

## On Faith and the Fear of Fatality: A review of recent research on deities and death

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### ABSTRACT

*Although speculations about the role of fear—and fear of death in particular—in the evolutionary and psychological origins of religion have been around for millennia, it is only in the last decade or so that systematic empirical investigations on the matter have been undertaken. In this paper, we review this recent body of correlational and experimental research to assess theoretical developments in the evolutionary and cognitive psychology of religion, and in Terror Management Theory. While these existing theories about the anxiety ameliorating functions of religious belief are still significantly under-determined by data, the systematic and scientific study of religion has benefited greatly from insights about the multidimensionality of religiosity, the importance of implicit levels of cognition and affect, and the dangers of biased sampling.*

### Keywords

death anxiety, religion, implicit attitudes, unconscious emotion

### Fear of death and religious belief: a brief history of an idea

We are all going to die. This is, it seems reasonable to assume, an undesirable state of affairs for most of us. After all, death involves loss—indeed, paradigmatically so—and loss is, generally speaking, a negative thing. It is, furthermore, often associated with illness, pain, and degeneration; that is, death involves dying, and the prospect of this process of decay is hardly pleasing. Or so it seems reasonable to assume, and indeed many—priests and philosophers and psychologists alike, as well as the laity—have assumed that death is not only undesirable in a matter-of-fact way, but also the source of anxiety, even of terror. Much has been made of the fear of death, of its universality and its power

over us, its unwitting influence on us. In particular, much has been made of the role of death anxiety in religious belief, its evolutionary origins as well as its development in individuals.

The hypothesis that religious belief is motivated by existential anxiety and the fear of death more specifically is as venerable as the enterprise of attempting to explain religion itself. For example, according to Lucretius's Epicurean analysis—among the first systematic accounts of the origins of religion, in the first century BCE—the uncertainties and perils of mortal life lead us to believe in gods controlling the natural world. This idea has survived well into and through the Enlightenment, and indeed has developed since. So, while David Hume (1757/2008) merely lists “the terrors of death” among the passions that led our ancestors to “see the first obscure traces of divinity,” Feuerbach (1851/1967, 276), writing a century later, concludes his *Lectures on the Essence of Religion* with the emphatic claim that “the meaning and purpose of God are immortality.” Similarly, according to Freud (1927/1961, 22) gods “must exorcise the terrors of nature, they must reconcile men to the cruelty of Fate, particularly as it is shown in death” and Malinowski (1948, 47) exclaimed, “Of all sources of religion, the supreme and final crisis of life—death—is of the greatest importance.” By the latter 20th century, the fear of death had become a central theme in the social and psychological sciences. Kübler-Ross's (1969) *On Death and Dying* inspired much interest in the psychological processes involved in coping with impending death, while Ernst Becker's (1971, 1973) theories about the profound influence of a latent fear of death on human behaviour and culture now finds expression in Terror Management Theory (TMT; Greenberg, Pyszczynski and Solomon 1986), a major social psychological research programme. Even outside the thanatocentrism of Terror Management Theory, contemporary cognitive theorists of religion also emphasize the role of existential concerns in motivating religious belief. Atran and Norenzayan, for example, argue that “the cognitive invention, cultural selection, and historical survival of religious beliefs have resulted, in part, from success” (2004, 728) in easing “existential anxieties such as death and deception that forever threaten human life everywhere” (2004, 726). Barrett (2004) on the other hand takes a more intellectualist route, arguing that our social and moral intuitions lead us to see fortunes and misfortunes—including death, the ultimate misfortune—as morally relevant social exchanges: rewards and punishments meted out by agents. While human agents—parents, pedagogues, police officers, and their ilk—are sometimes obviously implicated, many of the fortunes and misfortunes that make up the vicissitudes of life are of more mysterious origin. This, Barrett suggests, open up an epistemic gap for supernatural agents—almighty gods, ancestral spirits, and so forth—to fill.

All of which is to say by way of a few examples that from Epicurean epic poetry to the nascent cognitive science of religion, death anxiety has been posited as an important causal factor in the evolutionary, cultural, and psychological origin of religious belief and behaviour.

To be sure, there have been diverse opinions about the precise of role that death anxiety plays in religion, but that it has played a role has been a mainstay in theorizing about religion. However, despite the unremitting enthusiasm for the emphasis on death anxiety and its amelioration in narratives of the origins of religious belief and behaviour, empirical research on the matter is still only in its infancy stages. The rest of this paper shall review the extant evidence from correlational and more recent experimental investigations on the relationship between death anxiety and religiosity; in so doing, the methodological and conceptual limitations of the field shall be noted, and a way forward shall be proposed. As we shall see, one of the main challenges in this research is the definition—and therefore measurement—of the psychological constructs in question. Theorists disagree about explanations of religion in part because they disagree about the *explanandum*. In reviewing the extant research, this paper shall advocate a piecemeal approach to the study of religion, tackling aspects of religion (e.g., belief in supernatural agents) separately, rather than attempting to generalize about Religion-with-a-capital-R. Similarly, in the study of death-related cognitions and emotions, there are still conceptual puzzles to resolve about the nature and structure of death anxiety (and, indeed, of anxiety more generally). This paper does not pretend to solve any such conceptual problems, nor does it presuppose any particular solution. Rather, it is primarily about the research as it stands, and not as idealized.

#### Individual differences in death anxiety and religiosity

The theoretical diversity on the relationship between religious belief and death-related cognition, alluded to above, is matched by evidential ambivalence. Even the nature of the statistical relationship between individual differences in death anxiety and religiosity is unclear, as various reviews of the correlational research have shown. Spilka, Hood, and Gorsuch (1985), for example, found that, of the 36 studies they reviewed, 24 showed negative correlations between death-anxiety and religiosity, three showed positive correlations, two showed mixed results, and seven showed no significant relationship in either direction. More recently reviewing 137 studies, Donovan (1994) found that 57% showed negative correlations between religiosity and death-anxiety and 9% showed positive correlations, while 33% showed no significant relationship or were otherwise inconclusive. While it is true that the available evidence suggests *prima facie*

that the relationship between religiosity and death anxiety is linear and negative, there is enough inconsistency to raise suspicions against this conclusion. There are, furthermore, various methodological limitations that need to be addressed before firmer conclusions may be drawn.

First, in few of these studies were curvilinear analyses performed on the data. It is therefore at least possible that the relationship between death anxiety and religiosity is quadratic or cubic, rather than linear. Indeed, theoretical accounts in which death anxiety motives religious belief, which then assuages said anxiety do predict a quadratic relationship between the two constructs: among unbelievers, the more one fears death, the more one should be tempted toward faith, whereas among believers, the more one is certain of one's faith, the less one should fear death.

Second, much previous research on the correlates of religiosity is plagued with a version of Henrich, Heine, and Norenzayan's (2010) WEIRD problem. Not only are research samples drawn from Western, Educated, Industrialized, Rich, and Democratic societies, but, as Hood, Hill, and Spilka (2009) have observed, the vast majority of the research in this area has been conducted with religious samples (e.g., American college students, who are predominantly religious); we therefore have relatively little information about non-religious individuals. As such, on top of unexplored curvilinear relationships, the fact that most of the correlational studies previously reviewed found linear negative relationships between death anxiety and religiosity might be deceptively incomplete, telling only half the story.

Third, and perhaps most perniciously of all, research on death anxiety and religion runs into the problem of definition and the concomitant problem of measurement. It is insufficiently precise to speak of the relationship between death-anxiety and religion or religiosity, especially given the multi-dimensional understanding of these terms. The notion, well-accepted within traditional psychology of religion (Hood et al. 2009), that religion is a multi-dimensional phenomenon has appropriately led to a preference for multi-factorial measures of religiosity that seek to capture its various aspects (e.g., affective, behavioural, cognitive, social), over general religiosity measures. However, uncritical uses of multi-factorial measures—those that do not examine each factor separately when appropriate, for example—fail to apply the theoretical insight from which these measures came. Death anxiety may well be correlated with some aspects of religiosity, but not others; indeed, death anxiety may be correlated with different aspects of religiosity in different directions. Merely aggregating across all items of a multi-factorial scale or, indeed, using a scale that measures theoretically inappropriate psychological constructs risks failing to pick up important

statistical relationships. Thus the conflicting findings reported by reviews of previous research may well be the result of the uncritical use and conflation of different measures of religiosity.

With these considerations in mind, it is instructive to turn to a few recent studies that have been more sensitive to these sampling and measurement concerns. Harding, Flannelly, Weaver, and Costa (2005) found that, among parishioners of an American Episcopal church, death-related anxiety was lower among those who more strongly believe in God and an afterlife. Similarly, Cohen, Pierce, Chambers, Meade, Gorvine, and Koenig (2005) found that, among Protestants, death anxiety was negatively correlated with intrinsic religiosity. However, death anxiety was also positively correlated with extrinsic religiosity. According to Allport and Ross (1967, 434), whose Religious Orientation Scale was used in this study, the intrinsically religious individual has “embraced a creed... [and] endeavours to internalize it and follow it fully,” while, for the extrinsically religious individual the “creed is lightly held” and religious participation is “instrumental and utilitarian.” Arguably then, Cohen et al. (2005) found that stronger true religious belief was associated with lower levels of death anxiety, whereas religious participation sans true belief predicted higher levels of death anxiety.

While examples of studies on predominantly religious samples can be multiplied, the same cannot be said for studies on non-religious participants. However, Jong, Bluemke and Halberstadt (2013) recently sampled both self-identified religious and non-religious participants, and found that that while religious belief was positively correlated with death anxiety among the non-religious, it was negatively correlated among the religious. That is, there was no overall linear relationship between religious belief and death anxiety when participants’ religious identities were ignored; instead, a significant interaction was found. Jong et al.’s (2013) findings indicate that at least with respect to religious belief, the belief in supernatural entities—admittedly only one aspect of religiosity—the relationship between religion and death anxiety is more complex than previous approaches to the matter would suggest. Furthermore, these findings are consistent with the notion that death anxiety motivates religious belief, which effectively reduces death anxiety. However, it is also consistent with other theoretical accounts, such as Terror Management Theory’s worldview defense account, in which it is the bolstering and affirming of one’s own or one’s culture’s worldview, regardless of content, which reduces death anxiety. In this view, militant atheists and devout believers equally benefit from their opposing ideologies, while the lukewarm on either side of the religious fence remain in a state of distress. While correlational evidence regarding the relationship between individual differences in religious belief and death anxiety are informa-

tive and suggestive, they are insufficient for the verification or falsification of causal claims. We turn then to recent experimental approaches to the question.

### Scaring the bejesus into people

While there have been over 100 correlational studies on death anxiety and religiosity (cf. Donovan, 1994), there have been far fewer experimental studies, and the results of these studies have also produced inconsistent results. As we shall see, some of the inconsistency across studies might be due to significant methodological divergences. Furthermore, while a review of the literature makes it clear that mortality salience (i.e., increased cognitive accessibility of death-related thoughts) strengthens religious individuals' commitment to their religious beliefs, it is less clear how individuals respond to outgroup religious worldviews and how non-religious individuals respond to religious worldviews. However, recent research that exploits the distinction between explicit and implicit psychological processes seem to provide a way forward.

Osarchuk and Tatz's (1973) seminal study on the effects of exposure to death-related stimuli on participants' afterlife beliefs marks the beginning of experimental research on death anxiety and religion. In this study, participants first completed one form of the authors' Belief in Afterlife (BA) scale to ascertain whether they believed in life after death (i.e., high scores) or not (i.e., low scores). Participants were then assigned to three priming conditions: death threat, shock threat, and control. Participants in the death threat condition were presented with a slideshow of death-related scenes, accompanied by an audio-recorded narration that provided exaggerated mortality rate estimates (e.g., by accident, from disease) for people of the participants' age group, as well as dirge-like background music. In contrast, participants in the shock threat condition were told that they would be given a series of shocks of various intensities, and participants in the control condition were given a child's toy to play with. After the manipulation phase, participants completed an alternate form of the BA scale and reported their anxiety levels. It turns out that while the death threat and shock threat both increased self-reported anxiety in both low BA and high BA participants, only high BA participants in the death threat condition experienced increased BA scores. That is, induced fear of death strengthened afterlife belief among people who already held strong afterlife beliefs, but not among those who disagreed with afterlife beliefs. Right out of the gate, the evidence seems to challenge accounts of religion that give death anxiety a central role; according to Osarchuk and Tatz's (1973) findings, death anxiety does not lead to religious belief, so much as enhance existing religious beliefs.

In some ways, recent research on the effects of death anxiety and religion provides even more reason for scepticism that death anxiety plays an important role in the psychological and/or evolutionary origins of religious belief and behaviour. For example, Weisbuch, Seery, and Blascovich (2005) also found that death priming increases religiosity among self-identified religious participants, while—in contrast to Osarchuk and Tatz's (1973) findings—decreasing religiosity (or rather, increasing irreligiosity) among non-religious participants (e.g., atheists, agnostics). Weisbuch et al.'s (2005) paradigm differed from Osarchuk and Tatz's (1973) in two significant ways. First, Weisbuch et al. (2005) employed a much milder death prime, standardly used in Terror Management research. Rather than watching a dramatic death-related video, participants imagined and wrote down what they thought dying would be like, physically and emotionally. Second, Weisbuch et al.'s (2005) measure of religiosity—the Index of Core Spiritual Experiences (Kass, Friedman, Leserman, Zuttermeister, and Benson, 1991)—was markedly different from Osarchuk and Tatz's (1973); far from being a measure of religious beliefs it was largely concerned with participants' religious and spiritual orientations, experiences, and practices. More recently, Jong, Halberstadt, and Bluemke (2012, Experiment 1) employed the same manipulation as Weisbuch et al. (2005), but measured religious belief using their Supernatural Belief Scale (SBS; Jong et al. 2013); the SBS is a validated 10-item scale that measures respondents' tendency to believe in supernatural entities and events, such as positively- and negatively-valenced supernatural agents and afterlife scenarios. Despite their methodological differences, their findings mirror Weisbuch et al.'s (2005): after death priming, religious participants reported increased supernatural belief, whereas non-religious participants reported decreased supernatural belief (or increased disbelief).

These results present a challenge to the venerable notion that death anxiety motivates religious belief; indeed, it seems as though death anxiety also motivate religious disbelief. However, they are consistent with the aforementioned worldview defense account within Terror Management Theory, according to which death anxiety motivates increased commitment to cultural or group norms, regardless of content. So, religious participants clung on to their beliefs, while non-religious participants clung on to theirs. Admittedly, it is somewhat unusual to think of religious disbelief as a cultural or group norm, but previous work has shown that mortality salience can lead to worldview defense in minimal group situations where groups are formed artificially without any shared values (Harmon-Jones, Greenberg, Solomon and Simon 1996). Besides this research comparing religious and non-religious participants, there is also some recent work looking at the effects of mortality salience on outgroup religious beliefs.

Norenzayan and Hansen (2006, Experiments 4) employed the standard mortality salience manipulation described above; participants were exposed to a death prime or a control prime, and after a brief distracter task (*viz.*, an affect scale) they were presented with an article, allegedly from a foreign newspaper, about Russia's employment of clairvoyant, ancestral spirit-guided Siberian Shamans during and after the Cold War. They were then asked about the extent to which they believed in ancestral spirits, clairvoyance, and God/a Higher Power. Contrary to Jong et al.'s (2012) and Weisbuch et al.'s (2005) findings, Norenzayan and Hansen (2006) did not find any effects on non-religious participants; however, among Christian participants, mortality salience increased belief in ancestral spirits and paranormal clairvoyance, though not in God/a Higher Power or the particular clairvoyant programme mentioned in the article. This latter finding is somewhat puzzling, as indeed Norenzayan and Hansen (2006) acknowledge. Their explanation of this null finding appeals to order effects: the questions concerning belief in Shamanic ancestral spirits always preceded the ones concerning belief in God, and so participants' need to believe in a supernatural agent would have already been fulfilled by the ancestral spirits by the time they were asked about God/a Higher Power. Indeed, previous research on goal activation has shown such a "use it and lose it effect" (Moskowitz 2005, 405), in which responses that fulfill a primed goal might deactivate the goal, such that participants' later responses differ from their earlier ones. In this case, participants' goal to reduce death anxiety was adequately fulfilled by increased belief in ancestral spirits, which made increased belief in God unnecessary. Whatever one makes of this, Norenzayan and Hansen's (2012) results at least suggest that death anxiety can motivate outgroup religious belief; this is inconsistent with Terror Management Theory's standard worldview defense account.

In response, Vail, Arndt, and Abdollahi (2012) more recently ran a series of studies, in which they primed Christian, Muslim, agnostic, and atheist participants with death, and found that when they did so religious participants reported strengthened ingroup religious belief and outgroup religious disbelief: that is, Christians reported increased belief in Jesus and decreased belief in Buddha and Allah, whereas Muslims reported increased belief in Allah and decreased belief in Buddha and Jesus. Furthermore, death priming increased religious belief—belief in a higher power, as well as belief in specific supernatural agents Jesus, Buddha, and Allah—among self-described agnostics, but had no effects on atheists. Vail et al.'s (2012) findings regarding atheists and agnostics are difficult to reconcile with Jong et al.'s (2012) and Weisbuch et al.'s (2005), who both found worldview defense effects among their non-religious participants. It is possible that individual differences between Jong et al.'s and Weisbuch et al.'s (2005)

“non-religious” participants and Vail et al.’s (2012) atheists and agnostics may be responsible for their different findings. Vail et al.’s (2012) findings are also in stark contrast with Norenzayan and Hansen’s (2006, Experiment 4) findings on Christians’ increased belief in ancestral spirits and paranormal clairvoyance. Two important differences between their studies should be noted. First, Norenzayan and Hansen’s (2006) study, messy as their results might be, has the distinction of being more ecologically valid than the other studies reported here in that their supernatural agent concepts were embedded in a narrative, rather than presented blankly. After all, most religious beliefs are accepted as part of larger stories; with respect to death anxiety in particular, religious beliefs are often weaved into rich stories about how existential problems may be resolved. As such, Norenzayan and Hansen’s (2006) method of measuring changes in religious belief might just be more sensitive because it exploits the ways in which religious ideas are usually received. Second, Vail et al.’s (2012) method of measuring religious belief presents the pantheon of religious options—Christian, Muslim, and Buddhist—together in a way that explicitly pits the different worldviews against each other. Furthermore, Norenzayan and Hansen’s (2006) findings suggested a “use it and lose it” effect, the methodological implication of which is that researchers should measure belief in one worldview at a time.

So far, then, the research on the effects of mortality salience on religious belief is inconsistent, perhaps due to the methodological differences. Besides different methods of increasing mortality salience, and the widely varying measures of religiosity, the various categories of “religious,” “non-religious,” “atheist,” and “agnostic” participants are not equivalent across studies. Despite the divergences, perhaps some sense may be made of these findings. One account of the findings regarding religious believers, for example, is that death anxiety motivates belief in their own gods (Jong et al. 2012; Vail et al. 2012) over and against other gods (Vail et al. 2012), except when others’ gods are exclusively or most saliently available (Norenzayan and Hansen, 2006). Non-believers’ responses may differ as a function of their prior levels of religious disbelief. Vail et al.’s (2012) null findings regarding atheists may reflect floor effects, while Jong et al.’s (2012) and Weisbuch et al.’s (2005) non-religious participants’ pre-manipulation levels of religiosity were such that there was still room to move deeper into disbelief; finally, agnostics are sufficiently close to the cusp of religious belief that mortality salience can effectively tempt them into faith (Vail et al. 2012). These accounts are speculative, of course. The effects of mortality salience on religious belief are obviously particularly sensitive to individual difference and contextual variables. Future research on the matter should therefore seek to elucidate more precisely the ways in which prior religiosity and the ways

in which religious concepts are packaged and presented affect the relationship between death anxiety and religious belief.

### The opium pie in the sky of the people?

The question of whether or not death anxiety motivates religious belief remains unanswered, or at least not emphatically. Vail et al.'s (2012) findings regarding agnostics, and Norenzayan and Hansen's (2006) findings regarding outgroup supernatural beliefs suggest that people are, under certain conditions, religiously promiscuous in the face of death, but there is also some evidence that death anxiety can lead to anti-religious pushback (Jong et al. 2012; Weisbuch et al. 2005). However, even if reminders of death do affect religious beliefs, it does not follow that they do so for the purpose of reducing anxiety, much less that religious beliefs are effective at reducing anxiety.

Somewhat surprisingly, very little empirical work has been done to address this question directly, perhaps due to the dominance of the focus on Terror Management Theory's worldview defense hypothesis in the field. That is, rather than directly measuring the effects of religiosity on death anxiety per se, most of the existing research treat worldview defense—the bolstering of the ingroup and the derogation of the outgroup—as a proxy of death anxiety or death-thought accessibility. Early work in this vein was done by Deschene et al. (2003), who found that encouraging participants to believe in an afterlife mitigated the effects of death priming on self-esteem striving and worldview defense; however, contrary to the worldview defense hypothesis, Heflick and Goldenberg (2012) recently found that such encouragement to believe in an afterlife also mitigated worldview defense responses in atheists, and not just religious believers. In contrast, discouragement from afterlife beliefs—that is, the affirmation of their own atheistic worldviews—had no such positive effects. Despite the inconsistencies in the research on the effects of mortality salience on religious belief, it seems that there is support for the notion that at least afterlife beliefs mitigate the effects of death anxiety.

Stepping back a little from specifically afterlife beliefs, there have also been a few studies looking at the extent to which individual differences in religiosity moderate the effects of mortality salience on worldview defense and self-esteem striving. For example, Friedman and Rholes (2008) found that participants who scored high on religious fundamentalism engaged in less secular worldview defense after death priming than their counterparts who scored lower on religious fundamentalism. Similarly, Norenzayan, dar-Nimrod, Hansen, and Proulx (2009) found that while non-religious participants reliably engaged in nationalistic worldview defense after a mortality salience induction, religious partici-

pants did not. In a more naturalistic quasi-experiment, Jonas and Fischer (2006, Study 1) found that participants who scored low on intrinsic religiosity engaged in worldview defense after the 2003 terrorist attacks in Istanbul, whereas participants who scored high on intrinsic religiosity did not. In all three studies, religiosity as an individual difference variable ameliorated the effects of mortality salience on intergroup attitudes; furthermore, Jonas and Fischer (2006, Study 2) further showed that the opportunity to affirm one's intrinsic religiosity is important in mitigating the effects of death anxiety. Despite this agreement, it is unclear if changes in death anxiety or, indeed, even death-thought accessibility mediate the effects of religiosity on worldview defense. While Jonas and Fischer (2006, Study 3) showed that the affirmation of religious belief decreases death-thought accessibility among intrinsically religious participants, Norenzayan et al. (2009) found no such effects: their religious and non-religious participants displayed the same levels of death-thought accessibility and self-esteem. Furthermore, the single-minded focus on death-thought accessibility rather than death anxiety is rather odd. This too is driven by the dominance of Terror Management Theory, which generally maintains—rather incongruously, given their grand narrative—that it is not consciously experienced affect that drives worldview defense, but rather death-thought accessibility itself (e.g., Pyszczynski, Greenberg, and Solomon, 1999). Despite this theoretical idiosyncrasy, it appears to follow that, if religious belief evolved to manage our existential anxiety, then manipulating religious belief should have measurable effects on it.

To test the hypothesis that increased religious belief leads to decreased death anxiety, Halberstadt and Jong (in press) recently attempted to manipulate religious belief via an indirect persuasive message. In this priming task, participants read and rated the quality of three texts, allegedly scientific abstracts. The first and third were identical for all participants and did not mention religiosity. The second differed by experimental condition. In the pro-religion condition, participants read about a large survey that found that scientists were getting more religious due to the inadequacy of naturalistic explanations of phenomena; in the anti-religion condition, participants read a similar abstract, but this time the survey reported increased atheism among scientists. Halberstadt and Jong's (in press) participants were primed with death after this pro- or anti-religion priming task, before they were primed with death, after which they completed Conte, Weiner, and Plutchik's (1982) Death Anxiety Questionnaire. Contrary to the notion that religious belief is an effective buffer against death anxiety for all, as suggested by Heflick and Goldenberg's (2012) study, pro-religious priming only decreased death anxiety among religious participants, whereas anti-religious priming only decreased death anxiety among non-religious participants. Once

again, this is consistent with Terror Management Theory's worldview defense hypothesis: worldview consistent affirmations decreased death anxiety, regardless of religious or anti-religious content. While it would be premature to come to firm conclusions from this early investigation into the direct effect of religious belief on death anxiety, the contrast between existing studies raises the question about how these various findings may be reconciled.

#### Implicit (religious) beliefs and unconscious emotions

Jong, Halberstadt, and Bluemke (2012) have proposed a possible way of making sense of the various findings regarding the effects of mortality salience on religious belief, especially among non-religious participants. Previous research has consistently found that religious participants report increased religious belief as a result of mortality salience induction, but non-religious participants have either reported increased religious belief (agnostics in Vail et al. 2012), decreased religious belief (non-religious participants in Jong et al. 2012), and no change in religious belief (non-religious participants in Norenzayan and Hansen, 2006; atheists in Vail et al. 2012). We suggested above that these differences might reflect different pre-manipulation levels of religious (dis)belief and different ways of categorizing non-believers, but Jong et al. (2012) suggested that differences in measurement may also have contributed to the divergent findings. For example, Jong et al. (2012, Experiment 1) and Norenzayan and Hansen (2006, Experiment 4) both examined participants who self-identified as "non-religious" rather than specifically "atheist" and "agnostic", and yet found different results: Jong et al.'s (2012) non-religious participants responded negatively against religious belief, while Norenzayan and Hansen's (2006) did not. Assuming that the pre-manipulation levels of religious belief are comparable across these two sample, the differences in findings might be driven by the differences in the measures used: Jong et al. (2012, Experiment 1) employed a very overt measure of religious belief, whereas Norenzayan and Hansen's (2006) measure what somewhat more subtle, as well as being embedded in a narrative. To test this idea, that the overtness of Jong et al.'s (2012, Experiment 1) results was responsible for their finding, they ran two additional studies employing two different response latency-based implicit measures of religious belief: a single-target Implicit Association Test (Experiment 2; Wigboldus, Holland, and van Knippenberg, 2006) and a property verification task (Experiment 3).

The ST-IAT is an adaptation of the standard IAT typically used to measure implicit attitudes toward two target categories (e.g., gods v. mortals); instead, the ST-IAT assesses cognitive associations, evaluative or otherwise, regarding a single target object without the need for a second counter-category (e.g., gods

only). The property verification task involves categorizing stimuli (e.g., gods) based on two attributes (e.g., real, imaginary). This task therefore captures conscious elements of participants' associations (e.g., gods as real) as well as the strength of these associations via their response latencies. On both tasks, Jong et al. (2012) found that death-priming increased religious belief among both religious and non-religious participants; these findings support their suggestion that some of the differences between previous studies are due to differences in measurement. However, their findings also raise the question of whether or not, at least for non-religious individuals, death anxiety affects explicit and implicit religious belief in different directions. That is, Jong et al.'s (2012) study may reflect more than differences between measurement methods, but also differences between different levels of cognition.

It has, in the last two decades, become social cognitive orthodoxy to distinguish between explicit and implicit cognitive states and processes. So-called dual-process models of cognition are now replete across different fields, including the study of attention, memory, decision-making and judgement, and motivation and goals. Research in these fields suggests that implicit and explicit cognitive processes and states are empirically dissociable, and can have different causal antecedents and different behavioural effects (cf. Gawronski and Bodenhausen, 2006 for review). Indeed, recent research on religious cognition also highlights just such a decoupling of reflective beliefs from implicit beliefs (e.g., Barrett and Keil 1996; Bering 2002; Uhlmann, Poehlman and Bargh 2008). Thus, Jong et al. (2012) argue that rather than interpreting the differences between the effects of mortality salience on explicit and implicit measures simply in terms of the inability of the former to get at respondents' "true" beliefs, the option is available to posit differential effects of mortality salience on explicit and implicit religious belief. In this view, death anxiety motivates both explicit worldview defense (regardless of content) and implicit religious belief (regardless of prior worldview).

This perspective led Halberstadt and Jong (in press) to investigate the effects of religious belief on unconscious emotion (Kihlstrom, Mulvaney, Tobias and Tobis 2000; Winkielman and Berridge 2004). Recall that while Heflick and Goldenberg's (2012) results suggest that increased religious belief mitigate the effects of mortality salience, even for atheists, Halberstadt and Jong (in press) found that non-religious participants reported increased death anxiety after death priming. One way to reconcile these findings is to postulate that the ameliorating effects of pro-religious priming on atheists are driven by decreased unconscious death anxiety. With its focus on affect rather than cold cognition, this proposal departs somewhat from the Terror Management claim that world-

view defense effects are triggered by unconscious death-thought accessibility (Pyszczynski et al. 1999).

The empirical investigation of the relationship between religious belief and unconscious death anxiety is still in its very early stages, but Halberstadt and Jong (in press) have reported two promising preliminary findings. First, they replicated their earlier finding that the relationship between self-reported religious belief and death anxiety is curvilinear, whereas the relationship between self-reported religious belief and implicit death anxiety (measured via a single-target Implicit Association Test) is linear and negative: that is, while atheists report low levels of death anxiety, their automatic responses indicate higher levels of death anxiety than devout religious believers. Second, they manipulated participants' religious beliefs by exploiting the affect-as-information effect (Clore, Gasper and Gavin 2001). In this task, participants are required to list twelve reasons in support of the belief that "God exists" or the belief that "God does not exist," after being told that most believers/atheists find this to be an easy task. Consistent with the affect-as-information literature, pre-tests showed that listing—with difficulty—reasons for an attitude weakened that attitude (or strengthened the counter-attitude); in this case, the difficulty with which participants listen reasons for/against belief in God shifted their beliefs in the opposite direction. More importantly, however, Halberstadt and Jong (in press) also found that the pro-religious prime here decreased implicit death anxiety (again, measured via an ST-IAT) but not self-reported death anxiety (measured via the Conte et al. 1982 scale). Together, these two studies provide some evidence that the positive social effects of religious belief (viz., weakened worldview defense) among even the non-religious (cf. Heflick and Goldenberg 2012) may be mediated by effects on unconscious emotions.

#### Ageing, dying, and believing

With very few exceptions, the preceding studies were conducted on convenience samples, mostly of undergraduates in what Henrich et al. (2010) have called WEIRD societies. The extant experimental research is particularly lacking in its myopic focus on young adults. There has, for example, been no work done on the relationship between religiosity and death anxiety among young children. Indeed, the oft-made claims that human beings are universally plagued with a chronic fear of death, albeit usually unconscious or variously repressed, raise questions of ontogeny. When in psychological development does such a fear arise? It should, if Ernest Becker and his intellectual successors in Terror Management Theory are correct, appear as soon as children are aware of their own mortality; but how much understanding is required for fear to strike? Recent work by Jesse Bering (cf. Bering, 2006 for review) suggests that not

only do children (Bering and Bjorklund 2004) fail to understand what death entails psychologically (viz., the cessation of all psychological states), but so do adults (Bering 2002), including those who explicitly disavow afterlife beliefs. It remains an open empirical question whether this failure to grasp what deadness entails has any affective repercussions and, indeed, any effects on religious beliefs (see Slaughter and Griffiths 2007 for some evidence that more mature understandings of death predicted lower levels of death anxiety; note, however that their measure of mature understanding neglects the aforementioned and arguably most significant psychological aspects of death).

In contrast to the gap in the literature at the beginning of life, there is a substantial body of work on religiosity at the end of life. While a comprehensive review of this literature exceeds the scope of this paper, some general themes may be noted. Perhaps the best known—if not always best understood—finding is that religiosity is positively correlated with age; older respondents frequently report stronger religious beliefs, religious service attendance, and increased participation in other religious activities (e.g., prayer) than their younger counterparts. Pew (2008), for example, found that 57% of US Americans aged 65 and older were absolutely certain that God existed, compared to only 45% of those aged 30 and younger, though Gallup (2002) found no change in belief in God or a universal spirit, when confidence levels were not measured (5% for those aged 50 years or older, 96% of those ages between 18 to 29 years). Gallup (2002) also reported that 75% US Americans aged 75 years and over said that religion was very important in their lives; this proportion decreases gradually to 47% among those ages between 18 and 29 years. Decreases in weekly religious service attendance (60% to 32%), religious group membership (80% to 60%) were also seen across the same age-groups. These age-related differences in various dimensions of religiosity might just reflect cohort differences; doubtless, historical and cultural circumstances exert and influence on religiosity. However, while comparisons of annual Gallup polls do suggest cohort-related declines in positive attitudes toward organized religion and denominational affiliation, such declines are largely absent in measures of personal religious behaviour and belief. Indeed, longitudinal studies on religious change over the lifespan also suggest that there are measurable tendencies toward greater religiosity in old age (e.g., Argue, Johnson and White 1999; Hunsberger 1985), though the effects of age are likely moderated by personality (McFadden 1999) and sociodemographic variables (Argue et al. 1999; Levin, Taylor and Chatters 1994).

Assuming that there is an increase in religiosity associated with age, it is still unclear whether or not these changes are driven by concerns about death and dying. Furthermore, it is unclear whether or not increased religiosity ameliorates

negative emotional responses to end of life issues, and if it does, why it might do so. Perhaps unsurprisingly, most of the hypotheses on this matter revolve around the well-established associations among religion, well-being (e.g., Coleman 2005; Levin and Chatters 1998), and health (e.g., George, Ellison and Larson 2002; McCullough, Hoyt, Larson, Koenig and Thoreson 2000). However, there is still insufficient longitudinal evidence that religiosity contributes especially to well-being toward the end of life (McFadden 1999). Indeed, recent research on terminally ill individuals suggests that it is “spiritual well-being” rather than religious beliefs and behaviours that buffer negative emotions associated with death and dying (McClain, Rosenfeld and Breitbart 2003; McClain-Jacobson, Rosenfeld, Kosinski, Pessin, Cimino and Breitbart 2004; Nelson, Rosenfeld, Breitbart and Galietta 2002). However, the measurement limitations that characterize the field apply here too. Much of the research on religion, health, and well-being employ vague or narrow definitions of religiosity and spirituality, with little sensitivity to the multidimensionality of these constructs. Even more problematically, the vast majority of the extant research has been conducted in the United States; such narrow a focus raises considerable doubt about the usefulness of this sociological data for general psychological hypotheses. Indeed, the historical trends concerning religion in the United States are famously inconsistent with trends in other otherwise comparable European countries; religious belief and belonging are in rapid decline in the United Kingdom, for example, both due to attrition even among the elderly (Coleman, Ivani-Chalian and Robinson 2004) and to the failure to transmit religious traditions down the generations (Voas and Crockett, 2005). So, while the empirical research on older adults and terminally-ill patients suggests increased religiosity toward the end of life, as well as positive effects of some dimensions of religiosity and spirituality in this developmental phase, this is a far cry from the venerable claim that *primus in orbe deos fecit timor*.<sup>1</sup> More research is required to discover whether or not fear—and fear of death more specifically—motivates the belief in supernatural agents, in gods and ghosts, and their ilk—and, furthermore, whether this belief brings any comfort from this terrible mortal fate.

#### Concluding remarks

The notion that religion evolved to fulfill a psychological need, to assuage the otherwise crippling fear of death has a long, if chequered, intellectual history. It is, however, only in recent decades that this hypothesis has undergone con-

1. Translated as “fear first made gods in the world.” Publius Papinius Statius (c. 45 – c. 96), *The Thebaid*, Book 3, line 661. Translation by D. R. Shackleton Bailey, vol. 207 Loeb Classical Library. Cambridge, MA: Harvard University Press, 2003.

ceptual refinement and empirical investigation. Currently, the most well-established version of this hypothesis comes from Terror Management Theory, which is itself based on Ernest Becker's thesis that the basic motivation for human behaviour—including even the cultural heights of art, religion, and science—is the pervasive and unconscious fear of death. Indeed, Terror Management Theory combines this grand narrative with a Darwinian one, in which our hominid ancestors adopted and embellished conceptions of reality that allowed them to deny the finality of death; those who successfully did this were thus able to hunt and explore more confidently, which in turn made them more successful at “propagating both their genes and their conceptions of an afterlife”, as well as other religious ideas (Greenberg et al. in press, 12). Similarly, albeit from a cultural evolutionary viewpoint, Atran and Norenzayan (2004, 727) argue that existential anxieties such as the fear of death form part of the evolutionary landscape in which religious beliefs were generated and transmitted within and across cultures; indeed, to them, “the need for belief in supernatural agency is possibly a qualitatively distinct buffer against terror of death”. No doubt there are many other possible ways to save the phenomena, including those that aim to subsume the fear of death into a fear of an allegedly more fundamental kind; an evaluation of such theoretical accounts must be left for some other occasion. To conclude this paper, however, it seems that whatever the fate of religion itself, the association between death and deities seems to show little sign of waning.

As is often the case, however, these recent theoretical developments are underdetermined by data. Methodological issues—in particular, sampling and measurements limitations—have yet to be resolved, though attempts to do so are actively underway. The fractionation strategy characteristic of contemporary cognitive science of religion has provided much conceptual clarity to the scientific study of religion, emphasizing as it does the multidimensionality of religiosity (cf. Boyer, 2011). The recent push toward radically cross-cultural research inspired by Henrich et al.'s (2010) critique has also been a long time coming. Furthermore, innovations in implicit measures of attitudes and measures of implicit attitudes have now become more common in the study of religion; however, interpretation of such measures remains a thorn in researchers' sides (Gawronski and Payne, 2010). All of which is to say that there is much more work to be done before firm conclusions can be drawn about the psychological foundations of religious belief, and the role of death anxiety therein; indeed, it is work that, with theoretical and methodological advances, can be done and should be done, given the overwhelming importance of religion in life.

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