

Death Anxiety and Religious Belief: responses to commentaries

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BOOK SYMPOSIUM: *DEATH ANXIETY AND RELIGIOUS BELIEF: AN EXISTENTIAL PSYCHOLOGY OF RELIGION* BY JONATHAN JONG AND JAMIN HALBERSTADT

COMMENTARIES



Religion as a defense against the awareness of death: comment on Jong and Halberstadt (2016)

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Many people turn to religion as a source of meaning and value. This is supported by research demonstrating that more than 8 out of 10 individuals (84%) identify with some type of faith (Pew Research Center, 2012), with 7% of the global population lacking a belief in a God or gods (Keysar & Navarro-Rivera, 2013). Interestingly, 82% of persons worldwide claim that religion plays an important role in their everyday lives – ranging from the birth of a child to a rite of passage to a burial occasion (Crabtree, 2009). Although Jong and Halberstadt (2016) review much literature as to why religion matters (e.g., need for cognition, evolution, attachment, etc.), the purpose of their book was to examine the associative link between mortality concerns and religiosity, in particular to provide evidence on (a) whether people are afraid of death, (b) the extent to which existential anxieties motivate religious belief, and (c) whether adhering to a faith-based system of meaning buffers the effects of mortality awareness. This is an important book as it provides an impressive, interdisciplinary review of research on the relationship between death anxiety and religiosity, with much of the work being done by the authors themselves. With that being said, however, we question some of Jong and Halberstadt's claims regarding terror management theory (TMT; Greenberg, Pyszczynski, & Solomon, 1986) and research. Given the concise nature of this commentary, our concerns are briefly discussed below.

The dark side of religion

In their review of thanatocentric (i.e., death-centered) theories of religion, Jong and Halberstadt (2016) take issue with people's adherence to a faith in which the depiction of a deity or an afterlife is far from a comforting experience. Specifically, if one of the aims of religiosity is to serve an anxiety-buffering function for individuals, then how might fire and brimstone preaching, maintaining faith in a punitive and vengeful God, and/or receiving harsh abominations against sinful behavior provide meaning and value to persons' lives? We agree with the authors in that these and other instances (e.g., sexual, animal-nature taboos) are far from being psychologically reassuring. However, as argued elsewhere (Soenke, Greenberg, & Landau, 2013), there are reasons as to why the "dark side" of religious worldviews matters.

One explanation is that religion serves as a protective shield against participating in immoral and illicit behaviors (i.e., social control; Raven, 1999). Through the development of different belief systems, individuals added harsh prescriptions of value in an attempt to promote group harmony and cohesion (Soenke et al., 2013). For instance, the commandments of "thou shalt not steal" and "thou shalt not kill" help to control deviancy by having a wrathful God reign down upon any violators. This is supported by research demonstrating that lower crime rates are found in societies in which a

majority of persons believe in Hell rather than Heaven (Shariff & Rhemtulla, 2012). Additionally, college students with stronger belief in God's punitive and angry nature are less likely to cheat on a test or steal money as compared to those who view the Supreme Being as comforting and forgiving (DeBono, Shariff, Poole, & Muraven, 2017; Shariff & Norenzayan, 2011). As Soenke and colleagues note, corrupt persons (e.g., cult leaders, government figures) can also use the powerful nature of deities to exhibit control over others for self-interest needs.

Importantly, from a TMT perspective, the harsher features of religion are critical if such beliefs are to serve an anxiety-buffering function. One of the primary requirements of a cultural worldview is to provide psychological security to individuals for it to be believable (Greenberg et al., 1986). It thus makes sense that negative events can happen in the world (e.g., drought, starvation, disease, natural disasters, etc.) in an attempt to provide some explanation for the tragedies faced in everyday life (Soenke et al., 2013). Turning to evil gods, spiteful ancestors, and vengeful spirits can provide meaning despite the atrocities one may experience in reality. At the same time, however, if malevolent spirits are at work, then there must be benevolent ones as well. This provides a sense of security to individuals who follow the values of their faith and any benefits that they afford. Although much more could be written here about the fearful and controlling aspects of religion (see, e.g., Soenke et al., 2013), we would argue that the dark side of religiosity is advantageous as it serves an anxiety-buffering function for persons, especially when confronted by the awareness of death. Given that the threat of mortality can happen at any time due to unforeseen circumstances, belief in a punishable God or deity is much more comforting than the randomness and uncertainty of life.

Where's the terror?

Another concern raised by Jong and Halberstadt (2016) has to do with a lack of mortality salience (MS) effects on participants' self-reported emotions (e.g., the Positive & Negative Affect Schedule [PANAS]; Watson, Clark, & Tellegen, 1988). Specifically, according to the authors, a criticism of thanatocentric theories of religion is an inability to demonstrate increased explicit anxiety in response to mortality-related concerns. We agree that much of the TMT literature on the relationship between thoughts of death and negative emotions has produced mixed results. For instance, although hundreds of terror management studies have shown no significant difference between death and control conditions on negative affect, Lambert et al. (2014) found that an MS manipulation led to greater self-reported anxiety when using more specialized measures of different emotional states. Whereas a heightened fear response was found to mediate the relationship between thoughts of death and state self-esteem, there was no influence of increased anxiety on worldview defense following mortality awareness (Lambert et al., 2014). Other TMT research, however, has demonstrated that death reminders signal a potential for anxiety, rather than an actual experience of fear, leading to increased defensive responses (Greenberg et al., 2003; also see Goldenberg, Arndt, Hart, & Routledge, 2008).

Interestingly, in Lambert et al.'s (2014) work, which serves as a basis of Jong and Halberstadt's (2016) argument, experimenters found that a heightened fear response to mortality awareness was associated with a *decrease* rather than an *increase* in self-esteem striving. The fact that participants reported lower feelings of self-worth following reminders of death runs counter to predictions and research put forth by TMT (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004). Additionally, in an attempt to replicate findings by Lambert and colleagues, we (Arrowood et al., 2016) analyzed different subscales of the PANAS (i.e., fear [*afraid, scared*], anxiety [*nervous, jittery*], and anger [*hostile, irritable*]) after a death awareness manipulation (i.e., Ebola threat). As with a majority of TMT research, there was no significant difference between disease and control conditions on self-reported affect (see Park, 2016 for similar effects using an MS manipulation). These results also held when written responses were coded and analyzed for emotional language use (i.e., anxiety, anger, sadness, and fear) with LIWC software (Linguistic Inquiry and Word Count; Pennebaker, Booth, & Francis, 2007). Finally, although Lambert et al. found that death reminders increased worldview defense and self-reported fear, heightened anxiety did not mediate the relationship

between mortality awareness and belief validation. These results are consistent with other terror management research demonstrating that greater corrugator muscle activity (i.e., an indicator of anxiety) in response to subliminal death primes does not influence a belief validation response (Arndt, Allen, & Greenberg, 2001).

Although Jong and Halberstadt (2016) make an argument in favor of using implicit measures of death anxiety, such as the IAT (Implicit Association Test; Greenwald, McGhee, & Schwartz, 1998), this scale has been criticized because of issues with reliability and validity (Singal, 2017; also see Mitchell & Tetlock, 2017). Rather, there is evidence to suggest that MS is associated with the activation of emotional areas of the brain, for instance the right amygdala, anterior cingulate cortex, and right caudate nucleus (Quirin et al., 2011). Tritt, Inzlicht, and Harmon-Jones (2012) suggest that reminders of mortality are likely to activate the behavioral inhibition system (BIS; anxiety mechanism) region of the brain, leading to approach-motivated behaviors (i.e., worldview defense) in an attempt to reach a state of psychological equanimity. Given that negative affect has been found following MS with the use of psychophysiological and neuroaffective assessments (Arndt et al., 2001; Quirin et al., 2011), and that death effects disappear when participants are allowed to misattribute their arousal to an external source (Goldenberg et al., 2008; Greenberg et al., 2003), Tritt et al. (2012) argue that self-report scales may not be sensitive (i.e., fast) enough to detect changes in negative affect following a mortality awareness manipulation.

As mentioned by Jong and Halberstadt (2016), to make the case that mortality-related concerns are associated with a heightened fear response, it is important for researchers to show “some kind of connection between DTA [death-thought accessibility] and negative affective states” (p. 108). This link has been demonstrated in a series of studies conducted by Webber et al. (2015). Specifically, in two experiments, participants were randomly assigned to drink some type of beverage: a caffeinated tea expected to make people feel “jumpy” versus a vitamin supplement with no arousing side effects. (In actuality, everyone was given the same drink.) After this, individuals received a threat manipulation – either an essay that attacked their religious beliefs or a control article about the Northern Lights – followed by measures of death cognition (Study 1) and worldview defense (Study 2). The results revealed that persons experienced a heightened accessibility of mortality-related thoughts and greater defense of their cultural beliefs following a religious threat when arousal could not be attributed to a neutral source (i.e., vitamin supplement). However, there was no significant difference between threatening and non-threatening belief conditions on DTA and defensiveness when people’s level of arousal could be blamed on the consumption of a caffeinated beverage. Combined with the results of a third experiment, these findings collectively suggest that emotion, including a heightened anxiety response, plays an important role in the associative link between death cognition and worldview threat.

Foxhole atheism (re-, revisited)

Finally, according to TMT, religion serves as a dual method of achieving both symbolic (e.g., what we have built, created, or given birth to) and literal (e.g., belief in an afterlife, reincarnation) immortality (Vail et al., 2010). As Jong and Halberstadt (2016) suggest, religious persons utilize their beliefs to capitalize on these opportunities when confronted with anxiety (explicit and implicit), including the awareness of death. An inconsistency appears, however, when applying this logic to atheists. By identifying as being atheist, individuals are asserting that they do not hold *any* religious belief (Bullivant, 2013); that is, their worldview is that of non-belief. Following reminders of mortality, TMT would predict that these persons should be more certain of atheism both implicitly and explicitly (Jong, Halberstadt, & Bluemke, 2012; Vail, Arndt, & Abdollahi, 2012). Contrary to these expectations, Jong et al. (2012) found that atheists were more likely to believe in supernatural entities following reminders of death when such beliefs were assessed with an IAT rather than a self-report questionnaire. These findings support Barrett’s (2012) perspective claiming that everyone is a hidden

believer, but due to culture, atheism can be adopted. Atheists thus seem to rely on their evolved religious beliefs when confronted with existential anxieties.

This account runs counter to a terror management perspective suggesting that atheist individuals should rely on non-belief as a defense when reminded of their mortality (Vail et al., 2012). Although Jong and Halberstadt (2016) cite the worldview defense account of TMT in which “death anxiety leads us to increased belief in one’s *own* god, but not necessarily in one’s *own god*” (p. 145), researchers would argue that only strict adherence to personal belief systems would constitute an anxiety-buffering mechanism (Greenberg et al., 1986; Pyszczynski, Solomon, & Greenberg, 2015). By adopting a conception of reality in which supernatural entities serve as a defense, atheists would be at odds with their belief system, making them vulnerable to heightened death anxiety. Nevertheless, using an IAT, Jong and Halberstadt (see also Jong et al., 2012) provided evidence that atheists have greater implicit beliefs (but lower explicit beliefs) in supernatural agents following MS.

Methodologically, these studies are limited on whether this claim can be made. The first study, for example, used self-classified atheists to demonstrate that they were more likely to deny belief in supernatural agents following reminders of death (Jong et al., 2012). It is important to note, however, that these atheists comprised a very small percentage (11%) of individuals in the non-religious group. As Silver, Coleman, Hood, and Holcombe (2014) suggest, non-belief is quite diverse and categorizing all forms of non-believers together would greatly limit any conclusions that can be made. This is essentially similar to ignoring individual differences in religiosity, which Jong and Halberstadt (2016) caution against. Returning to the findings of Jong et al. (2012), Study 2 had no atheists present while Study 3 included no method of directly assessing atheism.

Importantly, researchers found that lower belief in supernatural agents was associated with increased faith in the same beings following MS (Jong et al., 2012). We agree that this account likely holds true for those who have weak religious worldviews. As Jong and Halberstadt (2016) argue, individuals high in religiosity have strong belief systems (especially when affirmed; Jonas & Fischer, 2006) serving as a powerful defense; alternatively, persons low in religiousness would benefit by reassessing and increasing their faith. If religion serves as a system of meaning to defend against the awareness of death, and stronger belief systems are associated with reduced anxiety (i.e., the right half of Jong and Halberstadt’s inverted U figure), then those who exhibit lower belief systems can only temporarily benefit from the acceptance of supernatural agents in an attempt to defend against mortality-related concerns. This is the basis of Jong and Halberstadt’s argument for “no atheists in a foxhole” (also see Heflick & Goldenberg, 2012; Jong et al., 2012).

This is essentially suggesting that all persons have evolved with religious convictions, an idea that is highly contested (e.g., Dawkins, 2006; Galen, 2017; Geertz & Markusson, 2010). It is theoretically and empirically problematic to combine individuals with low beliefs and atheists into a single category as atheism is associated with the abandonment of religious faith altogether (Bullivant, 2013; Galen, 2015). To counter this claim, Jong and Halberstadt (2016; see also Jong et al., 2012) report that although low, atheists do have some supernatural beliefs with respect to traditional religious deities (i.e., gods), symbols, and locations (e.g., Heaven). This, however, is at odds with the theoretical understanding of atheism (Bullivant, 2013) unless one assumes that we are all born as being religious (Barrett, 2012). Additionally, there are methodological concerns with the authors’ research. As Park (2017) suggests, the Supernatural Belief Scale (Jong, Bluemke, & Halberstadt, 2013), which is consistently used in Jong and Halberstadt’s work, is associated with supernatural agents rather than religiosity in general. Further, using an IAT to measure religious faith is somewhat limited because this assessment does not ascertain beliefs, but rather attitude associations (Fazio & Olson, 2003; Olson, Fazio, & Han, 2009). By showing that persons low in supernatural ideology increase their beliefs when thoughts of death are salient, researchers have demonstrated an associative link between MS and religiosity not because of increased faith but because the two concepts are related (Jong et al., 2012). As argued by Jong and Halberstadt, it is difficult to tease these constructs (i.e., death and religion) apart given their interconnectedness; rather, they suggest a cultural acceptance and knowledge of religious beliefs that may be ingrained in individuals from an early age (Dawkins,

2006). Finally, due to scale insensitivity, individuals scoring low on religious belief are being categorized with self-identified atheists. Given the difficulty in finding a representative sample of atheists for research in general (Jong & Halberstadt, 2016), it is highly likely that low religious persons are the ones bolstering their belief in supernatural agents. This would provide support for Jong and Halberstadt's (2016) claim that religion can be a useful defense for all faith-based individuals, but we are hesitant to say the same holds true for atheists. We thus agree with the authors that there are no atheists in a foxhole, but only because they were never there to begin with.

Conclusion

Overall, we found Jong and Halberstadt's (2016) book to be quite interesting and thoroughly enjoyed our reading of the material. Not only did it provide an extensive review of research being done on the intersection between death anxiety and religion, but it also opens the door for many cross-lab and interdisciplinary (e.g., religion, psychology, anthropology, sociology, etc.) discussions on the importance of religiousness in people's lives. Although there are some differences between our perspective and that of Jong and Halberstadt (2016), we agree that more theoretical and empirical work needs to be done. For instance, if there is a bi-directional link between religiosity and death anxiety, then how might cultural (e.g., Norenzayan & Hansen, 2006 vs. Vail et al., 2012), social (e.g., attachment to God; Kirkpatrick, 1997), and personality characteristics (e.g., DTA proneness; Hayes, Schimel, Arndt, & Faucher, 2010; need for structure; Landau et al., 2004; just world belief orientation; Lerner, 1997) moderate and/or mediate these effects? Further, it would be interesting to examine the accessibility of religious-related constructs as a function of MS and age (Maxfield et al., 2007), gender (Arndt, Greenberg, & Cook, 2002), race (Schimel et al., 1999), and geographic location (e.g., United States vs. other nations; Burke, Martens, & Faucher, 2010), just to name a few. Regardless of this, the study of religion continues to be an important area of interest as it provides a way to buffer against mortality-related concerns, thereby making existential anxieties less threatening. We look forward to seeing future work by Jong and Halberstadt (and others) to examine these and other areas of study.

Disclosure statement

No potential conflict of interest was reported by the authors.

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Death and religion in a post-replication crisis world

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It is of great testament to a book when it can change your mind on a topic – especially when the topic addressed is one you felt you had already researched and well understood. On this criterion, Jonathan Jong and Jamin Halberstadt's *Death Anxiety and Religious Belief* (2016) proved a remarkably successful read for me. I began their book with a view that if not totally convinced, I was at least sympathetic to the links proposed by terror management theorists (and others) concerning religiosity and the alleviation of anxiety about death. But by the end of the book I had developed a much stronger appreciation for just how conflicting the evidence was. Not only for the connection between

religious beliefs and death anxiety but also for more basic issues like whether it is even common for people across the world to fear death.

As with most researchers in the cognitive science of religion, I am not persuaded by any mono-causal explanation for religion(s) or the *function* they serve. Instead, I agree with scholars like Barrett (2004), Boyer (1994), and Whitehouse (2004), that addressing a multifaceted topic like religion requires giving due consideration to a wide assortment of cognitive, social, and evolutionary factors. But despite this caveat, I still acknowledge that offering a degree of comfort from concerns about death (for both the living and their deceased ancestors) has a place in the explanatory web of theories on religion. Jong and Halberstadt's impressively detailed work has not entirely dislodged this assessment but it has led me to substantially reassess the probabilities involved. Yet, despite how some terror management theorists may interpret the book, it is not a polemical treatise dismissing any-and-all relationship between fear of death and religion. The position the book takes is more nuanced than that and it acknowledges areas where the evidence is stronger. Terror management variants that focus on worldview defense processes, for instance, seem to have identified a robust relationship between strength of belief and reduced anxiety over death. However, the notable point here is that religious belief is just an example of worldview and the same reduction in anxiety can be observed with committed atheists.

Overview of the book

Death Anxiety and Religious Belief is an academic treatise intended for a specialist audience, and as a result, while it addresses an impressive breadth of research in the earlier chapters, relatively little time is wasted in justifying the psychological approach it adopts. This is both a strength and a limitation of the book. On the one hand, it restricts the book's appeal primarily to researchers or students already familiar and on-board with a psychological research program. Such readers are unlikely to be daunted by the astonishing array of scale acronyms (e.g., PANAS, SBS, EDAS, etc.), technical discussions of confusingly titled subscales (personal extinction vs. the unknown), and arguments focusing on conflicting factor analyses. Consequently, a degree of competence in quantitative analysis is certainly a requirement to get the most value from this work. This is unavoidable given the material being covered but it is somewhat regrettable that the prevalence of psychological jargon and frequent presentation of statistical results is likely to prevent anthropologists or non-quantitative scholars of religion from engaging with the content.

Reflecting its origins as a doctoral thesis, the first half of Jong and Halberstadt's book offers the reader no less than four literature reviews spanning Chapters 1–3. Chapter 1 is particularly packed, offering an excellent summary of the thorny issues surrounding definitions of religion, providing a potted history of the main theories of religion (including a summary of the cognitive science of religion), and outlining the authors' preferred neo-Tylorian definition of religion. Chapter 2 then explores the various theories that have linked religion to fear of death, ranging from nineteenth-century works by Feuerbach to modern terror management theorists. And Chapter 3 provides two critical reviews of the existing psychological measures used to capture *religious belief* and *fear of death*.

Collectively, these chapters serve as an excellent introduction to a diverse array of research and they do so with an appropriately critical eye, highlighting weaknesses and contradictions in measures and theories as they go. There is some self-interest at play, since Jong and Halberstadt are simultaneously making the case for the superiority of their own measures (the Supernatural Belief Scale and the Existential Death Anxiety Scale), but I found the cross-cultural orientated logic behind their scales compelling. Throughout all the reviews, it was refreshing to see older theories being treated fairly with the insights they offer receiving due recognition rather than being casually dismissed. The book does not ignore the clear differences (and problematic assumptions) in the language and cultural values found with older works, but this does not overwhelm the presentation of the theories they contain. That this point warrants mention is unfortunate but it remains all too commonplace in

academia for the scholarship of past generations to be automatically regarded as fatally flawed and parallels with modern theories left unacknowledged.

Having established their theoretical and methodological foundations, the authors move on in Chapters 4–6 to offer a careful and sober assessment of the current evidence surrounding three distinct propositions: (1) that human beings fear death; (2) that the fear of death motivates people to believe in supernatural agents; and (3) that beliefs in supernatural agents mitigate death anxiety. Here, original research is paired with reviews of existing research and in almost all cases the reader is left with a sense that the current evidence is messy, there is a distinct lack of cross-cultural research (particularly from non-Christian societies), and consequently any conclusions must be drawn hesitantly. The final chapter provides a summary of the findings, arguing that humans appear to fear death less than is commonly imagined, that correlations between belief and fear of death are uncertain, and that while strong belief in religion appears to mitigate fear of death, so too does strong atheism.

Although I did not always agree fully with the authors' assessments, I did always find my objections to be given due consideration and the ambiguities in the research to be acknowledged. When summarizing the literature on children's fears, for example, I found myself thinking it extremely unlikely that many young children would raise existential fears of mortality unbidden but that this did not equate to such fears being absent. However, while still formulating this objection, I found it addressed directly in the text, along with a discussion of relevant studies that used prompting style questions. In the end, while my view still diverged from the position of the authors, I felt that they had adequately presented the counter position and this was a feeling that persisted throughout most of the book.

A post-replication crisis book

This leads me to highlight what I regard as the greatest strength of the book – its reluctance to oversimplify and willingness to acknowledge uncertainty. There are no glib Gladwellian stories seeking to eclipse the uncertainty in the research literature or conceal limitations in the data from individual studies. Instead, the authors seem intent on drawing attention to the various limitations and competing explanations with almost obsessive regularity. This could prove potentially off-putting to some readers, and at times it does interrupt the narrative flow, however these prove minor complaints compared to how refreshing it is to see the messy reality of research presented so directly and honestly.

This leads to the first issue I want to address in this commentary; specifically, I want to argue that in the wake of the *replication crisis* it should now become standard practice for academic books, especially those in the social sciences, to stringently acknowledge the limitations of individual studies and collective issues with the relevant literature. The replication crisis refers broadly to recent failures to replicate many prominent research findings (Open Science Collaboration, 2015) and attendant recognition of widespread problems with research methods (Simmons, Nelson, & Simonsohn, 2011), inappropriate statistical analyses (Button et al., 2013), and skewed publication priorities (Ioannidis, 2005). The issues identified are not new (Cohen, 1994; Kerr, 1998; Meehl, 1967; Tversky & Kahneman, 1971), nor are they restricted to the field of psychology (or other social sciences). But they have perhaps been most keenly felt in this discipline, due to failures to replicate various influential theories (Hagger et al., 2016; Ranehill et al., 2015). Jong and Halberstadt's work has clearly absorbed influences from this more critical research environment and this has led them to be more circumspect in their claims and avoid imposing artificial consensus on conflicting results. They should be commended for this and I hope that in the coming years this is a characteristic that is no longer worthy of mentioning. But we are clearly not at that point yet.

The Christian/Abrahamic bias

The second issue I want to highlight, echoing a point recognized by Jong and Halberstadt, is just how heavily skewed the research literature addressed is to Western, predominately Christian, samples.

Believers and non-believers are frequently contrasted, but there are far too few studies addressing non-Christian societies. This risks the theories proposed being more appropriately defined as theories of Christianity, or at best Abrahamic religion, rather than general theories that apply to religious traditions worldwide. There are some cross-cultural studies referenced and the authors' initial efforts to address this gap with their own six-nation study are a positive step. But the current dearth of cross-cultural evidence severely limits how broadly generalizations can be extended. It is particularly notable, for example, even with the relatively robust inverse curvilinear relationship observed between death anxiety and religious belief, that in Jong and Halberstadt's six-country study the relationship was significantly weaker in Islamic countries, and in Japan – the only country without any significant presence of an Abrahamic religion – there was “no evidence of a curvilinear relationship” (p. 135). Of course, we must be wary of over-interpreting a single null result, but until better data are available it should at least make researchers more reticent to posit universal patterns, a point which Jong and Halberstadt stress.

Religion in East Asia, particularly in Japan, has been the long-term focus of my research and as such, despite the fleeting representation of the region in the research literature, I found myself considering how the relationships predicted compare against this cultural context. I agree fully with Jong and Halberstadt that the so-called *Buddhism problem* (p. 2) for definitions of religion is not really that much of a problem. If one looks at how Buddhism is practiced across the world, there are all of the expected trappings of religion including devotional practices directed at supernatural beings (Reader & Tanabe, 1998; Spiro, 1982; Tambiah, 1976), rather than the atheistic philosophy which pervades the imagination of Western intellectuals (Kavanagh, 2016; Lopez, 1995, 1998). However, I was less convinced by the suggestion that a belief in reincarnation provides “no real solace” (p. 44) from the fear of death because it carries with it an acknowledgment of the existence of hell realms and the potential to be reborn as animals. It is true that the “ultimate” goal of many Buddhist traditions, as with other Indian-derived religions, is to reach *nirvana* and escape the endless cycle of rebirth (*samsara*) and that the same traditions provide detailed descriptions of the torments awaiting those whose karmic misdeeds condemn them to hell realms. But focusing on these aspects and the lack of existential comfort they provide seems to neglect the emphasis placed by Buddhist traditions on how following a specified path enables one to escape such undesirable fates. While this could in some cases induce anxiety rather than comfort, it would seem a false equivalence to suggest both possibilities are equally likely. Consider for example the “Pure Land” Buddhist traditions, popular throughout East Asia, that explicitly instruct followers that rebirth in a heavenly realm is assured by the compassion of Amitābha Buddha and that all they need do to insure their ascendance is perform devotional practices and have faith. Indeed, it seems something of a tautology that religions promoting salvation, or at least a preferable way of life, must provide an undesirable contrast.

Let I be misunderstood, I should clarify that I am not positing an unambiguous positive and comforting relationship between Buddhist traditions and death. A potent counterexample to any such claim would be the various Buddhist meditational traditions that promote a sense of revulsion of the corporal form and earthly pleasures by encouraging adherents to envision their body as a sack of meat/excrement or to spend time in graveyards around rotting corpses. Such practices seem unlikely to offer immediate psychological comfort, although they might still serve to reduce existential fear by confirming commitment to Buddhist metaphysics. Or to provide a more mainstream counterexample, there is significant controversy in Japan surrounding the predatory practices of institutional Buddhism promoting costly funeral rites that are presented as being required to pacify the dead (Covell, 2005, 2008). Hence, Helen Hardacre describes how rituals for aborted fetuses (*mizuko kuyō*) involved efforts to market the concept of the “menacing fetus” by various Buddhist, Shinto, and New Religious groups (Hardacre, 1999). But even here there is room for ambiguity as some scholars argue that such practices are unfairly maligned and do offer mental solace and comfort (Anderson & Martin, 1997; LaFleur, 1992; Taniyama & Becker, 2014).

Ultimately, without better and more representative data from non-Abrahamic cultures, we are left with conflicting subjective interpretations that rely on cherry-picked examples. However, my

intention here is not to argue for a positive or negative association between Buddhism, or other religious traditions, and death anxiety in East Asia but rather to demonstrate that there is fertile ground to be explored in non-Abrahamic settings and potentially independent complex relationships to unpack. In Chapter 6, Jong and Halberstadt report the results of a study that found participants displayed a stronger implicit association between death and anxiety after receiving a prime that challenged God's existence, regardless of their explicit pre-existing beliefs. They suggest that this is likely due to "culturally established associations" between "belief in God" and "literal immortality" (p. 165). This seems reasonable, but the question it inevitably raises is what about those countries where religion is not so intimately associated with such concepts? Again, focusing on East Asia, although there are plenty of supernatural beings and reincarnation stories, there is perhaps more emphasis culturally placed on impersonal karmic forces than concepts of omnipotent gods and eternal life. It seems likely that such a distinction could significantly alter implicit associations – as indicated by a recent replication that failed to find any increase in prosocial behavior after religious priming with a Japanese sample (Miyatake & Higuchi, 2017) – but we currently do not have enough data to draw any firm conclusions. This is not a criticism directed at Jong and Halberstadt specifically, as they fully acknowledge the problem of an over-reliance on Western, Christian populations and are undertaking studies that seek to address this limitation, but it should be a central issue of concern for the broader field.

Conclusion

Death Anxiety and Religious Belief is an impressive work that serves as a valuable and concise reference resource for researchers and students interested in the psychology of religion and existential fears. It summarizes a vast array of empirical studies and theoretical perspectives but does so with admirable honesty about the current, often contradictory state of the evidence. Given the amount of ink that continues to be spilt on the relationship between death anxiety and religion, this book offers a timely assessment of the evidence for relationships that are too often taken – in both academic and public spheres – as being already firmly established. I hope that the clear limitations the book identifies help to spur new research efforts and make scholars, such as myself, re-evaluate any assumptions they hold concerning the relationship between religious belief and fear of death.

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Why are people religious? Death anxiety and alternative explanations

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If not death anxiety, what else could motivate people to cling to certain religious beliefs? This question is central in my commentary to *Death Anxiety and Religious Belief*. Jong and Halberstadt

(2016) describe decades of research that was performed to study the relationship between death anxiety and religion. The book is well-written, and gives an impressive summary of the current state of research in the area. Moreover, the authors have taken up the questions that others left open, conducting research in different cultures and with the application of diverse methods, ranging from questionnaires to implicit measures and experimental studies. It can be expected that *Death Anxiety and Religious Belief* will be a markstone in this research field and a source of inspiration.

The authors cite Feuerbach's statement (p. 33) that there would be no religion if man lived forever, a claim that has inspired many to theorize how religion evolved as a means to live with the awareness of the finiteness of life. The authors focus on this relationship between death anxiety and religion; however, they emphasize (e.g., p. 174) that limiting their scope to this relationship was necessary to get a deeper understanding because death anxiety and religion are complex and multi-faceted constructs. This limitation, therefore, does not mean that they see relieving death anxiety as the sole or even core function of religion. To proceed, I will first comment briefly on their central hypothesis, and second I will give some examples of other motives that may be sources for religious belief.

Empirical evidence for the thanatocentric claim

The authors discuss the empirical evidence for their central hypotheses, showing that in general death anxiety seems not to play a strong role in the lives of most people, at least not on a conscious level. Although death anxiety can be easily triggered, and thus seems highly accessible, its relation with religion turns out to be complicated. Some evidence is found for a curvilinear relation, in which the left side represents atheists who are low in death anxiety and the right side represents convicted believers who are also low in death anxiety. However, as the authors show, evidence for this claim is hindered by atheists being underrepresented in most studies, and probably also by cultural differences. In addition, it makes a difference whether explicit measures, such as questionnaires, or implicit measures, such as association tasks, are used. The conclusion must be that the hypothesis that religion evolved as a way to handle death anxiety cannot easily be answered. Relieving death anxiety seems to be one of the psychological functions of religion, at least according to studies in which subliminal measures are used, but even after hundreds of empirical studies the evidence is weak, certainly when considering that religion is widespread and can have a strong influence on the lives of its adherents, as the authors describe in the first chapter of the book.

Testing hypotheses from evolutionary psychology with social science methods

A related and more fundamental question is whether methods from social science are capable of testing hypotheses that are derived from evolutionary psychology. One of the basic principles of social science research is that a sample has to be representative of the population. Obviously, this is impossible for hypotheses that apply to populations that lived many millennia ago. The authors warn that "any claim about the evolutionary origins of religious belief based on its current psychological benefit is at best an educated guess" (p. 175). This begs the question whether evolutionary psychology is our best guide for discovering the reasons why people adhere to religious belief in the twenty-first century. Factors that were important in the development of religion may be irrelevant in understanding its current functions. The authors make a comparison with music (p. 18), which may have evolved because of its signal function, but nowadays is important for entirely different reasons.

The fact that death anxiety has become so central to research on religious belief seems worth a study on its own. Maybe the strong focus on the role of death anxiety is partly caused by the intuitive appeal of evolutionary psychology. Literal immortality is an important topic in many religions, and it

seems logical that this aspect made religion so appealing to our ancestors. However, a strong focus on death anxiety can blind us to other motivational sources for religious belief. For example, the authors discuss loneliness, randomness, and fear of uncertainty as examples of other affective needs that are fulfilled by religion, and these needs have been studied by existential psychology, to which we will turn now.

Alternatives to death anxiety

In research from the tradition of Terror Management Theory (TMT), five important threats are often distinguished, namely death, meaninglessness, guilt, isolation, and identity (Koole, Greenberg, & Pyszczynski, 2006). We will briefly work out the last four threats, and give examples of how they might be relevant for understanding the benefits of religious belief for its attendants.

Meaninglessness: Meaning has been a central topic in psychological research for decades. Frankl (1962), one of the founding fathers of this research tradition, describes the search for meaning as central to human existence, whereas an *existential vacuum*, the lack of meaning, is an important cause for dysfunctionality and health complaints. Ranging from finding patterns in occurrences to the development of complex worldviews, the search for meaning seems to be an innate need for human beings. A distinction can be made between meaning as experiencing coherency in what is happening, and purpose, defined as having goals that feel worthy to strive for. Religious traditions provide their adherents with a system of meaning and purpose. They address questions about reasons why events occur, and about making life choices. Believers often receive detailed instructions on how life should be lived, alleviating the stress of feeling personally responsible for one's own life.

Guilt: Life can be seen as a chain of choices that have to be made. Yalom (1980) famously describes how the awareness of our many choice options can provoke feelings of anxiety. Although the concept of free will has been critiqued by philosophers and neuroscientists, people in general have the experience of being responsible for their own choices. At the same time, they experience limited control and are unable to know the results of their choices in advance. Choices can turn out negatively in the long run, giving rise to feelings of guilt or regret. Religious traditions have provided their attendants with ideas for alleviating feelings of guilt, such as bringing sacrifices as expiation or confessing sins to receive forgiveness. As with death anxiety, this may give rise to a paradoxical situation where religions may provoke feelings of guilt, and also offer the means to relieve these feelings.

Isolation: In general, human beings have a strong need to feel connected with other persons. Having relationships and a satisfactory social network contribute to health and feelings of well-being. Religious traditions are often community oriented. Their attendants meet each other at different moments, and are called on to offer practical help or emotional caring to each other. In addition to providing a social network, religion may also help to bear fundamental loneliness, which results from our inability to know for certain what others are experiencing. In TMT research, the concept of I-sharing, the belief of having the same experience as at least one other person at the same time, has been studied. Laughing in reaction to the same joke is an example of I-sharing (Pinel, Long, Landau, & Pyszczynski, 2004). The experience of I-sharing may provide strong feelings of connectedness between persons. At those moments it seems that the gap that exists between one person and another is bridged. Religious practice often contains elements that are meant to provoke emotional reactions in groups of people. For example, performing the same meditation exercises or seeing that other persons are also moved by a certain song may elicit feelings of connectedness and thus motivate persons to participate in religious practice.

Identity: Being an individual can feel like a heavy burden. One cannot know for sure what is inside other persons, and it is also impossible to attain full self-knowledge or to control one's own thoughts, emotions, or longings. Also, the boundaries between oneself and one's surroundings may be experienced as unclear, such as when one recognizes that what were presumed to be personal choices were

in fact strongly influenced by other people. Identity is an important theme in many religious traditions, ranging from learning to mindfully observe your own identity, and learning to bear its unpredictability, to the trust that you are fully known by God in heaven, who can understand you better than you will ever understand yourself.

Existential psychology has been discussing whether a core existential threat can be distinguished, with death anxiety as a likely candidate. But other candidates have been considered, for example uncertainty, loss of control, social exclusion, meaninglessness (Sullivan, Landau, & Kay, 2012), and the sociological concept of ontological insecurity (Friedman, 2010). If survival is seen as the basic human drive, then it is understandable that the finiteness of life provokes the most basic form of anxiety, and that other anxieties might be understood as the result of failing defense mechanisms that were developed to manage death anxiety. The confrontation with death motivates people, for example, to search for meaning in cultural worldviews, as highlighted by TMT research. Anxiety that results from losing a meaning system could then be seen as the result of underlying death anxiety. However, until now the debate about a core threat has not yielded a broadly accepted conclusion. Researchers have, for example, pointed out that threats related to uncertainty, failure, and separation can also elicit one's worldview defenses. Perhaps it is more useful to develop a hybrid model in which attention is paid to each specific threat, as well as the possibility that one of these threats may have a causal influence on all the others (Sullivan et al., 2012). In a recent project of our own, we validated the Existential Concerns Questionnaire, which is based on the five existential domains that were mentioned above: death, meaninglessness, guilt, isolation, and identity. We found strong relations between the items that represented the different domains, and the scale turned out to be essentially unidimensional, although the items that explicitly addressed the finiteness of life could be seen as a possible subfactor (van Bruggen et al., 2017). These results mainly illustrate the strong interrelatedness of different existential concerns. As a closing remark to this section, it is also important to note that existential psychology seems to have a bias for negative experiences like anxiety. In addition to paying attention to other existential threats, it also seems worthwhile to focus on positive experiences. From research in positive psychology, we can learn that the absence of a problematic experience and the presence of the positive counterpart are not always on the same continuum. People may, for example, experience mental health complaints, and at the same time have more positive emotions than others (Lamers, Westerhof, Bohlmeijer, ten Klooster, & Keyes, 2011). Therefore, religion might be related to positive experiences like joy, inspiration, or meaning. For some people religion might be a shelter for the emotional storms that can be provoked by existential concerns, for others a place for inspiration.

Conclusion

In a time in which the negative side effects of religious belief are in the news headlines, understanding the functions of religion seems more important than ever. And, as the authors discuss in the last pages of their book, the same mechanisms that underlie religious adherence may also apply to worldviews in general, with their powerful potential to destroy or to heal our planet and its inhabitants. *Death Anxiety and Religious Belief* provides the reader with an extensive description of research on one of the functions of religious belief. The thought that religious belief developed as a way of handling death anxiety is appealing and worth further study. However, its value for understanding current religious practice seems to be limited. People might have a broad range of reasons to become or stay religious, and these reasons might be as relevant as alleviating death anxiety. It is important to broaden the scope of future research to other experiences that motivate people in the direction of religious belief. The same methods that have been used to study the relationship with death anxiety may again prove to be valuable. A comparison between different psychological factors that have already shown explanatory power, and an exploration of others, for example by applying qualitative measures, may be a path toward a deeper understanding of the psychological mechanisms behind religious belief. *Death Anxiety and Religious Belief* certainly is a milestone, but the road continues.

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The importance of meaning in the relationship between religion and death

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The mystery of human existence lies not in just staying alive, but in finding something to live for.
—Fyodor Dostoyevsky, *The Brothers Karamazov*

Jong and Halberstadt (2016) provide a compelling and coherent account of the complex relationship between religion and death anxiety, laying out an existential psychology of religion. Drawing from various empirical and theoretical accounts, especially Terror Management Theory (TMT; Greenberg, Pyszczynski, & Solomon, 1986), the authors highlight how religion, as a cultural worldview, may operate in the service of mitigating existential anxiety surrounding one's death. These worldviews help organize one's beliefs about the origin of the world, the nature of humanity, and, often, what happens to people after they die. Accordingly, religion is a prototypical cultural worldview: it provides an account for how the world came to be (i.e., creation stories), explains the nature of humanity and how people should act (i.e., provides moral codes for appropriate behavior, which are imbued with special spiritual significance [righteousness vs. sin]), and explains what happens to people after they die (i.e., afterlife beliefs) and clear guidelines for how to achieve this literal immortality, thus effectively managing death anxiety.

As Jong and Halberstadt (2016) note, the results of dozens of research studies support that cultural worldviews, such as religion, help attenuate death anxiety. Although previous work has

highlighted the terror management function of religion (Vail et al., 2010), less is known about *how* this process takes place. That is, there is scant empirical evidence about the *specific mechanisms* by which religion helps reduce death-related anxiety. Given how individuals rely on cultural world-views, especially when under strain, to help provide a sense of coherence to their external world, and purpose and significance to their lives, I argue that religion helps attenuate death anxiety by providing meaning in life. Put differently, meaning is likely one of the central mechanisms by which religious beliefs manage the existential anxiety surrounding one's inevitable death.

On meaning

Meaning has been defined in many ways and on many levels, but a growing consensus is converging on a definition that includes three components: coherence, significance, and purpose (George & Park, 2016; Heintzelman & King, 2014a; Martela & Steger, 2016). First, a sense of meaning emerges when things make sense or are coherent. Coherence is often felt when there are reliable patterns or consistently predictable associations in the environment (Heintzelman & King, 2014b). Similarly, coherence about one's life story or narrative – understanding one's life in a way that make sense – helps convey a sense of meaning (McAdams, 2001, 2013; McAdams & Pals, 2006). Having an organizing lens through which people can interpret the world provides meaning.

Second, people feel a sense of meaning when they feel significant, or as if they matter. When people perceive that their actions – or, more profoundly, their lives – make a difference, they feel meaningful. This significance may emerge through the relationships people forge with others; indeed, relationships are a primary source of meaning in life (Baumeister & Vohs, 2002), and people feel less meaning following exclusion (Twenge, Catanese, & Baumeister, 2003). Making a difference in the lives of others, or in the world more broadly, helps people feel a sense of meaning in life.

Third, meaning arises when people are oriented toward a larger goal or purpose. People can find purpose in a broader mission, such as eradicating a disease or educating the next generation, or more modest ambitions, such as running a marathon or completing a graduate degree. This orientation toward accomplishing a goal and being directed toward something bigger than oneself helps people experience a sense of transcendence (Steger, Frazier, Oishi, & Kaler, 2006). Having a direction that orients behavior helps people feel meaningful.

Religion as a meaning-making mechanism

Given that meaning emerges through a sense of coherence, when people feel significant, and when behaviors are oriented toward a larger purpose, religion is an effective meaning system (Newton & McIntosh, 2013; Park, 2005, 2013; Silberman, 2005). Religious beliefs often convey a sense of meaning across all three of these domains. First, religion is a schema (McIntosh, 1995) that helps people organize their experiences in a coherent way. Religious beliefs provide a lens through which people can interpret events and understand their life story in relation to the Sacred. Religious codes outline behaviors as sinful or righteous, and people often make sense of their lives according to a larger religious or spiritual narrative. People can assign meaning to events by attributing their cause to a benevolent God or a sinful world. Cognitively, religion helps confer meaning by providing a ready way to interpret, organize, and understand the world and one's place in it. Thus, religion facilitates meaning by providing an easy way to make sense of the world and one's own life.

Second, religion provides adherents with a sense of significance. Religion helps individuals transcend the impermanence of this earthly world and imbues people's actions, and very lives, with eternal importance (Pargament, Magyar-Russell, & Murray-Swank, 2005). Religious actions can have consequences that go beyond this life, and individual lives now transcend this world, as believers can live forever into eternity through the promise of literal immortality. That is, their lives make a difference. In addition, religious teachings convey that people matter. For example, Christian

beliefs surrounding God's unconditional love suggest that people matter so greatly that God's sacrifice of Jesus Christ ensures that faithful followers will live forever. Moreover, their actions matter, given that (as many believe) behaviors and decisions made in this life directly affect how one spends the next life. Thus, religion provides people with a sense of significance.

Third, religions provide people with purpose. Religious teachings offer guidelines for how people should behave (e.g., avoiding certain foods or behaviors) or orient their life's missions or goals (e.g., caring for the widows and orphans). Moreover, religious individuals may decide that their larger purpose in life is to please God or accomplish a larger spiritual goal (Emmons, 2005). Contemporary religious figures have drawn on the purpose-providing feature of religion (e.g., Rick Warren's *Purpose Driven Life*; Warren, 2012). For many religious individuals, religion not only provides purpose in everyday tasks and interactions, but also gives an overarching purpose to their entire life. Indeed, many people have transformed their job or career into a calling (Dik & Duffy, 2012; Dik, Duffy, & Tix, 2012), often one that aligns with their religious beliefs.

In short, there is ample evidence that religion is a meaning-making mechanism (Newton & McIntosh, 2013; Park, 2005, 2013; Silberman, 2005). This bears importance in understanding the complex relationship between religion and death anxiety largely because it is likely that one of the primary ways by which religion helps manage mortality-related fears is through the provision of meaning. That is, meaning helps explain *how* religious beliefs assuage death anxiety. Religion provides people with a sense of coherence, significance, and purpose, all of which help make life feel meaningful – and a sense of meaning mollifies death anxiety.

Meaning manages death anxiety

The relationship between death and meaning is complex (e.g., Landau, Greenberg, Solomon, Pyszczynski, & Martens, 2006; Vess, Routledge, Landau, & Arndt, 2009), but researchers generally agree that meaning helps humans manage existential anxiety. Prior research has shown the link between meaning in life and death anxiety. For example, challenging one's religious meaning systems results in increased awareness of death (Friedman & Rholes, 2007). Reminders of death result in more negative evaluations of meaningless modern art (Landau et al., 2006), highlighting the important role of meaning in managing existential anxiety surrounding death. The cognitive accessibility of death-related thoughts affects one's perceived meaning in life (Vess et al., 2009). Indeed, various research examining terror management processes suggest that meaning is an important feature in managing death-related anxiety.

Evidence for the mediating role of meaning

Researchers have argued that cultural worldviews are effective for terror management because they provide order, structure, and, perhaps most importantly, meaning. Previous work has demonstrated how living up to the cultural standards of one's worldview provides self-esteem, which is inversely associated with death anxiety (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004); however, the degree to which cultural worldviews provide meaning, and in doing so reduce existential anxiety, has not typically been examined through direct empirical examination. Rather, researchers have relied on indirect evidence that worldviews, such as religion, provide meaning, which reduces death-related anxiety. Recently, however, one investigation sought to provide evidence that the negative relationship between religious beliefs and death anxiety was mediated by meaning in life (Van Tongeren et al., 2017). First, the researchers focused on the religious belief in literal immortality. They examined its association with afterlife anxiety (i.e., fear surrounding what happens to oneself after death). Importantly, they examined (a) whether the association between religious beliefs and afterlife anxiety is mediated by meaning in life, and (b) whether this mediating relationship is stronger or weaker for those of varying intrinsic religiousness (i.e., the degree to which people view religion as central to their lives). The results indicated that the association between religious beliefs in

literal immortality and afterlife anxiety was mediated by meaning in life, and these effects were stronger among those for whom religion is central (i.e., those high in intrinsic religiousness).

There are several important implications of these findings. First, this is the first direct evidence that religious beliefs reduce death-related anxiety by providing a sense of meaning in life. That is, meaning is the mediating mechanism by which religion mitigates existential anxiety pertaining to the afterlife. Whereas previous research has theoretically asserted that meaning plays an important role, this work tested this prediction directly. Second, these processes were powerful only when religious beliefs were of central importance to the individual. That is, only the intrinsically religious individuals demonstrated this strong pattern of enhanced meaning in life. Thus, religious meaning systems must be personally relevant for individuals to reap existential benefits. Experimental priming work confirms this: when primed with religion, only those high in intrinsic religiousness reported reduced afterlife anxiety, whereas those low in intrinsic religiousness became more anxious about the afterlife following a religious prime (Van Tongeren, McIntosh, Raad, & Pae, 2013). Other work has highlighted how intrinsic religiousness is associated with reduced defensiveness following reminders of death (Jonas & Fischer, 2006). To be sure, the religious meaning system must be personally relevant, which is concordant with terror management research on worldview-consistent bolstering following threat (see Pyszczynski, Greenberg, Koole, & Solomon, 2010 for a review). Indeed, this work is consistent with Jong and Halberstadt's (2016) assertion that religion may not operate uniformly for all individuals.

Varieties of religious meanings

Religion may reduce death anxiety through the provision of meaning, but some religious beliefs may actually increase existential anxiety insofar as they are associated with less meaning in life. Van Tongeren, Davis, Hook, and Johnson (2016) described the existential benefits of religious beliefs across a spectrum. On one end, some religious beliefs provide security and meaning; these beliefs, such as religious fundamentalism and defensive religion, offer certainty, closure, and security in the form of lower death anxiety and higher meaning in life. On the other end, some religious beliefs do not offer existential security or as much meaning in life: these beliefs, such as quest religion, are marked by doubt, openness, and questioning. Though such beliefs promote tolerance (and the security-focused beliefs often accompany prejudice and closed-mindedness), they come at the cost of lower meaning in life and higher death-related anxiety. This work provided experimental evidence that following a meaning threat, quest religion was associated with greater death anxiety. This suggests that the content and style of one's religious beliefs may have marked effects on how much meaning in life such beliefs provide and, in turn, how well they manage death-related anxiety.

Research such as this suggests that religion cannot be treated as a unitary or static construct. Rather, both *what* one believes and *how* one believes it matters greatly. Moreover, it suggests that certain religious beliefs appear better suited to provide meaning and, in turn, manage death-related anxiety (see Beck, 2004, 2006; Van Tongeren, Hook, & Davis, 2013). Accordingly, under threat, religious beliefs that offer certainty and security are more highly prioritized, though such belief systems are often also associated with lower tolerance (Van Tongeren, Davis, et al., 2016). Thus, there remains a paradox in religious beliefs between balancing the desire for existential security and simultaneously prioritizing open-mindedness, tolerance, and possibilities for growth. Given that people across religious spectrums defend their beliefs ardently (Brandt & Van Tongeren, 2017), research should examine how religious beliefs may meet existential needs without the costly negative effects of outgroup derogation. Some initial work suggests that cultivating humility surrounding one's religious beliefs might be a helpful way to mollify some of the intolerance toward outgroup members that might accompany some religious beliefs (Van Tongeren, Stafford, et al., 2016). In any case, particular religious beliefs may vary in their ability to provide meaning, particularly under threat or strain, which has downstream implications for death anxiety.

Open questions and future directions

Jong and Halberstadt (2016) review a considerable research literature examining the relationship between religion and death anxiety. They should be lauded for their thorough and cogent account, as well for inspiring future research to advance an existential psychology of religion. I see a few open questions that might encourage future research.

First, what, precisely, is the role of meaning in the association between religion and death anxiety? Initial evidence suggests that meaning may be a mechanism by which religion mitigates death-related anxiety (Van Tongeren et al., 2017), but additional work is needed. Is this the primary mediator that explains the relationship between religion and death anxiety? Are other mediators also involved (e.g., self-esteem; Pyszczynski et al., 2004)? In addition, is there a particular feature of meaning – such as coherence, significance, or purpose – that is more central to this relationship than others? Given the development of scales that now parse apart these various components of meaning (George & Park, 2016), such methodological advancements would allow researchers to provide a clearer picture of the unique, and potentially important, role of various facets of meaning in understanding how religion assuages death-related anxiety.

Second, how does *what* people believe and *how* they hold such religious beliefs affect death anxiety (and meaning)? Are there religious orientations that are more effective in managing existential concerns? Which beliefs are beneficial in providing existential solace, and why are such beliefs more soothing than others? What tradeoffs are present in religious beliefs that provide security (cf. Van Tongeren, Davis, et al., 2016)? More work is needed examining both the content and style of religious beliefs. That is, future work should examine the particular features of religious beliefs and the ways in which people hold such beliefs, providing nuance and avoiding broad generalizations that obscure important variations in religious experiences that might have profound effects on how people find meaning and manage existential anxiety.

Finally, and more broadly, what is the relationship between religion and death, meaning, and other existential concerns? Researchers have suggested that there are four (Yalom, 1980) or five (Koole, Greenberg, & Pyszczynski, 2006) existential concerns, or certainties of existence, that humans must face: death, isolation, groundlessness, meaninglessness, and identity. Various theoretical approaches may favor the primacy of one existential concern over others (e.g., TMT presumes that death is the superordinate concern), but future research should examine (a) how these various fears or concerns may be interrelated, (b) the degree to which religious beliefs affect not only death-related anxiety, but existential anxiety surrounding all of these concerns, and (c) whether religion is particularly well-suited to address some of these fears more than others. Is one of the existential concerns truly the most terrifying? Is religion particularly suited to address one concern more than others? Or might it be the case that religion is, in fact, equipped to quell each of these certainties of human existence? That is, religion may not only provide the literal immortality to conquer death, but may also provide the spiritual community and Sacred connection to overcome isolation, the structure and certainty to overcome groundlessness, the multifaceted dimensions of meaning to vanquish meaninglessness, and a clear and compelling sense of identity. To be sure, more work linking religion to all of these concerns is needed for complete and robust existential psychology of religion.

Conclusion

Religion and death anxiety are closely associated, and a comprehensive understanding of their relationship is a worthwhile scholarly endeavor. An area of future theoretical and empirical work centers on exploring the role of meaning in these complex dynamics. Carefully unpacking how religion offers meaning as a route to managing existential concerns may prove to be a fruitful avenue to catalyze research and more fully understand the existential functions of religion.

Disclosure statement

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A broader look at terror management, death, and belief in the supernatural

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In their masterfully comprehensive book, Jong and Halberstadt (2016) provide a compelling account of the links between religious belief and death anxiety. The topic of the book is, as the authors rightfully note, complex. But despite this complexity and grandness, the authors clearly describe what is and what is not known from the empirical literature. The book should no doubt be a central work in the libraries of scholars who are interested in the existential roots of religious and supernatural belief. At the same, however, the thoroughness of this book makes the crafting of an interesting commentary a bit difficult. What else could possibly be brought to bear on the central question that is the focus of this inquiry? As an active Terror Management Theory (TMT; Greenberg, Pyszczynski, & Solomon, 1986) researcher myself, I believe the authors did an appropriate job interpreting and reviewing the critical research linking terror management motives to religious outcomes. Rather than critically arguing with the authors' key points, I found myself agreeing with much of what they presented and, most importantly, the conclusions that they drew. My commentary therefore focuses on some of the broader issues of a terror management account of existential motivation and consequently introduces potentially more nuances to an already nuanced investigation of death anxiety and religion.

At a fundamental level, the difficulty the authors face in using terror management theory as a vehicle to answer direct questions about the link between death and religion is that terror management theory is a much broader explanatory framework. The theory argues that culturally derived beliefs of many kinds function existentially to alleviate the potential negative psychological consequences of being aware of mortality. Religion, from a terror management perspective, is but one of the many belief structures used to mitigate existential concerns. This broader view introduces additional ambiguity into some of the analyses presented by the authors. As one example, even though Jong and Halberstadt's conclusions about death anxiety and religious beliefs generally cohere with terror management theorizing, such correlations are conceptually difficult to interpret in the absence of considering other belief structures. People low in explicit religious belief may be low in death anxiety because they possess faith in other existentially comforting systems of belief. It is not religious disbelief, *per se*, that is providing existential protection, but rather the integrity of some other meaning-providing framework. The point here, which the authors briefly allude to, is that the management of death concerns, from a terror management perspective, results from an incredibly flexible and diverse psychological response. Religion is only a single weapon in the arsenal that people, even those who are religious, have at their disposal.

Building from this point, the research linking mortality salience to explicit reports of death anxiety may be brought into sharper focus. The authors note that successful demonstrations of this link typically involve moderating variables, such as Routledge and Juhl's (2010) finding that people low in meaning in life report greater death anxiety following a typical mortality salience induction, or Abeyta, Juhl, and Routledge's (2014) finding that mortality salience decreases distally measured death anxiety only among people low in self-esteem. From a terror management perspective, these findings align with theorizing about the functional importance of self-esteem and meaning for managing the negative consequences of death-related concerns. Other findings make similar points. For instance, Vess, Routledge, Landau, and Arndt (2009) showed that people who do not readily engage with clearly structured knowledge about the world (i.e., those low in personal need for structure) experience deficits in meaning in life following mortality salience. Such findings illustrate that the integrity of key psychological structures (self-esteem, meaning, coherence) posited to keep death concerns at bay is critical for understanding when death thoughts will trigger anxieties about death, as well as other downstream negative consequences for psychological health.

So where does religion fit into this discussion? One way to perhaps think about these findings is to consider a more multilevel view of terror management. That is, according to terror management theory, existential concerns about death do not motivate *specific* religious beliefs (or any other belief) *per se*. Rather, the theory posits that concerns about death motivate individuals to pursue self-esteem and meaningful views of the world and one's self. These relatively abstract psychological structures would thus be located quite closely to death concerns in the model, and more robustly account for people's ability to regulate death anxieties and aspects of psychological functioning in the face of death thoughts. The particular beliefs and behaviors that generate self-esteem and meaning, such as religion, fame, and relationships, on the other hand, are consequently located at a higher level in the model as they represent the many ways that people could enhance self-esteem and a sense of meaning in life. Of course, the one distinction between religion and other beliefs that confer self-esteem and meaning in life is that religion offers particularly explicit paths to a *literal* afterlife. This may be why terror management scholars and the theorists who developed the ideas that led to terror management (e.g., Becker) have sometimes argued that religion may be the most effective type of belief for combating the negative consequences of death awareness. Yet, even here, non-religious belief systems may provide the same type of function. Advances in genome research have indeed laid a foundation for a belief in the possibility of "immortality" through secular (scientific) avenues. All of this is to say that the authors' tentative conclusions about the merits of a terror management "worldview" account, relative to the more restrictive thanatocentric accounts of religion, seem logically consistent with a broader view of the conceptual foundation for terror management theory. Terror management theory makes no

explicit claims about the primacy or universality of religious belief (as defined by the authors) and, as such, the lack of definitive evidence linking religious belief to avowed non-believers in the face of death would be coherently predicted by the theory.

A broader consideration of outcomes that border on the “religious” might also be worth considering. The authors define religion, effectively in my opinion, as “belief in supernatural agents and the phenomena associated with those beliefs, such as rituals, social structures, and emotional and perceptual experiences” (p. 3). They further define supernatural agents as agents who can overcome intuitive expectations about the limits of reality. Despite this broad definition, much of the discussion centers on more conventional notions of religious faith, even though other belief structures are relevant. Indeed, if one assumes that religious belief is a functional response to concerns about death-transcendent meaning, then focusing on a broader spectrum of supernatural beliefs could be useful. This is the approach recently taken by Clay Routledge and his colleagues. In one set of studies, Routledge, Roylance, and Abeyta (2017) demonstrated that direct threats to meaning – which we know leaves people vulnerable to death anxiety (Routledge & Juhl, 2010) – lead people to show greater belief in miraculous events caused by supernatural agents. Here is an example of one such event, taken directly from Routledge, Roylance, et al. (2017).

(Tony Davis of Los Angeles describing his experience after being shot in a mugging-gone-wrong)

I started to float towards these clouds. These clouds opened up and through these clouds, I saw this huge city. It was so strange, but the city was beautiful. I saw these colors I've never seen before in my life ... these strange, glowing colors, radiant colors, just glowing out of this huge city. All of a sudden this voice said, “It's not yet your time. Go back.” I'm like, “No.” It said my name. “Tony, your work is not yet done. Go back.”

Although this example never directly mentions conventional notions of God or religion, the experience no doubt “feels” religious and provides a nice illustration of a methodological device for capturing belief in the supernatural. Building on similar ideas, Routledge, Abeyta, and Roylance (2017) have shown that participants low in religiosity (atheists and agnostics) are more likely to harbor belief in extraterrestrials. I think it is reasonable to suggest that belief in aliens can be religious in nature; the infamous cult in the dissonance theory literature referenced in Jong and Halberstadt's book certainly echoes that notion. I also believe that Routledge and colleagues' approach demonstrates an important point about “religious” belief. Although “non-religious” people may be reluctant to embrace explicit beliefs about God (or conventional notions of religions), they may nevertheless be very willing to express explicit beliefs that are in many ways “religious” when the need for meaning is elevated. Such responses may be consistent with the mixed evidence that Jong and Halberstadt review in regards to explicit and implicit religious beliefs among those low in religiosity. The implicit measures may be picking up on a more general tendency to find meaning in the supernatural, which might only show up in specific types of explicit “religious” beliefs.

Finally, while I appreciate the psychological approach adopted by Jong and Halberstadt, I think it might be important to consider the possibility that modern psychological research on the link between religion and death anxiety may not directly speak to the size of this association throughout human history. Terror management theory specifies the features of belief systems, both religious and secular, that function to thwart concerns about death. The centrality of religious and non-religious belief systems in providing these functions to people may be a more sociological, anthropological, or historical question, rather than merely a psychological one. That is, much has been made of western societies becoming less and less religious in recent times. This does not necessarily mean, of course, that death anxiety should be more of an issue. It might simply mean that people are increasingly relying on non-religious worldviews for their terror management needs. In times past, when religious beliefs were indeed more central (or perhaps even fundamental), one might expect to see consistent and robust links between death anxiety and religious belief. The centrality of particular types of beliefs for terror management is, admittedly, a question that the theory may not be able to fully address with the methods typically employed in social psychology experiments. However, even against this possible backdrop, the work linking meaning concerns (which are, of course, tied to

death concerns) to belief in supernatural phenomena outside traditional views of religion might offer evidence for more fundamental motivational and cognitive processes that transcend historical trends in explicit religiosity. Regardless, the well-conceived and supported foundation provided by Jong and Halberstadt in this book will likely prove to be a useful starting point for such future inquiries.

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On setting up straw gods?

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Not everyone believes in Gods, Devils, heavens and hells, or eternal souls, but that doesn't mean they don't believe in anything. In New Zealand, analysis of large numbers of New Zealanders' beliefs suggests that only a small proportion (12% or so) can be thought of as "Religious Exclusives" – people who believe in traditional religious notions but no other supernatural or paranormal phenomena (Wilson, Bulbulia, & Sibley, 2014). That said, a further 9% may be thought of as "Undifferentiated Believers" (who believe in religion *and* most other things) and 13% as "New Age Spiritualists" who report the highest levels of belief in ideas of non-religious spirituality, as well as high levels of traditional religious belief. The remaining two-thirds of the population are either "Moderate Agnostics" or "Undifferentiated Sceptics." Aarnio and Lindeman (2007) report a cluster analysis of a large sample of Finnish participants, identifying 49% as "Skeptics," 35% as "Religious," 12% "Paranormal Believers," and about 3% "Double Believers." Both New Zealand and Finland, it appears, are more secular than religious. I'll come back to this.

But, first things first. What a fantastic one-stop shop Jong and Halberstadt (2016) provide those with a scholarly interest in religion, a scholarly interest in death, as well as the generally morbidly inclined. Want a summary of measures of religion and religiosity? Check. A survey of the empirical

literature on death anxiety? Check. This volume can sit alongside my usual go-to books by Argyle and Beit-Hallahmi (2014) and Batson, Schoenrade, and Ventis (1993). Couple this literature review with some quite innovative empirical work and we probably have as close to the state of the art in this area as one can expect. Bouquets delivered, let's return to the business at hand.

In 2010 I had the pleasure of watching Jong present this work-in-progress at a conference. In it he presented a proto-summary of the literature on religion and death anxiety. He concluded that, in spite of the theoretical sensibility of arguing that religion might serve as a buffer against the terror of our annihilation, research seemed rather more equivocal. But I had just re-read Nelson and Cantrell (1980) that, to me anyway, suggested that perhaps the lack of a robust association might be because the relationship was not, in fact, a linear one. Essentially, Nelson and Cantrell find that it is not the most or least religious (based on an orthodoxy scale) who report the greatest death anxiety (assessed using Nelson and Nelson's [1975] death anxiety index), but rather those somewhere in the middle of a parabolic. The bob-each-way religious, it seemed to me.

I had re-read this paper because I just had a go at replicating with the traditional (for something like 75% of all psychology research) sample of 110 New Zealand undergraduate psychology students, to whom I administered Hoelter's (1979) Fear of Death Scale – a measure unfairly maligned by Jong and Halberstadt in my view – and Tobacyk's (2004) revised Paranormal Belief Scale (also described in the book). Sure enough, as can be seen in Figure 1, fear of death scores were quadratically associated with both Christian religious belief and non-religious paranormal belief, exactly as Nelson and Cantrell (1980) found, with different measures of both religious belief and fear of death (Wilson, 2005). More on these shortly.

While I saw this as an argument at the individual level, Jong and Halberstadt have seized upon it and taken it a step further – at the sample level. Specifically, they have dug up every study they could find looking at death anxiety and religious belief and conducted a really cunning test. While Nelson and Cantrell were kind enough to test for a curvilinear relationship, not all researchers have done similarly, and that makes it tricky to meta-analyze for the existence of such a finding across studies. Jong and Halberstadt report a weak (and sometimes non-significant, depending on the particular operationalization of religion) linear relationship between religion and death anxiety. But when one considers the proportion of religious and non-religious participants across studies, the situation clarifies – samples with more non-religious participants are more likely to produce a positive correlation, while studies with higher proportions of religious participants produce the reverse. Their own

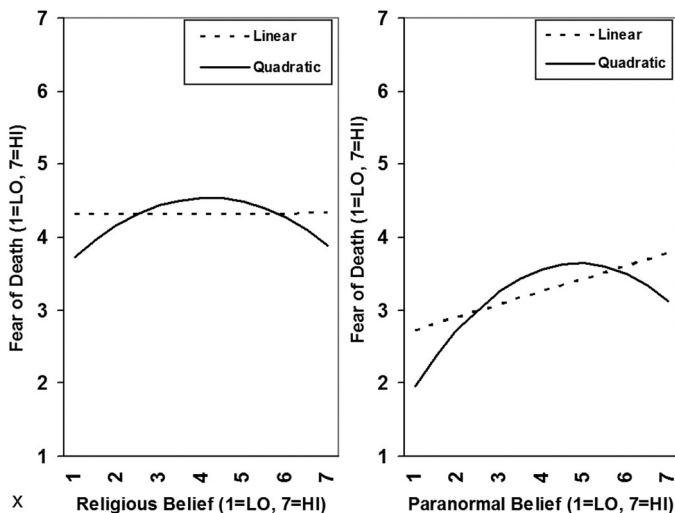


Figure 1. Religious belief, and non-religious paranormal belief against fear of death.

survey-based studies show a similar pattern. The answer to the question “Is religion related positively or negatively to death anxiety?” is, seemingly, it depends.

Correlation is not, however, necessarily causation, and Jong and Halberstadt go on to present some experimental work to test the causal direction of this potential relationship. This work includes tests of implicit measures of the relevant constructs, and tests of the impact of death salience on belief, and vice versa (not easy to do).

Having said that it is cool work, it is time to get a little critical. Throughout this impressive body of empirical work, I cannot help but feel that some of the target questions of interest in the early part of the book are not so much deities (small or otherwise) but straw gods. I will argue this on two fronts.

First, while I think the use of implicit measures is a strength of this work, the justification for their inclusion is somewhat contrived. Sure, survey researchers should beware of social desirability bias in responding, but the existence of such a bias is not necessarily fatal to the research. First, the relationship between measures of religiosity is not only so weak as to be almost negligible, their existence might even contribute to discussion on the function of religion. For example, Sedikides and Gebauer (2010) argue that the (weak) relationship between social desirability and religiosity variously defined reflects that religion serves, in part, a self-enhancement function, and this is itself not inconsistent with the argument made by Jong and Halberstadt – that religion serves a palliative function.

Second, Jong and Halberstadt conclude that religiosity is “multifaceted, perhaps even more so” than death anxiety, yet part of the early argument for development of their measure, the Supernatural Belief Scale (SBS), is that existing measures try too hard in trying to measure religion. A similar argument is made for death anxiety. I have two questions about this argument. First, what is meant by “supernatural”? It seems to me that it is fine to argue that a major problem with the existing pantheon of religiosity measures is that religion is, itself, tricky to define and that, therefore, one must take a step back and start over. However, to then define religious belief in terms of belief in things supernatural, without defining what “supernatural” means, recreates the problem surely? Second, the SBS is bifactorial ... How many factors are enough, or the right number?

I do not think we should assume that “religious” automatically means “supernatural.” I will illustrate this argument by using the protracted back and forth over the appropriate dimensionality of Tobacyk’s measure of paranormal belief (e.g., Lawrence, 1995; Lawrence, Roe, & Williams, 1997; Tobacyk, 1995; Tobacyk & Thomas, 1997). That is to say, Tobacyk has a set of criteria for arguing what constitutes paranormal belief, including that existence of paranormal phenomena lies outside of current scientific explanation, except that one subscale “Extraordinary entities” (such as alien life, or the Loch Ness Monster) may not satisfy it. If the Loch Ness Monster were corralled and it turned out to be a dinosaur, I am pretty sure we could explain it without having to develop a whole new theory. I suspect that these extraordinary entities are probably supernatural (in that they may exemplify supernature) rather than paranormal.

I think this may be important because [Figure 1](#) shows that it is not just traditional religious belief that exhibits a relationship with fear of death, but also non-religious paranormal belief. Isn’t it within the bounds of possibility that as some places become more secularized, the palliative function of religion might be shared with other beliefs that share the form, if not the exact content, of religion? For example, spiritualist beliefs such as communication with the dead, or astral projection, are predicated on the belief that there’s something about us other than our corporeal forms. On the one hand, the SBS is sufficiently flexible that it is probably the case that a person who is not religious in the traditional sense, but holds these kinds of spiritualist beliefs, might still resonate with items. In fact, we know that belief in families of paranormal phenomena are correlated with religious belief, so this is to be expected. On the other hand, we may not be able to tell who is spiritualist and not religious, and vice versa, and this could be an issue. This is important because of the figures I presented at the start – not everyone, everywhere, believes in religion.

On a related note, if we break down belief into the seven families identified by Tobacyk (2004), then we find exactly the same curvilinear relationship between fear of death and belief in precognition, witchcraft, psychic phenomena, and, yes, spiritualism – fear of death is highest among the moderate believers. That said, fear of death is unrelated, either linearly or quadratically, to superstitious beliefs or belief in extraordinary entities. So maybe it's not just belief in the things that take the form of religious belief (or beliefs in supernatural entities!) that buffers against death anxiety.

Further, while I agree wholeheartedly with Jong and Halberstadt's assertion that we are "irreducibly social agents," it seems that there's something missing from so narrowly examining beliefs about death, and beliefs about supernature. Death is clearly something that has great social meaning, and some measures of death anxiety do a better job than others of assessing this. For example, my old friend Hoelter's (1979) Fear of Death Scale has two subscales that are pertinent – the fear for significant others, and the fear of premature death, both of which include aspects of relationships. On the "religious" end, what is belief without observance? Indeed, Nelson and Cantrell (1980) found that it was observance of religious ritual that was most strongly (non-linearly) associated with death anxiety. Belief may be enough, but not as much of enough, in part because some of the benefits of belief particularly accrue from membership in congregations and the knowledge and benefits of kinship. Indeed, this is what may be missing from the potential role that non-religious paranormal belief might play in wellbeing – believing some people can tell the future doesn't necessarily see you in a room with other like-minded people once a week. In short, a narrow focus on narrowly defined belief is not enough, though it is an excellent start.

On a future-oriented note, Jong and Halberstadt have gone to commendable effort to collect some cross-cultural data. How does this work contribute to our understanding of death in different cultures, including polytheistic cultures? In the West, death is seen as a failure, and something to stave off, but in many parts of the globe (usually places with higher levels of earlier mortality) death is a given, often with explicit rituals and days of recognition.


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RESPONSE

Death Anxiety and Religious Belief: responses to commentaries

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The contributions to this symposium about *Death Anxiety and Religious Belief* (DARB; Jong & Halberstadt, 2016) have been stimulating and kind; we are grateful to our colleagues for taking the time to pen such thoughtful reactions to our book, and to the editors at *Religion, Brain & Behavior* for providing a forum for such a useful exchange of ideas. On the whole, we find ourselves in agreement with much of the commentary, and motivated anew to pursue further research on the mechanisms involved in the relationships – such as they are – between death anxiety and religious belief. And indeed, if there is a common theme to the commentaries – and DARB itself – it is that further research is needed.

We are also grateful to our colleagues for challenging us to defend the assumptions, definitions, and methods underlying our work. Rather than address each point of each commentary, we have read the set as a whole and extracted the most consistent and, in our view, significant themes that emerged. We begin with a review of what DARB was intended – and not intended – to accomplish, before turning to these themes: the importance of definitions; issues of measurement; the reality and theoretical significance of death anxiety; the validity and explanatory power of “atheism”; and alternative motivations for religion, now and in the future. (We also report our thoughts and data on the role of near-death experiences in death anxiety, which the commentaries have motivated us to explore.) We cover them in turn, below, with the hope that, in conjunction with the commentaries, we have added clarity and value to the original work.

The aims of DARB

As Kavanagh observes in his commentary, DARB was a doctoral dissertation before it was a book. But before it was a doctoral dissertation, it was an item on a list, scrawled in a notebook: “death anxiety” was one potential causal factor among others, such as “perceived control,” “loneliness,” “meaning,” and “identity.” Suspicious of monocausal theories of human behavior, we never assumed that any of these would emerge as *the* or even *the main* cause of religiosity, as several commentaries have pointed out (see, especially, van Bruggen’s commentary, as well as DARB, pp. 173–175). Thus, death anxiety was explored not because it was an *a priori* more substantial or plausible account of religious belief, but rather because folk and scholarly theories of religion believe it to be. Indeed, in an online survey conducted early in the project (208 Mechanical Turk participants, $M_{\text{age}} = 34.85$, $SD = 11.65$; 54.3% female), over a quarter of respondents ranked the fear of death as the most “important (or true) explanation of religion,” beating out other options like social influence from family and friends (16.3%) and the desire to explain natural (6.3%) and seemingly miraculous (2.9%) phenomena (see Figure 1).

People are religious because ...

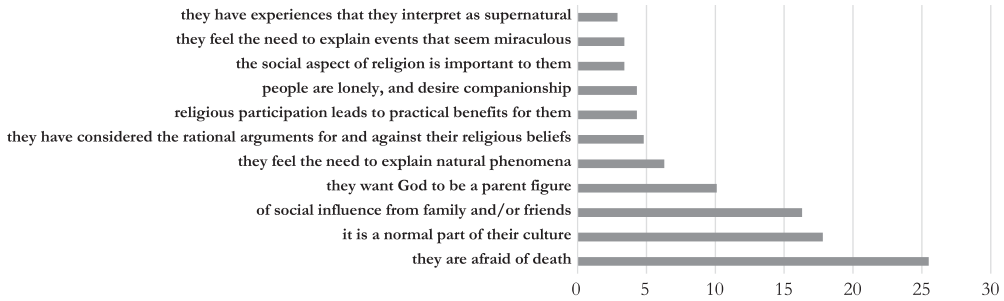


Figure 1. Percentage of participants who ranked each cause of religion as most important.

More importantly, the perceived significance of death anxiety among other factors has been promoted by the field's most influential and enduring thinkers. As we show in the book, the idea gained traction among theorists in the nineteenth and twentieth centuries, championed in particular by the philosopher Ludwig Feuerbach (1804–1872), the psychologist Sigmund Freud (1856–1939), the social anthropologist Bronislaw Malinowski (1884–1942), and the cultural anthropologist Ernest Becker (1924–1974; see also Jong, 2014). Becker's work – in which death anxiety and death denial were posited to explain far more than religious belief *per se* – then inspired Terror Management Theory (TMT; Greenberg, Pyszczynski, & Solomon, 1986) in social psychology, which is DARB's main theoretical interlocutor.

Now, as van Bruggen explains in his commentary and we elaborate in DARB, TMT's explanation of religion is part of a much broader theoretical framework, in which a panoply of human activities and achievements are driven by our knowledge of our own mortality and the existential terror that this knowledge threatens to evince. However, the unique place of religion in TMT – and especially in Becker's work, TMT's intellectual predecessor – cannot be denied. In *The Denial of Death* (Becker, 1973), religion is the paradigmatic immortality project, upon which secular varieties are derivative, or even parasitic. TMT's distinction between literal and symbolic immortality also at least implicitly prioritizes the former, and despite emerging scientific alternatives (see below), religious supernatural mechanisms are generally seen, for now, as the only option for achieving it.

Furthermore, TMT theorists have proposed specific narratives about the evolutionary origins of religion. For example, in their recent book-length treatment of TMT, *The Worm at the Core*, Solomon, Greenberg, and Pyszczynski (2015, p. 67) claim that early humans “created a supernatural world, one in which death was not inevitable or irrevocable,” and that those who managed to most effectively assuage their mortal terror in this way “would have been the most capable of functioning effectively in their environment and thereby most likely to perpetuate their genes into future generations.” Others have taken a cultural evolutionary rather than a biological evolutionary perspective, arguing that “religious memes spread so rapidly and effectively [because of] the protection from existential fear that they afforded to those who possessed them” (Vail et al., 2010, pp. 90–91; see also Atran, 2002).

Setting aside the speculation required for them, such accounts clearly portray existential dread as an adaptive problem religion emerged to solve, and even if, as van Bruggen suggests in his commentary (and we in DARB), social science is ultimately incapable of testing for psychological adaptations in our evolutionary past, those adaptations have implications for theory and research in the present. For example, suppose one believes that religion's function was to defend against death anxiety, but is no longer, due to science's perceived promise of literal immortality. In that case, one might predict that religion's importance will vary with the perceived plausibility or time frame of the supposed scientific breakthroughs. Indeed, Lifshin, Greenberg, Soenke, Darrell, and Pyszczynski (2017) tested

this very hypothesis, showing that less religious participants decreased their belief in the afterlife after reading about the plausibility of indefinite life extension through medical science. In any case, TMT itself does not view death anxiety (or, presumably, religious belief) as a relic of our evolutionary past, but as a very real phenomenon in the present, with very real potential to produce crippling psychological paralysis and/or other lethal dysfunction.

In short, the intention of the book was neither to propose a new theory of religion, nor to defend an old one. We simply took note of the widespread hypothesis – most extensively elaborated in modern psychology by TMT – that the fear of death motivates religious belief at least in part through the buffer it ostensibly provides, and wanted to test it against empirical evidence. In our investigations, we found a great deal of existing research on the topic, which DARB collects in one place. However, we also saw gaps in the literature that we were able to fill; we are pleased that other researchers are joining us in identifying still more promising future lines of research in this area.

On definition

Before evaluating the relationship between religion and death anxiety, we had to lay some conceptual and methodological foundations and, in the process, make choices that were the subject of legitimate skepticism by commentators. Our first port of call was the seemingly obvious, but so frequently ignored matter of defining what “religion” and “death anxiety” mean – and do not mean. If there is one thing on which researchers agree, it is that both religion and death anxiety are complex, multi-faceted phenomena. For example, an individual or group may hold religious beliefs, engage in religious practices, and experience religious emotions. Equally, there are many aspects of death about which one might be fearful, including prolonged suffering, loneliness, and nonexistence. As widely accepted as the multidimensionalities of these phenomena are, we argue that researchers have largely failed to take seriously an obvious implication of them: one cannot assume that any particular aspect of religion (or death anxiety) has the same etiology or consequences as another. Scientific progress, at least at this early stage, is more likely if we isolate and cleanly operationalize the aspect(s) we care about, and have a good understanding of why we do.

Thus, we focused our inquiry in DARB on just one aspect of religion: the *belief in supernatural entities and events*; that is, the belief in the existence of such things as gods and ghosts, heavens and hells, blessings and curses, prophecies and miracles. Perhaps unsurprisingly, the narrowness of our definition has courted some criticism. Wilson is quite right when he urges us in his commentary not to assume that “religious” automatically means “supernatural.” As we hope the previous paragraph makes clear, we would be the last to make this assumption. Indeed, if the history of attempts to define “religion” is any indication, the term cannot mean *any* one thing, automatically or otherwise, and is better characterized as a shorthand for whatever phenomenon any given scholar of religion is interested in, within conventional limits.

On the other hand, our focus on belief in the supernatural¹ is hardly arbitrary. Like the relationship between religion and death anxiety itself, it is a response to widespread interest among scholars. This is the aspect of religion that has most occupied the research tradition we inhabit, from David Hume to E. B. Tylor² to our more recent thanatocentric theorists of religion. Although we happen to agree with this historical emphasis – the belief in supernatural agents *is* the most distinctive and significant aspect of “religion” – we acknowledge that it is not the only one: other beliefs to which the commentators allude (see especially the commentaries by Vess and Wilson), such as in extraterrestrials, terrestrial cryptids, or an inchoate oneness-with-the-universe, are interesting in their own right. Indeed, they may, when all is said and done, turn out to overlap with or encompass belief in the supernatural itself. But they simply lay outside our immediate sphere of concern. Analogous things may be said (and were; see Wilson) regarding “death anxiety.” While there are many flavors thereof – fear of a painful or lonely dying, fear for one’s family, fear of premature burial, and so forth – we were primarily interested in the one that we found most prominently featured in the theoretical literature: the anxiety over ceasing to exist.

In sum, our narrowing religion and death anxiety to supernatural belief and existential fear is a deliberate and considered move on scientific grounds. It enables us to engage directly with the research tradition as we have received it, to review the empirical literature in a systematic and targeted way, and to design studies – and measures – well-suited to our specific theoretical interests. It is certainly possible that we have misread our sources or failed in our reconstructions or operationalizations of their ideas, but those criticisms have not yet been made.

On measurement

The same preference for targeted-but-clear over inclusive-but-uncertain progress also motivated our approach to measuring religiosity and death anxiety. The existing measurement options were both voluminous and wanting, either too narrow (and often meaningful only to Christians) or too multifaceted for our purposes. The former tend to assume the beliefs they are meant to measure, and take for granted constructs that may be irrelevant outside of (or even within) the targeted population. The latter more fully capture the multiple dimensions of “religion,” but at the cost of missing crucial differences among them (they are often treated as unidimensional measures, for example of what Cox and Arrowood call “religiosity in general”) or of a combinatorial explosion of possible statistical analyses.

The Supernatural Belief Scale (SBS), which measures an individual’s tendency to believe in supernatural entities and events, was designed to fill this gap. The construct is narrow but, according to cognitive scientists and religious scholars, pancultural and therefore amenable in principle to cross-cultural measurement, even if its first instantiation of the SBS was most appropriate for those familiar with Abrahamic faiths. (A second, six-item iteration has been constructed to increase the generalizability of the instrument; we have now tested it successfully in South and East Asian contexts such as India, China, and Japan.) Similarly, the Existential Death Anxiety Scale (EDAS) was also an attempt to measure a specific construct – anxiety about the extinction of the self – that represents, in our view, the theoretical concerns of the thanatocentric theorists we reviewed in DARB.³

As useful as the SBS has been in our and others’ research (e.g., Lindeman, Svedholm-Häkkinen, & Lipsanen, 2015; van Elk, Rutjens, & van Harreveld, 2017), conscious endorsement of propositional knowledge is not the only way in which one can “believe” in the supernatural. Furthermore, it is a way that is vulnerable to well-known criticisms, which we review in DARB, such as doubts over whether individuals can or will accurately report their endorsements. In response to these concerns, we also developed an implicit measure of religious belief (a supernatural belief single-target implicit association test; IAT) to capture the automatic associations between supernatural entities/events and existence. Because the distinction between explicit and implicit beliefs plays a key role in the arguments and conclusions in DARB, we address their critique in some detail.

Cox and Arrowood observe that the IAT has been criticized because of “issues with reliability and validity.” Though they do not elaborate on these, the articles they cite imply that they oppose the use of the IAT as a *diagnostic* tool. There is indeed a litany of concerns with the IAT as a reliable measure of stable individual differences: test-retest reliability is low; performance varies with the particular stimuli used; claims of unfakeability may be exaggerated; absolute scores may reflect participants’ knowledge of social norms rather than their “true” attitudes; and so forth. We are familiar with the limitations of this use of the IAT, not least because Bluemke, a co-constructor of our SBS and IAT, has made similar criticisms (Fiedler & Bluemke, 2005; Fiedler, Messner, & Bluemke, 2006; see also Jong, Zahl, & Sharp, 2017).

However, the studies in DARB do not use the IAT as an indicator of stable individual differences, but as an indicator of group differences as a function of experimental manipulations. The psychometric assumptions required for the two purposes differ. It is still important, for example, for the IAT to demonstrate convergent and divergent validity (on which see, e.g., Cunningham, Preacher, & Banaji, 2001; De Houwer, Teige-Mocigemba, Spruyt, & Moors, 2009; Dovidio, Kawakami, & Gaertner, 2002; Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Gawronski, 2002;

Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005; Nosek & Smyth, 2007). However, the IAT need not enjoy high test-retest reliability, or explain unique variance in behavior (though see Greenwald, Poehlman, Uhlmann, & Banaji, 2009 for meta-analyses of the predictive validity of the IAT compared to explicit measures), or even be immune to faking and bias, so long as such vulnerabilities are constant across experimental conditions. For example, a common criticism of the IAT's validity is that it reflects attitudes respondents know about, rather than attitudes they actually hold themselves. However, for this hypothesis to be plausible in experimental contexts would require an account of how the experimental manipulation could affect such knowledge or the salience thereof.

We do, of course, assume that the IAT assesses *belief*, but this is something the measure is well (arguably, uniquely well) designed to assess. Contrary to Cox and Arrowood's contention that the IAT measures not beliefs but "attitude associations," we argue (along with Fazio, 2007, whom Cox and Arrowood cite) that beliefs *are* associations – in particular, cognitive associations between supernatural concepts and existential ones – regardless of whether they are measured implicitly or explicitly. It is true that explicit and implicit measures of these associations may not always coincide, but it would be a mistake to conclude that they therefore measure orthogonal constructs. As we argue in DARB, implicit and explicit beliefs are better thought of as distinct but related products of the same psychological phenomenon (cf. Gawronski & Bodenhausen, 2006; Petty, Briñol, & DeMarree, 2007), both of which are required for a complete picture of religiosity and its precursors and consequences. From our perspective, therefore, it is fortuitous indeed that our theoretical focus emphasizes belief, which, unlike more ambiguous aspects of religiosity, affords measurement in terms of IATs.

None of the above is to say that our use of implicit measures is unassailable. For example, while we stand by the soundness of our supernatural belief IAT, we are less certain of our death anxiety IAT. IATs are intended to measure associations between *concepts*. As we argue in the book, this is a good way to operationalize beliefs, but it is much less obvious that it is a good way to operationalize emotional states. Someone who scores high on our death anxiety IAT strongly associates death with anxiety, but this is at least one step removed from the claim that she *feels* anxious about death. We therefore agree with Cox and Arrowood that there are better methods of measuring death anxiety without relying on self-report, albeit for different reasons and with different recommendations for the future.

For example, in *The Denial of Death*, Becker (1973) mentions physiological tests – specifically, of galvanic skin responses (GSR) – as a means of measuring repressed death anxiety, and in DARB we suggest additional psychophysiological measures like facial electromyography (EMG) and salivary cortisol. The limitation of such methods is that they currently lack emotional specificity: multiple emotions increase GSR and heart rate and EMG responses, and not enough is yet known about the relationship between specific emotions and specific psychophysiological configurations. Indeed, on some theories of emotion, such correspondences simply do not exist (e.g., Barrett, 2017; Barrett & Russell, 2014). Fortunately, nonspecific measurement is not necessarily failed measurement: inferences about the causes and effects of anxiety may still be made under rigorous experimental conditions, even with equivocal measures.

Cox and Arrowood's own suggestion is the trendier preference for neuroimaging techniques, which seem to promise more emotion specificity than do psychophysiological approaches. Unfortunately, that promise has gone largely unfulfilled. Cox and Arrowood, for example, cite Quirin et al.'s (2012) paper approvingly as evidence that mortality salience (MS) is associated with "activation of emotional areas of the brain." However, other neuroimaging research reveals inconsistencies regarding *which* "emotional areas of the brain" are activated or deactivated by reminders of death (e.g., Han, Qin, & Ma, 2010; Klackl, Jonas, & Kronbichler, 2014; Shi & Han, 2013). Indeed, every brain region Cox and Arrowood cite from Quirin et al.'s study has been disconfirmed in subsequently published studies. It is therefore unclear what a neuroimaging measure of death anxiety would consist in, short of a scattershot approach in which multiple potential brain regions are monitored. Without wanting to be too pessimistic about neuroimaging research in general, we maintain our skepticism that neuroimaging holds the key to measuring death anxiety. Certainly, arguments

for the usefulness of neuroimaging should not be predicated on any single finding (Lieberman & Cunningham, 2009).

On the fear of death

Of the three questions DARB addresses – are people afraid of death, does death anxiety motivate religious belief, and does religious belief assuage death anxiety – the first, and particularly our conclusion that death anxiety is generally weak, tends to elicit the most discussion in public presentations, usually along partisan lines. Critics of Terror Management Theory feel vindicated, grateful that someone has given voice to their private misgivings about the theory's hegemony, while proponents take issue with the methods used to assess death anxiety.

Chapter 4 of DARB thoroughly reviews the evidence for death anxiety before coming to its rather tepid conclusion. Since there are no large-scale studies that use psychophysiological measures, population levels of trait death anxiety must generally be inferred from research using interview or questionnaire methods, and these indicate that trait death anxiety is generally low. Furthermore, proximity to death does not appear to increase self-reported anxiety about it. Indeed, death anxiety declines as a function of age, at least in the United States (cf. Russac, Gatliff, Reece, & Spottswood, 2007; DARB, pp. 100–103), and the terminally ill report, if anything, less fear of death than healthy controls (Feifel, 1974). Since DARB was published, Goranson, Ritter, Waytz, Norton, and Gray (2017) have also found, using semantic text analysis, that patients near death, as well as death row inmates, talk about death in much more positive terms than control participants expect, and in fact in more positive terms as death approaches.

Other research on people who have had close encounters with death suggest that such life-threatening experiences have little effect on their fear of death, except in special circumstances. For example, van Lommel, van Wees, Meyers, and Elfferich's (2001) longitudinal study compared two groups of patients who had undergone resuscitation after cardiac arrest: those who had had a near-death experience (NDE; e.g., out of body experiences) and those who had not. Two years after the event, patients who had experienced NDEs reported decreased fear of death compared to those who had not; by eight years post-event, both groups showed decreased death anxiety, but this may be a reflection of the aging effect mentioned above. Our own cross-sectional multinational study found no differences in EDAS scores between people who had almost died themselves and those who did not, except in the South Korean sample, where having life-threatening experiences was associated with increased death anxiety ($M_{\text{difference}} = -.75$, $SE = .32$, $p < .05$).⁴ Finally, in the vast majority of published studies – and as Cox and Arrowood have also found – even when people are acutely reminded of their mortality using TMT's standard mortality salience paradigm, they exhibit no measurable emotional change (cf. DARB, p. 113).

As we argue in DARB, the lack of direct evidence that people fear death poses a *prima facie* challenge to thanatocentric theories of religion. It at least generates a demand for explanation: how might we reconcile the alleged attitudinal and behavioral effects of death thoughts with participants' apparent emotional indifference to them? To meet this demand, many researchers effectively assume that the participants *would* have been terrified but for a complex evolved mechanism that keeps death out of consciousness (for review, see Hayes, Schimel, Arndt, & Faucher, 2010; Pyszczynski, Greenberg, & Solomon, 1999). Specifically, when faced with reminders of their mortality, people allegedly suppress unwanted death thoughts, though this has the paradoxical effect of rendering such thoughts more powerful. The process, if inelegant, does enjoy indirect empirical support. For example, as evidence of thought suppression, proponents of TMT point to the greater accessibility of death thoughts under cognitive load, which ostensibly hinders the effortful process of suppressing them. As evidence of hyperaccessibility, they point to stronger effects of mortality salience after delay (i.e., after thought suppression processes are alleged to have kicked in). While these and other findings (e.g., moderating effects of worldview defense) do suggest that people work to keep thoughts of death out of consciousness, there is, so far, little

direct evidence that they have much to do with death *anxiety*. An apparent exception is a study by Webber et al. (2015), cited by Cox and Arrowood, showing that physiological arousal is necessary for worldview threats to increase death thought accessibility and to instigate defensive reactions. But the fact that arousal is needed to produce death thoughts does not entail that death thoughts produce negative affect.

The second strategy sometimes taken by TMT proponents is to nuance claims about the fear of death, asserting that human beings all suffer not from death anxiety, but from *potential* death anxiety. In their recent review of the field, Solomon et al. (2015) point out that the fear TMT has in mind is the consequence of “the ever-present knowledge of the inevitability of death rather than immediate threats to continued existence.” Immortality projects – from physical exercise to child-bearing to worldview defense – are intended not to manage incapacitating terror, but the possibility that such terror will be realized. Similarly, Cox and Arrowood also cite research on how “potential for anxiety, rather than an actual experience of fear” explains worldview defensiveness.

This view sidesteps the lack of evidence for any affective component to mortality salience effects and the death thoughts they render hyperaccessible, but it unwittingly creates a new challenge for the TMT enterprise, at least in spirit. If it is truly the case that immortality projects are not attempts to relieve experienced terror, but rather attempts to keep terror from intruding in the first place, TMT need not assume actual terror at all. Mortality salience effects become fully explainable in terms of people’s *beliefs* that their death will terrorize them, beliefs that may or may not be (but are probably not) correct. The reality of death anxiety becomes an entirely separate empirical question (and indeed is treated as such in our book), independent of people’s psychological motivations. Indeed, it could be argued that by promoting a potential for terror that is currently scantily justified by the data, TMT prematurely legitimizes the immortality projects, both positive and negative, people engage in to prevent that potential from being realized. That (1) people have vastly misjudged how terrifying and incapacitating death will be when it intrudes into consciousness, and (2) their consequent efforts to avoid that terror are based on false premises, are ideas we can accept, but ones that scholars steeped in TMT may not.

Atheists in foxholes (re)(re)visited

There has been some disagreement in the research literature on how nonreligious individuals respond to the MS manipulation on measures of religious belief (Norenzayan & Hansen, 2006; Vail, Arndt, & Abdollahi, 2012), and on what this means from a TMT perspective. In our own studies reported in DARB, these individuals reported stronger (implicit) religious belief when mortality was salient than when it was not, which we argued is at odds with TMT’s worldview defense hypothesis. One objection to this inference, hinted at by Cox and Arrowood, is that “nonreligion” fails to constitute a worldview to be defended. (Atheism might count as a worldview in this sense, but even if so, atheists composed only a minority of our samples.) Cox and Arrowood therefore interpret our sample not as two groups with distinct worldviews, but as one group with a religious worldview of varying strength. If so, they argue, then all we have shown in our studies using implicit measures is that mortality-primed participants bolster their religious worldview regardless of how strongly it is consciously held. As Cox and Arrowood put it, “it is highly likely that low religious persons are the ones bolstering their belief in supernatural agents.”

However, the question of what constitutes a psychologically valid worldview is not one Cox and Arrowood (or we) can answer *a priori*. Just as there are innumerable ways to distinguish different kinds of religious people (e.g., by denomination, religious orientation, belief strength, religious observance), there are multiple varieties of nonreligion (e.g., atheism, agnosticism, antitheism), and while Cox and Arrowood may have their favorite taxonomy, the fact is that we simply do not know enough, as a field, to say what qualifies as a (non)religious worldview. We do know, however, that a worldview need not be venerable or elaborate to inspire defense under MS conditions (see, e.g., Harmon-Jones, Greenberg, Solomon, & Simon, 1996), and that our nonbelievers showed classic worldview defense

effects in their explicit responses (i.e., on the SBS) to mortality salience. There is therefore an inconsistency in Cox and Arrowood's interpretation of our results: it leaves unexplained this finding that, on self-report measure, nonreligious people *do* behave as though "nonreligion" were a worldview to be defended. It is in any case clear that further research is needed to understand what constitutes a "religious worldview" and under what circumstances it is worth defending.

As a starting point, future research might draw a distinction between atheism and "milder" forms of nonreligion (e.g., agnosticism, indifference), on the argument that there may be interesting differences between active and passive rejection of religious belief. Even using this simpler dichotomy, however, researchers will face the challenge of defining and operationalizing "atheism," which itself comes in multiple varieties (Bullivant & Ruse, 2013). For example, Cox and Arrowood's criterion that demands the "abandonment of religious faith altogether" seems overly restrictive, and risks conflating atheism with atheistic fundamentalism. Using a measure of religious belief, such as the SBS, which asks participants about the extent to which they believe or – crucially – *disbelieve* in the supernatural, may be a useful alternative to self-reported labels, given their fluidity and unfamiliarity in public discourse. A continuous scale presents its own challenges – the cut-off points for how strongly individuals disbelieve or how many supernatural entities they reject is bound to be arbitrary – but they may not be insurmountable.

On near-death and life-threatening experiences

Although DARB deliberately avoided the controversial literature on near-death experiences (NDEs), this symposium has given us the opportunity to engage with some of the relevant research under that rubric. We referred to research by van Lommel et al. (2001) earlier, regarding evidence of decreased death anxiety after a close encounter with death. The same study also showed interesting religious differences between patients who had had NDEs and those who had not. Patients who had had NDEs as they were being resuscitated reported increased belief in an afterlife, and by the eighth year after the event, most of the group reported strong belief in an afterlife. In contrast, the patients who had had brushes with death without NDEs remained mostly unbelieving in an afterlife, at both the second and eighth year follow-up. Similarly, in their cross-sectional study Groth-Marnat and Summers (1998) found that participants who had had NDEs reported decreased death anxiety and increased afterlife belief compared to those who experienced similar life-threatening experiences without NDEs. It seems that close encounters with death are only religiously significant if they come with these intense experiences that are amenable to supernaturalistic interpretation. This conclusion is also corroborated by our own nonclinical data, alluded to above. In none of our samples from the USA, Brazil, South Korea, Japan, the Philippines, or Russia did SBS scores differ between those who reported previous life-threatening experiences ("Have you almost died yourself?") and those who did not; nor were there differences in afterlife belief specifically (see Table 1).

These findings provide an important corrective against the overinterpretation of experimental findings, including our own. Overall, real-life brushes with death appear to have no lasting effect on religious belief, except when they coincide with out-of-body or other kinds of unusual experiences. Even under controlled conditions, with very specific and simplified measures of religiosity, experiments on the effects of mortality salience produce very modest findings, with effects that rarely account for much more than 10% of the variance in the sample (cf. Jong, Halberstadt, & Bluemke, 2012; Norenzayan & Hansen, 2006). These are, in other words, not dramatic effects. Even though scholars and laypeople alike prioritize death anxiety in their explanations of religion, other causal factors are likely more important in the real world, such as social and political factors. But those are topics for other books.

Beyond death anxiety, beyond religion

Although death receives disproportionate attention in the psychology and philosophy of religion, we agree with van Bruggen that it is not a unique, or even uniquely powerful, psychological threat.

Table 1. Supernatural beliefs as a function of life-threatening experience.

Country	n (Y, N)	Variable	M_Y (SD); M_N (SD)	t	df	p
USA	288, 525	SBS-6	.52 (2.70); .36 (2.92)	.79	630.94	.43
		Afterlife	.72 (2.86); .45 (3.06)	1.24	625.27	.22
Brazil	105, 95	SBS-6	2.62 (1.95); 2.68 (1.60)	.27	196.28	.79
		Afterlife	2.35 (2.33); 2.27 (2.47)	-.23	193.14	.82
South Korea	86, 114	SBS-6	.52 (2.00); .27 (2.42)	-.78	196.23	.44
		Afterlife	.33 (2.50); .20 (2.70)	-.34	189.98	.74
Japan	109, 116	SBS-6	-.02 (1.91); -.18 (1.88)	-.65	223	.52
		Afterlife	-.47 (2.35); -.45 (2.20)	.05	222	.96
Philippines	77, 123	SBS-6	2.79 (1.50); 3.00 (1.33)	1.02	147.68	.31
		Afterlife	2.34 (2.25); 2.82 (1.90)	1.57	141.36	.12
Russia	40, 160	SBS-6	1.73 (2.13); 1.77 (1.72)	.09	52.42	.93
		Afterlife	1.53 (2.44); 1.54 (2.19)	.03	55.73	.98

Van Bruggen outlines others, including concerns about meaninglessness, guilt, social isolation, and lack of self-knowledge and self-consistency. From a TMT perspective, of course, death anxiety undergirds all of these – it is, for example, the reason we strive for self-esteem, the reason we desire to see meaning in things – but we make no such argument in DARB, in part because it is not clear that arguments about the primacy of one fundamental motivation over others are empirically tractable.

Van Tongeren focuses in particular on the connection between death anxiety and the pursuit of meaning, which provides people with a sense of coherence, purpose, and significance. Coherence here refers to the manner in which experiences are organized and interpreted, while purpose refers to normative behavioral guidelines and goals. (Cox and Arrowood similarly acknowledge the capacity for religion to help us make sense of negative experiences, and even to facilitate moral behavior.) These two components of the meaning-making perspective, at least as van Tongeren has described them, are analyzable in terms of religion's ability to provide symbolic immortality. In contrast, according to van Tongeren, significance pertains to the transcendence of impermanence: religion can provide not only meaning, but *lasting* meaning. These ideas suggest a promising research program, which van Tongeren and colleagues have already begun, on the factors that determine the cultural transmission of different religious ideas. To be sure, there are politically and more broadly historically contingent reasons for the rise and fall and evolution of religious traditions, but van Tongeren's commentary suggests that some religious beliefs do not provide meaning as well as others, and therefore may not fare as well over time.

If death anxiety is not our only source of significant anxiety, religion likewise is not our only source of comfort, especially when broadly construed, as Wilson and Vess have done. Indeed, Vess proposes that religion may be less and less relevant for our pursuit of literal immortality. In Chapter 7 of DARB, we consider the implications for religion of biotechnological and information technological approaches to lifespan extension, but it is still an empirically understudied area. It is certainly possible that the development of these technologies will reduce people's need for supernatural belief in much the way that political and economic changes that provide stability and security may well have done (Gill & Lundsgaarde, 2004; Norris & Inglehart, 2004). There is already evidence, cited above, that learning about life-extending technologies reduces afterlife belief among those low in religiosity; will faith in biotechnology – or, for that matter, in the welfare state or in liberal democracy – absorb other characteristics of religious faith? To answer such questions, it may be necessary to challenge the distinction between literal and symbolic immortality. After all, it is already unclear how symbolic immortality is really meant to defeat our death anxiety, given that it is obviously only an ersatz immortality. In what sense do we think that we will live on in our children or church or country, such that it can assuage death anxiety or serve any other significant motivational function? As technology expands the ways in which it is possible to live forever (e.g., as an uploaded dataset), we may see more clearly just what aspects of immortality are psychologically important to us.

Final remarks

It is a poor workman who blames his tools, but some critical reflection on our research methods can be a much-needed prophylactic against hubris on one hand and disappointment on the other. DARB summarizes decades of psychological research on tens of thousands of human participants, and at the end of it, the shortcomings of our field seem more evident to us than the increased understanding it has gained us on our topic. But perhaps this is just typical of the study of human behavior more generally: no one method is adequate, no one theory exhaustive. The great contribution of the cognitive science of religion and journals like *Religion, Brain & Behavior* is precisely in their rejection of methodological parochialism: archaeologists and anthropologists and psychologists and economists and behavioral neuroscientists, and computer scientists and historians and biblical scholars and literary scholars all have seats at the table. We do not regret writing DARB the way we did, but we cannot help but wish that we were up to the task of writing a book on death anxiety and religious belief that more reflected the multidisciplinary ethos we so admire in these emerging approaches. Perhaps in the next edition.

Notes

1. Pace Wilson, we define “supernatural” on p. 4; see also Vess’s commentary. On our definition, neither extraterrestrial aliens nor the Loch Ness Monster necessarily count as “supernatural,” unless they possess traits that violate our intuitive category-based expectations.
2. See, for example, Jong’s (2017) recent essay on E. B. Tylor and the cognitive science of religion.
3. We say “an attempt” because our psychometric analyses produced a second, correlated factor, which we termed “the cessation of life.” See DARB, pp. 73–74.
4. These data are from the same multinational correlational study as reported in DARB, including samples from the USA, Brazil, Russia, South Korea, Japan, and the Philippines.

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