

Running head: TMT AND COALITIONAL PSYCHOLOGY

Death, Isolation, and Culture:

Testing the Validities of Terror Management Theory and Coalitional Psychology

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Abstract

Two empirical studies attempted 1) to compare the validities of terror management theory and coalitional psychology, 2) to extend past research on cultural influences on cognition, and 3) to examine the effects of mortality and social isolation salience on cognition. Experiment 1 examined the effects of cultural (collectivism or individualism) priming and salience (mortality, social isolation, or neutral) priming on performance on a field-dependence task and a causal attribution task. The results revealed no significant effects for the field-dependence task but a significant cultural priming effect on the attribution task. Experiment 2 examined the effects of cultural priming and salience priming on mortality, social isolation, or fear-thought accessibility as measured through a word completion task. The only significant effect that emerged was one of salience priming in which the neutral salience condition showed a greater accessibility for social isolation words. The implications of these results for both past and future research are discussed.

Death, Isolation, and Culture:

Testing the Validities of Terror Management Theory and Coalitional Psychology

Culture undoubtedly plays a large role in our everyday lives, creating an environment in which art, relationships, science, etc. become part of our understanding of the world. Gleitman (1991) states it well when he describes culture as a force that becomes embodied within us—a force that allows us to recognize what is shared knowledge as well as what is acceptable and unacceptable to do, think, or believe in our society. Thus, culture is something within and around us that is affected by and influences us. As humans, we find ourselves strongly adhering to our culture's beliefs, looking to its values in times of need, and opposing those who do not adhere to our own cultural ideals.

In recent years, much cross-cultural work has been done in the field of psychology to examine the specific roles that culture plays and how cultures may have formed. In the psychological sense, culture can be viewed as a “coalescence of discrete behavioral norms and cognitions shared by individuals within some definable population that are distinct from those shared within other populations” (Lehman, Chiu, & Schaller, 2004, p. 690). While this provides the generally accepted definition for culture, beliefs about how and why these behavioral norms and cognitions originated tend to vary across different theories.

One theory, Dynamic Social Impact Theory (Latané, 1996), suggests that culture arises largely from interpersonal communication. This theory concerns the social influence processes that govern a particular group of individuals. It emphasizes the idea that people socially influence one another and that this, along with communication, creates groups in which individuals living in close proximity mutually influence one another in their beliefs and

behaviors (Lehman et al., 2004). Depending on the number and closeness of individuals as well as their persuasive abilities, different groups will form and will display their own sets of norms.

Latané's theory is compelling because it provides an explanation for why certain beliefs and behaviors will form for some cultures while others will not succeed in other cultures. Latané has suggested that the ideas which get passed along and accepted are generally those that are prone to social influence; therefore, attitudes that are adaptable as well as popular will be more likely to establish themselves as beliefs, values, or norms of a specific group (Bourgeois, 2002). At the same time, however, we can see how and why certain beliefs that are not accepted by the majority may sometimes become a set of beliefs. Minority groups manage to survive despite holding minority viewpoints because the individuals who hold these similar views are able to cluster together to solidify and maintain their standing.

Dynamic Social Impact Theory provides a provocative theory for the origins of culture but is limited in its explanation for why cultures may have formed in response to human psychological needs. From an epistemological standpoint, it provides no reference to evolutionary biology or human psychological processes (Tooby & Cosmides, 1992). An accurate theory of cultural origin must account for changes in human biology—as expressed through human behavior and psychology—caused by the changing ancestral environment. It must also emphasize the specific psychological processes that have evolved because much of how human interaction manifests and is viewed is initiated by the minds of people (Tooby & Cosmides, 1992).

Thus, it is clear that an evolutionary perspective on the origins of culture is a useful framework. An evolutionary angle demonstrates the adaptability of culture in the idea that it may offer humans a safe alternative to a life of solitude, self-defense, and self-sufficiency. With

culture come mutually supportive collective behaviors through which groups of individuals can aid in one another's survival (Lehman et al., 2004). As these collective behaviors become more established and reproductive, we can see how such behaviors are also evolutionarily adaptive.

A prominent theory that explains the psychological necessity of society is terror management theory (TMT). According to this theory, culture did indeed arise as a safe alternative but not to a life of solitude. Instead, it proposes that inherent in being human is our consciousness, which has evolved for primarily adaptive reasons but from which we have derived our tragic weakness: the awareness of and anxiety over our inevitable death (Solomon, Greenberg, Schimel, Arndt, & Pyszczynski, 2003). TMT posits that the thought of death is so terrorizing that we have formed culture to act as a buffer against this potentially paralyzing fear. As one of the first, major theories to suggest a psychological necessity for culture from an evolutionary stance, TMT has received impressive empirical support and offers a unique perspective on the origins of culture.

Terror Management Theory

The fundamental bases of TMT derive from the work of Ernest Becker (1962; 1971), who believed that, because of our consciousness, humans are time-bound and able to reflect on the past, anticipate the future, and, subsequently, use this knowledge to enhance survival in the present. The fear of death came from the ability to anticipate the future, and culture was created as a solution to enhance life and make the most of the present. With the formulation of culture, humans were able to convince themselves that they were significant beings living in a meaningful reality (Pyszczynski, Solomon, & Greenberg, 2003).

TMT's assumptions are based primarily on ideas that explain how the psychological need for culture also necessitates the human need to maintain a high level of self-esteem and the

tendency to firmly adhere to one's own cultural beliefs. It is important to note the positive correlation that proponents of TMT believe to exist between one's culture and self-esteem. This belief is grounded to some extent, as theories for social identification have also suggested a link between culture and self-esteem. Social Identity Theory (Tajfel & Turner, 1986), for example, posits that humans have a tendency to identify with a group while also deriving their self-worth from the group. As cultures are comprised of groups, an individual may use his culture as a source of self-esteem as well. TMT believes that because self-esteem is a large part of an individual's group affiliation, any threat to the group may necessarily threaten the person's self-esteem.

When mortality is threatened, terror management theorists believe our self-esteem is likewise threatened, and so our anxiety levels rise. This link between self-esteem and anxiety has also been suggested previously. Empirical studies have found a negative correlation between self-esteem and anxiety levels; that is, low self-esteem is correlated with high levels of anxiety, and high self-esteem is correlated with low levels of anxiety (Solomon, Greenberg, Pyszczynski, 1991; Templer, 1971). Furthermore, a typical finding in laboratory studies is that, under the threat of failure, individuals will utilize psychological defenses to uphold their self-esteem, such as excusing their poor performance by claiming that the test they took was invalid. This suggests that individuals are sensitive to stimuli that may threaten self-esteem and will try to find ways to lessen the threat's negative effects. Because of this, it can be said that self-esteem may act as an anxiety buffer during times in which an individual feels threatened.

This notion that self-esteem may act as a buffer is referred to as the anxiety-buffer hypothesis (Harmon-Jones, Simon, Greenberg, Pyszczynski, Solomon, & McGregor, 1997), which states that if self-esteem, or any other psychological structure, acts as a buffer against

anxiety, then it should also be the case that strengthening or weakening the structure may reduce or increase anxiety about these threats (Harmon-Jones et al., 1997). Past research supports this notion. Greenberg, Solomon, Pyszczynski, Rosenblatt, Burling, Lyon, Simon, & Pinel (1992) conducted a study in which individuals were initially given either positive or negative feedback on a personality questionnaire and then put under the anxiety-provoking situation of watching a documentary on death. Their results concluded that those who were first given positive feedback and thus had increased self-esteem were less likely to report high levels of anxiety in response to watching the video about death compared to individuals in the control condition who reported higher levels of anxiety after watching the same video.

A second study by Greenberg, Solomon, et al. (1992) found that even the use of physiological measures of anxiety, such as skin conductance as opposed to self-reports, provided additional evidence for the anxiety-buffering function of self-esteem. Furthermore, a study by Greenberg, Pyszczynski, Solomon, Pinel, Simon, and Jordan (1993) compared individuals with chronically high self-esteem to individuals with chronically low self-esteem and found that individuals would respectively defend against threats to the self in the same manner as those with induced or non-induced self-esteem. Thus, sufficient evidence for the anxiety-buffer hypothesis has been found and suggests that self-esteem does provide an effective defense mechanism against certain threats such as death.

Along similar lines, terror management theorists believe that a culture helps to provide its individuals with a sense of self-esteem through the creation of standards that an individual internalizes and continuously attempts to meet or exceed; in achieving or exceeding these standards the individual will believe himself to be a person of value or worth (2004). In other

words, the individual derives his self-esteem from his culture. Therefore, TMT theorists believe that because self-esteem stems from culture, culture can also be viewed as a self-esteem buffer.

Furthermore, if the threat is one of death, looking to one's culture can specifically be viewed as an anxiety buffer against this threat. If this is the case, under conditions in which an individual feels threatened by the thought of death, the individual will cling to his culture's norms, beliefs, and values to lessen the effects of this threat. Given that an individual's worldview consists of the norms, beliefs, and values of his particular culture, and sharing these norms, beliefs, and values with others is what helps to provide the individual with a sense of order, stability, permanence, and meaning in life, it is clear that alongside self-esteem, culture plays an important, functional role in human life.

Solomon et al. (2004) believe that the existence of culture and, consequently, a cultural worldview, have evolutionary roots. Because consciousness allowed humans to be aware of themselves as well as their inevitable deaths, it was necessary to develop evolutionarily advantageous adaptations that would allow humans to survive despite this paralyzing anxiety over death; in other words, the awareness of the inevitability of death produced an instinctive desire for life (Dechesne, Pyszczynski, Arndt, Ransom, Sheldon, Knippenberg, & Janssen, 2003). The formation of culture and the adoption of cultural worldviews gave individuals the ability to symbolically immortalize themselves through the language, religion, art, etc. of their respective cultures.

Attachment Theory and Enculturation

Solomon et al. (2004) further defend their cultural worldview concept by noting that these processes develop from children's attachments to their primary caregivers. Bowlby (1969) first introduced Attachment Theory, which claims that infants, from birth, are constantly in need

of protection against threat and of having their physiological and psychological needs met; if they are not met, the infants will experience anxiety. Therefore, their primary caregivers play the crucial role of protector and provider, comforting infants and taking care of them in times of need. The infant then becomes attached to the caregiver, and this attachment fosters the child-caregiver relationship.

While Solomon et al. (2004) describe this relationship as primarily biologically-based because needs have physiological and psychological origins, they note the important transition from biological needs to cultural needs as the child transitions into adolescence and, eventually, adulthood. As the child becomes more autonomous and less dependent on the parents for the same physiological or psychological needs that he had as an infant, he is simultaneously socialized by his parents and has instilled in him many of the cultural standards to which he will need to adhere in order to survive and therefore be successful in society. As children, individuals will come to equate good behavior with receiving rewards and praise from parents and will feel safe in the process; on the other hand, they will learn that bad behavior elicits punishment or disdain, causing children to feel anxious or insecure. In this case, children will equate being bad with possible parental abandonment. This association between rewards and punishments in the eyes of their parents later transfers to the child's search for approval from society and to the desire to uphold the standards of their particular cultural worldview. It is the attachment to this worldview as an adult that is the point of interest for research on TMT.

The Mortality Salience Hypothesis

The idea has been put forth, then, that if strengthening one's self-esteem through cultural worldview defense acts as a buffer against the fear of death, then the mere mention of death should increase one's need for protection against this threat of death. Specifically, if mortality is

made salient, the need for psychological structures like self-esteem will increase (Harmon-Jones et al., 1997). Numerous empirical studies have been performed to test this mortality salience hypothesis, primarily with the same conclusion: mortality salience does in fact increase an individual's need to bolster his self-esteem and consequently increase what Solomon et al. (2004) refer to as the individual's worldview defense. In other words, individuals faced with the thought of death will attempt to use their own norms, beliefs, and values to make certain judgments, assessments, and ratings about people and ideas to ease their anxiety and bolster their self-esteem.

This theory would also suggest that if self-esteem stems from an individual's importance in his world and, if worldview defense truly does function to buffer anxiety under thoughts of death, then individuals with high self-esteem would rely less on cultural worldview defense when under situations of stress. Harmon-Jones et al. (1997) tested this theory by manipulating self-esteem through positive or neutral feedback on a bogus personality test. They found that, if first primed with thoughts of death, participants with increased self-esteem were less likely to engage in cultural worldview defense than those who did not have their self-esteem increased. Thus, evidence for the mortality salience hypothesis was found.

Methods of Mortality Salience

The technique used to induce mortality salience has primarily required individuals to briefly describe the emotions their own death arouses in them and what they believe will happen to them as they physically die (Greenberg, Pyszcznski, Solomon, Rosenblatt, Veeder, Kirkland, & Lyon, 1990). The control group is asked the same question but the word death is substituted with the word television. These questions are generally disguised as a personality questionnaire embedded among other personality measures.

Other methods of inducing mortality salience have been found to be effective as well, including the use of death anxiety scales (Mikulincer & Florian, 1997), showing graphic automobile accident clips (Nelson, Moore, Olivetti, & Scott, 1997), asking true or false questions to assess fear of death (Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989), and physical proximity to a funeral home (Pyszczynski, Wicklund, Floresku, Gauch, Koch, Solomon, & Greenberg, 1996). Despite the different natures of these various measures, all manipulations of mortality salience have proven to be effective and consistent in producing the mortality salience effect of cultural defense.

The Dual Defense Model: A Cognitive Explanation

Many defense mechanisms have been proposed to occur under the threat of death as a way to explain mortality salience effects. Some proposed explanations are instrumental, in which individuals may attempt to physically avoid actual threat, e.g. by getting medical treatment when feeling sick or braking in order to avoid a possible accident. Others include cognitive defenses, such as avoidant thinking to distract oneself from the problem (Houston & Holmes, 1974), reducing one's perception of the intensity of the threat (Bennett & Holmes, 1975; Houston & Holmes, 1974; Lazarus, 1966), emphasizing one's temporal distance from the problem (Chaplin, 2000), or denying one's vulnerability to the threat (Greenberg et al., 1993; Jemmot, Ditto, & Croyle, 1986; Quattrone & Tversky, 1984).

While all of these mechanisms act as immediate and temporary solutions to the problem of death, TMT is the only theory that attempts to resolve the problem by focusing on how culture acts as a buffer against this fear and using underlying cognitive mechanisms to explain responses to this fear. Without understanding the cognitive processes behind the idea of terror management, one cannot make an accurate assessment of its validity. In looking at many of the

aforementioned studies, for example, in most instances the mortality salience effects occurred after a delay, such as having the participants fill out a questionnaire or perform a task between the independent and dependent measures. Therefore, it is safe to assume that delay and, thus, underlying cognitive processes do play an important role in TMT.

TMT's main claims deal with unconscious mechanisms that are moved to action when we are faced with the threat of death. These unconscious processes, then, are what must necessarily cause these effects, suggesting that an individual's fear of death acts as a motivating force regardless of whether he is aware of it or not. Pyszczynski, Greenberg, Solomon, and Hamilton (1990) use an appropriate analogy when trying to explain this point. They compare terror management processes to an individual's desire to go to graduate school: both are motivating forces, and though the issue is not constantly in focal awareness, there is still an implicit knowledge of it being there. At the same time, bringing the issue into focal awareness leads to bolstering one's cultural worldview for those threatened by thoughts of death or putting greater effort into academic work for those students who are working towards going to graduate school.

Based on the studies performed on mortality salience and the fact that many include a delay or distracter task that may enhance the mortality salience effects, it has been suggested that we have two distinct psychological defenses that come into play when mortality is made salient: proximal defenses and distal defenses. Proximal defenses function as a direct and rational resistance to reduce our conscious awareness of death. The primary defense that occurs here is the active suppression of death thoughts after mortality has been made salient. Distal defenses come after, once the problem of death has been suppressed and is out of our focal attention yet is still cognitively accessible. It is through distal defenses—in having already suppressed thoughts

of death but now having them again become accessible below the level of awareness—that we come to bolster our worldview and favor those who support our view while disfavoring those who do not. The Dual Defense Model of TMT implies that these two types of defenses are necessary when faced with the threat of death; therefore, the threat of death will not be overcome unless distal defenses are employed—in other words, unless worldview defense occurs.

The Necessity of Delay and Distraction: Empirical Evidence

Several studies by Greenberg, Pyszczynski, Solomon, Simon, and Breus (1994) have tested the role of delay and distraction in mortality salience conditions. In their first study, they had two groups of American participants, one in a mortality salient condition and one in a control condition, rate a foreign student who had written either a pro- or anti- American essay. Relative to the control group, those in the mortality salience condition showed a strong preference for the foreign student when they were told he had written a pro-American essay. When told that the foreign student had written an anti-American essay, the experimental condition strongly disfavored him relative to the control group. However, in an additional condition in which participants were given time to express their deepest fears about death after the mortality salience treatment, the experimenters found that the ratings for the pro-American foreign students significantly decreased when compared to the standard mortality salience condition in which no expression of fear took place. The experimenters concluded that mortality salience effects seemed to be much stronger in cases where death had been subtly presented.

A second study by Greenberg et al. (1994) extended this finding by adding three mortality salience conditions in addition to the standard mortality salience manipulation. These conditions required participants to engage in different tasks after the usual mortality salience treatment: one condition consisted of a three-minute distracter task in which participants

performed a word search puzzle with television-related words; another was a continued death focus condition in which participants were asked to work on a word search puzzle that contained death-related words; and a final condition in which they were asked to engage in free thought and write down whatever thoughts came to mind. The researchers found that the participants in the distracter and free-thought conditions produced a stronger mortality salience effect than those in the continued death focus condition, suggesting that a delay after death salience is needed in order to successfully suppress thoughts of death and later have death thoughts become more accessible.

One last study performed by Greenberg et al. (1994) tested whether the effects found in their previous studies were actually due to the extent to which the participants focused on death in conscious awareness. An alternative explanation could be that the amount of time that participants were able to focus on mortality gave them enough time to reach a resolution of their problem of death. In order to test this, the experimenters included a mortality salient continued death-focus condition similar to the one used in the previous study and two additional mortality salient conditions in which the amount of death focus was held constant while the timing of the death focus was varied. Specifically, for these latter conditions, one required participants to complete a death puzzle followed by a distraction puzzle after the mortality salience treatment, and the second had the participants receive the distraction puzzle first and then the death puzzle after the mortality salience treatment. Results found that mortality salience effects were most pronounced in the condition in which the participants were given the death puzzle first and then distraction puzzle before the dependent measures were assessed. These findings show that mortality salience effects are indeed sensitive to the extent to which death-related thoughts are out of focal awareness, and not to the amount of time in which individuals think about death.

The concept of delay and suppression of thought has been examined in other research to support the idea that death thoughts do, in fact, become more accessible after a delay because distal defenses are being used. Studies by Fiske and Taylor (1991) and Srull and Wyer (1980) show that the accessibility of primed concepts generally decreases over time, making it safe to assume that when primed with death, the accessibility of any death-related thoughts should gradually decrease with time but then eventually increase to a hyper-accessible state, at which point individuals will employ distal defenses and begin to display mortality salience effects. Similarly, other cognitive research by Martin and Tesser (1993) find that if individuals are blocked from their ego-relevant goals, they will experience an increase in the accessibility of goal-related thoughts after a delay and distraction. Specifically, they note that individuals will initially suppress goal-related thoughts to avoid any negative effects of the thoughts but that, over time, as they naturally relax in their suppression, the thoughts will inevitably become more accessible. However, only after the delay will the thought-accessibility increase.

Greenberg et al. (1994) pursued this idea by testing it in a laboratory setting. The researchers measured the accessibility of death thoughts through participants' performance on a word completion task that included six fragments that could be completed with a neutral or death-related word (e.g., coff__ , which could be completed as "coffee" or "coffin," or sk_ll, which could be completed as "skill" or "skull"). They primed participants with death and then asked them to perform the word completion task either immediately after the mortality salience treatment or after a delay which involved reading a neutral passage. Their results indicated that those who performed the word completion task after a delay were more likely to generate death-related words than those who performed the task immediately after the mortality salience induction.

These results support the notions of proximal and distal defenses and that terror management does occur when the issue of death is high in accessibility yet beyond of focal awareness. However, it brings up the question of the role that sufficient cognitive resources play in the topic of mortality salience. If sufficient resources are necessary, what effects would occur from increasing cognitive load as a way to deny individuals these crucial resources?

Arndt, Greenberg, Solomon, Pyszczynski, and Simon (1997) examined the role of active suppression of thoughts under mortality salience by looking at effects of an increased cognitive load due to a cognitively taxing task. Their results showed that individuals' accessibility of death-thoughts was low immediately after mortality salience and then slowly increased over time, but this occurred only in conditions in which participants were not under high cognitive load. They also found that death-thought accessibility was high immediately after mortality salience but only in conditions in which participants had been induced with a high cognitive load. Thus, they concluded that there is indeed an active suppression of death-related thoughts, due to the negative nature of these thoughts.

If the past findings regarding death-thought accessibility and its relation to worldview defense are in fact reliable, it would be expected that under a cognitive load, worldview defense would increase immediately after mortality salience. Arndt et al. (1997) tested this hypothesis. They found parallel results to their previous study: those who were in a high cognitive load condition were more likely to favor a pro-American individual immediately after mortality salience. These results can be explained in the same manner as their previous findings in that participants in the high cognitive load condition were deprived of the necessary cognitive resources to suppress their thoughts of death. Because of this, they were able to bypass proximal

defenses and administer distal defenses, as their death-thoughts were high from the beginning instead of being suppressed and then becoming hyper-accessible later on.

The Role of Consciousness in Mortality Salience Effects

Up to this point, mortality salience effects have been found to increase under conditions in which death thoughts are made accessible but are not in focal awareness. What role, then, does consciousness play if individuals do not need to be consciously aware of their death thoughts in order to produce mortality salience effects? Previous research with subliminal priming has found that stimuli whose duration is just below the threshold for conscious awareness generally serve to increase the accessibility of thoughts related to these stimuli. This in turn can influence our behavior, affect, or attitudes (Kilhstrom, 1987; Murphy, Monohan, & Zajonc, 1995).

Using this knowledge, Arndt et al. (1997) predicted that subliminally priming individuals with death would increase the accessibility of death thoughts and thus produce mortality salience effects immediately after this prime. In this case, individuals would no longer need to actively suppress their death thoughts because they would be conscious of them to begin with. Subliminal priming, similar to inducing cognitive load, would be predicted to bypass proximal defenses and create a situation in which individuals would need to use only their distal defenses to resist thoughts of death. The researchers found just that: participants who were subliminally primed for thoughts of death were more likely to favor the foreign, pro-American writers and also show high death-thought accessibility immediately after the prime than those in the control condition. In addition, to validate their findings, the researchers used another aversive, death-related word (“pain”) in a similar condition and found that though the subliminal prime led to greater accessibility of pain-related words, no worldview defense was found thereafter. Thus, these studies indicate that it is only the subliminal death salience that increases worldview defense.

Mortality Salience and Increased Worldview Defense

In reviewing the cognitive processes that take place during mortality salience, it is now clear why one's general cultural worldview comes under defense when mortality has been made salient. The notion of cultural worldview defense stems from the idea that much of what we consider a part of our identity derives from the culture in which we have been raised. While it has also been noted that our self-esteem is derived from our culture, it is assumed that our self-identity comes from our culture as well, as people often show pride in calling themselves American, French, Italian, or other nationalities. The term "cultural worldview" generally refers to one's ingroup—whether it be a country of origin, a religion, a political view, or anything else that provides an individual with a sense of belonging.

A number of aforementioned studies have provided empirical evidence for the notion that those for whom mortality is made salient will engage in worldview defense. This defense is often measured by having individuals rate essays that have allegedly been written by someone who either supports or opposes an individual's worldview. In many of the previous studies performed in America, for example, individuals will read either a pro- or anti-American essay and be asked to rate their attitudes about the author of the essay. Relative to a control group, those in the mortality salience conditions have been found to rate the writers very differently.

One study performed by Greenberg, Pyszczynski, Solomon, Rosenblatt, Veeder, Kirkland, and Lyon (1990) had Christian participants evaluate other Christian or Jewish individuals either in a mortality salience or control condition. They found that participants in the mortality salience condition were more likely to rate other Christians more favorably than Jewish individuals when compared to the control condition, in which ratings for the Christian and Jewish individuals did not significantly differ. A subsequent study showed that American

participants increased their favorability toward a pro-American author and increased their disdain toward an anti-American author compared to a control condition. Another study conducted by Greenberg, Simon, Pyszczynski, Solomon, and Chatel (1992) found that mortality salience led liberal participants to respond more favorably to someone who challenged their liberal views because their own views stressed the value of tolerance toward others.

While many studies have examined the role of mortality salience in the negative judgment of others who oppose one's worldview, additional findings indicate that mortality salience also leads to positive judgments of those who uphold one's worldview. One study performed by Rosenblatt et al. (1989) found that those in mortality salience conditions were not only more likely to give harsher punishments to those who opposed their worldviews but were also more likely to give higher rewards to those who upheld them.

Other studies have taken these worldview defense findings and extended them to the area of stereotype research. Because worldview defense implies a favorable impression of one's ingroup, it is predicted that a disfavorable view of outgroup members occur as well. Research by Fein and Spencer (1997) suggests that stereotyping may serve as a form of self-esteem maintenance because it allows individuals to reaffirm their own placement in a group while recognizing the characteristics of outgroup members that set them apart from the ingroup. Schimel, Simon, Greenberg, Solomon, Pyszczynski, Waxmonsky, and Arndt (1999) performed several studies on mortality salience effects on stereotyping and found that when reminded of death, participants in fact used more stereotypes when thinking of members of different social groups. Specifically, they found that mortality salience caused American students to use more stereotype-consistent traits to describe Germans, and that when faced with a stereotype-consistent or -inconsistent African American student, participants were more likely to favor the

stereotype-consistent student because it fell in line with their view of how outgroup members were supposed to behave. In addition, they found that mortality salience increased participants' desire to explain stereotype-inconsistent behavior related to sex roles. These studies taken as a whole reveal the complexity of mortality salience effects and how they produce bias against outgroup members, increase the use of stereotypes, and influence how individuals interpret stereotype-inconsistent behavior.

Mortality Salience and Judgments of Moral Transgressions

Another line of research testing the mortality salience hypothesis has focused on judgments of moral transgressions. Rosenblatt et al. (1989) conducted an experiment using 22 municipal court judges as participants. Judges were assumed to have worldviews that revolved around upholding the law and making rational decisions based on these laws. Some judges received personality questionnaires in which a mortality salience measure was embedded while others received no such personality measure. Afterward, all judges were presented with a hypothetical legal brief involving a prostitute who had a lack of ties to her community. The judges were then asked to set a bond for the defendant, thereby requiring them to pass judgment on the prostitute. Such a judgment was important to examine because of the nature of the case; prostitution can be viewed as a crime that goes against certain values of most individuals in the American culture. The results showed that relative to the control group, judges in the mortality salience condition tended to give significantly higher bond judgments.

Rosenblatt et al. (1989) replicated these findings in a second study that relied on a sample of undergraduate students. The experimental condition involved the same procedure, but the control condition involved giving participants a personality questionnaire in which parallel questions with neutral content were administered instead of the mortality salience questions. The

experimenters also assessed participants' attitudes about prostitution before the mortality salience questionnaire. Results showed that, like the court judges, students were more likely to give a higher bond to the prostitute if they were under the mortality salience condition, but only when they held negative views of prostitution to begin with.

Florian and Mikulincer (1997) extended these findings by conducting a study in which different types of moral transgressions were assessed. Specifically, they looked at participants' scores on the Fear of Personal Death Scale (Florian & Kravetz, 1983), which assessed both interpersonal (e.g., fear of loss of social identity or fear of consequences to family and friends) and intrapersonal (e.g., fear of loss of self-fulfillment or fear of self-annihilation) aspects of death, to see how this influenced their ratings on the severity of specific interpersonal (e.g., damaging the victim's social identity through rejection or alienation) or intrapersonal moral transgressions (e.g., damages to the victim's ability to fulfill personal projects), as well as the severity of the punishment that should be administered. Their results indicated that mortality salience led to higher ratings of severity and punishment. In addition, the greatest increase in severity and punishment occurred when participants' specific concerns about death—whether interpersonal or intrapersonal—matched the nature of the moral transgression.

In sum, when mortality is made salient to an individual, certain judgments are made and influenced primarily by one's cultural viewpoint. Those behaviors that go against societal norms or values are viewed as unfavorable, and those that adhere to societal norms or values are considered favorable.

Mortality Salience and Behavioral Effects

While all of the studies previously mentioned show attitudinal assessments as a result of mortality salience, other studies have shown that behavioral changes also occur. Greenberg,

Simon, Porteus, Pyszczynski, and Solomon (1995) conducted a study in which two groups of students, one mortality salience condition and one control condition, participated in two problem-solving tasks. In order to succeed in the tasks, participants were forced to engage in culturally inappropriate uses of cultural icons, such as a flag or crucifix, or the use of other neutral objects. They found that those who were in the mortality salience condition took longer to solve these problems, found an increased number of alternative solutions, and reported feeling more reluctant and uncomfortable in using the cultural icons than those in the control condition.

In another study examining mortality salience and aggression against those who opposed one's worldview, McGregor, Lieberman, Greenberg, Solomon, Arndt, Simon, and Pyszczynski (1998) split participants into mortality salience and control conditions. Both groups were given an essay to read written by an individual whom they would later meet. Half received an essay that advocated the individual's own political views and the other half received an essay that opposed it. Afterwards, participants were told they would be administering hot sauce to the writer of the essay in the second part of the study that tested consumer taste preferences. Results found that those in the mortality salience condition administered significantly more hot sauce to those whom they believed to have opposing political views from their own.

Still other studies find behavioral effects of mortality salience as well. Ochsman and Mathy (1994) found that German participants sat closer to a German confederate and farther from a Turkish confederate when under the mortality salient condition. Jonas, Greenberg, and Frey (2003) found that people tend to donate more money to charities, particularly ones which benefit their ingroup, when under mortality salience. Thus, these empirical findings help to further support the effects of mortality salience in that cognition is not only influenced but behavior as well when individuals are exposed to the idea of death.

Individual Differences in Mortality Salience Effects

Harmon-Jones et al. (1997) found in a previously mentioned study that enhanced self-esteem influenced mortality salience effects. In a second study, the experimenters compared individuals with moderate dispositional self-esteem to those with high dispositional self-esteem and found that those who had moderate self-esteem responded similarly to those who were given neutral feedback in the first study; those with chronically high self-esteem, however, responded similarly to those with enhanced self-esteem. Arndt and Greenberg (1999) performed a similar study and replicated these findings.

While self-esteem is one factor that may vary within individuals and thus influence the extent to which mortality salience affects worldview defense, it has been shown that other psychological resources related to self-esteem produce differences in mortality salience effects. Florian, Mikulincer, and Hirschberger (2001), for example, found that commitment to a relationship can act as a buffer against threats to mortality while, at the same time, reminders of relationship problems can increase the accessibility of death thoughts. Thus, these findings suggest that those who are in a committed close relationship may, in effect, be less motivated to shield against death when death is made salient since their close relationship allows them to affirm their importance in the world. The fact that death-thoughts increase with thoughts of relationship problems propose an association between death and relationship dissolution, which suggests an explanation for why relationship breakups are so painful to experience.

Other findings have demonstrated gender differences in mortality salience effects. Specifically, a study by Arndt, Greenberg, & Cook (2002) showed that men and women's cultural worldview constructs became more accessible under mortality salience. Their results showed that men are more likely to have increased accessibility to nationalistic constructs while

women are more likely to have increased accessibility to romantic constructs. Other research by Wisman and Goldenberg (2005) showed that men, but not women, are more likely to desire offspring under morality salience. These findings were explained by the notion that offspring may provide a form of immortality for both men and women, but women view the having of offspring as a threat to other methods of terror management, such as having a successful career. This hypothesis was in fact supported in a subsequent study in which women were led to believe that they would be able to have offspring as well as maintain a career in the process; in this case, women were more likely to desire a larger number of offspring.

Still other studies have shown that deficits in certain psychological resources may help to increase mortality salience effects. Support for this has been found in studying individuals who are high in neuroticism (Goldenberg, Pyszczynski, McCoy, Greenberg, & Solomon, 1999) or those who are mildly depressed (Simon, Greenberg, Harmon-Jones, & Solomon, 1996). In both cases, participants who displayed these psychological deficits showed an increase in mortality salience effects, suggesting certain psychological resources are necessary to combat anxiety-provoking death thoughts.

Alternative Explanations

Despite this overwhelming support for mortality salience and thus TMT, many alternatives have been suggested to explain why these effects occur. One such explanation is that it is not merely the thought of death but the physiological arousal that comes from it--a phenomenon known as excitation transfer (Zillmann, 1971)--which causes people to respond in exaggerated ways to certain stimuli. A study performed by Rosenblatt et al. (1989) tested this hypothesis using physiological measures. Even when measuring skin conductance, pulse rate,

and peripheral blood volume, the experimenters found no differences among the experimental and control conditions.

Other studies have suggested that the effects found from mortality salience pertain to negativity or anxiety-provoking aspects of death as opposed to death itself (e.g. that it brings on negative affect or that it emphasizes a lack of control in life). Greenberg, Simon, Harmon-Jones, Solomon, Pyszczynski, and Lyon (1995) conducted a series of studies in which other negative or anxiety-provoking events were used in comparison to mortality salience conditions. Such events included speaking in public, social exclusion, meaninglessness, failure, pain, thinking about the death of another person—and all were found to produce no effects similar to those of mortality salience. Thus, this research suggests that it is solely the concern over one's own impending death that influences the way we respond to such things as moral transgressions.

Criticisms of TMT

With so much empirical evidence for TMT, it is understandable that it has become a prominent theory for death in the area of social psychology. At the same time, many criticisms have been directed toward TMT, and it is necessary to acknowledge their points before accepting the validity of the theory. Several of the many concerns with TMT will be discussed, as well as the responses given by supporters of the theory.

One criticism is that TMT cannot be viewed as an evolutionary theory. Specifically, critics (e.g., Buss, 1997) point out that TMT is not consistent with evolutionary theory's focus on reproduction over survival. Evolutionary theory proposes that humans are motivated toward self-preservation only to the extent that it helps to preserve their genes (Dawkins, 1976). Therefore, TMT as an evolutionary theory would not work because its main focus is instead on the adaptiveness of the motivation to avoid anxiety over death.

The terror management theorists (Solomon, Greenberg, Pyszczynski, 1997) counter this notion by pointing out that TMT is in fact compatible with evolutionary theory because, at a basic level, humans and other animals must in fact ensure their survival; without doing so, they would not reach the age to reproduce or be able to live long enough to successfully reproduce. In addition, they argue that while sexual reproduction is important to survival, sex itself is a biological drive rather than a psychological one. They note the ways in which sex may be considered a psychological drive only because culture may influence our view of sex by labeling it a pleasurable activity, a way to express love, enhance self-esteem, etc. In that sense, it is the only biological drive—vs. food, warmth, etc.—that does not contribute to an animal's survival. In addition, because culture may be viewed as an influence through which certain sexual motives are expressed or suppressed, TMT can be considered the ideal theoretical context in which to examine these influences.

Another common criticism concerns the fact that many people choose to die—through suicide—rather than to live. Because this is sometimes the case, many have proposed that TMT, therefore, cannot possibly be valid. A theory that grounds itself on the idea that people are motivated to avoid death and desire life would not do well in responding to how some individuals instead choose death because they consider their lives too physically or psychologically painful to endure any longer. In these cases, the victims may be considered unafraid of death because of their ability to confront it.

The response to this concern by Solomon et al. (1997) gives critics a different view of suicide. Rather than viewing it as evidence against TMT, the researchers propose that suicide should be regarded as a pathology within society—in other words, irregularities that occur but do not necessarily invalidate the idea that “normal” individuals are in fact avoiding death. They

suggest that suicide, in actuality, may be a consequence of an extreme fear of death and not of a lack of fear. These individuals' behavior may be seen as evidence of a breakdown of the normal cultural-anxiety buffer; their fear of death combined with their feelings of great meaninglessness and purposelessness push them, often literally, over the edge. At the same time, Solomon et al. (1997) emphasize that suicide is not as common as we would think considering the many other people who experience great suffering do not choose to take their own lives. This fact does, however, suggest that the tendency toward suicide is indeed a societal illness or pathology and not a normal, common occurrence.

Criticisms from Coalitional Psychology

While TMT proponents have generally given sufficient responses to these criticisms, others have gone unattended. These criticisms come from a group of researchers who propose their own explanation of why these so-called mortality salience effects occur. Navarrete, Kurzban, Fessler, and Kirkpatrick (2004) argue that TMT itself cannot rest on the assumption that the human fear of death stems from survival instincts. They note that all animals have survival instincts yet no animals have evolved the human-like capacity to foresee their own deaths. This may, understandably, be regarded as a weak argument because many human-specific mechanisms have evolved over time which differentiates humans from other animals. Humans, unlike other animals, have evolved a strong propensity towards language and have become rational thinkers. These characteristics may have evolved over time from similar survival mechanisms in animals, but evolution has nonetheless greatly increased the gap between human and animal capabilities, making Navarrete et al.'s argument irrelevant.

Navarrete and colleagues and other critics (Buss, 1997) have noted that the supporters of TMT claim that humans have evolved terror management as an adaptive mechanism against the

overarching fear of death. The critics point out that TMT is supposed to function for one very general purpose despite the fact that so many other adaptive problems which deal directly with actual survival or reproduction need to be solved on a daily basis. In other words, these critics argue that TMT is too focused on anxiety regulation and does not focus enough on actual problems of survival; it, therefore, cannot be considered a true evolutionary theory. While evolutionary adaptations are meant to solve specific adaptive problems—acquiring food, fighting off predators, finding and attracting mates, etc.—TMT proposes a host of psychological mechanisms that are meant to ward off only the anxiety of death. In an example to show the simplicity of TMT, Navarrete et al. (2004) reason that, in the situation in which an individual sitting on train tracks might feel some relief from thinking about his worldview as he hears the train coming, the fact that he will die if he does not move is not addressed. Furthermore, evolutionarily speaking, it would have made more sense to naturally select against those who developed this anxiety of death rather than to select for it and create an entire separate set of mechanisms to aid it in its development.

Coalitional Psychology as an Alternative Explanation

These same researchers propose an alternative to TMT, one they claim better explains mortality salience effects. Such a theory rests on the importance of social networks, interpersonal attachments, and coalitions—all of which have associated, adaptive mechanisms. Navarrete et al. (2004) specifically derive this coalitional psychology stance from research that looks at the adaptability of the creation and adherence to social norms as these are markers of an efficient group system (McElreath, Boyd, & Richerson, 2003). This formation of groups and the internalization of norms may have been evolutionarily adaptive for survival, and humans may

have naturally selected within themselves for this pro-normative behavior so that one's group would be looked to in times of need—including situations in which death is made salient.

Additional reasoning for these beliefs comes from the notion of a shared reality (Hardin & Higgins, 1996) and how this may affect how individuals influence one another. As humans are inherently communicative and interpersonal creatures, one way in which they enhance these personal connections is through a shared reality, or the affirmation of mutual understanding and common values. Also, as is human nature, individuals will tend to present themselves in ways which they believe will be acceptable and likeable by others (Asch, 1955; Baumeister & Leary, 1995; Schaller & Conway, 1999). Navarrete et al. (2004) go on to note that, if individuals continuously alter their interpersonal interactions with others in response to group-oriented goals, then, as a default, their impression management motives may in turn alter the way they perceive and evaluate ingroup members (Schaller & Conway, 1999).

Thus, coalitional psychology explains mortality salience effects not as managing the fear of death but as the altering of social cognitions in response to aversive stimuli. In this case, aversive stimuli include but are not limited to thoughts of death. In addition, the proponents of coalitional psychology consider the TMT concept of worldview defense as merely another form of altering social cognitions in favor of a pro-normative stance in relation to one's culture or ingroup. While TMT claims only mortality salience causes these effects, this group of researchers believes that any stimuli which pose adaptive problems for individuals in their immediate environments or that have consistently been addressed by involving the support of others will also produce the same worldview defense responses.

Thus, these findings would explain why previously tested stimuli such as pain, negative affect, or speaking in front of a group, do not produce mortality salience effects. These stimuli do

not directly pose a problem that may necessarily have been solved with the support of a group in our evolutionary past. In regards to mortality salience, they explain these effects by noting that death in the ancestral environment could likely have been avoided with the support of allies; thus, inflated feelings for increased social support and, consequently, stronger group ideology, would have been advantageous for survival.

Theoretical Support for Coalitional Psychology

Many related theories give support for coalitional psychology's ideas about tending towards one's group when faced with aversive stimuli. In social psychology research, it has been suggested and well accepted that humans even under normal, secure circumstances have an inherent need for both belongingness and affiliation (Erber & Erber, 2001). Both the need to belong and the need to affiliate have been found to provide different benefits for people.

As previously noted, Attachment Theory (Bowlby, 1969) gives us a fundamental example of people's innate desire for affiliation. Infants, long before they can well understand who their caregivers are, are instinctually able to recognize the advantages of having their primary caregiver with them in times of need. For later stages in life, Social Identity Theory (Tajfel & Turner, 1986) provides an explanation for people's tendency to come together with others in order to validate their reality. A shared common reality creates a common social identity and within this group, one continuously validates cognitions and beliefs through mutual social influence. Thus, the group offers validation of the self as well as validation of the self as part of the group. Several laboratory studies examining the effects of arbitrarily assigning participants to groups have found that individuals will quickly develop loyalty to their particular group while also discriminating against those who are not in their group (Sherif, Harvey, White, Hood, & Sherif, 1961; Brewer, 1979).

Several theories for affiliation have also been set forth to explain the human tendency to come together in groups as a way to resolve the uncertainty we have about our own realities. General social psychological theories such as Festinger's (1954) Social Comparison Theory suggest that, similar to our need for belongingness, our desire to compare ourselves to others physically and socially is a way of getting around the ambiguity in the world around us. An empirical study by Shachter (1959) tested the human tendency toward affiliation while under the threat of uncertainty. The experimenter told half of the subjects they would later receive harmless electrical shocks while the other half were told they would receive painful shocks. Before receiving the shocks, the experimenter then gave each participant the option of waiting in a room either by himself or with another person. Results showed that relative to the harmless shock group, those who were in the painful shock group were more likely to choose to wait with another person than by themselves. Aside from the uncertainty of the shocks, it must be noted that the group that was to receive the more harmful shocks were the ones that chose to have a waiting room partner and thus were more likely to experience anxiety. These results help to support coalitional psychology's view that those under aversive stimuli may tend towards others—and more specifically, one's ingroup—for protection.

In addition, coalitional psychology proposes different functions and origins of self-esteem than does TMT. TMT views self-esteem as a buffer against anxiety because individuals derive their self-esteem from their culture. In this sense, self-esteem comes not from inclusion in the culture but from feeling worthwhile and contributing to the culture in ways that will give them symbolic immortality. On the other hand, coalitional psychology supporters believe self-esteem to derive from culture because one's inclusion in a group demonstrates access to

coalitional support when it is needed as well as acceptance from the group. In these ways, the fundamental differences between coalitional psychology and TMT can be seen.

Empirical Support for Coalitional Psychology

Navarette et al. (2004) have performed several empirical studies providing evidence for their coalitional psychology theory. Their methodology relied on two particular primes they believed called for group support: a theft salience and a social isolation prime. In the first case, the researchers explained that individuals have evolved mechanisms that cause us to procure and maintain resources. With the help of social networks and groups, the procurement and maintenance of these resources is increased; thus, the desire for group support is predicted to be activated when the possible loss of personal property is made salient. In terms of social isolation from groups, individuals have evolutionarily succeeded with the help of groups because of their roles as protectors against enemies, groups from which to find mates, and providers of access to food and shelter, etc. Therefore, it is only a natural tendency to be motivated towards inclusion in groups, especially in cases where an individual finds himself alone and possibly excluded from the group. The researchers thus predicted that individuals primed with threat to their personal property or social isolation from important social relationships would respond in similar ways to those in previous TMT studies who were primed with death.

In their first study, the researchers tested this hypothesis using mortality as well as theft and social isolation salience. Participants' personalities (through a Right-Wing Authoritarianism Scale from Altemeyer, 1998; and a patriotism scale by Pratto, Sidanius, Stallworth, & Malle, 1994) were assessed followed by the experimental and control conditions, and finally the American participants' judgments of a pro- or anti-American essayist were assessed. Results showed that participants in the theft and social isolation salience conditions responded identically

to those in the mortality salience condition. Those high in authoritarianism, and thus less open to those with dissimilar views, rated the anti-American essays more unfavorably; on the other hand, those who were low in authoritarianism and thus more tolerant of those with dissimilar viewpoints were more likely to rate the essayist in a way that was more favorable towards them despite their differing views. The researchers noted that terror management theorists would have explained the mortality salience findings by arguing that the individuals were merely bolstering their worldview. However, because the same pattern of results was found for both the theft and social isolation salience conditions, the coalitional psychologists make the case that when under these specific types of threats, individuals will show their support for their group by conforming to the ideologies of that group.

A second study by Navarrete et al. (2004) accounted for any death-thought accessibility that may have occurred from the theft and social isolation saliences. They replicated Arndt et al.'s (1997) study in which the primes were administered and then a word completion task was completed after a delay. The experimenters found that neither theft nor social isolation salience increased death-thought accessibility. These research findings, therefore, begin to provide some evidence against the popular TMT claims.

Cross-Cultural Research

Despite these intriguing findings from supporters of both coalitional psychologists and TMT, the majority of the empirical studies conducted have relied on participants from Western cultures. Nisbett, Choi, Peng, and Norenzayan (2001) emphasize the importance of cross-cultural research and how a theory of culture can be limiting if its only empirically tested findings are from primarily Western, individualistic participants from primarily Western, individualistic cultures. Many cross-cultural studies, when conducted first in a Western society and then tested

in an Eastern culture, have found that results are not as generalizable as once claimed. Without studying theories of cultures across cultures, explanations from these theories may lack the validity they claim to display.

With regard to TMT, a limited number of cross-cultural studies have been performed to examine any cultural differences in terror management processes. The general findings from Japanese (Heine, Harihara, & Niiya, 2002) and Australian Aboriginal cultures (Halloran, 2001) show that such individuals display the same mortality salience responses found in previous studies. It is generally accepted in the field of TMT that regardless of culture, individuals within the culture will tend to display defense of their cultural worldview.

Individualism and Collectivism

Much research has been conducted to compare differences between cultures and their effects on human cognition. Nisbett et al. (2001) specifically argue for the considerable influence that cultures have on our views about the nature of the world around us, about the way knowledge is understood, and knowledge about the way our cognitive processes work. They refer to the research that has been done comparing Western and Eastern cultures. These cultures are primarily studied because of their differences in fundamental systems of thought that have ancient origins; both developed independently of one another and yet continue to influence the modern world to this day.

In understanding the history of the two modes of thinking, we can see how such cognitive systems came about and why their specific views developed. In particular, the major philosophical differences of ancient Greece and ancient China show us how the two cultures have developed into what are now considered, respectively, individualistic and collectivistic modes of thinking. Ancient Greece was known for placing much power on the individual,

allowing them to develop a sense of personal agency in the world. At the same time, much of the Greek tradition was based on debate, finding causes for the objects and events in their environment, as well as creating rules for which much of nature could be viewed. This mode of thinking is understandable when looking at the way ancient Greece was suitable for herding and fishing—occupations that promoted self-sufficiency and personal freedom. Within the Greek cities, as well, much freedom was given to those who wanted to travel from city to another, and the political atmosphere was open to the expression of personal opinions (Nisbett et al., 2001). Thus, Greek culture was known for encouraging highly individualistic, or independent, social orientations.

The Ancient Chinese, on the other hand, developed as an agrarian society built upon the necessary cooperation with others in order for it to work efficiently. In addition, because of the bureaucratic and hierarchical nature of their political system, social order and harmony were stressed. Thus, much of ancient Chinese thought focused on collective agency, or the idea of reciprocal social obligation. Because of this, another notion encouraged in Chinese society was the fulfillment of social duties and expectations in such a way that would ensure group harmony, as opposed to the Greek tradition of debate. They differed from the Greeks who attempted to, in a sense, control nature through their formulation of rules and causes for things; the Chinese, instead, viewed nature and humans as indistinct from one another (Nisbett et al., 2001). In this way, the Chinese were known for emphasizing collectivistic or interdependent social orientations.

Because of these historical differences between the two cultures, many of the same ideas are present today. In addition, because the civilizations have expanded in such a way to give rise to other cultures, civilizations in America and Europe have adopted the Greek or Western mode

of thinking, while civilizations primarily in East and Southeast Asia have adopted the Chinese or Eastern mode of thinking. Significant differences have been found between individuals from these two different cultures.

Cultural Differences in Cognition

Recently, differences have been found when comparing Western and Eastern cognitive styles. While Westerners tend to engage in analytic thought, Easterners will engage in holistic thought. These differences, again, have roots in Greek and Chinese culture. Ancient Greece in particular was known for exercising analytic thinking, which involved detaching objects from their context or field and the tendency to focus on attributes of an object in order to categorize it. From these rules of categorization, they also explained and predicted the object's behavior through the use of formal logic and the avoidance of contradiction (Nisbett et al., 2001).

The ancient Chinese, on the other hand, were known for employing holistic thought, which involved orienting to the context or field as a whole. They attended to the relationships between a focal object and its field and had a tendency to predict events through these relationships. Furthermore, the Chinese based their knowledge on experience and were more dialectical—emphasizing change, recognizing contradictions and the need for multiple perspective-taking, and trying to find compromise between opposing views (Nisbett et al., 2001). These differences between the two cognitive styles are evident in Westerners' and Easterners' ideas about control or ways of categorizing things, and especially in how they attend to or make causal attributions about events.

Control. Some of the cognitive differences today involve cultural ideas about control. A study conducted with American individuals found that participants performed better on routine tasks when they mistakenly believed that they could control a loud noise that occurred periodically

during the tasks (Glass & Singer, 1973). A study using a collectivist sample of Japanese individuals found that these participants were not as optimistic about their performance on such tasks when compared to American males (Yamagushi, Gelfand, Miguno, & Zemba, 1997).

Relationships/similarities vs. rules/categories. Other cognitive differences concern categorization and the perception of relationships between objects. In one study, Chiu (1972) found that Westerners tend to group objects based on category membership (e.g. putting a picture of a man and a woman in the same group because “they are both adults”) whereas Easterners tend to do so on the basis of relationships (e.g. grouping a woman and a child together because “the mother takes care of the baby”). These types of groupings are also found in the ways in which individuals from the two cultures judge associations (Ji, 2001; Ji & Nisbett, 2001), similarity (Norenzayan, Nisbett, Smith, & Kim, 2000; Norenzayan, 1999), and how they learn categories (Norenzayan et al., 2000).

Attention. In terms of attention, research has shown that individuals in certain cultures will attend to more objects or events simultaneously than individuals in other cultures (Chavajay & Rogoff, 2000; Rogoff, Mistry, Göncü, & Mosier, 1993). Initial predictions for the differences between Eastern and Western cultures stemmed from this idea; specifically, it was hypothesized that Easterners tend to see wholes and the relationships between different elements within the field with which they are observing, while Westerners will look at individual parts of the event without recognizing the relationships between them. Because of this, Westerners were believed to be better able at picking out embedded objects within a field while Easterners were believed to be too attentive to the relationships among things to be able to differentiate them as easily.

A study by Abel and Hsu (1949) found that when Rorschach cards were presented to European Americans and Chinese Americans, the Chinese American individuals were more

likely to respond in ways that incorporated aspects of the card as a whole, while the European American individuals were more likely to respond to single parts of the card. Because of this, it is believed that Easterners tend to be more holistic in their thinking while Westerners are more analytic.

Studies concerning attention to the field as opposed to the object have also been conducted. Masuda and Nisbett (1991) tested Eastern and Western perceptions of a scene depicting a focal fish as well as other fish and underwater objects. They found that their Western sample, made up of Americans, was more likely to first refer to the focal fish when describing what they had seen, whereas the Eastern, Japanese sample was more likely to incorporate background objects into their responses. Their results indicated that, overall, Japanese participants were more likely to include these background objects in their descriptions even though both the Americans and the Japanese were equally likely to mention the focal fish. Further support for the notion that Easterners tend to focus on background elements as well as focal elements was seen when participants were later asked to pick out the focal fish in a recognition task. Here, the Japanese participants were less able to pick out the previously seen focal fish when the background on which it was presented was changed. The Americans, on the other hand, were able to recognize the previously viewed focal fish regardless of the background in which it was later shown.

Evidence of Easterners using background elements as retrieval cues has been supported in other studies performed by Hedden, Ji, Jing, Jiao, Yao, Nisbett, and Park (2000) and Park, Nisbett, and Hedden (1999). In these studies, participants were asked to look at a series of cards with words printed on them; half of the cards were presented on a background of social stimuli (e.g. people at a market) while the others were presented on blank backgrounds. Though the

words were unrelated to the backgrounds, the Chinese participants were better able to later recall the words if they had been presented on the background with social stimuli.

Field dependence measures have also been created to further assess Eastern and Western abilities to separate objects from their field. The prediction is that Easterners are less able than Westerners to detach objects from their context because they are more focused on the relationships between objects and their field. The Rod and Frame Test created by Witkin, Lewis, Hertzman, Machover, Meissner, and Karp (1954) is often used to test this. It involves participants' looking into a rectangular box framing a rod that sits inside of it. Participants are asked to indicate when they believe the rod to be vertical, and field dependence is assessed by the degree to which the judgment of the position of the rod is influenced by the position of the frame that it is in. In a study examining the Rod and Frame effects, Ji, Peng, and Nisbett (2000) confirmed this prediction by finding that East Asians were less able to judge when the rod was vertical and were less confident about the accuracy of their performance than Americans.

Explanation/causation. In relation to findings regarding attention to objects and events, it has been suggested that the ways in which individuals from different cultures attribute causality to a situation may be different as well. For instance, if Westerners are generally more likely to attend to a focal object within a field, they may be more likely to attribute the causes of an event to the object. Similarly, because Easterners are more likely to attend to the field and the relationships between objects, they may be more likely to attribute causes of an event to the context or situation.

Different theories regarding causal attribution have been suggested by researchers in the past. Jones and Nisbett (1972) suggested the theory of actor-observer bias, in which individuals tend to use situational attributions to explain events in which they are the actors but use

dispositional attributions to explain events in which they are the observers. More generally, the actor-observer bias is termed the fundamental attribution error (FAE; Ross, 1977), in which individuals tend to view behaviors and events as being caused by the actor's dispositions and ignoring the situational factors.

In comparing Western and Eastern cultures, the FAE is often employed to assess differences. Miller (1984) hypothesized that Americans and other Westerners were more likely to make the FAE than individuals of other cultures. In one study, she found results supporting this theory; while Americans tended to explain another person's behavior in terms of his personality traits, Hindu Indians were more likely to explain the same behaviors in terms of social roles, the environment, or other situational factors. A later study found that Korean participants were more likely to use situational factors when predicting how people in general would be expected to behave in a given situation (e.g. if person lies or does something extremely charitable) and were more likely to similarly use situational factors when predicting behaviors of a target individual (Norenzayan, Choi, & Nisbett, 2001).

While many studies have examined judgments of behaviors, several studies have been conducted to assess how individuals attribute attitudes to others as well. Jones and Harris' (1967) classic study of the fundamental attribution error involved participants reading an essay either supporting or opposing an important social issue; specifically, the issue at the time of the study involved support or opposition towards Castro's Cuba. Some of the participants were told that the essayists had absolutely no choice in the side they took in the essay while others were not informed of a choice or no choice on the part of the writer. The experimenters found that those who read the pro-Castro essay were more likely to rate the writer as more in favor of the topic

than did those who read the con-Castro essay, even when the participants were told that the writers had no choice in the matter.

Further studies by Choi (1998) and Choi and Nisbett (1998) replicated the Jones and Harris (1967) study and included an additional condition in which participants themselves were put in the situation of having to write their own essay and were allowed no choice on which side to take. In comparing a Korean and American sample, they found that Korean individuals were more likely to recognize their own, similar situational constraints in writing the essays and therefore rated the writers' attitude with this in mind. The American individuals in this additional forced-choice condition, however, did not take their own situational constraints into account and responded similarly to those in the standard conditions.

Cultural Frame Switching

Such differences between Eastern and Western cultures are often great, while at other times the differences can be quite small. This makes it necessary to recognize that while collectivism and individualism may be terms to define the modes of thinking of particular cultures, collectivist and individualistic styles of thinking can vary within one's culture as well. The ability to switch between frames of thought can then be viewed as a human need to look to culture for a sense of reality (Lehman et al., 2004). For example, when one framework is more accessible, individuals may interpret the world around them according to that framework.

Kühnen, Hannover, and Schubert (2000) studied the effects that priming for field dependence had on an individual's subsequent performance on a field dependence task. As a prime for collectivism, the experimenters asked participants to think about what they had in common with their family and friends while those in the non-collectivism condition were asked to think about how they differed from their family and friends. Afterwards, they assessed field

dependence through the Embedded Figures Test (Witkin, Oltman, Raskin, & Karp, 1971), in which complex geometric figures are displayed and participants are asked to find simpler geometric shapes embedded within them. The researchers found that after priming individuals for collectivism, they indeed showed more field dependence and thus performed more like an individual from a collectivistic culture.

Studies involving the priming of one cultural paradigm or the other have found that such primes do influence cultural frame switching. Empirical studies with bicultural participants have found that when priming an individual with one culture or the other, the individual will behave in ways that are consistent with the primed culture. Hong et al. (2000, 2003), for example, were able to prime bicultural individuals who identified as Hong Kong Chinese (collectivistic) and Chinese American (individualistic) with cultural icons from either China (e.g., the Chinese dragon) and America (e.g., Mickey Mouse) and were able to influence their performance on an attribution task (e.g., if primed with American icons, the individuals made more dispositional attributions).

Some evidence from Berry (1967; 1976; Witkin & Berry, 1975) show there is naturally occurring variability in holistic or analytic thinking within a culture as well. Specifically, they compared farmers to hunters, herders, and industrialized peoples within various cultures and found that the farmers were the most field dependent, presumably because their agrarian lifestyle relied on collective efforts for survival. Other studies examining Orthodox Jewish boys, secular Jewish boys, and Protestant boys found that the Orthodox Jewish boys were more field dependent than the secular Jewish boys, and these boys were more field dependent than their Protestant counterparts (Adevai, Silverman, & McGough, 1970; Dershowtiz, 1971). One last study found that within the American culture, those who were more social and were involved in

more social activities were more field dependent than those with less social interactions in that regard (Witkin & Goodenough, 1977; Witkin, Price-Williams, Bertini, Christiansen, Oltman, Ramirez, & Van Meel, 1974). These findings provide evidence for collectivism and individualism not merely being modes of thought that are cultural in nature, but also modes that can be very individualized. In this sense, collectivism and individualism at the individual level may correspond to a person's allocentrism or egocentrism levels, and may be viewed as personality traits as opposed to traits purely derived from one's culture.

TMT and Cross-Cultural Research

Several cross-cultural studies have been conducted in relation to TMT. Kashima, Halloran, Yuki, and Kashima (2004) attempted to extend cross-cultural testing by exploring the role that culture plays in the actual process of terror management. The researchers specifically wanted to test the culture-specificity of worldview defense, the role of self-esteem in a collectivist culture, and how personal versus collective mortality salience influenced how individuals from different cultures responded to them. In looking at how terror management functions in Japan, a highly collectivist culture, and in Australia, an individualistic culture, the researchers were hoping to test how cultural constructs can affect an individual's rejection of an opposing construct. A past study by Halloran (2001) found that with Aboriginal Australians, highlighting the Aboriginal identity caused the participants to respond more collectivistically and reject the individualist worldview, while highlighting their Australian identity caused them to respond more individualistically and reject the collectivist worldview. Kashima et al. (2004) performed a similar study with Australian and Japanese samples and found that the Australian participants responded more individualistically than the Japanese, as TMT would predict.

The second element of their study focused on the role of self-esteem in the two cultures but was particularly interested in looking at the role of self-esteem in the Japanese culture, as self-esteem levels are generally found to be lower in Asian cultures (Kashima et al., 2004). The researchers found that both Australian and Japanese individuals who were low on self-esteem were more likely to produce mortality salience effects, thus supporting TMT claims. However, their analyses found that those who scored high on an autonomy measure also tended to score higher on self-esteem. In this way, then, self-esteem and autonomy may be associated, which makes their findings for the Japanese sample incongruent with TMT claims. According to TMT, self-esteem should be derived from one's culture and that culture's core beliefs and norms; however, for the Japanese participants, scoring high on self-esteem and high on autonomy would be a contradiction to the collectivistic nature of Japan. While the finding may not necessarily be applicable, it does however introduce the problem of measuring self-esteem across cultures, as the standard self-esteem measure used for these types of studies is a highly individualistic one. Because of this, they proposed that measuring self-esteem across cultures may need to be done using different measures that are sensitive to the cultures of the respondents.

Their last finding involved comparing personal and collective mortality salience effects in both the Australian and Japanese cultures. Their results found that when personal mortality was made salient, individuals in Australia responded more defensively to those opposed to their worldview while Japanese participants were more likely to respond in this manner to collective mortality salience, during which they were asked to imagine that their country was suddenly destroyed by a meteorite (e.g., "What will happen to you and the people in your country when your bodies die?" and "What emotions does the thought of your death and the death of all the people in your country arouse in you?"). These findings suggest that individuals from various

cultures will respond to different types of mortality threats in different ways, thus emphasizing the complexities of the mortality salience hypothesis. What may be perceived as a mortality threat to one culture may not be perceived as such a threat in another, and vice versa.

Coalitional Psychology and Cross-Cultural Research

Though the two previously cited studies by Navarrete et al. (2004) were both conducted on American undergraduate students, the experimenters did attempt to extend their findings by conducting similar studies in a primarily collectivistic culture. The primary focus of Navarrete et al.'s (2004) third study was to see how individuals who are more collectivistic in their worldview would respond to mortality, theft, and social isolation salencies in comparison to their American sample. They predicted that individuals from the collectivistic culture would show similar effects (i.e. increased worldview defense) when primed with death, theft, and social isolation because experiencing these threats will motivate them to alter their cognitions in line with their culture or their group.

They specifically chose a Costa Rican sample from which to collect their data. Their reasoning for choosing such a sample was due to its strong dissimilarity to typical American culture. They noted as well that Costa Rica as a culture openly discusses death anxiety and possibly has a hyper-cognized fear of social isolation instilled in its citizens.

The experimenters set forth to test for any cross-cultural differences by employing a similar method to their first study in which mortality salience as well as theft and social isolation salience influences were examined after a delay. While their first study employed paper-and-pencil methods, the Costa Rican study used an interview format to assess responses. What the researchers found was surprising and supported coalitional psychology's ideas: both theft and social isolation salience produced greater mortality salience effects than the mortality salience

manipulation itself. As social isolation produced the largest effect in this case, experimenters believed that, because this sample was collectivistic, the idea of being completely isolated from members of one's group was more fearful than thoughts of death.

In addition, they conducted a fourth study to assess responses for social isolation salience relative to the personality trait of allocentrism (i.e., dispositional collectivism). As coalitional psychology theorists believe interdependence to be an important quality in underlying human motivations, Navarrete et al. (2004) predicted that high levels of allocentrism would produce greater pro-Costa Rican bias when primed with aversive thoughts. Specifically, this last study focused on the comparison between mortality salience and social isolation salience conditions, as the previous study found social isolation to have a greater effect than both mortality salience and theft salience.

For the purposes of the study, participants were asked to complete a personality questionnaire specifically assessing levels of allocentrism (ESTCOL, Realo, Allik, & Vadi, 1997). In addition, for the priming variables, only mortality salience, social isolation salience, and a control were used. Aside from that, the study was performed using the same procedure as their previous study. Results showed that both individuals who were low and high in allocentrism were more likely to respond with pro-Costa Rican biases when under social isolation salience, but that similar effects were significant only for individuals high in allocentrism in the mortality salience condition. These results may be explained by the fact that high levels of allocentrism may be positively correlated with the tendency to look to the group when faced with aversive stimuli. Thus, worldview defense was not found for those low in allocentrism because these individuals have less motivation to alter their social cognition in

times of social need, providing doubt for the TMT belief that fear of death creates worldview defense in all individuals.

Limitations to Coalitional Psychology

Coalitional psychology, then, can be viewed as an alternative theory of culture and, overall, it provides a broader definition for causes of mortality salience effects. However, very few studies have been conducted to examine this area further, and some problems do arise from the limitations of Navarrete et al.'s (2004) studies. One issue involves the fact that the researchers prefaced their Costa Rican studies with a note that the Costa Rican culture itself openly discusses death while at the same time may make interdependence a priority. If the Costa Ricans in fact openly discuss death, it may be suggested that death to them no longer becomes a fearful matter; thus, death is not an anxiety-provoking stimulus, but being social isolated from one's groups is. Therefore, it may be that the Costa Rican sample itself is biased and that the findings from the sample cannot be generalized to other collectivistic cultures. This limitation is highlighted when we see that death-thought accessibility from theft and social isolation salience was assessed only in the individualist sample and not in the collectivistic sample. The findings may then be explained by the fact that social isolation salience and possibly theft salience bring on thoughts of symbolic death in ways that thoughts of literal death do not.

Validity Testing for TMT or Coalitional Psychology

The present research attempts to address and extend the past research on both TMT and coalitional psychology and their views about cultural influences on human attitudes and behaviors. Specifically, we are hoping to accomplish three goals: 1) to compare the validities of TMT and coalitional psychology; 2) to extend past research on cultural influences on cognition; and 3) to examine the effects of mortality and social isolation salience on cognition.

TMT and coalitional psychology have very different explanations for past findings regarding mortality salience effects on behaviors and attitudes. In order to tease apart which theory's explanations hold true, we must recognize the fundamental differences between the two theories. TMT, for example, claims that, under mortality salience, individuals will adhere to their cultural beliefs and increase their worldview defense in order to strengthen their self-esteem. Coalitional psychology, on the other hand, believes that in instances in which an aversive stimulus (including but not limited to death) is presented which will motivate individuals to ally with a group, a person will be motivated to alter his social cognitions to reflect that group's beliefs. Because of these basic differences between the two theories, different behavioral outcomes should be expected under different priming conditions.

The present study aimed to provide a cross-cultural perspective on both theories while also testing their validities. Priming for collectivism or individualism, specifically, allows us to examine the ways in which these modes of thinking might interact with mortality salience or social isolation salience. If TMT and coalitional psychology claims are taken with what is known about collectivistic and individualistic cultures, TMT would predict that individuals who are collectivistic will become, in a sense, more collectivistic in their mode of thinking after having been reminded of their mortality. This, in fact, was found in the Kashima et al. (2004) study. Coalitional psychology would predict the same outcome, not because increasing collectivistic attitudes or behaviors is necessarily a method of worldview defense and a means for bolstering self-esteem but because having collectivistic attitudes is beneficial in times when death, or other socially isolating situations, are potential threats. At the same time, coalitional psychology would hypothesize that this effect will occur not only under mortality salience but also under instances

such as social isolation salience, which would remind an individual of his motivation to be a part of a group.

For individuals in which an individualistic or analytic mode of thinking is a part of their worldview, TMT and coalitional psychology would have more conflicting predictions. Terror Management Theorists would predict that, under mortality salience, an individualist will adhere more to his individualistic beliefs because this would be in line with his cultural worldview. coalitional psychologist, on the other hand, would argue that this individual will instead become more collectivistic in his mode of thinking when under mortality salience as well as under social isolation salience because the thought of dying or being socially isolated from important people in his life would motivate him to tend towards his group for support and alter his cognitions in favor of his group's norms and beliefs.

In addition, because past literature has shown cognitive differences in cognitive tasks between collectivistic and individualistic modes of thinking, using cognitive tasks as dependent measures would allow us to extend past research on both cultural influences as well as the effects of mortality and social isolation salience on cognition. This would provide a reliable and valid assessment of the ways in which cultural primes and mortality or social isolation primes interact with each other. Aside from the studies regarding cognitive load and the exploration of proximal and distal defenses, very little research has examined the effects of aversive primes on cognition.

If either of the aforementioned predicted effects is found, the studies would show that being primed with either individualistic or collectivistic tendencies as well as death or social isolation will cause differential performance on cognitive tasks. The predicted performance will depend on which theory one adheres to (TMT vs. coalitional psychology). A terror management theorist would predict that a person primed with collectivism and mortality salience would

respond more collectivistically both in terms of his worldview and cognitive performance. For example, if a person was primed with collectivism, he would be more likely than someone primed with individualism to group objects into relationship categories. A Coalitional Psychologist would predict the same outcome (i.e. responding more collectivistically) but for different reasons. The coalitional psychologist would also, however, predict that social isolation salience would produce these same effects.

If an individual were primed with individualism, TMT theorists and coalitional psychologists would differ in their predictions once again. TMT would predict that priming a person with individualism and mortality salience would cause him to perform more individualistically on a cognitive task. In other words, if the task were the Rod and Frame Task (Witkin et al., 1954), the person would perform better on it than another individual in a control condition. Coalitional psychology, on the other hand, would predict that when primed with individualism and mortality or social isolation salience, an individual will become more collectivistic due to the basic assumptions of coalitional theory. Thus, this individual should perform worse on the Rod and Frame Task compared to an individual in a control condition because they would be thinking more field-dependently (ie. collectivistically).

In sum, the general goal is to assess the relative validity of TMT vs. coalitional psychology. Such research may reveal that one's cognitive style is in fact malleable to the extent that mortality or social isolation saliencies can interact with it. This would also reveal new aspects of mortality and/or social isolation salience in that these aversive primes may interact with collectivistic/individualistic tendencies and alter the ways in which individuals experience, perceive, attend to, and interpret the world around them. This set of issues is addressed through two empirical studies.

Experiment 1

The purpose of this first study was to test the validity of either TMT or coalitional psychology in an experimental context that assessed performance on two cognitive measures: a field dependence task and a causal attribution task. Prior to these tasks, two sets of primes were administered to all participants. These included a set of primes for either collectivism or individualism and a set of primes for mortality, social isolation, or neutral salience.

In developing the first type of prime, we took into account the fact that collectivistic and individualistic tendencies are found both at the societal level as well as at the individual level. The logistical limitations in conducting a true cross-cultural study forced us to manipulate individual collectivistic and individualistic tendencies because the variables are known to be just as flexible within as they are between cultures. To assess baseline measures of individualism and collectivism, all participants were required to complete Triandis' (1995) Collectivism and Individualism Scale prior to the laboratory visit. Their self-esteem was also measured by Rosenberg's (1965) Self-Esteem Scale to assess additional individual differences.

On the day of the actual laboratory study, participants were randomly selected to be primed with either individualism or collectivism using two priming tasks created by Trafimow, Silverman, Mei-Tai Fan, and Law (1997) and Gardner, Gabriel, and Lee (1999). Participants were then divided into mortality, social isolation, or control salience conditions in which the standard, paper-and-pencil mortality and neutral salience treatments (Greenberg et al., 1990) were administered. We included an additional experimental group whose primes substituted the themes of "death" or "television" for "social isolation." The choice to use the standard mortality salience measures was made because Halloran (2001; Halloran & Kashima, 2004) was able to

find significant effects when priming for both culture and mortality salience, thus showing that the two sets of primes did not interfere with one another.

Past studies have found that a delay is necessary after this manipulation in order to give time for proximal defenses to come into play before the distal defenses are employed. We chose to have participants complete the Positive and Negative Affect Schedule-Expanded Form (PANAS-X; Watson & Clark, 1991) immediately after the primes as a distracter task and to confirm that the death prime did not increase negative affect. Following this task, participants were given two cognitive measures—the Embedded Figures Test (EFT; Witkin et al., 1971) and a causal attribution task—to assess how the cultural and salience primes interacted and affected their performance on these tasks. A collectivistic cognitive style would be manifested through high performance on the EFT (i.e., correctly identifying the simple figures embedded in the complex figures) and through more situational attributions in the attribution task, while an individualistic cognitive style would be displayed as lower performance on the EFT and more dispositional attributions in the attribution task.

If it is found that participants respond in a cognitive style that reflects an exaggeration of their primed collectivistic or individualistic tendencies only in the mortality salience condition, TMT would be supported. On the other hand, if it is found that participants become more collectivistic in their thinking and perform more field-dependently or attribute causes to contextual factors in both experimental conditions compared to the control condition, this would provide support for coalitional psychology.

Method

Participants and Design. Ninety-seven research participants were recruited through an introductory undergraduate psychology course, through an on-line campus web forum, and by

word of mouth at Haverford College in Pennsylvania. Participation was voluntary, and introductory students received course credit for their involvement while all other participants were entered into a \$50 cash lottery. Participants ranged from 18 to 22 years of age ($M=19.60$) including 62 (64%) identified females and 32 (33%) identified males. Because of missing on-line questionnaire responses from several of the participants, data from 92 participants were used in the final analyses.

The design was a 2 (collectivism or individualism prime) x 3 (mortality, social isolation, or control salience) between-subjects factorial. Approximately twelve participants were randomly assigned to each of the six priming conditions.

Stimulus Material. Prior to the laboratory study, participants were required to complete an on-line questionnaire which included demographic questions asking participants for their age, sex, race, country of origin, and country of general residency over the past ten years. Also included in this electronic questionnaire was Triandis' (1995) Collectivism and Individualism questionnaire (Appendix A) which was used to measure baseline measures of individualism and collectivism. The questionnaire had participants rate on a Likert scale from 1 (strongly disagree) to 9 (strongly agree) how much they agreed or disagreed with a list of 32 statements assessing individualism (e.g., "One should live one's life independently of others;" $\alpha=.75$) and collectivism (e.g., "It is important for me to maintain harmony within my group;" $\alpha=.76$). Participants were also required to complete Rosenberg's (1965) Self-Esteem Scale (Appendix B), which asked participants to rate to what extent they believed certain personal statements to be true or false (e.g., "I feel that I'm a person of worth, at least on an equal plane with others" or "All in all, I am inclined to feel that I am a failure;" $\alpha=.92$).

The primes for the laboratory study included a collectivism and individualism prime by Trafimow et al. (1997), which asked participants to write either what makes them different from their family and friends or what they have in common with their family and friends (Appendix C). Gardner et al.'s (1999) priming task was used as a second cultural priming task. This required participants to read a paragraph describing a trip into the city and then circle all of the pronouns embedded within the paragraph. For the individualism prime paragraph, all of the pronouns referred to the self (e.g., "I" or "me"), whereas the pronouns in the collectivism prime paragraph referred to the group (e.g., "we" or "us;" Appendix D).

Mortality, social isolation, and neutral salience was manipulated using Greenberg et al.'s (1990) mortality and neutral salience tasks. In the original task, participants were asked to jot down the emotions that either their own death or watching television would arouse in them and what they thought would happen to them when they physically die or while they watch television. For the purposes of our study, a social isolation prime was added in which the word death or television were replaced with the idea of being socially isolated (Appendix E).

The PANAS-X (Watson & Clark, 1991; Appendix F), which assesses the emotional state of an individual, was used as a distracter task. The measure asks participants to rate on a scale from 1 ("very slight or not at all") to 5 ("extremely") their positive (e.g., "interested" or "excited;" $\alpha=.88$) and negative (e.g., "irritable" or "distressed;" $\alpha=.80$) emotions and feelings at the present time.

Finally, two tasks were adopted as our dependent measures. One was the Embedded Figures Test (EFT; Witkin et al., 1971; Appendix G) which assesses field dependence by requiring individuals to locate a series of simple figures embedded within more complex ones. In contrast to Witkin et al., a black and white form of the task was administered. Item 12 was

removed from the original instrument due to incongruence in the simple figure and its embedded match, leaving 23 total items in the task.

Lastly, an attribution task was adopted by McArthur (1972) which required participants to read 9 sentences each describing an event with a target individual as the subject (e.g., “Miranda showed up over an hour late for her appointment,” or “Markus received a ‘B’ grade on his biology exam;” Appendix H). Participants were asked to write down what they believed caused the individual’s action. The task included three female names, three male names, and three androgynous names in order to control for gender of the target individual.

Procedure. Participants were asked to sign fill out pre-laboratory online questionnaire. The questionnaire assessed their baseline collectivism and individualism levels through Triandis’ (1995) Collectivism and Individualism questionnaire; their baseline self-esteem (Rosenberg, 1965) and various types of demographic information including age, sex, race, country of origin, and country of general residence for the past ten years. This questionnaire was given two days prior to the actual laboratory study so that their responses and the later primes would not interfere with one another.

On the day of the laboratory session, subjects were asked to give informed consent to participate in the study, which they were told would be examining baseline personality measures on a series of tasks. Specifically, they were notified they would be participating in a 2-minute free-writing personality task, a 2-minute proof-reading activity, two more 2-minute free-writing tasks, and a short questionnaire. For the second part of the study, they were told they would perform two final tasks that would take 5 minutes each to complete. In addition, they were told that the researcher would be in the room to notify them when to begin and to finish writing. To clock every time-limited task, a stopwatch was used.

Participants were randomly assigned to one of the six priming groups (i.e. individualism/collectivism prime x mortality/social isolation/neutral salience). The collectivism or individualism primes were administered first to induce the cultural priming effects. Participants were timed for two minutes to complete Trafimow et al.'s (1997) prime regarding similarities (collectivistic prime) or differences (individualistic prime) between family and friends. They were then timed for two minutes to complete Gardner et al.'s (1999) word search for either individualistic or collectivistic pronouns. Afterwards, participants were timed to complete the mortality, social isolation, or control primes taken from Greenberg et al. (1990). Participants were given two minutes to complete each of the two questions in this second set of primes.

Following these manipulations, participants were given the PANAS-X (Watson & Clark, 1991) which they completed at their own paces. Once all of the participants were finished, they were given five minutes to complete each of the two dependent measures—the EFT (Witkin et al., 1971) and the attribution task (McArthur, 1972). For the EFT, participants were told they would be presented with sets of simple and complex images and that their task was to locate the simple figure within its corresponding complex figure by outlining it with a pen. They were given a sample set of figures in which the simple figure was boldly outlined in the complex figure. Participants were told that each simple figure would be found within the complex figure in the same size and orientation as shown and that, though there could be more than one simple figure found within the complex figure, they should only trace one. Participants were instructed to use a blue pen for their outlines and to use a red pen to correct any errors. For the attribution task, participants were given the list of statements and told to decide, on the basis of the given information, what probably caused the event to occur. During the administration of the

dependent measures, for which participants were given five minutes each to complete, the researcher participants were given a warning that they had 30 seconds left before the end of the seconds before the end of the 5-minute limit.

To account for any potential carryover effects of either task, the order of these two measures was counterbalanced within each of the six conditions. Participants were tested in groups of 1-4 individuals and an entire session took approximately 30 minutes to complete.

Results

EFT Task. Participants were scored based on the number of correct responses for the 23 possible items. Scores ranged from 4 (highly field-dependent) to 23 (highly field-independent) correct answers ($M=12.05$, $SD=4.69$). An overall ANOVA revealed no significant main effects for either cultural prime, $F(1, 91)=1.60$, $p>.05$, or salience prime, $F(2, 91)=.69$, $p>.05$, nor was there any interaction between these two variables, $F(2, 91)=.36$, $p>.05$.

Attribution Task. Two raters coded each participant's responses to the attribution task. Individuals received a coding of 1 for each dispositional attribution made and a coding of 2 for each situational attribution made. The mean for every participant was computed by both raters. Inter-rater reliability on each of the nine attribution task items ranged from .50 to .87, with an overall reliability of .84, indicating high agreement between coders. The mean of both raters' scores for each individual contributed to each person's final score. Scores ranged from 1.00 (i.e., highly dispositional) to 1.95 (i.e., highly situational; $M=1.47$, $SD=.20$).

Although there was no significant main effect for salience prime, $F(2, 91)=.59$, $p>.05$, nor an interaction between cultural prime and salience prime, $F(2, 91)=1.06$, $p>.05$, the overall ANOVA did reveal a significant main effect of cultural prime, $F(1, 91)=6.00$, $p<.05$. Those primed with collectivism were more likely to make situational attributions ($M=1.52$), whereas

those primed with individualism were more likely to make dispositional attributions ($M=1.42$).

An analysis of covariance (ANCOVA) was conducted to determine whether responses to the PANAS-X, the Collectivism and Individualism scale, and the Self-Esteem scale co-varied with performance on the EFT or the attribution task. No significant effects were revealed for either measure.

Discussion

Based on past research on cross-cultural cognition, one prediction of this study was that performance on the EFT and the attribution task would vary with cultural primes. In particular, those primed with collectivism should display more field-dependence than those primed with individualism, as shown through worse performance on the EFT. In addition, those primed with collectivism should consequently exhibit a more external attribution style than those primed with individualism, who should exhibit a more internal attribution style. Those primed with collectivism, therefore, should generate more situational causes for events in the attribution task than those primed with individualism, who should produce more dispositional causes.

Results from this study show that performance on the EFT was not consistent with past literature on field-dependence (Witkin et al., 1954; 1971; Kuhnen, Hannover, & Schubert, 2000) which found that those in collectivistic cultures or those primed with collectivism performed more field-dependently on tasks like the EFT than those in individualistic cultures or those primed with individualism; these latter individuals instead tended to perform more field-independently than those with collectivistic cognitive styles. The most likely explanation for this finding concerns the delay between our independent and dependent measures. Kuhnen et al. (2000) administered the EFT in a cultural priming context but noted the sensitivity of the task to temporal delays. Because a delay would attenuate the cultural priming effects on the task,

Kuhnen and colleagues gave directions for the EFT prior to the administration of the task so that the participants could begin the EFT immediately after their cultural prime. However, our methodology included an additional salience prime, which took a total of four minutes to complete, as well as the PANAS-X, which participants were told to work on without a specific time limit. Due to this increased delay between the cultural prime and EFT administrations, cultural priming effects that could have been found were instead significantly reduced. Using a less time-sensitive field-dependence task may have been more appropriate in the context of our study.

Results for the attribution task, however, were found to be consistent with past literature (Miller, 1984; Norenzayan et al., 2001), which revealed that collectivistic individuals are more likely to make situational attributions for a target individual's behavior whereas individualistic individuals are more likely to make dispositional attributions. This would be expected, as those with collectivistic cognitive styles are known to focus more on the whole field as opposed to those with individualistic cognitive styles who are known to focus on parts of the whole. Our findings give additional evidence for collectivistic cognitive styles allowing individuals to attend to broader aspects of a situation and therefore make more external attributions about an event. At the same time, it reveals how those who apply an individualistic cognitive style will instead tend to look at individual aspects of an event and recognize more internal attributions to a specific behavior.

Despite this finding, a more primary prediction of this study was that task performance would be jointly influenced by both the cultural and salience primes. The purpose of these manipulations was to contrast the validity of TMT with that of coalitional psychology. While it was expected that culture would play a significant role in performance on both cognitive tasks, it

was also predicted that the salience primes would pull individuals' primed cognitive styles in one direction (e.g., collectivistic) or the other (e.g., individualistic). TMT would predict that those primed with death, compared to those in the social isolation or neutral salience conditions, would perform in a manner that reflected the exaggerated cognitive style of their primed culture. Coalitional psychology, on the other hand, would predict that when either social isolation or mortality salience is paired with either cultural prime, individuals will perform more collectivistically than if they were in the neutral salience condition.

However, no significant effects were observed on either task. Because neither mortality nor social isolation salience influenced participants' performance in any way, a possible explanation for this could be that, theoretically, neither TMT nor coalitional psychology contains the validity that its supporters suggest it does. If our primes were administered properly, this would suggest that TMT and coalitional psychology are not adequate explanations for previous mortality salience or social isolation effects, and therefore are not appropriate to explain human motivation and cultural formation.

However, the large number of studies previously conducted on TMT and on coalitional psychology would suggest a different reasoning. A probable explanation for our insignificant findings is the approach we used to assess the salience primes. Perhaps cultural and salience prime interactions do influence cognition but cannot be exhibited through the performance on these specific tasks. This does not necessarily provide evidence for or against TMT or coalitional psychology but does suggest that neither theory is meaningful in the methodological context of this study. Both have been evidenced to increase so-called mortality salience effects (i.e. increased world-view defense) but do not claim to change an individual's cognitive style in such a way that would be evident in performance on certain cognitive tasks. If these ideas are valid,

then it may be the case that the joint influence of cultural and salience primes will emerge in a methodological context that relies on a different type of cognitive task. Experiment 2 was designed with this goal in mind and examined the effect of double priming on thought accessibility.

Experiment 2

Experiment 2 extends the first study by exploring what types of thoughts are evoked by mortality and social isolation salience as a function of collectivism or individualism primes. In addition, it addresses a limitation in Navarrete et al.'s (2004) study, which tested social isolation salience effects on death-thought accessibility in an individualistic culture (American) but not in a collectivistic culture (Costa Rican). Their studies suggested that it is people's desire for inclusion in a group and not merely their anxiety over death that has produced mortality salience effects in past studies related to TMT. They concluded from their results that social isolation salience is another effective way to increase worldview defense and that priming for social isolation does not bring on thoughts of death.

Conveniently, they only tested for this in their sample of American college students and did not assess whether social isolation salience brought on thoughts of death in their collectivistic sample. However, it may be suggested that, because a collectivistic mindset places more emphasis on the group, individuals who think more collectivistically may view social isolation as a form of death. In this case, then, social isolation salience may increase death thoughts for these individuals and a TMT explanation could be applied to explain Navarrete and colleagues' social salience effects in their Costa Rican sample. If this is found, this may highlight conceptual differences in the way collectivists think compared to individualists.

Experiment 2 was designed to address this discrepancy by comparing the death-thought

accessibility of those primed with social isolation in addition to being primed with either collectivism or individualism. At the same time, we assessed social isolation-thought accessibility in those primed with either cultural prime in hopes of revealing any reciprocal association between social isolation and death concepts. If it is found that mortality salience also elicits thoughts of social isolation, it may be suggested that death and social isolation are interrelated constructs. Because coalitional psychologists do not claim that social isolation and death are related constructs but are merely members of a broader category of “emergency situations that can be remedied through coalitional support” (Navarrete et al., 2004, p. 373), finding that mortality salience elicits social isolation thoughts would introduce possible theoretical limitations of coalitional psychology. In addition, such a finding would contradict TMT because terror management theorists claim that death is its own concept and evokes the most fear; it is not merely part of a larger construct. However, if mortality salience does not elicit thoughts of social isolation, and social isolation salience does not elicit thoughts of death, coalitional psychology would be supported.

As a third component, fear-thought accessibility was added to the instrument to assess which prime (mortality or social isolation) would evoke more fearful thoughts, possibly acting as further validation for either TMT or coalitional psychology. Death-, social isolation-, and fear thought-accessibility were assessed through a word completion task adopted from Greenberg et al. (1994). This task included word fragments and required participants to complete each fragment so that it formed a whole word. The administration of the word completion task would come after the salience prime and a distracter task, as it has been shown by past research (Fiske & Taylor, 1991; Srull & Wyer, 1980) that the accessibility of primed concepts will gradually decrease over time and will then eventually increase to a hyper-accessible state. Greenberg et al.

(1994) found that the delay between the salience prime and the thought-accessibility measure was necessary because it allowed individuals to move from proximal defenses, in which they suppressed the aversive thoughts produced by the salience prime, to distal defenses, in which aversive thoughts were high in accessibility yet outside of focal awareness.

To reiterate our predictions, if it is found that social isolation salience does not increase death-thought accessibility when primed with either culture, then this would be consistent with coalitional psychology. Conversely, if it is found that social isolation salience elicits thoughts of death, particularly for collectivistic individuals, then this would be consistent with TMT and the notion that social isolation is merely a form of death. However, if it is found that mortality salience elicits thoughts of death, it could be suggested that death and social isolation are conceptually related in a way that may require a reexamination of the theoretical and conceptual foundations of both coalitional psychology and TMT.

In examining these predictions, a study similar to Experiment 1 was conducted but with a different set of dependent measures. Participants first filled out a questionnaire to measure baseline characteristics prior to the laboratory visit. On the day of the laboratory study, participants were randomly selected to be primed with either individualism or collectivism and then divided into mortality, social isolation, or neutral salience conditions. For those manipulations, the same cultural and salience priming tasks from Study 1 were used. Similarly, the PANAS-X was used as a distracter task immediately following the two priming tasks. Afterwards, participants were given a word completion task to assess how the cultural and salience primes interacted and to see if the interaction had an effect on how they performed on the word completion task.

Method

Participants and Design. Eighty-six volunteers participated in Experiment 2. Participants were recruited from an introductory psychology course, through an on-line campus web forum, and by word of mouth at Haverford College in Pennsylvania. Students in the introductory psychology course received credit while all other volunteers received \$5 for their involvement. Participants ranged from 18 to 22 years of age ($M=19.38$) and included 55 (64%) identified females and 30 (35%) identified males.

The design was a 2 x 3 x 3 mixed factorial. Six independent groups of participants first received a cultural prime (collectivism or individualism) followed by a salience prime (mortality, social isolation, or neutral). Immediately after, all participants were administered a word completion task that varied on the types of words that could be produced (death, social isolation, or fear words).

Stimulus Materials. The same set of measures from Experiment 1 was used to assess cultural tendencies through the Collectivism and Individualism questionnaire (Triandis, 1995; collectivism $\alpha=.71$, individualism $\alpha=.65$) and baseline self-esteem through the Self-Esteem Scale (Rosenberg, 1965; $\alpha=.91$) as well as gather demographic data regarding age, sex, race, country of origin, and country of general residency over the past ten years.

Trafimow et al.'s (1997) and Gabriel et al.'s (1999) collectivism/individualism primes and the standard mortality, social isolation, and neutral salience manipulations were used in this study as independent measures. The PANAS-X (Watson & Clark, 1991; positive $\alpha=.71$, negative $\alpha=.80$) was again used to assess positive and negative affect and act as a delay/distracter task.

Finally, participants completed a word completion task (Appendix I) to assess their death-, social isolation-, and fear-thought accessibility. This task was taken from Greenberg et al.

(1994) and required participants to create words out of word fragments that consisted of one to three missing letters. The locations of the deleted letters were varied. Six of the 32 total fragments could be completed as death-related words (e.g., COFF__ could be “coffin” or “coffee”); for the purposes of our study, we added twelve additional word fragments that could also be completed as six social isolation-related words (e.g., _ERMIT could be “hermit” or “permit”) and six fear-related words (e.g., S_ARE could be “scare” or “stare”). Fourteen additional neutral words were included as fillers. Within each of the aversive word categories, all words were roughly equated for length (four to seven letters long) and varied in parts of speech (e.g., nouns, adjectives, verbs, and adverbs). Word norms were also compared and words were chosen according to their frequency in the English language calculated in word per million (“Frequency Lists,” n.d.).

Lastly, to examine whether performance was guided by demand characteristics or other factors, a suspicion probe was developed which asked participants what they thought the study was testing.

Procedure. Two days prior to the laboratory study, participants were sent the same electronic questionnaire from Experiment 1 in order to assess their baseline collectivism and individualism levels (Triandis, 1995), baseline self-esteem levels (Rosenberg, 1965), and to collect demographic information.

On the day of the laboratory study, participants signed informed consent forms under the assumption that they were going to be performing a series of word-related tasks. Specifically, they were informed that they would be engaging in a 2-minute free-writing task, a 2-minute proof-reading activity, two additional 2-minute free-writing tasks, a brief self-paced questionnaire, and a final self-paced word completion task. Participants were told that the

researcher would be present in the room to notify them when to begin and to finish writing. A stopwatch was again used to clock the timed tasks.

Participants were randomly assigned to one of the six priming groups (i.e. individualism/collectivism prime x mortality/social isolation/neutral salience). The collectivism or individualism primes were administered first to induce the cultural priming effects. Participants were first timed for two minutes to complete Trafimow et al.'s (1997) prime regarding similarities (collectivism prime) or differences (individualism prime) between family and friends. They were then timed for two minutes to complete Gardner et al.'s (1999) word search for either individualistic or collectivistic pronouns. Afterwards, participants were timed to complete the mortality, social isolation, or control primes taken from Greenberg et al. (1990). Participants were given two minutes to complete each of the two questions in this second priming task.

Following these manipulations, participants were again given the PANAS-X (Watson & Clark, 1991) as a distracter task and told to complete it at their own pace. Once all participants were finished, they were then given the word-completion task taken from Greenberg et al. (1994) to complete with no time limit. They were instructed to work as quickly as possible and to write down the first word that came to mind. After, participants answered one last question regarding the suspected purposes of our study. All participants were tested in groups of 1-4 individuals and an entire experimental session lasted approximately 20 minutes.

Results

The overall ANOVA found no significant main effects for cultural prime, $F(2, 150)=.88$, $p>.05$, nor any interaction between cultural prime and salience prime, $F(4, 150)=.67$, $p>.05$. However, a significant effect of salience prime, $F(4, 150)=2.65$, $p<.05$, was found and is shown

in Table 1. A set of post-hoc Tukey comparisons (p set at .05) revealed only one significant difference, namely between the mean number of death words ($M=.31$) and mean number of social isolation words ($M=.51$) for those participants in the neutral salience priming condition.

Table 1. *Mean proportion of words identified, and their respective standard deviations, as a function of word type.*

| | Mean | Standard Deviation |
|-------------------------------|------|--------------------|
| Death Prime (N=30) | | |
| <i>Death</i> | .39 | .23 |
| <i>Social Isolation</i> | .36 | .17 |
| <i>Fear</i> | .42 | .25 |
| Social Isolation Prime (N=28) | | |
| <i>Death</i> | .35 | .24 |
| <i>Social Isolation</i> | .37 | .20 |
| <i>Fear</i> | .46 | .22 |
| Neutral Prime (N=28) | | |
| <i>Death</i> | .31* | .20 |
| <i>Social Isolation</i> | .51* | .18 |
| <i>Fear</i> | .45 | .18 |

*Indicates significant differences at $p < 0.05$.

An analysis of covariance (ANCOVA) was also conducted to determine whether responses to the Collectivism and Individualism scale, the Self-Esteem scale, and the PANAS-X co-varied with performance on the word completion test. No significant effects were revealed.

Discussion

The goal of Experiment 2 was to examine the joint influence of cultural and salience primes on cognition using a different cognitive task from Experiment 1. In particular, we aimed to expand on Navarrete et al.'s (2004) study by looking specifically at the effects of mortality

and social isolation salience on death-, social isolation-, and neutral-thought accessibility. In doing so, we also hoped to validate either TMT or coalitional psychology.

Navarrete and colleagues studied social isolation salience influences on death-thought accessibility only in an individualistic culture and found that social isolation salience did not increase death-thoughts. Because collectivistic cultures focus more on groups and relationships between people and things, it could be that social isolation may be viewed by collectivists as a form of death. In this case, social isolation salience would also elicit thoughts of death and would explain Navarrete et al.'s findings that social isolation salience had the same effects as mortality salience. Social isolation salience, then, would merely be another form of mortality salience, and thus would provide more evidence for TMT. On the other hand, if social isolation salience did not elicit thoughts of death—and therefore was conceptually different from death—coalitional psychology would be supported and Navarrete et al.'s findings could not be explained by TMT. Furthermore, if it was found that mortality salience elicited thoughts of social isolation, the conceptual natures of death and social isolation in the contexts of both culture and salience priming would need to be questioned, as well as their implications for the theoretical foundations of TMT and coalitional psychology.

Results from Experiment 2 showed only a significant difference between the number of death and number of social isolation words generated in the neutral salience condition. In this group, more social isolation words were produced than death words. This difference may have been found because of the nature of the prime. Television may be viewed by some as a socially isolating experience, and many participants indicated these feelings of isolation in their essays. For example, one subject stated: “I think [television] is so detrimental to society. It isolates people...” while others described being less “social,” “by myself,” and “alone” in their

experiences when watching television. These responses give powerful support to the idea that television may not have induced neutral thoughts in participants and instead caused them to think more about social isolation.

Aside from this single finding regarding the neutral salience condition, there were no other significant differences for types of words produced in the mortality or social isolation salience conditions, providing no meaningful data in the context of comparing the validities of TMT and coalitional psychology. Another goal of this study was to replicate previous findings showing that a primed concept will become more accessible after a delay (Fiske & Taylor, 1991; Srull & Wyer, 1980). However, this present study did not replicate past research in showing that mortality salience increases death thoughts (Greenberg et al., 1994). Similarly, it did not reveal that social isolation thoughts were elicited by social isolation primes.

One possible explanation for these insignificant findings may concern the structure of our dependent measure. We included in our word completion task six potential death words, six potential social isolation words, and six potential fear words among fourteen neutral words. Because the ratio of aversive words to neutral words was significantly higher (9:7) in our study compared to the Greenberg et al. (1994) study from which it was taken, which had a 1:3 ratio of aversive to neutral words, participants may have predicted the purpose of our study and tried to answer in a way that opposed it. In addition, because participants were told that their personality had previously been assessed, they may have attempted to answer with non-death words primarily because of social desirability reasons. In other words, instead of writing the first words that came to mind, they chose to complete words that were more socially acceptable so that they would not be viewed as deviant.

Suspicion probe responses revealed that some participants were aware of our independent measures and how they might have related to our dependent measures, stating that the study examined “the connection between personality and word choice” or “whether thinking about something distressing would lead me to choose words/feelings that are in turn more distressing like death.” Furthermore, having so many aversive stimuli may have acted as a second salience prime, allowing participants to complete the task before they had a chance to move through proximal defenses and enter into distal defenses. Given these methodological issues, future research in this topic may choose to include fewer aversive words in relation to neutral words, making the purpose of the dependent measure less explicit.

General Discussion

Overall, the goals of Experiments 1 and 2 were to assess cultural and salience prime influences on three types of cognitive tasks in order to validate TMT or coalitional psychology, yet none of the statistically significant findings provided meaningful support for either theory. If our findings are valid, this may suggest that TMT and coalitional psychology are theoretically weak and do not affect cognition in ways that have been suggested in prior research by both terror management theorists (Greenberg et al., 1990) and coalitional psychologists (Navarrete et al., 2004). Moreover, it is important to highlight that much of TMT research, especially, has been conducted by the same set of researchers and used the same sets of salience manipulations. These consistent findings supporting TMT may reflect a systematic error that has gone undetected and has therefore not been accounted for in TMT studies. These errors may also have carried over into coalitional psychology research. Thus, a thorough re-assessment of TMT methodology may be needed in addition to a re-evaluation of its theoretical bases to account for any possible limitations in previous TMT or coalitional psychology research.

Despite these possible theoretical and methodological issues, however, so much empirical support has been found for TMT and coalitional psychology that a more likely explanation for our null effects involves methodological issues specific to Experiments 1 and 2. One possible problem with our methodology was our use of double priming, which may have been ineffective since a direct relationship between cultural priming and salience priming on cognitive task performance has never been empirically found. While Navarrete and colleagues' study examined two already culturally-divergent samples (Americans vs. Costa Ricans) and looked at death-thought accessibility, no other study has studied salience priming on death-thought accessibility using additional cultural priming.

Halloran (2001; Halloran & Kashima, 2004) studied double priming effects on cultural worldview defense but not on death-thought accessibility. Therefore, it may be noted that perhaps our priming for culture had less of an impact in Experiment 2 than previous studies where double priming for culture and mortality salience has occurred. In Halloran's (2001; Halloran & Kashima, 2004) studies, for example, participants were bicultural Aboriginal Australians and had one of their cultures--either Aboriginal or Australian--primed. They then received the standard mortality salience manipulation. It was found that if the individuals had their Aboriginal (collectivistic) culture made salient, they subsequently responded more collectivistically to the dependent measures. Those primed with Australian (individualistic) culture, on the other hand, responded more individualistically.

In our sample, the majority of participants were born in America or lived in America for much of their lives; therefore, they may have been more individualistic to begin with and would have trouble identifying enough with a concept like collectivism to let the cultural prime affect how they, in turn, responded to the salience primes and performed on the word completion task.

Interestingly, it was found that participants as a whole rated themselves as just as collectivistic as individualistic, according to our pre-laboratory questionnaire. However, this may reflect not overall cultural differences but instead differences within a culture. In other words, while participants in this largely Western sample may seem collectivistic according to our measure, in comparison to an Eastern sample their responses may not be very collectivistic. Because we did not conduct a true cross-cultural study to look at the effects of collectivism and individualism on mortality and social isolation effects on salience-thought accessibility, perhaps a more reliable and valid way to measure this is through comparing the words completed of a Western sample to an Eastern sample.

Another methodological issue may involve our presentation of the salience primes. Our measures were taken from Greenberg et al. (1990); however, while Greenberg and colleagues had disguised their mortality salience questions within a standard personality questionnaire, our study used only the salience prime questions as the entire personality assessment itself. Making the salience prime so explicit may have led participants to respond in a socially acceptable manner; instead of responding to the dependent measures with whatever came to their mind first (e.g., in the attribution task or in the world completion task) they may have engaged in self-monitoring, which in turn could have led to the insignificant effects.

In addition, having the questions stand alone as opposed to embedded in a longer personality assessment may have shortened the delay between our independent and dependent measures, making the prime insufficient in producing any of the hypothesized effects. In other words, we may not have allowed for a long enough delay for participants to move from proximal defenses to the distal defenses that we were predicting they would be employing at the time of the administration of the dependent measures. Research by Greenberg et al. (1994) shows that

this delay is necessary for the aversive thoughts to become accessible and for mortality salience effects to occur.

In light of these limitations, however, we found some support for another goal of this research, which was to examine the effects of individualism and collectivism on cognition. Specifically, a significant cultural priming effect found was on the types of causal attributions made in Experiment 1: participants primed with collectivism were more likely to make situational attributions while participants primed with individualism were more likely to make dispositional attributions. Though EFT findings were insignificant and therefore inconsistent with past literature, participants' responses to the attribution task provided evidence for collectivistic and individualistic cognitive style influences on event explanation. At the same time, cultural frame-switching was effective in producing the same effects as past research which has compared cognitive styles from two prototypically distinct cultures. This finding supports the notion that these different modes of thinking—whether at the societal or individual level—may influence how individuals perceive the world around them, why they attribute different causes for social behavior, and how they, in turn, may interact with others.

While no cultural effects were found in Experiment 2 for types of words generated in the word completion task, this may reveal that culture does not have an influence on the types of words that are accessible when primed with death or social isolation. Perhaps the nature of the dependent measure made it ineffective in producing the cognitive styles we hoped to elicit. Due to the general ineffectiveness of our measures for producing the joint effects of culture and salience prime, it may be suggested that other aspects of cognition be explored to expand on TMT and coalitional psychology research.

One area of cognition that has yet to be explored in relation to either theory is that of memory. It has been shown that priming for culture can influence what aspects of cultural history individuals remember; specifically, it was found their memories exemplified central cultural themes and schemas (Schwartz & Kim, 2002). Because priming influences how individuals interpret certain events as well, it may be that people primed with individualism and people primed with collectivism may remember any event very differently. Cultural priming in the context of memory, as well as studied in conjunction with TMT or coalitional psychology, may reveal a new and interesting way at looking at memory and culture. This also would have great implications for how events that are highly life-threatening or socially isolating can affect individuals' memories of them after, depending on the type of culture they live in or the cognitive style they adhere to. In addition, this would uncover new questions for clinical psychologists in regards to how individuals from these different cultures may respond differently to these types of traumatic events and their possible differences in coping style.

Along with these possibilities for future research, another more appropriate area to explore may be one that is more conceptually related to collectivistic and individualistic modes of thinking. Because a critical difference between the cognitive styles concerns their ideas about people and relationships among people, a more reliable dependent variable may involve actual interpersonal relationships. More specifically, it may be interesting to see how individuals' cultural influences, along with either mortality or social isolation salience, affect their preferences for the company of others, either in the form of intimate or familial types relationships.

It is assumed that under some anxiety-inducing threat, which may include death or social isolation, individuals will prefer the company of others over being alone (Schacter, 1959). If this

is the case, TMT and coalitional psychology would most likely have different predictions for the types of relationship preference that individualists and collectivists have under these threatening circumstances. TMT would predict that when faced with the threat of death, individuals will adhere to their cultural ideals; in this case, an individualistic culture might value personal relationships over familial relations, so individualists may prefer the company of one person with whom they hold an intimate relationship with as opposed to a larger group of individuals, like their family members. For collectivists, TMT would predict the opposite is true.

Coalitional psychology, on the other hand, would predict that regardless of the cultural cognition a person may be engaging in, the threats of social isolation as well as death would produce great anxiety and lead individuals to prefer the company of a group such as their family. While the presence of one other person may be sufficient to calming any fears, there still may be a preference for members of a common group (i.e., a friend from a large social network vs. a friend with whom a person shares no mutual friends). Other considerations for comparing the two theories in a relational and cultural context may involve looking at not just the number of preferred persons but the specific type of relationship held with the preferred person, exploring how these influences may affect perceived satisfaction with or investment in different interpersonal relationships, or examining ratings of different types of relationships (e.g., arranged marriages, interracial relationships, short-term relationships, etc.) that may vary in acceptance levels across different cultures.

Additional future directions for TMT and coalitional psychology research may delve into the question of conceptual differences or similarities between death and social isolation as a function of culture. Previous research has found that individuals from individualistic cultures differ from collectivistic cultures in how they judge transgressions depending on the nature of the

wrongdoing (Florian & Mikulincer, 1997). This reveals a possible distinction between how individualists and collectivists conceptualize relationships among those around them and between others and themselves. In deconstructing the concepts of death and social isolation it may be revealed that each is related to the other in some way, even though this may not have been evident in our research due to the methodological limitations in our word completion task. In line with this idea, future research may want to explore whether TMT and coalitional psychology are competing theories or complementary ones. Each provides a probable and well-supported theory about human motivations and the formulation and perpetuation of culture. The theories can be seen to overlap in many ways, and there is the possibility that humans may have been motivated both by their fear of death and their natural inclination to affiliate when forming groups and cultures.

Results from the present studies suggest that more research must be done in the areas of TMT and coalitional psychology. Both theories offer compelling evolutionary and social mechanisms that underlie and explain culture. This, along with what empirical evidence has been found, only begins to provide a clearer view of our social world. With further investigation in the realms of cultural influence and cognition, the ties and disconnects between TMT and coalitional psychology will be recognized and, consequently, will present new outlooks on our different ways of life.

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Appendix A

Triandis (1995), Collectivism and Individualism Scale.

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:

| | | | | | | | | | | |
|------------------------------|---|---|---|---|---|---|---|---|---|---------------------------|
| <i>Strongly Disagree</i> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | <i>Strongly Agree</i> |
|------------------------------|---|---|---|---|---|---|---|---|---|---------------------------|

- _____ 1. I prefer to be direct and forthright when I talk to people. (Ind)
- _____ 2. My happiness depends very much on the happiness of those around me. (Coll)
- _____ 3. I would do what would please my family, even if I detested that activity. (Coll)
- _____ 4. Winning is everything. (Ind)
- _____ 5. One should live one's life independently of others. (Ind)
- _____ 6. What happens to me is my own doing. (Ind)
- _____ 7. I usually sacrifice my self-interest for the benefit of my group. (Coll)
- _____ 8. It annoys me when other people perform better than I do. (Ind)
- _____ 9. It is important for me to maintain harmony within my group. (Coll)
- _____ 10. It is important to me that I do my job better than others. (Ind)
- _____ 11. I like sharing little things with my neighbors. (Coll)
- _____ 12. I enjoy working in situations involving competition with others. (Ind)
- _____ 13. We should keep our aging parents with us at home. (Coll)
- _____ 14. The well-being of my classmates is important to me. (Coll)
- _____ 15. I enjoy being unique and different from others in many ways. (Ind)
- _____ 16. If a relative were in financial difficulty, I would help within my means. (Coll)
- _____ 17. Children should feel honored if their parents receive a distinguished award. (Coll)
- _____ 18. I often do "my own thing". (Ind)
- _____ 19. Competition is the law of nature. (Ind)
- _____ 20. If my classmate gets a prize I would feel proud. (Coll)
- _____ 21. I am a unique individual. (Ind)
- _____ 22. To me, pleasure is spending time with others. (Coll)

- _____ 23. When another person does better than I do, I get tense and aroused. (Ind)
- _____ 24. I would sacrifice an activity that I enjoy very much if my family did not approve of it. (Coll)
- _____ 25. I like my privacy. (Ind)
- _____ 26. Without competition it is not possible to have a good society. (Ind)
- _____ 27. Children should be taught to place duty before pleasure. (Coll)
- _____ 28. I feel good when I cooperate with others. (Coll)
- _____ 29. I hate to disagree with others in my group. (Coll)
- _____ 30. Some people emphasize winning; I am not one of them. (Ind)
- _____ 31. Before taking a major trip, I consult with most members of my family and many friends. (Coll)
- _____ 32. When I succeed, it is usually because of my abilities. (Ind)

*Reverse scoring for item 30

Appendix B

Rosenberg (1965), Self-Esteem Scale.

| | | | | |
|-----------|-------------|---------------|-------------|-----------|
| Always | Usually | Sometimes | Usually | Always |
| False | False | True or False | True | 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.

*Reverse scoring for items 3, 5, 8, 9, 10

Appendix C

Trafimow, Silverman, Mei-Tai Fan, & Law (1997), Cultural priming task.

Individualism prime:

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.

Collectivism prime:

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 D

Gardner, Gabriel, & Lee. (1999), Cultural priming task.

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.

Individualism prime:

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.

Collectivism prime:

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 E

Greenberg, Pyszcznski, Solomon, Rosenblatt, Veeder, Kirklan, & Lyon. (1990), Mortality, Social Isolation, and Neutral Salience task

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.

Mortality Salience:

1. PLEASE DESCRIBE THE EMOTIONS THAT THE THOUGHT OF YOUR OWN DEATH AROUSES IN YOU.
2. WRITE DOWN AS SPECIFICALLY AS YOU CAN, WHAT YOU THINK WILL HAPPEN TO YOU PHYSICALLY WHEN YOU DIE.

Neutral Salience:

1. PLEASE DESCRIBE THE EMOTIONS THAT THE THOUGHT OF WATCHING TV AROUSES IN YOU.
2. WRITE DOWN AS SPECIFICALLY AS YOU CAN, WHAT YOU THINK WILL HAPPEN TO YOU PHYSICALLY WHEN YOU WATCH TV.

Social Isolation Salience:

1. PLEASE DESCRIBE THE EMOTIONS THAT THE THOUGHT OF BEING SOCIALLY ISOLATED AROUSES IN YOU.
2. WRITE DOWN AS SPECIFICALLY AS YOU CAN, WHAT YOU THINK WILL HAPPEN TO YOU PHYSICALLY WHEN YOU ARE ALONE.

Appendix F

Watson & Clark (1991), Positive and Negative Affect Schedule-Expanded Form.

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.

| 1 | 2 | 3 | 4 | 5 |
|--------------------------------|----------|------------|-------------|-----------|
| Very slightly Or not at all | a little | moderately | quite a bit | extremely |

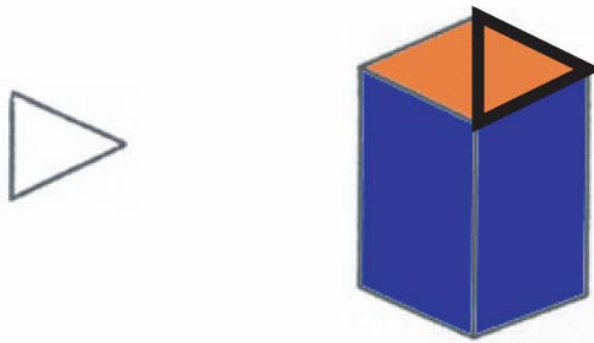
| | |
|--------------------|------------------|
| _____ interested | _____ irritable |
| _____ distressed | _____ alert |
| _____ excited | _____ ashamed |
| _____ upset | _____ inspired |
| _____ strong | _____ nervous |
| _____ guilty | _____ determined |
| _____ scared | _____ attentive |
| _____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

Appendix G

Witkin, H.A., Oltman, P.K., Raskin, E., & Karp, S.A. (1971), The Embedded Figures Test.

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.



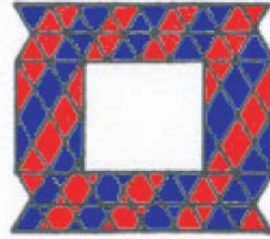
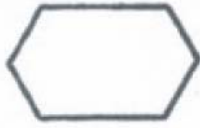
During this task, you will be presented with 24 similar puzzles, and you will have 5 minutes to complete as many as possible. Once you find the simple figure, outline its shape within the complex figure on the right, using the pen we have provided you.

Please note that when you are looking for the simple figure within the complex figure, it 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)



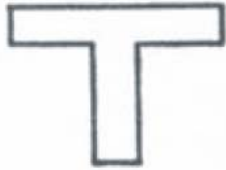
4)



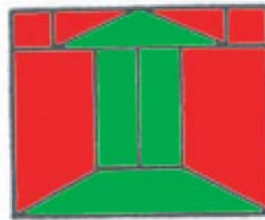
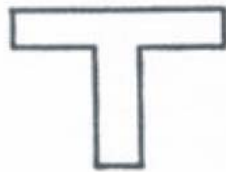
5)



6)



7)



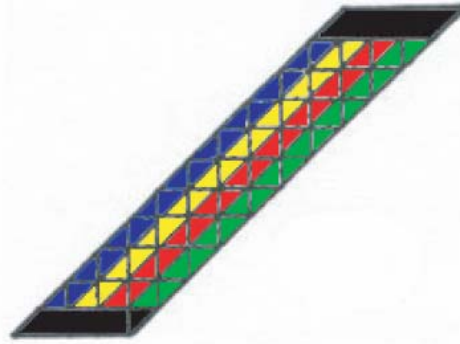
8)



9)



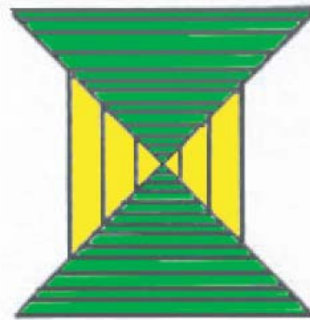
10)



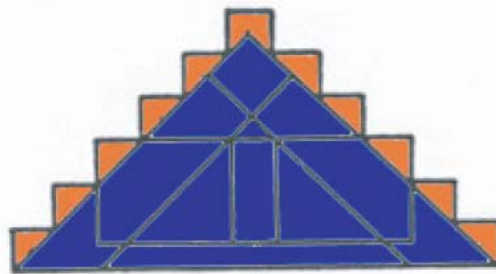
11)



12)



13)



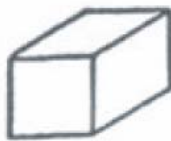
14)



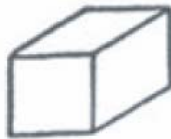
15)



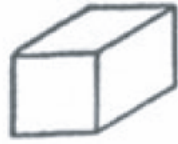
16)



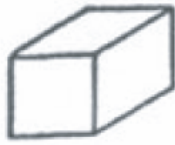
17)



18)



19)



20)



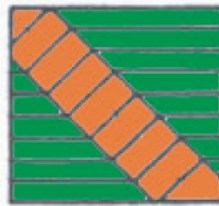
21)



22)



23)



24)



Appendix H

Adopted from McArthur (1972), Causal Attribution Task.

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.

Appendix I

Greenberg, Pyszczynski, Solomon, Simon, & Breus (1994), Word Stem 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 |

Key:

Mortality: 2) corpse, 10) skull, 15) dead, 17) coffin, 22) funeral), 31) decay

Social Isolation: 5) solo, 8) outcast, 12) single, 19) hermit, 24) exclude, 30) lonely

Fear: 3) panic, 7) fear, 14) horror, 20) dread, 26) fright, 28) scare

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