Death and failure:
A cautionary tale of death anxiety and alternate causality

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A thesis submitted for the degree of
Doctor of Philosophy
at the University of Otago, Dunedin
New Zealand
September, 2017
To my family,

your unwavering support means more than you will ever know
Abstract

Many believe that the fear of death is central to the human experience. Theoretically, this fear stems from the human cognitive capacity to project ourselves into the future and contemplate the world without us in it. Awareness—either conscious or unconscious—of our mortality is the central cause of what researchers call death anxiety, which we manage on a day-to-day basis by protecting our cultural worldviews. These views (which range in diversity from a belief in God to the belief that America is the greatest country on earth) act as a crutch to lean on when confronted with terrifying reminders of our mortality.

The data on the fear of death and death anxiety are inconsistent. Some data suggests that we are afraid of death, but the majority of data suggest that death anxiety is low. The leading thanatocentric theory, Terror Management Theory (TMT), makes the claim that we do not show death anxiety because we are well practised at suppressing the terrifying thoughts of death; however, this claim is non-falsifiable.

The present research does its best to test these claims against the competing theory, the Meaning Maintenance Model (MMM), which stipulates that thoughts of our mortality threaten our meaning framework. We know how the world works and reminders of death make us question that certainty, although death is only one example of a thing that makes us question ourselves.

This thesis uses the inconsistent data as a starting point and asks, “Are we actually afraid of death?” in two parts. Part one (which includes Studies 1, 2, and 3) proposes the question philosophically and empirically. Study 1 directly asked participants what they were afraid of. ‘Death’ was listed by approximately 27% of the respondents (‘One’s own death’ was listed by approximately 21%) and death anxiety scores were moderate. ‘Failure’ was the most prevalent fear. It was listed by approximately 61% of the participants. Study 2, more
indirectly, analysed written reflections on their mortality. When asked about how their own death made them feel, participants wrote more negative emotional words than positive emotional words. Both positive and negative emotional words were more prevalent when writing about death than writing about neutral controls. Study 3 had participants speak about their own deaths—or a neutral television condition—in front of a camera. Facial recognition software was unable to detect any meaningful emotional differences between those two conditions. These studies looked for (and failed to find) direct signs of death anxiety. Some indirect signs of death anxiety were found (e.g., increased negative emotional word usage), but nothing that suggests a ubiquitous and universal fear of death.

Part two, which includes Studies 4 and 5, explores an alternate cause of death anxiety from Study 1: failure. The final two studies explore the mediated relationship between personal failure, the need for closure, and death anxiety. Closure is a construct that links TMT and the MMM. Study 4 asked participants to think about personal life successes or personal life failures and then complete need for closure and death anxiety scales. Need for Closure (NFC) mediated the relationship. Participants that thought about life failures showed an increased need for closure, which subsequently led to an increase in death anxiety. Study 5 tested the relationship between death and failure by adding a mortality salience condition to the previous study. This final study failed to replicate the findings of Study 4. It did, however, find a link between NFC and death anxiety.

Taken together, these studies reiterate that the terror from TMT seems to be missing. Failure was the most commonly cited fear, though it is unclear whether death and failure are related. The relationship between NFC and death anxiety is the most promising finding. The implications of these relationships as they relate to existing theories on death and dying are discussed.
Preface

I spent three and a half wonderful years in New Zealand studying the conversation starter of human mortality. “Death is a very dull, dreary affair, and my advice to you is to have nothing whatsoever to do with it” is what W. Somerset Maugham would have told me; I chose to ignore his advice. Nevertheless, it would behove the reader to note that this thesis is a reflection of me in the purest sense—from the ideas explored to the, sometimes, questionable language used.

Because of this, it is important to preface the reader, or, more likely the poor souls charged with marking this thesis, with playfulness. I am a child at heart and, to the benefit of my academic endeavours, try to keep things light-hearted. This thesis is replete with pop culture references and cheeky quips because science should be fun, I think, especially for the consumer of written manuscripts. My supervisor has told me, in jest, that I write like an Internet blogger; compliment taken! This means, I hope, that my writing is clear, easy to follow, insightful, and fun for the reader.

Acknowledgements. I want to thank Jamin Halberstadt first, lest he forget that he is one of the most important influences on my academic career. Through him I have become—I can only hope—a better writer. He has opened up numerous opportunities for me through his wisdom, connections, and his far too kind letters of recommendation. Thank you does not begin to cover my gratitude, but Jamin, thank you for all that you are. Janice Murray, thank you for *Larry's Party*. That book was the revelation my thesis needed.

To the Halberstadt lab, you are wonderful! Thank you for the fun runs, the bowling, the pub quizzes, the costume parties, the philosophical discussions, the discussions about nothing, and the friendships. Jo Secher, if you read this, know that you made my first year in
New Zealand an experience I will always remember. Victoria Alognia, thank you for being an American anchor in a sea of foreign experiences. Thanks to Amelie, Gabriela, Keren, Leila, Marea, and Sam for your countless hours of coding, data collection, and data analysis; this thesis would not be what it is without your influences. To Sam Smith specifically, I hope you learned as much from our collaboration as I did—we made a lot of quick decisions and judgement calls.

To Capri Holden, the love you shared with me helped make the stressful times more manageable. Thank you so much for the fond memories. And to my family: words cannot cover the support you have shown me in the most difficult of times. For this, all I can do for now is emphatically say, “I love you. I love you so much.”
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Chapter 1
The Fear of Death

“For certain is death for the born and certain is birth for the dead; therefore over the inevitable thou shouldst not grieve.”

- Bhagavad Gita

Death is a universal, inevitable mystery. Death is the subject of artists and entertainers, of rigorous philosophical and scientific debates, and the centrepiece of a notorious theory in psychology: Terror Management Theory (TMT; Greenberg, Pyszczynski, & Solomon, 1986). The English language has several words to express loss when someone dies—bereavement, mourning, grief—and it seems normal to fear this loss. Even in Christianity, which promises an eternal afterlife, Paul told the Corinthians that death was “the last enemy to be destroyed” (1 Cor. 15:26).

But why is death the enemy, and why should loss, or any other aspect of death, be feared? Conventional wisdom (and arguably, evolutionary psychology, as in Landau, Solomon, Pyszczynski, & Greenberg, 2007) might dictate that the fear of death is adaptive; we must have a mechanism that keeps the human organism alive long enough to reproduce. From this perspective a motivation for self-preservation makes intuitive sense as a mechanism for maximising reproductive fitness. For example, early psychological evidence suggested that humans have an innate fear of heights—falling is a proximate cause of death. Babies chose to look down into a glass covered pit rather than cross (Gibson & Walk, 1960). Similarly, people may have an innate fear of separation (Bowlby, 1959). In theory, this is a manifestation of the fear of being abandoned because an abandoned child will likely die. Evolutionarily, the argument is the same for any death-proximate fear: dangerous things hide in the dark, snakes and spiders are poisonous, and people drown in water.
On closer inspection, however, it is not at all obvious that these fears are proxies for death. Nor is it obvious that people are (or should be) afraid of death itself, or even that it is in their reproductive interest to do so. For example, taking more physical risks might in principle increase reproductive success (if, say, risk taking signals dominance or resources to potential mates). Furthermore, producing offspring is itself dangerous. Prior to the 1900s, childbirth carried a substantial risk of death. The World Health Organisation keeps statistics on various health-related outcomes, one of which is maternal mortality. Since 1990, maternal mortality worldwide dropped by about 44%, although 99% of the total deaths during childbirth occur in developing countries (World Health Organisation, 2015). The World Health Organisation estimated that 303,000 women died in childbirth in 2015, and for every woman that dies in childbirth, dozens more suffer infection, injury, or illness. It could be argued that a powerful aversion to death would decrease reproductive fitness, at least among women.

Fear of Death: a Philosophical Perspective

While evolutionary psychologists may speculate that fear of death is adaptive, the earliest writers on the subject argued strongly that people should not fear death on logical grounds. Great thinkers including Socrates, Zhuangzi, Epicurus, and Lucretius were convinced that being afraid of death is irrational and misguided. In their minds, the fear of death stems from faulty thinking, opinions, and judgments (Warren, 2004). The enlightened mind does not concern itself with mortality, or as German philosopher Arthur Schopenhauer put it, “Only small and limited minds fear death” (Schopenhauer, 1818/2012, vol. 3, p. 258).

As dictated in Defence of Socrates (Plato, 2012), Socrates attempted to convince the Athenians that they should not fear death. His position on his own mortality was quite clear:
we should only fear known evils. What happens after death is unknown, which means one cannot determine if it is good or evil. Socrates said we have every reason to hope that death is good because it will result in either one of two scenarios: a dreamless sleep or passage into another life. Dreamless sleeps, Socrates argued, are both painless and refreshing; and if there is another life—which Socrates did not believe; he was on trial for atheism—the fear of being dead is not a concern. Another existence would allow us to think, reflect, learn, and philosophise with great minds of the past. Socrates would “personally be willing to die many times over, if those tales [of an afterlife were] true” (Plato, 2012, p. 21).

Nearly a century later in Bozhou, China, ancient Chinese philosopher Chuang Tzu lost his wife, observing first-hand that death claims all. Shortly after his wife died, another philosopher found him playing the drums and singing and asked Chuang Tzu is celebration was appropriate. Chuang Tzu’s response was as follows:

“You’re wrong. When she first died, do you think I didn’t grieve like anyone else? But I looked back to her beginning and the time before she was born. Not only the time before she was born, but the time before she had a body. Not only the time before she had a body, but the time before she had a spirit. In the midst of the jumble of wonder and mystery a change took place and she had a spirit. Another change and she had a body. Another change and she was born. Now there’s been another change and she’s dead. It’s just like the progression of the four seasons, spring, summer, fall, winter.

Now she’s gone to lie down peacefully in a vast room. If I were to follow after her bawling and sobbing, it would show that I don’t understand anything about fate. So I stopped” (Tzu, 1968, p. 192).
Chuang Tzu believed that death is one of many milestones in the life cycle. The inevitability of death is similar to the inevitability of other milestones. People are born, they grow into toddlers, then teens, then adults, and then they die. Life is an endless series of milestones, all of which are celebrated. Parents may shed a tear when their child leaves for college, but the child’s transition into adulthood is ultimately celebrated. Just as it might seem ridiculous to mourn babies becoming toddlers or teens becoming adults, it makes little sense to mourn death; the final milestone.

Around the same time, in Greece, Epicurus approached the question as a materialist who believed we are our bodies and nothing more. “Good” stimuli are good because they bring us pleasure and “evil” stimuli are bad because they bring us pain. To him, death is neither (Epicurus, 2012). We should not fear death because we are not aware of it when it happens. Upon death our vital organs cease to function and we no longer possess the ability to perceive. If we are unaware of something it cannot harm us. In his own words, “Death, the most terrifying of ills, is nothing to us, since so long as we exist, death is not with us; but when death comes, then we do not exist. [Death] does not concern either the living or the dead” (Epicurus, 2012, p. 266).

Epicurus further writes that, “The man speaks but idly who says that he fears death not because it will be painful when it comes, but because it is painful in anticipation. For that which gives no trouble when it comes, is but an empty pain in anticipation” (Epicurus, 2012, p. 266). Thinking about death is what is causing the anxiety, not death itself. Of course, one can sometimes feel the cause of death, for example being mauled by a bear. To the Epicurean, however, being mauled by a bear makes the bear evil, not death.

Nearly two centuries later, Lucretius, a Roman poet and disciple of Epicurus extended the Epicurean argument in his work *De rerum natura* (On the nature of things). Scholars often refer to the following passage:
“Life is granted to no one for permanent ownership, to all on lease. Look back not and consider the bygone ages of eternity that elapsed before our birth were nothing to us. Here, then, is a mirror in which nature shows us the time to come after our death. Do you see anything fearful in it? Do you perceive anything grim? Does it not appear more peaceful than deepest sleep?” (Lucretius, 2001).

Lucretius proposed what philosophers call the symmetrical argument against the fear of death. Prenatal and post-mortem nonexistence are equivalent because the human mind cannot perceive either. Because we do not fear the time before we were born, we should not fear the time after we die (Rosenbaum, 1989 and others have elaborated on this argument).

Another modern version of Epicurus’ argument comes from Sigmund Freud. Freud believed that fear and anxiety were the result of childhood trauma. Anyone who reported a fear of death, however, was mislabelling that fear because “nothing resembling death can ever have been experienced” (Freud, 1926/2010, p. 4268). We cannot be afraid of death because the unconscious mind has no repressed memories to draw on. The source of the patient’s anxiety must be originating from a source other than death.

Furthermore, Freud describes two opposing classes of human behaviour: the sexual and the aggressive (Freud 1923/2010). Eros is the term given to our sexual desires. This instinct drives humans to reproduce (or at least engage in the act of reproduction) and to bring life. Conversely, we are also driven by a destructive force that Freud calls Thanatos—the death instinct. Just as we have mechanisms to bring life, we may also have mechanisms that ensure death. Humans wage war, demonise others, and relive traumatic events. According to Freud, acts of aggression are external manifestations of the death instinct and an attempt to seek death. This claim is diametrically opposed to the fear of death.
Many prominent philosophers take the view that the fear of death is irrational, though not everyone agrees. Klein (1948), in a psychoanalytical counterpoint to Freud, argued that not only could death be a source of anxiety, it is the primary source of anxiety. Klein postulated that “if we assume the existence of a death extinct, we must also assume that in the deepest layers of the mind there is a response to this instinct in the form of fear of annihilation of life” (Klein, 1948, p. 29). This argument alone is not satisfactory, however, because the presence of an instinct is not a sufficient condition for fearing it (e.g., humans still have Eros, the life instinct, but they do not fear life; Blass, 2014). But reading deeper into Klein (as Blass notes, she does not expand on her points well in her writings), she appears to argue that all fears are ultimately fears of death. When a patient is expressing a fear of heights, for example, they are communicating to the therapist that they are afraid to die. Similarly, a fear of snakes, spiders, drowning, or the dark is merely the explicit form the unconscious fear of death takes. And further, day-to-day behaviours relate to prolonging life (e.g., grooming to attract a mate) or circumventing death (e.g., choosing to stop at a red light).

This argument helped form the foundation of Ernest Becker and the Terror Management Theorists (discussed further in Chapter 2). In his influential work, The Denial of Death, Becker (1973) extends the Kleinian argument that the fear of death is at the core of human behaviour. Becker argues that human are, perhaps uniquely, able to project themselves into the future and contemplate their eventual death. This awareness leads to a feeling of terror. Human behaviour, and indeed human civilisation, is an elaborate defence mechanism that imbues us with a sense of immortality. Because the individual will eventually die (and is aware of this fact), they undertake “immortality projects” to buttress themselves against the terror their mortality creates. Religion, for example, is one such
A genuine belief in the afterlife allows the individual to transcend their physical body and live, in some form, forever.

On a more technical note, Nagel (1979) challenged the Epicurean assumption that a person can only be harmed if they have the capacity to feel the harm. In Nagel’s view, we can be harmed by things we are not aware of. For example, friends who spread negative gossip about a person harm that person indirectly even if the person is never aware of the gossip (Nagel, 1979). One can also be harmed and not feel it. A brilliant psychologist who suffers a devastating brain injury is no longer aware of their existence, but has nonetheless been robbed of future possibility. Analogously, death deprives us of future life; a future can be good. Thus, Nagel concludes, we might find death scary not because of nonexistence or inevitability, but because we are losing life. Perhaps the future good lost from death is something to be feared. Nagel argued that “life familiarises us with the goods of which death deprives us” (p. 9). Thus death is harmful not because we will necessarily suffer after our death but because we suffer harm now when we think about the life of which our death deprives us.

Avoidance of Death

Gauging whether or not we are afraid of death does not have to be rooted in abstract philosophical arguments, however. One could argue that we are afraid of death because we avoid it, most notably in conversation. The evidence for fear of death is right in front of us, in the way humans avoid confronting, or even talking, about the subject.

The language of death. Western, English speaking cultures do not talk about death. Much like physical and mental illness, substance abuse and recovery, abortion, sex, sexuality, sexual preference, and bodily functions, human mortality is not discussed in casual settings.
(ComRes, 2014; Glaser & Strauss, 1965; Pattison, 1977). Bringing up these topics is socially forbidden by what Shulman (2003) called the invisible sign on the wall. For example, 83% of Britons agree that they are uncomfortable discussing death (ComRes, 2014). Fewer than a quarter surveyed had either asked a family member about their own end of life wishes, talked to someone about their end of life wishes, or initiated a discussion with their general practitioner about their end of life wishes (23%, 21%, and 2% respectively). Conversations about death are often left to moments when death is imminent; though even imminent death may not enough to force a conversation about it. Intensive care specialist Peter Saul recalled a conversation he has with the daughter of a dying man. “[Kathleen], did you and Jim ever talk about what you would want done if he ended up in this kind of situation?” Kathleen replied combatively, “No, of course not!” (Saul, 2011).

Both survey data (ComRes, 2014) and observational research (Glaser & Strauss, 1965; Pattison, 1977)—which come from western, English speaking countries—suggest that speaking about death can be difficult and uncomfortable, which is why people choose to avoid it. English has an expanded list of euphemisms, such as passed on, to facilitate uncomfortable conversations. Euphemisms are linguistic tools to safely discuss taboo topics (McCallum & McGlone, 2011) as Monty Python’s Pet Shop sketch captures quite well:

“[The parrot is] not pinin’! ‘E’s passed on! This parrot is no more! ‘E ‘as ceased to be! ‘E’s expired and gone to meet ‘is maker! ‘E’s a stiff! Bereft of life, ‘e rests in peace! If you ‘adn’t nailed ‘im to the perch, ‘e’d be pushin’ up the daises! ‘Is metabolic processes are now ‘istory! ‘E’s off the twig! ‘E’s kicked the bucket! ‘E’s shuffled off ‘is mortal coil, run down the curtain, and joined the bleedin’ choir invisible!” (Chapman et al., 1989, p. 320).
Death euphemisms are ubiquitous. Humans have hundreds of ways to say death without actually saying it. You may depart, go on a journey, send forth your spirit, completely scatter, gather to your fathers, get your call, go over to the majority, kick the bucket, peg it, peg out, cash in your chips, hand in your accounts, conk it, crease it, buy it, relent, move off, pop off, pack off, fall off the perch, hop the twig, shuffle off your mortal coil, yield the ghost, croak, succumb, expire, assume room temperature, bite the big one, throw a double-six, buy the farm, take a last bow, face the final curtain, turn up your toes, push up daisies, feed the worms, sleep with the fishes, have your final sleep, draw your last breath, end your days, answer the final summons, go home in a box, go the way of all flesh, join the choir invisible, keep the angels company, be six feet under, take a dirt nap, wear a pine overcoat, make the ultimate sacrifice, pay the ultimate price, or you may be deleted (Crystal, 2014; “List of expressions”, n.d.).

Ironically, avoiding death conversations may prevent open and honest dialogue about what death means, imbuing it with the power of fear. Activist Maajid Nawaz (2016) calls this the “Voldemort effect” (after the famous villain of the Harry Potter novels). Refusal to discuss “it-that-must-not-be-named” handicaps society by not providing people with the appropriate lexicon to discuss end of life concerns and, as Nawaz claimed, a larger lexicon helps us understand what it means to live and what it means to die. Additionally, for children in counselling who have lost a parent, euphemism used to ‘protect’ the child may prevent the child from making breakthroughs (Siegel, Mesagno, & Christ, 1990).

**Historical factors.** The lack of open, honest dialogue could be indicative of a fear of death. However, death was not always so unfamiliar and off-putting a topic; rather, our reluctance to confront death may be a relatively recent development, a consequence of a series of related Western social changes that have shaped how people view their own death.
If the year were 1900, death would be more familiar to the average person. At that time, approximately 80-90% of people in the United States died at home, surrounded by their families and loved ones (Buckman, 1998; Lerner, 1970). A designated family member would often act as a primary caregiver for a dying person and the children would assist. Exposure to death, especially at an early age, may have reduced anxiety with the dying process (Corr, Nabe, & Corr, 2006).

Data from the National Centre for Health Statistics (Kochanek, Murphy, Anderson, & Scott, 2004) and the U.S. Census Bureau (1975) suggest that this historical situation has changed dramatically. Post 2000, a comparable 71% of Americans die in an institution (e.g., a hospital, hospice, or assisted care facility), rather than their own home. Death in an institution often occurs away from the family and in the company of strangers. Families are also often spectators rather than active participants for their dying relative. This dissociation with all things familiar (i.e., the home and family) may reinforce the notion that death is unmentionable; death is it-that-must-not-be-named.

According to Corr et al. (2006), decline in familiarity with death between 1900 and 2000 is attributed to six factors: industrialisation, public health measures, preventative healthcare for individuals, the rise of modern cure-oriented medicine, the nature of contemporary families, and lifestyle. Corr and colleagues’ central thesis is that, due to these factors, exposure to death became less frequent when it was removed from the home.

*Industrialisation* meant improved living conditions and increased efficiency of production. People enjoyed more food, better clothing, and higher quality housing. Better production also meant better transportation and communication. When crops went bad, for example, it was easy to telephone neighbouring communities for assistance.

Industrialisation brought scientific advancement, which meant better *public health measures*. People began to understand how diseases were contracted and spread, and learned...
that quarantines were effective ways to stop the spread of disease. Around the same time, scientists discovered vaccinations for (often fatal) communicable childhood diseases and the knowledge to reduce the environments with which communicable diseases spread (Corr et al., 2006). Increased availability of these vaccines improved preventative healthcare for individuals (Cohen, 1989).

By the second quarter of the 20th century, these factors helped give rise to modern cure-oriented medicine with a biomedical model of care—which emphasises cure over prevention (Corr et al., 2006), a cure that the patient was more likely to find at a general hospital than at home. The days of private physicians traveling through the snow to visit their patients were numbered. At the same time, the nature of contemporary families was changing. In the early 1900s, extended families lived together, with older members acting as caregivers with the help of the children—by the end of the century this was less so.

*Lifestyle* began to change as well. Industrialised populations lived longer, healthier lives. As of 1990, approximately half of the deaths in the United States are, in principle, preventable (McGinnis & Foege, 1993; Mokdad, Marks, Stroup, & Gerberding, 2004). Media outlets help convince people that exercise is good, smoking is bad, and expecting mothers should avoid alcohol during pregnancy. Factors such as poor diet and physical activity, tobacco use, and alcohol consumption take a toll on the human body and are among the top ten causes of death (Mokdad et al., 2004)—a stark contrast with the early 1900s, when people primarily died of communicable diseases and poor living conditions (Corr et al., 2006; Kochanek et al., 2004; U.S. Census Bureau, 1975).

These developments, combined with more widespread and (sometimes) affordable healthcare, seeded a cultural belief that death is something to be prevented (Corr et al., 2006). In the 21st century, healthcare is a service. When a family member gets older, the family often puts them into an institution (e.g., intensive care) to save their life. One in five
Americans die in an intensive care unit (ICU) and the process is far more stressful (Saul, 2011). Treatment is devastating on the body and mind and intensive care survivors have high rates of psychological morbidity (Wade et al., 2012).

Society’s outsourcing of healthcare to hospitals has not only removed death from public view, but also obviated the need to talk about it. The family no longer needs to have death discussions with the patient, because the patient can have that conversation with his or her doctor. The result is that people may not only fear death as an unknown, but also lack the lexicon to have productive conversations about it (Nawaz, 2016).

**The Current Thesis**

In sum, there are some seemingly compelling reasons to think that humans ubiquitously fear their own death. Regardless of whether, as Klein (1948) argues, death is the ultimate source of all other fears, death itself causes harm. Even if death represents a complete cessation of all sensation and consciousness, we can, according to Nagel (1979), be harmed by things that we cannot feel and are not aware of. And in any case, we can feel while we are alive, and may be harmed by thoughts of the future good of which death will deprive us.

Certainly judging by (largely anecdotal) evidence from their social interactions, people avoid thinking about death. Discussions about death seldom occur. When they do, these discussions are steeped in euphemism. It is statistically likely that the readers of this thesis have not asked a family member about their end of life wishes, or initiated a discussion with their general practitioner about their own end of life wishes.

Indeed, the arguments for death anxiety are so obvious to some that even to question it seems ridiculous. Landau and colleagues (2007) taunt: “Do [they] really want to argue that
humans do not fear death? Wouldn’t it be curious if a species whose bodies were designed by natural selection to stay alive and reproduce were not at all bothered by the knowledge that they must die and that this knowledge did not have significant effects on the way they live their lives?” (p. 491).

But, being “curious” if false is hardly evidence that a statement is true. As Freud argued, we cannot be afraid of death, because nothing resembling death has ever been or can be experienced (Freud, 1926/2010). Death is nonexistence. Humans cannot be afraid of what they lack the biological capacity to feel (Epicurus, 2012). Furthermore, death itself is not necessarily bad, even taking into account loss of future potential. Ancient philosophers maintained that the time after death must be good because it is an eternity in heaven or a deep sleep (Plato, 2012). Tzu (1968) argued that death is one of many milestones and as such it should be celebrated, not mourned. To be afraid is to lack an understanding of fate.

The primary goal of the current thesis is to review and contribute to the evidence base for the proposition that death anxiety is a primary and pervasive human motivation. Chapter 2 begins with an overview of the theoretical approaches to death and dying from both the medical and psychological perspectives. Then, Chapter 3 reviews the available death anxiety data that loosely supports these theories. Chapter 4 and Chapter 5 report behavioural and self-report data, both in the laboratory and in the field, on people’s fears and the emotions they feel when talking about death. With little evidence for death anxiety, subsequent studies in Chapters 6 and 7 examine an alternate source of anxiety, fear of failure that may precede or supersede fear of death. In the final chapter, I speculate on the nature of death anxiety and, moving forward, consider the implications of investigating both the fear of personal failure and the fear of death.
Chapter 2
Medical and Psychological Theories of Death and Dying

“It is difficult to accept death in this society because it is unfamiliar. In spite of the fact that it happens all the time, we never see it.”

- Elisabeth Kübler-Ross

Given the decrease in death familiarity and the rise of hospital-based care, discussed in the previous chapter, perhaps it is not surprising that theories of death and dying came initially from the medical perspective. Such theories tended to be descriptive and prescriptive, rather than explanatory. They addressed questions such as: What do clinical patients experience as they die? What is the most effective way to die? What does “appropriate” dying look like?

Early theorists noticed that doctors and nurses did not interact well with patients and began interviewing all parties to identify the nature of the problem (Glaser & Strauss, 1965; Kübler-Ross, 1969). When a patient receives a fatal diagnosis, how aware is the patient that he or she will die? And how aware should the patient be? Awareness theories, one of the three broad classifications of medical theories about death, deal with communication between patients, doctors, nurses, and family members depending on how aware patients are of their impending deaths.

For example, the uncertainty of the lethality of a diagnosis matters. In a hospital setting the timing of death is almost always in question. From the patient’s perspective, death can be certain at a known time; certain at an unknown time; uncertain but with a known time when the question will be resolved; or uncertain with an unknown time when the question will be resolved (Andrews, 2015; Glaser & Strauss, 1965). Given the simplicity of these possible outcomes, it may be surprising that health care providers have historically been largely unwilling to disclose death with their patients. Doctors still engage in mechanistic
communication with patients and fail to take into account patients’ personal needs (Caswell, Pollock, Harwood, & Porock, 2015). And interestingly, the first major medical approach to death and dying had little role for death anxiety.

**Contexts of awareness theory.** Glaser and Strauss (1965) were among the first to research the communication problem in hospitals by conducting interviews with doctors, nurses, and patients from three hospitals in the San Francisco Bay area. Based on their observations, they formulated the context of awareness theory, noting that the doctors’, nurses’, and patients’ level of awareness affected behaviour. A patient can have one of four contexts of awareness: closed, suspicious, mutual pretence, or open.

Patients with closed awareness are unaware of their impending death. Doctors and nurses are not completely honest with the prognosis, so the patient has no reason to be alarmed. Their discussions with patients circumvent full disclosure, especially when the patient is expected to die soon. The end result is a game of sorts, in which the staff members systematically prevent the information from leaking to the patient. Disclosure would lead immediately to an open awareness, but of course, without full disclosure the more time that elapses, the more likely it is that the patient suspects a problem and becomes suspicious.

Suspicious awareness is the unstable follow-up to closed awareness. The patient suspects that their condition is more serious than the doctors are letting on and the doctors are not aware that the patient knows. During this time the patient is on the offensive—attempting to confirm their suspicions indirectly by peeking at their chart or by asking directly. Again, depending on the frankness of the relationship, this situation, a stressful one for both family and staff, can shift directly to open awareness or transition into mutual pretence.

If the dishonesty continues, the staff will come to suspect that the patient knows his prognosis, yet all parties may act as if he will live. The situation is an odd masquerade governed by a set of informal rules. The patient is permitted to talk about a future with their
family; patients and medical staff focus on strictly safe topics, and accidental references to the patient’s death are intentionally ignored. If on the other hand all parties decide to acknowledge that death is coming, open awareness results, though this does not necessarily make the situation easier to manage (Copp, 1998; Glaser & Strauss, 1965). Patients and doctors often have different expectations about what appropriate dying looks like.

Because appropriate dying unofficially means dying without anxiety, the open context of awareness is more appropriate for clinicians and patients. Patients who know they are going to die are more likely to die in a hospice or their own home (rather than the hospital) with others present (rather than alone); and more likely to feel like they have control over their last months (Field & Copp, 1999; Seale, Addington-Hall, & McCarthy, 1997). The context of awareness theory remains a model for healthcare professionals (Andrews, 2015), who are now more likely to get patients to a state of open awareness so they can plan their remaining days.

**Stage models of dying.** For all of its descriptive value, context of awareness theory is not a how-to guide for aspiring doctors. The lack of detail about how to deal with dying patients may have created the vacuum that led to more specific “stage theories” of death and dying. Stage theories suggest that the dying process can be subdivided into progressive stages that a patient must pass through. One early and influential example is the five stage model of the process of dying (Copp, 1998; sometimes called the five stages of grief): denial, anger, bargaining, depression, and acceptance (Kübler-Ross, 1969). Transition between the stages happens idiosyncratically, and some individuals never reach the final stage (the transition between the stages is now a part of pop culture; as Law & Order: Special Victims Unit’s Detective John Munch cheekily tells a witness, “There are five stages of grief. Try not to go through them all at once.”).
Denial comes first. The individual has either just been diagnosed with a terminal illness or surmised that they are going to die in hospital. Shock, disbelief, and other negative emotions result. The patient then becomes angry and lashes out at friends, family, the hospital staff, or God. Bargaining comes after anger and is typically an exchange between the person and God, although petitioning any external agent will suffice. They may ask to not die or for more life. Once all excuses are exhausted, the patient becomes depressed and withdrawn. Once overcome, the patient has accepted their fate.

The five stage model was quickly adopted and filled a much needed void in the healthcare industry (Copp, 1998). Kübler-Ross’ theory helped publically legitimise having conversations about death, although the topic is still taboo. Her theory did not explicitly make predictions about death anxiety, although it might be assumed that when death was near, patients would not want to die (see ‘Bargaining’). Her theory was, however, the first systematic description of the dying process, and it allowed professionals to describe the dying process to their patients with some structure (Kastenbaum, 1975).

However, each individual is different. Human emotion is rarely serial or universal, people seldom experience the five stages in the “correct” order (Buckman, 1998) and, as critics have pointed out, the theory fails to capture the wide range of emotions humans actually experience prior to their end (Buckman, 1998; Kastenbaum, 1975), which should, according to Buckman, include fear. As Buckman put it, if you tell someone they are going to die and fear is not among their first responses your first response should be, “Has this patient understood the situation?” (p. 145).

Responding to criticisms about the adequacy and validity of the five stage model, Buckman (1998) reduced the model to three stages, at the cost of some specificity. The initial stage, facing the threat, is a combination of Kübler-Ross’ first three stages—denial, anger, and bargaining—expanded to capture a wider range of emotional responses. These include,
but are not limited to humour, cyclical feelings of hope and despair, and, specific to this thesis, fear and anxiety about death. In the chronic stage, the patient deals with the emotions from stage one, often at the cost of becoming depressed. The final stage, as with Kübler-Ross’, is acceptance.

This theory attempted to detach itself from viewing the dying process as a clean progression through stages by making the stages less concrete and tailoring the stages to the responses of each individual. As many have argued, however, this theory is just as mechanistic and suffers from the same disadvantages as all stage-based theories (Copp, 1998): physicians can get preoccupied with moving patients from one stage to another, at the cost of addressing their concerns at the moment.

The living-dying interval. Although the living-dying interval is a stage-based approach, its uniqueness warrants a separate subheading. Pattison (1977) agreed that the treatment process for death and dying begins when the patient becomes aware they are going to die. For him, there is no choice whether to disclose a fatal diagnosis to the patient; telling the patient is a given. A patient’s hopes, dreams, and goals get put on hold when told that they are going to die. This point, known as the crisis of the knowledge of death, marks the beginning of the living-dying interval (the period between the time you are told you are going to die and the time you actually die; see Figure 2.1).

The living-dying interval is marked by the clinical phases (stages): the acute crisis phase, the chronic living-dying phase, and the terminal phase. The acute crisis phase begins immediately after the patient is told they will die. Personal anxiety rises until it reaches peak tolerance; all the while the patient tries to calm themselves through a variety of defence mechanisms. During this phase, the patient exhibits emotions reminiscent of Kübler-Ross’ five stage model, including denial, anger, and bargaining. Few patients have prior experience dealing with their own deaths and the news brings up unresolved issues from the past. Was
the patient a narcissist? Did they live the life they wanted? These questions coincide with nine particular fears related to death (see Table 2.1) and can only be resolved if the fears are conscious and the patient is in the chronic living-dying phase.

Once the body is ready to die, the patient enters the terminal phase—the beginning of the end. It begins when the person withdraws into himself or herself preparing for eventual death. More silent, less interactive and more reflective, this patient in this phase often exhibits a change from *expectational* hope to *desirable* hope. Expectational hope is characterised by a set of expectations that could potentially be fulfilled (e.g., hope for remission or a cure). Desirable hope is outward expectational hope with the internal realisation that a cure is not coming.

The terminal phase ends with four types of death: sociological, psychic, biological, and physiological (Pattison, 1977). According to Pattison, sociological death is the separation of others from the patient; psychic death is the acceptance of death and the regression into the self; biological death is the cessation of consciousness (e.g., a coma); and physiological death is when vital organs, such as the heart and lungs, stop functioning. Problems arise if the types
of death are prolonged or out of sync. For example, if a cancer diagnosis causes a patient’s family to ostracise them, the patient is socially dead long before they are psychically or biologically dead—this drastically reduces their quality of life (Pattison, 1977).

Although all deaths, in theory, are characterised by these four types of death, individuals can and often do differ in their own expectations of how death will unfold. Recognising that everyone experiences death differently, Pattison (1977) is one of the first to hint at a task-based model which prioritises the completion of pragmatic tasks (i.e., work) instead of progressing through stages.

**Task-based approaches.** Medical advances have changed many fatal diagnoses into chronic illnesses. HIV, for example, is today treated successfully rather than being a death sentence (Samson & Siam, 2008). An increase in the amount of time someone lives creates room for theories of how healthcare professionals can help patients cope. Task-based theories focus on giving the patient manageable and pragmatic tasks to accomplish.

<table>
<thead>
<tr>
<th>Fear of…</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>The unknown</td>
<td>We do not know what happens after death.</td>
</tr>
<tr>
<td>Loneliness</td>
<td>The sick struggle with how to interact with family and friends.</td>
</tr>
<tr>
<td>Sorrow</td>
<td>Fear of loss; includes job, strength, relationships, etc.</td>
</tr>
<tr>
<td>Loss of family and friends</td>
<td>Fear of losing the experience of people close to you.</td>
</tr>
<tr>
<td>Loss of body</td>
<td>Illness distorts the body, a vital sense of our self-concept.</td>
</tr>
<tr>
<td>Loss of self-control</td>
<td>Fear of not being able to control your own actions.</td>
</tr>
<tr>
<td>Suffering and pain</td>
<td>Dying can be a painful process.</td>
</tr>
<tr>
<td>Loss of identity</td>
<td>Fear of losing the self; who we are.</td>
</tr>
<tr>
<td>Regression</td>
<td>Fear of withdrawing back into the self, like falling asleep into nothingness.</td>
</tr>
</tbody>
</table>

*Source.* Pattison, 1977
Corr (1992) developed a task-based approach, with tasks defined as work that the patient undergoes to help cope with dying. Tasks are bound to one of four areas: physical, psychological, social, and spiritual. Physical tasks satisfy bodily needs while minimising physical distress and may include daily walks or regular exercise. Psychological tasks maximise security, autonomy, and richness of living, such as learning a new hobby, skill, or trade. Social tasks sustain and enhance interpersonal attachments and address the social implications of dying: tasks may include forming new relationships or joining new support groups. Finally, spiritual tasks identify, develop, and reaffirm sources of spirituality; they include investigating new forms of religion or spirituality. Corr further stipulates that the dying process and these tasks are not limited to the individual; they include family, friends, and carers (Copp, 1998; Corr, 1992).

Simple task-based models, like Corr’s, have since been expanded in an effort to combine various task-based approaches. Samson and Siam (2008), for example, proposed a comprehensive task-model (see Figure 2.2) that includes components from previous models (Cohen & Lazarus, 1979; Corr, 1992; Samson & Siam, 2008). Their comprehensive model incorporates the tasks into a larger framework that takes the patient’s life history into account: ethnic origin, socio-economic status, life transition experience, quality of social support networks, etc. These factors determine whether or not the patient has a successful cognitive appraisal of the situation (Cohen & Lazarus, 1979). A terminal diagnosis can be interpreted as either stressful, benign-positive, or irrelevant. This appraisal gives meaning to the illness and “moulds the perception of the tasks involved in the adaptation process” (Samson & Siam, 2008, p. 427)—though appraisal can change over time.

The number of tasks varies, although Samson and Siam (2008) claim that Corr’s (1992) set of four are both precise and clear. The inclusion of the vocational task reflects the reality that even with a diagnosis that marks the individual for death treatment allows the
Source of Stress

- Background and personal characteristics
- Event-related factors
- Features of physical and socio-cultural environment

**Primary cognitive appraisal**
Evaluation of the significance of an event: *event seen as threat*

**Secondary cognitive appraisal**
Evaluation of resources: *event seen as challenge*

**Adaptive tasks**

<table>
<thead>
<tr>
<th>Physical</th>
<th>Psychological</th>
<th>Social</th>
<th>Spiritual</th>
<th>Vocational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfy bodily needs</td>
<td>Re-establish emotional balance</td>
<td>Seek social support</td>
<td>Find meaning</td>
<td>Reintegrate into work environment</td>
</tr>
<tr>
<td>Minimise distress</td>
<td>Develop a positive self-image and autonomy</td>
<td>Establish meaningful relationships</td>
<td>Develop a sense of hope</td>
<td>Vocational rehabilitation or volunteer work</td>
</tr>
</tbody>
</table>

**Coping Skills**
Information seeking, goal-setting, denying, taking action, minimising, cognitive processes, requesting support, etc.

**OUTCOME**

- **POSITIVE OUTCOME**
  New state of psycho-social equilibrium

- **NEGATIVE OUTCOME**
  Psychological deterioration and decline

*Figure 2.2. Comprehensive task-model. Source. Samson & Siam, 2008*
individual to live longer with a terminal diagnosis today than twenty years ago. Patients often want to resume their professions with a renewed sense of purpose.

Once the tasks are specified, the coping process is the means by which the tasks are carried out and the end result can be positive or negative. A positive outcome is equilibrium between living life and the diagnosis, a return to normalcy, whereas a negative outcome is associated with physical (and mental) deterioration and decline.

In sum, task-based approaches, like all healthcare-based theories of death and dying, focus on best practises for accepting death or, perhaps more accurately, for accepting an unfavourable diagnosis that will eventually result in death. Glaser and Strauss’ (1965) context of awareness theory described the patient as a person bent on finding truth from the doctors. Patients engage in behaviours that attempt to ascertain the truth of their diagnosis and once they learn the truth the outcome is either positive or negative. Research does suggest that telling the patient honestly leads to the best behavioural outcomes (Field & Copp, 1999; Seale et al., 1997).

Interestingly in the current context, it is unclear what the purpose, if any, fear serves in medical theories of death and dying. Stage theories expand on the time when the patient learns about their diagnosis and eventual death. These theories contend that the initial shock of the information is always negative, often resulting in denial, anger, bargaining, or ill-placed humour and sometimes fear (Buckman, 1998; Kübler-Ross, 1969). Stage theories are informal guides for doctors to get patients from a negative outcome to a positive one, and list fear of death as one of the potential initial reactions a patient can have to a diagnosis. The same is true for task-based approaches: fear is sometimes the initial emotional reaction, and the patient successfully or unsuccessfully learns how to live with the diagnosis. However, the fear of death is neither a universal response to, nor a central component of, any of the health-based theories. Nor do these theories, generally speaking, provide any explanation as to why
patients should experience fear. The comprehensive task-model (Samson & Siam, 2008), with its emphasis on personal histories and social context, comes closest, but little detail is provided regarding what personal or social factors lead to favourable appraisals.

Managing the Terror with Terror Management Theory

The minimal emphasis on fear and its causes in the context of death puts medical theories at odds with psychological theories, in particular Terror Management Theory (TMT) and the Meaning Maintenance Model (MMM). Fear is integral to the former and a by-product of the latter.

The assumption that humans fear their own mortality is at the core of TMT, which posits that humans are able to comprehend their eventual death while simultaneously possessing an instinctive drive to stay alive. Thinking about one’s own death causes terror, so one must learn to cope with or suppress those thoughts (Greenberg et al., 1986). With time, people learn to manage thoughts of their own death by defining and cultivating an outlook on how the world works (TMT theorists call this our cultural worldview).

According to this theory, self-esteem is a gauge by which we measure how well we are living up to the values set forth by our worldview (see Greenberg, Solomon, & Pyszczynski, 1997 for a methodological review). A Catholic, for example, may attend Mass on Sundays and observe rituals of their faith (McCallum & McGlone, 2011). Through this, they reinforce their worldview about the church and God. A self-esteem boost, in short, lets the Catholic know that their efforts are working. The strong worldview prevents us from feeling the terror of mortality (Harmon-Jones et al., 1997).

Worldviews eventually include a belief in immortality: either literal or symbolic (Florian & Mikulincer, 1998; Lifton, 1983). Immortality allows us to circumvent the
inevitability of death. *Literal* immortality is straightforward: you do not die. Many (but not all) religious worldviews offer literal immortality in heaven, the underworld, Valhalla, or another approximate place. With the existence of a soul, death is merely the passage from one existence to the next. Lifshin, Greenberg, Weise, and Soenke (2016) reported that participants who believed in the soul found the apocalypse less frightening than those who did not believe in the soul.

Symbolic immortality is not quite as straightforward. Lifton’s (1983) original work describes five types of symbolic immortality—biological, religious, creative, natural, and transcendent—obtained through indirect means. The biological mode grants immortality through sons and daughters. Sons and daughters remember their parents after death. Many Japanese households have spirit tablets of the deceased in their homes to emphasise the importance of remembering past generations (Lifton, 1983). The religious mode can best be described as harmony with God. Religious members do not need a *literal* soul. Buddhism, for example, denies the existence of the soul; the *atman*. Showing acts of faith give the person power over death. In Christianity these can be abstract concepts such as ‘the capacity to love’.¹ The creative mode is achieved by leaving a tangible legacy (e.g., writing a bestseller or passing a ground-breaking piece of legislation) that survives your physical death. The natural mode comes from the calm ambivalence of nature. In *Chūn wàng* (Spring Scene), Chinese poet Tu Fu writes:

> “Guó pò shān-hé zài
> chéng chūn cǎo-mù shēn.”

(State ruined mountains-rivers survive,

city spring grass-trees thick” (Fu, 757/1967).

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¹ Many hypotheses about the fear of death involve religion. Jong and Halberstadt (2016) have written an entire book on the subject. However, the relationship between these two variables is too murky for this thesis to answer. As one researcher put it, the relationship between religiosity and death anxiety is positive, negative, curvilinear, or non-existent (Pyne, 2010). In other words, no one knows.
Although the state may fail, the hills and streams survive. Human existence is finite, but we are a small part of the infinite universe and, though it might not sound comforting, that small part is also infinite. Finally, the experiential transcendent mode is obtained by losing oneself in an activity, such as song, dance, athletics, or sex (Mathews & Kling, 1988), although TMT theorists tend not to include this form of symbolic immortality in their research (Burke, Martens, & Faucher, 2010).

According to TMT, we spend our lives cultivating our worldview, keeping our self-esteem up, and striving for immortality, in order to buffer death-related anxiety and terror (Ben-Ari, Florian, & Mikulincer, 1999). This is the buffering hypothesis. Death-related thoughts, when they do creep through our defences, cause the terror to resurface, which then promotes worldview validating and self-esteem boosting behaviour (Ben-Ari et al., 1999)—this is the mortality salience hypothesis.

Experimentally, researchers use mortality salience (MS) paradigms to prime death-related thoughts. The first and most common MS manipulation, in the form of a purported attitudes or personality survey, involves asking people to write about what will physically happen to them when they die and the emotions that the thoughts of their own death arouse in them (Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989). The manipulation does not have to be conscious or direct, however. Pyszczynski and colleagues (1996), for example, manipulated mortality salience indirectly by interviewing participants either in front of or 100 metres away from a funeral home. Ein-Dor and colleagues (2014) manipulated mortality salience implicitly by handing the participants fliers before the experiment—one of which reminded the participant of their own death.

In one experiment utilising Israeli participants and a survey designed to capture Lifton’s aspects of symbolic immortality (Mathews & Kling, 1988), Florian and Mikulincer (1998) found that symbolic immortality moderates the effect of MS on fear of death.
Participants with low scores on symbolic immortality were more affected by thoughts of their own mortality than participants with high scores on symbolic immortality, although Shatil (2012) pointed out that without a manipulation check, it is unclear whether symbolic immortality allows participants to suppress death-related thoughts or to better activate their worldview defence.

One consistent and awkward finding in the terror management literature is that, despite priming the supposedly terrifying notion of death, MS manipulations do not tend to evoke feelings of anxiety or negative affect (Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994; Greenberg, Simon et al., 1994). To resolve this paradox, theorists have developed a dual process model: we defend against death thoughts, according to theory, through both “proximal” and “distal” defences (Pyszczynski, Greenberg, & Solomon, 1999). Immediately following a MS procedure, people utilise proximal defences to push death from their conscious awareness. If we fail a test, for example, we can blame it on the test’s validity or difficulty. With regard to death, we can point out how healthy we are and how much we exercise. These proximal defences are generally effective at keeping thoughts of death out of conscious awareness, which is why MS fails to arouse any emotional response. Subliminal primes or reminders of death, however, circumvent proximal defences, and require different psychological mechanisms. This is where both our cultural worldview, promises of immortality, self-esteem, and other “distal” defences, become important to keep the terror at bay. The entire death thought process from death-prime to terror avoidance can be seen in Figure 2.3.

After more than two decades and hundreds of published articles, mortality salience effects appear quite varied and robust (Burke et al., 2010). For example, when thinking about death people tend to show increased support for martyrdom attacks on foreign governments, military intervention abroad (Pyszczynski et al., 2006), and nationalist sentiments (Harmon-
Jones et al., 1997), and to show increased aggression toward others—in the form of giving a confederate known to dislike spicy food more hot sauce; McGregor et al., 1998).

TMT effects typically involve a participant's behaviour toward others, but can also involve self-directed behaviour. Mortality thoughts lead individuals to boost their self-esteem, such as by focusing on the positive aspects of reckless driving (e.g., thrill-seeking and excitement; Ben-Ari, Florian, & Mikulincer, 1999, 2000). And mortality thoughts lead individuals to avoid using physical symbols of their worldview as tools (i.e., the crucifix as a hammer or the U.S. flag as a sieve; Greenberg, Porteus, Simon, Pyszczynski, & Solomon, 1995).

Burke and colleagues (2010) recently meta-analysed two decades worth of TMT research, describing the prototypical experiment:

“The prototypical experiment involved 87 participants (53 females, 34 males) who were American college students with an average age of 22 years. After one or two filler questionnaires, the Mortality Attitudes Personality Survey (Rosenblatt et al., 1989) manipulated MS by asking participants in the experimental group to answer two short essay questions about death, whereas the control group wrote instead about dental pain. A second IV such as gender or score on another measure was used to examine potential within-study moderators of MS effects. After a delay (typically a single task lasting 2-6 minutes) during which participants completed another filler measure such as [the] positive and negative affect scale (PANAS; Watson, Clark, & Tellegen, 1988) or solved a puzzle, the main DV measured participants’ attitudes toward an essay or author who disagreed with their worldview” (Burke et al., 2010, p. 185).
Thoughts of death enter consciousness

Proximal defences: suppression and rationalisation

Increase in accessibility of death-related thought outside of consciousness

Distal defences: worldview defence and self-esteem bolstering

Death thought accessibility is reduced and potential terror averted

Figure 2.3. Defensive processes activated by conscious and unconscious death-related thoughts. Source. Pyszczynski et al., 1999

Their meta-analysis of 277 experiments revealed a moderate MS effect across all MS manipulations, $r(276) = .35$. The effects were significantly larger for college students, $r(235) = .36$, than non-college students, $r(25) = .25$, though neither gender nor age moderated them. Additionally, the MS manipulation affects Americans, $r(122) = .37$, significantly more than Europeans or Israelis, $r(86) = .31$, or Asians, $r(9) = .26$.

Written MS manipulations require a control on one of the various dimensions of the fear of death. Instead of writing about their own deaths, some participants may be asked to write about uncertainty (death can cause uncertainty), social exclusion (dying can remove you from your friends and family), dental pain (death can be painful), or watching television. A major finding of Burke and colleagues’ (2010) analysis was that the MS manipulation produced less worldview defence relative to control groups who experienced meaning threats (e.g., a change in experimenter, Proulx & Heine, 2008; a questionnaire on the pointlessness

Maintaining Meaning with the Meaning Maintenance Model

Writing about death and writing about meaning threats both cause uncertainty. The potential causal similarity between the mortality and meaning threats in Burke et al.'s meta-analysis is consistent with a second prominent approach to investigating anxiety. The Meaning Maintenance Model (MMM) proposed by Heine, Proulx, and Vohs (2006) offers an alternative account of MS effects, attributing them to uncertainty rather than fear of death per se.

According to MMM, human beings create schemas, or frameworks, for how the world works, in order to understand and control it. When faced with a threat to these meaning structures, they respond by compensating, reaffirming or readjusting their frameworks. The reaffirming and readjusting is similar to Piaget’s concepts of assimilation and accommodation, respectively (see McLeod, 2015 for examples). Anything that challenges our personal sense of meaning, including but not limited to death, should make us construct or affirm other frameworks of meaning. Burke and colleagues (2010) point out that this claim is synonymous with what TMT calls the distal defence. Meaning threats can include social rejection or alienation, feelings of meaninglessness or uncertainty, or self-esteem threats (Proulx & Heine, 2006, 2008).

Self-esteem needs are protected by keeping our frameworks stable. A stable framework is protected when a person can affirm that what they know about the world is true (e.g., the Need for Closure, Roets & Van Hiel, 2007, 2011; Webster & Kruglanski, 1994). Affiliative needs are met when a person has friends or belongs to groups that value what they
value and believe what they believe. Symbolic immortality needs are met when, as TMT describes, you have a worldview and you behaviourally live up to it.

TMT and MMM share similarities, most notably their claims to worldview defence. Both TMT and MMM agree that meaning structures, like worldviews, are needed and that threats to these structures affirm their importance. For example, threatening someone’s core religious beliefs cause them to bolster their faith (Webber, Zhang, Schimel, & Blatter, 2015). The crux of the differences lies in how the two theories treat death anxiety. TMT stipulates that a fear of death is at the centre of our anxiety and that by maintaining a healthy worldview, we can keep that anxiety at bay. MMM, by contrast, does not view death as a special category. Instead of suppressing terror, we want to keep the world predictable—any uncertainty causes anxiety (Webber et al., 2015). Death is just an example of this uncertainty. We worry about death not because of thoughts of nonexistence, but because it deprives our life of meaning (e.g., death removes us from our friends, shattering our affiliative needs). It does this in four ways: (1) undermining the predictability and controllability of the individual’s existence; (2) eliminating the potential for creating meaning in the future; (3) reminding the individual that their meaning framework and existence will be forgotten; and (4) nullifying the value of the individual’s life achievements (Baumeister, 1991).

MMM attempts to redefine the motivation of human behaviour from avoiding death to finding meaning. For example, MMM theorists use suicide to illustrate the difference between death anxiety and meaninglessness, and to argue for the generality of the latter. If we have a need for self-preservation, why would some opt to kill themselves? The answer, according to the MMM, is that the suicidal no longer find meaning in their lives, and as Heine and colleagues (2006) write, “If people sometimes choose death over meaninglessness, it scarcely seems possible that death can be considered their greatest fear” (p. 105).
The counterexamples are not limited to suicide. Several behaviours appear to contradict the self-preservation instinct/fear of death championed by TMT theorists. Muraven and Baumeister (1997), for example, cite sex. Sex is not biologically necessary, nor does it bolster your worldview, and it also carries risk. Historically, HIV, sexually transmitted diseases, and childbirth were (and still are) often fatal, which would make sex less appealing from a self-preservation or terror management perspective (Muraven & Baumeister, 1997). It could be a source of symbolic immortality through offspring but, as Muraven and Baumeister argue, many people engage in sexual intercourse even with the goal of avoiding children—thus avoiding symbolic immortality.

In sum, death anxiety does not seem to play an important role for medical theories of death and dying. Stage theories, the living-dying interval, and task-based approaches all include fear as an initial response, but it quickly fades and the doctors and patients focus on more meaningful tasks for the patient. Meaning is the operative word. The two most prominent psychological theories, by contrast, offer competing explanations of how mortality motivates cognition and behaviour: either we are paralysed by the fear of our eventual death and we keep those fears at bay through a strong cultural worldview and high levels of self-esteem or we constantly search for meaning through our actions and death is merely one example in which we test our meaning framework.

Both TMT and MMM can be reconciled, in part, by a theoretical and empirical consideration of death anxiety: to what extent is death indeed a primary motivating factor in human behaviour. Chapter 3 will investigate the available evidence with regard to death anxiety throughout the lifespan.
Chapter 3
The Search for Terror

“Theories come and go, but fundamental data always remain the same.”
- Mark Leakey

Thanatocentric theories suggest that death is something you learn to deal with, suppress, or make meaning out of. In the hospital, outcomes are better for patients that know their diagnosis (Field & Copp, 1999; Seale et al., 1997) and who work toward actionable goals (Cohen & Lazarus, 1979; Corr, 1992; Samson & Siam, 2008), particularly the goal to accept death. Unless a patient has misinterpreted their diagnosis, healthcare professionals prepare for the patient to receive the news poorly (Buckman, 1998).

Terror Management Theory (TMT) would likely not disagree with Buckman, Field, Copp, or any of the medical theorists from Chapter 2. If humans are terrified of death the news of their death would be troubling and the tasks that doctors assign should be most helpful when they promote the patient’s worldview. As described in the previous chapter, TMT posits that humans have a series of defence mechanisms to protect us from death-related thoughts. These thoughts are unconscious, to protect the person from the terrors of mortality. When death does become salient, humans bolster their worldview. Contrastingly, the Meaning Maintenance Model (MMM) posits that any increases to worldview defence are because of challenges to a person’s understanding of how the world works; their meaning framework.

As noted in the previous chapter, one obvious theoretical divergence involves the role of death anxiety, which motivates worldview defence (and most other human behaviour) in TMT, but which is at most a side effect in the MMM. Perhaps the most important question to ask, then, is how fearful and motivating death really is.
Surprisingly, the terror in TMT is hard to come by, even for Terror Management Theorists. Muraven and Baumeister (1997) write, “Where’s the terror?” (p. 38). Kastenbaum (2009) summarises, “What is missing from the terror research program is terror” (p. 282). Roy Baumeister also recalled a conversation he had with the late social psychologist Caryl Rusbult during her late stages of cancer. She told him, “By the way, that terror management theory is bullshit. When you face death, it’s not about upholding your cultural values. The main thing is to get right with the people you love” (Seligman, Railton, Baumeister, & Sripada, 2016, p. 185). Setting the bar lower, critics also note that participants in TMT studies seldom report even moderate levels of anxiety (Kastenbaum, 2009; Muraven & Baumeister, 1997).

The purpose of Chapter 3 is to review, across the lifespan and among populations proximally close to death, the available data on death anxiety, beginning with an overview of the common methodologies used to assess it.

**Psychological Measurements**

**Death anxiety scales.** The most common way to assess death anxiety in adults, as with so many psychological constructs is via a scale. Death anxiety scales ask questions that are both directly (“I am very much afraid to die.”) or indirectly (“I am often distressed by the way time flies so very rapidly.”) related to mortality. One of the most widely used measures, the Death Anxiety Scale (DAS; Templer, 1970), asks participants 15 questions developed on a two-factor model (Tomer, 1992): internal psychological factors related to death or external life experience factors related to death. Factor analysis of the DAS reveals five factors: absolute death anxiety, fear of patience and pain, death-related thoughts, time passing and short life, and fear of future.
The Death Anxiety Questionnaire (DAQ; Conte, Weiner, & Plutchik, 1982) also has five factors: fear of the unknown aspects of death, fear of suffering, fear of loneliness at the time of death, fear of interpersonal aspects of death, and the fear of personal extinction. Despite their differences, these scales and others like them capture two basic distinctions quite well: the difference between self and other, and between death and dying. A person can be afraid of their own mortality or of someone else’s mortality; and a person can be afraid of dying (e.g., the pain involved) or afraid of death itself (e.g., the uncertainty of what lies beyond). Carmel and Mutran (1997) consider these the two major dimensions of fear of death.

Using death anxiety scales requires three assumptions: (1) everyone has death anxiety; (2) people are willing and able to disclose their death anxiety; and (3) the instruments and scales used are capable of measuring death anxiety (Corr et al., 2006). The third is perhaps the most problematic from the perspective of TMT in particular. People tend to score low on death anxiety scales (e.g., Kang & Kang, 2013a, 2013b; Russac, Gatliiff, Reece, & Spottswood, 2007), but it is not clear whether this finding indicates that death anxiety is low or, as TMT would predict, that people are good at defending against it. Chapters 4 and 5 will attempt to address the concern that people are unwilling or unable to disclose their death anxiety.

Death anxiety scales are generally not administered to children. This may be because surveys need to be tailored to the ability of the child. Children have a limited vocabulary, a limited attention span, and struggle with paper and pencil assessments (Schell & Seefeldt, 2001). Dividing death anxiety scales into factors is a common practise. Other factors that have been identified include but are not limited to: fear of death of the self, fear of death of others, fear of pain and suffering, fear of death-related images (e.g., corpses), fear of the passage of time and aging, fear of the future, fear of the unknown aspects of death, fear of loneliness at the time of death, fear of practical death elements (e.g., someone carries out your will), and fear of personal extinction (e.g., self-annihilation; Collett & Lester, 1969; Conte et al., 1982; Hoelter, 1979; Templer, 1970; and Wittkowski, 2001 represent merely a few of many scales).
Fear survey schedules. Unlike most questionnaires, which try to capture underlying dimensions of death anxiety, fear survey schedules (FSS) assess participants’ concerns about particular potential fears. Obviously, a limitation of this approach is that participants are constrained by the types of things the researchers think are or should be scary, which may ultimately be based on intuition rather than data, or grounded in a specific theoretical approach. For example, since the majority of publications that use fear surveys in adults have focussed on the treatment of clinical populations (e.g., Akutagawa, 1956; Geer, 1965; Wolpe & Lang, 1964), the items on these scales have reflected clinical theories, and are subject to change as our understanding of clinical anxiety advances.

The original FSS was based on 50 fears that Akutagawa (1956) felt were common (as cited in Geer, 1965—Akutagawa’s dissertation was unpublished). The creatively named FSS-II was an attempt to expand upon the FSS and to make it more valid and reliable (Geer, 1965). Wolpe and Lang (1964) constructed the FSS-III based on the FSS-II and the clinical observations of patients’ fears; it was intended for use in behavioural therapy and did not contain any items directly related to mortality.

In contrast to death anxiety scales, fear schedules are often used with children. The most common assessment tools for younger populations are based on the original Fear Survey Schedule for Children (FSSC; Scherer and Nakamura, 1968). This FSS was conceptually developed by modifying the FSS-III (Wolpe & Lang, 1964) for adults, though Scherer and Nakamura did not clearly explain how they chose to keep items from the adult version. The FSSC has undergone a revision (the FSSC-R; Ollendick, 1983), but is currently in its second official iteration (the FSSC-II; Gullone & King, 1992) to address concerns that the original survey has not been updated since the 1970s—an acknowledgement, itself
problematic for TMT that fears evolve over time—and to make the survey suitable for an Australian sample (Burnham & Gullone, 1997; Ramirez & Kratochwill, 1990). The FSSC-II was developed by adding, removing, and modifying items from both the FSS-III and the FSSC (e.g., the FSSC-II, FSSC-R, and FSS-III all include the fear of contracting AIDS).

The FSS-II contains 75 items that load onto five fear factors: fear of death and danger, fear of the unknown, fear of failure and criticism, animal fears, and psychic stress/medical fears; Gullone & King, 1992, 1993). FSSCs tend to be both consistent (α ≥ .90) and temporally stable (test-retest correlations = .80; Gullone & King, 1992, 1993; Muris et al., 2002; Ryall & Dietiker, 1979).

Although most fear survey schedules (e.g., Akutagawa, 1956; Burnham & Gullone, 1997; Geer, 1965; Gullone & King, 1992, 1993; Ollendick, 1993; Scherer and Nakamura, 1968; Wolpe & Lang, 1964) provide closed questions (e.g., “Are you afraid of death?”), a very small number (see Hall, 1897; Lane & Gullone, 1999 for examples) use open ones (“What are you afraid of?”), encouraging participants to create their own list of personal fears. As we will see the differences between the findings of closed and open fear surveys may be critically important in assessing the evidence for death anxiety.

**Death Anxiety in Children**

One of the interesting and appealing features of studying death anxiety in children is that they are, theoretically, at a stage of development before the worldview defence strategies have been acquired. Since TMT proposes that these strategies keep terror at bay, if any population were to exhibit a fear of death, it should be those without a worldview defence.
Cotton and Range (1990) interviewed 42 children (M<sub>age</sub> = 9 years, 1 month; SD = 1 year, 8 months; 10 girls, 32 boys; 100% Caucasian) from a Bible school about death concepts and the fear of death using FSSC. Death concepts were assessed by asking each child seven questions about death that relate to five subcomponents of death anxiety (see Table 3.1). Each response was coded as 0, 1, or 2 depending on the depth of the child’s answer. In contrast to most findings at the time (e.g., Reilly, Hasazi, & Bond, 1983), experience with death was negatively correlated with understanding of causation and inevitability, and fear of death was negatively correlated with irreversibility (also called ‘finality’ in some iterations of the methodology). Cotton and Range concede that their sample was both small and 100% religious, further observing that children who gave religious answers (e.g., “Grandpa has gone to be with Jesus”) understood death less.

Increasing the sample size with a (presumably, though unreported) more secular sample, Slaughter and Griffiths (2007) interviewed 90 preschool children (M<sub>age</sub> = 6 years, 5 months; SD = 11.7 months; 46 girls, 44 boys; 90% Caucasian) about death concepts and death anxiety. Death concept was again assessed by asking each child seven questions about death that relate to the five subcomponents (see Table 3.1). Each response was also coded as 0, 1, or 2 depending on the depth of the child’s answer.

### Table 3.1. Five major aspects of death understanding

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Example question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inevitability</td>
<td>Tell me some things that die.</td>
</tr>
<tr>
<td>Applicability</td>
<td>Tell me some things that don’t die.</td>
</tr>
<tr>
<td>Irreversibility</td>
<td>Can a dead person ever become a living person?</td>
</tr>
<tr>
<td>Cessation</td>
<td>When a person is dead do they need food?</td>
</tr>
<tr>
<td>Causation</td>
<td>Can you tell me something that might happen that would make someone die?</td>
</tr>
</tbody>
</table>

Source. Slaughter & Griffiths, 2007
Death anxiety was assessed with a modified version of the Death Anxiety Scale for Children (DASC; Schell & Seefeldt, 1991), which, despite its name, strongly resembles a fear survey schedule. Children indicated whether they were ‘not scared at all,’ ‘a little scared’, or ‘very scared’ of 18 stimuli: dead, boy, eyes, live, dying, like, funeral, years, living, death, breathing, smiled, died, life, awake, use, coffin, and alive.

Death understanding was positively correlated with age. In the first of two step-wise regression models, age (in months) and general anxiety did not significantly predict the fear of death. The second included death understanding in the model and found that the death concept was the only significant predictor of the fear of death. The more a child understood about what death is, the less fear they reported.

On average, death words were rated only a little scary by the children in Slaughter and Griffiths’ (2007) study ($M = .99$, $SD = .56$), which is consistent with most research on death anxiety with children. On the separate Koala Fear Questionnaire (KFQ; Muris et al., 2003), Muris and colleagues found that only 26% of 4- to 6-year-olds replied that ‘death’ caused ‘a lot of fear’.

The findings of Muris and colleagues (2003) are unsurprising given the results of both Cotton and Range (1990) and Slaughter and Griffiths (2007). Indeed, in the earliest known open-ended fear surveys, Hall (1897, 1915; Jersild & Holmes, 1935) found that death was mentioned by fewer than 5% of the 1,701 participants (only some of whom were children). Jersild and Holmes (1935) found that fear of death was mentioned by fewer than 3% of their sample of 398 children between the ages of 5 and 12.

Thus, contrary to the view that death is terrifying, both death anxiety scales and fear surveys indicate that children, who theoretically have no worldview defences, experience low death anxiety, and that the more children learn, the less fear they report. Cotton and Range (1990) further offer that “euphemistic explanations of death may not be helpful” (p. 123):
teaching children that grandpa has gone to be with Jesus is not as beneficial to the child as teaching them that death is the end. Euphemisms remember, from Chapter 1, are a common way to refer to death in adolescence, early- and late-adulthood.

Children do not seem particularly afraid of death, and although a strong death concept is associated with a reduced fear of death, many researchers believe that the benefit of acquiring a death concept is not to alleviate death anxiety, but rather to treat issues like bereavement, terminal illness, and suicide (Cotton & Range, 1990; see Stambrook & Parker, 1987 for a review). These findings, however, are not without criticism.

The children-do-not-understand critique. The assessment of death concepts in children highlights an important criticism of their supposed fearlessness: because children may not fully understand death, they may not understand what they are responding to (see Lansdown & Benjamin, 1985; Slaughter & Griffiths, 2007; or Speece & Brent, 1984 for more on the development of a death concept). Thus, a low incidence of the fear of death in children could be because death is an abstract concept that they are not yet cognitively equipped to understand. It is true that young children tend to report more specific fears (e.g., earthquakes and falling from high places) than older children and adults (Ollendick, King, & Frary, 1989). Pattison (1977) considers childhood “the dawning intellectual appreciation of death” (p. 21), partly understood through the euphemism of their parents. On the subject of death parents tell their children that the dead are ‘not coming back’ or are ‘going away’, so it should not be surprising when a child asks his mother if his friend who moved to Europe is dead (Pattison, 1977). A challenge, then, in fully understanding these data is to understand how children learn about death and at what age.

Generally children learn about death relatively early, through observation: sick people die, old people die, people are buried when they die, etc. (Renaud, Engarhos, Schleifer, & Talwar, 2015). Based on these observations, it is not surprising that one of the earliest
experiences with death comes from witnessing a grandparent die (Irizarry, 1992). Irizarry’s qualitative analysis and other research (e.g., McGovern & Barry, 2000; McNeil, 1983) suggests that children have a somewhat straightforward and arguably mature understanding of death—they know their grandparent is gone forever, even if they do not fully understand the biological specifics. Parental responses, however, suggested that parents assumed their children did not understand and that they were uncomfortable discussing death with their children (Irizarry, 1992).

Researchers suspect that when they do happen, early parent-child conversations about death start between the ages of three and four (Renaud et al., 2015) and that a complete understanding of death—from death as a temporary sleep-like state to death as an inevitable biological process—is acquired sometime between ages five and ten (Lansdown & Benjamin, 1985; Slaughter, 2005; Slaughter & Griffiths, 2007); and age is positively correlated with an increased understanding of death (Nguyen & Rosengren, 2004).

A complete understanding of death—our death concept—is defined by the acquisition of three (Speece & Brent, 1984) to seven (Lansdown & Benjamin, 1985) subcomponents; the exact number of subcomponents is unresolved. The most commonly cited number is five, which are acquired in a relatively fixed sequential order starting at the age of 5 and typically ending at the age of 10: inevitability, applicability, irreversibility, cessation, and causation (refer back to Table 3.1; Slaughter & Griffiths, 2007).

Death Anxiety in Adolescents

Whereas it can be argued that children do not fully understand death (even though some evidence above suggests otherwise), it is harder to argue that teenagers do not understand death. With regard to the adolescent death concept, the first noticeable difference
in understanding death (compared to children) is the transformation from a binary, logical understanding to a more complex, nuanced, and “fuzzy” understanding (Brent, Speece, Lin, Dong, & Yang, 1996). In addition, adolescents have more experience with death, and more discussions involving death and religiosity, including a belief in the afterlife (Noppe & Noppe, 1997).

Adolescence is also a time, empirically, when fear of death becomes less clear, and possibly linked to the methodology used to assess it. During this time of marked physical, mental, and emotional change, some researchers find that mortality concerns increase during adolescence (with fear surveys). Others find that mortality concerns are low (with death anxiety scales).

In a survey of 226 Canadian adolescents between 11 and 18 years ($M_{age} = 14.91; SD = 1.96; 67$ girls, $57$ boys), fear of death scores on the revised Death Anxiety Scale (RDAS; Thorson & Powell, 1993) were low. This finding also held for another sample of adolescents who had experienced the death of a grandparent (Ens & Bond, 2005), whose mean death anxiety ($n = 124, M = 40.42$ out of a possible $100, SD = 15.38$) did not differ from those who had not experienced the death of a grandparent ($n = 88, M = 40.70, SD = 15.33$). Grief was the only variable to be significantly associated with death anxiety—personal growth, gender, time (since the death of the grandparent), and number of deaths experienced were not (Ens & Bond, 2005).

Although low in this and most samples, one study by Muris and colleagues (2003) found that approximately $50\%$ of adolescents replied that ‘death’ caused ‘a lot of fear’. The finding is out of place in that it, like research using the FSSC-II, asks participants directly, “How afraid of death are you?” When adolescents rate their fears on the FSSC-II, death and danger-related items tend to dominate (Ollendick, 1983; Ryall & Dietiker, 1979; Scherer & Nakamura, 1968). Most research utilising the FSSC-II has found that death is typically in the
Table 3.2. Ten most common fears among adolescents aged 7-18 years

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian sample</td>
<td>Endorsement</td>
<td>United States sample</td>
</tr>
<tr>
<td>AIDS</td>
<td>74.3%</td>
<td>AIDS</td>
</tr>
<tr>
<td>Someone in my family dying</td>
<td>64.8%</td>
<td>Not being able to breathe</td>
</tr>
<tr>
<td>Myself dying</td>
<td>64.0%</td>
<td>Being threatened with a gun</td>
</tr>
<tr>
<td>Not being able to breathe</td>
<td>63.4%</td>
<td>Myself dying</td>
</tr>
<tr>
<td>Being threatened with a gun</td>
<td>61.0%</td>
<td>Being kidnapped</td>
</tr>
<tr>
<td>Taking dangerous drugs</td>
<td>60.0%</td>
<td>Being hit by a car or truck</td>
</tr>
<tr>
<td>Being kidnapped</td>
<td>58.7%</td>
<td>Someone in my family dying</td>
</tr>
<tr>
<td>Nuclear war</td>
<td>53.5%</td>
<td>Murderers</td>
</tr>
<tr>
<td>Being hit by a car or truck</td>
<td>52.4%</td>
<td>Nuclear war</td>
</tr>
<tr>
<td>Sharks</td>
<td>51.5%</td>
<td>Falling from high places</td>
</tr>
</tbody>
</table>

Source. Burnham & Gullone, 1997

top 10 most common fears of adolescents (see Table 3.2). The results overwhelmingly indicate that adolescents from Australia and the United States are afraid of items that load onto a death and danger factor (Burnham, 1995; Burnham & Gullone, 1997; Gullone & King, 1993). The fear of death and danger has remained consistent over a two week period (Muris et al., 2003), a two year period (Spence & McCathie, 1993), and a three year period (Gullone & King, 1997). These results are telling, but have tremendous methodological problems.

The FSSC, FSSC-R, and FSSC-II, for example, all include items that fall into the “death and danger” category and these frequently appear in the top 10 lists of children and adolescent fears (Ollendick, 1993; Scherer & Nakamura, 1968). However, Jong and Halberstadt (2016) argue that the validity of the five categories of fear survey schedules, although they have been replicated in many Western countries, is questionable. Ollendick’s fear of death and danger category, for example, includes having to stay after school, having...
to go to school, and being sent to the principal. Similarly, another version of the schedule included kidnapping and murderers in its death and dying factor, but it also included parents arguing and being sent to the principal (Burnham & Gullone, 1997).

Additionally, items from the death and danger category are more numerous than the fears in other categories. Items on fear schedules involve many specific instances of death and danger (e.g., Someone in my family dying, not being able to breathe, someone in my family having an accident, AIDS, Being threatened with a gun, myself dying, murderers, falling from high place, etc.), which is why other common fears (e.g., failure) often go unreported in top 10 lists (Lane & Gullone, 1999). This also makes the death and danger category too inclusive. Burnham and Gullone (1997) reported that a fear of tigers, for example, loaded onto the death and danger factor—rather than the animal fears factor. It also includes items such as having to stay after school and being sent to the principal’s office (see Jong & Halberstadt, 2016, p. 89).

In addition, because items such as AIDS, nuclear war, murder, and sharks all result in death, it is difficult to discern if the adolescents are expressing a concern with the *cause* of death—which Epicurus would argue is rational; see Chapter 1—or a concern with death itself. There is no guarantee that a shark attack would be lethal, but it would be painful. Indeed, one could reasonably fear a non-lethal shark attack more than a lethal one.

Perhaps most problematic is that the FSSCs may artificially over- or underestimate death anxiety or other fears. When presenting simultaneous options for a participant in psychological experiments, ratings on one item can be influenced by the others present via processes of assimilation or contrast effects (Schwarz & Bless, 2007). For example, if you are rating the ferocity of an animal, your perception of an ambiguous animal or animal you have never heard of is more threatening if the animal that preceded it was only moderately threatening (Herr, Sherman, & Fazio, 1983)—an assimilation effect. Contrastingly, if you are
presented with an animal you have never heard of and an extremely threatening animal, the next animal is seen as more docile—a contrast effect. It is possible that the FSSCs create contrast effects; when compared to failing an exam, murder is both infinitely more frightening and statistically less likely to happen.

Further, FSSCs may prime the fears they are attempting to measure. Nuclear war, AIDS, shark attacks, and murder are not very likely to happen to an adolescent and it is unlikely for them to think about these outcomes on a day-to-day basis (Muris et al., 2002). By priming death and danger, the FSSC is unable to distinguish whether respondents fear death spontaneously, or if they fear death when someone asks them about it. This distinction is important, because it has implications for the supposedly intrinsic nature of death anxiety in humans.

An alternative and arguably more valid approach is to ask open, rather than closed, questions: ask participants what they are afraid of. This methodology is far less common than administering a FSS (Lane & Gullone, 1999). Lane and Gullone asked 439 adolescents between 11 and 18 years old (237 girls, 201 boys) to list their three biggest fears. Their results contrast with the results using the FSSC-II. Fears of death and danger, though present on some lists, were replaced by fears of failure, the unknown, animals, and psychic stress (i.e., losing a friend).

When the data were split by gender and age, death and danger-related fears were only frequently listed in the top 10 lists for boys and participants between 11 and 14 years old (Lane & Gullone, 1999). Spiders were reported most frequently for all the subsamples (girls 24%, boys 17%, 11 to 14 year olds 20%, and 15 to 18 year olds 21%). This is not surprising given that animal-related fears tend to dominate adolescent fears (Angelino & Shedd, 1953; Nalven, 1970; Pratt, 1945), but it is unclear whether these fears are mediated by concerns about death (e.g., I am afraid because spiders are poisonous) or by other factors (e.g., I am
afraid because spiders are gross). In the Lane and Gullone (1999) study, however, death is the second most frequent fear for all samples (girls 21%, boys 16%, 11 to 14 year olds 20%, and 15 to 18 year olds 18%).

Taken together, this is the first sign that methodology matters. When the question is closed, death and danger fears are prevalent (Burnham, 1995; Burnham & Gullone, 1997; Gullone & King, 1993)—though death and danger stimuli dominate the total number of items on the FSSC-II (Lane & Gullone, 1999). However, when the question is open, death is the second most commonly cited fear, but the majority of fears relate to daily life concerns such as failure (i.e., unfavourable social evaluation or rejection).

Are adolescents afraid of death, then? Perhaps, though the results seem to be mixed. Death was highly ranked, but the proportion of participants spontaneously listing death as a fear never exceeds 21% (Lane & Gullone, 1999). At the very least, adolescence is a time when preliminary evidence of the fear of death begins to surface.

**Death Anxiety in Adults**

For adolescent participants, researchers favour asking about fears rather than say, administering a questionnaire. Assessing fear of death in adulthood, by contrast, tends to favour the questionnaire, although this may be because college students are disproportionately sampled in the social sciences (Henrich, Heine, & Norenzayan, 2010). The college years are also the time in which people report the highest levels of death anxiety on the death anxiety scales (Russac et al., 2007). Twenty published samples using the Templer (1970) DAS report mean scores at or below the midpoint, whereas only one sample ‘High death anxiety psychiatric patients’ was above the midpoint ($M = 11.62$ out of 15; see Templer
& Ruff, 1971 for these example means). The psychiatric patients had verbalised fears of, or a preoccupation with, death.

Asking adults to list their fears is less common (Kirkpatrick, 1984). Kirkpatrick recognised that most fear surveys focus on younger populations (i.e., children, and college students) and clinical populations instead of adult, non-psychiatric samples. He also noted that most authors use different fear items, methodologies, and samples, which affect the results they report. The earliest study, for example, used an open question format found that fewer than 5% of the participants reported a fear of death (Hall, 1897) and the same study concluded that the fear of death declines from adolescence to adulthood.

Geer’s (1965) survey, by contrast, used the FSS-II (a closed question format). Geer piloted the FSS-II on college students despite the intent that it would be used in clinical settings. He then administered this list to a new sample of 270 college students (109 female, 161 male) on a 7-point scale (none, very little, a little, some, much, very much, very much, and terror). The responses were recoded as 1 through 7, separated by gender and averaged. Only two items averaged more than 4 (which indicated some fear on Geer's scale). These were the death of a loved one (for women, not men) and illness or injury to a loved one (for women, not men). Items between 3 and 4 (a little fear) included failing a test, snakes (for women, not men), and death of a loved one. The items involving untimely or early death, life after death, dead bodies, and death were all low.

In one of the most comprehensive and age-diverse studies of its kind, Kirkpatrick (1984) administered a questionnaire to a group of 545 residents of northwest Indiana and northeast Illinois between ages 15 and 89 (345 women, 200 men). His survey included 133 fear items which were derived primarily from the FSSC-II and FSSC-III (Kirkpatrick, 1984). Using the same 7-point scale as Geer (1965), Kirkpatrick found that most of the fear items were rated low (only 52 items for female participants and 21 items for male participants had a
mean score of 3—*a little* fear—or above). Because of the generally low fear responses, Kirkpatrick chose to focus on items that included a 7 rating (terror) in at least 10% of the sample. The frequency of each fear for each age group can be seen in Tables 3.3 and 3.4.

Kirkpatrick’s findings reflect three general patterns: 1) for death-related concepts (untimely or early death, death, and dead people) both men and women decreased in the frequency with which they selected 7 (terror) on the surveys as they aged; 2) the fear of death of a loved one remained relatively constant across the lifespan; and 3) women tended to report higher levels of fear, including the fear of death, than men—a finding which has been called the *gender effect* and has been replicated by many other researchers (e.g., see Kang & Kang, 2013a, 2013b; Russac et al., 2007), but not all (e.g., Azaiza, Ron, Shoham, & Tinsky-Roimi, 2011; Thorson & Powell, 1993).

Apart from the gender effect (mentioned previously), the death anxiety literature also reports an age effect: the consistent finding that death anxiety decreases with age (see Kastenbaum, 2000; Neimeyer, 1988; and Neimeyer, Wittkowski, & Moser, 2004, for reviews). This finding is not exclusive to questionnaires; Kirkpatrick (1984) reported a similar linear decline in death anxiety with age using a closed fear survey.

The decline of death anxiety with age poses a particular puzzle if one considers aging as a gradual approach to death. If, as TMT suggests, life is a continuous struggle to keep reminders of death at bay, that struggle ought to become more difficult as we get older, and reminders of death become more frequent.

Yet, interestingly, death anxiety in the elderly is the lowest of all age groups (Kirkpatrick, 1984; Russac et al., 2007). This pattern held in two separate Indian samples. In one study of 120 elderly participants (60 female, 60 male) above the age of 65, 11.7% of male respondents and 41.7% of female respondents reported high levels of death anxiety.
Table 3.3. Females’ patterns of percentage of terror ratings across age

<table>
<thead>
<tr>
<th>Source</th>
<th></th>
<th>Age category (years)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fear</td>
<td></td>
<td>15-17</td>
<td>18-24</td>
<td>25-34</td>
<td>35-44</td>
<td>45-54</td>
<td>Over 54</td>
</tr>
<tr>
<td>(n = 86)</td>
<td>(n = 102)</td>
<td>(n = 52)</td>
<td>(n = 34)</td>
<td>(n = 37)</td>
<td>(n = 32)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decreasing terror</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>17</td>
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Source. Kirkpatrick, 1984
Table 3.4. Males’ patterns of percentage of terror ratings across age

<table>
<thead>
<tr>
<th>Source</th>
<th>15-17 (n = 30)</th>
<th>18-24 (n = 57)</th>
<th>25-34 (n = 32)</th>
<th>35-44 (n = 25)</th>
<th>45-54 (n = 27)</th>
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<td>Deep water</td>
<td>3</td>
<td>12</td>
<td>6</td>
<td>8</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Looking down from high</td>
<td></td>
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<td>buildings</td>
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<td>Illness or injury to</td>
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<tr>
<td>loved ones</td>
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<td>10</td>
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<td>4</td>
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<td>Weapons</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Source. Kirkpatrick, 1984
(Kang & Kang, 2013a). In another study with a larger sample, 360 elderly Indian participants (180 female, 180 male) above the age of 65, 6.7% of male respondents and 22.2% of female respondents reported high levels of death anxiety (Kang & Kang, 2013b). This study also found a statistically significant negative correlation between death anxiety and life satisfaction ($r = -.18, p < .05$).

These patterns of low death anxiety held, surprisingly, in a sample of 49 bereaved and 49 nonbereaved elderly participants ($M_{age} = 74.72, SD = 6.91; 58$ women, $34$ men, 6 not specified; Azaiza et al., 2011). Based on the work of Carmel and Mutran (1997), Azaiza and colleagues created a death anxiety scale that measured death and dying anxiety separately. They found that although death anxiety was low, bereaved parents had a significantly higher fear of dying anxiety ($M = 4.34, SD = .66$) than nonbereaved parents ($M = 3.99, SD = .97; F(1, 89) = 7.89, p < .01, \eta^2 = .08$). And consistent with previous findings on gender, bereaved mothers were also more afraid of dying than bereaved fathers. There were no gender differences for death anxiety.

A very few studies have also used implicit measures of death anxiety, such as a modified version of a Stroop task (refer to Stroop 1935/1992). In the traditional Stroop task, participants are presented with colour words in congruent colours (the word blue written in blue font) or incongruent colours (the word blue written in red font) and are asked to name the colour of the font. Unsurprisingly, it takes longer to say, “Yellow” when the word is written “b-l-u-e” because the semantic meaning of the word, which is automatically processed, interferes with the identification of the colour it is written in (MacLeod, 1991).

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3 While Kang and Kang (2013a) reported that almost one half of their female sample (41.7%) reported high levels of death anxiety, their follow up study indicated that less than a quarter (22.2%) of their sample reported high levels of death anxiety. This could be related to sample size; their second study tripled $n$ from 60 to 180. Regardless, this finding is not indicative of other studies using elderly populations.

4 Note. Elderly participants and others proximally close to death (such as those with a terminal illness) are not studied as often as healthier populations. Subsequently, this means that when a new methodology is used, it stands out. While I will do my best to describe each new methodology in this chapter as appropriate, this will invariably affect the flow of the thesis.
De Raedt and Van der Speeten (2008) modified the original Stroop test by using death related (e.g., graveyard, dying, cremation) or neutral words (book, wood, vegetable) in either blue, black, green, red, or yellow font. Their participants were instructed to say the colour of the word as fast and as accurately as possible. Participants tend to be slower in naming the colour of death-related words because, in theory, involuntary thoughts and feelings about death impede controlled cognitive responses (e.g., “I am not afraid of death”) and interfere with the colour naming process (De Raedt & Van der Speeten, 2008; Feifel, Freilich, & Hermann, 1973). They found that response times for death related words were no different from response times for neutral words in an elderly sample (De Raedt & Van der Speeten, 2008). This is unsurprising, De Raedt argues, because older adults tend to avoid threats less than middle-aged adults (De Raedt, Koster, & Ryckewaert, 2013), although studies have not investigated these effects in children.

**When death is close.** Old age is not the only “symptom” of impending death; one can be close to death and not old, as is the case with individuals with terminal illness, or who are on death row. Like the elderly, both these populations are proximally close to death and also appear to fear death less than other, matched controls.

Two studies using HIV/AIDS populations found relatively low to moderate death anxiety scores on the DAS (Alvarado, Templer, Bresler, & Thomas-Dobson, 1993; Hintze, Templer, Cappelletty, & Frederick, 1993). Miller, Lee and Henderson (2012) conducted a recent meta-analysis and concluded that individuals diagnosed with HIV/AIDS reported higher levels of death anxiety than those who were asymptomatic or HIV negative, though this effect quickly decreased after the diagnosis. Furthermore, death anxiety and global measures of anxiety are correlated (Hintze et al., 1993) making it difficult to determine the ultimate source of anxiety in these populations.
Cancer patients, too, are more generally anxious and depressed, but not more death anxious (Cella & Tross, 1987). In another study, Feifel and Branscomb (1973) found that among 92 seriously ill and terminally ill patients (38% cancer, 36% heart disease, 26% other), over 75% explicitly denied the fear of death. Across Feifel and Branscomb’s entire sample of 371 participants ($M_{age} = 39.87$, $SD = 8.20$; 169 female, 202 male) the most common reason for denying their fear of death was its inevitability. Jong and Halberstadt (2016) point out the irony of this finding, given that TMT cites the inevitability of death as the primary reason to fear it.

Inmates on death row, like those with a terminal diagnosis, are also near death. In a particularly creative study, Hirschmüller and Egloff (2016) analysed the transcripts of death row inmates’ final words before their execution using the text analysis software programme Linguistic Inquiry Word Count (LIWC; Pennebaker, Chung, Ireland, Gonzales, & Booth, 2007). Using an dictionary of almost 4,500 words, LIWC searches texts for words that fit into categories, such as positive emotion words and negative emotion words, and reports the proportion of those words relative to the total number of words in a text. The inmates’ last words were more positive than negative, and more positive than controls from LIWC’s database (Hirschmüller & Egloff, 2016; Pennebaker et al., 2007). Inmates were showing positivity during a time that should be, according to thanatocentric theories, terrifying.

**Conclusion**

In sum, a narrative of death anxiety across the lifespan might go something like this: children begin to learn about death at an early age (Renaud et al., 2015). The more they learn, the less they fear death—especially when parents choose to speak honestly and without euphemism (Cotton & Range, 1990; Slaughter & Griffiths, 2007).
At some point during adolescence we learn to fear death and danger (Burnham & Gullone, 1997; Gullone & King, 1993; Ollendick, 1983), though it is unclear if the danger-related fears are because of a fear of death and non-existence or a fear of dying and pain. During the college years, people report the highest levels of death anxiety (Russac et al., 2007) which may fuel researchers’ assumption that everyone is afraid of death because college students are, by far, the most studied sample (Burke et al., 2010; Henrich et al., 2010).

After early adulthood, adults and the elderly tend to report decreasing levels of death anxiety and the fear of death (Kirkpatrick, 1984; Russac et al., 2007) even after acute death-related events like the death of a child (Azaiza et al., 2011), an HIV/AIDS or cancer diagnosis (Alvarado et al., 1993; Cella & Tross, 1987; Hintze et al., 1993), or a literal death sentence (Hirschmüller and Egloff, 2016).

All things considered, people do not seem to be terribly afraid of death. The data are also consistent with the opposite conclusion, that people are terribly afraid of death, so afraid that their defence mechanisms either prevent them from acknowledging their fear, or have successfully managed it. A cancer patient, perhaps, may report low levels of death anxiety because she has faith that the treatments are working, or the death row inmate is positive in the face of imminent death because he has a special relationship with God. However, if any denial of death anxiety counts as a successful defence of it, TMT and similar theories are rendered non-falsifiable. Where is the terror?

Chapter 4 presents my own original empirical search for death anxiety.
Chapter 4
Study 1: The Direct Search for Terror

“I’m not afraid to die.”

- John Wooden

Chapter 3’s review tells a somewhat mixed story of people’s conscious fear of death. The evidence suggests that fear of death never emerges as a conscious obsession at any age, although individuals do appear to differ in their concern at different ages. This finding is, on its face, at odds with Terror Management Theory (TMT) which assumes that people are ubiquitously afraid of death, although TMT’s Neo-Freudian assumption that they defend against this fear makes the theory difficult to falsify.

Another conclusion from this literature is that how one asks about death anxiety may produce different conclusions. Indeed, in adolescence, death and danger-related fears are common on fear schedules like the FSSC-R and FSSC-II (Ollendick, 1983; Ryall & Dietiker, 1979; Scherer & Nakamura, 1968), but not on fear lists (Lane & Gullone, 1999). Adolescents acknowledge fear of death when prompted (and perhaps because they are prompted), but with no prompting, they are more prone to list more prosaic concerns, like social fears and failure.

Surprisingly, almost no open-ended fear surveys have been administered on adults for basic research purposes since the early 1900s (Hall, 1897, 1915). The adult fear surveys that do exist are primarily for clinical purposes and overwhelmingly use closed response formats. The goal of Study 1 is to fill this gap. Thus, a large number of Americans completed a survey that asked them, in the most unbiased and least leading way possible, to list their five biggest fears or anxieties, and the results were coded both in terms of emergent themes and also in terms of a priori categories of death (what TMT suggests people should fear the most) and failure (what some previous research suggests they do fear the most). I made no prediction as
to whether death would emerge as a significant concern, or more or less prominently than failure.

In addition to listing their fears, participants answered a standard assessment of death anxiety, the Death Anxiety Questionnaire (DAQ; Conte et al., 1982), allowing the two types of data to be statistically compared for the first time. I also, incidentally, expected the DAQ data to replicate three general findings from the death anxiety literature discussed in Chapter 3: the numerically low average death anxiety score, a decrease in death anxiety as a function of age (the age effect), and higher death anxiety scores for women than men (the gender effect).

Method

Participants and procedure. Eight hundred and thirteen participants ($M_{age} = 35.93, SD = 11.33$; 399 women, 408 men, 6 other) were recruited using Amazon’s Mechanical Turk (M-Turk), an online community of “workers” who volunteer to complete simple tasks in exchange or token payment (in this case, NZ $0.50).

In this and all studies reported in this thesis, all participants provided written informed consent and were debriefed following the study. All participants in this study completed it online, via a questionnaire designed in Qualtrics (2015). After providing demographics (sex, age, city and country of residence, ethnicity, relationship status, and employment status) all participants were given the following instructions: “The following question is about what you

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5 This survey was part of a larger project in collaboration with Dr Jonathan Jong at the University of Oxford. It included other questionnaires unrelated to the focus of this thesis. In order, these included a long list of exploratory variables: an existential death anxiety questionnaire, a question about subjective age, questions relating to death experience (e.g., “Have you ever slaughtered an animal?”), questions related to mortuary preferences (e.g., “Would you like to be cremated?”), questions related to religious and spiritual orientation (e.g., “Do you consider yourself a religious person?”), the Supernatural Belief Scale (SBS; Jong, Bluemke, & Halberstadt, 2013), questions about frequency of religious behaviour (e.g., “How often do you attend religious services?”), and a description of a religious experience (if the participant has had one). All of these questions came after the list five fears prompt and the DAQ (Conte et al., 1982), so they did not affect our measures.
are most afraid of or most worried about. In the space provided, please list your five biggest fears or anxieties” [emphasis added]. The prompt was followed by five blank text boxes for the participant to type in their answers.

Death anxiety was measured with the DAQ (Conte et al., 1982; see Appendix A) on a modified 9-point scale from 0 (not at all) to 8 (very much). This measure of death anxiety is highly correlated ($r = .51$) with the most common measure, Templer’s (1970) DAS. It was selected and modified to allow participants a wider range of responses—as opposed to the dichotomous ‘true’ or ‘false’ responses in the DAS. The modified scale is reliable ($\alpha = .92$). The DAQ has five factors: fear of the unknown aspects of death (e.g., “Does the thought worry you that with death you may be gone forever?”), fear of suffering (e.g., “Do you worry that dying may be very painful?”), fear of loneliness at the time of death (e.g., “Do you worry that you may be alone when you are dying?”), fear of the interpersonal aspects of death (e.g., “Does it worry you that your instructions or will about your belongings may not be carried out after you die?”), and the fear of personal extinction (e.g., “Does the thought bother you that you might lose control of your mind before death?”). To get a generalised fear of death measure, the factors were not analysed separately (most studies report the mean score and analyse the factors separately only if they have specific hypotheses about them; e.g., see Cella & Tross, 1987; or Knight & Elfenbein, 1993).

**Results**

One participant, who listed no fears, was not included in the following analyses. Of the remaining participants, all but two listed all five fears (the others listed 1 and 4 fears respectively). Overall, participants listed a total of 4060 fears. DAQ scores were calculated as the average of all 15 items (no reverse scoring is required). Mean death anxiety was 5.14 (SD
Death anxiety was non-normally distributed, with slight negative skewness of \(-.25\) (SE = .09) and kurtosis of \(-.48\) (SE = .17; Shapiro-Wilk test of normality, \(p < .001\)).

**Fear coding.** A primary coder blind to hypotheses was asked to parse raw fear data into common themes, with particular attention to mentions of death. She detected three categories of death-related responses: one’s own death, other people’s death, and “death” (i.e., the word alone, with no disambiguating context). In addition, she extracted the following categories, in decreasing frequency: failure, illness and injury, phobias, social fears, animals, crime and violence, transportation, and natural disasters (a “miscellaneous” category was also used for fears that did not fit any of these categories but were not numerous enough to make a category of their own). A second blind research assistant coded all fears a second time using the extracted categories, and achieved good agreement (Cohen’s Kappa = .78). Common disagreements involved the classification of financial problems, which include single words such as money, destitution, and economy. The first coder, for example, filed these under ‘miscellaneous’; the second coder filed them under ‘failure’. Another disagreement involved the death of the family dog. The first coder filed this under ‘another person’s death’—presumably because the dog is a loved member of the family; the second coder filed this under ‘miscellaneous’. The primary coder’s initial codes were used in cases of disagreement. The frequencies of the 12 categories (including “miscellaneous”), along with example responses, appear in Table 4.1 (for the first fear listed) and Table 4.2 (for all fears listed). A Spearman’s rank order correlation between the frequencies of first fears and total fears was \(.88\) \((p < .001)\), suggesting a high degree of agreement in fears’ prominence in the two lists; subsequent analyses used the latter measure.

As seen in the Tables, fear frequencies clustered into roughly three groups. Failure, illness and injury, phobias, and social fears comprised the high frequency group, being mentioned by approximately 50% to 60% of the sample. A second cluster of fears, including
the three death categories, as well as animals and the miscellaneous category, were mentioned by approximately 20% to 30% of the sample. Finally, the three most specific fear categories, transportation, crime and violence, and natural disasters, were each mentioned by fewer than 14% of the sample.

In order to focus on the theoretically and empirically most important categories—death and failure—two new coders rated each listed fear in terms of their relationship to three categories: own death, another’s death, or failure? Each fear received a rating of either 0 (definitely not related), 1 (possibly related), and 2 (definitely related). A second coder rated half of the 4060 fears. Coders agreed perfectly in 81%, 92% and 71% for own death, other death, and failure, respectively. Once agreement was established, the first coder’s ratings were averaged across all five fears to create an index ranging from 0 to 2 for each participant. The descriptive statistics of and correlations between one’s own death, another person’s death, and failure can be seen in Tables 4.3 and 4.4.

Secondary hypotheses regarding death anxiety. As predicted, average death anxiety for this sample was moderately low: 4.15 (SD = 1.83), just below the midpoint, a common finding in the death anxiety literature. The scale was reliable (α = .92). DAQ scores were negatively, though very weakly, correlated with age, r = -.09 (see Figure 4.1), p = .011. An independent t-test revealed that women were more death anxious (M = 4.34, SD = 1.85) than men (M = 3.97, SD = 1.81), t(805) = 2.87, p = .004.

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6 The original publication of the DAQ included the same 15 items with a 0 (not at all), 1 (somewhat), and 2 (very much) response format (Conte et al., 1982). The reported means for death anxiety were averaged from the total DAQ score between 0 and 30. All means reported were between 7.36 and 9.58, below the midpoint. Similarly, on another 3-point scale, Kang and Kang (2013b) report that twice as many participants averaged the mean response (i.e., ‘average’ death anxiety) than the other two points combined (i.e., ‘low’ and ‘high’ death anxiety.)
Table 4.1. The first self-reported fears from an American sample (n = 813)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Fear category</th>
<th>Example item(s)</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Failure</td>
<td>Failure; losing my job</td>
<td>161 (19.8)</td>
</tr>
<tr>
<td>2</td>
<td>Phobias</td>
<td>Darkness; heights</td>
<td>111 (13.7)</td>
</tr>
<tr>
<td>3</td>
<td>Death</td>
<td>Death</td>
<td>104 (12.8)</td>
</tr>
<tr>
<td>4</td>
<td>Social fears</td>
<td>Rejection; loneliness</td>
<td>96 (11.8)</td>
</tr>
<tr>
<td>5</td>
<td>Illness and injury</td>
<td>Severe injury; getting cancer</td>
<td>84 (10.3)</td>
</tr>
<tr>
<td>6</td>
<td>Animals</td>
<td>Spiders; snakes; bears</td>
<td>72 (8.9)</td>
</tr>
<tr>
<td>7</td>
<td>One’s own death</td>
<td>Dying; fatal accident</td>
<td>53 (6.5)</td>
</tr>
<tr>
<td>7</td>
<td>Another person’s death</td>
<td>Loss of a child; death of a spouse</td>
<td>53 (6.5)</td>
</tr>
<tr>
<td>9</td>
<td>Miscellaneous</td>
<td>Being haunted; evil in society</td>
<td>42 (5.2)</td>
</tr>
<tr>
<td>10</td>
<td>Natural disasters</td>
<td>Earthquakes; tornadoes</td>
<td>14 (1.7)</td>
</tr>
<tr>
<td>11</td>
<td>Crime and violence</td>
<td>Crime; being robbed</td>
<td>11 (1.4)</td>
</tr>
<tr>
<td>11</td>
<td>Transportation</td>
<td>Car accident; plane crash</td>
<td>11 (1.4)</td>
</tr>
</tbody>
</table>

Table 4.3. Descriptive statistics for death anxiety and the death and failure categories

<table>
<thead>
<tr>
<th>Category</th>
<th>M</th>
<th>SD</th>
<th>Minimum</th>
<th>Maximum</th>
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<tbody>
<tr>
<td>One’s own death</td>
<td>.33</td>
<td>.25</td>
<td>.00</td>
<td>1.40</td>
</tr>
<tr>
<td>Another person’s death</td>
<td>.28</td>
<td>.30</td>
<td>.00</td>
<td>1.60</td>
</tr>
<tr>
<td>Failure</td>
<td>.46</td>
<td>.37</td>
<td>.00</td>
<td>2.00</td>
</tr>
<tr>
<td>Death anxiety</td>
<td>4.14</td>
<td>1.83</td>
<td>.00</td>
<td>8.00</td>
</tr>
</tbody>
</table>
Table 4.2. The self-reported fears from an American sample (n = 813)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Fear category</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Failure</td>
<td>499 (61.4)</td>
</tr>
<tr>
<td>2</td>
<td>Illness and injury</td>
<td>444 (54.6)</td>
</tr>
<tr>
<td>3</td>
<td>Phobias</td>
<td>407 (50.1)</td>
</tr>
<tr>
<td>4</td>
<td>Social fears</td>
<td>388 (47.7)</td>
</tr>
<tr>
<td>5</td>
<td>Animals</td>
<td>224 (27.6)</td>
</tr>
<tr>
<td>6</td>
<td>Death</td>
<td>218 (26.8)</td>
</tr>
<tr>
<td>7</td>
<td>Another person’s death</td>
<td>213 (26.2)</td>
</tr>
<tr>
<td>8</td>
<td>Miscellaneous</td>
<td>195 (24.0)</td>
</tr>
<tr>
<td>9</td>
<td>One’s own death</td>
<td>174 (21.4)</td>
</tr>
<tr>
<td>10</td>
<td>Transportation</td>
<td>109 (13.4)</td>
</tr>
<tr>
<td>11</td>
<td>Crime and violence</td>
<td>97 (11.9)</td>
</tr>
<tr>
<td>12</td>
<td>Natural disasters</td>
<td>62 (7.6)</td>
</tr>
</tbody>
</table>

Table 4.4. Correlations between death anxiety and the death and failure categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Own</th>
<th>Another</th>
<th>Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>One’s own death</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Another person’s death</td>
<td>.16 **</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failure</td>
<td>-.35 **</td>
<td>-.09 *</td>
<td></td>
</tr>
<tr>
<td>Death anxiety</td>
<td>.20 **</td>
<td>.14 **</td>
<td>-.02</td>
</tr>
</tbody>
</table>

* p < .05. ** p < .01.
Independent t-tests were also used to compare DAQ scores between participants who did, versus did not include each category of fear in their lists. These analyses revealed that people who listed their own death among their five fears were more death anxious than people who did not. The same pattern held for those who listed “death” and, oddly enough, miscellaneous. No other category of fear reached statistical significance (see Table 4.5).
Table 4.5. T-tests comparing death anxiety scores between participants who listed and did not list fear ‘X’

<table>
<thead>
<tr>
<th>Fear</th>
<th>Mean (SD) If listed</th>
<th>Mean (SD) If unlisted</th>
<th>t</th>
<th>(df)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure</td>
<td>4.17 (1.76)</td>
<td>4.13 (1.94)</td>
<td>.26</td>
<td>(808)</td>
<td>.795</td>
</tr>
<tr>
<td>Illness and injury †</td>
<td>4.15 (1.77)</td>
<td>4.16 (1.91)</td>
<td>-.10</td>
<td>(752.55)</td>
<td>.918</td>
</tr>
<tr>
<td>Phobias †</td>
<td>4.14 (1.93)</td>
<td>4.17 (1.73)</td>
<td>-.21</td>
<td>(799.80)</td>
<td>.832</td>
</tr>
<tr>
<td>Social fears</td>
<td>4.15 (1.84)</td>
<td>4.16 (1.83)</td>
<td>-.09</td>
<td>(808)</td>
<td>.928</td>
</tr>
<tr>
<td>Animals</td>
<td>4.13 (1.92)</td>
<td>4.16 (1.80)</td>
<td>-.24</td>
<td>(808)</td>
<td>.808</td>
</tr>
<tr>
<td>Death ‡</td>
<td>4.91 (1.59)</td>
<td>3.87 (1.84)</td>
<td>7.84</td>
<td>(445.05)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Another person’s death</td>
<td>4.35 (1.69)</td>
<td>4.08 (1.88)</td>
<td>1.87</td>
<td>(808)</td>
<td>.062</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>3.76 (1.94)</td>
<td>4.28 (1.78)</td>
<td>-3.46</td>
<td>(808)</td>
<td>.001</td>
</tr>
<tr>
<td>One’s own death ‡</td>
<td>4.63 (1.68)</td>
<td>4.02 (1.85)</td>
<td>4.11</td>
<td>(295.92)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Transportation</td>
<td>4.46 (1.96)</td>
<td>4.10 (1.81)</td>
<td>1.86</td>
<td>(808)</td>
<td>.063</td>
</tr>
<tr>
<td>Crime and violence</td>
<td>3.88 (1.90)</td>
<td>4.19 (1.82)</td>
<td>-1.54</td>
<td>(808)</td>
<td>.124</td>
</tr>
<tr>
<td>Natural disasters</td>
<td>4.06 (1.91)</td>
<td>4.16 (1.83)</td>
<td>-.40</td>
<td>(808)</td>
<td>.688</td>
</tr>
</tbody>
</table>

†, Equal variances not assumed because Levene’s test for equality of variance < .05.

Discussion

The purpose of this study was, firstly, to help address the methodological gap between adolescent and adult participants. Death and danger-related fears are common on closed, but not open fear schedules; and open fear schedules are sparse especially on adult populations (see Hall, 1897 for the last major survey). Secondly, this study was designed to
replicate previous findings from death anxiety literature: death anxiety was predicted to be low, to decrease with age, and to be stronger among women than among men.

What do people say they are afraid of? The fear of one’s own death was cited by only 6.5% of the sample, placing it in a tie for the seventh most common fear category of the twelve we extracted from the data. Consistent with Lane and Gullone’s (1999) open-ended fear survey with adolescents, failure and social fears were more prevalent than participants’ own death; failure was the most common fear, listed by 61.4% of the participants. Social fears were the fourth most common fear, listed by 47.7% of the participants. It would appear that in early- to late-adulthood fears of death, although present, are secondary to more pragmatic fears of failure (such as financial trouble or losing one’s job), as was the case with adolescents were in Lane and Gullone’s open survey.

The survey was designed to offer as few constraints as possible on participants’ responses, and an inevitable side effect was that many of the response were ambiguous. For example, it was possible that the word ‘death’ was referring to the fear of one’s own death, another person’s death, or something else entirely; the participants did not specify, nor did the methodology explicitly require them to do so. However, even using a much more conservative coding scheme (assuming every instance of “death” refers to own death), the own death still represented only the fifth most common fear, listed by 46.4% of the participants.

Although, as always, these data could be interpreted in terms of the success of participants’ unconscious defences, the most straightforward and parsimonious conclusion is that mortality concerns in this sample are low. Thus, the answer to the central question of this thesis—are we afraid of death?—would be “no” were it not for some important limitations of Study 1. Whereas closed fear formats such as the FSS and FSSC-R may overemphasise the important of mortality on human behaviour with clean, easy to interpret results that prime
participants with death, open formats may underrepresent the importance of mortality, for several reasons. First, because people generally do not discuss death (see Chapter 1) social norms may have prohibited some participants from listing death. Alternatively, perhaps conversational norms did so: participants may have neglected to mention death because it was too obvious a response. Of course, both accounts are speculative: was death too obvious of a fear, or not obvious enough? All we can know for sure is that participants were able to, and did, list their own death as a fear, which helps temper both propositions.

The results are also only as good as our coding system, which like all such schemes has limitations. Other listed fears may have been related to the fear of death, but not coded as such (e.g., the ‘transportation’ category included car crashes, which arguably represents a mortality concern). Furthermore, these implicit mentions of death anxiety may have suppressed explicit mentions; for example, a participant might not list both a snake bite and death if their reason for the former is the latter. To address such ambiguities, all the fears were re-coded on the three most relevant dimensions: one’s own death, another person’s death, and failure. Again, own death, on average, was less of a concern than failure.

All methods of coding, though, are imperfect. With the first method, fears of “terminal illness” and “cancer” were coded into separate categories entirely, purportedly distinct from “death”; with the second method these fears may have been wrongly assumed to be related to death. Without an explicit question about why people fear the things they do, it is difficult to read more into the data than we have.

Taking the data mostly at face value, then, why was failure reported at a higher rate than own death? One reason may be the immediacy of failure. Personal failure is often in the present and directly affects the outcome of one’s life. Financial trouble or employment concerns are things that many struggle with day-to-day, whereas death is something that happens once, and once dead, the person no longer lives with the stressor (reminiscent of
Epicurus’ argument). Losing a job and not paying bills, by comparison, is a chronic stressor and one must live with the consequences. For example, both depressed individuals and individuals with low self-esteem are prone to internalise feelings of failure (Brown & Dutton, 1995; Kuiper, 1978); and these feelings may be linked to self-destructive behaviours like alcoholism (see Hull & Young, 1983).

The second goal of the study was to replicate several major phenomena in the literature on death anxiety. As in previous studies (Kang & Kang, 2013a, 2013b; Russac et al., 2007), the American sample was only moderately death anxious—centred almost perfectly between not at all and very much. In addition to low levels of death anxiety, the data supported both the gender and age effects: women were more death anxious than men and death anxiety decreased with age.

The relationship between the listed fears and the DAQ scores also provided some insights. One is that failure and death might be related, perhaps because personal failure has an existential component (e.g., because failure threatens the achievement of a meaningful life; see Chapters 6 and 7). Consider Arthur Miller’s (1949/2000) play, *Death of a Salesman*. William “Willy” Loman, the 63 year old protagonist grapples with personal failure. In a financial struggle, having recently lost the only career he has known, and watching his son Biff fail to achieve greatness, his internal struggle ends with suicide—failure and death. In prose and the previously mentioned studies on depression and alcoholism, it is not unlikely that thoughts of mortality and failure are related.

Tables 4.4 and 4.5 illustrate the discriminant validity of the fear categories. Only one’s own death and another person’s death are positively correlated with death anxiety. And although failure is negatively correlated with both of these dimensions, it is not correlated with death anxiety itself. Because of this, any relationship will likely be indirect (i.e., mediated or moderated by a third variable).
Further, only participants who listed death and one’s own death showed higher levels of death anxiety than participants who did not list death or their own death, respectively. No other categories—except for miscellaneous—predicted death anxiety, including failure. This finding is important because only death of the self, rather than death in general predicts death anxiety (i.e., another person’s death was not a successful predictor).

These findings require additional support. By themselves, they are not inherently telling and suffer from the (tempered) limitations of the coding system I used. And, by themselves, they are not sufficient to strongly falsify the TMT assumption of fundamental death anxiety. It also remains possible that participants do not cite their own death more frequently because their cognitive defences, worldview related or otherwise, prevented it.

If, as TMT theorists claim, death-thoughts immediately lead to cognitive defences then both nonverbal and implicit measurement may be necessary to find terror. The worldview involves some form of deception. If the assertions of TMT are correct and terror is being continuously suppressed by one’s cultural worldview, humans are deceiving themselves from the fact that they are mortal. Chapter 5 will address this concern more directly by analysing two less direct measures of the fear of death.

Participants who listed a miscellaneous fear also scored higher on death anxiety than participants who did not. It included items from the decline of our country, sinkholes, being haunted, to moving out of Jacksonville—none of which seem to relate to death anxiety in a meaningful way. It is possible that the relationship between miscellaneous fears reflects an individual difference: some people are afraid of many things, including death, and some are not. However, it is difficult to speculate about the implications because fears from the miscellaneous category varied widely.
“In every calm and reasonable person there is a hidden second person scared witless about death.”
- Philip Roth

As noted in Chapter 3, studies on death anxiety generally make three assumptions: everyone feels it, everyone can disclose it, and researchers can measure it (Corr et al., 2006). However, Terror Management Theory, along with its intellectual antecedents, takes issue with the latter two assumptions, asserting that fear of death is typically repressed and subliminal. Although Study 1 suggested that fear of death is low on the whole, the possibility that participants could or would not reveal their fears challenges the validity of this conclusion. In this chapter, I consider other means by which fear of death might be revealed.

Survey based methodologies in the psychological sciences have always had clear advantages and limitations. On the one hand, they are easy to administer, quick to develop, and cost effective. On the other hand, their reliability depends on several factors: participants may not feel comfortable providing accurate information; they may not want to present themselves in an unfavourable manner (even when anonymous); or they may not know their actual attitudes or beliefs. People often report more information to an experimenter than they can possibly know because of a lack of access to some mental processes (Nisbett & Wilson, 1977).

To circumvent such issues, social and cognitive psychologists often use indirect or subtle means to assess attitudes and emotional reactions. Text analysis is one way that researchers infer attitudes (Pennebaker, Booth, Boyd, & Francis, 2015; Pennebaker et al., 2007). Both the content and the form of spoken and written statements can reveal emotions that the speaker or writer may be trying to hide, or may not know about herself. Consider the
2006 incident in which Vice President Dick Cheney shot his hunting partner Harry Whittington. If someone says, “Dick shot Harry” in the active voice, that person is communicating that they believe the Vice President is responsible for the event. Whereas, the passive voice, “Harry got shot” removes the actor from the mind and exculpates Cheney. Cheney himself took responsibility for the event as follows, “Well, ultimately, I’m the guy who pulled the trigger that fired the round that hit Harry. And you can talk about all the other conditions that existed at the time, but that’s the bottom line. And there’s no—it was not Harry’s fault” (FORA.tv, 2010). With this sentence, Dick Cheney is now three steps removed from physical violence. Arguably, the language he chose speaks to his feelings about the incident and his view of his culpability. Similarly, an analysis of the content of mortality salience (MS) writings may reveal death anxiety where typical questionnaires cannot.

A number of software tools, such as Linguistic Inquiry and Word Count (LIWC; Pennebaker et al., 2007), are available to quantify the content of textual variables. LIWC calculates the percentage of words in a text that correspond to various language categories, such as psychological processes (e.g., social, affective, cognitive), relativity words (e.g., motion, space, time), and personal concerns (e.g., work, home, religion) against its own, validated internal dictionary (Pennebaker et al., 2007; Pennebaker, Mehl, Niederhoffer, 2003). LIWC also has an expanding database of verbal and written utterances that can be used as control texts for comparison.

Studies utilising LIWC suggest that writing predicts behavioural outcomes for the author (LIWC studies refer to participant speakers and writers as authors), especially when the author uses higher rates of, say, positive emotion words than a standard text (Pennebaker, Mayne, & Francis, 1997). Word use has also been linked to both physical and mental health (Gottschalk & Gleser, 1969; Rosenberg & Tucker, 1978; Stiles, 1992). For example, Pennebaker and his colleagues have found that writing about emotional topics can help
authors cope with traumatic events (Park & Blumberg, 2002; Pennebaker, 1997), and more specifically, a re-analysis of the content of that writing revealed that authors that use more personal pronouns cope better (Campbell & Pennebaker, 2003). Similarly, writing about emotional experiences helps promote well-being; and authors who use more positive words when writing about these emotional experiences show more improvement than authors who use fewer positive words (Lepore & Smyth, 2002; Pennebaker, 1997).

The link between emotional language use and emotional outcomes (i.e., anxiety about death) was at the heart of Hirschmüller and Egloff’s (2016) text analysis of the last words from inmates on death row. Using LIWC, Hirschmüller and Egloff analysed the final statements of 119 death row inmates spoken minutes before their execution. They found that inmates’ last words were overwhelmingly more positive than negative, and were more positive than the words in suicide notes (Handelman & Lester, 2007) and control statements in which participants were asked to write about their emotions (Pennebaker et al., 2007).

The typical “mortality salience” paradigm, in which participants provide written reflections on what they think physically happens to them when they die and the emotions those thoughts evoke in them (Burke et al., 2010; Rosenblatt et al., 1989), could similarly be analysed for evidence of participants’ emotional responses to death. Unfortunately, prior to 2010, researchers largely ignored these data, apparently because they were seen as tangential to the goal of making mortality salient (Kastenbaum, 2009). However, in 2011 Kastenbaum and Heflick pulled 209 MS writings from the archives of their TMT colleagues. The authors were from the University of Arizona (N = 124; 74 female, 50 male) and the University of South Florida (N = 85; 49 female, 36 male).

Kastenbaum and Heflick (2011) identified all adjectives in the writing (e.g., scared, sad, and nervous) and placed them into one of five clusters: fear and anxiety; depression and sadness; uncertainty; comfort and satisfaction; and apathy. Authors used many different
adjectives, but if an author used several adjectives from the same cluster it was counted once; and if an author used adjectives from multiple clusters, each cluster was counted once. Their analyses led to several conclusions. First, no single adjective category (e.g., ‘anxiety’) can capture the spectrum of emotions that death thoughts evoke. Only half of the sample used anxiety adjectives and for this half, many used multiple adjectives, including positive descriptions (e.g., comfortable and gracious) and depression descriptions (e.g., grievous and sad). Second, gender matters. Females were twice as likely to list anxiety adjectives as males, which, perhaps coincidentally, is consistent with the finding that women develop anxiety disorders at approximately twice the rate of men (Angst & Dobler-Mikola, 1985; McLean, Asnaani, Litz, & Hofmann, 2011; Regier, Narrow, & Rae, 1990). Third, sadness and anxiety words were used with roughly equal frequency—a point which the authors, Kastenbaum and Heflick feature in the title of their article, “Sad to Say: Is It Time for Sorrow Management Theory?”

Although Kastenbaum and Heflick (2011) did not attempt to explain their observed patterns, they did list several themes and devices extracted from the MS writings. Themes are explicit or implicit storylines and devices are the means by which the author implements those storylines (see Table 5.1). Some authors, for example, expressed a fear of incompletion and regret, wondering if they will accomplish everything they wanted to before their death.

Although these results provide some initial insights into what participants in the mortality salience paradigm are thinking (or at least writing) about, their implications for TMT are inconclusive. On average, participants were more sad than anxious in their writings, and it is not clear whether sadness reflects or disconfirms worldview defence mechanisms. In any case, Kastenbaum and Heflick’s (2011) study requires replication with more powerful methods, including a larger sample, a more systematic and validated text-analytic method
Table 5.1. Mortality salience themes and devices

<table>
<thead>
<tr>
<th>Theme / Device</th>
<th>Sample writing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fear of abandonment / Post-self observation</td>
<td>“I have no idea. I will hopefully go to heaven. Is it wrong I hope people will miss me? I really hope they do or I’d feel lost and also humiliated.”</td>
</tr>
<tr>
<td>Embedded self / Vicarious grief</td>
<td>“Very sad emotions like what will my family do. I love them so much that I couldn’t imagine being w/o them, so when I start to think about my own death…”</td>
</tr>
<tr>
<td>Time, the buffer / Proxy self</td>
<td>“I never really think about my own death. I feel like there’s a lot more left always, so never really worry about it. The fact that it could occur at any time is disturbing but it doesn’t worry me. I’ll be very old &amp; very sick &amp; just die of old age.”</td>
</tr>
<tr>
<td>Incompletion regret / Chart comparison</td>
<td>“I can only think how sad I would feel if my life ended before I did everything or most everything I want to do in life.” “It’s just the end, a motionless, emotionless end.”</td>
</tr>
<tr>
<td>Transcendence / A ticket to ride</td>
<td>“I feel proudness &amp; gratitude but also kind of scared. I think I will have a dream or something that feels like a dream &amp; everything will be wonderful.”</td>
</tr>
<tr>
<td>Drowning in anguish / Help me!</td>
<td>“Death makes me sad. I feel overwhelming sadness. I’m also scared of a painful death. I think I need help just thinking of it and I don’t want to think of it.”</td>
</tr>
<tr>
<td>Cool me / Disconnect</td>
<td>“I wouldn’t say death worries me in any way, it’s more of, if it happens, oh, well.”</td>
</tr>
</tbody>
</table>

Source. Kastenbaum & Heflick, 2011

(e.g., LIWC), and discriminant validity in the form of other dependent measures to which death anxiety can be compared.

Kashdan et al. (2014) partially addressed some of these issues. In a series of four experiments, Kashdan and colleagues used LIWC to show that participants use more positive words (when controlling for negative word use) in the written MS paradigm than in four
typical MS controls: watching television, dental pain, meaninglessness, and uncertainty. This effect held across different MS manipulations and over the course of a 6-day study. Although positive word use was equivalent in both the MS and television control conditions, participants who wrote about their own death and used more positive words showed an increased pro-US essay bias (indicative of worldview defence).

Despite its promise, Kashdan et al.’s (2014) study still has several limitations. First, the researchers were only concerned with positive word use. They did not report negative word use statistics and it is unclear if the writings are more positive than negative. Second, they did not include the descriptive statistics on the subcategories of negative word use which include anger, anxiety, and sadness. The second study of this thesis was designed to address these limitations to provide a more powerful look at the implicit anxiety revealed in participants’ reflections on their own death.

Method

Participants and procedure. Data were reanalysed from seven studies in the Halberstadt Social Cognition Laboratory conducted between 2009 and 2015. To be eligible, a study must have included the “standard” written MS manipulation: i.e., two questions asking about (1) what will happen upon death and (2) the feelings those thoughts arouse; see Appendix B. The search returned data from 459 participants ($M_{age} = 21.05$, $SD = 5.08$; 306 women, 153 men) from the University of Otago who were recruited from introductory psychology classes in exchange for course credit.

Data preparation and analysis. Each text was checked for spelling and language use. Cleaned text files were created by correcting spelling mistakes and typing abbreviations

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8 Standard order of the questions—physical then emotional—refers to the first fifteen years or so (e.g., since Rosenblatt et al., 1989). Recent iterations of the written mortality salience paradigm have begun asking the emotional question before the physical question (e.g., Kashdan et al., 2014).
and shorthand out completely (e.g., “w/” was changed to “with” and “uni” to “university”). See Table 5.2 for examples of the cleaned text files.

Each of the 459 written texts were analysed using LIWC (Pennebaker et al., 2007). The following variables were included in the analysis: total number of words, the percentage of categorised dictionary words, the proportion of positive emotion words (e.g., happy and love), the proportion of negative emotion words (e.g., hate—which includes the three subcategories of negative emotion words anxiety, anger, and sadness), and the proportion of death-related words (e.g., kill and coffin).

The analysis was conducted separately for the two MS questions, as some previous research has reported differences between them. For example, Burgin, Sanders, Vandellen, and Martin (2012) found that written responses to the physical death question were more informed by cultural values and knowledge, whereas responses to the emotional death question were more informed by personal belief.

Other measures. Demographics available in all studies included sex, age, ethnicity, and religious affiliation, and religious importance (measured on a 9-point scale anchored at “not at all important” and “very important”). Other demographics which were only present in one or two of the seven studies (and not analysed here) included nationality, handedness, and marital status.

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9 Only two studies measured the frequency of religious behaviour (e.g., “How often do you attend religious services?”) and five studies included the Supernatural Belief Scale (SBS; Jong et al., 2013). Although mentioned, religious variables are secondary to this thesis because of their mixed and contradictory effects on death anxiety and the fear of death (see Pyne, 2010 for a review).
Table 5.2. Examples from cleaned text files

<table>
<thead>
<tr>
<th>No.</th>
<th>Physical</th>
<th>Emotional</th>
</tr>
</thead>
<tbody>
<tr>
<td>208</td>
<td>I believe my body will get weaker and weaker and I will be able to tell that my time on earth has soon come to an end. I don’t believe I will see any bright light but will just close my eyes and never wake up. I do not have any certain beliefs or feelings as to what will happen to my spirit once I am dead because no one can ever know really what happens.</td>
<td>It makes me sad and upset but also I know at some point I am going to die. Also with having many life-threatening experiences already I am more determined to make the most out of my life and enjoy it while I can.</td>
</tr>
<tr>
<td>224</td>
<td>My cells and organs will cease to function, I will stop breathing, my heart will stop beating, and my brain will stop thinking. Once I am dead, I will be buried and start to decompose or I will be cremated.</td>
<td>It is disconcerting to think of myself no longer functioning. I feel a little sad that I will not be able to go on enjoying life.</td>
</tr>
<tr>
<td>351</td>
<td>I think that physically your body stops working and when it shuts down completely and no longer functions your soul leaves your body.</td>
<td>The thought of dying is one that does not bother me greatly as I believe in afterlife and therefore am not scared of death. However, it makes me sad for my family as it is the people left behind that are affected, rather than the dead. Thinking about others dying however, makes me sad especially family and friends as I have seen how death can tear families and friendships apart and the dramatic effects it has on the lives of others.</td>
</tr>
</tbody>
</table>
Results

Positive versus negative emotion words. The 459 participant authors wrote a total of 42,163 words, or 92 words on average, 93% of which were present in the LIWC dictionary. Tables 5.3 and 5.4 present the means and standard deviations of the word count, words present in the LIWC dictionary, and the physical and emotional components of the written MS prompt separately. Two paired t-tests were conducted to compare positive and negative emotions word use, one for the physical death question, and one for the emotional death question. Participants used a higher proportion of negative emotion words ($M = 8.48, SD = 12.41$) than positive emotion words ($M = 4.21, SD = 4.88$) for the emotional death question, $t(458) = -6.92$, $p < .001$; but they did not use a higher proportion of negative emotion words ($M = 2.02, SD = 2.89$) than positive emotion words ($M = 2.01, SD = 3.11$) for the physical death question, $t(458) = -0.45$, $p = .964$. The percentage of positive and negative emotion words were not correlated in either the emotional death question ($r = .03, p = .592$) or the physical death question ($r = .05, p = .258$).

Tables 5.3 and 5.4 also include the means and standard deviations for the physical and emotional components of the written prompts that included $> 10$ words. Again, participants used a higher proportion of negative emotion words ($M = 5.95, SD = 4.94$) than positive emotion words ($M = 4.00, SD = 3.91$) for the emotional death question, $t(411) = -6.28$, $p < .001$; but they did not use a higher proportion of negative emotion words ($M = 2.07, SD = 2.91$) than positive emotion words ($M = 1.93, SD = 2.70$) for the physical death question, $t(447) = -0.79$, $p = .431$. All subsequent analyses will focus on the emotional death question.

---

10 Statements with only a few words can be disproportionately influential. For example, if an author writes three words and one of them is anxiety, the LIWC output variable is .33. A separate analysis was conducted for both versions of the MS prompt (physical and emotional). Only a few means noticeably change, however, none of these changes are statistically significant.
of the MS prompt (Table 5.4), excluding responses of 10 or fewer words to reduce variance (e.g., the SD for the proportion of negative word use drops from 12.41 to 4.94).

**Positive emotional language. Base rates comparison.** Pennebaker et al. (2007) provide word use norms from 23,173 individuals, from children to the elderly. These texts come from a compilation of emotional writings (e.g., following instructions to “write about your thoughts or emotions”), control writings (e.g., “write about every day, non-emotional topics like your plans for the day”), and talking (e.g., a collection of recordings of social interactions, such as strangers interacting in a waiting room), and provide a baseline against which our participants’ language use can be compared.

As seen in Table 5.5, the overall mean for positive emotion words across all of these contexts is 2.74 (grand SD = 1.27); \( M = 3.28 \) for emotional writing, \( M = 1.83 \) for control writing, and \( M = 3.42 \) for control talking. Independent t-tests were computed to compare positive emotion word use in statements from participants who completed the written MS prompt and those who completed emotional writing, control writing, talking, or across all LIWC contexts (including, in addition to the three aforementioned groups, the writings from science articles, blogs, and novels; these t-tests were calculated with the grand SD). Participants used more positive language in the emotional death question than in emotional writing, control writing, and talking, and across all contexts (see Table 5.5).

**Other comparison data.** Table 5.5 also includes LIWC data from three other relevant datasets. Kashdan et al. (2014, Studies 1 and 2) also analysed responses to MS prompts (\( N = \) approximately 136 and 43, respectively).\(^{11}\) Hirschmüller and Egloff (2016) analysed the last words from 407 death row inmates. And finally, Handelman and Lester (2007), in

\(^{11}\) Because these sample sizes were not explicitly stated in the publication, they were calculated by dividing the total sample size of each experiment by the number of conditions.
conjunction with a police station collected suicide notes from 20 individuals who had completed and 20 individuals who had attempted suicide.\textsuperscript{12}

Participants in the present study used fewer positive words than death row inmates, but the same proportion of positive words as in the Kashdan and colleagues (2014) analysis of MS language, and as individuals who had either completed or attempted suicide. The descriptive statistics and t-tests can be seen in Table 5.5.\textsuperscript{13}

**Negative emotional language. Base rates comparison.** Table 5.6 shows the overall mean for negative emotion words across all LIWC contexts provided by Pennebaker et al. (2007). The overall proportion of negative word use is 1.63 (grand $SD = .91$); $M = 2.67$ for emotional writing, $M = .71$ for control writing, and $M = 1.49$ for control talking. Independent t-tests showed that the current participants used more negative language in the emotional death question than emotional writing, control writing, and talking, and across all contexts (see Table 5.6).\textsuperscript{14}

**Other comparison data.** Table 5.6 also includes LIWC data from the only dataset to include negative emotion word usage statistics: Hirschmüller and Egloff’s (2016) analysis of the last words from 407 death row inmates. Participants who wrote about the emotions that their own mortality evoked used more negative emotion language than the death row inmates. The descriptive statistics and t-tests can be seen in Table 5.6.

\textsuperscript{12} They did not report the standard deviation of the positive emotion word use, so the highest and most conservative standard deviation was used ($SD = 5.08$ from Hirschmüller & Egloff, 2016).

\textsuperscript{13} Kashdan et al. (2014) collapsed both the physical and emotional questions of the written MS prime. The present study did not because the physical question was equally positive and negative. When collapsing across both questions, the difference between the present study and Kashdan et al. (2014) becomes statistically significant. The writings of Kashdan experiment 1A ($M = 3.67$, $SD = 3.78$) were more positive than the present study ($M = 2.91$, $SD = 2.69$), $t(593) = 2.62$, $p < .01$. And the writings of Kashdan experiment 1B ($M = 3.84$, $SD = 2.97$) were more positive than the present study ($M = 2.91$, $SD = 2.69$), $t(500) = 2.15$, $p < .05$.

\textsuperscript{14} Both Kashdan et al. (2014) and Handelman and Lester (2007) did not report negative emotion word usage means or standard deviations. All negative emotion word comparisons will exclude these two studies.
Table 5.3. Descriptive results of LIWC analyses for mortality salience paradigms for the physical death question

<table>
<thead>
<tr>
<th>LIWC variables</th>
<th>All spoken statements</th>
<th>Spoken statements with &gt; 10 words</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Total authors</td>
<td>459</td>
<td></td>
</tr>
<tr>
<td>Total words</td>
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<td></td>
</tr>
<tr>
<td>Word count</td>
<td>49.64</td>
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</tr>
<tr>
<td>Dictionary words (%)</td>
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<td>5.62</td>
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<td>Positive emotion words (%)</td>
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<td>3.11</td>
</tr>
<tr>
<td>Negative emotion words (%)</td>
<td>2.02</td>
<td>2.89</td>
</tr>
<tr>
<td>Anxiety (%)</td>
<td>.25</td>
<td>1.00</td>
</tr>
<tr>
<td>Anger (%)</td>
<td>.24</td>
<td>.81</td>
</tr>
<tr>
<td>Sadness (%)</td>
<td>.49</td>
<td>1.22</td>
</tr>
<tr>
<td>Death (%)</td>
<td>4.19</td>
<td>3.28</td>
</tr>
</tbody>
</table>
Table 5.4. Descriptive results of LIWC analyses for mortality salience paradigms for the emotional death question

<table>
<thead>
<tr>
<th>LIWC variables</th>
<th>All spoken statements</th>
<th>Spoken statements with &gt; 10 words</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Total authors</td>
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</tr>
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<tr>
<td>Word count</td>
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<td>Dictionary words (%)</td>
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<td>Negative emotion words (%)</td>
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<td>12.41</td>
</tr>
<tr>
<td>Anxiety (%)</td>
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<td>8.03</td>
</tr>
<tr>
<td>Anger (%)</td>
<td>.36</td>
<td>1.57</td>
</tr>
<tr>
<td>Sadness (%)</td>
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<td>8.44</td>
</tr>
<tr>
<td>Death (%)</td>
<td>3.53</td>
<td>3.32</td>
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</table>
Table 5.5. Comparisons of positive emotional language use in the emotional death question with word usage base rates, language use preceding other written mortality salience questions, attempted or actual death by suicide, and executed death row inmates’ statements

<table>
<thead>
<tr>
<th></th>
<th>Total authors</th>
<th>Total words</th>
<th>Positive emotion words (%)</th>
<th>Independent t-test</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
<td>t</td>
</tr>
<tr>
<td>Current MS data</td>
<td>412</td>
<td>19,532</td>
<td>4.00</td>
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</tr>
<tr>
<td>Pennebaker et al., 2007</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All LIWC contexts</td>
<td>23,173</td>
<td>168,345,504</td>
<td>2.74</td>
<td>1.27</td>
<td>18.63</td>
</tr>
<tr>
<td>Emotional writing</td>
<td>1,104</td>
<td>1,299,400</td>
<td>3.28</td>
<td>(≈1.27)‡</td>
<td>5.40</td>
</tr>
<tr>
<td>Control writing</td>
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<td>985,698</td>
<td>1.83</td>
<td>(≈1.27)‡</td>
<td>14.60</td>
</tr>
<tr>
<td>Talking</td>
<td>850</td>
<td>1,202,015</td>
<td>3.42</td>
<td>(≈1.27)‡</td>
<td>3.92</td>
</tr>
<tr>
<td>Kashdan et al., 2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experiment 1A: MS Condition</td>
<td>(≈136)‡</td>
<td>‡</td>
<td>3.67</td>
<td>3.78</td>
<td>.86</td>
</tr>
<tr>
<td>Experiment 1B: MS Condition</td>
<td>(≈43)‡</td>
<td>‡</td>
<td>3.84</td>
<td>2.97</td>
<td>.26</td>
</tr>
<tr>
<td>Hirschmüller and Egloff, 2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last words before execution</td>
<td>381</td>
<td>42,154</td>
<td>9.01</td>
<td>5.08</td>
<td>-15.63</td>
</tr>
<tr>
<td>Handelman &amp; Lester, 2007</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suicide notes: attempters</td>
<td>20</td>
<td>‡</td>
<td>3.55</td>
<td>(≈5.08)‡</td>
<td>.50</td>
</tr>
<tr>
<td>Suicide notes: completers</td>
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<td>‡</td>
<td>5.32</td>
<td>(≈5.08)‡</td>
<td>-1.45</td>
</tr>
</tbody>
</table>

Notes: ‡, Information not specified in the original study. All p-values are two-tailed and t-tests refer to comparisons between each study and the current MS data.
Table 5.6. Comparisons of negative emotional language use in the emotion death question with word usage base rates and executed death row inmates’ statements

<table>
<thead>
<tr>
<th></th>
<th>Total authors</th>
<th>Total words</th>
<th>Negative emotion words (%)</th>
<th>Independent t-test</th>
<th>Cohen’s d</th>
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</thead>
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<td></td>
<td>M</td>
<td>SD</td>
<td>t</td>
</tr>
<tr>
<td>Current MS data</td>
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<td>19,532</td>
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<tr>
<td>Pennebaker et al., 2007</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>All LIWC contexts</td>
<td>23,173</td>
<td>168,345,504</td>
<td>1.63</td>
<td>.91</td>
<td>78.09</td>
</tr>
<tr>
<td>Emotional writing</td>
<td>1,104</td>
<td>1,299,400</td>
<td>2.67</td>
<td>(.91)‡</td>
<td>21.13</td>
</tr>
<tr>
<td>Control writing</td>
<td>841</td>
<td>985,698</td>
<td>.71</td>
<td>(.91)‡</td>
<td>29.76</td>
</tr>
<tr>
<td>Talking</td>
<td>850</td>
<td>1,202,015</td>
<td>1.49</td>
<td>(.91)‡</td>
<td>25.46</td>
</tr>
<tr>
<td>Hirschmüller and Egloff, 2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last words before execution</td>
<td>381</td>
<td>42,154</td>
<td>2.74</td>
<td>2.68</td>
<td>11.24</td>
</tr>
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</table>

Notes: ‡, Information not specified in the original study. All p-values are two-tailed, and t-tests refer to comparisons between each study and the current MS data.
### Table 5.7: Independent t-tests for anxiety, anger, and sadness between the emotional written MS statements and word usage base rates

<table>
<thead>
<tr>
<th></th>
<th>Total authors</th>
<th>LIWC base rates</th>
<th>Independent t-test</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
<td>t</td>
</tr>
<tr>
<td>Anxiety (from present study)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All LIWC contexts</td>
<td>412</td>
<td>3.35</td>
<td>3.53</td>
<td>106.72</td>
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<tr>
<td>Emotional writing</td>
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<td>.33</td>
<td>.33</td>
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<tr>
<td>Control writing</td>
<td>1,104</td>
<td>.68</td>
<td>(.33)†</td>
<td>24.86</td>
</tr>
<tr>
<td>Talking</td>
<td>841</td>
<td>.21</td>
<td>(.33)†</td>
<td>25.58</td>
</tr>
<tr>
<td></td>
<td>850</td>
<td>.18</td>
<td>(.33)†</td>
<td>25.96</td>
</tr>
<tr>
<td>Anger (from present study)</td>
<td></td>
<td>.33</td>
<td>1.25</td>
<td></td>
</tr>
<tr>
<td>All LIWC contexts</td>
<td>23,173</td>
<td>.47</td>
<td>.48</td>
<td>-5.59</td>
</tr>
<tr>
<td>Emotional writing</td>
<td>1,104</td>
<td>.66</td>
<td>(.48)†</td>
<td>-7.43</td>
</tr>
<tr>
<td>Control writing</td>
<td>841</td>
<td>.14</td>
<td>(.48)†</td>
<td>3.87</td>
</tr>
<tr>
<td>Talking</td>
<td>850</td>
<td>.58</td>
<td>(.48)†</td>
<td>-5.11</td>
</tr>
<tr>
<td>Sadness (from present study)</td>
<td></td>
<td>1.71</td>
<td>2.91</td>
<td></td>
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<tr>
<td>All LIWC contexts</td>
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<td>.37</td>
<td>.37</td>
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<tr>
<td>Emotional writing</td>
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<td>.63</td>
<td>(.37)†</td>
<td>12.08</td>
</tr>
<tr>
<td>Control writing</td>
<td>841</td>
<td>.14</td>
<td>(.37)†</td>
<td>15.40</td>
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<tr>
<td>Talking</td>
<td>850</td>
<td>.19</td>
<td>(.37)†</td>
<td>14.99</td>
</tr>
</tbody>
</table>

**Notes**: †, Information not specified in the original study. All p-values are two-tailed, and t-tests refer to comparisons between each study and the current MS data.
**Anxiety, anger, and sadness. Base rates comparison.** The negative emotion word category for the MS emotional question can be further broken down into three separate components: anxiety ($M = 3.35$, $SD = 3.53$), anger ($M = 0.33$, $SD = 1.25$), and sadness ($M = 1.71$, $SD = 2.91$). Independent t-tests comparing the frequencies of these language categories to those in the emotional writing, control writing, and talking base rates, using the grand SD of anxiety (0.33), anger (0.48), and sadness (0.37), appear in Table 5.7.

Participants in the MS conditions used more anxious and sad words than in those comparison contexts. They used more angry words than base rates from control writing, but fewer angry words in the emotional writing, talking, and general contexts.

**Discussion**

Study 2 aimed to explore death anxiety more indirectly than in Study 1, by examining the content of participants’ thoughts about their death. Unlike the few studies that have analysed death writings with LIWC, participants here used more anxiety and sadness words when describing the emotional aspects of their death—consistent with Kastenbaum and Heflick’s (2011) loose coding of adjectives in their MS writings, and inconsistent with previous studies reporting that participants are more positive than negative (see Handelman & Lester, 2007; or Hirschmüller & Egloff, 2016). It is also worth noting that the preference for negative words was limited to the emotional question; participants used positive and negative words with equal frequency when writing about the physical events associated with their death, consistent with Burgin et al.’s (2012) finding that the two MS questions, physical and emotional, have diverging effects.

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15 None of the death-related text analysis studies (Handelman & Lester, 2007; Hirschmüller and Egloff, 2016; Kasdhan et al., 2014) break negative emotion word use into its respective subcomponents.
Although the results for negative word use, on their face, appear to confirm the presence of implicit death anxiety, at least when discussing emotional responses to death, there are qualifications to this conclusion. Most obviously, participants were also more positive when discussing their death, compared to all baselines (though less positive than participants confronting their death, including, confusingly, previous participants in the MS paradigm). Thus, a more apt conclusion may be that writing about death is more emotionally evocative—both negatively and positively—than other forms of emotional writing, control writing, or casual conversation.

Unfortunately, while LIWC permits some inferences about the emotions participants are experiencing, it does not provide much insight into why they are experiencing them. Thus, it is not clear whether the experience of positive emotions when discussing death (and, arguably, increasing positivity as death approaches) reflects emotional ambivalence or the successful implementation of worldview defence. TMT does predict that when confronted with death, proximal defences that attempt to suppress death-related thoughts are activated. As the first line of defence fails, distal defences such as the affirmation of one’s worldview are activated, so it could be argued that, for example, death row inmates should feel more positive than college students, who are only speculating about death in the abstract (Kashdan et al., 2014).

Analysing how death is discussed is a less direct and, presumably, less demand-inducing method of assessing death anxiety than asking participants to list their personal fears. Even so, it is still possible that participants under- or overstated their fears, or inaccurately represented them due to experimenter demand. There are, however, even more indirect methods to gauge latent death attitudes. Experimental psychology is replete with dual-process models of cognition. According to these theories, humans process information at two levels, variously termed implicit and explicit (Nosek, 2007), automatic and controlled
(Bargh & Chartrand, 1999), unconscious and conscious (Dijksterhuis & Nordgren, 2006), peripheral and central (Petty & Cacioppo, 1986), and heuristic and systematic (Chen & Chaiken 1999), among other distinctions. Although these dichotomies differ in subtle ways, they share the assumption that self-reported beliefs may differ from beliefs measured without the individual’s awareness. Arguably the latter is superior in some contexts: explicit thinking is often a “poor account of mental operations” (Nosek, 2007, p. 65).

Nonverbal communication is a good example of implicit behaviour, whether conscious or unconscious. In forensic psychology, for example, police officers unconsiously communicate information to the eyewitness during a line-up procedure without speaking (Wells, 1978; Wells & Seelau, 1995). Often, the police officer knows who the suspect is and the eyewitness is influenced by these nonverbal cues when selecting a suspect. These cues are outside of the conscious awareness of the office, so they cannot be controlled. Similarly, it may be through unconscious, nonverbal measures that evidence of terror emerges.

One promising method involves measuring “micro-expressions” of the face (Ekman & Friesen, 1976; Littlewort, Whitehill, Wu, Fasel et al., 2011). Ekman and Friesen pioneered the analysis of facial movement, developing the Facial Action Coding System (FACS) to quantify subtle but visible facial changes. The FACS consists of single action units (AUs) that correspond to particular muscle movements (e.g., AU 13 is the ‘cheek puffer’ and involves movement of the caninus; Ekman & Friesen, 1976).

A major application of the FACS has been lie detection. Although it is theoretically possible for humans to accurately detect lies, five decades of evidence argue that humans have an extremely limited capacity to detect lies based on body language and speech patterns (Vrij, Granhag, Mann, & Leal, 2011). However, according to Ekman, liars “leak” emotional information through their face (including via what some would consider counterintuitive movements, like subtle variations in smiling while actively deceiving another person; Ekman,
Friesen, & O’Sullivan, 1988), and these leakages can be detected by trained coders. There is also support for using facial movements to determine the expression of emotions in other contexts (refer to Keltner & Ekman, 2000 for a review).

Untrained human coders have trouble differentiating emotions using the FACS (Littlewort, Whitehill, Wu, Butko et al., 2011; Valstar, Méhu, Jiang, Pantic, & Scherer, 2012), however a growing family of computer vision techniques has made progress in automating FACS coding and making the process accessible and cost-effective. The Computer Expression Recognition Toolbox (CERT; Littlewort, Whitehill, Wu, Fasel et al., 2011), for example, is a free facial recognition programme that measures the intensity of 19 different AUs and provides probability estimates for six different emotions: happiness, sadness, surprise, anger, disgust, and fear.

Humans’ worldview defences are lies of sorts. If the assertions of TMT are correct and terror is being suppressed, humans are unconsciously deceiving themselves. CERT may be the means by which researchers are able to test participants underneath their worldview armour and, perhaps, provide measurable support for TMT’s central assumption. Study 3 asked participants to complete a spoken version of the MS paradigm in front of the computer’s camera. If terror is the basic human response, a reading of each participant’s face should reveal greater negativity and less positivity in the death than in a control condition, even though written descriptions suggest otherwise.

**Method**

**Participants and procedure.** Data were collected as part of a thesis-unrelated study investigating the effects of religiosity on death anxiety. Seventy-one University of Otago
students ($M_{age} = 21.43, SD = 3.78; 48$ women, $23$ men) participated, and were reimbursed NZ $12 to cover their travel expenses.

All participants were instructed to generate $12$ reasons in support of the proposition that God exists or that God does not exist (between subjects). This manipulation is based on the “ease of retrieval” effect, in which the difficulty of generating support for a proposition is taken as evidence that the participant does or does not believe it. Pretesting had shown that virtually no participants spontaneously generate $12$ reasons in support of God’s existence or nonexistence, so in theory asking them to do so should have the counterintuitive effect of shifting attitudes in the opposite direction of each proposition. For example, people struggling to think of reasons why God exists should infer that, perhaps, He doesn’t.

After the participants completed the $12$ reasons task, they completed a variation on the standard written MS manipulation (Rosenblatt et al., 1989) in which they talked, on camera, about what would happen to them when they die, and the emotions that those thoughts arouse in them, followed by the same task with regard to watching television (see Kashdan et al., 2014, Experiment 3). The prompts always appeared in the same order. Again, participants did not write anything down.

Finally, all participants completed a series of questionnaires, including the Death Anxiety Questionnaire (DAQ$^{16}$; Conte et al., 1982; see Appendix A) on its original $3$-point scale anchored at $0$ (not at all), $1$ (somewhat), and $2$ (very much) and the Positive and Negative Affect Scale (PANAS; Watson et al., 1988; see Appendix C). The PANAS measures how the participant is feeling right now on a series of emotions (e.g., irritable, inspired, and enthusiastic) on a $1$ (very slightly or not at all) to $5$ (extremely) scale. The Supernatural Belief Scale (Jong et al., 2013) was included in the study, but not included in

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$^{16}$ These were past laboratory experiments, run by other researchers. I would have preferred to use the modified DAQ from Study 1 on the $0$ (not at all) to $8$ (very much) scale.
the current analyses. Participants also provided basic demographic information (age, sex, ethnicity, nationality, religious affiliation, English quality, and handedness).

**Data coding.** The emotions expressed by the participants were coded in two ways. First, a human coder, blind to condition, was instructed to watch each video on mute, in a random order. Every 30 seconds, the coder stopped the video and rated how positive and how aroused the participant appeared, both on 1-9 scales (anchored at negative/unpleasant and positive/pleasant, and calm/relaxed and anxious/excited, respectively). The number of ratings was dependent on how long the participant spoke; none of the videos lasted longer than five minutes. A second blind, independent human coder coded a random sample of 10% of the videos with the same instructions. Second, all videos were subjected to a CERT analysis for the presence of seven emotions: anger, contempt, disgust, fear, joy, sadness, and surprise.

**Results**

There was no evidence for effects of reasons listing on any of the dependent variables, either as a main effect or in an interaction with participants’ religious affiliation, so this manipulation is not included in the analyses presented below.

**Human coding.** The intraclass correlation (ICC) between two independent human coders was less than expected by chance. On the negative/unpleasant to positive/pleasant scale, the ICC was .17, 95% CI [-.14, .43]; and on the calm/relaxed to anxious/excited scale, the ICC was .14, 95% CI [-.15, .39]. I concluded, therefore, that the human data were simply too unreliable to analyse.

All CERT emotion means (except for contempt in both the death and TV conditions) were positively skewed (all Shapiro-Wilk tests of normality, $p < .001$). The data were transformed by their natural log before being analysed. After the data were transformed, all
CERT emotion means were normal. A 2 (condition) x 7 (emotion) within-subjects ANOVA revealed a statistically significant effect of prompt on emotion, $F(1, 64) = 4.86, p = .030$. Participants expressed *slightly* more emotion in the TV condition, with the exception of contempt, than in the MS condition (see Figure 4), although no individual comparison reached statistical significance for any individual emotion.

![Figure 5.1](image-url)  
*Figure 5.1. Natural log of the probability a given emotion is being expressed.* Error bars represent the individual lower- and upper-bound 95% confidence intervals.

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 CERT does not measure the intensity of the emotion being expressed. Thus, the numbers in Figure 5.1 represent movement of a combination of facial muscles Ekman associates with anger, e.g. CERT data cannot tell us how anxious a participant is, it can only tell us if it was likely that the participant was anxious.
Discussion

Neither the humans nor CERT could detect negativity specifically. Human coders simply did not agree on whether participants were expressing emotions—perhaps unsurprisingly given that untrained coders have difficulty using Ekman’s FACS (Littlewort, Whitehill, Wu, Butko et al., 2011; Valstar et al., 2012). By contrast, CERT appeared sensitive enough to detect differences in emotionality, but did not reveal any effects on specific emotions, as might have been predicted following Study 2. Participants in that study were more expressive and used both more positive and more negative words when writing about their own death—a finding which was not present on the participants’ faces.

The differences between studies may be attributed to a host of reasons. Writing may be considered a “safer” method than video, thereby facilitating greater emotional expression. The written task is similar to a diary, which is normally private, whereas video may be associated with the Internet, YouTube, and other means of public expression. Alternatively, CERT itself may be less sensitive to detecting differences in emotions. CERT is only one of many software packages that estimate the intensity of emotions for an annual competition known as the Facial Expression Recognition and Analysis Challenge (FERA). FERA provides competitors with datasets in which the expressed emotion is known. CERT is above the baseline for successful recognition (Littlewort, Whitehill, Wu, Butko et al., 2011), although the FERA organisers concede that the programmes are far from perfect and need to continue to focus on the intensity of the emotion rather than if the emotion is expressed (Valstar et al., 2015).

In Study 3, CERT did find a significant difference in emotion expression when discussing TV (as opposed to mortality) which suggests that the procedure can make distinctions between the likelihood of emotion expression under different conditions. It is
possible that participants were more comfortable expressing emotion when discussing TV, permitting CERT to detect slight differences in the likelihood of emotional expression.

It is also possible that the differences in emotionality were influenced by familiarity with the procedure, as the order of conditions was not counterbalanced. The death condition always preceded the TV condition, and participants may have felt more comfortable expressing emotions as the study progressed. Conversely, if participants grew less comfortable expressing emotions as the study progressed, then the data may be underestimating the emotionality of TV relative to death. A future study should counterbalance the order of conditions, but it is clear that any effects of death talk in this study are very small.

**Conclusion on Studies 1-3**

Whether measured implicitly, explicitly, consciously, or unconsciously there is little evidence for death anxiety. In Study 1, mortality concerns were present in approximately 20% of the sample, but well below other fears such as failure, social fears, illness, and injury. This suggested that, at least explicitly, people are more afraid of things that influence them on a day-to-day basis, such as raising children, giving public speeches, or getting injured. In Study 2, although participants used more negative words when discussing death, compared to control groups, they also used more positive language. This finding opens up the possibility that writing about death leads to more evocative language use in general.

TMT asserts, however, that participants in our studies were just activating their worldview defence to a) list something other than death as a fear and b) use positive language when writing about death. Neither the first nor the second study provided evidence contrary to this assertion. In Study 3 neither human nor machine could detect fear and anxiety during a
prepared statement about mortality. If anything, participants exhibited more emotion when discussing TV than when discussing death. This study is a closer step to locating the terror proposed by Terror Management Theory, although it runs into the same critique of the first two studies: the data do not falsify TMT’s assumptions that death anxiety is a salient and powerful motivator of thought and behaviour. But perhaps this is only because nothing can. In theory, participants have constructed elaborate defences to protect and defend against death anxiety and, if so, Studies 1-3 may simply be evidence of the effectiveness of these strategies. A more parsimonious account, however, is that death is not a particularly concerning event.

If people are not particularly afraid of death, what are they concerned about? When asked explicitly, 61.4% of participants listed some form of failure. The word failure was common, perhaps accounting for why the category was listed frequently: the word ‘failure’, for example can encompass failing an exam or losing a sports match, which may simply be more likely to be salient at the time of the study. However, the most frequently cited failures, such as completing life goals, taking care of children, and keeping one’s job, were extreme, life-changing, and perhaps as infrequent and hypothetical as death itself.

Indeed, there are reasons to think that significant failure and death and functionally related. According to the Meaning Maintenance Model (MMM), any threats to our personal meaning structures (which are, for example: self-esteem threats, feelings of uncertainty, interpersonal rejection, and mortality salience) cause anxiety and the fear of death is only one special case of meaning threat.

Mortality salience is hardly the only concern, however. Humans are meaning makers, constantly seeking to find relationships between themselves and the outside world (Heine et al., 2006). Humans can also reflect on these relationships and are quick to detect both structural breakdowns and inconsistencies (Heine et al., 2006). Significant failure could, in
theory, provide an even stronger challenge to one’s meaning structures. Furthermore, the threat might be especially problematic when death is salient since life failures only have meaning to the extent that life is finite. For a similar reason, significant life failures might contribute directly to death anxiety.

Routledge, Juhl, and Vess (2013) have demonstrated that participants who have a high need for the type of structure that the MMM deems important are more prone to death anxiety. Without the appropriate meaning structures in place, Routledge and colleagues found that people are less protected from the terror of death, under mortality salient conditions (known to challenge pre-existing meaning structures; Proulx & Heine, 2006). It was only through exploring other thought processes (Vess, Routledge, Landau, & Arndt, 2009) or by opening themselves up to other potential meaning frameworks (e.g., celebrating a non-traditional Thanksgiving; Routledge, Juhl, & Vess, 2010) that participants were able meet their meaning needs.

Thus, it may be possible that failure challenges an individual’s personal meaning structure, indirectly leading to death anxiety (among other negative states). Studies 4 and 5 examine this hypothesis.
Chapter 6
Study 4: Personal Failure

“For any culture which is primarily concerned with meaning, the study of death—the only certainty that life holds for us—must be central, for an understanding of death is the key to liberation in life.”

- Stanislav Grof

Terror Management Theory, the descendant of a line of thanatocentric thinking in philosophy and psychology, assumes that death anxiety is, as Muraven and Baumeister (1997) put it, ubiquitous. Previous empirical research, however, provided little empirical support for the anxiety; much less terror about death, and the current Studies 1, 2, and 3 have provided little reason to suspect that it exists as a salient and powerful motivational force.

Study 1 indicated that participants overwhelmingly fear failure, but little time has been spent investigating failure as a construct. What, specifically, is “fear of failure?” The Oxford English Dictionary defines failure as “a lack of success” (Failure, n.d.), but of course the implications of failure will vary depending on what goal has not been achieved. Although failure is often studied in terms of local and acute goals (e.g., failure to score well on a test; Sweeney, Moreland, & Gruber, 1982), the failures listed in Study 1 were typically more substantial and life-changing. They often included financial failures—losing one’s job, or one’s house, or one’s money—but also failure to achieve life-long goals, such as finishing a postgraduate degree, having children, or traveling the world.

In an extensive review of the research on personal failure, White (2002) identified three types of failure: lapses, omissions, and resistances. The lapses and omissions are important themes that emerge from clinical psychology (White, 2002). Lapses are approach-based failures, such as making an error that others perceive as a lack of social competence or poor performance in work. Omissions are avoidance-based failures; such as missing an
opportunity to improve oneself. Resistances are more complicated, and are associated with modern power structures. According to White, “The dramatic growth of the phenomenon of personal failure is associated with the rise of distinctly modern versions of power that establishes an effective system of social control through what can be referred to as normalising judgment” (White, 2002, p. 43). Through these systems, people are encouraged to judge each other on socially constructed benchmarks of success (White, 2002). Climbing the corporate ladder, purchasing an expensive house, and raising a family are such constructs, and they all represent places on a continuum from entry level position to CEO; renting a flat to owning a mansion; and dating to married with children. Through these systems, people also have license to judge others (and themselves) on their progress.

Whatever the cause or type of failure, the experience of failure is universally negative, and potentially crippling. Interviews with clients reveal negative outcomes such as feeling defeated, withdrawal from social circles, and depression (White, 2002). ‘Don’t be afraid of failure’ is a common phrase because failure is, culturally, something that causes fear but ultimately needs to be overcome (Martin, 2010; Pang, 2010; Prochaska, Norcross, & DiClemente, 1994). With such ubiquity, perhaps people are right to fear it—even though researchers seem to argue that people should not.

Ironically, given the findings in Studies 1-3, what might give substance and emotional power to failure, is death. If we were immortal, “failure,” at least when defined in terms of life goals, would have little meaning. And indeed, while knowledge of death does not seem to provoke much anxiety, it does tend to prompt a re-evaluation of one’s goals. Once an individual knows they are going to die—that time is finite—priorities change. Researchers might call this moment—where priorities change—the crisis of the knowledge of death (Pattison, 1977; see Chapter 2) or the mid-life crisis (Jaques, 1965), but the outcome is the same: an appraisal and re-evaluation of one’s life. In the song, “Live like You Were Dying”
by Tim McGraw, the protagonist asks a man diagnosed with cancer (presumably his father) about what he did when he received the news. The man told the protagonist to prioritise new, adventurous life experiences from bull riding and mountain climbing to sky diving.

Failure might in principle prompt death anxiety. When participants write about their death in the mortality salience paradigm, they sometimes express a fear of incompletion and regret because they have yet to accomplish everything in life (e.g., “Sad. If I died at such a young age, because there is so much left for me to do, and so much that I have not experienced. It would be different if I died at an old age and after a good life, and then there would be nothing to be sad about” Kastenbaum & Heflick, 2011, p. 314). In addition, personal failures, what White (2002) calls omissions, are inextricably linked to human mortality. A cancer survivor might be prompted to pursue her dream of climbing Mount Everest but, conversely, thoughts of mountains never climbed might prompt her to fear her mortality. The links between death and failure are also consistent with the Meaning Maintenance Model (MMM; see Chapter 2), which assumes that people are highly motivated to keep their worldviews stable, rather than to avoid thoughts of death per se, which are only of concern to the extent they destabilize one’s worldview. Meaning threats can include social rejection, feelings of uncertainty, and threats to self-esteem (Proulx & Heine, 2006, 2008).

By White’s (2002) definitions, failure is also a threat to meaning.

In theory, the effect of such threats on death anxiety should be mediated by concern over the need to maintain schemas of how the world works, and the ability to trust that those schemas are accurate. MMM theorists call this concern “need for closure” (NFC; Kruglanski & Webster, 1996), although others have described it as “personal need for structure (PNS; Neuberg & Newsom, 1993), a construct closely related to NFC. NFC is defined as the

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18 PNS and NFC are almost directly related. The scales both include the question, “I don’t like situations that are uncertain”, and most of the other questions are similar. PNS and NFC are internally consistent (α = .89 for NFC, and α = .74 and .76 in two separate samples for PNS; Leone, Wallace, & Modglin, 1999) and strongly and
desire for any answer to a given question (Kruglanski & Webster, 1996). Two of the
tendencies that define NFC are the inclination to ‘seize’ and ‘freeze’ (Kruglanski & Webster,
1996; Roets & Van Hiel, 2007). Seizing is finding an answer, any answer, to an ambiguous
situation, and freezing is the tendency to accept and defend that answer. Individuals high in
NFC are cognitively rigid in their thinking, spend less time trying to solve problems (Viola et
al., 2015), are poor negotiators (Pietrzak, Jochemczyk, Serbin, Kuśka, 2014), are prone to
intergroup hostility (De Zavala, Cislak, & Wesolowska, 2010), and tend to be politically
conservative (De Zavala & Van Bergh, 2007). More importantly, NFC is cited as a specific
driver of meaning making in the context of the MMM (Heine et al., 2006; Proulx & Heine,

A recent study by Routledge and colleagues (2013) lends some support to the
proposed relation between failure and death anxiety. The researchers manipulated mortality
salience using the standard written MS paradigm, and measured death anxiety, along with
PNS. In their first of two regression analyses, they found a main effect of PNS on death
anxiety: higher levels of PNS were associated with lower levels of death anxiety. This was
qualified by a significant interaction between PNS and MS condition. At low levels of PNS,
writing about death increased death anxiety compared to the control condition. No such effect
existed at high levels of PNS (Routledge et al., 2013; this marks one of the rare occasions in
which death anxiety is above average on a death anxiety scale). Individuals low in PNS had
an average death anxiety score of approximately 4 out of 5 on the revised Collett-Lester Fear
of Death Scale (FODS; Lester, 1990).

Routledge and colleagues (2013) argued that the need for structure affects how people
respond to mortality salience and, therefore, how mortality salience affects death anxiety.
Specifically, people with low need for structure (and presumably a weaker worldview

reliability correlated ($r = .75, p < .01$). To be able to weigh in on the merits of MMM, this thesis will continue to use NFC, rather than PNS.
defence) were not protected from death-related thoughts and they experienced more death anxiety after the manipulation. Similarly, Vess and colleagues (2009) found that low need for structure participants sought meaning as defined by the Meaning in Life Questionnaire (MLQ-P; Steger, Frazier, Oishi, & Kaler, 2006) and a separate 8-item measure of meaning (Krause, 2007). Because of this, they argued, participants were more willing to explore culturally unfamiliar perspectives (e.g., willingness to view two documentaries: one related to the Chinese-American experience and the other about the United States’ involvement in the rise of global terrorism). The willingness to explore is prosocial but it does not adequately represent a stable, unchanging worldview defence/meaning structure (Routledge et al., 2013; Vess et al., 2009).

The need for structure in the previous studies was a moderator; a trait specific to the individual. With a MMM lens, failure should not directly lead to death anxiety—as in the previous study—because failure is more likely to affect the meaning structure because big failures challenge established meaning. Consider the following hypothetical: I believe in a life trajectory that involves graduating college, finding a profession, getting married, and having children before I die. If I focus on the fact that I am not married, this personal failure undermines what I know to be true about the world. By thinking about this particular failure I am also reminded of the time I have left to get married before my death. Having no wife, I am forced to redefine this meaning structure for myself.

By focusing on failure, I am actively searching for closure. Searching for this meaning, rather than relying on existing structures, is a poor defence against death-thoughts (Vess et al., 2009). Similarly, if a threat to life’s meaning is associated with death anxiety, and if failures present a challenge to meaning, then failure may indirectly lead to an increase in death anxiety.
Inducing Failure

The goal of Study 4 was to manipulate failure and examine its effects, via Need for Closure, on death anxiety. Unfortunately, manipulating participants’ experience of significant failure in life poses obvious practical (and ethical) problems, and existing laboratory paradigms are not sufficient for inducing the type of failure that theoretically should promote death anxiety. Previous studies have, for example, examined students who failed an exam (Sweeney et al., 1982) or have manipulated task difficulty to be sure they did (Klein, Fencil-Morse, & Seligman, 1976; Mednick, 1962). At face value, neither of these methods captures the personal failures defined by White (2002) and present in Study 1.

A promising methodology can be found in the literature on goal pursuit. In this paradigm participants are encouraged to write about their goals and how to implement them (e.g., Gollwitzer & Brandstätter, 1997). Study 4 adopted this paradigm to induce feelings of personal success and failure by asking participants to list important life goals they have completed, or that they have yet to complete. Death anxiety and need for closure were measured. If a stable framework is a defence against mortality, priming failure (relative to success) should increase a participant’s desire for closure, as well as their death anxiety, and the former effect should mediate the latter.

Method

Participants and procedure. Ninety-five participants (\(M_{\text{age}} = 34.13, SD = 11.88\); 40 women, 55 men) were recruited using M-Turk for token payment of NZ $0.50. All participants completed the study online, via a questionnaire designed in Qualtrics (2015). After providing demographics (sex, age, ethnicity, nationality, religious affiliation, religious
importance on a 9-item question from not at all important to very important, spoken English quality, and self-esteem; see Appendix D), all participants were given one of two sets of instructions: success or failure (see Appendix E). Afterward, participants completed a short series of questionnaires. The questionnaire consisted of the following measures, always in the same order:

Death anxiety was measured using the Death Anxiety Survey (DAS; Templer, 1970; see Appendix F). An example item includes “I am very much afraid to die”; indicated by the participant as either true or false. The DAS is the most widely used measure of death anxiety, is well validated, and has been translated into over 26 languages (Lehto & Stein, 2009 for a review; Beshai & Naboulsi, 2004). Test-retest reliability after 3-weeks was .83.

Need for Closure was measured using the reduced 15-item NFC scale (Roets & Van Hiel, 2011; see Appendix G). An example item includes “I enjoy having a clear, structured mode of life” on a 9-point scale from -4 (strongly disagree) to 4 (strongly agree). The 15-item NFC is one-dimensional and has a test-retest correlation of .79 after one month (Roets & Van Hiel, 2011).

Other Measures. Two other measures—the Supernatural Belief Scale (SBS; Jong et al., 2013) and the Verbal Fusion Scale (VFS; Gómez et al., 2011)—were included at the end of the study, as part of an unrelated project, and are not analysed below.

Results

DAS scores, calculated by summing all 15 items (2, 3, 5, 6, 7, and 15 are reverse scored), were positively skewed (Shapiro-Wilk test of normality, p = .006; M = 7.11, SD = 4.06) and, as is typical in the literature, below the midpoint of the scale. NFC scores were calculated as the average of all 15 items (no reverse scoring is required) and normally
distributed (Shapiro-Wilk test of normality, $p = .60; M = .86, SD = 1.38$). Death anxiety and need for closure were significantly positively correlated ($r = .42, p < .01$).

A MANOVA was conducted with condition as an independent variable, and DAS and NFC as dependent variables. The analysis revealed that participants listing failures reported a greater need for closure than participants listing successes ($M = 1.19, SD = 1.47$ and $M = .52, SD = 1.22$, respectively), $F(1, 93) = 5.78, p = .02$, although they were no more death anxious ($M = 7.33, SD = 4.27$ and $M = 6.87, SD = 3.87$, respectively), $F(1, 93) = .30, p = .58$.

**Mediation.** PROCESS for SPSS (Hayes, 2012, Model 4) was used to test the hypothesis that NFC mediates the relationship between failure and death anxiety. As shown in Figure 6.1, the results of a mediation test with 5000 bootstrapped resamples revealed a significant indirect effect of $-0.06, 95\%$ CI [-.11, -.01]. The reverse indirect effect (with death anxiety as mediator, using the same parameters) was non-significant, $-0.06, 95\%$ CI [-.31, .18].

*Figure 6.1. Standardised regression coefficients for the relationship between failure and death anxiety as mediated by NFC. The standardised regression coefficient between failure and death anxiety, controlling for NFC, is in parentheses.*

*$p < .05$, **$p < .001$*
Discussion

In Study 1, participants most frequently cited failure as a fear, far more often than death, but a consideration of the nature of failure and death suggests that the two may be functionally related. Failures to achieve life goals take on significance only in light of mortality—life goals are by definition tasks to be completed in one’s lifetime. Failure and death are also linked via the logic of the Meaning Maintenance Model, in that both represent challenges to a meaningful life. Failures should challenge established ideas about one’s future, and in turn undermine some of the meaning that keeps death anxiety at bay.

As predicted participants who thought about their failure to achieve their life goals reported greater need for closure than those who thought about the life goals they had completed, and need for closure was positively related to death anxiety. Failure did not directly influence death anxiety but, more importantly, did so indirectly via its effect on need for closure. This finding is consistent with the MMM hypothesis that individuals searching for closure engage in tactics to reaffirm their beliefs (Heine & Proulx, 2006). In the marriage example above, when confronted with the notion I am not married, I need closure to not feel like a failure. To attain this, I may tell myself that am I waiting for the right person or I am finishing my studies, so I can then focus on finding a partner.

Although mediation in the absence of a significant direct effect seems counterintuitive, it is both statistically sound and psychologically plausible (Rucker, Preacher, Tormala, & Petty, 2011). The direct effect may be absent for any number of reasons, including differential effect sizes associated with the mediator versus the dependent variable, and/or differential power to detect the effects. Alternatively, an unmeasured variable or variables can entirely suppress the direct effect (MacKinnon, Krull, & Lockwood, 2000).
Although these variables would need to be uncovered through further research, the current data do suggest that failure, despite having no direct link to death anxiety, can affect it by prompting increased need for closure.

The positive association between NFC and death anxiety is seemingly inconsistent with the negative association between PNS and death anxiety reported by Routledge et al. (2013). However, there were significant methodological differences between the two studies. Most notably, NFC was measured after a success/failure manipulation and used as a mediator of death anxiety, whereas Routledge and colleagues measured PNS as an individual difference and used it as a moderator of MS effects. Given that NFC and PNS are strongly and reliably correlated (Leone et al., 1999) a complimentary explanation is that both studies utilised participants who needed answers. When confronted with death, participants who began with low trait need for structure were unable to defend themselves with their current worldview (Routledge et al., 2013). Other participants in similar conditions started exploring other cultural practices instead of retreating to their own stable cultural practices (Vess et al., 2009).

In Study 4, the failure manipulation led to an increased need for closure, regardless of pre-existing trait levels of NFC. When confronted with failure, participants’ life meaning was threatened (as measured by an increase in NFC). Under attack and unable to defend themselves from thoughts of death, death anxiety increased.

There are several limitations to this study, however. First, there was no control condition. The study compares the experience of success to the experience of failure; there is no neutral baseline. Without this baseline it is unclear whether failure produces death anxiety, or whether success reduces it, or some combination of the two. Success could in principle reduce death anxiety through the same mechanism that failure increases it: thinking about success cements the meaning framework or worldview defence, which reduces the need for
closure. Second, the experiment was exploratory, rather than confirmatory. The sample size was small and the study underpowered. A future study would need to address this practical limitation. Third, the results do not elucidate the relationship between failure and death. With a more powerful sample, Chapter 7 attempts to clarify this relationship.
Chapter 7
Study 5: Personal Failure, When Mortality Is Salient

“Life is not lost by dying; life is lost minute by minute, day by dragging day, in all the thousand small uncaring ways.”

- Stephen Vincent Benét

Studies 2 and 3 provided little evidence for acute death anxiety under conditions that should promote it, at least implicitly. Although these data do not rule out the possibility that death anxiety is fully suppressed by other mechanisms, I suggested that the most parsimonious conclusion is that participants are not particularly concerned about their death. This conclusion is bolstered by evidence from Study 1 that death is not a salient fear, and is far less concerning than significant life failure.

Chapter 6, however, suggested that the story is not so simple, and that failure itself may gain some of its power via its functional association with death. The interpretation is confounded by the potential fluidity of the relationship: just as thinking about death can prime failure (e.g., dying before you experienced everything you wanted), thinking about failure can prime death (e.g., not being married with children reminds you of your biological clock). Study 4 provided preliminary evidence for mediation between failure and death anxiety through the increased need for closure.

The common ground between studies using mortality salience (Routledge et al., 2013; Vess et al., 2009) and the failure manipulation of Study 4 as independent variables is the strength of the meaning structure; the worldview defence. Meaning is related to the cultural worldview and the lack of meaning leads to death anxiety. People with low personal need for structure have weak worldview defences (Routledge et al., 2013; Vess et al., 2009). Thus, when these people are confronted with their mortality, they are more willing to seek new cultural perspectives than rely on their existing worldviews. Without this defence, they are
prone to experience high levels of death anxiety. Study 4 demonstrated that thoughts of failure led to a greater desire for closure; a variable associated with the search for meaning and the cultural worldview (Heine & Proulx, 2006; Proulx & Heine, 2006, 2008; Vess et al., 2009).19

Mortality salience typically does not lead to death anxiety (Greenberg et al., 2003). However, if failure challenges the worldview defence and the worldview defence is insufficient defence against the terror of death, then the most parsimonious explanation is that mortality salience produces death anxiety for people who experience failure. Study 5 tests this statement directly using a 2 (failure or success) x 2 (mortality salience or nothing) between-subjects design and the same dependent variables. If the results from Study 4 replicate and failure does lead to an increase in the need for closure, than mortality salience should enhance death anxiety for participants in the failure condition.

Method

Participants and procedure. Four hundred and thirty-one participants ($M_{age} = 36.31$, $SD = 12.22$; 259 women, 171 men, 1 other) were recruited using M-Turk for token payment of NZ $0.50. All participants completed the study online, via a questionnaire designed in Qualtrics (2015). Participants began by providing demographics (sex, age, ethnicity, nationality, religious affiliation, religious importance on a 9-item question from not at all important to very important, spoken English quality, and self-esteem; see Appendix D). After providing demographics, participants then completed a failure manipulation (see Appendix E) counterbalanced with a written mortality salience manipulation (see Appendix B).
Afterward, participants completed a short series of questionnaires. The questionnaire consisted of the following measures, always in the same order:

Death anxiety was measured using a modified version of the Death Anxiety Questionnaire (DAQ; Conte et al., 1982; see Appendix A) to allow participants a wider range of responses—as opposed to the binary Death Anxiety Scale from the previous study (Templer, 1970). An example item included “Does the thought worry you that with death you may be gone forever?” on a modified 9-point scale from 0 (not at all) to 8 (very much).

Cognitive closure was again measured using the reduced 15-item NFC scale (Roets & Van Hiel, 2011; see Appendix G). An example item includes “I enjoy having a clear, structured mode of life” on a 9-point scale from -4 (strongly disagree) to 4 (strongly agree).

To streamline the methodology for this replication, Study 5 did not include the extraneous measurements (i.e., the Supernatural Belief Scale and the Verbal Fusion Scale). Also to ensure they were paying attention, Study 5 ended with a question about what emotion the participant was feeling. The question specifically asks participants to select “none of the above” and continue with the survey.

Results

Thirty participants did not complete the study, one participant did not provide informed consent, eight participants completed the survey on a small device without a full screen option, and five participants failed the attention check. Because of overlap, 34 participants in total were removed from the following analyses.

DAQ scores, calculated as the average of all 15 items (no reverse scoring is required), were slightly negatively skewed (Shapiro-Wilk test of normality, $p < .001$; $M = 3.90$, $SD = 1.90$) and, as typical in the literature, below the midpoint. NFC scores were calculated as the
average of all 15 items (no reverse scoring is required) and were slightly negatively skewed (Shapiro-Wilk test of normality, $p = .006; M = .83, SD = 1.46$) and were above the midpoint. Death anxiety and need for cognitive closure were significantly correlated ($r = .44, p < .01$).

A MANOVA was conducted with the failure condition, the mortality salience condition, and a dummy code for the counterbalance between the two as independent variables. DAQ and NFC were included as dependent variables. The analysis revealed that participants under mortality salient conditions reported greater death anxiety than participants who were not ($M = 4.11, SD = 1.85$ and $M = 3.70, SD = 1.93$, respectively), $F(1, 395) = 4.51$, $p = .03$, although they reported no more need for closure ($M = .90, SD = 1.40$ and $M = .76, SD = 1.50$, respectively), $F(1, 395) = .88, p = .35$. The analysis also revealed that participants listing failures reported no more need for closure than participants listing successes, ($M = .74, SD = 1.48$ and $M = .92, SD = 1.42$, respectively), $F(1, 395) = 1.36, p = .24$, nor were they more death anxious ($M = 3.84, SD = 1.83$ and $M = 3.95, SD = 1.97$, respectively), $F(1, 395) = .34, p = .56$.²⁰

**Mediation Replication.** PROCESS for SPSS (Hayes, 2012, Model 4) was used to reanalyse the finding from Study 4 that NFC mediates the relationship between failure and death anxiety. Two hundred and eight participants were subjected to the same conditions of Study 4 (i.e., No MS -> Failure / Failure -> No MS and No MS -> Success / Success -> No MS are the same conditions from Study 4). The results of a mediation test with 5000 bootstrapped samples revealed a non-significant indirect effect of .01, 95% CI [-.11, .13]—the results did not replicate.

**Further mediation.** PROCESS for SPSS (Hayes, 2012, Model 7) was also used to test the moderated mediation of death anxiety through NFC. The overall model was non-significant, .08, 95% CI [-.08, .25]. Further, separate mediation models were conducted for

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²⁰Counterbalancing had no significant effect on either DAQ or NFC, nor did any of the two- or three-way interactions.
**Mortality salience present**

\[ \text{Success} \rightarrow \text{Need for Closure} \rightarrow \text{Death Anxiety} \]

\[ .16 \rightarrow .07 (-.02) \rightarrow .57** \]

*Figure 7.1.* Standardised regression coefficients for the relationship between failure and death anxiety as mediated by NFC under mortality salient conditions. The standardised regression coefficient between failure and death anxiety, controlling for NFC, is in parentheses.

**p < .001**

**Mortality salience absent**

\[ \text{Success} \rightarrow \text{Need for Closure} \rightarrow \text{Death Anxiety} \]

\[ .01 \rightarrow .03 (.02) \rightarrow .56** \]

*Figure 7.2.* Standardised regression coefficients for the relationship between failure and death anxiety as mediated by NFC without mortality salience. The standardised regression coefficient between failure and death anxiety, controlling for NFC, is in parentheses.

**p < .001**
mortality salient present and mortality salient absent conditions (see Figures 7.1 and 7.2). As shown in Figure 7.1, under mortality salient conditions the results of a mediation test with 5000 bootstrapped samples revealed a non-significant indirect effect of .09, 95% CI [-.02, .21]. As shown in Figure 7.2, without mortality salient conditions the results of a mediation test with 5000 bootstrapped samples revealed a non-significant indirect effect of .01, 95% CI [-.11, .13].

Discussion

Failure, Study 4 proposed, theoretically gained some of its power from a functional association with death. Study 5 investigated the fluid relationship between death and failure using need for closure—common ground between Terror Management Theory and the Meaning Maintenance Model—as a mediating variable. I had hoped, among other things, to demonstrate a basic tenant of TMT: death-thoughts without a worldview defence leads to death anxiety. The moderated mediation model tested the hypothesis that MS moderates the relationship between failure and the need for closure, which mediates the relationship between failure and death anxiety. The present data did not support this hypothesis.

There was one surprising and one consistent result. Surprisingly, there was a main effect of mortality salience on death anxiety; a finding largely absent from the literature. Most TMT theorists conclude that mortality salience does not lead to death anxiety because of the worldview defence (Greenberg et al., 2003). The main effect of mortality salience on death anxiety in the present study does not support this conclusion. The present study had 397 participants, four times the size of the average TMT study (87 participants; Burke et al., 2010). If there was a small effect of mortality salience on death anxiety, it had the sample size to find it.
However, Studies 4 and 5 did consistently find strong, positive correlations between need for closure and death anxiety ($r = .42$ and $r = .44$, respectively). This finding lends support to the claim that meaning structures (MMM) and the worldview defence (TMT) are related to death anxiety.

Given the strength of this relationship and the link between MS and the search for meaning (Vess et al., 2009) it is odd that Study 5 failed to replicate the results of Study 4. Mortality salience should have, in theory, increased death anxiety for participants in the failure condition. This may be because of a couple factors. Firstly, there was never a direct effect of failure on death anxiety. This direct relationship is not strictly necessary in a mediation model (Rucker et al., 2011) but its presence gives confidence that an effect exists in the current thesis. Absence of a direct relationship does not preclude the existence of a suppressor variable, although any suppressor variable candidates are currently unknown.

Secondly, the failure manipulation is highly variable. The only manipulation check is that participants did in fact list failures, although there was no time to systematically analyse each failure listed. Examples included the theorised personal failures (e.g., “Have a stable romantic relationship,” “Have a child,” and “See the Sphinx of Egypt”) but they also included unknown categories of failure (e.g. “Sleep with Pamela Anderson”, “Sell my car”, and “Water”). The inability to measure the intensity of or categorise the present failures of Study 5 is a limitation. Future research should consider using a self-report measure to gauge intensity, or to avoid self-report biases (Nisbett & Wilson, 1977) and categorise listed failures with human coders (similar to Study 1).

Thirdly, it is always a possibility that the indirect effect of failure—as conceptualised by Chapter 6—on the need for closure does not exist. This explanation is not as likely because Study 4 found a moderate effect size with a small sample (-.67; $N = 95$). Further, previous research from the MMM (Proulx & Heine, 2006, 2008) and TMT (Routledge et al.,
2013; Vess et al., 2009) all suggest that the worldview is an important defence against the terror of death. And medical theories of dying (Corr, 1992; Pattison, 1997) and the mid-life crisis (Jaques, 1965), for example, suggest that priorities change halfway through life to prevent having feelings of failure.

Of course, the parsimonious explanation from Studies 1-3 may still apply: death anxiety does not affect behaviour in a meaningful way. Participants under mortality salient conditions in the present study had a mean slightly above the midpoint and only a handful of studies (e.g., Routledge et al., 2013) report this finding. The implications of this explanation and the limitations of each variable in the present model—failure, meaning, and death anxiety—will be discussed further in the final chapter.
“Getting older was to witness the steady decline of limitless possibility.”

- Carol Shields

Are we afraid of death, the universal mystery, the ultimate source of all fear and “the last enemy to be destroyed” (1 Cor. 15:26)? In a series of five studies, this thesis attempted to answer this question. Despite some arguments that death is the source of all other fears and that death deprives the individual of many years of future good, the evidence still supports, “no”. Ancient philosophers from Chapter 1 argued relentlessly that humans should not fear death—even up to their execution! Doctors and healthcare professionals largely ignore the fear of death according to the medical theories of death and dying from Chapter 2.

The second chapter also introduced the reader to Terror Management Theory, which assumes that awareness of our mortality is an ever-present and uniquely powerful threat to our well-being. This argument is compelling and has led to countless studies underneath the theoretical umbrella of TMT (Burke et al., 2010). This singular argument combined with the robust findings of Terror Management Theory stand in opposition to a simple, “no”.

The literature on death anxiety (see Chapter 3) paints a mixed picture, however, and arguably falsifies TMT’s strongest motivational claims, although results vary with participant and methodological (among other) factors. In particular, there has been no modern open-ended survey of adult fears, a gap Study 1 sought to fill. Results showed that explicit human fears fell into distinct high, medium, and low frequency clusters. Consistent with previous research (Lane & Gullone, 1999), failure, illness and injury, phobias, and social fears comprised the high frequency cluster cited between 50% and 60% of respondents. Death concerns occupied the medium frequency cluster being cited by approximately 20% and 30% of respondents. Independent coders then recoded every fear based on its relationship to three
categories: own death, other death, and failure on a 3-point scale anchored at 0 (definitely not related), 1 (possibly related), and 2 (definitely related). Each rating was averaged across all five fears resulting in a fear index from 0 to 2. Again, each fear was more related to failure (.46) than own death (.33).

TMT’s claims of death anxiety are not so easily relinquished, however. Indeed, in theory, people are so fearful of death that they have developed elaborate defences to prevent themselves from thinking about it, making any failure to find death anxiety embarrassing but not fatal. Of course, TMT risks non-falsifiability with this approach: if a study finds that participants are low in death anxiety as with Study 1, TMT explains that those participants had strong worldview defences. If challenging a worldview fails to move death anxiety, TMT can rebut that another defence strategy took its place. Oddly enough, TMT studies seldom measure death anxiety (e.g., Greenberg, Simon et al., 1994; Harmon-Jones et al., 1997; Lifshin et al., 2016; Pyszczynski et al., 1996) instead focusing on the causes and consequences of the worldview defence.

To demonstrate death anxiety, then, one needs to go beneath these defences. To this end, Studies 2 and 3 used two novel approaches to assessing death anxiety: textual analysis and facial recognition. The few studies that have used textual analysis to analyse death-related writings conclude that people are overwhelmingly positive in their language use when compared to baseline and emotional controls. Inmate language is positive immediately before their execution (Hirschmüller & Egloff, 2016), suicide notes are positive (Hendelman & Lester, 2007), and, experimentally, written mortality salience prompts are more positive than controls (Kashdan et al., 2014). Study 2 did not demonstrate overwhelming positive word use. Participants in this study expressed more positive (and negative) words than baseline controls, however they were far more negative than positive (driven by words related to both ‘anxiety’ and ‘sadness’), and they expressed more anxiety than controls. Because participants
were both positive and negative, the safest conclusion is that talking about death is more emotionally evocative than talking about neutral or negative (non-death-related) topics, but there is no evidence that death is exclusively or uniquely terrifying.

Study 3 was the first opportunity, arguably, to peer beneath the worldview defence armour. Following Ekman’s theory of emotional leakage, I proposed that even if death anxiety were being suppressed, the participant’s face would betray those feelings. However, when talking about their own deaths on camera, participants did not show anxiety whether rated by human coders or by software designed to detect negative expressions and, if anything, participants were more emotional when talking about television than about death.

These studies are not the first to demonstrate that Terror Management Theory lacks terror (see Kastenbaum, 2009; Muraven & Baumeister, 1997; Seligman et al., 2016). The parsimonious account from Chapter 5 was that, because of so many null findings, that death is not a concerning event. Interpretation of the data, though, is still hindered by the worldview defence. Researchers do not see death anxiety because the worldview protects participants from it. Study 3, though not without its weaknesses, found no evidence of emotional leakage from participants during death-related expressions.

Enter the Meaning Maintenance Model. Both TMT and the MMM share similar claims about the worldview defence (see Chapter 2). According to theory, the search for and maintenance of meaning structures, like worldviews, are central to the human defence from anxiety. When you threaten a meaning structure, you threaten well-being. For example, remind a person of terrorism and their belief that the world if safe and secure shatters. The only recourse is to find meaning elsewhere, which in this example is both the increased support for martyrdom attacks and the use of extreme military force (Pyszczynski et al., 2006). The difference is that the MMM does not view death as a unique category. Any uncertainty that undermines the predictability and controllability of one’s life causes anxiety
(Baumeister, 1991; Webber et al., 2015) and death is only one example of an uncertainty threat.

At this theoretical juncture, the thesis analysed what people in Study 1 explicitly feared: failure. Chapter 6, Study 4 had the difficult task of linking severe failure to death anxiety through two seemingly disparate lines of evidence. First, meaning threats must increase death anxiety. Individuals with low Personal Need for Structure (PNS), a variable similar to the Need for Closure (NFC) and indicative of the need for meaning, do not possess a strong worldview defence and are prone to death anxiety (Juhl & Routledge, 2016). Second, failure must act as a meaning threat. The failure manipulation from Study 4 helped undermine predictability and controllability by asking participants to self-select their own personal failures (i.e., I should be a success but I have not accomplished any of these items). The mediation model was as follows: a meaning threat (failure) undermines well-being (death anxiety) through the strength of a meaning structure (NFC).

Failures were operationalized as lapses and omissions (White, 2002). Both of these types of failure were related to the general term ‘severe failure’. Lapses were approach-based (e.g., losing your job) and omissions were avoidance-based (e.g., not traveling the world). Even with operationalized terms for failure, the methodological problem of inducing these personal failures remains. Inducing failures of this magnitude was new territory, and part two of this dissertation attempted to temporarily capture the feeling of being a personal failure. Study 4 was, to my knowledge, the first attempt to induce personal failure. Results confirmed the aforementioned mediation model. Thoughts of failure did lead individuals to seek closure (i.e., NFC); this temporary search for a stable worldview left them, arguably, prone to death anxiety. While creating a satisfying explanation for the causal role of meaning threats on death anxiety, Study 4 did not include mortality salience—the obvious theoretical link to TMT—in its model, nor did it account for the theoretical relationship between death, failure,
and immortality. Death and severe, personal failures would be meaningless if people lived forever. Immortality is the antithesis of mortality and, if an individual had an infinite amount of time, she would have infinite hours to amend failures. Climbing Mount Everest, starting a family, and finding a new career can only be labelled personal failures because time on earth is finite.

To clarify this relationship, Study 5 attempted to replicate and extend study 4 by including mortality salience as a moderator of the relationship between failure and NFC. Theoretically, mortality salience should enhance the effect of failure on NFC. Thoughts of failure (e.g., losing your job, not providing for your family, and not traveling the world) previously increased individual need for closure. After being reminded about personal failures, thoughts of one’s mortality should exacerbate those feelings and increase the need for closure further.

Study 5 did not replicate, nor did it find any direct or indirect effect of death anxiety on failure or NFC. Contrary to most published death anxiety articles, however, there was a main effect of mortality salience on death anxiety. The ubiquity of this finding was likely one of the reasons TMT theorists shied away from measuring death anxiety. Researchers consistently argued that the potential to feel anxiety rather than the actual experience of anxiety was enough to activate the worldview defence (Greenberg et al., 2003; Pyszczynski et al., 1999). Although, Study 5 did have the sample size to detect a small effect on death anxiety, this finding is not supported by the literature.

**Implications**

Part one of the present thesis helped reinforce the “Where’s the terror?” claims from previous researchers. In the first three studies, neither explicit, nor implicit measures of fear
of death and death anxiety suggested a response akin to terror. From these findings and the extant literature, I am unconvinced that death anxiety has behavioural consequences.

For one thing, many studies find that people are more afraid of the pain associated with dying rather than death itself (Fry, 1990; Henderson, 1990; Wass, Christian, Myers, & Murphey, 1979). For another, most people do not experience substantial levels of death anxiety at all. Despite the robust literature supporting TMT, the weight of the literature and part one of this thesis call the central assumption of Terror Management Theory into question. If everyone is afraid of death, why do no studies find high levels of death anxiety? What would a person look like without their worldview defence? How would they behave?

During the writing of this thesis, Juhl and Routledge (2016) tied together a series of studies measuring death anxiety under a variety of conditions that stripped participants of their worldview defence (i.e., their buffer; their armour). Highlights from this paper include the findings that mortality salience increases death anxiety for individuals with low, but not high, perceptions of meaning in life (Routledge & Juhl, 2010); and low, but not high, levels of nostalgia proneness (Juhl, Routledge, Arndt, Sedikides, & Wildschut, 2010).

Studies 4 and 5 provided cursory support for their findings. The only consistent finding from the models was a strong effect of Need for Closure (NFC) on death anxiety and a strong positive correlation between the two. This indicates that the search for meaning coincides with an increase in death anxiety. The failure to replicate, however, tempers the casual claim. It is more likely, based on Studies 4 and 5, that NFC and death anxiety share a relationship in which the direction is unknown.

Both the MMM and TMT support a relationship between NFC and failure because both theories champion the importance of meaning. The difference between the two, remember, is the role of death. For the TMT theorist, death is the penultimate cause of terror. The only reason humans function is because they have learned to suppress this terror with a
strong cultural worldview (aka meaning structure). The MMM theorist, however, places uncertainty and meaninglessness as the biggest existential concerns. After all, why would people commit suicide if they were afraid of death? The inability to find death anxiety set the stage for an in-depth analysis of a potential threat to meaning and the more frequent explicitly stated fear of failure.

The inability to replicate the findings from Study 4 places personal failure (as manipulated) in an interesting position. Study 4 demonstrated a significant indirect effect between failure and death anxiety mediated by NFC, whereas Study 5 did not. Study 5 has the most power to detect effects, which makes it more likely to be the correct interpretation of the findings. What, then, should one make of the theoretical justification of using failure to increase the need for closure? Consider the limitations of the part two’s experimental design.

Limitations

Failure. The manipulation of personal failure in Studies 4 and 5 was novel and it allowed participants to define personal failure for themselves. The benefit of ensuring that the manipulation meant something to the participant was also a detriment to the interpretation of the results; the failure manipulation had a high variability in the types of failure. Some examples were more traditional and frequent personal failures (e.g., “Have a stable romantic relationship,” “Have a child,” and “See the Sphinx of Egypt”) some were less traditional and infrequent personal failure (e.g. “Sleep with Pamela Anderson”, “Sell my car”, and “Water”).

Although easy to dismiss, the less traditional answers still fit within the White (2002) framework. Letting opportunities slip by such as choosing not to visit Egypt and choosing not to sleep with Pamela Anderson are both omissions by definition. But are these two options
functionally the same for the participant? The inability to tell the difference is a limitation of Studies 4 and 5.

Future studies can improve upon the design and avoid the Pam Anderson/Egypt distinction in one of two ways. (1) A self-report measure is a means of measuring the intensity of each failure. This methodological choice takes the decision out of the researcher’s hands. If for example, both the Pam Anderson and Egypt examples receive a 5 on a 5-point scale then they are both important to the participant regardless of frequency. (2) Human coders can rate the intensity of each failure similar to the method used in Study 1. This methodological choice avoids self-report bias (Nisbett & Wilson, 1977) and adds an element of control over the types of failure that get admitted into the dataset.

Further, the theoretical justification for Study 4 was predicated on a potential relationship between failure and death. Death reminders prime the list of things you want to do before you die and, conversely, personal failure reminders prime the time you do not have to get those things done. While theoretically sound, Study 1 found that the human ratings for own death and failure were negatively correlated. At face value, this implies there is a negative relationship between the two; the opposite of a testable positive relationship. There are reasons why this could have happened. The nature of the list five fears manipulations was such that every time a participant lists death, he has one less slot to list failure. Additionally, it may be a common practise for a participant to list five death- or five failure-related themes (though this explanation is untested).

Finally, failure is a broad category. White (2002) defines lapses, omissions, and resistances, but concedes that these are merely three examples of failure classifications. Other tests of the effect of failure on meaning structures can consider the difference between chronic and acute failure (e.g., anxiety over work performance vs. failing an exam) or between self failure and failing others (e.g., failing an exam vs. not picking a friend up from
the airport). The current classification of failure is far from perfect. Not only do the previous examples overlap with each other, they overlap with the current description of lapses and omissions. Future research can easily reinterpret failure similar to or distinct from this thesis’ original interpretation.

**Meaning.** The definitions for meaning structure and worldview are still nebulous. Baumeister (1991) contended that meaning could be threatened by undermining the predictability and controllability of the individual’s existence, by eliminating the potential for creating meaning in the future, by reminding the individual that their meaning framework and existence will be forgotten, and by nullifying the value of the individual’s life achievements. These definitions, though illuminating, leave some questions: What constitutes a worldview? Can a worldview be individualised or do they have to have consensus? How many worldviews can a person hold simultaneously? When one is threatened, how long does it take for another worldview to take its place? How do you tell if one worldview is better than another?

There are no simple ways to address this concern. Though TMT and the MMM have some answers. Personal worldviews are just that, personal. To hold one, an individual must maintain a faith in it and live up to the standards prescribed by it (Greenberg et al., 1997; Pyszczynski et al., 2006). The Catholic worldview, for example, involves a faith in God and a set of behavioural standards of conduct (e.g., attending mass, giving confession; McCallum & McGlone, 2011). Additionally adhering to the behavioural norms personally increases the strength of the worldview as does interacting with people who also hold the same worldview (Pyszczynski et al., 2006).

According to MMM, when a meaning structure is challenged or removed, the individual needs to reaffirm an existing structure or construct a new one (Proulx & Heine, 2006, 2008). The international news of sexual assault in the church was an attack on the
Catholic worldview. Practising Catholics had two theoretical options: one, abandon the church to distance themselves from the scandal (e.g., change denominations or become atheist) or two, create a mental justification for the behaviour (e.g., “It was a select few, not all priests were involved”).

The present studies utilised a measure of the need to maintain these structures (i.e., NFC). It did not measure what, if any, meaning structures were affected by the manipulation. Granted, this limitation applies to most research conducted under either the MMM or TMT umbrella. To my knowledge it may not even be possible to parse the effects of specific worldviews on behavioural outcomes. Consider the following example: I believe that governments provide safety and security to their citizens. I believe that people should treat each other with respect. In the event I am primed with terrorism, my safety and security worldview is threatened. According to researchers, I am likely support an increase in the use of extreme military force (Pyszczynski et al., 2006).

In fairness to the researchers of the previous study, they did not measure either worldview and acknowledge that it is a “complex question” (Pyszczynski et al., 2006, p. 526). Which will invariably be a part of the problem with future research: no one knows how to measure worldviews or meaning structures, only that they are theoretically important.

Final Thoughts on Death Anxiety

Measuring the fear of death—indeed, measuring most things in social cognition—is still a work in progress. Survey based methodologies of death anxiety are, far and away, the most popular and suffer from the same criticisms mentioned previously: researchers assume that everyone has death anxiety, that everyone will disclose it, and that the surveys can detect it (Corr et al., 2006). It is surprising how little existing data bear out these assumptions.
Participants consistently score low on death anxiety scales, they do not list fear of death when given the opportunity, and indirect methods of assessing death anxiety are not very promising either (see also Chapter 3).

Despite the shortcomings of these methodologies, there are some consistencies in the death anxiety literature. Death anxiety, at the very least, can be measured. Women are consistently more death anxious than men and age is associated with a decline in death anxiety (e.g., see Russac et al., 2007 for evidence on both findings). The preceding five studies of this thesis helped clarify the elusive nature of death anxiety, namely that there does not seem to be anything to find.

Granted, this thesis suffers from a common problem in the psychological sciences: Westernisation. Samples are overwhelmingly American (Burke et al., 2010; Henrich et al., 2010) and reflect a Western outlook on the sciences conducted by Western researchers. With regard to death anxiety there have been samples from India (Kang & Kang, 2013a, 2013b), Israel (Azaiza et al., 2011), Kuwait (Abdel-Khalek, 2000-2001), Lebanon (Abdel-Khalek, 1998), the United States (Abdel-Khalek, 1997; Templer, Lavoie, Chalgujian, & Thomas-Dobson, 1990) among others. And, with some minor exceptions, do not appear to contradict the common finding that death anxiety is low.

These findings and the current studies, despite their limitations, challenge the intuitive and theoretical assumption that death cognition is a primary motivator of human behaviour. The inability to find terror means that TMT is beginning from the faulty assumption that humans are afraid. Humans can be afraid given that they are willing to explicitly list death as a fear, but the fear of death is by no means a common finding in a majority of samples.

Moving forward, proponents of TMT should follow Juhl and Routledge’s (2016) lead. Their current research programme has found cursory evidence that terror can exist underneath the worldview armour and scales that measure meaning are theoretically suited to
explain this relationship. The Need for Closure and Personal Need for Structure are two such variables. When a person needs structure, when a person craves meaning in their lives, events that challenge a meaning structure (e.g., the death of a child) cause anxiety. This renewed focus on meaning and the search for it are the crux of the MMM and future studies might productively focus on the causes and consequences of meaning structures.

Failure, as it turns out, may be related to these meaning structures but as it is currently defined by this thesis, Studies 4 and 5 are ambivalent on this point. Personal failure is far too ubiquitous in popular culture (newspapers, movies, novels, etc.) and the sciences (Martin, 2010; Pang, 2010; Prochaska et al., 1994; White, 2002) to not share a relationship with personal meaning structures and the cultural worldview. The present thesis did not find the appropriate way to measure failure.

Personal failure also has clinical consequences. Discussing these failures is a focal point of narrative therapy (White, 2002), but as a common fear it has an important place in psychoanalysis, cognitive behavioural therapy, motivational interviewing, or any form of therapy that involves social fears and phobias. Specific to narrative therapy, if society did not judge failures (or people did not feel likely failures because of perceived societal judgments) the meaning structures, although nebulous, would likely be easier to maintain.

If reading this dissertation has caused any discomfort may the words from Justin Roiland and Dan Harmon, creators of the animated series Rick and Morty, provide solace, “Nobody exists on purpose. Nobody belongs anywhere. Everybody’s going to die…come watch TV.”
References


Appendix A

This section of the study is about your thoughts and feelings about death. Using the scale below, please indicate how much you agree with each statement. There are no right or wrong answers. Please take your time and response as honestly as possible.

<table>
<thead>
<tr>
<th>Not At All</th>
<th>Very Much</th>
</tr>
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<td>0</td>
<td>1</td>
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<td>1</td>
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<td>7</td>
<td>8</td>
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</tbody>
</table>

1. Do you worry about dying?
2. Does it bother you that you may die before you have done everything you wanted to?
3. Do you worry that you may be very ill for a long time before you die?
4. Does it upset you to think that others may see you suffering when you die?
5. Do you worry that dying may be very painful?
6. Do you worry that the persons most close to you won’t be with you when you are dying?
7. Do you worry that you may be alone when you are dying?
8. Does the thought bother you that you might lose control of your mind before death?
9. Do you worry that expenses connected with your dying will be a burden for other people?
10. Does it worry you that your instructions or will about your belongings may not be carried out after you die?
11. Are you afraid that you may be buried before you are really dead?
12. Does the thought of leaving loved ones behind when you die disturb you?
13. Do you worry that those you care about may not remember you after your death?
14. Does the thought worry you that with death you may be gone forever?
15. Are you worried about not knowing what to expect after death?

Death Anxiety Questionnaire (DAQ; Conte et al., 1982)
Appendix B

In the space below, jot down, as specifically as you can, what you think will happen to you physically as you die and once you are physically dead.

___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

In addition to the physical description, write in some detail about the feelings that the thoughts of your own dying arouse in you.

___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

22 Mortality Salience Manipulation: Death Prime (Rosenblatt et al., 1989)
We would like to know how you are currently feeling. Please use the scale below to rate each item in terms of how you are feeling right now.

<table>
<thead>
<tr>
<th>Not At All</th>
<th>Very Much</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

____ Irritable  ____ Excited  
____ Nervous  ____ Attentive  
____ Distressed  ____ Active  
____ Ashamed  ____ Upset  
____ Inspired  ____ Afraid  
____ Proud  ____ Strong  
____ Enthusiastic  ____ Alert  
____ Jittery  ____ Guilty  
____ Scared  ____ Hostile  
____ Interested  ____ Determined

---

\(^{23}\) The Positive and Negative Affect Scale (PANAS; Watson et al., 1988)
Appendix D

Rate the following statements on the extent to which you agree or disagree with them, using the scale below. Please answer each item as honestly as possible.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
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</table>

1. On the whole, I am satisfied with myself.
2. At times I think I am no good at all.*
3. I feel I have a number of good qualities.
4. I am able to do things as well as most other people.
5. I feel I do not have much to be proud of.*
6. I certainly feel useless at times.*
7. I feel that I’m a person of worth, at least on an equal plane with others.
8. I wish I could have more respect for myself.*
9. All in all, I am inclined to feel that I am a failure.*
10. I take a positive attitude toward myself.

---

24 Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965)
* Note: Questions 2, 5, 6, 8, and 9 are reverse coded.
Appendix E

Failure Instructions:

“Everyone has personal ambitions—goals that they expect to achieve during their lives, and even at this point in your life, you probably have not achieved many of them. In this study, we are interested in which of your goals you have not yet achieved. In the space provided below, please list six personal goals that you have yet to achieve. If you can’t think of six, just list the ones that are most important to you.”

Success Instructions:

“Everyone has personal ambitions—goals that they expect to achieve during their lives, and even at this point in your life, you have probably achieved many of them. In this study, we are interested in which of your goals you have achieved. In the space provided below, please list six personal goals that you have achieved. If you can’t think of six, just list the ones that are most important to you.”

25 Failure Manipulation
Rate the following statements on the extent to which you agree or disagree with them, using the scale below. Please answer each item as honestly as possible.

<table>
<thead>
<tr>
<th>False</th>
<th>True</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

1. I am very much afraid to die.
2. The thought of death seldom enters my mind.*
3. It doesn’t make me nervous when people talk about death.*
4. I dread to think about having an operation.
5. I am not at all afraid to die.*
6. I am not particularly afraid of getting cancer.*
7. The thought of death never bothers me.*
8. I am often distressed by the way time flies so rapidly.
9. I fear dying a painful death.
10. The subject of life after death troubles me greatly.
11. I am really scared of having a heart attack.
12. I often think about how short life really is.
13. I shudder when I hear about people talking about a World War III.
14. The sight of a dead body is horrifying to me.
15. I feel that the future holds nothing for me to fear.*

---

Death Anxiety Survey (DAS; Templer, 1970)

*Note: Questions 2, 3, 5, 6, 7, and 15 are reverse coded.
Appendix G

Rate the following statements on the extent to which you agree or disagree with them, using the scale below. Please answer each item as honestly as possible.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>-4</td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td></td>
<td>-1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

1. I don’t like situations that are uncertain.
2. I dislike questions which could be answered in many different ways.
3. I find that a well ordered life with regular hours suits my temperament.
4. I feel uncomfortable when I don’t understand the reason why an event occurred in my life.
5. I feel irritated when one person disagrees with what everyone else in a group believes.
6. I don’t like to go into a situation without knowing what I can expect from it.
7. When I have made a decision, I feel relieved.
8. When I am confronted with a problem, I’m dying to reach a solution very quickly.
9. I would quickly become impatient and irritated if I would not find a solution to a problem immediately.
10. I don’t like to be with people who are capable of unexpected actions.
11. I dislike it when a person’s statement could mean many different things.
12. I find that establishing a consistent routine enables me to enjoy life more.
13. I enjoy having a clear and structured mode of life.
14. I do not usually consult many different opinions before forming my own view.
15. I dislike unpredictable situations.

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27 Need for Closure Scale (NFC; Roets & Van Hiel, 2011)