

Despite some diversity in our subject pool, most of our participants were born and raised in the United States—a country in which the dominant culture embraces individualistic values (Chiu, 1972; Choi et al., 1999; Lehman et al., 2004; Masuda & Nisbett, 2001; Morris & Peng, 1994; Nisbett et al., 2001). As compared to Halloran and Kashima’s (2004) sample, perhaps our sample, though sensitive to cultural priming, could not use our primes to form new cultural worldviews. Although this is certainly a possible explanation, our participant’s scores on the baseline collectivism and individualism measures (Triandis, 1995) suggest that like semitradiotional Aboriginals, Haverford and Bryn Mawr students possess highly flexible notions of culture.

Surprisingly, while the United States is renowned for a strong individualistic culture, our sample scored similarly on both the collectivism and individualism measures. In fact, the mean collectivism scores were slightly higher than the mean individualism scores in both Experiment 1 and Experiment 2. Because Haverford—the school from which the majority of our participants were drawn—is a small, community-oriented institution with Quaker roots, it may attract students who tend towards more collectivistic values and practices. The baseline collectivism and individualism scores suggest that despite our population’s largely homogeneous background, like the Aboriginal Australian population, our participants find both the independent and interdependent self highly accessible even in the absence of priming.

Aside from using a relatively culturally homogeneous rather than transitioning sample, we also diverged from past research in our selection of cultural priming techniques. No past study,
to our knowledge, has successfully integrated the collectivism/individualism and TMT paradigms using the cultural primes we chose to employ in Experiment 2. In integrating the TMT and collectivism/individualism paradigms, Kashima et al. (2003) avoided cultural priming all together by comparing Japanese (collectivistic) and Australian (individualistic) participants. Halloran and Kashima (2004) culturally primed their participants by asking them to either write about their Aboriginal background (collectivistic) or their Australian culture (individualistic). Because this sort of priming technique could not, for obvious reasons, be applied to our participants, we used a family writing task (Trafimow et al., 1991) and a pronoun word search task (Brewer & Gardner, 1996). Though established cultural priming techniques, these instruments have never, to our knowledge, been used in conjunction with a TMT paradigm. Though unlikely, we must acknowledge the possibility that our cultural primes were simply not strong enough to alter participants’ cultural worldviews.

The Sensitivity of the Dependent Measures to Death and Social Isolation Primes

Because mortality and social isolation priming did not exaggerate cultural worldview defense on the EFT and the attribution task, it is important to consider whether or not the dependent measures were sensitive to the subprimes. The question of whether or not our dependent measures should, from a theoretical standpoint, be sensitive to social isolation salience has not been thoroughly addressed in the literature (Navarrete et al., 2001; Schimel et al., 1999); however, there is no theoretical reason to suspect that our dependent measures were not sensitive to the mortality salience manipulation. Past studies have demonstrated that cultural priming can alter an individuals’ cultural worldviews under mortality salience (e.g., Halloran & Kashima, 2004) and that an individual’s cultural worldviews do, in fact, influence attributional style (Morris & Peng, 1994) and performance on spatial tasks (e.g., Kuhnen et al., 2001). Given our
results, it is possible that though the dependent measures should have been sensitive to the subprimes, the suprimes themselves were ineffective in eliciting fears of death or social isolation (see section: “The Effectiveness of Death and Social Isolation Priming” (p.76) for a more detailed explanation). Even if our subprimes were completely ineffective, it is important to explore why cultural priming, independent of subprime, influenced performance on the attribution task and not the EFT.

The Sensitivity of the EFT to Cultural Priming

Interestingly, even though the cultural primes (both individualism and collectivism) effectively influenced participant performance on the attribution task, the primes did not affect participants’ scores on the EFT. This result contradicts the findings of Kuhnen and colleagues (2001) who found that a single cultural prime can influence participants’ performance on measures of spatial field dependence including the EFT. Our use of two consistent, consecutive, cultural primes should have only served to strength the effect that Kuhnen and colleagues (2001) reported.

A comparison of our procedure with that of Kuhnen and colleagues’ (2001), however, demonstrates several important differences which may help explain why cultural priming did not significantly impact performance on the EFT. In Kuhnen and colleagues’ (2001) study, participants took the EFT immediately after receiving the family cultural prime which we employed in Experiment 2 (Triafimow et al., 1991). To minimize the delay between the cultural prime and the administration of the EFT, Kuhnen and colleagues (2001) provided participants with directions for the EFT before the experiment began. In our study, not only did we fail to administer directions for the EFT prior to beginning the experiment, but participants engaged in several other relatively time-consuming tasks between the cultural primes and the EFT.
In Experiment 2, after cultural priming, all participants took four minutes to respond to our death, social isolation, or neutral subprimes. Following subpriming all participants were required to take the PANAS which served to minimize distal defenses. Half the participants then received a several minute explanation of the directions for the EFT before beginning the 23-item task. Because the attribution task and the EFT were counterbalanced to control for order effects, the other half of the participants actually received directions for the EFT only after taking five minutes to complete the attribution task.

Though results did not reveal any meaningful order effects, all participants received the EFT after a significant delay (between seven and twelve minutes). Because it is unclear how long our cultural primes remained effective, it is possible that by the time participants took the EFT, the cultural prime had seriously deteriorated. Kuhnen and colleagues (2001) discuss this danger in their methods, describing the importance of providing participants with the EFT instructions before the beginning of the experiment: “...the explanation of the EFT is somewhat complicated and could therefore have attenuated the priming effect if provided immediately before the test” (p. 401). Although we sought to prevent the primes from weakening by administering two cultural primes as opposed to one, we may not have successfully avoided deterioration effects. Not only could the cultural primes have deteriorated but the death/social isolation/TV subprimes could have interfered with the cultural primes.

Although the EFT did not prove sensitive to the cultural primes, we do know that the primes were at least somewhat effective because they did affect participants’ attributional style on the AT. It is possible, however, that the AT is simply a more sensitive cultural measure than the EFT because like the priming tasks, the AT is a semantic instrument. Even though Kuhnen and colleagues (2001) did find support for a “semantic-procedural interface model of self” which
suggests that semantic primes can elicit differences on spatial tasks like the EFT, semantic dependent measures may simply be more sensitive to semantic priming.

Directions for Future Research

Future researchers should first consider adjusting Experiment 2 by minimizing the delay between the cultural primes and the administration of the dependent measures. Although some time could be saved by explaining the EFT directions prior to the cultural primes, it would prove very difficult to couple cultural priming with death/social isolation subpriming without a significant delay between the cultural primes and the dependent measures. If the death/social isolation/neutral subprimes were administered before the cultural primes, participants would lack an assigned cultural identity to defend. In addition, if too much time elapses between the death/social isolation/neutral primes and the dependent measures, these primes may begin to deteriorate as well.

Employing subliminal rather than supraliminal priming would likely be the most effective way to minimize the time delay between the cultural primes and the dependent measures. Subliminal priming can be administered in approximately 30 seconds and because subliminally primed participants do not engage in proximal defenses, the paradigm requires no delay task. Had our attempt at subliminal priming proved effective in the preliminary part of Experiment 1, we would certainly have employed the technique in Experiment 2. Because we found the subliminal priming technique difficult to replicate, future researchers should consider contacting some of the more prominent TMT researchers to get specific technical instructions.

Methodological problems aside, future researchers with some financial flexibility should consider replicating Experiment 2 by seeking out inherently collectivistic and individualistic participants. By comparing an eastern and western sample, for example, these researchers could
avoid the methodological challenges inherent in cultural priming while still determining whether or not the TMT paradigm is sensitive to cognitive measures such as spatial field dependence and attributional style. Psychologists seeking to embark on such research could model their design off of not only the present study but the work of Kashima and colleagues (2002). Kashima and colleagues (2002) compared the effects of mortality salience on cultural worldviews in an individualistic (Australian) and collectivistic (Japanese) culture. Instead of the “self-description task” employed by Kashima and colleagues (2002) as a dependent measure of cultural worldview, researchers could include the EFT, a measure of attributional style, or other cognitive tasks. Other cognitive tasks might include a measure of self-serving bias, hindsight bias, and categorical learning (Nisbett et al., 2001).

General Discussion

In Experiment 1 we failed to show a relationship between the death and social isolation subprimes and frequency with which participants completed death and social isolation words on an ambiguous word stem task. In addition, we found that primed culture (either individualism or collectivism) had no effect by itself or as a function of subprime on participant performance on the word completion task. In Experiment 2, though we found that our cultural primes did, in fact, influence participants’ attributional style, participants in the death and social isolation salience conditions did not to cling to their assigned cultural worldview significantly more than participants in the neutral subpriming condition. Taken together, our results fail to provide any support for either terror management theory or social exclusion theory.

If nothing else, our results call into question the ease with which experimenters can reproduce the terror management paradigm. Based on the findings of both Experiment 1 and Experiment 2, we have reason to suspect that our mortality and social isolation primes may not
have effectively elicited mortality and social isolation fears respectively. It still remains unclear whether the failure of our subprimes can be attributed to a subtle methodological flaw in our experimental design or a more sweeping theoretical problem inherent in social exclusion and terror management theory.

**The General Effectiveness of Death and Social Isolation Priming**

Although TMT studies have been conducted around the country and even the globe (Pyszczynski et al., 2004), only a handful of researchers—many of whom have worked together—have published successful TMT research (e.g., Arndt, Cook, Goldenberg, Greenberg, Florian, Harmon-Jones, McGregor, Mikulincer, Pyszczynski, Rosenblatt, Schimel, Simon, Solomon, etc.). It is possible that these researchers, by virtue of their common training, engage in some seemingly inconsequential methodological practices which do actually impact their results. These methodological details may be so subtle that they seem unworthy of mention in the published versions of the studies off of which we designed our experiments. Because none of the researchers involved in either of our experiments have ever had personal contact with published TMT researchers, it is possible that we failed to replicate their clearly sensitive methodological paradigm. Though we did contact Sheldon Solomon, a prominent TMT researcher, to obtain an exact copy of the death priming instrument, it is impossible to know the exact methodology that Solomon and his colleagues employ.

Although it is difficult to guess at the nature of a possible methodological difference, because TMT relies so heavily on the existential and the unconscious, subtle methodological differences could seriously impact participant response to death primes. Despite the existence of over 170 successful TMT studies (Pyszczynski et al., 2004), the nature of publication—that most studies only reach the publication stage if they yield significant results—makes it difficult to
know how consistently the TMT paradigm is actually replicated. Perhaps, for example, any experiment conducted one week after a serious natural disaster or plane crash fails to yield significant results because participants continually suppress death thoughts after media exposure to such incidents. Even if these hypothetical experimenters chose to mention the possibility that tragic current events may have interfered with their results, none of these particular studies would reach the publication stage. No researchers, then, would be inspired to investigate whether or not the TMT paradigm is truly sensitive to major death-related news. It is a very real possibility that both Experiment 1 and Experiment 2 failed to yield significant results simply because our death and social isolation primes—for methodological reasons currently unknown to us—proved ineffective at eliciting death fears, social isolation fears, and ultimately cultural worldview defense.

In order to correct the apparent methodological flaws inherent in both experiments, future researchers should consider contacting some of the more prominent terror management and coalitional psychologists. Though complicated, the theories underlying our experiments have garnered rich empirical support in the literature, suggesting that our analyses should have revealed significant results. That we were unable to replicate the findings of past terror management and coalitional research in two separate studies suggests that we unknowingly committed a major methodological flaw. Some possible flaws and remedies have been discussed and more should be explored before researchers embark on any future related investigations.

*Theoretical Concerns and Directions for Future Research*

Although there is a great deal of empirical support for the theories underlying both Experiments 1 and 2, there are some theoretical weaknesses in the literature which must be acknowledged. The vast majority of cross-cultural research assumes that all the world’s nations
can be divided into two concrete cognitive frameworks: collectivism of the east and
individualism of the west. Countries which cannot geographically be characterized as “eastern”
or “western” tend to be forced into one of the two cultural frameworks. Navarrete and colleagues
(2004), for example, seem to assume that Costa Rican culture is characterized by collectivism
simply because a study showed “Costa Rica, Panama, and Guatemala to be the most
collectivistic out of 52 cultures studied when collectivism was defined as a rejection of
individualistic values and uncertainty avoidance in social relationships” (Hofstede, 1991 as cited
in Navarrete et al., 2004, p. 383). By rejecting the pillars of individualism or demonstrating
avoidance in social relationships, Costa Ricans are not necessarily embracing collectivism.
Future research should focus on gaining a more nuanced understanding of the collectivism-
individualism dichotomy, which may prove to be far more complicated than a simple dichotomy.
Although comprehensive research has been conducted in many East Asian countries, little
research focuses on Africa, South America, Central America, and Island nations.

The intersection between terror management theory and cross-cultural research is an
endlessly complicated one. On the one hand, cultural differences between and within nations are
highly nuanced and exceedingly complex. On the other hand, the human existential crisis
regarding our comprehension of death is equally difficult to grasp. Before terror management
theorists can make claims of cultural universality, psychologists must embark on a great deal of
cross-cultural and TMT research that extends well beyond the traditional east-west dichotomy.
References


Goldenberg, J.L., McCoy, S.K., Pyszczynski, T., & Greenberg, J. (2000). The body as a source of self-esteem: The effect of mortality salience on identification with one’s body, interest


Appendices

Appendix A

Spider-Man Poster

After September 11th, all Twin Tower imagery was removed from the Spider-Man (2002) movie. Even the subtle image of the Twin Towers reflected in Spider-Man’s eyes was removed from posters. The image below is a magnified picture of Spider-Man’s eye which holds the tower imagery.
Appendix B

Collectivism/Individualism Scale (Triandis, 1995)

We want to know if you strongly agree or disagree with some statements. If you strongly agree, enter a 9 in the blank space; if you strongly disagree, enter a 1 in that space; if you are unsure, enter a 5 next to the statement. In short, use this key:

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

1. I prefer to be direct and forthright when I talk to people.
2. My happiness depends very much on the happiness of those around me.
3. I would do what would please my family, even if I detested that activity.
4. Winning is everything.
5. One should live one’s life independently of others.
6. What happens to me is my own doing.
7. I usually sacrifice my self-interest for the benefit of my group.
8. It annoys me when other people perform better than I do.
9. It is important for me to maintain harmony within my group.
10. It is important to me that I do my job better than others.
11. I like sharing little things with my neighbors.
12. I enjoy working in situations involving competition with others.
13. We should keep our aging parents with us at home.
14. The well-being of my classmates is important to me.
15. I enjoy being unique and different from others in many ways.
16. If a relative were in financial difficulty, I would help within my means.
17. Children should feel honored if their parents receive a distinguished award.
18. I often do “my own thing”.
19. Competition is the law of nature.
20. If my classmate gets a prize I would feel proud.
21. I am a unique individual.
22. To me, pleasure is spending time with others.
23. When another person does better than I do, I get tense and aroused.
24. I would sacrifice an activity that I enjoy very much if my family did not approve of it.
25. I like my privacy.
26. Without competition it is not possible to have a good society.
27. Children should be taught to place duty before pleasure.
28. I feel good when I cooperate with others.
29. I hate to disagree with others in my group.
30. Some people emphasize winning; I am not one of them.
31. Before taking a major trip, I consult with most members of my family and many friends.
32. When I succeed, it is usually because of my abilities.
Appendix C

*Self-Esteem Scale (Rosenberg, 1965)*

Below is a list of statements that may or may not be true to you. Please rate each statement according to the scale below.

Always False  Usually False  Sometimes True/Sometimes False  Usually True  Always True

1 ------------------------ 2 ------------------------- 3 ------------------------ 4 ---------------------- 5

_____ 1. I feel that I’m a person of worth, at least on an equal plane with others.

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

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

_____ 4. I am able to do things as well as most other people.

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

_____ 6. I take a positive attitude toward myself.

_____ 7. On the whole, I am satisfied with myself.

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

_____ 9. I certainly feel useless at times.

_____ 10. At times I think I am no good at all.
Appendix D

Consent form

**Purpose and Procedure:** The purpose of this research is to learn more about how personality is associated with different modes of thought and performance on psychological tasks. Specifically, we are interested in how individual differences impact the way individuals think about and respond to different situations and complete various cognitive exercises. To investigate these questions, we have developed this experimental protocol that we ask you to complete. First you will complete a questionnaire assessing your personality. Then you will complete several reading and writing tasks, answer questions about your thoughts and feelings, followed by cognitive tasks. We plan on recruiting approximately 200 participants for this study.

**Credit:** Completing this study takes about 30-40 minutes, and you will receive 1-hour of experimental credit for your participation.

**Benefits/Risks:** Based on participant feedback in past studies using a similar procedure, it is anticipated that participants will find these tasks engaging. Furthermore, this research project involves no foreseeable risks or discomforts to you beyond those that you might ordinarily encounter in daily life. Specific benefits associated with your participation in this project include insight gained into the psychological mechanisms involved in cognition, and the type of research that examines these topics.

**Confidentiality:** The data collected in this study will be confidential and anonymous. Although you are providing your name on this form, please note this information will be kept separate from your data, it will not be connected to your data. Furthermore, your identity will not be revealed in any publication or presentation of the results of this research. In addition, the investigators will not be probing for “right” or “wrong” answers, and they are not concerned with any single person’s responses. They are interested in the response of college students as a group.

**Voluntary Nature of Participation:** Your participation in this research project is voluntary. In addition, you can decline to answer any question you don’t want to answer or discontinue your participation at any time without any penalty.

**Contact Information:** If you have any questions about this research project or your rights as a research participant, please contact Profs. Marilyn Boltz (mboltz@haverford.edu) or Benjamin Le (ble@haverford.edu). You may also address concerns to Prof. Rob Scarrow (rscarrow@haverford.edu), chairperson of Haverford College’s IRB (a committee with oversight on human subject research).

You have been informed about this study’s purpose, procedures, possible benefits and risks. In addition, you voluntarily agree to participate in this study. By signing this form, you are not waiving any of your legal rights.

___________________________________________
Your name (please print)

___________________________________________  ____________________
Signature         Date
Appendix E

Direction Sheet

Directions Sheet

Condition # __________

The following study will be used to attain base-line personality measures on a series of tasks. During the study, which should last about 20 minutes, you will be asked to partake in several activities: a free writing personality task, a proof-reading activity, another free writing task, a short questionnaire, and a word completion task. We ask that you read the instructions for each task carefully.

For the first task, you will be asked to write for 2 minutes. Next, you will complete the pronoun search for another 2 minutes. You will then complete the second 4-minute writing task and a short questionnaire followed by the word-completion task.

During each task the researcher will be in the room and will notify you when to begin and when to finish writing.

As we proceed through your packet of material, we ask that you do not skip ahead to upcoming pages or talk to other participants.

Do you have any questions?
Appendix F

*Independent/Interdependent Prime I: Trafimow et al. (1991)*

**A. Independent:**

Please use the space below to write about what makes you different from your family and friends. What do you expect of yourself? Please write for two minutes.

**B. Interdependent:**

Please use the space below to write about what you have in common with your family and friends. What do they expect of you? Please write for two minutes.
Appendix G


Please read the paragraph on the next page carefully and circle all the PRONOUNS found within the paragraph. The pronouns may be singular (e.g. he, she, me, I, you, mine, yours, etc.) or plural (e.g. we, they, our, their, etc). Please take your time.

A. Independent

I go to the city often. My anticipation fills me as I see the skyscrapers come into view. I allow myself to explore every corner, never letting an attraction escape me. My voice fills the air and street. I see all the sights, I window shop, and everywhere I go I see my reflection looking back at me in the glass of a hundred windows. At nightfall I linger, my time in the city almost over. When finally I must leave, I do so knowing that I will soon return. The city belongs to me.

B. Interdependent

We go to the city often. Our anticipation fills us as we see the skyscrapers come into view. We allow ourselves to explore every corner, never letting an attraction escape us. Our voices fill the air and street. We see all the sights, we window shop, and everywhere we go we see our reflections looking back at us in the glass of a hundred windows. At nightfall we linger, our time in the city almost over. When finally we must leave, we do so knowing that we will soon return. The city belongs to us.
Appendix H

Salience Manipulations (Courtesy of Sheldon Solomon)

The Projective Life Attitudes Assessment

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

A. Death salience

1. Please briefly describe the emotions that thoughts of your own death arouse in you.

2. Jot down, as specifically as you can, what you think will happen to you as you physically die and once you are physically dead.

B. Social isolation salience

1. Please describe the emotions that the thought of being socially isolated from your friends and family arouses in you.

2. Write down as specifically as you can, what you think will happen to you physically when you are alone.

C. Neutral Salience:

1. Please briefly describe the emotions that watching TV arouses in you.

2. Jot down, as specifically as you can, what will happen to you as you physically watch TV.

Appendix I

PANAS
This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to the word. Indicate to what extent you feel each of these emotions right now, at this point in time. Use the following scale to record your answers.

<table>
<thead>
<tr>
<th></th>
<th>Very slightly</th>
<th>a little</th>
<th>moderately</th>
<th>quite a bit</th>
<th>extremely</th>
<th>Or not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>interested</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>distressed</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>excited</td>
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<td></td>
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<tr>
<td>upset</td>
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<td></td>
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<tr>
<td>strong</td>
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<tr>
<td>guilty</td>
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<td></td>
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<tr>
<td>scared</td>
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<td></td>
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<tr>
<td>hostile</td>
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<td></td>
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<tr>
<td>enthusiastic</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>proud</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

_____ interested      _____ irritable
_____ distressed      _____ alert
_____ excited      _____ ashamed
_____ upset      _____ inspired
_____ strong      _____ nervous
_____ guilty      _____ determined
_____ scared      _____ attentive
_____ hostile      _____ jittery
_____ enthusiastic      _____ active
_____ proud      _____ afraid

Appendix J

Word Completion Task
Please complete the following by filling in letters in the blanks to create words. Write in one letter per blank. Some words may be plural.

| 1) PLA _ _ | 17) COFF _ _ |
| 2) CO _ _ SE | 18) POST _ _ |
| 3) _ ANIC | 19) _ ERMIT |
| 4) _ _ OK | 20) DREA _ |
| 5) _ OLO | 21) CL _ _ K |
| 6) MUS _ _ | 22) _ _ NERAL |
| 7) _ EAR | 23) P _ P _ R |
| 8) OUT _ AST | 24) EXCL _ _ _ |
| 9) _ _ NG | 25) K _ _ GS |
| 10) SK _ LL | 26) _ RIGHT |
| 11) TAB _ _ | 27) CHA _ _ |
| 12) SI _ _ LE | 28) S _ ARE |
| 13) _ _ ASS | 29) TRA _ _ |
| 14) HOR _ _ _ | 30) LO _ ELY |
| 15) DE _ D | 31) DE _ AY |
| 16) WAT _ _ | 32) _ OUSE |

Appendix K

*Embedded Figures Test (Witkin, 1950)*
On the following pages, you will be presented with simple images on the left and complex images on the right. Your task will be to locate and then outline the simple figure within the more complex figure.

Below is one example in which the simple figure on the left is outlined in black within the complex figure.

During this task, you will be presented with 24 similar puzzles, and you will have 5 minutes to complete as many as possible. Once you find the simple figure, outline it shape within the complex figure on the right, using the pen we have provided you.

Please note that when you are looking for the simple figure within the complex figure will be the same size and in the same orientation.

If you have any questions, please ask the experimenter at this time.

When instructed to do so, turn the page and begin.
1)  

2)  

3)  

4)
Note: Puzzle #12, deemed unsolvable, was crossed off.
Appendix L

Attribution Task (Inspired by McArthur, 1972)

This questionnaire contains a number of statements which report the occurrence of some event. After each statement, we would like you to decide, on the basis of the information given, what probably caused the event to occur. Please indicate your response in the space provided after each statement. Given that there are no right or wrong answers, we would like you to write the first thought that immediately comes to mind.

1) Tiffany helped an old lady carry groceries across the street.

2) Miranda showed up over an hour late for her appointment.

3) Markus received a "B" grade on his biology exam.

4) Mitchell went to a party and did not talk to anyone.

5) Jamie spoke enthusiastically in class.

6) Ellerie uses the computer often.

7) Pat was rude to a fellow classmate.

8) Darren smiled happily.

9) Hannah attended a talk on economic policy.