

Chapter 2

Death anxiety and religious belief: a critical review

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This chapter further explores the connection between explicit death anxiety and religious belief. Dealing with a large body of empirical research, it considers various interpretations of terror management theory (TMT) and their predictions about whether people are aware of and consciously afraid of death; whether death anxiety systematically covaries with religiosity; and how the two are causally related. As we gain more—and more complex—answers to these empirical questions, TMT may have to evolve to reconsider how death thought accessibility (DTA) and death anxiety are related, whether literal immortality pursuits outweigh symbolic immortality pursuits, and how culturally specific factors impact the ostensibly universal fear of death.

The idea that religious beliefs and practices are psychological and cultural means for assuaging fear is one that enjoys an impressive and impressively venerable pedigree. Lucretius Carus's (c. 99 BCE–c. 55 BCE) poetic celebration of Epicurean philosophy, *On the Nature of Things*, contains among its speculations the idea that it is the uncertainties and perils of mortal life that lead us to believe that the gods control the natural world. The gods can at least be appealed to and appeased, unlike the inanimate atoms that Lucretius knew to be the real causes of things. It would not be long before the sentiment is enshrined in a phrase—*primus in orbe deos fecit timor*; fear first made gods in the world—that appears in at least two different poems in the 1st century CE.¹ The more specific idea that the fear of *death* is what motivates religious belief and practice develops later, though the idea that death anxiety is a powerful force in human psychology more generally can already be found in antiquity. For example, in *City of God* (4.3, 5.13), Augustine of Hippo analyzes the Roman love of glory—as evinced by their pursuit of war as well as art—as a product of death anxiety: he also interprets the fear of death theologically, arguing that our fear of death may, and indeed ought to, lead us to treasure eternal things (Martin, 2009).

Hume's (2008) *Natural History of Religion* is perhaps the best early example of a naturalistic theory of religion. The theory set out in the book is surprisingly modern, comprising both cognitive elements as well as affective ones. Among the litany of passions that Hume (2008, p. 140) lists as the triggers of “the first obscure traces of divinity” in the minds of our ancestors is the terror of death. A century later, Feuerbach (1967) also lists the fear of death as an example of the feelings of dependency that he claims as the psychological source of religion: but death also clearly has a special place in his theorizing. “If man did not die, if he lived forever, if there no such thing as death,” writes Feuerbach (p. 33), “there would be no religion”; and again, that “man's tomb is the sole birthplace of the gods.”

All of which is to say that such ideas were already in the air by the time we get to Sigmund Freud and Bronisław Malinowski, with whom social and psychological scientists may be more familiar. Freud actually has surprisingly little to say directly on the role that the fear of death plays in religious belief: his theorizing about the interplay between anxiety, death, and religion is characteristically convoluted, involving themes we have come to expect of Freud such as the incest taboo and primordial patricide. However, in *The Future of an Illusion*, Freud (2001, p. 18) does claim that gods—if they are to deserve devotion—“must exorcize the terror of nature, they must reconcile men to the cruelty of Fate, particularly as it is shown in death, and they must compensate them for the sufferings and privations which a civilized life in common has imposed on them.” Furthermore, Freud's work also proved sufficiently suggestive for later psychoanalytic theorists like Ernest Becker, who in turn inspired TMT (Greenberg, Pyszczynski, & Solomon, 1986).

1. Petronius's (27 CE–66 CE) *Poems* 1 and Statius's (45 CE–96 CE) *Thebaid*, Book 3.

The anthropologist [Malinowski \(1948\)](#) was more emphatic about the role that death played in the emergence of religion: reminiscent of Feuerbach, he writes that “[t]he belief in spirits is the result of the belief in immortality” (p. 51); and again, “Of all sources of religion, the supreme and final crisis of life—death—is of the greatest importance” (p. 47).

Although numerous thinkers down the centuries have speculated about the role of death anxiety in the emergence of religion in human cognitive and cultural evolution, Ernest Becker’s development and expansion of this theme remains significant as a watershed. *The Denial of Death*—published in 1973 ([Becker, 1973](#)), and which posthumously won Becker a Pulitzer Prize a year later—put the fear of death at center stage. In it, Becker argued that all human beings share a fundamental need to deny our mortality, which in turn shapes our other desires including the desire for self-esteem, sociality with others, and systems of shared values and accomplishments such as religion, morality, art, and science. In other words, it expressed a social scientific theory of everything organized around a single fundamental force: the fear of death.

Just as Becker’s theory is about more than religion as commonly understood, so is TMT, the social psychological interpretation of Becker. Indeed, of the hundreds of published studies under the rubric of TMT, the vast majority are about what the theory calls “symbolic immortality.” These studies have found that when people are confronted with reminders of their mortality, they become more desirous of fame and fortune, self-esteem and the esteem of others.² Thoughts of death also lead people to prefer others such as themselves and be less tolerant of those who differ from them: prejudice—whether on the basis of ethnicity, nationality, religion, gender, or age—is the dark side of our pursuit of symbolic immortality, which is the kind of immortality that one obtains by being a part of a larger more longevous phenomenon than the individual human organism.

Symbolic immortality is, in other words, an ersatz immortality, even if it is the only kind possible. The term itself carries this implication, especially when contrasted with the literal variety promised by many religions and some biomedical sciences, whether through the transmigration of the soul or the extension of telomeres. Literal immortality is not only analytically prior to the symbolic kind that has received most of the psychological research attention but also theoretically prior, as we find it both in Becker’s own work and in recent expositions of TMT. In the first chapter of *The Denial of Death*, even before the central argument begins, he describes what it is he is trying to explain: he begins by calling it heroism, which he comes to diagnose as the human aspiration that comes from the “ache for cosmic specialness” (p. 4). This leads him to the conclusion that “[e]very society thus is a ‘religion’ whether it thinks so or not . . . no matter how much they may try to disguise themselves by omitting religious and spiritual ideas from their lives.” Similarly, in [Solomon et al.’s \(2015\)](#) recent book-length treatment of TMT, religion—belief in the immortality-granting supernatural—is posited to be a precondition of further cultural and technological achievement: “the sophisticated cognitive capacities associated with consciousness could serve our ancestors well only when buttressed by confidence in a supernatural universe in which death could be forestalled and ultimately transcended” (p. 69).

Given the centrality of religion to TMT and its direct predecessor, the empirical literature’s emphasis on symbolic immortality overliteral immortality is surprising: fortunately, it is recently being rectified, and one of the tasks of this present chapter is to summarize these newer contributions. However, there is another neglected and yet fundamental aspect of TMT to be addressed: indeed, it is one shared with all thanatocentric theories of religion, even from David Hume’s incipient comments onward. All these theories assume that people fear death. Neither Ernest Becker nor terror management theorists are shy about this: in the latter case, the clue is in the name. People are not merely afraid of death; they are *terrified* by it. [Solomon et al. \(2015\)](#) wax superlative about just how terrified we are, insisting that without an ability to deny death, our fear would have hurled “our terrified and demoralized ancestors into the psychological abyss and onto the evolutionary scrap heap of extinct life-forms” (p. 64). Similarly, *The Denial of Death* opens with the claim that “the idea of death, the fear of it, haunts the human animal like nothing else” (p. ix); and Becker goes so far as to posit “the universality of the innate terror of death” (p. 20). The fear of death is, for Becker, the flip side of our desire to live, “the instinct of self-preservation” (p. 16) for which there is plenteous evidence, not only in human beings but also across many species: just watch what happens when an animal—human or otherwise—is confronted with imminent danger. Whereas this instinct of self-preservation is not unique to human beings, the *awareness* of our mortality is to the extent that existential awareness is also unique to our species: even in the absence of immediate peril, we alone among creatures know the fate that awaits us all, and the fear of death therefore disturbs us greatly. Or so goes the theory.

The trouble with this first premise of TMT is that it is rather difficult to prove, or for that matter, to falsify. This is because it is coupled with another fundamental hypothesis in the theory, that the knowledge and concomitant terror of

2. For a recent and comprehensive review, see [Solomon, Greenberg, and Pyszczynski \(2015\)](#).

death are *suppressed* or *denied* in some way. There are various accounts of the mechanisms of death denial, but the upshot of all of them is that because human beings are very successful at keeping our thoughts and fears about death at bay, these thoughts and fears must be very difficult to detect. Becker himself noticed that his theory ran the risk of unfalsifiability, and so proposed two potential solutions: he suggested that psychophysiological measures may succeed to detect death anxiety where self-report measures fail, and also that “shocks in the real world [may] jar loose repressions” (p. 21).

Becker’s first suggestion is a promising one, but only a few studies have attempted to use measures such as galvanic skin response and electromyography to assess death anxiety (e.g., Arndt, Allen, & Greenberg, 2001; Rosenblatt, Greenberg, Solomon, Pyszczynski, & Lyon, 1989; Templer, 1971); none of them are large enough to permit reasonable generalizations about the prevalence of death anxiety. There have been recent attempts to employ neuroimaging methods, but these have resulted in equivocal and inconsistent results (Jong & Halberstadt, 2018). Also beyond the scope of this chapter is research on *implicit measures*: although there is increasing interest in implicit measures of religiosity (Jong, Zahl, & Sharp, 2017), the development of implicit measures of death anxiety is still in its infancy (Jackson et al., 2018). His second proposal is more difficult to apply in the laboratory, though TMT’s standard mortality salience induction procedure may serve a similar function of bringing suppressed thoughts of death to fore; we shall consider the relationship between mortality salience and death anxiety later.

Perhaps Becker is right to be pessimistic about the ability of self-report measures to detect the universal innate terror of death that forms the primary assumption of his theory. He is certainly not alone in pointing out the limitations of self-report measures. On the other hand, the alleged limitations of self-report measures are often exaggerated (Chan, 2009), and we have a better understanding of how self-report measures work and what they mean than we do about more subtle measures that rely on reaction times or physiological changes. Psychologists should not too easily give up on self-report measures, even if our theories tell us that the phenomena we are trying to measure is likely to be elusive. It is in this spirit that this chapter begins—with Becker’s caveat in mind—with a review of the varied attempts that have been made to detect death anxiety in people.

Are people afraid of death? Pt 1: Evidence from lists

Before we get to the evidence, there is a matter of terminology to clarify. This chapter will mostly use the terms “fear of death” and “death anxiety” interchangeably. However, there may be good theoretical reasons to distinguish between fear and anxiety; different theorists have drawn the distinction in different ways, for example, as that between concrete versus symbolic threats (Lazarus & Averill, 1972) or immediate versus anticipatory responses (McNaughton & Corr, 2004). Jong and Halberstadt (2016) have argued that *anxiety* is the right term, as the “fear” of death is an anticipatory response to an abstract threat. Death is not a thing in the way that a poisonous snake or armed robber is a thing; and if death anxiety is theorized to be a chronic aspect of human nature, then it exists even in the absence of such threats to our lives as snakes or robbers. In contrast, Lambert et al. (2014) have focused on other criteria like the inevitability of the threat in question (viz., death) to argue that it is *fear* that TMT should be concerned with. This chapter will mostly sidestep this debate but will draw the distinction between immediate and anticipatory fears where necessary.

The most obvious way to know whether people are afraid of death is to ask them. There are two ways one might go about this. One might ask people what they are afraid of, and see if death appears in the list. Alternatively, one might ask people directly whether they are afraid of death. There are upsides and downsides to both approaches. The upside to the latter method is that it is unambiguous: participants state whether they fear death, and if so, how much. The downside is that the method explicitly plants the idea of the fear of death in their minds: their response may therefore be affected by the suggestion. The upside to the free-list method is that the researcher does not prejudice the respondents’ answers in this way; the downside is that the researcher has to judge whether the answers indicate death anxiety. She may take a restrictive route, and only count overt mentions of death and dying; or she may also count life-threatening diseases and hazards such as cancer and car accidents; or she may opt for an even more permissive rule, counting all manners of hazards—such as the fear of spiders or heights—as indicators of death anxiety. In any case, she risks under- or overestimating respondents’ death anxiety.

Perhaps for the reasons outlined previously, the free-list method has been unfashionable for many decades, which makes free-list data on people’s fears difficult to come by. Hall’s (1897) and Jersild and Holmes’s (1935) studies in the early decades of psychological science remain among the largest relevant datasets available, though both focus on children. Hall obtained—in a rather unsystematic fashion, as he himself admits—written responses from 1701 individuals describing their own, their children’s, or their students’ “early or present fears” (p. 149); from these, he extracted 6456 fears, predominantly those of children between the ages of 4–15 years. He summarized his findings thus:

It would appear that thunder storms are feared most, that reptiles follow, with strangers and darkness as close seconds, while fire, death, domestic animals, disease, wild animals, water, ghosts, insects, rats and mice, robbers, high winds, dream fears, cats and dogs, cyclones, solitude, drowning, birds, etc., represent decreasing degrees of fearfulness. (p. 152)

The published tables show that death only makes up less than 5% of the total fears listed: even if we included diseases, that would only bring the figure up to just over 8%.

Jersild and Holmes's subsequent studies similarly found little evidence of death anxiety among children, though obviously dangerous or threatening things do appear more frequently. Parental reports they collected of 136 children aged 8 years and under found that only 4 mentioned the fear of death and death-related things such as corpses and cemeteries; interviews with 398 children aged between 5 and 12 years found that the fear of death made up less than 1% of the responses, with another 2.5% being the fear of death-related things. Fear of "possible danger or threat of bodily injury in specific situations, through fire, traffic, drowning, fighting, and the like" added a further 11.9%.

More recently, [Muris, Merckelbach, Gadet, and Moulart \(2000\)](#) looked at differences between children's *fears* and *worries*, defining the latter to refer to anticipatory thoughts about a future negative experience in keeping with our definition of anxiety at the beginning of this section. They found—as [Hall \(1897\)](#) and [Jersild and Holmes \(1935\)](#) did—that only 2.1% of the children ($N = 190$; age range: 4–12 years; $M_{\text{age}} = 7.9$, $SD = 2.3$) reported fearing death; however, 14.8% of them reported being worried about death. This raises the possibility that the low rate of death-related responses among children in previous studies is an artifact of their choice of terminology.

In any case, the frequency of death-related responses seems to increase as children get older. One of the biggest recent studies on fears among teenagers is a Gallup telephone poll that asked 1028 teenagers, aged 13–18 years, what they were most afraid of ([Lyons, 2005](#)): only 7% of respondents mentioned death, dying, or being killed as their greatest fear. However, this was the second most common response, after the fear of terrorists (8%), which reflects the salience of this threat in the years directly after the terrorist attacks on September 11, 2001. The fear of terrorism might be a proxy for the fear of death, as might other sources of bodily harm mentioned (e.g., "crime," "nuclear war"; reported by 3% and 2% of respondents, respectively). Even so, fears of death and mortal threats do not add to up a majority of the responses, which also included things such as spiders (7%), heights (5%), being alone (3%), and the "real world" (3%).

[Jong and Halberstadt \(2016\)](#) have also run a similar poll, also in the United States ($N = 813$; $M_{\text{age}} = 35.9$, $SD = 11.3$). Rather than asking for only one thing that people were the most afraid of, they asked participants to list five of the things they were "most afraid of or most worried about" (p. 92). In contrast to previous studies, 46.5% of these participants mentioned the fear of death among their top five fears, with 21.4% specifying the fear of their own death. However, this American sample seems to be an outlier in their broader study, which also included samples from Russia, Brazil, South Korea, and the Philippines ($n = 200$ each; $M_{\text{age}} = 35.4$, $SD = 10.5$). Across these countries, 26.6% mentioned the fear of death with only 4.1% specifying the fear of their own death. These figures are still conspicuously higher than those from previous studies. This may be because adults are more prone to death anxiety than teenagers and children, but it could also be because participants were asked to list five fears: perhaps if they were asked for fewer, fewer people may have reported a fear of death. On the (dubious) assumption that the first thing mentioned indicates respondents' topmost fear, 18.7% of the American participants feared death most; across the other countries, 13.4% mentioned death first.

List and other open-ended survey data may be rich, but they also present many methodological challenges to researchers who have to categorize and interpret participants' responses. For example, one way to think about the results we have just considered is to say that both the Gallup survey on teenagers and Jong and Halberstadt's multinational survey on adults indicate that death features prominently among our most salient fears. Jong and Halberstadt's findings suggest that for a significant minority—a quarter to almost half—of us, death is one of the five things we fear most: the Gallup survey suggests that even though only 7% of us claim death as our greatest fear, death—especially we include terrorism—is mentioned more than anything else. On the other hand, if only 7% of us fear death most of us and fewer than half of us name death among our five greatest fears, the fear of death seems far from the universal terror that terror management theorists claim it to be.

Are people afraid of death? Pt 2: Evidence from scales

Free-list studies may have gone out of fashion, but psychometric testing has not. From the late 1960s onward, there have been several attempts to construct and validate psychometric tools to assess individual levels of death anxiety (for reviews of available scales, see [Jong & Halberstadt, 2016](#); [Neimeyer, 1994](#)). However, large-scale studies on population

levels and distributions of death anxiety are still quite rare. [Templer and Ruff's \(1971\)](#) collation of data from 23 different samples ($N = 3600$) of adolescents and adults is the largest available source of descriptive statistics for [Templer's \(1970\)](#) Death Anxiety Scale (DAS). They found that, out of a maximum score of 15 (with higher scores indicating higher levels of death anxiety), “means of normal [subjects] tend to be roughly from 4.5 to 7.0; the standard deviations a little over 3.0” (p. 173). Similarly, [Neimeyer and Moore's \(1994\)](#) study on [Hoelter's \(1979\)](#) Multidimensional Fear of Death Scale (MFODS) found a sample mean of 139.6 ($SD = 21.3$) out of a maximum of 210, with higher scores indicate lower fear of death ($M_{age} = 53.9$, $SD = 17.2$; $N = 952$). In both cases, they found that people were generally not explicitly afraid of death.

One problem with looking at aggregate scores is that most of the available scales have—either theoretically or empirically—multidimensional structures, often including fears of the dying process (e.g., pain) and fears for others (e.g., the death of loved ones), which are not directly germane to our concerns. This is true for both the DAS and the MFODS, for example. Furthermore, there is also some evidence that items that target the fear of one's own death generally elicit lower scores than those that target other related fears (e.g., [Mooney & O'Gorman, 2001](#); [Power & Smith, 2008](#); [Zana, Szabó, & Hegedűs, 2009](#)). To address this concern, [Jong and Halberstadt \(2016\)](#) developed the Existential DAS (EDAS), which specifically targets the fear of one's own death (as opposed to the dying process), with an emphasis on the fear of annihilation or nonexistence. Examples of items include “The finality of death is frightening to me” and “I am scared that death will extinguish me as a person,” to which participants respond on a 9-point scale anchored at “Strongly Disagree” (−4) and “Strongly Agree” (4) with “Neither Agree nor Disagree” (0) as a midpoint.³

The EDAS was included in the study previously mentioned, which collected lists of participants' worst fears. Given the relatively high frequency of responses concerning death in that task, one might expect relatively high EDAS scores. However, in all the countries, sample means varied around the midpoint: on average, people did not feel strongly about their own death.⁴ Upon closer inspection, [Jong and Halberstadt \(2016\)](#) found that most samples showed a trimodal distribution, in which the modal responses clustered around the extreme low and high ends of the scale, with another smaller peak at the midpoint. Additional data from Japan ($n = 225$) also showed peaks at the low end and midpoint ($M = -0.99$, $SD = 2.0$).

As part of another project led by McKay, Jong and Halberstadt (2016),⁵ more data on the EDAS were collected from the United States ($n = 299$), Brazil ($n = 189$), and Russia ($n = 185$), as well as from China ($n = 194$), India ($n = 188$), Indonesia ($n = 191$), Thailand ($n = 183$), and Turkey ($n = 195$) (age range = 18–91 years; $M_{age} = 34.5$, $SD = 10.5$), which confirmed this pattern.⁶ Many of these samples showed peaks at the extreme low end and midpoint, with some also showing the trimodal pattern early.

The evidence from DASs is less ambivalent than that from free-list studies: overall, people do not explicitly fear death. The standard TMT response to the observation that we are not all crippled by death anxiety is, as we have already seen, that this is because we are very good at variously suppressing or denying our death. However—as Becker suggests—it is not unreasonable to suppose that we might find it difficult to distract ourselves from the inevitability of our mortality when it is imminent.

Are people afraid of death? Pt 3: Death anxiety and proximity to death

As psychologists are rarely permitted to administer DASs at people's deathbeds, the most relevant evidence comes from studies focused on the elderly and the terminally ill. Studies of the general population like those we have been considering are of limited value, as older adults tend to be underrepresented. Furthermore, as these studies generally employ cross-sectional correlational designs rather than a longitudinal one, we are not able to tell whether any effects are due to aging or whether they reflect cohort differences.

3. [Jong and Halberstadt \(2016\)](#) typically analyzed two subscales of the EDAS separately—corresponding to the fear of the cessation of life and of the extinction of the self respectively—but this chapter will, for sake of brevity, aggregate all scale items together to form a single score. They also transformed the scale scores to range from 1 to 9 to be comparable with other measures they discuss; for this chapter, the original −4 to 4 scale will be maintained.

4. The mean scores were as follows: United States = 0.24 ($SD = 2.7$), Brazil = 0.35 ($SD = 2.6$), South Korea = −0.18 ($SD = 2.3$), the Philippines = 0.33 ($SD = 2.5$), and Russia = −0.08 ($SD = 2.5$).

5. The project titled *Toward an affective science of religion: the emotional causes and consequences of religious belief* was funded by the John Templeton Foundation (no. 52257), awarded to Ryan McKay, Jonathan Jong, and Jamin Halberstadt.

6. The mean scores were as follows: United States = −0.49 ($SD = 2.6$), Brazil = −1.02 ($SD = 2.8$), Russia = −0.14 ($SD = 2.6$), China = −0.77 ($SD = 2.4$), India = −0.99 ($SD = 2.5$), Indonesia = −1.09 ($SD = 2.4$), Thailand = −0.01 ($SD = 2.3$), and Turkey = −0.15 ($SD = 2.5$).

It has been observed before that studies sometimes find that death anxiety is *negatively* correlated with age—older people fear death less than younger people—but Fortner and Neimeyer’s (1999), see also Fortner, Neimeyer, and Rybarczyk (2000) review of 27 studies, found no robust effect. Jong and Halberstadt (2016) did find a weak negative correlation between age and death anxiety in their American sample ($r = -0.18$, $P = .001$), but not in their Brazilian, Korean, Filipino, and Russian samples. McKay et al. (2016) did not replicate the finding in their American sample, but negative correlations did obtain in their Thai ($r = -0.29$, $P < .001$), Brazilian ($r = -0.21$, $P < .005$), and Indonesian ($r = -0.18$, $P < .05$) samples. The main problem with these and most other studies is that participants skew young: across both of these multinational studies, only six participants were over the age of 70. For this reason, Cicirelli’s (2002) research stands out as it focuses on elderly participants in the United States, between the ages of 70 and 99 years ($N = 109$). He found no linear trend across the sample, but both the fear of the dying process (e.g., pain) and of the unknown (e.g., nonexistence) did increase with age between participants’ 70s and mid-80s, before declining again toward and into their 90s. As with the previous studies, it is not clear here whether the age differences reflect a cohort effect or an effect of aging per se.

Research among terminally ill individuals is no less difficult than research among the very elderly. Even when access to a clinical sample is available, researchers face further methodological challenges. For example, as psychological distress often accompanies terminal illness, death anxiety is often difficult to distinguish from more generalized anxiety, and other forms of negative affect (e.g., Cella & Tross, 1987; Gonen et al., 2012; Hintze, Templar, Calleppetty, & Frederick, 1993). In any case, there is very little evidence that terminally ill patients are more death anxious than other ill or healthy people. For example, Feifel and Branscomb (1973) and Feifel (1974) found that most of their 92 seriously and terminally ill patients explicitly denied fearing their own death (77% among religious and 80% among nonreligious participants, respectively); this was similar to their findings among healthy participants. Aggregating across 371 participants, both healthy and ill, Feifel and Branscomb (1973) did not find that participants’ nearness to death predicted their fear of it. Furthermore, by far the most common reason given for their lack of fear was that death is inevitable, which is in direct contradiction with Ernest Becker’s and TMT’s claim that it is precisely this exact aspect of death that is the cause of fear.

Goranson, Ritter, Waytz, Norton, and Gray (2017) recently tried to tackle the question in a novel way, by analyzing the writings of terminally ill patients and convicts on death row. In their first study, they compared blog posts of patients with cancer and amyotrophic lateral sclerosis ($n = 20$ and 5, respectively, totaling 2616 posts) who were near death with those of recruited healthy participants who were asked to write blog posts *as if* they were terminally ill. Using the Linguistic Inquiry and Word Count tool to assess the emotional valence of the blog posts, Goranson et al. (2017) found that the simulated posts were less positive and more negative than those written by people who were actually near death: this result was replicated when they employed human coders to rate the posts for emotional valence. Furthermore, longitudinal analyses revealed that the blog posts for the patients did not become more negative over time (i.e., as they got closer to death), and instead became more positive.

They then repeated this comparative method in the second study, this time comparing the recorded last words of inmates on death row, poetry by inmates on death row, and simulated last words by recruited participants imagining they were on death row. The actual last words were taken from the Texas Department of Justice, which makes available executed prisoners’ last words going back to 1982 ($n = 396$). The death row poetry came from five books that collected such poetry ($n = 188$). Analogous to the previous study, the researchers again found that actual last words were more positive and less negative than imagined last words; actual last words were also less negative but not more positive than death row poetry.

The most obvious TMT interpretation of the fact that death anxiety does not increase—and may even decrease—with proximity to death is that people close to death have psychological resources available that help them to suppress or deny their fears. The elderly, for example, may have shored up enough accomplishments in their lives to satisfy their own needs for symbolic immortality. However, it is difficult to imagine situations that would “jar loose” thoughts and fears of death more than actual proximity to death: there is therefore something ad hoc about the attempt to incorporate these findings seamlessly into TMT.

Are people afraid of death? Pt 4: Death anxiety and mortality salience

According to most expositions of TMT, it is not simply the fact of our mortality that gives rise to terror: the problem unique to our species, so far as we know, is that we are *aware* of the fact of our mortality and its inevitability. It would therefore be reasonable to suppose that people are more aware of their mortality to be more fearful of death, and that people would be more death anxious when they are reminded of their mortality. In the previous section, we saw that

TABLE 2.1 Death anxiety as a function of life-threatening experience.

| Country | <i>n</i> (Y, N) | <i>F</i> | <i>P</i> | η_p^2 |
|-----------------|-----------------|----------|----------|------------|
| United States | 288, 525 | 0.001 | .982 | 0.000 |
| Brazil | 105, 95 | 0.392 | .532 | 0.002 |
| South Korea | 86, 114 | 0.021 | .021 | 0.027 |
| The Philippines | 77, 123 | 0.448 | .448 | 0.003 |
| Russia | 40, 160 | 0.563 | .563 | 0.002 |
| Japan | 109, 116 | 0.653 | .420 | 0.003 |

people who were near death—and therefore presumably more aware of their mortality than the rest of us—were not more death anxious. However, there may be other proxies for increased awareness of mortality to consider.

We might, for example, look to see whether people's previous experiences with death predicted their levels of death anxiety. Jong and Halberstadt's (2016) international study included several items relevant to this, which permit new analyses that they did not originally consider. For example, they asked whether participants had ever had an experience in which they almost died. The only country in which such a close brush with death predicted death anxiety was South Korea (see Table 2.1 for other countries), where respondents who reported that they had at least once almost died ($M = 0.24$, $SD = 2.1$) also had higher EDAS scores than those who have never had such an experience ($M = -0.05$, $SD = 2.4$). They also asked a question about one's subjective familiarity with death—"Overall, how familiar are you with death, the dead (e.g., what corpses are like), and dying (e.g., what the process looks like)?"—responses to which did predict death anxiety in the United States ($r = 0.18$, $P < .001$) and Japan ($r = 0.23$, $P < .001$) but not elsewhere.⁷

The American version of Jong and Halberstadt's (2016) study also included a standard measure of what TMT calls *DTA*, which is the extent to which thoughts of death are activated in someone's mind, albeit unconsciously (Greenberg, Pyszczynski, Solomon, Simon, & Breus, 1994). This measure is a word fragment completion task, in which participants are given an incomplete word—for example, C O F F _ _—which they have to complete: in the target cases, the word fragment may be completed in a death-related (COFFIN) or death-unrelated (COFFEE) way. In TMT research, this is a measure of temporary accessibility: that is, it is a state measure, rather than a trait measure. However, the word fragment completion paradigm has also been used in other domains as a trait measure (Uhlmann et al., 2012), which is how it was applied in Jong and Halberstadt's study. The task comprises 25-word fragments, of which 6 could be completed in a death-related manner. None of the participants completed all six in this manner; the modal response was two. *DTA* was not correlated with death anxiety; however, neither participants' encounters with near death nor their subjective familiarity with death and dying predicted *DTA* scores either, which raises questions about the validity of the measure.

Even if trait levels of *DTA* might not predict death anxiety, it may still be the case that *state* levels of *DTA* do. In other words, perhaps reminding people of death—thus increasing *DTA*—might also temporarily increase their death anxiety. It turns out that things are not quite as simple as that, theoretically speaking. As Hayes, Schimel, Arndt, and Faucher (2010) describe it, TMT underwent a theoretical refinement and elaboration in the mid-1990s when studies were finding that the standard manner of reminding people about death—asking them to imagine themselves dying, and write about the feelings this arouses in them—did not increase self-reported levels of negative affect.⁸ This and other subsequent findings led the architects of TMT to conclude that when people are reminded of death they immediately attempt to *suppress* conscious thoughts and feelings about death, which leads to the ironic effect of increased unconscious *accessibility* (Hayes et al., 2010; Pyszczynski, Greenberg, & Solomon, 1999). Therefore according to TMT, we should expect low levels of both *DTA* and death anxiety directly after people are reminded of death: this period of suppression should then be followed by increased *DTA* without increased anxiety.

There have been few direct tests of this hypothesized chronology. Earlier on, Greenberg et al. (1994) did find that *DTA* increased after participants completed a distraction task. However, Trafimow and Hughes (2012) more recently found the opposite effect: *DTA* was high immediately after mortality was made salient, thereafter declining. Neither study had a very large sample, so it is difficult to adjudicate between the two contradictory findings. To get around this

7. Pearson's correlations for each country are as follows: United States; Brazil = 0.05, South Korea = 0.08, the Philippines = 0.09, and Russia = -0.08, all *ns*.

8. Except in certain conditions, such as when people lack a sense of meaning or structure or positive self-esteem (Abeyta, Juhl, & Routledge, 2014; Routledge & Juhl, 2010; Routledge, Juhl, & Vess, 2013).

problem, [Steinman and Updegraff \(2015\)](#) recently aggregated data from multiple studies that were not designed to test this hypothesis but nevertheless included the relevant manipulations and measures. They did not find evidence for death thought suppression immediately after mortality salience tasks but did find that more complicated and time-consuming distractor tasks were associated with larger DTA effects. Terror management theorists may take this as a partial vindication of their view.

On another front, [Lambert et al. \(2014\)](#) have recently called into question TMT's claim that increased DTA is affect-free, which is based on null findings about the effects of experimentally induced mortality salience on self-reported negative affect. First, they note that the claim is made on insufficient evidence, as TMT studies do not examine the effects of mortality salience on specific emotions such as fear and anxiety, but only negative mood more generally. Then across three experiments, they consistently found that participants who were asked to imagine their own deaths did report higher levels of fear than those in a neutral control condition. Furthermore, they found that it was fear rather than anxiety that was affected; this is in tension with previous approaches to studying death anxiety and raises questions about exactly what specific emotion TMT should be concerned with. [Abeyta et al. \(2014\)](#) also found that death anxiety increased when mortality is made salient, but only among people with low self-esteem.

As before, these findings are not easy to interpret. On one hand, there is intuitive appeal to the idea that reminders of death increase both death anxiety and death thoughts, conscious or otherwise; [Lambert et al.'s \(2014\)](#) and [Trafimow and Hughes's \(2012\)](#) results provide evidence for these common sense views. On the other hand, TMT posits the rather counterintuitive hypotheses that death reminders only increase death thoughts after delays or distractions and do not normally increase death anxiety at all; there is some evidence for these claims too, though they tend to be more indirect. In particular, the affect-free claim is based on failures to detect broad changes in mood after mortality is made salient; [Lambert et al. \(2014\)](#) rightly point out the weaknesses of this form of arguing from the absence of evidence. More direct evidence is needed here, to determine whether TMT should abandon its counterintuitive and complicated theoretical elaborations in favor of more straightforward hypotheses.

Are people afraid of death? Coda

It would not be an exaggeration to say that the direct evidence on whether people fear death is mixed. The evidence as it stands warrants the claim that the fear of death is common, but not the claim that it is universal; it further warrants the claim that people may—under certain circumstances—be bothered by death, but not that people are terrified of death. On one hand, this may be taken to mean that the first premise of TMT lacks empirical justification. However, as we have already seen, even Becker anticipated this outcome decades ago. Death anxiety is difficult to detect, not—according to the theory—because it does not exist, but because human beings are very good at dealing with it, either by suppressing our thoughts of and anxieties about death or by displacing them through our pursuits of symbolic immortality or by resolving them through our hope in literal immortality.

As evidence of this, terror management theorists might point to the hundreds of studies that show that reminders of death lead people to behave in ways that can reasonably be described as pursuits of symbolic immortality. They infer from this that we fear death and seek to quell this fear by asserting ourselves and enhancing the groups to which we belong. Whether this inference is the best explanation of the data is a matter of some current debate, but this goes beyond the scope of this chapter's focus on explicit death anxiety (e.g., [Heine, Proulx, & Vohs, 2006](#); [Holbrook, Sousa, & Hahn-Holbrook, 2011](#); [Navarrete & Fessler, 2005](#)). More to the point of this chapter, perhaps, are the small handful of studies on the effects of mortality salience on behaviors reasonably described as pursuits of *literal* immortality. Before this, however, let us consider whether trait levels of death anxiety—such that they are—covary in theoretically sensible ways with trait levels of religiosity.

Are death anxiety and religiosity correlated?

According to TMT and other similar thanatocentric theories of religion, religion emerged—at least in part—as a means to mitigate our death anxiety. It does so in at least two broad ways. First, and most obviously, to the extent that religious beliefs include beliefs about the afterlife, religion provides the potential for literal immortality. Second, to the extent that religious traditions are more longevous than their adherents, religion provides the potential for symbolic immortality. The first of these is more or less unique to religion, with a few exceptions in the transhumanist direction, and for this reason will be the main focus of this chapter. In other words, by “religion” and its cognates, we will mostly be concerned with supernatural beliefs, especially as they pertain to literal immortality.

Even if one is persuaded that rumors of a pan-human chronic terror of death have been exaggerated by theorists, one might still be interested in whether individual variability in death anxiety and religiosity covary. All else being equal, TMT should predict that it does, though exactly what it should predict about the shape of the relationship is more difficult to pin down. On one hand, if religious beliefs are the product of death anxiety, it seems reasonable to suppose that people who are more death anxious should also be more tempted by religious faith: that is, a positive correlation between death anxiety and religiosity. On the other hand, if religious beliefs are effective mitigators of death anxiety, it seems reasonable to suppose that the faithful is less prone to fearing death than their faithless counterparts: that is, a negative correlation between religiosity and death anxiety. These are, on their face, contradictory propositions. However, they are reconcilable if one considers different patterns between believers and nonbeliever. Among nonbelievers, *irreligiosity*—that is, skepticism toward religious beliefs—should be tempered to the extent that one fears death, which would show up as a positive correlation between death anxiety and religiosity. In contrast, among believers, death anxiety should decline to the extent that one is confident of one's hope in everlasting life, which would show up—assuming that one's religious tradition promises everlasting life—as a negative correlation between religiosity and death anxiety. Therefore the relationship between death anxiety and religiosity is not linear but curved, moderated by whether the respondent is a believer or nonbeliever (Fig. 2.1).

There have, fortunately for us, been dozens of studies that have examined the relationship between death anxiety and religiosity. However, unfortunately for us, almost none of them have specifically tested this curvilinear or quadratic relationship, in part because nonreligious participants tend to be underrepresented in the samples, particularly in older studies. Jong et al. (2018) found that of the 100 studies—totally 202 effect sizes—they included in their metaanalysis, only 8 directly tested for curvilinearity. Their metaanalyses of the linear effects found very high levels of heterogeneity across studies: the modal result was that there was no significant correlation between death anxiety and religiosity. When they aggregated effect sizes across studies, they found very weak negative correlations across different dimensions of religiosity. For example, the average correlation between death anxiety and religious belief was $r = -0.07$, $P < .01$ across 58 studies; the magnitude of the effect was not much changed by looking at afterlife beliefs specifically, $r = -0.07$, $P < .01$, across 35 studies.

Only eight of the studies included in the metaanalysis directly tested for curvilinearity, but Jong et al. (2018) also found a further three, whose effects were not amenable to metaanalysis. Of these 11, 8 unequivocally supported the curvilinearity hypothesis and 2 more partially support it. Two of these studies warrant some further comment. Jong, Bluemke, and Halberstadt (2013) study deliberately oversampled nonreligious participants ($N = 147$; 88 nonreligious) in New Zealand: they found no overall linear correlation between death anxiety and religious belief, but they did find an interaction with religious identification. For those who self-identified as religious, death anxiety and religious belief were negatively correlated, $r = -0.33$, $P < .01$; for those who self-identified as nonreligious (e.g., atheist, agnostic), they were positively correlated, $r = 0.27$, $P < .01$. Ellis, Wahab, and Ratnasingan (2013) collected data in Malaysia ($n = 2396$), the United States ($n = 1291$), and Turkey ($n = 265$); although they found similar quadratic patterns, they

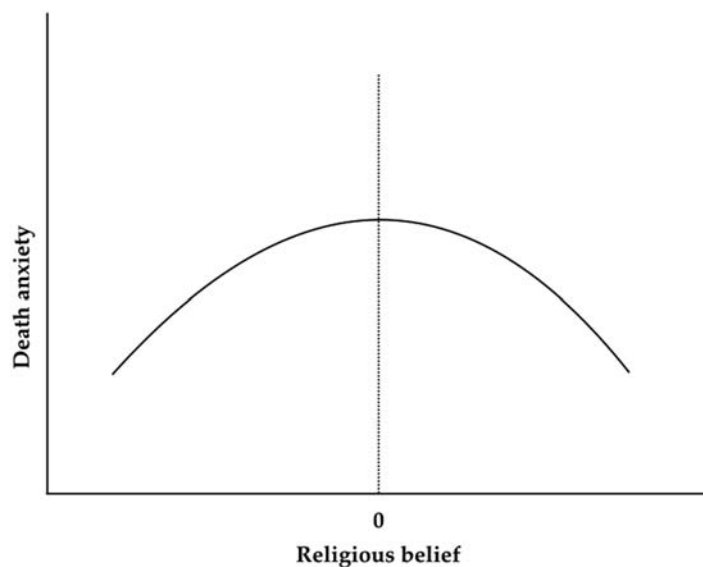


FIGURE 2.1 Diagram of the curvilinear hypothesis.

TABLE 2.2 Death anxiety and afterlife belief in 14 samples.

| Country | <i>n</i> | % No belief in afterlife | <i>r</i> (EDAS, afterlife) | Curve estimation <i>R</i> ² |
|-----------------|----------|--------------------------|----------------------------|--|
| Indonesia | 191 | 7.3 | − 0.14 | 0.02 |
| The Philippines | 200 | 15.5 | 0.234 ^b | 0.07 ^c |
| Thailand | 183 | 18.6 | − 0.01 | 0.00 |
| Brazil | 200 | 24 | − 0.07 | 0.03 |
| Turkey | 195 | 25.6 | − 0.01 | 0.09 ^c |
| Brazil | 189 | 28 | − 0.01 | 0.04 ^a |
| Russia | 185 | 33.5 | 0.03 | 0.00 |
| India | 188 | 35.1 | − 0.02 | 0.05 ^a |
| Russia | 200 | 37 | 0.01 | 0.00 |
| United States | 813 | 48 | 0.02 | 0.04 ^c |
| United States | 299 | 48.5 | 0.08 | 0.01 |
| South Korea | 200 | 56 | − 0.06 | 0.05 ^a |
| Japan | 224 | 69.2 | − 0.02 | 0.01 |
| China | 194 | 73.7 | 0.167 ^a | 0.07 ^b |

EDAS, Existential Death Anxiety Scale.

^a*P* < .05.

^b*P* < .01.

^c*P* < .001.

also found—contrary to our predictions—*positive* linear relationships between death anxiety and religiosity in Malaysia and Turkey, both Muslim-majority countries. Only in the United States was the quadratic effect consistently stronger than the linear one. This suggests that even among religious traditions that promise literal immortality, cross-cultural differences may be found.

Not included in Jong et al.'s (2018) metaanalysis, which only included studies published before 2016, were findings from Jong and Halberstadt's (2016) and McKay et al.'s (2016) multinational studies from which this chapter has already drawn. As there were very few studies that looked specifically at afterlife beliefs, the ensuing analyses will look exclusively at the item of the Supernatural Belief Scale that pertains to this: "There is some kind of life after death." As with Jong et al.'s (2013) New Zealand study, both Jong and Halberstadt's (2016) and McKay et al.'s (2016) American samples included overrepresentations of nonreligious participants. In neither study did they find a linear relationship between death anxiety and afterlife belief. Curve estimation analyses detected a quadratic relationship in Jong and Halberstadt's (2016) sample, $R^2 = 0.04$, $P < .001$ (see Table 2.2). Analyzing those who believed in an afterlife (scores > 0; $n = 421$) separately from those who did not (scores ≤ 0; $n = 389$) revealed that death anxiety and afterlife belief were negatively correlated for believers, $r = -0.25$, $P < .001$, whereas the reverse was true for nonbelievers, $r = 0.15$, $P < .005$. However, these findings were not replicated in McKay et al.'s (2016) sample ($r = -0.08$ and 0.08 , respectively). Combining the two samples results statistically significant effects, albeit smaller than those in Jong and Halberstadt's (2016) study alone, $r = -0.17$ and 0.14 , $P < .001$.

Most of the other countries in both studies were highly religious, and therefore less amenable to testing our curvilinear hypothesis. The exceptions to this were South Korea, Japan, and China. In these three countries, proportions of participants who self-identified as nonreligious approached or exceeded 50%; more directly relevant to the hypothesis, the proportion of individuals who were agnostic or disbelieving in an afterlife approached or exceeded 50%. Curve estimation analyses found that a quadratic model fit the data in South Korea and China, but not in Japan.⁹ It is possible that this difference is driven by doctrinal differences in afterlife beliefs across these countries, but further research is required to establish this.

Although the other samples—Brazil, Russia, the Philippines, India, Indonesia, and Turkey—do not include enough nonreligious participants to test the curvilinear hypothesis in full, there may be enough variation in afterlife beliefs to test one half of the model: among believers in an afterlife, we should expect negative correlations between death anxiety and afterlife belief. As predicted, in most of these samples, among participants who believed in an afterlife, the strength of their afterlife belief was negatively correlated with death anxiety. In McKay et al.'s study, only Russia

9. A linear model also fits the Chinese data; consistent with the prediction for nonreligious samples, death anxiety, and religious belief were positively correlated, $r = 0.167$, $P < .05$. There were no significant linear correlations found in South Korea and Japan.

($r = 0.01$, $n = 123$) and Thailand ($r = -0.07$, $n = 149$) did not evince this pattern found in Brazil ($r = -0.19$, $P < .05$, $n = 136$), India ($r = -0.29$, $P < .001$, $n = 122$), Indonesia ($r = -0.29$, $P < .001$, $n = 177$), and Turkey ($r = -0.27$, $P < .001$, $n = 145$). Jong and Halberstadt (2016) replicated the finding in Brazil ($r = -0.21$, $P < .01$, $n = 152$); similarly, no correlation was detected in Russia ($r = 0.003$). This study also included a Filipino sample, in which death anxiety and afterlife belief were not correlated ($r = -0.04$).

Expanding the analysis to include nonbelievers—bearing in mind that there were very few in each sample—we also found some evidence for a curvilinear pattern, though the effects were understandably weak and inconsistent. In Jong and Halberstadt's (2016) study a quadratic model fit the data from the Philippines ($R^2 = 0.07$, $P < .001$) and marginally fit the data from Brazil ($R^2 = 0.02$, $P = .06$); no such pattern emerged in the Russian sample. McKay et al.'s (2016) study also found a curvilinear pattern in Brazil ($R^2 = 0.04$, $P < .05$), as well as in India ($R^2 = 0.05$, $P < .05$), Indonesia ($R^2 = 0.06$, $P < .005$), and Turkey ($R^2 = 0.09$, $P < .001$), and not in Russia and Thailand. Inspections of the best fit curve revealed that in almost all cases where a quadratic function fit the data, the inflection point was around the midpoint of the scale (viz., 0), indicating agnosticism. The only exception to this was the Philippines, in which the estimated curve closely matched a positive linear correlation, which could also be found, $r = 0.23$, $P < .001$. Although these results are broadly supportive of the curvilinear hypothesis, they should be interpreted with caution as these samples included relatively few nonbelievers, ranging from 7% in Indonesia to 35% in India (see Table 2.2).

With a few exceptions—Japan, Russia, Thailand, and the Philippines—these findings support the curvilinear hypothesis. The effect sizes tend to be small, but this is to be expected given the multitude of factors that were not accounted for in these analyses. Furthermore, it remains the case that correlational studies do not go very far in testing causal claims. Thus we next consider some experimental evidence about whether mortality salience increases religious belief.

Does mortality salience increase religious belief?

It is, for obvious reasons, difficult to directly test the hypothesis that the fear of death increases religious belief. Therefore in this final section of this chapter, we depart somewhat from our brief—the investigation of the relationship between explicit death anxiety and religiosity—and turn instead to the available research on mortality salience and religiosity. As previously discussed, the relationship between mortality salience and death anxiety is uncertain. All the same, as the mortality salience paradigm is the dominant way in which TMT's hypotheses are tested, it is to such studies that we must turn.

It should first be said that there is some ambiguity over what TMT should predict about the effects of mortality salience on religious belief. On one hand, to the extent that religious traditions offer literal immortality to their adherents, they are almost unique among cultural products: and we might expect such offers to hold universal appeal, given that mortality is a universal problem universally acknowledged, even if suppressed. On the other hand, human beings are fractious, ready to form coalitions and therefore to draw lines between ingroups and outgroups, including religious ingroups and outgroups. Whatever tendency we might have to be promiscuously religious may be tempered, even reversed, by this tendency. If so, then it is only our own particular brand of literal immortality that we want: and, indeed, for some the pursuit of symbolic immortality may motivate them to repudiate the literal version altogether. In keeping with TMT's focus on symbolic immortality pursuits since its inception, most researchers are inclined toward the second possibility.

In the same year that Becker published *The Denial of Death*, and over a decade before TMT was first formalized in print, Osarchuk and Tatz (1973) ran a study that is still the closest thing we have to a manipulation of the *fear* of death and not just its cognitive accessibility. They subjected a third of their participants to what they called their "death threat treatment," which involved listening to exaggerated statements about the risk of mortality and watching a slideshow—set to funereal music—of automobile accidents, murder, and corpses. Another third of their participants were told that they were going to experience electric shocks—this was in order to generate in them anticipatory stress—which were never actually given. The last third were in a neutral condition. Both prior and after the experimental manipulation, participants answered questions about their afterlife beliefs. What Osarchuk and Tatz (1973) found was that among participants who already believed strongly in an afterlife, as indicated in their premanipulation responses, the death threat condition further increased their commitment to their belief. No such effect was found for participants who disbelieved or believed only very weakly in an afterlife.

Osarchuk and Tatz's (1973) findings among believers are consistent with TMT's *worldview defense hypothesis*, which says that increased mortality salience motivates us to bolster our own and our ingroup's beliefs and values—in the pursuit of symbolic immortality—sometimes even to the detriment of outgroup members. However, their null findings with respect to nonbelievers are more difficult to interpret. On one hand, the lack of belief in an afterlife does not

seem to constitute a worldview to be defended; on the other hand, other experiments have shown that people are willing to bolster much flimsier elements of identity, including ad hoc minimal groups (Harmon-Jones, Greenberg, Solomon, & Simon, 1996). Furthermore, in some cultural contexts, *religious disbelief* is certainly a more strident and existentially significant position than a construal of it as a mere absence of belief implies.

So, it is that researchers are increasingly interested in nonbelievers' responses to mortality salience vis-à-vis religious beliefs, as a robust test of whether reminders of mortality cause people to become promiscuously religious or stubbornly secular. One difficulty with this growing body of work is that studies differ on how participants are categorized as religious and nonreligious, respectively. For example, Jong, Halberstadt, and Bluemke's (2012) nonreligious sample included atheists, agnostics, and those who explicitly stated that they had no religious affiliation: they found that mortality salience increased supernatural belief among religious participants while marginally decreasing supernatural belief among nonreligious participants. Employing a similar demarcation principle, Norenzayan and Hansen (2006, Study 4) found that mortality salience increased Christians' religious beliefs but did not affect nonreligious participants in either direction. To complicate matters, Heflick, Goldenberg, Hart, and Kamp (2015) found that it was only the participants who did *not* believe in body-self dualism who evinced a decrease in afterlife belief when mortality was salient; believers were unaffected. Similarly, in Lifshin, Greenberg, Soenke, Darrell, and Pyszczynski (2018) study, it was only participants who scored low on a religious importance measure who were affected by mortality salience: they showed decreased belief in God and an afterlife, whereas highly religious participants were unaffected. Taking a more nuanced approach, Vail, Arndt, and Abdollahi (2012) distinguished between atheists and agnostics and found that whereas atheists were unaffected by mortality salience, agnostics reported increased belief in Allah, Jesus, and Buddha. Indeed, in this study, it was the nonreligious participants who became promiscuously religious, whereas Christians showed increased belief only in their own deity, more strongly disbelieving others. This finding contradicts one of Norenzayan and Hansen's (2006) earlier result that reminders of death led Christians to become more willing to endorse even out-group deities.

Another, less direct, way to examine the causal relationship between mortality salience and religious belief is to see whether affirmations of the latter mitigate the known effects of the former. For example, it is well established that mortality salience increases preferences for the ingroup, punitiveness against transgressors of cultural norms, and other manifestations of what TMT calls cultural worldview defense. Norenzayan, Dar-Nimrod, Hansen, and Proulx (2009) have found that religious participants are less affected in this way by mortality salience than nonreligious participants; Jonas and Fischer (2006) found that this was especially true among intrinsically religious participants who were given the opportunity to affirm their religious beliefs. Dechesne et al. (2003) also found that exposing participants to arguments for afterlife beliefs decreased worldview defense after mortality salience; Heflick and Goldenberg (2012) confirmed this finding among nonbelievers as well as believers. Certainly for believers—and perhaps for nonbelievers too—the belief in literal immortality can reduce the alleged psychological effects of death anxiety.

Concluding remarks

The empirical literature on death anxiety and its relationship to religious belief is, to put it mildly, messy. This is especially true as we look at data from outside the United States, as indeed we must when testing theories that make universal claims as TMT certainly does.

The fear of death—the phenomenon upon which TMT is premised—is elusive: the claim that normal levels of death anxiety are low, even among those for whom death is imminent, because of the success of our terror management strategies is plausible but requires more scrutiny. Direct evidence of mortal terror may always be beyond our reach: perhaps, we will never be able—or allowed—to strip away participants' defenses enough to reveal the worm at their core. But if so, then more indirect evidence is needed. In particular, the relationships between anxiety, DTA, and the pursuit of literal and symbolic immortality are still unclear. Is mortality salience and its downstream effects affect-free? Do challenges to our immortality projects increase death anxiety, or just death thoughts? Does TMT deserve its name in the absence of any evidence of terror?

The evidence base for the relationship between trait levels of death anxiety and religious belief—and afterlife belief in particular—seems more secure, even from a cross-cultural perspective. Jong et al.'s (2017) systematic review of published research found some initial evidence for a curvilinear relationship between death anxiety and religious belief, which was then confirmed by new analyses of Jong and Halberstadt's (2016) and McKay et al.'s (2016) cross-cultural datasets. There are two possible interpretations of this inverted U-shape pattern, reflecting different interpretations of TMT. The first interpretation is based on TMT's worldview defense hypothesis: the fear of death is low among those who are strongly committed to their worldviews, and high for those who are weakly committed. On this view, the

content of the worldview is less important than one's belief in it: so, belief and disbelief in an afterlife are equally effective strategies. The second interpretation tells two causal stories: among nonbelievers, the fear of death chips away at their religious skepticism, whereas among believers, religious conviction mitigates death anxiety.

As causal relationships cannot be validly inferred from correlational data, experimental evidence is required to adjudicate between these two alternatives: unfortunately, the jury is still out on this front. The effects of mortality salience on nonreligious people are ambivalent and depend in part on the type of nonreligious people they are: agnostics may be more amenable to adopting religious beliefs in the face of death than their more atheistic counterparts, who sometimes (but not always) strengthen their secular resolve in those circumstances. There is very little evidence available about the efficacy of beliefs—religious or otherwise—at mitigating death anxiety. However, Heflick and Goldenger's study on worldview defense—theoretically the downstream effect of death anxiety—suggests that afterlife beliefs may assuage the fear of death even among nonbelievers. Clearly, as ever, more evidence is required.

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