

**Terror Management Theory and the Impact of Individual and
Collective Mortality Salience on Symbolic and Literal
Immortality Beliefs**

by

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ABSTRACT

According to Terror Management Theory (TMT), many human behaviors, attitudes, and thoughts are the result of an attempt to reduce the uncomfortable feelings associated with the knowledge that human life is finite. Although many of TMT's postulates have been supported by research, the assumption that an underlying desire for literal or symbolic immortality is partly responsible for mortality salience responses has received less research attention. Additionally, there has been little research investigating the possibility that different forms of mortality salience may be associated with different behavioral, emotional, and cognitive reactions. The first study examined views of having children (a form of symbolic immortality) as a function of Individual mortality salience (increased awareness of one's own death), Collective mortality salience, (increased awareness of the deaths of others), or no mortality salience. Overall, results from Study 1 did not support the theory that different forms of mortality salience would result in different responses to questions about parenthood desirability. In partial support of predictions, however, participants in the individual mortality salience condition did report an increased sense of urgency to have children compared to those in the control condition. The second study examined views on religion, spirituality, and the possibility of an afterlife (a form of literal immortality) as a function of individual, collective, or no mortality salience. In contrast to predictions, the mortality salience inductions had no effect on self-reported measures of religion, spirituality, and opinions about an afterlife – thereby offering little support for the theory that mortality salience increases religiosity and spirituality. Study 2 also did not support the hypothesis regarding different reactions to different mortality salience types, as individual and collective mortality salience conditions produced

virtually identical results. The third study examined the possibility that thinking about one's children prior to experiencing increased death awareness would moderate the mortality salience effect. Although this prediction was not supported, the results did support previous research demonstrating a tendency for highly neurotic individuals to be more responsive to mortality salience inductions.

Keywords: **Terror Management Theory, Mortality Saliency, Literal Immortality, Symbolic Immortality, Death, Religion, Children, Relationships**

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INTRODUCTION

In the fall of 2002, a local newspaper headline read “Sniper Claims 10th Victim in U.S. Capital.” For two weeks, the Washington D.C. area was the site of ten “sniper-style” attacks, eight resulting in fatalities. The victims were not individuals we tend to associate with such violent attacks (e.g., gang members or drug dealers). Rather, they were described in the media as “ordinary people.” In such cases, is it possible that we may find comfort in discovering the connections or commonalities between the victims? For example, if the victims all happened to be female, males may feel a certain sense of protection from future attacks. If the victims were all children, adults may fear for the lives of their children, but not for their own lives. If the victims were all of a particular race, other races may feel that they are unlikely to be targeted next. In the face of mortality, we may search for (or create) evidence that proclaims “*I am safe. Others are at risk, others need to worry...but I am safe.*” Rationally, we realize that our lives are finite. However, realization is not equivalent to acceptance. In the following series of studies, the human reaction to increased mortality awareness will be examined. More specifically, the studies will attempt to answer this question: During periods of greater mortality realization, do we engage in behaviors, change our preferences, and shift our values in an attempt to convince ourselves that in some way we can avoid the ultimate fate of zero existence - that we can become immortal?

On September 11th 2001, I, as did millions of others awoke to unimaginable scenes of chaos, destruction, and the loss of human life that resulted from the terrorist attacks in New York city. As the day progressed, my reaction and the reactions of those around me appeared to move from “This isn’t happening” to “I wish this wasn’t

happening” to “Will it happen again?” Instantly, the reality of human mortality was brought to the consciousness of the entire world (especially for the people of North America and New York City). Could we find a way to distance ourselves from our sudden mortality awareness by identifying the differences between ourselves and the victims? Did we have any evidence to support the notion that *somehow* we were different than the people who lost their lives during the attacks? If the victims could all be described as “A” and I see myself as “B” I may feel that I have regained some degree of control and predictability over my mortality. Again, “I am safe. Others are at risk, others need to worry...but *I* am safe.” Research on the phenomenon known as *the illusion of invulnerability* has demonstrated that humans have a robust perception of personal physical safety (e.g., Roe-Berning & Stracker, 1997). Beck (2004) argues that when faced with increased death awareness, individuals adopt the existential defense mechanism of *specialness*. That is, they tend to view themselves as uniquely protected from death and more in control of their ultimate fate than they actually are.

These mortality-coping strategies (e.g., viewing ourselves as different from those who have died) may serve us well on the majority of occasions we turn to them. They allow us to wake up in the morning believing that we will also wake up the next morning, and the next, and the next. They allow us to drive to work or school without assuming that every car we pass will unexpectedly swerve into our lane, ending our life instantly. They allow us to smoke, drink, and eat unhealthy foods without believing that our hearts will stop after we fall asleep later that night. Unfortunately, these mortality-coping strategies are not always effective. Again, let us turn to the case of the sniper attacks in Washington, DC. We may find it troubling that there were no apparent similarities

between the victims. To address the examples posed earlier, the victims were *not* all of the same sex, age, or ethnicity. They were *not* all involved in some “deviant” activity (e.g., drug users). They were men, women, and children of all ages, races, and socioeconomic statuses engaged in rather mundane activities that we can all relate to (e.g., filling cars with gas, walking to school, buying groceries). Now consider the victims of the terrorist attacks in New York, Washington, and Pennsylvania. Once again, they were “ordinary” men, women, and children of all ages and ethnicities doing “ordinary” things (such as taking a flight or going to work). When we look closely at the victims, we cannot help but see ourselves. We may try, but ultimately, we have difficulty explaining their deaths by who they were or by what they were doing...they were *us* and they were doing what *we* do every day.

For the examples of the sniper and terrorist attacks, our ability to avoid confronting our own mortality may be compromised by the similarities we find between the victims and ourselves. However, it is very important to note another unique (or perhaps not so unique) characteristic of these examples. Not only does the random and uncontrollable nature of these particular current events threaten our own individual lives (individual mortality), they *also* threaten the lives of those important to us. That is, just as these events make us aware that today could be our last day alive, they also make us aware that our families, friends, and members of our culture are just as vulnerable (collective mortality). A sniper killing one person per day with no apparent motive or pattern delivers a very clear message to our collective psyches: “I am mortal and I could literally die at any moment. The people I care about are also mortal and could die as well. The world is not a safe place for me or my family. Death is uncontrollable, unpredictable,

and unavoidable for me *and* for every single person I care about.” Due to recent events such as the terrorist attacks in the US, the Washington sniper, letters laced with anthrax, and Western involvement in wars in the middle East, human mortality has been in the consciousness or on the verge of consciousness for North American citizens more so than any period in recent history. We are only a newspaper article or a television news story away from once again confronting the harsh reality that our lives are temporary and extremely fragile. Luckily, we have developed impressive and extensive coping mechanisms for dealing with mortality awareness (much more on this later).

With regard to the experience of death, some have suggested that certain species of animals, such as elephants, show concern for the deceased (Douglas-Hamilton, Bahalla, & Vollrath, 2006). However, it seems unlikely that animals have the same clear awareness of an inevitable death (and the anxiety that accompanies this knowledge) that humans do. For example, the bird that just landed on my balcony lives in a much more dangerous and deadly world than I do. In contrast to this bird, I have never been viewed as a potential meal! Yet compared to this bird, my behaviors are far more influenced by *thoughts* of death and the knowledge that I will some day die. Of course, animals can experience fear, and their behaviors are certainly affected by this fear (Rushen, Taylor, & de Passille, 1999). Just like the behaviors of humans, the behaviors of animals can be motivated by basic harm avoidance (e.g., forest animals running away from the smell of smoke rather than towards it). Although it is impossible to know exactly what animals “think” about death (hence, the complete lack of scientific research on this topic), it seems reasonable to conclude that animals do not experience and understand the *concept* of an inevitable physical death like humans do. It can be argued that animals live in a

highly focused segment of time consciousness. While there is some support for the hypothesis that certain animals display limited evidence of episodic memory and future planning (Clayton, Bussey, & Dickinson, 2003; Suddendorf & Corballis, 2008) it is generally believed that animals more or less live in the present (see Roberts, 2002 for a review of research supporting of this argument). This is not to imply that a dog, for example, does not have some memory of its last visit to the veterinarian when entering the waiting room on its next visit. Nor does it mean that the same dog has no concept of the future when it pulls off a tablecloth in order to retrieve dinner leftovers! What it does mean is that animals live in a very small window of time corresponding to; just before the present, the present, and just after the present. Animals do not spend time thinking about their accomplishments over the past year, nor do they plan for what they will be doing next week. In contrast, humans have the ability to project ourselves into the past and into the future. We daydream about the people we have known, the places we have been, what we have done, and who we used to be. We ask ourselves questions like “Who will I be, where will I live, and what will I value?” We wonder who we will be in 10 years, in 20 years...in 50 years? And then the realization hits us. The question we should be asking is not “Who will I be in 50 years?” but rather, “Will I be?” For almost everyone reading these words, the answer is, “You will not be.” At best, you may have 60 years yet to live. At worst, this is your last hour alive.

The ability to contemplate our own existence and to project ourselves into a future in which we are no longer alive, may be uniquely human (Becker, 1973; Sani, Herrera, & Bowe, 2009). Unfortunately, this rather special ability has also resulted in a fear (and complications resulting from this fear) unknown to other animals. For us, simply living

with the awareness that life is temporary can dramatically influence human behaviors and thoughts (Kosloff & Greenberg, 2009). In the program of work described in this dissertation, mortality awareness is conceptualized as being threatening primarily to the individual (individual mortality) or threatening to both the individual and other people in the individual's life (collective mortality). This is an important distinction because previous research examining the effects of mortality salience has generally conceptualized death awareness as an individual mortality salience threat. An exception to this rule is a study by Kashima, Halloran, Yuki, and Kasima (2004) which introduced the concept of a collective mortality (i.e., the idea that an entire country or population could die). Kashima et al. found that collective mortality salience had a greater impact on Japanese subjects compared to Australian subjects – which according to the authors, may be due to the greater importance placed on a shared national identity in Japan.

The following research will focus on procreation (a form of symbolic immortality) and the achievement of literal immortality (e.g., heaven or reincarnation) as two possible methods of managing death anxiety. It will also address how these forms of immortality may be influenced by the type of mortality salience experienced by subjects (i.e., individual vs. collective). Therefore, there are two primary objectives to the following series of studies. First, if the concept of collective mortality is to be useful in understanding mortality salience reactions, it will be important to support previous research (i.e., Kashima et al., 2004) showing different responses to individual and collective mortality salience. Second, this research is an attempt to explore how the impact of these two forms of mortality salience may vary depending on the available method of death anxiety reduction (i.e., symbolic immortality through procreation vs.

literal immortality through religion). These two objectives will be explored using the theoretical framework known as Terror Management Theory (TMT; e.g., Arndt & Vess, 2008; Greenberg, Pyszczynski, & Solomon, 1986).

Origins of Terror Management Theory

Terror management theory is grounded in evolutionary theory (e.g., Landau, Solomon, Sheldon, Pyszczynski, & Greenberg, 2007), argues that humans are biologically predisposed toward continued survival (Jonas, Martens, Kayser, Fritsche, Sullivan, & Greenberg, 2008), and was initially inspired by the work of cultural anthropologist Ernest Becker (1973). Becker believed that the unique human quality of self-consciousness and the ability to think abstractly results in existential fear and anxiety unknown to other animals. Like animals, we have an instinctual drive for self-preservation, but unlike animals, we also understand that our lives are finite. Becker theorized that death anxiety results from realizing that although we can sense and avoid mortal dangers, ultimately death *will* catch up to us and our lives *will* come to an end. In order to function and to avoid this potentially paralyzing anxiety, we have developed psychological mechanisms to assist us in managing death anxiety. Becker believed that one of the ways in which we alleviate this anxiety is by viewing ourselves as part of shared human experiences that give life meaning and significance. In this view, the ultimate goal of human existence is not to simply prolong life, but to transcend death...to achieve symbolic immortality (e.g., writing a book, leaving a lasting influence on society) or literal immortality (e.g., the promise of an afterlife through religion or spirituality).

Terror Management Theory and the Cultural Anxiety Buffer

According to TMT, many human behaviors, preferences, and thoughts can be understood as an attempt to reduce the anxiety associated with realizing that our lives are temporary and the timing of death is entirely unpredictable (Greenberg, Solomon, & Pyszczynski, 1997). The theory states that the potential terror of death is managed primarily through one's culture - the shared values, beliefs, morals, traditions, and knowledge of society (Solomon, Greenberg, & Pyszczynski, 2004). Although there are significant variations between human societies, it is argued that they all manage existential anxiety through the creation of culturally derived meanings and values. TMT's definition of "culture" is a relative and flexible term. In theory, "culture" can refer to the millions of people in your country, race, or religion, the thousands of people in your town, a dozen people in your circle of friends, or simply yourself and one other person.

According to TMT, terror from the awareness of human mortality is managed by maintaining faith in two components of a cultural anxiety buffer (Salzman & Halloran, 2004). The first component of the cultural anxiety buffer is the belief that the world in which we live has meaning, order, and specific moral standards to follow. It is a humanly constructed view of reality that is intended to provide life with permanence and stability, and to offer individuals a sense of personal value. According to Pyszczynski, Solomon, & Greenberg (2003):

By providing a view of reality as stable, orderly, meaningful, and permanent, cultural worldviews allow us to deny that we are merely transient material organisms clinging to a clump of dirt in a purposeless universe fated only to die and decay. All my perceptions of time, place, name, meaning, and significance at this precise moment (and every other moment) are based entirely on my immersion in a culturally constructed and ultimately fictional framework for organizing my thoughts and sensations. Different cultures mold their members' transient experiences quite differently, but fortunately for them, all cultures

provide order, stability, meaning and individual enduring significance, just as America does for me. And precisely because cultures do this, the vast majority of people can function securely, safely tucked within their death-transcending worldviews. In this way, we live as valued participants in a culturally based symbolic vision, rather than vulnerable animals fated only for death and decay. (p. 17)

This first component involves an expectation that for those who meet or exceed these cultural values, the achievement of symbolic and/or literal immortality is a solution to inevitable physical mortality. Symbolic immortality can be achieved by a variety of methods including death-transcending contributions to a culture (Jonas, Schimel, Greenberg, & Pyszczynski, 2002; Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989), the knowledge that your belief system and values will continue to be upheld by your culture following your death, and most importantly for the current series of studies, through procreation (Wisman & Goldenberg, 2005). Literal immortality is typically associated with the promise of an afterlife via a particular religion or faith, given that one meets the specific standards and subscribes to the specific beliefs of the religion.

Self-esteem (the belief that one is of value in a world of meaning) is the second component of the cultural anxiety buffer. The achievement of self-esteem is considered to be an essential ingredient in reducing the fear associated with mortality awareness (Greenberg, 2008; Hirschberger, Florian, Mikulincer, Goldenberg, & Pyszczynski, 2002). TMT views self-esteem as the end result of living up to the standards of a culturally prescribed worldview. Our immortality is not guaranteed by simply believing that the world has meaning, order and value (component 1 above). According to TMT, we must also view ourselves as valuable contributing members of our world / culture in order to

achieve a sense of death transcendence (Harmon-Jones, Simon, Greenberg, & Pyszczynski, 1997; Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004). By behaving in ways that receive praise and respect from one's culture, self-esteem is maintained and/or enhanced (Greenberg & Shackelford, 2005). In contrast, culturally undesirable behaviors and beliefs serve to decrease self-esteem. Of course, the notion of "culturally undesirable" is a perfect case to apply TMT's flexible definition of culture. For example, an underage youth who drinks alcohol likely receives little approval (and therefore self-esteem) from adult society for this behavior, but he may receive significant positive feedback from the subculture important to *him* (i.e., his friends). According to TMT, what matters most is living up to the beliefs and standards of *your* valued culture, not satisfying the values of other belief systems. As such, it has been found that mortality salience increases adherence to social norms and values (Jessop, Albery, Rutter, & Garrod, 2008) and that these values can be manipulated and vary in response to mortality salience inductions (Jonas, et al., 2008). Supporting the theory that self-esteem is essential in moderating death-related anxiety, research has demonstrated that enhancing self-esteem results in less defensive reactions, less self-reported anxiety, and lower physiological arousal when physical mortality is made salient by having participants write about their feelings as they contemplate their own death (Greenberg, Pyszczynski, Solomon, Pinel, Simon, & Jordan, 1993; Harmon-Jones, Simon, Greenberg, Pyszczynski, & Solomon, 1997; Schmeichel, Gailliot, Filardo, McGregor, Gitter, & Baumeister, 2009). This need for self-esteem enhancement in the face of mortality salience can result in somewhat counterintuitive human behaviors and reactions. It may seem reasonable that following an increase in mortality awareness, individuals would be less likely to engage

in physically harmful or risky behavior. According to TMT, this prediction is not necessarily accurate. For example, it was found that if driving ability was an important component of one's self-esteem, these individuals were actually *more* likely to engage in risky driving behavior following mortality salience inductions (e.g., Jessop, Albery, Rutter, & Garrod, 2008; Taubman Ben-Ari, Florian, & Mikulincer, 1999). Research on risk-taking as a result of mortality salience has also found that those already with high self-esteem may be more willing to take risks in certain situations while those with low self-esteem become more risk-averse (Landau & Greenberg, 2006). In contrast, other research has found just the opposite – that *low* self-esteem tends result in more risky decisions after mortality salience (Miller & Taubman, 2004). Although the impact of self-esteem seems to depend on the particular type of risk being assessed, the conclusion usually is that in order to enhance self-esteem and thereby boost the notion that they are valuable members of their culture, individuals are willing to sacrifice physical safety and/or the possibility of success.

By adopting a cultural worldview and fulfilling the criterion of value supported by the worldview, it may be possible to reduce the experience of existential terror associated with acknowledging one's mortality (Landau, Greenberg, Solomon, Pyszczynski, & Martens, 2006). According to TMT, the primary function of the cultural anxiety buffer is to reduce mortality-related fear. Therefore, it is essential that individuals have faith in their cultural beliefs and that they receive validation and support from members of their culture for maintaining these beliefs. However, both components of the cultural anxiety buffer are relatively fragile social constructions and must be maintained by seeking validation from others. Therefore, when one's values and beliefs are shared and validated

by others, it increases the faith in their validity, and when others do not support these perceptions and beliefs, it undermines their validity.

Anxiety-Buffer Hypothesis and Mortality Salience Hypothesis

TMT research has focused on two primary hypotheses. According to the *anxiety-buffer hypothesis* (Greenberg et al., 1997), augmenting a psychological structure that provides protection against anxiety, should result in a reduction of anxiety in response to future threats. Self-esteem as discussed above can be viewed as one psychological structure that serves as an anxiety-buffer. For example, individuals with high self-esteem whether dispositional or experimentally induced, have experienced lower levels of anxiety in response to graphic depictions of death (Greenberg, Solomon, Pyszczynski, Rosenblatt, Burling, & Lyon, 1992) and that reminders of mortality generally produce a desire to gain self-esteem (Solomon, Greenberg, & Pyszczynski, 2004). To summarize, strengthening any anxiety-buffering structure (e.g., increasing self-esteem or strengthening faith in the cultural worldview) serves to reduce anxiety and anxiety-related behavior in response to death-related threats (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004).

The TMT *mortality salience hypothesis* states that there will be an intensified need to maintain any system that alleviates the potential terror arising from an increased awareness of mortality. If a psychological structure (e.g., the cultural worldview) provides protection against the terror associated with the knowledge of mortality, reminding people about their mortality should activate the need to validate one's faith in the cultural worldview. TMT theorists propose that by maintaining faith in the cultural

worldview (beliefs, behaviors, values, and morals) death-related anxiety can be reduced. Therefore, it follows that in the presence of mortality reminders (whether occurring naturally or via experimental manipulation) there will be a greater need to adhere to these cultural worldviews. Supporting this hypothesis, studies have found that mortality salience can lead to the validation of one's *own* cultural worldview by derogating, punishing, and aggressing towards others assumed to have different worldviews (e.g., Florian & Mikulincer, 1997; McGregor, Lieberman, Greenberg, Solomon, Arndt, Simon, & Pyszczynski, 1998) and has been used as a model to explain ageism (Martens, Goldenberg, & Greenberg, 2008) and defense of consumerism (Arndt, Solomon, Kasser, & Sheldon, 2004; Rindfleisch & Burroughs, 2004). In addition to mortality salience being associated with negative behavior towards worldview challengers, it also leads to more positive behavior towards individuals who support one's particular cultural worldviews (Simon, Arndt, Greenberg, Pyszczynski, & Solomon, 1998; Tam, Chiu, & Lau, 2007) and increased defense of one's own culture (Fritzsche, Jonas, & Fankhänel, 2008).

Dual Process Theory of TMT

A dual process model of the cognitive processes responsible for death-focused defensive reactions has been recently added to TMT (see Pyszczynski, Greenberg, & Solomon, 1999; Pyszczynski, Greenberg, and Solomon, 2005). It is theorized that fear of death activates two distinct defenses depending on whether or not mortality-related content is in present focal consciousness. It is believed that when individuals are actively thinking about death, the defenses are denial and suppression. Denial can involve pushing

death into the distant future by believing that one is invulnerable to factors which could lead to an early death (Greenberg, Arndt, Simon, Pyszczynski, & Solomon, 2000), or actively suppressing death-related thoughts (Arndt, Greenberg, Pyszczynski, & Solomon, 1997). As a result of these defenses (known as proximal defenses), death-related thoughts are no longer a part of the individual's conscious focus. Mortality salient thoughts are still very accessible, but are no longer in active contemplation. In this state, distal defenses are activated. Distal defenses continue to manage the potential terror of death-related thoughts by increasing worldview adherence and self-esteem striving (Greenberg, Pyszczynski, Greenberg, Solomon, Kluck, & Comwell, 2001). Supporting the dual process theory, it has been found that following an explicit mortality salience induction, worldview defenses are heightened only after a delay or a distraction task (Arndt, Greenberg, Solomon, Pyszczynski, Simon, 1997), presumably after proximal defenses such as denial and suppression have first been activated (Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994). In contrast, following a subliminal mortality salience induction, increased worldview adherence is observed immediately (Arndt, Greenberg, Pyszczynski, & Solomon, 1997), suggesting that proximal defenses are not necessary when death-related content does not enter consciousness and that distal defenses can be activated without delay. Thus, if thoughts of death are the current focus of attention, proximal defenses such as denial and suppression are used to reduce death-related anxiety. In contrast, if mortality salience thoughts are no longer a part of one's conscious focus, distal defenses are activated in order to manage the underlying death-related anxiety (e.g., Arndt, Cook, Greenberg, & Cox, 2007).

Mortality Salience Research

To date, TMT's hypothesis that increased adherence to cultural worldviews and self-esteem bolstering occurs in response to reminders of mortality has been supported in hundreds of studies. The most common mortality salience induction involves asking participants (typically university students) to write a paragraph about what they believe will happen to them when they physically die, and also, to write about their emotions as they contemplate their death. These requests are usually embedded among filler items as part of a "personality test." Critics have suggested that the effects of mortality salience manipulations would also result if subjects were asked to write about *any* anxiety-provoking event. However, research has not supported this argument. Control subjects are often asked to answer similar questions regarding watching television (Simon, Greenberg, Harmon-Jones, & Solomon, 1996), studying for an exam (e.g., Greenberg et al., 1995), or experiencing dental pain (e.g., Fritsche, Jonas, Fischer, Koranyi, & Berger, 2006). In all of these studies however, focusing on television viewing experiences (control, non-worrisome), exam studying experiences (control, worrisome) or dental pain (control, worrisome) did not lead to a greater defense of the cultural worldview. Therefore, increased worldview defense appears to result only in response to thoughts of death and not simply from any worrisome or painful event.

Following the mortality salience induction, subjects may be asked to make judgments about individuals who either support or oppose their cultural worldviews, or may be given the opportunity to defend their own worldview. Consistent with TMT's mortality salience hypothesis, subjects tend to make harsher judgments against those who oppose their worldview in mortality salient conditions than in control conditions. For

example, in the first published TMT study, municipal court judges set higher bonds for an alleged prostitute when they were first required to report their thoughts and feelings on anticipating their own death (Rosenblatt et al., 1989). The prostitute was assumed to threaten the cultural worldview of the judges. Later studies found that harsh treatment of the prostitute occurred only when subjects had unfavorable attitudes toward prostitution (Rosenblatt et al., 1989). Of course, this makes perfect sense, as we would expect a worldview defense to occur most strongly in the presence of a worldview threatening person or event.

Mortality salience research has consistently demonstrated that reminders of mortality result in increased worldview faith and identification. For example, researchers investigating mortality salience have found that this induction has led Christian subjects to respond more positively toward Christians than Jews (Greenberg, Pyszczynski, Rosenblatt, Veeder, Kirkland, & Lyon, 1990); has led American students to respond especially favorably to a foreign student who praised America and especially unfavorably to a foreign student who criticized America (Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994); has resulted in hesitance to use cultural objects in inappropriate ways (e.g., hammering a nail to a wall using a crucifix) (Greenberg, Porteus, Simon, Pyszczynski, & Solomon, 1995); has resulted in overestimation of the proportion of others who share their opinion when interviewed in front of a funeral home (Pyszczynski, Wicklund, Florescu, Koch, Gauch, Solomon, & Greenberg, 1996); has triggered phobic behaviors (Strachan, Schimel, Anrdt, Williams, Solomon, Pyszczynski, & Greenberg, 2007); has led to physical aggression (i.e., feeding hot sauce to a person who expressed a dislike for spicy foods who criticized subjects' political views) (McGregor, Lieberman,

Greenberg, Solomon, Arndt, Simon, & Pyszczynski, 1998); has increased support for counter-terrorism policies (Landau, Solomon, Greenberg, Cohen, Pyszczynski, Arndt, Miller, Ogilvie, & Cook, 2004); has resulted in Whites showing increased sympathy for White racists (Greenberg, Schimel, Martens, Solomon, & Pyszczynski, 2001); and has caused people to view the physical aspects of sex as less appealing presumably because sex is a reminder that humans are just like animals and are subject to death and decay (Goldenberg, Pyszczynski, McCoy, Greenberg, & Solomon, 1999).

The power of mortality salience was demonstrated in a particularly memorable study. Schimel, Simon, Greenberg, Pyszczynski, Solomon, and Waxmonsky (1999) started with the assumption that under normal conditions, Whites will prefer Blacks whose behaviors do not support negative stereotypes and images of Blacks. After this hypothesis was supported, they wondered if the same pattern would hold true under conditions of mortality salience. Would Whites continue to favor the Black confederate who appeared to share similar values as the White subjects, and presumably, shared a similar worldview? Based on previous research this seems reasonable, as death awareness should cause individuals to find those who share their worldview even more appealing. The results did not support this hypothesis, as Whites in the mortality salience condition now found the Black confederate who confirmed negative stereotypes of Blacks more appealing than the confederate who did not support these stereotypes. With a closer examination of TMT, these results are not surprising. According to TMT, others having the *same* worldview as you is not as important as whether their thoughts and behaviors *support your* worldview. Therefore, if one has a stereotype of a particular group, when the behaviors of the group members support this stereotype (even negative behaviors),

the group is more appealing to an outsider. Under mortality salient conditions, the need to validate the individual worldview is so strong that individuals who support preexisting negative stereotypes are actually preferred over those who challenge the worldview with unexpected positive behaviors.

Individual and Collective Mortality

A review of TMT research may cause one to believe that all forms of mortality salience are interchangeable. Whether death awareness is raised by writing about your own death (Simon et al., 1998), being interviewed in front of a funeral home (Pyszczynski et al., 1996), watching videos (Greenberg et al., 1992), or receiving subliminal messages (Arndt, et al., 2007; Arndt et al., 1997), the vast majority of death awareness manipulations have focused on the individual (i.e., *I am vulnerable, I will die*). However, recall once again that Kashima et al. (2004) found different reactions to individualistic and collective mortality salience inductions, supporting the theory that there are at least two distinct forms of mortality salience. Furthermore, these two forms of mortality salience may result in different methods of death-anxiety reduction. Individual mortality salience is threatening primarily to the individual. An individual mortality salience manipulation results mostly in increased personal death awareness and anxiety - the person realizes that their own death is unavoidable. In TMT research, having participants write about their feelings as they think about their own death (e.g., Friese & Hofmann, 2008) is the most common method of increasing death awareness, and would be classified as an individual mortality salience induction. Being involved in a single

vehicle car accident would be an example of naturally occurring individual mortality salience.

Collective mortality salience, in contrast to individual mortality salience, is threatening to both the individual *and* to the members of his or her society/culture. Collective mortality salience results in increased individual death anxiety, *and also*, an increased realization that other people in the individual's life are just as vulnerable and cannot escape death. According to these definitions, the vast majority of mortality salience manipulations in TMT studies are threats to individual mortality (Kashima et al., 2004). In contrast, collective mortality salience inductions are very rare in TMT research. In the "real world" however, there is no absence of collective mortality salience. Once again, consider the terrorist and sniper examples from the beginning of this discussion. These events threaten both the individual and the world in which the individual lives. There is an increased concern not only for one's own life, but also for the lives of valued others (e.g., family, friends, society at large). Following collective mortality salience, there is an intensified perception of the world as unpredictable, threatening, and dangerous for its inhabitants. Clearly, more research on collective mortality salience can only expand TMT's utility as an explanation of human reactions to death anxiety. Accordingly, one major goal of the proposed research is to further examine the effects of collective mortality salience.

Literal and Symbolic Immortality: Afterlife and Procreation

As reviewed above, TMT has used the anxiety-buffer hypothesis and the mortality-salience hypothesis to explain adherence to moral and cultural standards, the importance of self-esteem, and aggression toward those who disparage our worldviews. The large majority of TMT research has concentrated on self-esteem as a death anxiety buffer, and cultural worldview adoption as a consequence of intensified mortality salience (Solomon, Greenberg, and Pyszczynski, 2000). However, it should be noted that ever since the very first TMT articles (e.g., Rosenblatt et al., 1989), to the primary researchers' current work (e.g., Goldenberg, Heflick, & Cooper, 2008; Arndt et al., 2007), the desire for literal and/or symbolic immortality has been conceptualized as an underlying mechanism for the predicted mortality salience effects. Reviewing TMT research (e.g., Landau, Greenberg, & Sullivan, 2009; Greenberg et al., 1995), one typically finds a brief statement in the introduction stating that by believing in the cultural worldview and living up its standards, the goal is to transcend death symbolically and/or literally. The desire for immortality appears to be at the very foundation of several TMT hypotheses (e.g., dual-process, anxiety-buffer, mortality-salience). TMT states that a fundamental way in which humans deal with the reality of death is through the hope of literally transcending death through afterlife achievement (e.g., heaven or reincarnation), or symbolically transcending death by being part of something that will remain after one is dead (e.g., cultural connections, career achievement). Pyszczynski et al. (1999) write:

Our ancestors developed a solution to the problem of death in the form of a dual-component cultural anxiety buffer consisting of a cultural worldview - a humanly constructed symbolic conception of reality that imbues life with order, permanence, and stability, a set of standards through which individuals can attain a sense of personal value, and some hope of either literally or symbolically transcending death for those who live up to these standards of value. (p. 839)

Regarding the influence of immortality desires on reactions to increased death awareness, there appears to be a 4-Step reasoning process that underlies most TMT research. In Step 1, an individual experiences intensified mortality salience (i.e., the sudden realization that death is unpredictable and unavoidable). In Step 2, there is assumed to be an increased motivation to regain the sense of invulnerability and immortality that has been lost. Step 3 is typically the measurement of increased adherence to the cultural worldview (e.g., harsher judgments on social transgressors), which is assumed to boost the death-anxiety buffer. In Step 4 as a result of this cultural worldview support, one's sense of immortality has been restored and death-related anxiety has returned to a more manageable level.

TMT researchers argue that increased worldview adherence following intensified death awareness reflects individuals adopting behaviors and views thought to increase the probability of achieving symbolic or literal immortality. However, if the ultimate goal of increased cultural worldview adoption is the achievement of symbolic or literal immortality, then it is reasonable to suggest that individuals might be able to *bypass* this particular step and take a more *direct* route to satisfying immortality needs. Therefore, a *3-Step* model may be useful for examining the effects of intensified mortality salience on the need to regain a sense of immortality. Although previous research has not specifically described these two possible models, it is worth noting that past studies have used designs that imply a 3-step process (relevant examples will be described in Study 1 below). The above comparison between a 3-step and 4-step model is depicted in Figure 1.

To clarify, TMT proposes a roundabout solution to satisfying the need for immortality: A threatening mortality salience induction engenders a boost to the cultural anxiety buffer (e.g., forming harsher opinions of those who contradict your cultural

worldview), which in turn satisfies the desire for literal / symbolic immortality (as the new polarized beliefs are assumed to be more consistent with achieving an afterlife). However, some researchers have begun to assess whether individuals attempt to regain their sense of immortality by shifting their behaviors, attitudes, and values on issues *directly* related to the achievement of literal or symbolic immortality. For example, it was found that reading an essay arguing against the presence of an afterlife leads to stronger beliefs that one possesses positive qualities and also results in greater worldview defense (Dechesne, Pyszczynski, Arndt, Ransom, Sheldon, van Knippenberg, & Janssen, 2003) – the reasoning being that if one cannot believe in an afterlife as a way to manage death anxiety, other methods must be used (i.e., self-esteem and worldview defense). Additionally, in a study initially inspired by the increasing frequency of suicide bombings, it was found that mortality salience increased British citizens expressed willingness to self-sacrifice for their country presumably because this is a method of obtaining a form of symbolic immortality (Routledge & Arndt, 2008). Perhaps however, the two most obvious and *direct* methods of death transcendence are procreation (symbolic immortality) and afterlife achievement (literal immortality). It should be noted that it is impossible to completely eliminate the element of worldview adoption (e.g., a desire to have children could be viewed as a form of endorsing a cultural worldview). However, the most important point of the three-step model is that if a desire for immortality underlies previous mortality salience reactions, then this desire should also be expressed in the more direct paths to immortality (procreation and religion) when these options are available.

By assessing the value of having children and belief in an afterlife, it is the goal of these studies to follow up on previous research suggesting that death anxiety reduction can be achieved via methods *directly* related to the achievement of immortality. For example, when we are made aware that death is inevitable, do we adopt specific values, beliefs, and behaviors in an attempt to convince ourselves that we are indeed on the road to immortality? Will participants who have been exposed to a mortality salience induction show greater confidence that they will eventually have children of their own? Will these participants also demonstrate increased adherence to religious beliefs and increased confidence that their values and behaviors will result in some form of an afterlife? If so, this would add support for the proposition that the cultural worldview buffer can be bypassed, and immortality needs can be satisfied directly through modifying beliefs and values on procreation and/or religion.

Moreover, although there has been some initial support for the proposition that mortality salience increases both the desire for children and religious beliefs (relevant details are included in Studies 1 and 2 which follow), the present research also addresses whether these increases are affected by the *type* of mortality salience (i.e., individual or collective).

STUDY 1: VIEWS ON HAVING CHILDREN AS A FUNCTION OF MORTALITY SALIENCE TYPE

INTRODUCTION

Costs and Benefits of Children

Becoming a parent has the potential to be one of life's greatest pleasures and/or its greatest source of pain. Choosing whether or not to have children is, without a doubt, one of the most important decisions a person will make. Until recently, choosing not to have children was given little consideration - it was more or less a given that one would eventually be a parent. However, in today's more complex society with demands of multiple life roles, it is no longer safe to assume that everyone wishes to become a parent. The postponement of marriage, high divorce rates, and the increasing importance of careers and economic independence for women (e.g., Davis, 1987) are just a few of the reasons that have been proposed for the decreasing birthrate (Lester, 1996) in industrialized nations. Additionally, effective and sexually unobtrusive modern contraceptives (compared to previous generations in which reproductive behavior could only be controlled by regulating sexual activity), have made pregnancy a choice rather than a foregone conclusion (Neal, Groat, & Wicks, 1989). Still, despite an overall dropping birthrate, the desire to have children remains strong for most individuals. Most people want to and expect to have children. For example, Gormly, Gormly, and Weiss (1987) found that 92% of undergraduates without children desired to be parents in the future. Similarly, Zhou (2006) found that 94% of university students wished to have children. Finally, O'Laughlin and Anderson (2001) reported that 80% of their sample had a strong desire to be parents, and 97% showed at least some intention to have children.

Furthermore, there continues to be a negative stigma attached to those who are voluntarily childfree (usually referred to as “childless”). Those who choose to remain childfree have been viewed as selfish, lonely, unfulfilled, immature, insensitive, and more likely to have mental problems than those who have children (Blake, 1979; Calhoun & Selby, 1980; Callan, 1985). In addition to the negative attitudes towards those who are voluntarily childfree (e.g., Burkett, 2000; LaMastro, 2001; Lampman & Dowling-Guyer, 1995), it has been found that even couples who are childless due to infertility elicit anger and hostility from others (Kopper & Smith, 2001). Clearly, there continues to be both personal desires and social pressures to become parents.

According to most research models, the decision to have children (as well as when and how many) appears to be based on weighing the costs and benefits of having children against the costs and benefits of not having children. Often reported disadvantages of children include; less free time, increased responsibility, more worry and tension, the requirement of a lifestyle change, relationship concerns, financial costs, career sacrifices, negative effect on one’s health, and overpopulation (Neal et al., 1989; Secombe, 1991; Taris, 1998) as well as a lack of time and the absence of a partner (Boucai & Karniol, 2008).

In addition to the negative aspects of having children, studies have also examined positive feelings for parenthood and the reasons why one might choose to have children. Common motivations reported for having children include; the pride and achievement derived from parenthood, the love of children, pleasure obtained in a childrearing role, companionship, emotional satisfaction (Somers, 1993); sense of accomplishment, believing it is the “right” thing to do, as an expression of love for one’s partner, fulfilling

a role (O’Laughlin et al., 2001); fun and stimulation, economic utility (Hoffman, McManus, & Brackbill, 1987); achieving adult status, to be able to influence or control someone, and to compare one’s self to others (Gormly, et al., 1987). However, one possible parenthood motivation that just has started to receive more research attention is that children provide a form of symbolic immortality to their parents.

Children as the Means to Symbolic Immortality

Although there are multiple paths to symbolic immortality (e.g., career or political achievements), it is possible that these methods are ultimately less satisfying and comforting in the face of death than the symbolic immortality one gains through procreation. Klass (2001) has argued that any attempt to achieve an external representation of immortality will feel less sure and less meaningful than the symbolic immortality associated with parenthood. Still, having children as a means to immortality is rarely studied as a motivation for parenthood. Evolutionary theory would suggest that a major force underlying a desire for children is the literal survival of one’s genes from generation to generation. Although children can provide continuity from one generation to the next and as a road to symbolic immortality (Neal et al., 1989), until recently researchers studying the reasons why people decided to have children rarely addressed this as a motivation. Of course, it would be unlikely that many people would endorse a statement like “I wish to have children so that I can be immortal” as immortality can be viewed as a relatively unconscious evolutionary influence. For example, men’s judgment of the physical attractiveness of women’s faces declines with the increasing age of the woman (Jackson, 1992). However, the men are not consciously thinking “The reason I

find this 20 year old woman with clear, smooth skin more attractive than the 40 year old woman is because the younger woman shows more reliable signs of health and fertility...she has higher underlying reproductive value and capacity.” The man is not consciously aware of all of the reasons why he finds the younger woman more attractive...he just does. In the same way, we are not aware of *all* the factors that make having children so appealing (e.g., symbolic immortality)...we just know that we want to be parents.

Although it would be misguided to ask people directly if they would like to have children in order to achieve symbolic immortality, there has been research that provides evidence for this possibility. For example, Gormly et al. (1987) found that the *most* commonly reported reasons for wanting children fell into a category referred to as “expansion of the self.” These self-expansion responses were; “To reproduce oneself,” “To see your own characteristics in your child,” “To carry on the family name,” and “Establish a family line.” Clearly, the highly endorsed elements of self-expansion are attempts to leave a symbolic legacy that will remain even after the individual is no longer alive. Quite simply, they appear to be expressed desires to achieve symbolic immortality through one’s children.

Koffman et al. (1987) also found that self-expansion reasons are commonly reported as motivating a desire to have children. Furthermore, they discovered that compared to younger people, older people were more likely to believe that there were no disadvantages to having children. Considering the great importance assigned to self-expansion, it makes perfect sense that when one is older and nearer to death, the decision to have children (i.e., achieve symbolic immortality) would seem like a much more

valuable investment compared to when one is young and healthy. Supporting this reasoning, O’Laughlin et al. (2001) found that reported motivations for parenthood include the belief that children will care for and support them in their old age, and that children will carry on and remember them after they have died.

More directly related to the present study, Wisman and Goldenberg (2005) found that after an increase in mortality awareness, Dutch men desired more children than those exposed to a control condition. In contrast, this initial study found that a mortality salience induction *did not* alter the number of children desired by women. The researchers believed that this was due to a nullifying effect of career concerns among women on the desire for children. A later study found that when career advancement and having children were presented as compatible, women also desired more children under conditions of mortality salience. These results were later replicated by a different research team and expanded to show that the accessibility of offspring-related thoughts increases in German participants following mortality salience inductions (Fritsche, Jonas, Fischer, Koranyi, Berger, & Fleischmann, 2006). Additionally, a study in China found that mortality salience increased opposition to the country’s “one child per couple” birth control policy (Zhou, Liu, Chen, & Yu, 2008). The Wisman and Goldenberg (2005), Fritsche et al. (2006), and Zhou et al. (2008) studies are rare in that they present an underlying desire for symbolic immortality as a direct reason for becoming a parent.

Study 1: Design and Hypotheses

Study 1 is an attempt to determine if increased individual or collective mortality salience has a direct effect on the desire for symbolic immortality. More specifically, Study 1 asks the questions “Does intensified mortality salience increase the sense that one will gain symbolic immortality through procreation?” and “How does the type of mortality salience impact the subjects’ views on having children?” In contrast to most previous research on motivations for parenthood, the current study is less interested in the expressed conscious reasons for having children (e.g., “love of children”), and is more interested in continuing to explore the possibility that an unconscious desire for symbolic immortality (especially under conditions of heightened death awareness) is a motivating factor for having children.

If, as TMT suggests, mortality salience reactions (subscribing to cultural norms, increased fondness for others who share similar beliefs) are reactions to death anxiety and suggest an unconscious desire for immortality (symbolic and/or literal), then other opportunities for immortality may also serve as vehicles for coping with death-related anxiety. As previously discussed, the most obvious method of achieving symbolic immortality, procreation, has received relatively little attention from TMT researchers. Wisman and Goldenberg’s (2005) series of studies as well as the Fritzsche et al. (2006) study represented TMT’s first focused examinations of parenthood desire as a function of immortality attainment. The goal of the present study is to expand this area of research by exploring *type* of mortality salience (i.e., individual vs. collective) and including additional measures of parenthood desire.

Study 1 uses a between-subjects design with one independent variable. The three levels of the independent variable are Individual Mortality Salience, Collective Mortality Salience, and a No Mortality Salience Control condition. The various dependent variables pertain to participants' attitudes and beliefs about having children (e.g., desire for, how many, how soon).

Study 1 is expected to support previous research demonstrating that increasing *individual* mortality salience results in a greater appeal for parenthood. In addition to assessing the effect of *individual* mortality salience on views about having children, Study 1 also examines the effect of *collective* mortality salience on these beliefs. Researchers have examined the reasons why having children may be undesirable (e.g., increased expenses, lifestyle changes). However, relatively few have studied current societal happenings as influencing the parenthood decision. An exception is a study finding that current world events are seldom reported as influencing the timing of having children (Gormly et al., 1987). In contrast, Neal et al. (2001) found that ambivalent and hostile attitudes toward children are associated with the view that major social events are unpredictable and uncontrollable.

As Kotre (1995, p. 36) writes:

In generativity, an investment in life is transferred from the self to something that has come from the self. If that something is well, I am well. If it is having a hard time, I suffer right along. So generativity outcome matters a great deal.

It seems possible that world events, especially those that increase collective mortality, can affect the decision to have children. A unique theme of the current research is that all forms of mortality salience are *not* created equal. Recall again TMT's assumption that a desire for immortality underlies mortality salience reactions such as increased worldview

defense and adherence. Under conditions of individual mortality (above), procreation offers a method of managing death anxiety through symbolic immortality (“I will die, but my children will live on.”). However, under conditions of collective mortality, the solution of achieving symbolic immortality through one’s children may break down. Specifically, if the world is not safe for the individual and for the important others in the person’s life (family, friends, society), then procreation *is not* a good method of immortality achievement and death anxiety reduction. If world events make death unpredictable and uncontrollable for one’s future children, the knowledge that one’s offspring are in mortal danger will not reduce the anxiety associated with one’s own mortality awareness. Having children will be an unattractive option for individuals who are experiencing collective mortality salience, as procreation will not alleviate this type of death-related anxiety. As a result, individual and collective mortality salience inductions are predicted to have opposite effects on participants’ values and beliefs about having children.

To summarize, it is predicted that participants exposed to an *individual* mortality salience induction will demonstrate an *increased* sense that they will gain symbolic immortality by having children relative to those not exposed to this induction. Having children offers a “solution” to one’s own mortality. In contrast, individuals exposed to a *collective* mortality salience induction should demonstrate a *decreased* sense that they will gain symbolic immortality by having children relative to those not exposed to this induction. In this scenario, having children does not offer a “solution” to one’s own mortality. Although research on the moderating impact of certain personality characteristics on mortality salience effects has been somewhat inconsistent (see

Schmeichel et al., 2009 for a review of self-esteem as a moderator and the possible distinction between implicit and explicit self-esteem), most research has found that individuals with low self-esteem and depressed mood are more likely to demonstrate mortality salience effects (e.g., stronger worldview defense following increased death awareness) as there is theoretically an increased need for worldview defense among those who do not believe they are living up to cultural standards of value (Beatson & Halloran, 2007; Gailliot, Schmeichel, & Maner, 2007; Simon et al., 1996). Also, personality traits such as neuroticism have been associated with more anxiety about death (Loo, 1984; Westman & Barckney), greater accessibility of death related thoughts (Goldenberg et al., 1999), and also, greater likelihood of demonstrating the mortality salience effect (e.g., Goldenberg et al., 2008). It should be noted that currently, the exact mechanisms responsible for the function of self-esteem, depression, and neuroticism as moderators are not yet fully understood. For example, it has yet to be clearly determined if these moderating effects are due to a *greater increase* in the overall level of death anxiety following mortality salience among those with depressed mood, low self-esteem, or high neuroticism, or due to differential responses to the *same increase* in death anxiety among those with these traits compared to those with more positive mood, higher self-esteem, and lower levels of neuroticism. The research that does exist on this topic seems to suggest that stronger mortality salience effects for those with certain personality / mood characteristics are due to differential responses to the *same increase* in death anxiety. For example, Schmeichel et al. (2009) found that following mortality salience, death-thought accessibility (as measured by a word-stem completion task) is *not* moderated by level of self-esteem. Similarly, it has been found that “psychological hardiness” interacts with

mortality salience with regard to worldview defense, but that again, death-thought accessibility itself is *not* moderated by hardness (Florian, Mikulincer, & Hirschberger, 2001). This current ambiguity notwithstanding, the primary prediction is still expected to hold true only for individuals who are already lacking in attributes such as self-esteem or with greater levels of depression or neuroticism as these individuals would, according to TMT, have a greater need to defend against the mortality salience threat. Thus, the above hypothesis involves a two-way interaction between mortality salience type and personality traits.

METHOD: STUDY 1

Participants

Seventy-nine undergraduate university students (62 women and 17 men, mean age = 19.5 years) volunteered to participate. Volunteers received 3% toward their grade in a psychology class for their participation.

Procedure and Materials

Testing occurred over a six-month period. Participants were randomly assigned to the three experimental conditions (Individual Mortality Salience, Collective Mortality Salience, or Control). They completed the questionnaire packages at home and mailed it back to the experimenter in a postage-paid envelope. Only participants who had a parent who was also willing to complete a questionnaire package (note that parents served as the participants for Study 3) were eligible to participate. They were informed that the purpose of the study was to “compare parent's and children's various personality traits, interests, and preferences.” They were asked to work through the package in order and to not skip ahead to later sections. With the exception of the three mortality salience conditions, all participants received identical information and completed the questionnaires in the order described below.

Participants completed an informed consent form prior to participation (see **Appendix A**). The experimental questionnaire package began with an instructions page (see **Appendix B**). Next, a demographics questionnaire (see **Appendix C**) was included for contact purposes and to ensure that participant age, sex, and marital status were

equivalent between the experimental groups. The remaining sections are discussed in order below.

Individual Difference Measures

As noted earlier, depressed individuals have in general demonstrated stronger mortality salience reactions (e.g., Simon et al., 1996). Therefore, the Beck Depression Inventory (Beck, 1967) (**see Appendix D**) was included to assess whether depressed mood would moderate the effects of the mortality salience inductions in the current study. Similarly, given the finding that individuals with higher self-esteem are generally less responsive to mortality salience inductions (Arndt & Greenberg, 1999; Harmon-Jones et al., 1997), Rosenberg's Self Esteem Scale (Rosenberg, 1965) (**see Appendix E**) was included as a possible moderator variable. To support the cover story regarding attitude comparison between parents and children, participants next completed The Gender Role Beliefs Scale (Kerr & Holden, 1996) (**see Appendix F**), a 20-item distracter scale on topics such as sexuality, careers, and proper etiquette for men and women. The neuroticism scale of the NEO Five-Factor Inventory (Costa & McCrae, 1991) (**see Appendix G**) was used to assess neuroticism as a final possible moderator variable.

Mortality Salience Manipulations

The collective mortality salience condition (**see Appendix H**) was created to induce feelings of death vulnerability, and also, to induce feelings that one's family, friends, or society members are vulnerable to an unpredictable and unavoidable death (collective mortality). Participants were asked to read short passages from an actual

newspaper article detailing the events of a sniper shooting and killing “normal” residents in the Washington DC area. They were asked to consider the possibility of a series of similar attacks happening in their neighborhood. They were then required to write about their thoughts of their family members, or friends dying as a result of such an attack, and also, what they thought would physically happen to these people as they physically die and once they were physically dead. These two questions were designed to be as analogous as possible to the original stimulus questions used by Rosenblatt et al. (1989) (i.e., “Please describe the emotions that the thought of your own death arouses in you” and “Please write as specifically as you can what you think will happen to you as you physically die and once you are physically dead”). Therefore, the collective mortality salience passage read “Please describe the emotions that the thought of your family members or friends dying in such an attack arouses in you. Also, please write as specifically as you can what you think will happen to them as they physically die, and once they are physically dead.”

The individual mortality salience condition served as an induction of individual mortality that was analogous in design to the collective mortality salience induction. For the individual mortality salience induction (**see Appendix I**) participants were asked to read short passages from a supposedly real newspaper article describing a single vehicle car accident in which the sole occupant died. In actuality, this article was fictional and was designed to be analogous to the description of the sniper attack in the collective mortality salience induction. Participants were asked to consider the possibility of dying in a similar accident. They were then required to write about their thoughts of dying as a

result of such an accident, and also, what they thought would physically happen to them as they physically die and once they were physically dead.

The control condition (see **Appendix J**) followed a format similar to the mortality salience conditions. Participants read several passages about the anxiety associated with giving a public speech, and were then required to write about their thoughts about giving their next public speech and what they thought would happen to them physically as they give the speech.

It has been shown that mortality salience effects (e.g., increased worldview defense) occur only after a delay or distraction task (Greenberg et al., 1994) (presumably due to relaxed proximal death anxiety defenses). Therefore, following the mortality salience manipulation, participants completed a 25-item filler-distracter scale on leisure time activities (see **Appendix K**).

Dependent Measures

Participants completed the author's Parenthood Beliefs Questionnaire (see **Appendix L**) composed of original content as well as elements of previously established questionnaires. The Parenthood Beliefs Questionnaire was designed to assess the participants' current views on having children. Participants were required to rate the extent to which they agreed with statements focusing on the importance, urgency, intent, and symbolic immortality-related reasons for becoming a parent. Specifically, four indexes and two individual items served as the dependent variables for Study 1.

The "Expansion" index (items 12-15 in the Parenthood Beliefs Questionnaire) corresponded to the 4-item "expansion of the self" factor (e.g., "Having children allows

you to see your own characteristics in your child”) from Gormly et al. (1987). The “Immortality” index (items 16-23 in the Parenthood Beliefs Questionnaire) corresponded to the “immortality” factor of Seaver’s (1977) Parenthood Motivation Questionnaire. These items required the participants to rate the importance of reasons why people may want to have children and represent a desire to live on symbolically through one’s children (e.g., “To pass on my genes to the next generation”). The “Desire” index (items 2, 5, 6, 8, & 11 in the Parenthood Beliefs Questionnaire) was created from the author’s original questions and is related to an expressed desire to become a parent or have children (e.g., “I would like to have children some day”). The “Similarity” index (items 3, 4, 7, & 9 in the Parenthood Beliefs Questionnaire) was also created from the author’s original questions and is related to the appeal of having a child with attributes similar to the rater (e.g., “If I have children, I would want at least one of them to be the same sex as I am”). Additional information on these measures is included in the “Creation of Indexes” section to follow.

Two individual items were also analyzed. These questions focus on the number of children desired (Item 24: “Ideally, I would like to have [0, 1, 2, 3, 4, 5 or more] children”), and the time frame planned for having children (Item 25: “I would like to have my next child within [1, 2, 3, 4, 5, 6, 7, 8, 9, 10 or more] years”). Participants who answered “0” for Item 24 were instructed not to complete Item 25, and as such, the degrees of freedom for this particular item are slightly lower in comparison to the other dependent variables.

Participants read debriefing information after they completed the study (see **Appendix M**).

RESULTS: STUDY 1

Creation of Indexes

As previously above, two already established measures as well as new items on parenthood beliefs were used to measure any changes in parenthood desirability or reasons for having children as a result of increased mortality salience. The previously validated indexes based on past research were considered the primary dependent variables. Cronbach's alpha values were calculated for the "Expansion" index ($\alpha = 0.83$) from Gormly et al. (1987) and the "Immortality" index ($\alpha = 0.91$) from Seaver (1977). Therefore, based on the alpha values from the originally published research and the current study, both indexes were determined to have acceptable levels of internal consistency. High scores on the Expansion index generally represent the belief that having children is a method of symbolically reproducing yourself. High scores on the Immortality index generally represent the belief that having children allows the goals, talents, and attributes of the rater to live on after he/she is dead.

For the author's exploratory questions in the Parenthood Beliefs Questionnaire, two separate indexes were created based on the conceptual similarity of the items and alpha values. The "Desire" index (items 2, 5, 6, 8, & 11) ($\alpha = 0.71$) was comprised of items related to the appeal and intent of becoming a parent (e.g., "I will be disappointed if I cannot have children of my own" – with higher scores indicating a greater desire for children. The "Similarity" index (items 3, 4, 7, & 9) ($\alpha = 0.47$) included items expressing hope that one's children will have characteristics similar to the rater (e.g., "If I have children, it is important that they have similar values as I do") – with higher scores expressing a stronger wish that one's children will have the rater's attributes. Because the

alpha value on the Similarity index is relatively low, the results on this measure will be interpreted with caution.

In the analyses to follow, each subsection will pertain to the impact of mortality salience condition and a different trait moderator. Within each section the four indexes will be analyzed first, followed by the two individual items.

Statistical Analyses

In the analyses to follow, results are provided via the Analysis of Variance (ANOVA) statistical procedure. A typical test examines the effects of the three-level mortality salience induction and a two-level trait characteristic (e.g., Self-esteem: High vs. Low) on a measure of parenthood beliefs. Additionally, following the procedure described by Aiken and West (1991) in which categorical trait variables are treated as continuous, regression analyses corresponding to each ANOVA were also performed as an additional, more sensitive, test of the role of the trait variables. Unless otherwise noted in the text, these regression analyses yielded results (i.e., patterns of effects, probability values, and conclusions) comparable to those found using the ANOVA procedure.

The impact of mortality salience and self-esteem on the sense of symbolic immortality through procreation.

It was expected that ratings of symbolic immortality beliefs (in this study, the desire for, and reasons for having children) would be a function of mortality salience type and self-esteem. Specifically, it was predicted that individuals with low self-esteem would respond to individual mortality salience with an increased expressed desire for

symbolic immortality through procreation, whereas these same individuals would respond to collective mortality salience with a decreased expressed desire for symbolic immortality through procreation. Given that previous research has demonstrated that individuals with high self-esteem are not prone to the effects of mortality salience manipulations (e.g., Harmon-Jones et al., 1997), mortality salience type was not predicted to have an effect on the expressed desire for children among participants with higher self-esteem.

In order to evaluate this prediction, 2 (Self-esteem: High vs. Low) X 3 (Mortality salience Type: Individual vs. Collective vs. Control) ANOVAs were performed on the measures of parenthood beliefs (i.e., the four indexes, and the two individual items asking about the relative urgency one feels to have children and the number of children desired). A median split on the self-esteem measure was used to divide participants into “relatively low” (range = 14 - 30) and “relatively high” (range = 31 – 40) self-esteem groups.

For the Self-Expansion index, there was no main effect of mortality salience $F(2, 73) = 0.03, p > .05$, no main effect of self-esteem $F(1, 73) = 2.89, p > .05$, and no significant interaction effect $F(2, 73) = 0.06, p > .05$.

For the Immortality index, there was no main effect of mortality salience $F(2, 73) = 0.66, p > .05$, no main effect of self-esteem $F(1, 73) = 2.00, p > .05$, and no significant interaction effect $F(2, 73) = 0.92, p > .05$.

For the Desire index, there was no main effect of mortality salience $F(2, 73) = 0.44, p > .05$, no main effect of self-esteem $F(1, 73) = 0.68, p > .05$, and no significant interaction effect $F(2, 73) = 1.39, p > .05$.

For the Similarity index, there was no main effect of mortality salience $F(2, 73) = 0.46, p > .05$, no main effect of self-esteem $F(1, 73) = 0.01, p > .05$, and no significant interaction effect $F(2, 73) = 0.39, p > .05$.

For the individual item regarding the desired number of children there was no main effect of mortality salience condition $F(2, 72) = 0.01, p > .05$, no main effect of self-esteem $F(1, 72) = 0.46, p > .05$, and no significant interaction effect $F(2, 72) = 0.50, p > .05$.

For the individual item regarding the number of years one wished to wait before having children, there was no main effect of self-esteem $F(1, 63) = 0.86, p > .05$. However, the ANOVA did reveal a main effect of mortality salience condition $F(2, 63) = 5.22, p < .01$ (see Figure 2 for the means pertinent to these findings). Planned comparisons revealed that participants in the Individual MS condition did not differ from those in the Collective MS condition $t(63) = 1.04, p > .05$, and that participants in the Collective condition did not differ from those in Control condition $t(63) = 1.89, p > .05$. However, participants exposed to the Individual MS condition expressed a desire to have children sooner than those in the Control condition $t(63) = 2.6, p < .05$. Initially, this main effect appeared to be qualified by a significant interaction effect between mortality salience type and self-esteem $F(2, 63) = 5.71, p < .01$. However, the regression analysis was not consistent with this finding ($p = 0.19$) and a subsequent inspection of the data revealed two outliers (two individuals who indicated that they wished to have children within the next one and two years) that accounted for the significant effect. Thus, it appears that increased individual mortality salience results in a greater sense of urgency to have children – but that this is not moderated by self-esteem.

The impact of mortality salience type and depression level on the sense of symbolic immortality through procreation.

It was expected that ratings of symbolic immortality desire (i.e., the Expansion, Immortality, Desire, and Similarity indexes and the items related to number of children desired and years to wait before having children) would be influenced interactively by mortality salience type and level of depression. Specifically, it was predicted that individuals with depressed mood would respond to individual mortality salience with greater endorsement of the indexes and individual items measuring symbolic immortality desire through procreation. In contrast, it was predicted that these same individuals would respond to collective mortality salience with less endorsement of the indexes and individual items measuring symbolic immortality desire through procreation. Given that previous research has demonstrated that individuals without depressed mood are not as prone to the effects of mortality salience manipulations (e.g., Simon et al., 1996) mortality salience type was not predicted to have an effect on the endorsement of the indexes and individual items for participants with relatively positive moods.

In order to evaluate this prediction, 2 (Depression: Low vs. High) X 3 (Mortality Salience: Individual vs. Collective vs. Control) ANOVAs were performed on the measures of parenthood beliefs (i.e., the four indexes and the selected individual items regarding parenthood urgency and number of children desired). A median split on the depressed mood measure was used to divide participants into “relatively high” (range = 8 - 27) and “relatively low” (range = 0 - 7) groups.

For the “Self-Expansion” factor, there were no significant main effects of mortality salience condition $F(2, 73) = 0.11, p > .05$, depression $F(1, 73) = 0.85, p > .05$, and no interaction effect $F(2, 73) = 0.86, p > .05$.

For the “Immortality” factor, there was no significant main effect of mortality salience condition $F(2, 73) = 1.31, p > .05$, and no significant main effect of depression $F(1, 73) = 0.01, p > .05$. However, there was a significant mortality salience condition by depression interaction $F(2, 73) = 3.12, p < .05$. See Figure 3 for the means pertinent to these findings. It should be noted that the corresponding regression analysis for this effect was only marginally significant ($p = 0.098$) and that results should be interpreted with this in mind. In contrast to predictions, planned comparisons revealed that depressed participants exposed to the Individual MS condition were actually *less likely* to endorse items describing children as a form of living on after they are dead compared to those in the Collective MS condition $t(73) = 2.39, p < .05$ and those in the Control condition $t(73) = 2.75, p < .01$. Depressed participants in the Collective MS and the Control condition did not differ on this measure $t(73) = 0.42, p > .05$. Thus, it appears that for individuals with relatively high levels of depressed mood, increased awareness of their own physical mortality makes them less likely to view having children as a road to symbolic immortality (e.g., passing on their genes, carrying on family names).

For the “Desire” factor, there were no significant main effects of mortality salience condition $F(2, 73) = 0.20, p > .05$, depression $F(1, 73) = 0.76, p > .05$, and no interaction effect $F(2, 73) = 2.03, p > .05$.

For the “Similarity” factor, there were no significant main effects of mortality salience condition $F(2, 73) = 0.18, p > .05$, depression $F(1, 73) = 1.49, p > .05$, and no interaction effect $F(2, 73) = 2.71, p > .05$.

The analysis for the “number of children desired” item revealed no significant main effects of mortality salience condition $F(2, 73) = 0.13, p > .05$, depression $F(1, 73) = 2.02, p > .05$, and no interaction effect $F(2, 73) = 0.36, p > .05$.

For the item on parenthood urgency, this analysis again revealed the same main effect of mortality salience condition $F(2, 63) = 3.76, p < .05$. with participants in the Individual MS condition expressing a desire to have children sooner than those in the Control MS condition $t(63) = 2.6, p < .05$. Finally, there was no main effect of depression $F(1, 63) = 0.69, p > 0.05$, and no significant interaction of mortality salience condition and depression $F(2, 63) = 0.13, p > 0.05$. Thus, it appears that increased individual mortality salience results in a greater sense of urgency to have children – but that this is *not* moderated by depressed mood.

The impact of mortality salience and neuroticism on the sense of symbolic immortality through procreation.

Neuroticism has been found to be positively related to greater levels of death anxiety (Westman & Barckney, 1990) and those high in neuroticism seem to be more likely to demonstrate mortality salience effects (e.g., Goldenberg, Hart, Pyszczynski, Warnica, Landau, & Thomas, 2006). Therefore, it was expected that ratings on the measures of parenthood beliefs would demonstrate an interaction of mortality salience type and level of neuroticism. Specifically, it was predicted that individuals with

relatively high neuroticism levels would respond to individual mortality salience with stronger endorsement of the various measures of parenthood desirability and beliefs about children as a method of symbolic immortality.

In contrast, it was predicted that these same individuals would respond to collective mortality salience with a weaker endorsement of these same measures. Mortality salience type was not predicted to have an effect on the expressed desire for children for participants with relatively low levels of neuroticism.

In order to evaluate this prediction, 2 (Neuroticism: Low vs. High) X 3 (Mortality Salience: Individual vs. Collective vs. Control) ANOVAs were performed on the measures of parenthood desirability (i.e., the four indexes, and the two individual items regarding parenthood urgency and number of children desired). A median split on the neuroticism measure was used to divide participants into “relatively high” (range = 33 - 51) and “relatively low” (range = 15 - 32) groups.

With regard to the “Self-Expansion” factor, a 2 (Neuroticism: High vs. Low) X 3 (Mortality Salience: Individual vs. Collective vs. Control) ANOVA revealed no significant main effect of mortality salience $F(2, 73) = 0.03, p > .05$, a marginally significant main effect of neuroticism $F(1, 73) = 3.60, p = .06$, and no interaction $F(2, 73) = 0.09, p > .05$. Note that the corresponding regression analysis revealed a significant main effect of neuroticism ($p = 0.04$) with higher levels of neuroticism being associated with stronger endorsement of the self-expansion items.

For the “Immortality” factor, 2 (Neuroticism: High vs. Low) X 3 (Mortality Salience: Individual vs. Collective vs. Control) ANOVA also revealed no significant

main effect of mortality salience $F(2, 73) = 0.62, p > .05$, no significant main effect of neuroticism $F(1, 73) = 0.70, p > .05$, and no interaction $F(2, 73) = 1.10, p > .05$.

Analysis of the “Desire” factor revealed no significant main effect of mortality salience $F(2, 73) = 0.06, p > .05$, a significant main effect of neuroticism $F(1, 73) = 3.84, p < .05$ with those in high neuroticism group showing a greater desire to have children, and no interaction $F(2, 73) = 0.71, p > .05$.

Analysis of the “Similarity” factor found no significant main effect of mortality salience $F(2, 73) = 0.02, p > .05$, no significant main effect of neuroticism $F(1, 73) = 0.39, p > .05$, and no interaction $F(2, 73) = 0.29, p > .05$.

The analysis for the “number of children desired” item revealed no significant main effects of mortality salience condition $F(2, 73) = 0.08, p > .05$, neuroticism $F(2, 73) = 1.80, p > .05$, and no interaction effect $F(2, 73) = 0.42, p > .05$.

The analysis again revealed the main effect of mortality salience condition $F(2, 63) = 3.37, p < .05$ for the urgency item. As previously reported, participants exposed to the Individual MS condition expressed a desire to have children sooner than those in the Control MS condition $t(63) = 2.6, p < .05$. There was no main effect of neuroticism $F(1, 63) = 1.37, p > 0.05$, and no significant interaction of mortality salience condition and neuroticism $F(1, 63) = 0.71, p > 0.05$. Therefore, increased individual mortality salience results in a greater sense of urgency to have children – but this is not moderated by neuroticism.

In summary, Study 1 did not strongly support the theory regarding differential effects of different forms of mortality salience (i.e., individual and collective). In partial support of predictions, subjects exposed to the individual mortality salience condition

reported an increased sense of urgency to have children compared to those in the control group. However, the prediction that self-esteem and neuroticism would interact with mortality salience with regard to parenthood beliefs was not supported.

Study 1 also revealed an unexpected mortality salience condition by depression interaction. Specifically, depressed subjects exposed to the individual mortality salience condition actually reported a *decreased* sense that having children is a means to symbolic immortality (an increase was predicted). Thus in contrast to initial predictions, for those who are depressed and made aware of their own physical mortality, there is in fact a decreased value placed on having children as a means of death anxiety reduction. These somewhat surprising results will be addressed in the discussion section to follow.

DISCUSSION: STUDY 1

Desire for Symbolic Immortality?

A primary goal of Study 1 was to examine TMT's hypothesis that a desire for immortality (symbolic immortality in Study 1) ultimately underlies the reactions elicited by an increase in mortality salience. Did Study 1 support this theoretical concept of TMT? Although subjects demonstrated a desire to have children somewhat earlier in life after experiencing increased awareness of their own physical mortality, overall the results of Study 1 provided very little evidence for the theory that a desire for symbolic immortality is an important factor in mortality salience effects. There are several possible explanations for this result.

First, it is possible that contrary to TMT's explanation for mortality salience effects, a desire for symbolic immortality *does not* underlie the unique responses and behaviors following increased death awareness. If true, this may call for a modification of TMT's theoretical tenets. If an increased desire for immortality is not activated by mortality salience, then TMT may need to offer slightly different explanations for certain previous and future mortality salience research findings. This raises the question as to whether a desire for symbolic immortality is a necessary part of TMT and whether mortality salience research findings could be just as well explained without this component. Although including symbolic immortality desire in TMT is appealing from a theory-building perspective, perhaps this is needlessly complicating a relatively simple process. Following heightened mortality awareness, individuals may still respond by subscribing more intensely to culturally important beliefs and values. However, this response may simply be motivated by a desire to follow certain principals *while one is*

still alive, but this is not in service of obtaining some form of symbolic immortality. Being confronted with the fact that one's life is relatively fragile and very temporary is likely to be a sobering, if not outright depressing, thought for most people. This is certainly not a line of thinking that would encourage especially positive or optimistic feelings about one's life. TMT may make the argument that greater adherence to cultural values in this situation is therefore an attempt to have one's beliefs live on in some way after death (i.e., assumed symbolic immortality strivings). However, when reminded that our time alive is limited, perhaps we are temporarily more motivated to make the most of this time and view the world as a receptive environment for our ideas, goals, and values *while we are still alive*. Is it possible that worldview defense is not an attempt to *deny* death and gain symbolic immortality, but rather, an *acceptance* of death and an attempt to gain comfort by viewing the world as a safe place to live out our remaining days? It is possible that the increase in self-esteem that may come from adhering to valued cultural beliefs may be sufficient to explain the shift in attitudes, beliefs, and behaviors following intensified death awareness - and the additional goal of obtaining symbolic immortality by adhering to these beliefs is not a motivating factor. Although this is an interesting argument for the present study, it should be noted that several studies *have* found results that are more consistent with TMT's argument that a desire for symbolic immortality via procreation influences mortality salience reactions (Fritzsche et al., 2007; Wisman & Goldenberg, 2005; Zhou et al., 2008). Note however, that these studies were conducted in the Netherlands, Germany, and China while the current study was carried out in Canada. In fact, Fritzsche et al. (2007) theorized that certain inconsistencies between their research and the Wisman and Goldenberg (2005) study may have been due to different cultural

values between Germany and the Netherlands. Therefore, it is worth considering the possibility that cultural or societal differences between the earlier research (taking place in Europe and China) and the current study (taking place in North America) may be partially responsible for the lack of significant effects in Study 1. Given that previous research has revealed results consistent with TMT's take on symbolic immortality desire, concluding that the present study invalidates TMT's assumptions on this issue is not justified at present. Therefore, it may be helpful to next consider factors or elements of the current study that may have contributed to the lack of expected findings.

A second possibility for the lack of significant findings is that TMT as a whole remains theoretically sound, and a desire for symbolic immortality *does* underlie many mortality salience reactions, but that the current study was not able to properly measure changes in this particular desire. It remains possible that the questions used to measure beliefs about having children were too "direct" (e.g., "Having children allows me to pass on my genes to a new generation"), and that more subtle measures of parenthood interest may have captured changes in opinions as a result of increased mortality salience. For example, questions pertaining to one's opinion toward children in general (e.g., "I enjoy being around children") may be more susceptible to experimental manipulation than one's views on procreation (which may be more deeply ingrained and resistant to change). Future research containing more subtle measures of subjects' views on children or using questions from previous research that did find significant effects could readily test this theory.

A third possibility for the general lack of significant effects concerns the use of procreation as the best representation of symbolic immortality. Although increased

mortality salience may not influence views on procreation, this does not necessarily mean that *all* forms of symbolic immortality are similarly unaffected. For example, views on the importance of career development or leaving a professional legacy (a different form of symbolic immortality) have been found to moderate the mortality salience effect (Wisman & Goldenberg, 2005). Additionally, research has demonstrated that following mortality salience, people are more willing to sacrifice their physical safety if this sacrifice is likely to make a lasting contribution to their culture (Routledge & Arndt, 2008). Also, mortality salience has resulted in larger charitable donations and willingness to assist others when these actions are consistent with death anxiety reduction and terror management goals (Hirschberger, Ein-Dor, & Almakias, 2008). Finally, there is evidence that prosocial attitudes are generally stronger following an increase in mortality salience (Jonas et al., 2002). If these other activities (that could be considered forms of symbolic immortality) are consistently found to increase following mortality salience (e.g., career goals, charity work), this still provides support for TMT's assumption that a desire for symbolic immortality underlies mortality salience reactions and behaviors – despite attitudes towards having children seemingly being resistant to mortality salience inductions. Future research examining professional development attitudes and prosocial attitudes in response to mortality salience seems likely to add further support for importance of symbolic immortality in TMT – although the lack of significant findings for the desire for children also deserves further exploration.

A fourth contributing factor for the lack of significant results pertains to the sample of research subjects. In the current study, university students (primarily first year students) comprised the sample. Given that the mean age of the sample was

approximately 19 years old it is very possible that having children was a not topic these subjects had given serious thought to. Also, because they were university students it seems reasonable to suggest that career and educational goals would have been far more pressing concerns, and therefore, a more important component of their cultural worldview. As such, these issues may have been more appropriate measures of symbolic immortality desire (which could be addressed in future research).

A fifth possible contributing factor for the null findings regards the Wisman and Goldenberg (2005) study which revealed that after an increase in mortality awareness, men desired more children than those exposed to a control condition. In contrast, mortality salience inductions *did not* alter the number of children desired by women. It was hypothesized that this was due to a nullifying effect of career concerns among women on the desire for children. Considering that 78% of the subjects in Study 1 were female (and also young university students) it is reasonable to suggest that these subjects were, once again, unlikely to have their views on having children altered by the mortality salience manipulations. Although the limited number of males in the current study did not allow for an analysis with gender as a factor, future research using more male subjects (or male subjects only) could address this possibility.

Finally, it is worth considering the possibility that the unique mortality salience inductions (adding a visual “news story” element to the traditional mortality salience questions) may, for some reason, have been a less effective mortality salience induction, and therefore, did not produce attitude changes with regard to procreation. Although this scenario is possible, the results of Study 3 (as discussed below) suggest that the altered mortality salience conditions *were* effective inductions. As such, this points to the

previous five possibilities as more likely explanations for the lack of significant findings in Study 1. However, without additional research to test these alternative theories it is difficult to conclude which theory or theories offer the “best” explanation for the null effects (although there is likely enough evidence to rule out the first explanation). At present it may be reasonable to tentatively offer one of two possible explanations:

Explanation A would be that TMT’s assumption about symbolic immortality desires are faulty and that the theory should be modified to reflect the findings of Study 1.

Explanation B offers a much more conservative approach and suggests that the conclusions of Explanation A are not consistent with previous research and that the null results could be the result of questions that were too direct, the appropriateness of procreation as a representation of symbolic immortality, the use of university students as participants, and the large proportion of female subjects in the study. Unless future research offers evidence contrary to Explanation B, it is suggested that TMT’s argument that a desire for symbolic immortality underlies mortality salience responses be maintained – especially given the fact that research using other measures which could be considered forms of symbolic immortality (e.g., charitable donations, willingness to self-sacrifice, prosocial behavior) *have* offered support. That is, although the results of Study 1 did not support the notion that a desire for symbolic immortality (as measured by a desire for children) is an important component of mortality salience effects, a modification to TMT is not warranted at this time because of the still untested alternative explanations for the lack of significant results and other research in support of this component of TMT.

The Impact of Individual and Collective Mortality Salience

Kashima et al. (2004) introduced the terms “personal” and “collective” mortality salience. In a study investigating different cultural responses (Japanese vs. Australian) to mortality salience, it was found that in Japan collective mortality salience had a greater impact on worldview defense than did personal mortality salience, and that the opposite was true in Australia. It was concluded that a distinction could be made between mortality salience experiences that emphasize the fragility of one’s own life (personal mortality salience) and experiences that emphasize the death of the individual and also the cultural group that he/she belongs to (collective mortality salience). Given their findings, the authors suggested that adjustments to certain aspects of TMT may be necessary, namely that there may be multiple forms of mortality salience and that different cultural groups may be differently affected by the experience of intensified death awareness. Because of the limited research on the concepts of multiple forms of mortality salience, one of the goals of the current series of studies was to further examine the notions of individual and collective mortality salience. Although certain predictions were made, this particular investigation was once again largely exploratory in nature – results consistent with the Kashima study would lend support for the proposal to modify TMT, while results inconsistent with the study may suggest that a modification is not yet warranted.

With regard to individual and collective mortality salience, the results of Study 1 *did not* support the theory that different forms of mortality salience would have different effects on the measures of parenthood beliefs. As described in the previous section, participants generally demonstrated little change on the measures of procreation

desirability in response to increased mortality salience (whether it be individual or collective in nature). Does this suggest that the concepts of individual and collective mortality salience are not useful distinctions? Not necessarily. Recall that it was argued in the previous section that multiple factors may have contributed to the lack of significant effects (e.g., the applicability of procreation as a measure of symbolic immortality, certain characteristics of the participants). Consequently, it is difficult to conclude that the lack of significant effects is due to a complete lack of response to the experimental inductions. For example, future research may demonstrate that there are different responses to individual and collective mortality salience when other dependent variables are used (e.g., career aspirations) or when different groups participate in the study (e.g., non-university students). Therefore, although Study 1 did not offer support for the theory of differential effects for multiple forms of mortality salience, it remains premature to conclude that the concepts of individual and collective mortality salience are not useful distinctions. However, until there is additional support for these distinctions (future research may first wish to replicate the Kashima study) it would also be premature to conclude that they definitely *are* useful concepts. Additional research in this area is necessary for clarification.

The Timing of Having Children

Until this point, the discussion for Study 1 has focused on the two main findings - the lack of convincing evidence that one particular form of symbolic immortality (procreation) is activated by increased mortality salience, and the lack of evidence for multiple forms of mortality salience (individual and collective). Although these null

effects are the primary findings of Study 1, two additional results should be addressed. First, participants in the individual mortality salience condition expressed a desire to have children sooner than participants in the control condition. Therefore, this suggests that increased awareness of one's own mortality can lead to a desire to have children sooner in life. How is it that this particular measure appears to demonstrate an effect of increased mortality salience whereas the other measures (i.e., the expansion, immortality, desire, and similarity factors) were unaffected by the mortality salience inductions? One possibility is that this question about the *timing* of having children is a more subtle and malleable measure of one's desire for children and consequently, is more responsive to experimental manipulation. For example, the "expansion" and "immortality" factors (containing items such as "Having children allows me to pass on my genes to a new generation") may have been measuring deeply ingrained beliefs about procreation that are very resistant to change – especially during the course of a one hour study. In contrast, a question inquiring about the *timing* of having children does not challenge deeply held beliefs, but simply asks one to consider when this life event will become a priority. This finding adds support for the theory (as introduced in the Desire for Symbolic Immortality section above) that the general lack of significant effects in Study 1 may reflect subtleties in the design of the study (in this case, the nature of the dependent variables) and that it is premature to conclude that symbolic immortality yearnings are not activated by increased mortality salience.

Given that participants did respond to the individual mortality salience condition with a desire to have children earlier in life, why was this not true in the collective mortality salience condition? Again, several explanations are possible. First, assume that

this more subtle measure of procreation desirability was, as hypothesized above, more responsive to the mortality salience manipulations. Thus, this particular finding reflects an effect partially supportive of initial study predictions. That is, it was predicted that participants in the individual mortality salience condition would demonstrate an increased desire for having children (including having children sooner) as this would theoretically “solve” the problem of their *own* impending deaths. In contrast, participants in the collective mortality salience condition were not expected to respond with an increased desire for children, as having children would not reduce the existential anxiety (theoretically) created by imagining that *everyone* is at risk for death at any moment and that eventually *everyone* will die. The results for this particular measure (desired number of years before having children) were largely consistent with this prediction – participants in the individual mortality salience condition wished to have children sooner than those in the control condition. Is the “solution” theory the best possible explanation for this result? Future research may provide more evidence for this hypothesis, but there remains at least one other fairly plausible explanation. Recall that Kashima et al. (2004) found that compared to Asian participants, western participants were considerably more responsive to individual mortality salience and that collective mortality salience inductions had very little impact in terms of worldview defense. Therefore, it is possible that the predominantly western participants in the current study were simply not responsive to the collective mortality salience induction and hence, the similar results for this condition and the control condition are not surprising. Although it is interesting that individuals responded to increased individual mortality salience by planning for children earlier in life it is not yet clear *why* this occurred. Was it an initial attempt to boost self-

esteem by being a part of something larger than their own lives? Did it occur as a “solution” to the problem of their own physical mortality? Also, given the lack of research on individual and collective mortality salience, it remains possible that individual mortality salience is simply a “stronger” induction than collective mortality – and that this is why an effect was found for the urgency item in the individual mortality salience condition. Future research may provide more definitive answers.

Depression and the Timing of Having Children

The second statistically significant finding in Study 1 was that relatively depressed participants in the individual mortality salience condition were less likely to view children as a means to immortality (Seaver’s “immortality” factor) compared to those in the collective and control conditions. Therefore, for those who are depressed, increased individual mortality salience actually makes them less likely to see children as providing some form of a symbolic afterlife. To explain this finding, it may be helpful to examine the items comprising the immortality factor. In general, the items describe the symbolic transmission of one’s *positive* attributes to the next generation (e.g., carrying on family talents, goals, good traits, accomplishments). It seems reasonable to suggest that if one is already depressed (and likely has a negative view of their talents, goals, traits, accomplishments and has pessimistic thoughts about the future) that the individual would *not want* these characteristics to live on after death. As such, for depressed individuals, greater death anxiety reduction may actually come from believing that their negative qualities will die with them and *not* be passed on to future generations. One may wonder why this effect was found for those with depressed mood, but not for those with low self-

esteem. Although the answer to this question is not yet clear, it is important to note that low self-esteem is often viewed as one *symptom* of depression but that the two issues are not identical. For example, a common theory of depression is that it is identified by the “cognitive triad” of negative thoughts about the self, the world, and the future (Beck, 1970; Beck, 1979). In contrast, it may be argued that low self-esteem primarily reflects negative thoughts about the self only. Therefore, it is possible that the extra “features” of depressed mood over and above low self-esteem may have influenced how reactive individuals were on this measure of children as a means to immortality. In particular, negative beliefs about the future (given that becoming a parent likely elicits a number of hopes and expectations for the future), may be an especially interesting area to explore.

Finally, note once again that the collective and control conditions did not significantly differ with regard to immortality factor scores, which adds support for the theory that those from western cultures are not strongly activated by threats to a collective sense of mortality.

STUDY 2: RELIGIOUS MOTIVATION AS A FUNCTION OF MORTALITY SALIENCE TYPE

INTRODUCTION

Study 1 offered some limited support for the hypothesis that expressed interest in procreation (a form of *symbolic* immortality) would be influenced by increased levels of mortality salience, in that participants exposed to the Individual MS condition wished to have children sooner than those in the Control condition. Study 1 also suggested that for depressed individuals, having children may not be viewed as an effective method of reducing death anxiety. In contrast to Study 1, Study 2 examined the proposition that the values, beliefs, and expectations of achieving *literal* immortality (religious and spiritual beliefs) varies as a function of increased individual or collective mortality salience. Study 2 used a design similar to Study 1, but examined the impact of mortality salience on the sense that one will achieve literal immortality (through religion), rather than its impact on the sense of symbolic immortality (by having children).

The Afterlife: Literal Immortality

Despite the many differences that exist between religions, there is one feature that they almost all have in common: Religions promise literal immortality in the form of an afterlife (be it heaven, reincarnation, or otherwise) for individuals who meet or exceed the expectations and beliefs of a particular faith. Jung (1965) argued that all major religions function as advanced systems to help people prepare for death, and Frankl (1977) proposed that awareness of the inevitability of death provides an existential crisis

which then creates a need to find meaning in life. Although there is no empirical evidence for the existence of an afterlife (Blackmore, 1993), the vast majority of the world's population believes in some form of an afterlife (the country of Slovenia being an exception) (Greeley, 1995), 85% of the world's population has some form of religious belief (Zuckerman, 2005), and 95% of the American population believes in some form of God (Gallop & Castelli, 1989). Perhaps this is not surprising. From a cost-benefit perspective, believing in an afterlife has few costs relative to the benefits (i.e., immortality)...little is lost and much is potentially gained by saying, "I believe." Alternatively, by *not* believing in an afterlife, much may be lost (i.e., immortality) and little may be gained.

TMT suggests that symbolic and / or literal immortality can serve as a solution to inevitable physical mortality (e.g., Dechesne, et al., 2003; Pyszczynski et al., 2003) and may underlie numerous mortality salience reactions. Study 1 offered minimal support for the theory that increased individual mortality salience triggers an increased desire for *symbolic* immortality through procreation. Although the hypothesis that an increased expectation of *literal* immortality is also triggered by increased mortality salience has not been studied extensively, research does offer some support for this theory. For example, it has been demonstrated that compared to those who are non-religious, the moods of intrinsically religious individuals are less negatively affected by the possibility of a terrorist attack (Fischer, Greitemeyer, Kastenmuller, Jonas, & Frey, 2006). Religious fundamentalism has been associated with more positive emotions when writing about death (Friedman, 2008), reduced need to engage in worldview defense following mortality salience (Friedman & Rholes, 2008), and higher levels of death accessibility

when fundamentalist beliefs are strongly challenged (Friedman & Rholes, 2007). It has also been found that intrinsically religious people have a reduced need for worldview defense following increased levels of mortality salience (e.g., Norenzayan, Dar-Nimrod, Hansen, & Proulx, 2009; Jonas & Fischer, 2006), that when a sense of personal control is threatened individuals express greater beliefs in the existence of God (Kay, Gaucher, Napier, Callan, & Laurin, 2008; Laurin, Kay, & Moscovitch, 2008), and that regular attendance at religious services is predictive of support for suicide attacks among both Palestinian and Israeli citizens (Ginges, Hansen, & Norenzayan, 2009). In a study involving death row inmates, Heflick (2005) found that the expectation of a physical afterlife was a very prevalent theme of the last statements before execution. Finally, it has been found that afterlife believers have less self-reported death-related anxiety than afterlife non-believers (Thalbourne, 1996), that religiosity moderates afterlife belief and death anxiety (Cohen, Pierce, Chambers, Meade, Gorvine, & Koenig, 2005), and that religious worldviews can provide comfort for terminally ill medical patients (Edmondson, Park, Chaudoir, & Wortmann, 2008). These studies do seem to suggest that the belief that one will live on in some form of an afterlife can provide comfort from the knowledge of an inevitable physical death. Yet, can we assume that an expectation of literal immortality (e.g., afterlife belief) would be affected in the same way as desired symbolic immortality (Study 1)? It seems unlikely that the possibilities of symbolic and literal immortality motivate human behaviors and manage death anxiety in the same manner and to the same extent. Klass (2001) has written on the emotional reactions and behaviors of bereaved parents who have lost a child. The loss of symbolic immortality is reflected by bereaved parents who remind each other “When your parent dies, you lose

your past. When your child dies, you lose your future.” (Klass, 2001). The tragic death of a child can be viewed as a double mortality salience threat: The parent experiences both the collective mortality salience threat (the world is not safe for those important to me), and simultaneously, loses one mechanism of reducing death awareness anxiety (symbolic immortality through their child). Given that the extension of the parent’s self (i.e., symbolic immortality) has been lost, TMT may predict that the parents would employ other methods of death anxiety reduction and would seek immortality by other means. According to Klass (2001), such parents carry on by adopting the belief that their child is in “heaven” and that they will eventually be reunited. Amazingly, this was found even for those who, prior to the death of their child, did not believe in heaven (Knapp, 1986). That is, individuals with no previous belief were now unable to accept the possibility that there was no afterlife waiting for both them and their children...they had adopted a belief in, and a desire for literal immortality.

The previous discussion of parents’ reactions to the death of their children exemplifies not only the unpredictable and uncontrollable nature of death, but also exposes the weakness of symbolic immortality as a death anxiety coping mechanism. Symbolic immortality through procreation is a gamble. Not only must one’s children survive, they must also have children, and their children must have children, and so on for eternity. Events suggesting that the world is an unsafe and deadly place for ourselves and our children (e.g., terrorism, disease, natural disasters) may devalue symbolic immortality as a method of death anxiety reduction. According to Kotre (1995), “Some things we bring about in life will in fact remain in existence after we die. They will outlive us, whether by an hour, a day, a year, or a century. But not forever.” Our children

die, the values of our culture change, and our work is forgotten. Ultimately, *no* form of earthly symbolic immortality is everlasting. Why? The world on which we live is also mortal. Eventually, there will be no Earth. At the very best, we have 4.5 billion years until the Earth is incinerated in the initial stages of our sun's death, and then permanently frozen in the final stages. Four and a half billion years may seem like a long time (and it is), but the death of our planet is just as uncertain and unpredictable as our own lives. For example, an asteroid just several miles wide could literally end all life on Earth as we sleep tonight.

Study 2 is an examination of the TMT hypothesis that a sense of *literal* immortality increases as a result of intensified death awareness. Study 1 did not strongly support the hypothesis that there is an increased sense of symbolic immortality through procreation following a mortality salience induction. Yet, as discussed above, symbolic immortality is a less than ideal solution to an impending physical death. Our children can die and world events threaten our future lineage. *All* forms of symbolic immortality are ultimately in vain...immortality on Earth does not exist. In contrast, achieving an afterlife can be viewed as the ultimate solution to physical mortality, and the expectation that one will literally live on in some form following death may offer the best direct defense against the anxiety associated with mortality awareness. Study 2 examines the possibility that under conditions of heightened death awareness, there is an intensified value of, and expectation for, literal immortality.

Religion has been defined as the means by which humans transcend the limits of human existence (Chidester, 1990). Immortality as achieved through religion may offer a solution to a fear of death, and according to TMT, this desire for immortality may

underlie mortality salience reactions (e.g., subscribing to cultural norms). However, it is reasonable to propose that individuals *may* deal with the fear of death more directly, resulting in an increased desire for literal immortality and adopting behaviors and beliefs consistent with achieving an afterlife. For example, a study by Norenzayan and Hansen (2006) found that mortality salience led to increased religiosity and a stronger belief in God. Study 2 seeks to obtain further evidence of a direct effect of mortality salience on the sense that one is advancing towards the ultimate achievement of literal immortality. Additionally, Study 2 will extend this prior work by examining whether religious beliefs are affected by the *type* of mortality salience experienced (individual vs. collective).

Study 2: Design and Hypotheses

Study 1 did not strongly support the author's theory that two distinct forms of mortality salience may differentially affect symbolic immortality strivings. Individuals in the individual mortality salience condition were expected to show an increased value of children as a form of symbolic immortality, whereas individuals in the collective mortality salience condition were not expected to value children as a form of symbolic immortality to the same extent. In contrast, it is predicted that for Study 2, individual mortality salience and collective mortality salience will have the *same* effect on the dependent variable of literal immortality values and beliefs. Belief in an afterlife and the steps necessary to achieve literal immortality should be just as effective in managing collective mortality salience as for managing individual mortality salience. That is, the belief that one can achieve literal immortality should provide comfort in the face of individual mortality awareness ("I will die, but will live on through an afterlife.") and

collective mortality awareness (“The world is a dangerous place. Anyone can die at any time, including my family and friends. But I, and my family and friends, will still live on through an afterlife.”).

Study 2 used a 3 X 2 between-subjects design. The three levels of the independent variable were Individual Mortality Salience, Collective Mortality Salience, and a No Mortality Salience Control condition. The primary dependent variable was religious or spiritual motivation (e.g., adherence to religious teachings, attendance at religious functions).

To summarize, it is predicted that following an increase in Individual or Collective mortality salience, there will be an *increase* in participants’ reports of past, present, and future values and intentions thought to be consistent with the achievement of an afterlife (e.g., praying, attending religious ceremonies). Because previous research has generally demonstrated that certain personality characteristics (e.g., low self-esteem, depressed mood) result in greater susceptibility to mortality salience manipulations (Beatson & Halloran, 2007; Gailliot, Schmeichel, & Maner, 2007; Simon et al., 1996), it is predicted that the hypothesis will hold true primarily for these individuals.

METHOD: STUDY 2

Participants

Eighty-three undergraduate university students (63 women and 20 men, mean age = 19.0 years) agreed to participate. They received 3% toward their grade in a psychology class for their participation.

Procedure and Materials

Study 2 followed the procedure for Study 1 as closely as possible. Again, participants completed an informed consent form prior to participation (see **Appendix A**), read the study instructions (see **Appendix B**), and read debriefing information after they completed the study (see **Appendix M**). They were informed that the purpose of the study was to “compare parent's and children's various personality traits, interests, and preferences” and were assured that all responses would be kept anonymous. Identical to Study 1, they completed the demographics information, individual differences measures, one of the three mortality salience inductions, and leisure time distraction questionnaire (see **Appendices C to K**). However, instead of answering questions regarding parenthood as in Study 1, participants next completed the author's Religious Beliefs Questionnaire (see **Appendix N**) as the primary dependent variable. This questionnaire was designed to assess whether values, intentions, and behaviors believed to be consistent with achieving an afterlife (e.g., religious devotion, attending religious ceremonies, following religious teachings) vary as a function of individual or collective mortality salience. On this questionnaire, participants were asked to rate the extent to which they agree with statements such as “I have never questioned my religious faith”, and “I use

religion to guide important decisions.” Because there are people who have “spiritual” beliefs associated with an afterlife, but would not define themselves as “religious” the Spiritual Involvement and Beliefs Scale (Hatch, Burg, Naberhaus, & Hellmich, 1998) (see **Appendix O**) was completed as an additional dependent variable to assess spiritual values and beliefs. Although this questionnaire asks about behaviors such as praying and a “greater power” it does not mention religion specifically. For example, individuals are asked the extent to which they agree with statements such as “A spiritual force influences the events in my life” and “I believe there is a power greater than myself.” The scale is comprised of four primary factors: Ritual (activities consistent with belief in an external power, items 3, 5, 6, 7, 9, 10, 12, 14, 17, 19, 22, 24, & 26), Fluid (evolving internal beliefs and growth, items 1, 2, 5, 6, 8, 11, 13-16, & 19), Meditative (meditation and existential issues, items 2, 8, 9, 16, & 24-26), and Humility (humility and the application of principals in daily activities, items 20-23).

RESULTS: STUDY 2

Creation of Indexes

As referred to above, religious and spiritual beliefs were measured using the Religious Beliefs Questionnaire and the Spiritual Involvement and Beliefs Scale. Cronbach's alpha values were calculated for the Religious Beliefs Questionnaire ($\alpha = 0.94$), the overall Spiritual Involvement and Beliefs Scale ($\alpha = 0.92$), as well as the four factors comprising the Spiritual Involvement and Beliefs Scale: Ritual ($\alpha = 0.93$), Fluid ($\alpha = 0.89$), Meditative ($\alpha = 0.80$), and Humility ($\alpha = 0.79$). Therefore, based on the alpha values, all indexes used in the following analyses were determined to have acceptable levels of internal consistency. Higher scores on the Religious Beliefs Questionnaire represent stronger endorsement of items related to religious beliefs, values, and behaviors. Items 1, 3, 5, 9, 15, 16, 18, & 22 on the Spiritual Involvement and Beliefs Scale were reversed scored such that higher scores represent greater identification with spiritual beliefs and practices.

Statistical Analyses

Following the protocol of analysis introduced in Study 1, results are provided via the Analysis of Variance (ANOVA) statistical procedure. Once again, a typical test examines the effects of the three-level mortality salience induction and a two-level trait characteristic (e.g., Self-esteem: High vs. Low), but this time the dependent variable is one of the measures of religious or spiritual beliefs. Again, the procedure described by Aiken and West (1991) in which categorical trait variables are treated as continuous was used to perform regression analyses corresponding to each ANOVA. In Study 2, these

regression analyses all yielded results comparable to those found using the ANOVA procedure.

The impact of mortality salience and self-esteem on the sense of literal immortality through religion or spirituality.

It was expected that ratings of literal immortality desire (reported practice and adherence to religious or spiritual beliefs) would reveal an interaction of mortality salience type and self-esteem. Specifically, it was predicted that individuals with low self-esteem would respond to both individual and collective mortality salience with greater reported adherence to religious practices relative to the control group (as such beliefs theoretically offer a solution to both individual and collective death anxiety). Given that previous research has demonstrated that individuals with high self-esteem are less prone to the effects of mortality salience manipulations (Harmon-Jones et al., 1997; Mandell & Smeesters, 2009; Schmeichel et al., 2009), mortality salience type was not predicted to have an effect on the expressed adherence to religious or spiritual practices among participants with higher self-esteem.

In order to evaluate this prediction, 2 (Self-esteem: High vs. Low) X 3 (Mortality Salience Type: Individual vs. Collective vs. Control) ANOVAs were performed on the measures of religious and spiritual practices (i.e., the Religious Beliefs Questionnaire and the four indexes of the Spiritual Involvement and Beliefs Scale). A median split on the self-esteem measure was used to divide participants into “relatively low” (range = 14 - 28) and “relatively high” (range = 29 – 40) self-esteem groups.

With regard to the Religious Beliefs Questionnaire, the analyses of variance revealed no significant main effect of mortality salience $F(2, 77) = 0.27, p > .05$, no significant main effect of self-esteem $F(1, 77) = 0.92, p > .05$, and no interaction $F(2, 77) = 0.18, p > .05$.

For the Ritual factor of the Spiritual Involvement and Beliefs Scale, the analysis revealed no significant main effect of mortality salience $F(2, 77) = 0.18, p > .05$, no significant main effect of self-esteem $F(1, 77) = 0.16, p > .05$, and no interaction $F(2, 77) = 0.15, p > .05$.

Analysis of the Fluid factor revealed no significant main effect of mortality salience $F(2, 77) = 0.11, p > .05$, no significant main effect of self-esteem $F(1, 77) = 0.09, p > .05$, and no interaction $F(2, 77) = 0.08, p > .05$.

Likewise, analysis of the Meditative factor revealed no significant main effect of mortality salience $F(2, 77) = 0.14, p > .05$, no significant main effect of self-esteem $F(1, 77) = 0.21, p > .05$, and no interaction $F(2, 77) = 0.67, p > .05$.

Finally, for the Humility factor, the analysis revealed no significant main effect of mortality salience $F(2, 77) = 2.14, p > .05$, no significant main effect of self-esteem $F(1, 77) = 0.14, p > .05$, and no interaction $F(2, 77) = 0.83, p > .05$.

The impact of mortality salience and depression on the sense of literal immortality through religion or spirituality.

It was again expected that ratings of literal immortality desire (reported practice and adherence to religious or spiritual beliefs) would reveal an interaction of mortality salience type and depressed mood. Specifically, it was predicted that individuals with higher levels of depressed mood would respond to both individual and collective mortality salience with greater reported adherence to religious practices relative to the control group. Once again, mortality salience type was not predicted to have an effect on the expressed adherence to religious or spiritual practices among participants with non-depressed mood.

To test this prediction, 2 (Depressed Mood: High vs. Low) X 3 (Mortality Salience Type: Individual vs. Collective vs. Control) ANOVAs were performed on the measures of religious and spiritual practices (i.e., the Religious Beliefs Questionnaire, and the four indexes of the Spiritual Involvement and Beliefs Scale). A median split on the depressed mood measure was used to divide participants into “relatively low” (range = 14 - 20) and “relatively high” (range = 21 – 26) depressed mood groups.

With regard to the Religious Beliefs Questionnaire, the analyses revealed no significant main effect of mortality salience $F(2, 77) = 0.05, p > .05$, no significant main effect of mood $F(1, 77) = 0.80, p > .05$, and no interaction $F(2, 77) = 1.68, p > .05$.

For the Ritual factor of the Spiritual Involvement and Beliefs Scale, the analysis revealed no significant main effect of mortality salience $F(2, 77) = 0.10, p > .05$, no significant main effect of mood $F(1, 77) = 0.63, p > .05$, and no interaction $F(2, 77) = 1.52, p > .05$.

Analysis of the Fluid factor revealed no significant main effect of mortality salience $F(2, 77) = 0.13, p > .05$, no significant main effect of mood $F(1, 77) = 1.00, p > .05$, and no interaction $F(2, 77) = 1.42, p > .05$.

The analysis of the Meditative factor revealed no significant main effect of mortality salience $F(2, 77) = 0.01, p > .05$, no significant main effect of mood $F(1, 77) = 0.01, p > .05$, and no interaction $F(2, 77) = 1.13, p > .05$.

For the Humility factor, the analysis revealed no significant main effect of mortality salience $F(2, 77) = 1.88, p > .05$, no significant main effect of mood $F(1, 77) = 0.06, p > .05$, and no interaction $F(2, 77) = 0.19, p > .05$.

The impact of mortality salience and neuroticism on the sense of literal immortality through religion or spirituality.

Similar to previous predictions for Study 2, it was expected that ratings of literal immortality desire (reported practice and adherence to religious or spiritual beliefs) would reveal an interaction of mortality salience type and neuroticism. It was predicted that subjects with higher levels of neuroticism would respond to both individual and collective mortality salience with greater reported adherence to religious practices relative to the control group. Again, mortality salience type was not predicted to have an effect on the expressed adherence to religious or spiritual practices among participants with relatively low levels of neuroticism.

To test these hypotheses, 2 (Neuroticism: High vs. Low) X 3 (Mortality Salience: Individual vs. Collective vs. Control) ANOVAs were once again performed on the measures of religious and spiritual practices. A median split on the neuroticism measure

was used to divide participants into “relatively low” (range = 15 - 31) and “relatively high” (range = 32 – 44) neuroticism groups.

For the Religious Beliefs Questionnaire, the analyses revealed no significant main effect of mortality salience $F(2, 77) = 0.11, p > .05$, no significant main effect of neuroticism $F(1, 77) = 1.19, p > .05$, and no interaction $F(2, 77) = 0.09, p > .05$.

For the Ritual factor of the Spiritual Involvement and Beliefs Scale, the analysis revealed no significant main effect of mortality salience $F(2, 77) = 0.09, p > .05$, no significant main effect of neuroticism $F(1, 77) = 0.03, p > .05$, and no interaction $F(2, 77) = 0.35, p > .05$.

Analysis of the Fluid factor revealed no significant main effect of mortality salience $F(2, 77) = 0.11, p > .05$, no significant main effect of neuroticism $F(1, 77) = 1.00, p > .05$, and no interaction $F(2, 77) = 0.35, p > .05$.

The analysis of the Meditative factor revealed no significant main effect of mortality salience $F(2, 77) = 0.01, p > .05$, no significant main effect of neuroticism $F(1, 77) = 0.86, p > .05$, and no interaction $F(2, 77) = 0.53, p > .05$.

For the Humility factor, the analysis revealed no significant main effect of mortality salience $F(2, 77) = 2.22, p > .05$, no significant main effect of neuroticism $F(1, 77) = 1.67, p > .05$, and no interaction $F(2, 77) = 0.16, p > .05$.

In summary, regardless of the mortality salience condition (Individual, Collective, or Control) and whether groups were separated into “high” and “low” personality characteristics (Self-Esteem, Depressed Mood, Neuroticism), there were no significant differences among the groups for the religiosity and spirituality measures. Mortality salience type and personality characteristics were found to have no effects on self-

reported measures of religion, spirituality, and opinions about an afterlife. Study 2 offered little support for the theory that mortality salience increases religiosity and spirituality – a null finding which will be addressed in the discussion section to follow. Additionally, Study 2 offered no support for the concept of differential reactions to different mortality salience types, as virtually identical results were found using individual and collective mortality salience conditions.

DISCUSSION: STUDY 2

Desire for Literal Immortality?

A goal of Study 2 was to test the TMT hypothesis that a desire for immortality (literal immortality in Study 2) partially explains the reactions following an increase in mortality salience. This theoretical component of TMT was not supported by the results of Study 2. In contrast to Study 1 (which provided some evidence that interest in having children can be influenced by mortality salience experiences), Study 2 provided absolutely no support for the theory that religious and/or spiritual beliefs would be altered by exposure to conditions of increased death awareness. Mortality salience type and personality characteristics (self-esteem, mood, neuroticism) had no effects on the measures of religion, spirituality, and opinions about an afterlife. It appears as though religious / spiritual beliefs (at least as measured in Study 2) are not affected by increased death awareness. In contrast to the predictions of Study 2, participants *did not* demonstrate increased religious or spiritual devotion or commitment after the mortality salience inductions. There was no evidence that religious beliefs can be activated (similar to worldview adherence) as a death anxiety buffer. The results of Study 2 provided no evidence for the theory that a desire for literal immortality is an important factor in mortality salience effects. Again, there are several possible explanations for this unexpected result.

The first and most simple explanation is that in contrast to TMT's assertion, a desire for literal immortality *is not* an important factor in observed mortality salience effects. That is, although it has been consistently demonstrated that individuals have certain predictable reactions after contemplating death, this is not due to an underlying

desire to achieve literal immortality. If future research also supports this explanation, TMT would need to account for the lack of impact on afterlife beliefs. Again, it is advisable to consider whether a desire for literal immortality is a necessary part of TMT and whether previous findings could be explained without it. Similar to the implications of Study 1, future researchers may wish to consider the possibility that mortality salience effects result from an increased motivation to adhere to cultural beliefs while one is still living, but that this is not an attempt to achieve literal immortality after death. It is possible that the theoretical boost to self-esteem that comes from following cultural beliefs and behaviors may explain mortality salience effects without assuming that these effects also represent a desire for literal immortality.

According to the results of Study 2 it appears as though religious / spiritual beliefs are not altered following a mortality salience induction. However, this is somewhat inconsistent with previously published research in this area. For example, it has been found that exposure to arguments against the existence of God reduces self-reported religiousness (Shariff, Cohen, & Norenzayan, 2008), that reducing a sense of personal control increases the belief in God (Kay et al., 2008; Laurin et al., 2008) and that mortality salience *can* lead to stronger beliefs in God (Norenzayan & Hansen, 2006). Additionally, previous research has demonstrated that these religious beliefs can have a *protective* influence on the expression of mortality salience effects. For example, recall that afterlife believers report less death-related anxiety (Thalbourne, 1996), and also show a reduced need to rely on worldview defense after a mortality salience experience (Jonas, 2006). Is it possible that religious and spiritual beliefs do play a role in the expression of the thoughts / behaviors following increased death awareness but that the

measured beliefs were not affected by the mortality salience inductions in Study 2 for some reason? If previous research has demonstrated that those with strong religious beliefs are less impacted by the knowledge that they will someday die and also that religious beliefs are modified in response to mortality salience, why the lack of significant changes on the measures of religious / spiritual beliefs in Study 2?

Unfortunately, the reasons for this surprising finding are not yet clear. Comparing Study 2 to the Norenzayan & Hansen (2006) study, one finds similar mortality salience inductions (i.e., writing about thoughts of their own deaths), comparable participants (university students), and similar dependent variables (questions about religion). How can this discrepancy in results be explained? First, it is possible that in contrast to Study 2, Norenzayan and Hansen employed a more effective mortality salience manipulation. That is, they used the standard mortality salience induction asking participants to write about the thought of their own death, whereas the mortality salience manipulation in Study 2 added a passage about a specific kind of death participants were to imagine – an unproven modification which, in retrospect, may not have been the best choice as this makes comparison with previous research more difficult. Second, it is possible that the discrepancy is due to differences in the wording of the dependent variables – “How religious are you?” in Norenzayan and Hansen (2006), compared to “I have strong religious beliefs” in Study 2. Note also that Norenzayan and Hansen asked a question not addressed in Study 2 – “How strongly do you believe in God?” Of course, it remains very possible that the discrepancy in results is due to a combination of the modified mortality salience inductions, differently worded dependent variables, and other differences between the two studies (e.g., additional measures in Study 2 not present in the previous

research). Finally, it should be noted that there is emerging research on the role of initial religiosity in moderating the impact of mortality salience, which may be useful to consider when interpreting the results of Study 2. For example, Norenzayan et al. (2008) discovered that had they not examined religious and non-religious participants separately, they would have found no significant effect of mortality salience on cultural worldview defense on three out of four dependent variables. Unfortunately, it was not possible to examine religious and non-religious participants in the present study, but this would certainly be recommended for future research in this area. At present it is not clear why Study 2 did not follow past research demonstrating that religious beliefs can be influenced by mortality salience. To determine which element(s) of Study 2 were responsible for the null effects, additional investigation using methodology more similar to that used in previous research may be helpful.

The Impact of Individual and Collective Mortality Salience

Study 1 offered very little support for the theory that different forms of mortality salience would produce different beliefs about having children, but did acknowledge the possibility that individuals from European cultures may be more responsive to individual mortality salience experiences whereas those from Asian cultures may show greater responsiveness to collective mortality salience experiences. Study 2 offered no support for the theory that individual and collective mortality salience would have differential effects on beliefs about religion and spirituality - as there were virtually no differences between the groups with regard to the afterlife / spirituality measures. However, given that Study 2 did not even obtain results consistent with previous research demonstrating

that traditional (i.e., “individual”) mortality salience leads to a change in beliefs about God and religion, it is not surprising that the collective mortality salience induction also did not produce changes with regard to religious beliefs. An obvious next step would be not only to replicate the design (and perhaps the results) of the Norenzayan & Hansen (2006) study, but to also add a collective mortality salience condition. Finally, even though exploratory analyses did not reveal any differences between Asian and Caucasian participants in response to individual or collective mortality salience, further study on the possible differential impact of mortality salience type for different ethnic groups is recommended.

Possible to Bypass the Worldview Step?

Upon introducing the current series of studies it was proposed that if, as suggested by TMT, a desire for symbolic or literal immortality underlies mortality salience effects, then it should be possible to satisfy these desires directly rather than via worldview defense. TMT implies that the ultimate motivation behind worldview defense is the reduction in death anxiety that accompanies the belief that one will “live on” in some manner. Therefore, the worldview defense portion of this sequence seems only to be in the service of “living on.” The current studies posed the question “Is it possible to bypass the worldview defense method and directly satisfy symbolic or literal immortality desires?” These studies largely suggested that participants did not take the bypass opportunity (they did not report an increased desire to have children or greater adherence to religious beliefs). Is it possible that the worldview defense portion cannot be bypassed and that satisfaction of symbolic or literal immortality desires can only be satisfied

indirectly? Based on the current study it may be tempting to conclude that literal immortality desires *cannot* be satisfied directly. However, previous research (e.g., Norenzayan & Hansen, 2006) did find that mortality salience strengthens belief in God and religious conviction. If new studies consistently replicate Norenzayan's findings, this offers strong support for TMT's argument that a desire for literal immortality partially underlies mortality salience effects. However if future research (which addresses the suggested design changes to the present study) repeatedly *fails* to find evidence for greater symbolic or literal immortality desires following increased mortality salience, then it may be worth considering that a bypass is not possible and that these immortality goals must be obtained indirectly through worldview defense. However, if this is the direction that TMT takes, a cautionary note is warranted - TMT runs the risk of proposing that a critical component of the theory cannot be tested. That is, it would be problematic for TMT to assert that a desire for immortality is a fundamental component of mortality salience effects, but that this desire is only expressed *indirectly* by changes to thoughts and behaviors that support one's cultural worldview. The immortality seeking assumption holds a curious place in TMT: It is a fundamental principal that has bound the theory for over 20 years and underlies many subsequent assumptions, yet it is rarely used to explain obtained results and has not yet been verified to an extensive degree. Again, if future research cannot consistently confirm the presence of an increased desire for an afterlife following increased mortality salience, it may be necessary to modify the theory to account for these findings. At present however, Norenzayan and Hansen's (2006) research does provide encouraging evidence that mortality salience can influence

religious beliefs – which certainly supports the literal immortality-striving assumption of TMT.

STUDY 3: SOCIAL JUDGMENTS AS A FUNCTION OF CHILD THOUGHT FOCUS AND INDIVIDUAL MORTALITY SALIENCE

INTRODUCTION

Study 1 offered limited support for the TMT derived hypotheses that symbolic immortality desire through procreation increases as a function of increased death awareness. Study 2 offered no support for the hypothesis that religious and spiritual beliefs would be affected by increased mortality salience. Therefore, these two studies did not directly support TMT's *mortality salience hypothesis*, which states that if a psychological mechanism serves as a death anxiety buffer, increased death awareness will increase the reliance on that psychological mechanism. Additionally, Studies 1 and 2 did not support the theory that the nature of a mortality salience experience (individual or collective) can prompt different reactions to death-related anxiety as a function of the death anxiety reduction method (i.e., procreation vs. religion). Study 3 is an attempt to expand the results of Studies 1 and 2 by answering the following questions: When given the opportunity to activate more *traditional* death anxiety buffers (i.e., worldview defense), is there a differential response to individual or collective mortality salience inductions on measures of worldview defense? Can thinking about one's children (a form of symbolic immortality) create a death anxiety buffer that nullifies traditional mortality salience responses?

Study 3: Design and Hypotheses

As previously discussed, following traditional mortality salience inductions, participants give *harsher* judgments of social transgressors (e.g., Arndt, Liberman, Cook, & Solomon, 2005; Jonas et al., 2008; Rosenblatt et al., 1989). This effect is assumed to reflect a greater need to identify with and defend one's culture as a method of reducing death-related anxiety. Although TMT has largely focused on the cultural worldview and self-esteem as effective defense mechanisms for reducing death anxiety, recent research has suggested that close relationships may also function as a death anxiety buffer. For example, it has been found that activating thoughts about one's parents reduces death-thought accessibility and worldview defense in response to mortality salience (Cox, Arndt, Pyszczynski, Greenberg, Abdollahi, & Solomon, 2008), that thinking about a romantic partner decreases death-thought accessibility (Mikulincer, Florian, Birnbaum, & Malishkevich, 2002), and that mortality salience leads to compromises in mate selection requirements (Hirschberger, Florian, & Mikulincer, 2002).

Study 3 was inspired by and will closely follow the design of an experiment by Florian, Mikulincer, and Hirschberger (2002), which found that thoughts of romantic relationships *reduced* the harsh judgments of social transgressors following increased mortality salience. Recall that TMT's anxiety-buffer hypothesis states that augmenting a psychological structure that provides protection against death-related anxiety should reduce the amount of anxiety in response to future threats. Consistent with this theory, Florian et al. (2002) found that the activation of thoughts of close relationships reduced the need to activate other defenses (i.e., worldview defense through the punishment of social transgressors). Similarly, if one has boosted the sense of symbolic immortality

through one's children, then the activation of such mechanisms should reduce the need to activate *other* defensive mechanisms, as terror management needs have already been satisfied (Greenberg, Pyszczynski, & Solomon, 1997).

Studies 1 and 2 did not support the hypothesis that immortality desire through procreation or religion increases in response to increased mortality salience. However, since anxiety-reducing responses to death awareness are theorized to happen on an unconscious level, it is possible that the dependent measures used in Studies 1 and 2 were too much in conscious awareness to effectively reduce death anxiety. That is, subjects may have made the connection between writing about death and then answering questions about their beliefs on procreation and religion – thus rendering this an ineffective method of reducing death anxiety. It remains possible that activating a sense of symbolic immortality can act as a buffer against death anxiety when individual mortality is made salient – if the buffer can be activated on a more unconscious level. That is, having parents think about their commitment to their children (i.e., activate a sense of symbolic immortality) may result in a reduced need to use other worldview defenses (i.e., negative judgments of social transgressors) following increased mortality salience. Additionally, *if* there really is a distinction between individual and collective mortality salience, it makes sense that for *individual* threats, thinking about one's children will lessen the harsh judgments on social transgressors, because believing that one will live on through procreation may make the transgressions of others less threatening to one's own worldview. However, it seems that the same result should not be expected following a *collective* mortality salience threat. For collective mortality salience threats ("The world is an unsafe place...*anyone* can die at any time") thinking about

one's children may actually *intensify* harsh judgments of moral transgressors. As a result of the collective mortality salience induction, individuals may feel that their road to immortality is in danger ("My children are not safe"). Instead of reducing the harsh judgments against social transgressors, thinking about one's children may in this case result in harsher judgments following a collective mortality salience induction. Thinking about one's children will be an ineffective buffer of death anxiety and participants will use the other readily available method of managing their mortality awareness (i.e., cultural worldview defense through the punishment of social transgressors).

Study 3 used a 3 (Mortality Salience: Individual vs. Collective vs. Control) by 2 (Symbolic Immortality: Activated through thoughts of ones' children vs. No symbolic immortality activated), by 2 (Neuroticism: High vs. Low) between-subjects design. The primary dependent variable is the participants' judgments of social transgressors – a more traditional TMT measure and one less likely to be recognized by subjects as the primary dependent measure compared to those used in Studies 1 and 2. Because one of the goals of Study 3 was to replicate the Florian et al. (2002) study as closely as possible (with the addition of Individual and Collective mortality salience conditions), a measure of neuroticism was also included in this study. The measures of self-esteem and depression from Studies 1 and 2 were not included in Study 3 because they were not present in the Florian study.

Although high levels of neuroticism has, at times, been associated with an increased likelihood of demonstrating the mortality salience effect (e.g., Goldenberg et al., 2008), the interaction of neuroticism and mortality salience has not always been consistent. For example, although neuroticism was included as a possible moderator

variable in the Florian study, it *did not* interact with the mortality salience induction.

Therefore, neuroticism was not predicted to act as a moderator variable in Study 3.

However, given the inconsistent findings on neuroticism in TMT research, an interaction of neuroticism and mortality salience condition does remain possible and will be included in the analyses.

It was predicted that asking parents to think about their children following an *individual* mortality salience induction would result in *decreased* activation of death anxiety defenses (resulting in more lenient judgments of social transgressors relative to the control group). In contrast, asking parents to think about their children following a *collective* mortality salience induction, would result in *increased* activation of other death anxiety defenses (resulting in harsher judgments of social transgressors relative to the control group). Thus, a two-way interaction between mortality salience condition and thought activation condition was expected.

METHOD: STUDY 3

Participants

One hundred and forty-three parents or guardians (102 women and 41 men, mean age = 48.3 years) of undergraduate university students volunteered to participate. Their children (the university students) received 3% credit towards their grade in a psychology class as compensation for asking their parents to participate in the study, and also for completing a questionnaire package themselves (Studies 1 and 2).

Procedure and Materials

Undergraduate students in the psychology department subject pool at Simon Fraser University volunteered to participate in the study in exchange for credit points towards their grade in a psychology class. Sealed questionnaire packages were distributed to the participants. They were told that the purpose of the study was to compare parent's and children's various personality traits, interests, and preferences. The students completed one package of questionnaires themselves (i.e., the questionnaires in Studies 1 and 2). The students were also asked to take packages home to their parents or guardians (who were the participants of Study 3) and asked them to complete the enclosed questionnaires. All participants were informed that there was no identifying information on the questionnaires and that all responses were completely anonymous. Finally, the students were told that both sets of questionnaires (parent and child) could be returned in the postage-paid envelopes provided.

Study 3 was an attempt to determine if thinking about one's children can activate the sense of symbolic immortality through one's children, and thus, serve as a death

anxiety buffer in the same way Florian et al. (2002) found that thinking about close relationships acts as a buffer. Therefore, the methodology of Study 3 followed that of Florian et al. (2002) as closely as possible. The *parental questionnaire* package began with an information and instructions page (see **Appendix P**). Participants completed an informed consent form (see **Appendix Q**), a demographics questionnaire (see **Appendix R**), and the same neuroticism scale used in Studies 1 and 2 (see **Appendix G**). The three possible mortality salience inductions were identical to those used in Studies 1 and 2. Participants completed either the individual mortality salience induction requiring them to write about their feelings on dying in a car accident (see **Appendix I**), the collective mortality salience induction requiring them to write about their feelings on the deaths of their friends and family members (see **Appendix H**), or the control questionnaire requiring them to write about giving a public speech (see **Appendix J**). The filler-distracter scale on leisure time activities (see **Appendix K**) immediately followed the mortality salience induction.

Participants were randomly divided into subgroups designed to manipulate the salience of their commitment to their children. Participants in the Parental Commitment condition completed the “Parental Commitment Survey” (see **Appendix S**) - a manipulation modeled after the Florian et al. (2002) manipulation but which asked subjects to think about their children rather than their significant other. Specifically, it required subjects to “Please briefly describe the emotions that commitment to the child also participating in this study arouses in you” and “How is your commitment to this child manifested in your relationship with him or her?” Participants in the No Commitment condition were asked similar questions about listening to music (see

Appendix T): “Please briefly describe the emotions that listening to music arouse in you” and “What do you think happens to you when you listen to music?” Finally, participants completed a shortened 10-item version of the Multidimensional Social Transgression Scale (MSTS) (Florian & Mikulincer, 1997) (**see Appendix U**). This measure served as the primary dependent variable used to determine if thinking about parental commitment acts as a buffer against individual and/or collective mortality salience. On the MSTS, participants were required to read short vignettes describing the cause of a particular social transgression and the damages suffered as a result of the transgression. The vignettes included commonly committed social transgressions such as robbery, traffic offenses, and fraud. Participants were asked to provide two judgments. They were first required to assess the severity of the transgression on a 7-point scale (*1 = not at all severe, 7 = very severe*). They were then asked to provide an evaluation of the punishment that should be administered (*1 = very light punishment, 7 = very heavy punishment*). Following the protocol of the Florian study, a single transgression rating was computed by averaging the scores on these two questions across the vignettes. Higher scores are reflective of more severe evaluations of the transgressions. Participants read debriefing information (**see Appendix V**) after they completed the questionnaire package.

RESULTS: STUDY 3

Statistical Analyses

The primary results for Study 3 are obtained via an Analysis of Variance (ANOVA). In Study 3, the test examines the effects of the three-level mortality salience induction, the two-level neuroticism classification (High vs. Low), and the parental commitment condition (Commitment vs. No Commitment) on social transgression ratings. The corresponding regression analysis yielded results comparable to the ANOVA findings as described below.

The impact of mortality salience and parental commitment on ratings of social transgressions.

It was expected that an interaction pattern (Mortality Salience Condition X Parental Commitment Condition) on social transgression ratings would be found. Specifically, it was predicted that asking parents to think about their children following an *individual* mortality salience induction would result in *more lenient* judgments of social transgressors. In contrast, it was predicted that asking parents to think about their children following a *collective* mortality salience induction, would result in *harsher* judgments of social transgressors. Neuroticism was not expected to moderate the mortality salience effect.

To assess the effects of mortality salience type, parental commitment, and neuroticism on evaluations of social transgressions, a 3 (Mortality Salience: Individual vs. Collective vs. Control) X 2 (Parental Commitment: Commitment vs. No

Commitment) X 2 (Neuroticism: Low vs. High) ANOVA was performed on the mean transgression scores for all participants. A median split on the neuroticism measure was used to divide participants into “relatively low” (range = 15 - 40) and “relatively high” (range = 41 – 59) neuroticism groups.

This analysis revealed a significant main effect for mortality salience condition $F(2, 131) = 3.72, p < .05$. Planned comparisons revealed that individuals in the Collective MS condition ($M = 5.82$) rated social transgressions as significantly more severe than did individuals in the Control condition ($M = 5.38$), $t(131) = 2.68, p < .01$. However, the ratings assigned by those in the Collective condition ($M = 5.82$) did not differ from the ratings assigned by individuals in the Individual MS condition ($M = 5.57$), $t(131) = 1.56, p > .05$. Also, the ratings assigned by those in the Individual MS condition ($M = 5.57$) did not differ from the ratings assigned by individuals in the Control MS condition ($M = 5.38$), $t(131) = 1.19, p > .05$. With regard to mean social transgression ratings, there was no main effect of neuroticism (high vs. low) $F(1, 131) = 2.70, p > .05$, no main effect of child commitment condition (commitment vs. no commitment) $F(1, 131) = 0.18, p > .05$, no interaction of mortality salience condition and commitment condition $F(2, 131) = 1.96, p > .05$, and no interaction of neuroticism and commitment condition $F(1, 131) = 0.06, p > .05$. Also, the three-way interaction of mortality salience condition, neuroticism, and commitment condition was not significant $F(2, 131) = 1.73, p > .05$.

In contrast to predictions, the analysis did reveal one significant two-way interaction effect between mortality salience type and neuroticism $F(2, 131) = 2.69, p < .05$ that qualified the main effect described above (see Figure 4 for the means pertinent to these findings). Planned comparisons revealed that the social transgression ratings

assigned by individuals in the *Low Neuroticism* group did not differ across the three mortality salience conditions: Individual vs. Collective $t(131) = 0.48, p > .05$; Individual vs. Control $t(131) = 0.61, p > .05$, and Collective vs. Control $t(131) = 0.12, p > .05$. However, planned comparisons showed that the social transgression ratings assigned by individuals in the *High Neuroticism* group did vary across the three mortality salience conditions. Specifically, high neuroticism subjects in the Individual and Collective mortality salience conditions did *not* differ from one another with regard to the social transgression ratings they assigned $t(131) = 0.18, p > .05$. However, high neuroticism subjects in both the Individual mortality salience condition $t(131) = 2.09, p < .05$, and the Collective mortality salience condition, $t(131) = 3.95, p < .01$, assigned higher social transgression ratings compared to those in the Control group.

In summary, Study 3 did not support the theory that thinking about one's children would moderate the mortality salience effect by interacting with the type of mortality salience condition on transgression ratings, as the commitment and no-commitment conditions produced no main effects and no significant interactions with the other variables. Study 3 also did not support the prediction that different forms of mortality salience (individual vs. collective) would differentially affect responses to increased death awareness, as individuals in both groups assigned similar social transgression ratings. Study 3 did support certain previous research by demonstrating that low neuroticism may serve as a death anxiety buffer, and that high neuroticism may result in greater worldview defense in the face of heightened death awareness (measured as harsher judgments of social transgressors in this study).

DISCUSSION: STUDY 3

Studies 1 and 2 offered very little support for the theory that a desire for symbolic immortality (procreation) or literal immortality (an afterlife) underlies mortality salience effects. In Study 1, beliefs about having children (other than the timing) were largely unchanged by the mortality salience inductions. Similarly, in Study 2, religious and spiritual beliefs were almost identical in the individual, collective, and control conditions.

In contrast to Studies 1 and 2, Study 3 used a dependent measure that is more typical and widely accepted in mortality salience / TMT research (i.e., worldview defense). Study 3 was an attempt to determine if, when given the opportunity to activate this more traditional death anxiety buffer, participants would finally reveal different responses to individual and collective mortality salience inductions. Study 3 was also an attempt to determine if thoughts of one's children can moderate the mortality salience effect (e.g., serve a protective function) in the same way that thoughts about romantic relationships (Florian et al., 2002) or thoughts about one's parents (Cox et al., 2008) appear to reduce the impact of experimentally induced death anxiety.

Children as a Death Anxiety Buffer?

According to TMT, if a psychological process buffers death anxiety, then activating this process after a mortality salience induction will decrease the need to activate other defense mechanisms because terror management needs have already been addressed. In a test of this theory, Florian et al. (2002) found that prompting thoughts about romantic relationships reduced the need to activate worldview defenses following a mortality salience induction. Likewise, thinking about a close parental bond also results

in reduced reliance on worldview defense to manage a mortality salience threat (Cox et al., 2009).

Given that thoughts of romantic relationships and parental bond appear to satisfy terror management needs, Study 3 proposed that thoughts of one's children (inspired by the line of reasoning in Study 1) may also moderate the mortality salience effect. It was proposed that compared to participants in the "no commitment" condition, those in the "child commitment" condition would respond to an *individual* mortality salience induction by giving more lenient judgments on moral transgressions. In contrast, it was hypothesized that compared to individuals in the "no commitment" condition, participants in the "child commitment" condition would respond to a *collective* mortality salience induction by giving harsher judgments on moral transgressions.

Results from Study 3 did not support these predictions as the commitment variable produced no main effects and no significant interactions with the other variables (i.e., the mortality salience condition and the neuroticism category). Therefore, it appears that unlike romantic relationships and parental bond, thinking about one's children does not act as a death anxiety buffer that nullifies traditional mortality salience effects. A single study with identical experimental conditions that examines the influence of romantic, parental, and relationships with children would be an obvious next step in this line of research. At present, there is no way of knowing exactly why one's relationship with a child does not seem to offer the same death anxiety buffer that other important relationships do – although some initial speculation is possible. Based on TMT, it would be logical to predict that thinking of one's children would also provide an effective defense against death anxiety (perhaps even more effective than thinking about other

close relationships). Yet, the child commitment condition in Study 3 did not buffer the mortality salience effect. Note that both romantic and parental relationships involve connections with other adults one would normally turn to for support. During challenging or stressful periods it seems reasonable to suggest that adults would look for comfort from their significant other and/or parents (i.e., other *adults* they have close relationships with) – assuming of course that these are positive relationships. Although not yet tested, this reasoning would suggest that close friendships may also serve as a death-anxiety buffer. In contrast, adults may be less likely to view their children (especially young children) as part of their primary support system. When children are young, a *healthy* parent-child support system is largely unidirectional – the parent provides stability, nurturance, and comfort during times of stress for the child. As such, the parents in Study 3 with relatively young children (just out of high school) may not view their children as a primary resource for support and comfort. Hence, thinking about their children after a mortality salience induction may have not reduced death anxiety, and participants turned to worldview defense to satisfy this need. In future research it would be interesting to examine the possibility that reliance on worldview defense varies as a function of the parent-child life stage. Early stage relationships with a young child and a young parent may be considered unidirectional with regard to support (only the parent provides support). Middle stage relationships with an adult child and an older parent may be considered bi-directional (both parties provide support). Finally, late stage relationships with an adult child and an elderly parent may actually reverse and once again become unidirectional (this time with the adult child providing most of the support). Consider a study involving early, middle, and late stage adult participants with a design similar to

Study 3. Following a mortality salience induction, it may be predicted that early stage adult parents would have the greatest need to rely on worldview defense due to the unidirectional nature of the relationship with their child (Unidirectional: The parent must provide the support). It follows that middle stage adult parents would have a reduced need to rely on worldview defense (Bidirectional: Parents are now in a position to give support to and receive support from their adult children). Finally, elderly parents of adult children may have the least need to rely on worldview defense (Unidirectional: The child provides most of the support), essentially reversing the findings from the early stage. Is it possible that thinking about certain relationships buffers the mortality salience effect not because doing so increases one's sense of symbolic immortality (which thinking about one's *children* should do best), but because it activates a sense of emotional support and personal security (which thinking about *adult* relationships should do best) – thereby reducing the level of death anxiety? These theories would be relatively easy to test and could help to explain why certain relationships seem to function as death-anxiety buffers while others do not.

The Impact of Individual and Collective Mortality Salience

Not only did Studies 1 and 2 fail to demonstrate *differences* between the individual and collective mortality salience conditions, they also failed to show effects of mortality salience *overall* (with those in the mortality salience conditions generally responding the same as those in the control conditions). Along with other possible explanations, it was proposed that the lack of significant effects may have been due to type of measure used to evaluate the impact of the mortality salience conditions. Instead

of measuring beliefs about procreation or religion, Study 3 relied on evaluations of moral transgressions as the primary dependent variable. In contrast to Studies 1 and 2, *Study 3 did finally demonstrate the mortality salience effect* - those in the collective condition assigned harsher ratings than those in the control condition (the ratings assigned by those in the collective condition did not significantly differ from those in the individual condition, and the ratings assigned by those in the individual condition did not significantly differ from those in the control condition). As a side note, the fact that a mortality salience effect *was* found in Study 3 (using a more traditional dependent variable) suggests that the lack of significant findings in Studies 1 and 2 were not due to the modified mortality salience inductions, but to some other factor which has yet to be determined (e.g., the suitability of procreation and religion as measures of change, particular characteristics of the sample).

On first inspection these results may appear to offer support for the theory of differential effects for different types of mortality salience, as only the collective condition resulted in harsher judgments of moral transgressions. However, two important points need to be made. First, the ratings assigned by participants in the collective condition did not differ significantly from those in the individual condition – suggesting that the responses of these groups were actually very similar. Secondly, and perhaps more importantly, there was an interaction effect of mortality salience and neuroticism that has not yet been discussed. Specifically, for those low in neuroticism there were no differences in severity ratings across the mortality salience conditions (individual = collective = control). In contrast, for those high in neuroticism, ratings were more severe in the individual and collective mortality salience conditions than in the control condition

(individual = collective > control). Given the presence of this interaction effect, the main effect of mortality salience condition as described above is potentially misleading and a better understanding is possible by considering how neuroticism plays a role in the effects. It appears that only those high in neuroticism were reactive to the mortality salience inductions, and this can account for the main effect of mortality salience condition. When examining only these high neuroticism participants, note that while there was a mortality salience effect (harsher ratings following a mortality salience induction), both the individual and collective conditions produced this effect. Therefore, Study 3 does not provide evidence for the theory that different mortality salience experiences will produce different reactions, but it does suggest that a collective induction *can* produce the mortality salience effect, which obviously has implications for future research.

CONCLUSION

The present line of research attempted to clarify several of Terror Management Theory's (TMT's) fundamental but less explored assumptions. From TMT's initial studies twenty years ago to its current research today, its proponents have argued that a latent desire for literal and/or symbolic immortality underlies the widely supported mortality salience effect (i.e., greater defense of the cultural worldview after an increase in death awareness). TMT proposes that by trusting the cultural worldview and living up to its standards, the ultimate goal is to symbolically and/or literally transcend death and achieve immortality. This is an intriguing theory and appears to provide the framework upon which much of subsequent TMT components rest. However, this fundamental assumption was largely untested and until recently, has received limited research attention. Rather, TMT research has overwhelmingly focused on the worldview defense aspect of the mortality salience effect.

The current studies were largely exploratory in nature and were designed to examine the argument that a desire for immortality underlies mortality salience effects. It was proposed that if a desire for immortality does fuel the mortality salience effect, then an increase in this desire should be detected after a mortality salience induction. This theory was not strongly supported by the research. Participants in Study 1 generally did not respond to mortality salience inductions with a greater expressed desire for children (an example of thoughts / behaviors that may lead to one form of symbolic immortality). Likewise, participants in Study 2 did not respond to mortality salience inductions with greater expressed adherence to religious / spiritual beliefs (an example of thoughts / behaviors that may lead to an afterlife). Although these results were not supportive of

TMT's views on immortality, it was deemed premature to call for a theory modification to TMT, as alternative explanations for the results were plausible and should be tested in future research. For example, future research examining TMT's immortality argument may focus on: measures which may be more easily influenced by experimental manipulation (e.g., career aspirations); sample groups comprised of older individuals; the possible influence of gender with regard to procreation beliefs and mortality salience; and behavioral indicators of mortality salience influence rather than self-report measures.

It was initially proposed that different forms of mortality salience could be expected to have a different impact depending on the particular measure under study. This hypothesis was not supported by the data. Across all three studies, there was either no significant differences between the mortality salience conditions and the control group (Studies 1 and 2), or the two mortality salience conditions did not significantly differ (Study 3). Given concerns about the sample group (age, gender, stage of life) and the possibility that certain measures may not be easily influenced via experimental manipulation (beliefs about procreation and religion), it is premature to conclude that all mortality salience experiences have the same impact. However, this was the first study to confirm that a threat to one's comparison group (collective mortality salience) increases worldview defense in a manner very similar to the "traditional" individual mortality salience induction. Adding this finding to previous research on the interaction of culture (western and eastern) and mortality salience type, does indicate that additional research on the differential effects of various mortality salience types may still prove to be fruitful. Finally, in contrast to previous research demonstrating that close adult relationships can

serve as a death anxiety buffer, thoughts of one's children did not reduce the need to rely on worldview defense in the present study.

It should be noted that TMT does have a number of critics and alternative theories of mortality salience effects, worldview defense, and the role of self-esteem have been proposed. For example the Meaning Maintenance Model (MMM) (Heine & Vohs, 2006) argues that mortality salience effects are but one example of the fundamental need people have to maintain predictable mental representations of expected relationships. These theorists suggest that mortality salience is one of many experiences that can disrupt a meaning framework and that other threats (such as feelings of uncertainty, feelings of meaninglessness, and alienation) can produce comparable effects (Proulx & Heine, 2006). As such, proponents of meaning maintenance often agree with many of TMT's arguments, but place mortality salience effects within a larger category of experiences in which "meaning" has been disrupted. The MMM may argue that although the sense of meaning and predictability was effectively disrupted by the mortality salience inductions in Study 1, the mechanism provided to restore meaning (i.e., a change in beliefs about having children) may not have been adequate or appropriate for this restoration. Another alternative theory to TMT, the model of compensatory conviction and zeal (McGregor, 2006) is conceptually similar to the MMM and argues that any experience that is a threat to important self-goals will result in the same types of compensatory reactions as mortality salience. This theory argues that a threat to personal consistency and self-integrity is dealt with by strongly affirming some other unrelated component of the self (McGregor, Zanna, Holmes, & Spencer, 2001) – and that mortality salience is just one of many possible threats to self-integrity. Finally, sociometer theory argues that the function

of self-esteem and worldview defense is not to buffer people against anxiety-provoking thoughts of death, but to monitor the social environment for threats to social acceptance (Leary, 2004). Although the author of the present research finds most of the arguments put forward by the proponents of TMT to be compelling explanations of mortality salience effects, there are a number of appealing counter-arguments and alternative explanations for mortality salience effects which still need to be addressed in future research.

Future studies examining the stage of parent-child relationship in a TMT context, paying extra attention to the differential effects of mortality salience types, considering alternative theories for mortality salience effects, and replicating previous research showing a change in religious beliefs following mortality salience are considered to be the next logical research directions – and may eventually lead to modifications or refinements of Terror Management Theory.

Figure 1. *Proposed 4-Step and 3-Step Models of Terror Management Theory's Method of Satisfying Immortality Needs.*

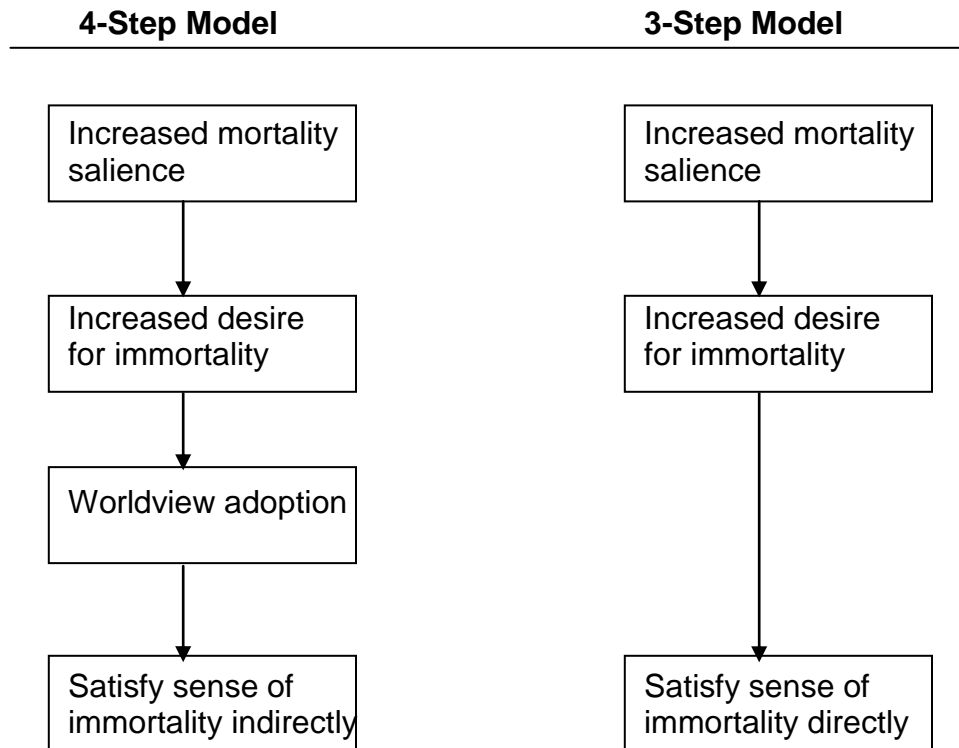


Figure 2. Mean Expressed Number of Years Before Having Children as a Function of Mortality Salience Condition.

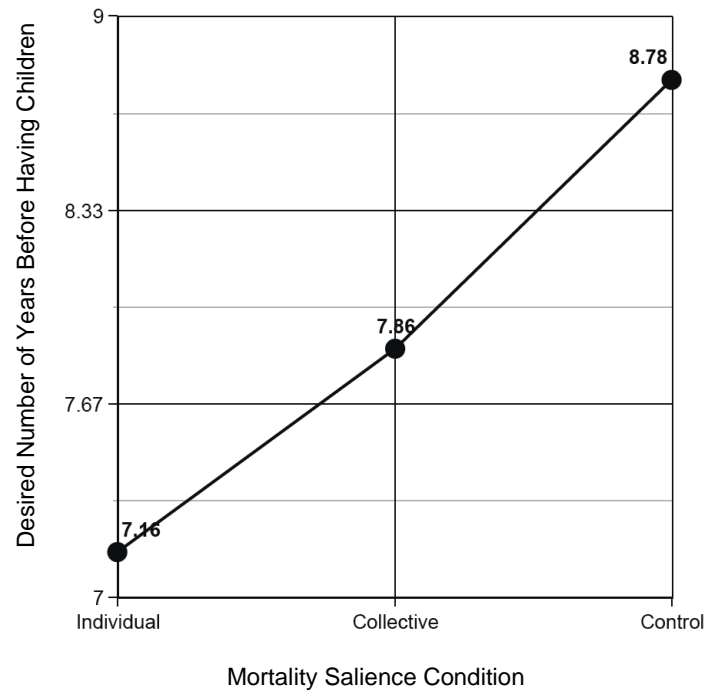


Figure 2. Mean expressed number of years before having children as a function of mortality salience condition. Participants in the Individual mortality salience condition expressed a desire to have children earlier in life than those in the Control condition, but did not differ from those in the Collective condition. Individuals in the Collective condition did not differ from those in the Control condition on this measure.

Figure 3. Mean Scores on Seaver's (1977) "Immortality" Factor Regarding Expressed Reasons for Having Children as a Function of Mortality Salience Condition and Depression.

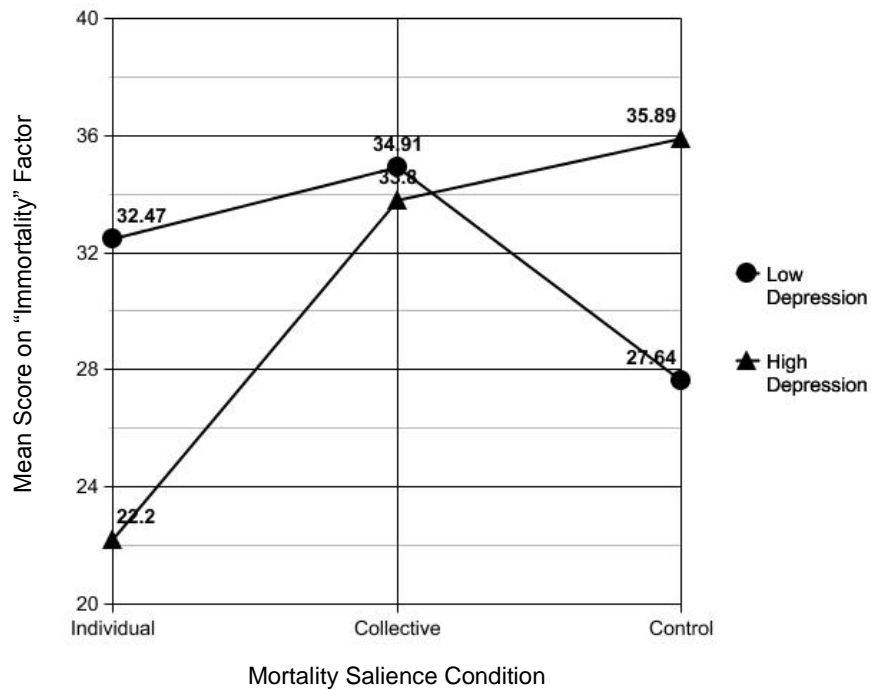


Figure 3. Mean scores on Seaver's (1977) "immortality" factor regarding expressed reasons for having children as a function of mortality salience condition and depression. Depressed subjects exposed to the Individual mortality salience condition were less likely to view children as a symbolic means to immortality compared to those in the Collective mortality salience and Control conditions. Subjects with low levels of depression did not differ across the mortality salience conditions.

Figure 4. *Mean social transgression ratings as a function of mortality salience condition and neuroticism.*

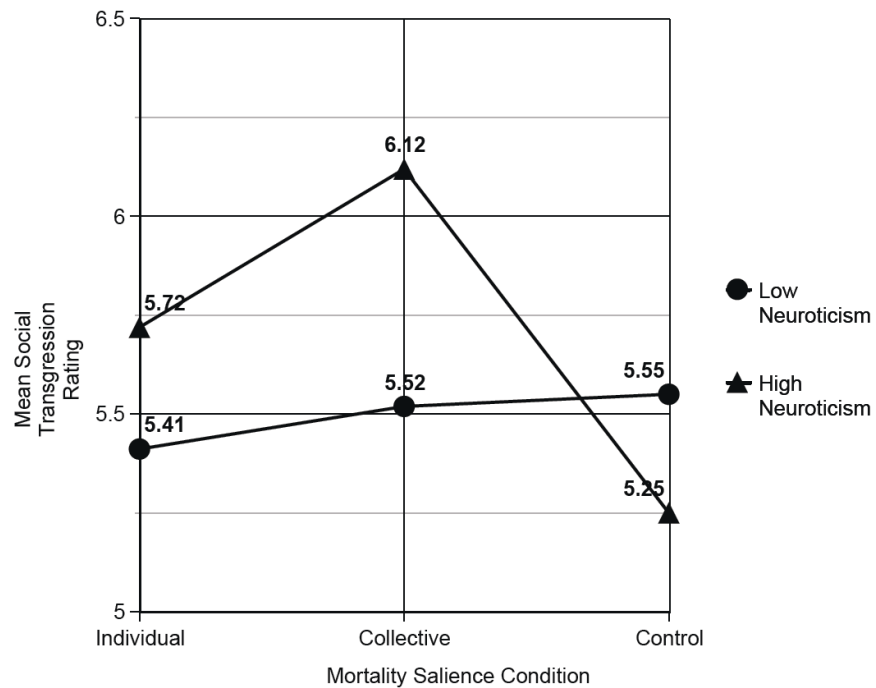


Figure 4. Mean social transgression ratings as a function of mortality salience condition and neuroticism. For the low neuroticism group, mean social transgression ratings did not significantly differ between the three mortality salience conditions. For the high neuroticism group, subjects in the Individual and Collective mortality salience conditions rated the social transgressions significantly higher compared to the control group.

APPENDICES

Appendix A: Informed Consent

SIMON FRASER UNIVERSITY INFORMED CONSENT BY PARTICIPANTS TO TAKE PART IN A RESEARCH PROJECT OR EXPERIMENT

The University and those conducting this project subscribe to the ethical conduct of research and to the protection at all times of the interests, comfort, and safety of subjects. This research is being conducted under permission of the Simon Fraser Research Ethics Board. The chief concern of the Board is for the health, safety and psychological well-being of research participants.

THE NATURE OF YOUR PARTICIPATION

In this study you will complete a personality trait survey. Your participation involves completing a questionnaire package. The study will likely take 30 minutes in total, but may require up to 45 minutes.

CONFIDENTIALITY AND ANONYMITY

Your responses will be entirely confidential and anonymous. At no time will you be asked to share your responses with your parent. You are asked to seal your questionnaire in the provided envelope and to then mail it as soon as possible; therefore your parent will have no access to your questionnaire. You will not be asked to place your name on any portion of the test and your responses will be identified by number only. This number is used so that we can match the parent's questionnaire to the appropriate child's questionnaire. There is no means for linking a particular person to a particular questionnaire or test result. The questionnaires will be stored for a period of 5 years, after which they will be destroyed. We are required to keep the material for five years because journals that publish research require researchers to produce raw data if necessary.

WITHDRAWING FROM THE STUDY

Your participation in this study is completely voluntary. Should you choose to take part, you are free to withdraw at any time. If you feel uncomfortable at any point during completion of this study you may choose not to complete a particular part of this study or you may withdraw your participation with no penalty whatsoever. You will still earn credit for participation even if you withdraw or choose not to complete a particular part of this study.

QUESTIONS OR CONCERNS

If you have any questions concerning the project you may contact the researcher for additional information (Brent Conrad, email: bconrad@sfu.ca). You can also obtain results from the research by contacting the above researcher. Should you wish to obtain information about your rights as a participant in research, or about the responsibilities of researchers, or if you have any questions, concerns or complaints about the manner in which you were treated in this study, please contact the Director, Office of Research Ethics by email at hweinber@sfu.ca or phone at 604-268-6593.

AGREEMENT TO PARTICIPATE

By signing below, you agree that you have read and understood the above information, and that you are willing to participate in the study described above. Remember that the following information is not associated with your responses in the study.

NAME: _____

ADDRESS: _____

SIGNATURE: _____

DATE: _____

Appendix B: Study Instructions

INTRODUCTION

The purpose of the study is to compare parent's and children's various personality traits, interests, and preferences. You will be asked to complete a package of personality questionnaires. The study will likely take 30 minutes in total.

Instructions:

For the purpose of experimental control it is extremely important that you do the following:

- (1) Set aside 30 minutes during which you and your parent can complete the questionnaire. Please do not take any breaks and finish the questionnaire in one sitting.
- (2) Go through the study at the same time as your parent but in a different room or far enough away from each other so that you both have enough privacy.
- (3) Please do not share your answers with your parent and do not expect your parent to share his/her answers with you.
- (4) Upon completion immediately place your finished questionnaire and consent form in the attached prepaid envelope. Seal the envelope and mail it as soon as possible. Your consent form will be separated from the questionnaire as soon as we receive it in order to preserve complete anonymity.

****Please complete the questions in order and answer as accurately and as honestly as possible.****

If you have any difficulties during the study that you would like to report to us, please list them at the end of this study in the space provided.

Thank you in advance for your cooperation and participation.

Appendix C: Demographics Information

DEMOGRAPHICS

Code #:

Age: _____

Sex: M F

Ethnicity / Race: _____

Marital Status: _____

Today's Date: _____

Appendix D: Beck Depression Inventory

Please read each group of statements carefully. Then pick out one statement in each group which best describes the way you have been feeling the PAST WEEK, including today.

- | | | |
|----|---|--|
| 1) | 0 | I do not feel sad. |
| | 1 | I feel sad. |
| | 2 | I am sad all of the time and I can't snap out of it. |
| | 3 | I am so sad or unhappy that I can't stand it. |
| 2) | 0 | I am not particularly discouraged about the future. |
| | 1 | I feel discouraged about the future. |
| | 2 | I feel I have nothing to look forward to. |
| | 3 | I feel that the future is hopeless and that things cannot improve. |
| 3) | 0 | I do not feel like a failure. |
| | 1 | I feel I have failed more than the average person. |
| | 2 | As I look back on my life, all I can see is a lot of failures. |
| | 3 | I feel I am a complete failure as a person. |
| 4) | 0 | I get as much satisfaction out of things as I used to. |
| | 1 | I don't enjoy things the way I used to. |
| | 2 | I don't get real satisfaction out of anything anymore. |
| | 3 | I am dissatisfied or bored with everything. |
| 5) | 0 | I don't feel particularly guilty. |
| | 1 | I feel guilty a good part of the time. |
| | 2 | I feel quite guilty most of the time. |
| | 3 | I feel guilty all of the time. |
| 6) | 0 | I don't feel I am being punished. |
| | 1 | I feel I may be punished. |
| | 2 | I expect to be punished. |
| | 3 | I feel I am being punished. |
| 7) | 0 | I don't feel disappointed in myself. |
| | 1 | I am disappointed in myself. |
| | 2 | I am disgusted with myself. |
| | 3 | I hate myself. |
| 8) | 0 | I don't feel I am any worse than anyone else. |
| | 1 | I am critical of myself for my weaknesses and mistakes. |
| | 2 | I blame myself all the time for my faults. |
| | 3 | I blame myself for everything bad that happens. |
| 9) | 0 | I don't have any thoughts of killing myself. |
| | 1 | I have thoughts of killing myself, but I would not carry them out. |
| | 2 | I would like to kill myself. |
| | 3 | I would kill myself if I had the chance. |

- 10) 0 I don't cry any more than usual.
1 I cry more now than I used to.
2 I cry all the time now.
3 I used to be able to cry, but now I can't seem to even though I want to.
- 11) 0 I am no more irritated now than I ever am.
1 I get annoyed or irritated more easily than I used to.
2 I feel irritated all the time now.
3 I don't feel irritated at all by the things that used to irritate me.
- 12) 0 I have not lost interest in other people.
1 I am less interested in other people than I used to be.
2 I have lost most of my interest in other people.
3 I have lost all of my interest in other people.
- 13) 0 I make decisions about as well as I ever could.
1 I put off making decisions more than I used to.
2 I have greater difficulty in making decisions than before.
3 I can't make decisions at all anymore.
- 14) 0 I don't feel I look any worse than I used to.
1 I am worried that I am looking old or unattractive.
2 There are permanent changes in my appearance that make me look unattractive.
3 I believe that I look ugly.
- 15) 0 I can work about as well as before.
1 It takes me an extra effort to get started at doing anything.
2 I have to push myself very hard to anything.
3 I can't do any work at all.
- 16) 0 I can sleep as well as I used to.
1 I don't sleep as well as I used to.
2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
3 I wake up several hours earlier than I used to and cannot get back to sleep.
- 17) 0 I don't get more tired than usual.
1 I get tired more easily than I used to.
2 I get tired from doing almost anything.
3 I am too tired to do anything.
- 18) 0 My appetite is no worse than usual.
1 My appetite is not as good as it used to be.
2 My appetite is much worse now.
3 I have no appetite at all anymore.
- 19) 0 I haven't lost much weight, if any, lately.
1 I have lost more than 5 pounds.
2 I have lost more than 10 pounds.
3 I have lost more than 15 pounds.
I am purposely trying to lose weight by eating less. YES NO

- 20) 0 I am no more worried about my health than usual.
 1 I am worried about physical problems such as aches and pains or upset
 stomach.
 2 I am very worried about physical problems and it's hard to think of much else.
 3 I am so worried about my physical problems that I cannot think about anything
 else.
- 21) 0 I have not noticed any recent change in my interest in sex.
 1 I am less interested in sex than I used to be.
 2 I am much less interested in sex now.
 3 I have lost interest in sex completely.

Appendix E: Self-Esteem Scale

Please indicate your level of agreement with the following statements:

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

1	2	3	4
strongly disagree	disagree	agree	strongly agree

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

1	2	3	4
strongly disagree	disagree	agree	strongly agree

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

1	2	3	4
strongly disagree	disagree	agree	strongly agree

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

1	2	3	4
strongly disagree	disagree	agree	strongly agree

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

1	2	3	4
strongly disagree	disagree	agree	strongly agree

6. I take a positive attitude toward myself.

1	2	3	4
strongly disagree	disagree	agree	strongly agree

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

1	2	3	4
strongly disagree	disagree	agree	strongly agree

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

1	2	3	4
strongly disagree	disagree	agree	strongly agree

9. I certainly feel useless at times.

1	2	3	4
strongly disagree	disagree	agree	strongly agree

10. At times, I think I am no good at all.

1	2	3	4
strongly disagree	disagree	agree	strongly agree

Appendix F: Gender Role Beliefs Scale

This questionnaire contains questions about male and female relationships and roles. Please use the 7-point scale to answer the questions honestly. Remember, your responses are completely anonymous.

- 1) It is disrespectful for a man to swear in the presence of a lady.
1 Strongly Disagree 2 Mostly Disag 3 Somewhat Disagree 4 Neutral 5 Somewhat Agree 6 Mostly Agree 7 Strongly Agree
- 2) Women should expect men to offer them seats on buses.
1 Strongly Disagree 2 Mostly Disag 3 Somewhat Disagree 4 Neutral 5 Somewhat Agree 6 Mostly Agree 7 Strongly Agree
- 3) Homosexual relationships should not be as socially accepted as heterosexual relationships.
1 Strongly Disagree 2 Mostly Disag 3 Somewhat Disagree 4 Neutral 5 Somewhat Agree 6 Mostly Agree 7 Strongly Agree
- 4) The initiative in courtship should usually come from the man.
1 Strongly Disagree 2 Mostly Disag 3 Somewhat Disagree 4 Neutral 5 Somewhat Agree 6 Mostly Agree 7 Strongly Agree
- 5) It bothers me more to see a woman who is pushy than a man who is pushy.
1 Strongly Disagree 2 Mostly Disag 3 Somewhat Disagree 4 Neutral 5 Somewhat Agree 6 Mostly Agree 7 Strongly Agree
- 6) When sitting down at the table, proper respect demands that the gentleman hold the lady's chair.
1 Strongly Disagree 2 Mostly Disag 3 Somewhat Disagree 4 Neutral 5 Somewhat Agree 6 Mostly Agree 7 Strongly Agree
- 7) Women should not have as much sexual freedom as men.
1 Strongly Disagree 2 Mostly Disag 3 Somewhat Disagree 4 Neutral 5 Somewhat Agree 6 Mostly Agree 7 Strongly Agree
- 8) Women should appreciate the protection and support that men have traditionally given them.
1 Strongly Disagree 2 Mostly Disag 3 Somewhat Disagree 4 Neutral 5 Somewhat Agree 6 Mostly Agree 7 Strongly Agree

- 9) Women with children should not work outside the home if they don't have to financially.
- | | | | | | | |
|-------------------|--------------|-------------------|---------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Strongly Disagree | Mostly Disag | Somewhat Disagree | Neutral | Somewhat Agree | Mostly Agree | Strongly Agree |
- 10) There is something wrong with a woman who doesn't like to wear skirts or dresses.
- | | | | | | | |
|-------------------|--------------|-------------------|---------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Strongly Disagree | Mostly Disag | Somewhat Disagree | Neutral | Somewhat Agree | Mostly Agree | Strongly Agree |
- 11) The husband should be regarded as the legal representative of the family group in all matters of law.
- | | | | | | | |
|-------------------|--------------|-------------------|---------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Strongly Disagree | Mostly Disag | Somewhat Disagree | Neutral | Somewhat Agree | Mostly Agree | Strongly Agree |
- 12) I do not like women who are outspoken.
- | | | | | | | |
|-------------------|--------------|-------------------|---------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Strongly Disagree | Mostly Disag | Somewhat Disagree | Neutral | Somewhat Agree | Mostly Agree | Strongly Agree |
- 13) Except perhaps in very special circumstances, a gentleman should never allow a lady to pay the taxi, buy the tickets, or pay the check.
- | | | | | | | |
|-------------------|--------------|-------------------|---------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Strongly Disagree | Mostly Disag | Somewhat Disagree | Neutral | Somewhat Agree | Mostly Agree | Strongly Agree |
- 14) Some equality in marriage is good, but by and large the husband ought to have the main say-so in family matters.
- | | | | | | | |
|-------------------|--------------|-------------------|---------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Strongly Disagree | Mostly Disag | Somewhat Disagree | Neutral | Somewhat Agree | Mostly Agree | Strongly Agree |
- 15) Men should continue to show courtesies to women such as holding open the door or helping them on with their coats.
- | | | | | | | |
|-------------------|--------------|-------------------|---------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Strongly Disagree | Mostly Disag | Somewhat Disagree | Neutral | Somewhat Agree | Mostly Agree | Strongly Agree |
- 16) It is ridiculous for a woman to run a train and for a man to mend socks.
- | | | | | | | |
|-------------------|--------------|-------------------|---------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Strongly Disagree | Mostly Disag | Somewhat Disagree | Neutral | Somewhat Agree | Mostly Agree | Strongly Agree |
- 17) A woman should not be as free as a man to propose marriage.
- | | | | | | | |
|-------------------|--------------|-------------------|---------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Strongly Disagree | Mostly Disag | Somewhat Disagree | Neutral | Somewhat Agree | Mostly Agree | Strongly Agree |

- 18) Women should be concerned with their duties of childrearing and
housetending, rather than with desires for professional and business
careers.

1	2	3	4	5	6	7
Strongly Disagree	Mostly Disag	Somewhat Disagree	Neutral	Somewhat Agree	Mostly Agree	Strongly Agree

- 19) Swearing and obscenity is more repulsive in the speech of a woman than
a man.

1	2	3	4	5	6	7
Strongly Disagree	Mostly Disag	Somewhat Disagree	Neutral	Somewhat Agree	Mostly Agree	Strongly Agree

- 20) There are some professions and types of businesses that are more
suitable for men than women.

1	2	3	4	5	6	7
Strongly Disagree	Mostly Disag	Somewhat Disagree	Neutral	Somewhat Agree	Mostly Agree	Strongly Agree

Appendix G: Neuroticism Scale

Read each statement carefully. For each statement circle the response that best represents your opinion.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1) I am a worrier.	1	2	3	4	5
2) I often feel inferior to others.	1	2	3	4	5
3) When I'm under a great deal of stress, I sometimes feel like I'm going to pieces.	1	2	3	4	5
4) I often feel lonely or blue.	1	2	3	4	5
5) I often feel tense and jittery.	1	2	3	4	5
6) Sometimes I feel completely worthless.	1	2	3	4	5
7) I often feel fearful or anxious.	1	2	3	4	5
8) I often get angry at the way people treat me.	1	2	3	4	5
9) Too often, when things go wrong, I get discouraged and feel like giving up.	1	2	3	4	5
10) I am often sad or depressed.	1	2	3	4	5
11) I often feel helpless and want someone else to solve my problems.	1	2	3	4	5
12) At times I have been so ashamed I just wanted to hide.	1	2	3	4	5

Appendix H: Collective Mortality Salience Condition

Social Dangers Personality Survey

This is a brief two-item, open-ended questionnaire designed specifically for this study. It is a new form of projective personality assessment in which open-ended responses to questions about social dangers are analyzed for content. Feel free to use more than one page if necessary. Please take your time to reflect on this question and answer in as much detail and as honestly as possible.

You may be aware that from September to October of 2002, a sniper shot and killed 10 people over a 2-week period. The random victims were described as “normal people” doing everyday activities such as shopping, mowing the lawn, or filling their cars with gas.

- ▶ Please read the following passages taken from the Vancouver Sun newspaper (below) on Saturday October 12th, 2002:

NEWS THE VANCOUVER SUN, SATURDAY, OCTOBER 12, 2002 A1

Trooper nearby as sniper struck

Tenth person shot at a gas station even as an officer was across street

By LISA GREY, STEPHEN BRAUN and JOHN HENDERSON

FREDERICKSBURG, Va. — A motorist filling his gas tank was shot dead by a sniper Friday morning, the latest in a series of public slayings that have spawned a new form of terror in the suburban community.

The sniper attack — the 10th in as many days in the Washington area — occurred within 50 yards of a state trooper who was working at the scene of a traffic accident on the other side of a nearby highway.

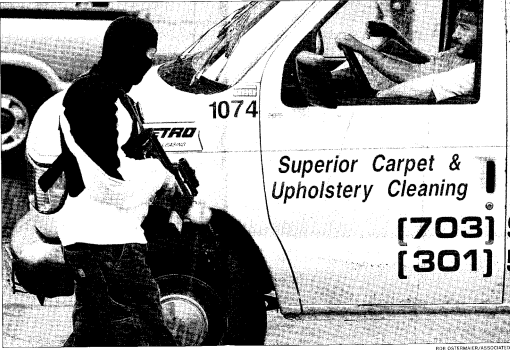
A small army of law enforcement officers surrounded the end of nearby highways in an effort to corral a white van seen speeding away with two men inside. But the van still resembled a similar vehicle seen at some of the other shootings, officials said.

Although police said they had not determined whether the man was shot by the same sniper believed responsible for the previous attacks, the shooting increased the sense of frustration and fear gripping the Washington metropolitan area.

“With a uniformed trooper directly across the street, obviously we’re dealing with an individual who is extremely cold and doesn’t care,” said Maj. Howard Smith of the Springfield County Sheriff’s Office.

Like the previous nine attacks, this one occurred at a service station. Like all but two of the previous nine, the victim died.

A spokeswoman for Virginia Gov. Mark Warner said more bullet fragments were recovered from Friday’s crime scene than from the other sniper attacks. A final tally of the ballistic evidence was expected.



A Fairfax County, Va., officer checks a van stopped on Interstate 95 in Springfield Friday as police searched for a sniper after a van was seen leaving the scene of a fatal shooting at a gas station. If this latest death is linked to the sniper who has terrorized the Washington area, it will mean 10 victims.

“A motorist filling his gas tank was shot dead by a sniper Friday morning, the latest in a series of public slayings that have spawned a new form of terror in the suburban community. The brazen attack - the 10th in as many days - occurred within 50 yards of a state trooper who was working at the other side of a nearby highway.”

“The shooting has deepened the sense of frustration and fear gripping the area.”

“Public schools imposed immediate ‘lockdowns’ requiring all students to stay inside. Friday night football games and other weekend sporting events were cancelled.”

“Jennifer Rell’s teachers told her she would be safe at school on Friday, even after the sniper stalking the area apparently killed his eighth victim less than a kilometer from her classroom. But Jennifer, a slight 11 year-old in a pink, sparkly T-shirt and jeans had had enough of being frightened, said her father John. ‘She just called and said “Come and get me.”’

“Jennifer, her expression unnaturally still, said ‘They said it was the safest place to be, but they still wouldn’t let us look out the windows. They put paper strips on the glass, and pulled down the blinds. I didn’t feel that safe.’”

As you answer the following questions, consider the possibility of a series of similar attacks happening in *your* neighborhood:

- 1) Please describe the emotions that the thought of your family members or friends dying in such an attack arouses in you.
- 2) Also, please write as specifically as you can what you think will happen to them as they physically die, and once they are physically dead.

[illegible]

Appendix I: Individual Mortality Salience

Social Dangers Personality Survey

This is a brief two-item, open-ended questionnaire designed specifically for this study. It is a new form of projective personality assessment in which open-ended responses to questions about social dangers are analyzed for content. Feel free to use more than one page if necessary. Please take your time to reflect on this question and answer in as much detail and as honestly as possible.

There are an estimated 635,000 car accidents in Canada every year. The victims are “normal people” doing everyday activities such as shopping, going to school, or commuting to work.

- Please read the following passages taken from the Vancouver Sun newspaper (below) on Saturday October 12th, 2002:



“A woman was found dead Friday morning, after her car rolled over on an embankment along Highway 1, the latest in a series of serious car accidents. The fatal accident - the 10th in as many days - occurred within 50 meters of a police officer who was working at the other side of a nearby highway.”

“The woman was heading northbound on Highway 1 at about 6:00 a.m. when, authorities believe, the car's left rear tire blew out, sending the Toyota Celica out of control and up an embankment between the freeway and the number 13 exit ramp.”

“She was wearing a seat belt, and the car's air bag also deployed”, according to the attending officers. “She was pinned in the car and pronounced dead at the scene from internal injuries. She was the sole occupant of the vehicle.”

“Jennifer Rell, a witness, was on her way to work when the accident occurred.”

“Jennifer, her expression unnaturally still, said ‘I thought I would be OK, but now I’m not so sure.’”

“You assume that driving to work or school is safe...that it will just be another day. But then something like this happens and you realize how fragile life is. That could have been me.”

“Visibly shaken, Jennifer called her father and simply said ‘Come and get me.’”

As you answer the following questions, consider the possibility that *you* could die in a similar accident:

1)	Please describe the emotions that the thought of dying in such an accident arouse in you.
2)	Also, please write as specifically as you can, what you think will happen to you as physically die, and once you are physically dead.

Appendix J: No Mortality Salience Control

Public Speaking Personality Survey

This is a brief two-item, open-ended questionnaire designed specifically for this study. It is a new form of projective personality assessment in which open-ended responses to questions about public speaking are analyzed for content. Feel free to use more than one page if necessary. Please take your time to reflect on this question and answer in as much detail and as honestly as possible.

Every year, millions of people make themselves sick at the thought of having to get up in front of people to give a speech.

- Please read the following passages taken from the Vancouver Sun newspaper (below) on Saturday October 12th, 2002:



If you fear public speaking more than going to the dentist, you are not alone.

Experiencing panic when standing before a crowd appears to be the norm - the feeling of getting up in front of a group and talking about a subject is very difficult for many people.

"The fear of public speaking is the No. 1 rated fear in America," says psychologist Shirley Impelizari; noting the fear of being judged creates anxiety that can be paralyzing. "We have a fear of being laughed at, a fear of making of a mistake, that fear of being vulnerable," she says.

Public speaking is a common source of stress for everyone. Many of us would like to avoid this problem entirely, but this is hard to do. Whether it be a presentation at work, or in social settings such as community events or weddings, eventually we will need to speak in public to get certain tasks accomplished.

Some people talk about physical things that happen to them when they're afraid in front of a group.

"I was the most nervous wreck. I had sweat coming down my face and I was just petrified," says Amit Patel.

The signs of anxiety are all too painfully familiar to those affected: increased heart and breathing rates, increased adrenaline, over-rapid reactions, and a tension in the shoulder and neck area. These bodily changes can affect the voice, making it sound tremulous, or disjointed by over-rapid breathing.

1)	Please describe the emotions that the thought of public speaking arouses in you.
2)	Also, please write as specifically as you can, what you think will physically happen to you as next make a public speech.

Appendix K: Leisure-Time Activities Questionnaire

The following questionnaire is about leisure time activities. Using the scale below, please indicate how frequently you engage in the following activities.

		Never	A few times in my life	A few times yearly	Monthly	Weekly	Daily
1)	Reading novels	1	2	3	4	5	6
2)	Cycling	1	2	3	4	5	6
3)	Listening to music	1	2	3	4	5	6
4)	Running	1	2	3	4	5	6
5)	Playing team sports	1	2	3	4	5	6
6)	Renting videos	1	2	3	4	5	6
7)	Writing	1	2	3	4	5	6
8)	Dancing	1	2	3	4	5	6
9)	Going to bars / clubs	1	2	3	4	5	6
10)	Volunteering	1	2	3	4	5	6
11)	Swimming	1	2	3	4	5	6
12)	Cooking	1	2	3	4	5	6
13)	Skiing	1	2	3	4	5	6
14)	Watching TV	1	2	3	4	5	6
15)	Going to the gym	1	2	3	4	5	6
16)	Playing video games	1	2	3	4	5	6
17)	Theatre / plays	1	2	3	4	5	6
18)	Going to parties	1	2	3	4	5	6
19)	Camping	1	2	3	4	5	6
20)	Attending concerts	1	2	3	4	5	6
21)	Using a computer	1	2	3	4	5	6
22)	Attending sporting events	1	2	3	4	5	6
23)	Going to movies	1	2	3	4	5	6
24)	Hiking	1	2	3	4	5	6
25)	Shopping	1	2	3	4	5	6

Appendix L: Parenthood Beliefs Questionnaire

This questionnaire examines university students' current attitudes on parenthood. Please answer the following questions as honestly as possible. Remember, your responses are completely anonymous.

- | | | | | | |
|-----|---------------------------------------|-----|----|---|-----------|
| 1) | Do you have any children of your own? | Yes | No | | |
| 1B) | If so, how many? | 1 | 2 | 3 | 4 or more |

Please use the scales to answer the questions below:

- | | | | | | | | |
|-----|--|---------------------------|-------------------------|---------------------------|------------------------|----------------------|------------------------|
| 2) | I would like to have children some day. | 1
Strongly
Disagree | 2
Mostly
Disagree | 3
Somewhat
Disagree | 4
Somewhat
Agree | 5
Mostly
Agree | 6
Strongly
Agree |
| 3) | If I have children, I would want at least one of them to be the same sex as I am. | 1
Strongly
Disagree | 2
Mostly
Disagree | 3
Somewhat
Disagree | 4
Somewhat
Agree | 5
Mostly
Agree | 6
Strongly
Agree |
| 4) | If I have children, it is important that they have similar values as I do. | 1
Strongly
Disagree | 2
Mostly
Disagree | 3
Somewhat
Disagree | 4
Somewhat
Agree | 5
Mostly
Agree | 6
Strongly
Agree |
| 5) | If I have children, I hope that my child achieves the goals in life that I am unable to reach. | 1
Strongly
Disagree | 2
Mostly
Disagree | 3
Somewhat
Disagree | 4
Somewhat
Agree | 5
Mostly
Agree | 6
Strongly
Agree |
| 6) | I will be disappointed if I cannot have children of my own. | 1
Strongly
Disagree | 2
Mostly
Disagree | 3
Somewhat
Disagree | 4
Somewhat
Agree | 5
Mostly
Agree | 6
Strongly
Agree |
| 7) | If I wanted children and assuming the technology was as safe as having a child naturally, I would consider having a child that is a clone of myself. | 1
Strongly
Disagree | 2
Mostly
Disagree | 3
Somewhat
Disagree | 4
Somewhat
Agree | 5
Mostly
Agree | 6
Strongly
Agree |
| 8) | I would consider adopting if I cannot have children of my own. | 1
Strongly
Disagree | 2
Mostly
Disagree | 3
Somewhat
Disagree | 4
Somewhat
Agree | 5
Mostly
Agree | 6
Strongly
Agree |
| 9) | Having children of my own would enable me to relive my childhood. | 1
Strongly
Disagree | 2
Mostly
Disagree | 3
Somewhat
Disagree | 4
Somewhat
Agree | 5
Mostly
Agree | 6
Strongly
Agree |
| 10) | I would prefer not to bring children into such a troubled world. | 1
Strongly
Disagree | 2
Mostly
Disagree | 3
Somewhat
Disagree | 4
Somewhat
Agree | 5
Mostly
Agree | 6
Strongly
Agree |

- 11) I would not spend my life with a partner who refused to have children.
- | | | | | | |
|-------------------|-----------------|-------------------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Strongly Disagree | Mostly Disagree | Somewhat Disagree | Somewhat Agree | Mostly Agree | Strongly Agree |
- 12) Having children is a way of symbolically reproducing yourself.
- | | | | | | |
|-------------------|-----------------|-------------------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Strongly Disagree | Mostly Disagree | Somewhat Disagree | Somewhat Agree | Mostly Agree | Strongly Agree |
- 13) Having children allows you to see your own characteristics in your child.
- | | | | | | |
|-------------------|-----------------|-------------------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Strongly Disagree | Mostly Disagree | Somewhat Disagree | Somewhat Agree | Mostly Agree | Strongly Agree |
- 14) Having children allows you to continue your family line.
- | | | | | | |
|-------------------|-----------------|-------------------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Strongly Disagree | Mostly Disagree | Somewhat Disagree | Somewhat Agree | Mostly Agree | Strongly Agree |
- 15) Having children is a form of achieving immortality.
- | | | | | | |
|-------------------|-----------------|-------------------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Strongly Disagree | Mostly Disagree | Somewhat Disagree | Somewhat Agree | Mostly Agree | Strongly Agree |

Below are a number of reasons why people may want to have a child now or in the near future. Please rate how important each reason is to you.

- 16) To pass on my genes to a new generation.
- | | | | | | | | |
|-----------------------|---|---|---|----------------------|---|---|---------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Extremely Unimportant | | | | Moderately Important | | | Extremely Important |
- 17) To carry on the family talents.
- | | | | | | | | |
|-----------------------|---|---|---|----------------------|---|---|---------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Extremely Unimportant | | | | Moderately Important | | | Extremely Important |
- 18) To carry on my goals when I am dead.
- | | | | | | | | |
|-----------------------|---|---|---|----------------------|---|---|---------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Extremely Unimportant | | | | Moderately Important | | | Extremely Important |
- 19) To carry on the good traits of me or my partner.
- | | | | | | | | |
|-----------------------|---|---|---|----------------------|---|---|---------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Extremely Unimportant | | | | Moderately Important | | | Extremely Important |
- 20) To make my other accomplishments more outstanding.
- | | | | | | | | |
|-----------------------|---|---|---|----------------------|---|---|---------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Extremely Unimportant | | | | Moderately Important | | | Extremely Important |

21) To be like a mark left by me on this world.

1	2	3	4	5	6	7	8
Extremely			Moderately				Extremely
Unimportant			Important				Important

22) To carry on the family name.

1	2	3	4	5	6	7	8
Extremely			Moderately				Extremely
Unimportant			Important				Important

23) To carry on the family business.

1	2	3	4	5	6	7	8
Extremely			Moderately				Extremely
Unimportant			Important				Important

Please answer the following question using the space provided.

24) Ideally, I would like to have [0, 1, 2, 3, 4, 5 or more] children.

Do not answer question #25 if you chose "0" for question #24.

25) I would like to have my next child within [1, 2, 3, 4, 5, 6, 7, 8, 9, 10 or more] years.

Appendix M: Debriefing Information

Debriefing Information

Important: You have just completed an ongoing study. Therefore, in order to prevent future participants from biasing the results, it is *very* important that you do not discuss the nature of the questionnaires, tasks, or theories underlying the study with other potential participants (e.g., fellow students or classmates).

- This study is based on a social psychology theory known as “*Terror Management Theory*.” *Terror Management Theory* was initially inspired by the simple observation that people often have strong reactions to topics such as mortality, dying, and their inevitable deaths. The “*terror*” in *Terror Management Theory* mostly refers to the anxiety and stress we must deal with in our daily lives when confronted with reminders of our mortality.
- *Terror Management Theory* does not assume that we must only occasionally confront our mortality. Rather, we are made aware of the inevitability of our death on a daily basis. For example, viewing the evening news or reading the newspaper can very quickly bring our attention to the fact that death is inevitable, and often can be entirely unpredictable.
- In general, research on *Terror Management Theory* has shown that when individuals are made aware of their own mortality, they tend to give harsher judgments for those who oppose their cultural worldview (e.g., morals, standards, and values) and more favorable judgments for those who support their cultural worldview. This is known as a “*mortality salience*” effect.
- *Terror Management Theory* suggests that these results can be partially explained by the values one must adopt (perhaps unconsciously) in the hope of achieving immortality (literal via an afterlife, or symbolic via a variety of methods including having children). By examining individuals’ desire to have children, the goal of this study is to examine differential contributions of literal and symbolic immortality motivation to these mortality salience effects.

- INDEPENDENT VARIABLE

If you were asked to write about your feelings as you give a public speech, you were in the CONTROL condition. If you were asked to write about the feelings that thinking about death arise in you, you were in a MORTALITY SALIENCE condition. There were 2 mortality salience conditions:

- a) Writing about feelings you have as you think about your own death (individual mortality)
- b) Writing about feelings you have as you think about the vulnerability of your own life and the lives of those important to you. (collective mortality)

- DEPENDENT VARIABLES

The dependent variables in this study were a compilation of answers regarding the desire to have children and questions concerning religious or spiritual activities.

- In relation to Terror Management Theory, the main questions this study asks are:

Are mortality salience effects partially due to a motivation to achieve symbolic immortality (e.g., having children)?

Are mortality salience effects partially due to a motivation to achieve literal immortality (e.g., an afterlife)?

Do threats to individual mortality and collective mortality have different influences on people's desire for symbolic immortality?

- Again, *please do not discuss this study with any other potential participants.*

If you found any questions in this package especially troubling (e.g., questions regarding depression, suicide, or death), you may find it helpful to discuss these issues with an appropriate mental health professional. For example, you may find the services or referrals offered by Simon Fraser University Counseling Services (291-3694), suitable for your needs.

If you have any further questions or comments, please feel free to contact Brent Conrad (principal investigator) at bconrad@sfu.ca

Thank you very much for your participation.

Appendix N: Religious Beliefs Questionnaire

This questionnaire examines university students' current attitudes on religious behaviors. Please answer the following questions honestly. Remember, your responses are completely anonymous.

Please use the scale to answer the questions below:

- 1) I believe in some form of an afterlife (e.g., heaven, reincarnation).

1	2	3	4	5	6
Strongly Disagree	Mostly Disagree	Somewhat Disagree	Somewhat Agree	Mostly Agree	Strongly Agree
- 2) I will gain immortality through my religious or spiritual beliefs.

1	2	3	4	5	6
Strongly Disagree	Mostly Disagree	Somewhat Disagree	Somewhat Agree	Mostly Agree	Strongly Agree
- 3) It is unsettling to imagine the possibility that after I die, there will be no afterlife waiting for me.

1	2	3	4	5	6
Strongly Disagree	Mostly Disagree	Somewhat Disagree	Somewhat Agree	Mostly Agree	Strongly Agree
- 4) I have strong religious beliefs.

1	2	3	4	5	6
Strongly Disagree	Mostly Disagree	Somewhat Disagree	Somewhat Agree	Mostly Agree	Strongly Agree
- 5) I try to follow the beliefs and teachings of a religion.

1	2	3	4	5	6
Strongly Disagree	Mostly Disagree	Somewhat Disagree	Somewhat Agree	Mostly Agree	Strongly Agree
- 6) I *do* follow the beliefs and teachings of a religion.

1	2	3	4	5	6
Strongly Disagree	Mostly Disagree	Somewhat Disagree	Somewhat Agree	Mostly Agree	Strongly Agree
- 7) I feel that I should practice religion more often than I do.

1	2	3	4	5	6
Strongly Disagree	Mostly Disagree	Somewhat Disagree	Somewhat Agree	Mostly Agree	Strongly Agree
- 8) I should make religion more of a priority in my life than I have in the past.

1	2	3	4	5	6
Strongly Disagree	Mostly Disagree	Somewhat Disagree	Somewhat Agree	Mostly Agree	Strongly Agree

- 9) I will never question my religious faith.
- | | | | | | |
|-------------------|-----------------|-------------------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Strongly Disagree | Mostly Disagree | Somewhat Disagree | Somewhat Agree | Mostly Agree | Strongly Agree |
- 10) Religion is very important in my daily life.
- | | | | | | |
|-------------------|-----------------|-------------------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Strongly Disagree | Mostly Disagree | Somewhat Disagree | Somewhat Agree | Mostly Agree | Strongly Agree |
- 11) I will never change my particular religious beliefs.
- | | | | | | |
|-------------------|-----------------|-------------------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Strongly Disagree | Mostly Disagree | Somewhat Disagree | Somewhat Agree | Mostly Agree | Strongly Agree |
- 12) I will use religion to guide my important decisions.
- | | | | | | |
|-------------------|-----------------|-------------------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Strongly Disagree | Mostly Disagree | Somewhat Disagree | Somewhat Agree | Mostly Agree | Strongly Agree |
- 13) I read religious writings.
- | | | | | | |
|-------------------|-----------------|-------------------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Strongly Disagree | Mostly Disagree | Somewhat Disagree | Somewhat Agree | Mostly Agree | Strongly Agree |
- 14) I watch religious programs on TV.
- | | | | | | |
|-------------------|-----------------|-------------------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Strongly Disagree | Mostly Disagree | Somewhat Disagree | Somewhat Agree | Mostly Agree | Strongly Agree |
- 15) I enjoy attending religious functions.
- | | | | | | |
|-------------------|-----------------|-------------------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Strongly Disagree | Mostly Disagree | Somewhat Disagree | Somewhat Agree | Mostly Agree | Strongly Agree |
- 16) I would enjoy taking a class entitled "Religions of the World".
- | | | | | | |
|-------------------|-----------------|-------------------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Strongly Disagree | Mostly Disagree | Somewhat Disagree | Somewhat Agree | Mostly Agree | Strongly Agree |

Please answer the following question even if you consider yourself to be an atheist or agnostic.

- 17) I would enjoy taking a class on my particular faith.
- | | | | | | |
|-------------------|-----------------|-------------------|----------------|--------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Strongly Disagree | Mostly Disagree | Somewhat Disagree | Somewhat Agree | Mostly Agree | Strongly Agree |

Appendix O: Spiritual Involvement and Beliefs Scale

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1) In the future, science will be able to explain everything.	1	2	3	4	5
2) I can find meaning in times of hardship.	1	2	3	4	5
3) A person can be fulfilled without pursuing an active spiritual life.	1	2	3	4	5
4) I am thankful for all that has happened to me.	1	2	3	4	5
5) Spiritual activities have not helped me become closer to others.	1	2	3	4	5
6) Some experiences can only be understood through spiritual beliefs.	1	2	3	4	5
7) A spiritual force influences the events in my life.	1	2	3	4	5
8) My life has a purpose.	1	2	3	4	5
9) Prayers do not really change what happens.	1	2	3	4	5
10) Participating in spiritual activities helps me forgive other people.	1	2	3	4	5
11) My spiritual beliefs continue to evolve.	1	2	3	4	5
12) I believe there is a power greater than myself.	1	2	3	4	5
13) I probably will not reexamine my spiritual beliefs.	1	2	3	4	5
14) My spiritual life fulfills me in ways that material possessions do not.	1	2	3	4	5
15) Spiritual activities have not helped me develop my identity.	1	2	3	4	5
16) Meditation does not help me feel more in touch with my inner spirit.	1	2	3	4	5
17) I have a individual relationship with a power greater than myself.	1	2	3	4	5
18) I have felt pressured to accept spiritual beliefs that I do not agree with.	1	2	3	4	5
19) Spiritual activities help me draw closer to a power greater than myself.	1	2	3	4	5
20) When I wrong someone, I make an effort to apologize.	1	2	3	4	5

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
21) When I am ashamed of something I have done, I tell someone about it.	1	2	3	4	5
22) I solve my problems without using spiritual resources.	1	2	3	4	5
23) I examine my actions to see if they reflect my values.	1	2	3	4	5
24) During the last week, I prayed... (check one)					
___ 10 or more times					
___ 7-9 times					
___ 4-6 times					
___ 1-3 times					
___ 0 times					
25) During the last week, I meditated... (check one)					
___ 10 or more times					
___ 7-9 times					
___ 4-6 times					
___ 1-3 times					
___ 0 times					
26) Last MONTH, I participated in spiritual activities with at least one person... (check one)					
___ more than 15 times					
___ 11-15 times					
___ 6-10 times					
___ 1-5 times					
___ 0 times					

Appendix P: Instructions (parent)

INTRODUCTION

The purpose of the study is to compare parent's and children's various personality traits, interests, and preferences. You will be asked to complete a package of personality questionnaires. The study will likely take less than 30 minutes in total.

Instructions:

For the purpose of experimental control it is extremely important that you do the following:

- 1) Set aside 30 minutes during which you and your child can complete the questionnaire. Please do not take any breaks and finish the questionnaire in one sitting.
- 2) Go through the study at the same time as your child but in a different room or far enough away from each other so that you both have enough privacy.
- 3) Please do not share your answers with your child and do not expect your parent to share his/her answers with you.
- 4) Upon completion immediately place your finished questionnaire and consent form in the attached prepaid envelope. Seal the envelope and mail it as soon as possible. Your consent form will be separated from the questionnaire as soon as we receive it in order to preserve complete anonymity.

****Please complete the questions in order and answer as accurately and as honestly as possible.****

If you have any difficulties during the study that you would like to report to us, please list them at the end of this study in the space provided.

Thank you in advance for your cooperation and participation.

Appendix Q: Informed Consent (parent)

SIMON FRASER UNIVERSITY INFORMED CONSENT BY PARTICIPANTS TO TAKE PART IN A RESEARCH PROJECT OR EXPERIMENT

The University and those conducting this project subscribe to the ethical conduct of research and to the protection at all times of the interests, comfort, and safety of participants. This form and the information it contains are given to you for your own protection and full understanding of the procedures.

THE NATURE OF YOUR PARTICIPATION

In this study you will complete a personality trait survey. Your participation involves completing a questionnaire package.

CONFIDENTIALITY AND ANONYMITY

Your responses will be entirely confidential and anonymous. At no time will you be asked to share your responses with your child. You are asked to seal your questionnaire in the provided envelope and to then mail it as soon as possible; therefore your child will have no access to your questionnaire. You will not be asked to place your name on any portion of the test and your responses will be identified by number only. This number is used so that we can match the parent's questionnaire to the appropriate child's questionnaire. There is no means for linking a particular person to a particular questionnaire or test result. The questionnaires will be stored for a period of 5 years, after which they will be destroyed. We are required to keep the material for five years because journals that publish research require researchers to produce raw data if necessary.

WITHDRAWING FROM THE STUDY

Your participation in this study is completely voluntary. Should you choose to take part, you are free to withdraw at any time. If you feel uncomfortable at any point during completion of this study you may choose not to complete a particular part of this study or you may withdraw your participation with no penalty whatsoever. Your child will still earn credit for participation even if you withdraw or choose not to complete a particular part of this study.

QUESTIONS OR CONCERNS

If you have any questions concerning the project you may contact the researcher for additional information (Brent Conrad, email: bconrad@sfu.ca). You can also obtain results from the research by contacting the above researcher. If you have any concerns or complaints about the project or the manner in which it was carried out, you may contact the Office of Research Ethics at hweinber@sfu.ca or phone at 604-268-6593.

AGREEMENT TO PARTICIPATE

By signing below, you agree that you have read and understood the above information, and that you are willing to participate in the study described above. Remember that the following information is not associated with your responses in the study.

NAME: _____

ADDRESS: _____

SIGNATURE: _____

DATE: _____

DEMOGRAPHICS

Code #:

Age: _____

Sex: M F

Ethnicity / Race: _____

Marital Status: _____

Number of Children: _____

Ages of Children: _____

Gender of Children: _____

Gender of child also
participating in this study: Male Female

Today's Date: _____

Appendix S: Parental Commitment

Parental Commitment Personality Survey

- 1) Please briefly describe the emotions that your commitment to the child participating in this study arouses in you.
- 2) How is your commitment to this child manifested in your relationship with him or her?

[illegible]

Appendix T: No Commitment Control

Music Personality Survey

- 1) Please briefly describe the emotions that listening to music arouse in you.
- 2) What do you think happens to you when you listen to music?

[illegible]

Appendix U: Multidimensional Social Transgression Scale

Please read the following vignettes and use the scales to rate the severity of the offense and the severity of the punishment that should be administered.

- 1) A false identification of the AIDS virus in the body of a young man caused him social isolation. "My girlfriend and my close friends all became afraid and left me. Even my peers in my dance club, which was the focus of my social life, rejected me from the group. I became dangerous to society. Even now when the mistake is clear, people are still very nervous, not willing to take risks and I blame no one but the doctor who was too busy to take a second look at my test results."

- a) The severity of this offense is:
Not severe at all 1 2 3 4 5 6 7 Very severe

- b) The punishment should be:
Very Light 1 2 3 4 5 6 7 Very Heavy

- 2) The boy's social life was destroyed by the accident caused by the drunken driver who veered toward the sidewalk and hit the boy. The child said, "For a year I had to rest in the hospital and at home. My body gradually recovered, but I was forgotten by my friends, who went on with their lives. I don't have any way to go to the way things were - they all went to junior high in a different school, and I was left back a grade and have to start again. I don't belong to the old cliques or the new ones. I simply don't belong."

- a) The severity of this offense is:
Not severe at all 1 2 3 4 5 6 7 Very severe

- b) The punishment should be:
Very Light 1 2 3 4 5 6 7 Very Heavy

- 3) "The mother's wounds will heal, but her daughter's wounded soul will forever remain," according to the psychologists who treated the girl upon hearing of the capture of the driver of the Subaru who hit the mother and escaped. The daughter, age five, who was orphaned from her father when she was one year old, was separated from her mother due to her mother's hospitalization for over a year.

- a) The severity of this offense is:
Not severe at all 1 2 3 4 5 6 7 Very severe

- b) The punishment should be:
Very Light 1 2 3 4 5 6 7 Very Heavy

- 4) In the confusion left by the burglar, the 10-year-old girl found her adoption papers on the living room table. In his opening statement about the burglary, the father said, "My wife's jewelry that was passed from generation to generation, money we saved over the years - these losses are dwarfed compared with my girl's tragedy. She is too young to deal with this. Since she found out, she hasn't spoken and almost never leaves her room as if she's trying to disappear."

a) The severity of this offense is:
Not severe at all 1 2 3 4 5 6 7 Very severe

b) The punishment should be:
Very Light 1 2 3 4 5 6 7 Very Heavy

- 5) A faulty diagnosis of the specialist brought turmoil to the family. The doctor diagnosed the girl with a rare liver disease that required treatment overseas. The parents sank into debt to finance the stay abroad and the treatment was found to be unnecessary. The father said in anger, "When he heard of the mistake, the doctor said 'Be happy that she's healthy,' but it's very hard to be happy. We've been left without an apartment, when we're barely able to feed our four children and all their childhood pleasures were denied them."

a) The severity of this offense is:
Not severe at all 1 2 3 4 5 6 7 Very severe

b) The punishment should be:
Very Light 1 2 3 4 5 6 7 Very Heavy

- 6) A frustrated burglar destroyed the life masterpiece of the renowned sculptor, one week before its completion and display to the public. The burglar, disappointed from the small robbery, tied up the sculptor and in front of his eyes hit the ceramic sculpture with a heavy hammer until it shattered. The stunned sculptor: "Nineteen years of work - the best of my talent, turned into a pile of rubble."

a) The severity of this offense is:
Not severe at all 1 2 3 4 5 6 7 Very severe

b) The punishment should be:
Very Light 1 2 3 4 5 6 7 Very Heavy

- 7) The doctor mixed up the records of two patients with the same last name and amputated the leg of the wrong patient. "I was anesthetized for a simple operation on my knee and woke up without a leg. It's impossible that my leg is gone," said the woman, staring in disbelief at the empty space on her bed where her leg was supposed to be.

a) The severity of this offense is:
Not severe at all 1 2 3 4 5 6 7 Very severe

b) The punishment should be:
Very Light 1 2 3 4 5 6 7 Very Heavy

- 8) The burglar stole a revolutionary computer program developed by the young scientist. A similar program was marketed soon after by a major cooperation. "This program was the key to my professional future", said the young scientist. This market is quick, wild, and full of talent. The opportunity to invent something unique is rare. I doubt if I'll ever have another chance to advance to the front of the line."

a) The severity of this offense is:
Not severe at all 1 2 3 4 5 6 7 Very severe

b) The punishment should be:
Very Light 1 2 3 4 5 6 7 Very Heavy

- 9) The head of the needy students' scholarship fund escaped overseas with the grant money. The students' representative: "He ran away with our future; none of us can continue our studies - we have no other resources. The academic degree was supposed to enable us to get out of this situation, and now the door is closed; reality has pushed the dream far away, who knows, maybe forever."

a) The severity of this offense is:
Not severe at all 1 2 3 4 5 6 7 Very severe

b) The punishment should be:
Very Light 1 2 3 4 5 6 7 Very Heavy

- 10) The owner of a cement factory was sued for the youth's loss of sight. His promise made 15 years ago to install new filters on his smokestacks wasn't fulfilled because of economic reasons. The youth, who lived his whole life neighboring the factor said; "Their greed cost me my health; any financial compensation, no matter how large - I will never recover from this loss."

a) The severity of this offense is:
Not severe at all 1 2 3 4 5 6 7 Very severe

b) The punishment should be:
Very Light 1 2 3 4 5 6 7 Very Heavy

Appendix V: Debriefing (parent)

Important: You have just completed an ongoing study. Therefore, in order to prevent future participants from biasing the results, it is *very* important that you do not discuss the nature of the questionnaires, tasks, or theories underlying the study with other potential participants.

Now that you have finished the study, we would like to take the time to give you a more specific and thorough overview of our study. In the introduction to this study, we indicated that we were interested comparing parent's and children's personality traits. Although, we are interested in this comparison, it was not our primary research question. It is often the case that researchers cannot tell their participants everything about a particular study. Some information may be kept from participants at the outset because fully aware participants are more likely to act in ways that are consistent with the expected hypothesis than to act naturally. This is a major concern that must be avoided when conducting research. Therefore, in order for us to gain a more precise and natural response to our questionnaire we did not inform you about our specific hypothesis. The following information will provide you with a detailed explanation of the rationale and purpose of this study.

- This study is based on a social psychology theory known as “*Terror Management Theory*.” *Terror Management Theory* was initially inspired by the simple observation that people often have strong reactions to topics such as mortality, dying, and their inevitable deaths. The “*terror*” in *Terror Management Theory* mostly refers to the anxiety and stress we must deal with in our daily lives when confronted with reminders of our mortality.
- *Terror Management Theory* does not assume that we must only occasionally confront our mortality. Rather, we are made aware of the inevitability of our death on a daily basis. For example, viewing the evening news or reading the newspaper can very quickly bring our attention to the fact that death is inevitable, and often can be entirely unpredictable.
- In general, research on *Terror Management Theory* has shown that when individuals are made aware of their own mortality, they tend to give harsher judgments for those who oppose their cultural worldview (e.g., morals, standards, and values) and more favorable judgments for those who support their cultural worldview. This is known as a “*mortality salience*” effect.
- *Terror Management Theory* suggests that these results can be partially explained by the values one must adopt (perhaps unconsciously) in the

hope of achieving immortality (literal via an afterlife, or symbolic via a variety of methods including having children). By examining individuals' judgments of criminal offenses, the goal of this study is to examine differential contributions of literal and symbolic immortality motivation to these mortality salience effects.

- INDEPENDENT VARIABLE

If you were asked to write about your feelings on public speaking, you were in the CONTROL condition. If you were asked to write about the feelings that thinking about death arise in you, you were in a MORTALITY SALIENCE condition. There were 2 mortality salience conditions:

a) Writing about feelings you have as you think about your own death (individual mortality)

b) Writing about feelings you have as you think about the vulnerability of your own life and the lives of those important to you.
(collective mortality)

- DEPENDENT VARIABLES

The main dependent variables in this study were the judgments you made regarding the criminal offenses.

- In relation to Terror Management Theory, the main questions this study asks are:

Are mortality salience effects partially due to a motivation to achieve symbolic immortality (e.g., having children)?

Does thinking about one's children prior to experiencing increased death awareness influence the mortality salience effect (the opinions on the moral transgressors in the criminal scenarios)?

- *Again, please do not discuss this study with any other potential participants.*

If you found any questions in this package especially troubling (e.g., questions regarding depression, suicide, or death), your family physician can provide a referral for an appropriate mental health professional.

If you have any further questions or comments, please feel free to contact Brent Conrad (principal investigator) at bconrad@sfu.ca

Thank you very much for your participation.

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