**Religion and Delusion**

Ryan T. McKaya\* and Robert M. Rossb

a Department of Psychology, Royal Holloway, University of London, Egham, Surrey TW20 0EX, UK. Email: Ryan.McKay@rhul.ac.uk

b Department of Philosophy, Macquarie University, Sydney, NSW 2109, Australia. Email: robross46@gmail.com

\* Corresponding author

**–To appear in *Current Opinion in Psychology–***

**Abstract**

We review scholarship that examines relationships – and distinctions – between religion and delusion. We begin by outlining and endorsing the position that both involve belief. Next, we present the prevailing psychiatric view that religious beliefs are not delusional if they are culturally accepted. We argue that although this cultural exemption has controversial implications, it is clinically valuable and consistent with a growing awareness of the social – as opposed to purely epistemic – function of belief formation. Finally, we review research on continuities between religious and delusional cognition, which reveals that religious content is quite common in delusions and which provides tentative evidence for a positive relationship between religious belief and delusion-like belief in the general population.

**Keywords:** Belief; Continuum models; Cultural acceptance; Delusion; Religion; Social epistemology.

*Belief in an afterlife is a malignant delusion...*

~ Steven Pinker

*[A delusion] is not an article of religious faith*

~ American Psychiatric Association

**1. Religion, delusion, and belief**

How much do religion and delusion have in common? One feature they certainly share is a resistance to easy definition (re: religion, see [1,2]; re: delusion, see [3,4]). One might start by suggesting that they both surely involve *belief*, perhaps belief that is not grounded in intersubjectively verifiable reality. But this belief conception[[1]](#footnote-1) is a subject of vigorous debates (for non-belief accounts of religion and delusion see [5] and [6], respectively; for defences of the belief conception see [7,8] on religion and [9,10] on delusions).

Often these debates turn on the question of whether people act on the propositions they profess to believe [11]. Those who dispute the belief conception point to instances where behaviour belies professed belief. For example, religious individuals in certain cultures may sacrifice animals for the gods or ancestors to consume yet eat the entire offerings themselves [5]; and deluded individuals may claim hospital staff are trying to poison them yet consume the food they are served [12].

Advocates of the belief conception, meanwhile, point to congruence between professed belief and behaviour. History, after all, is replete with individuals who willingly die for their professed religious beliefs; and some patients *do* act in accordance with their delusions, sometimes with tragic consequences – consider the case of a man who beheaded and dismembered his son while suffering the delusion that his son was a cardiopulmonary resuscitation dummy placed in his home as part of a government experiment [13].

As we find the belief conception more compelling, in much of what follows we assume that professed religious and delusional beliefs are indeed beliefs (as the term is ordinarily understood). But whichever manner of mental state is involved, a key question – a question of both conceptual and clinical import ­– is how we can tell the religious and the delusional ones apart. Let us consider several brief case studies to try and get some purchase on this.

**2. Religion, delusion, and culture**

**Case 1:** Christine believes that each week she drinks the blood of a long-dead man whose mother was a virgin and whose father created the universe.

**Case 2:** Ida believes that a magical man is keeping tabs on her movements from across the world. She also believes that once a year he creeps into her house and leaves gifts for her if her behaviour has pleased him sufficiently. On this day she leaves ritual offerings for him and for the wild animals he travels with.

**Case 3:** Chandni, a Bengali migrant to Australia, believes her husband has been possessed by an invisible spiritual creature called a jinn and has become increasingly hostile towards him. Her husband also believes in jinn possession but does not think he has been possessed.

**Case 4:** Javier believes his penis has been stolen and replaced with someone else’s. Recently he has cut his penis and poured boiling water on it. He was surprised that he found these acts painful.

All of these beliefs violate widely accepted tenets of scientific reality. The first case, however, may seem familiar to those raised in the Catholic tradition. Is Christine delusional? Not according to the world’s largest psychiatric organisation. By explicit stipulation of the American Psychiatric Association (APA), articles of religious faith do not qualify as delusions:

Delusion: A false belief based on incorrect inference about external reality that is firmly held despite what almost everyone else believes and despite what constitutes incontrovertible and obvious proof or evidence to the contrary. The belief is not ordinarily accepted by other members of the person’s culture or subculture (i.e., *it is not an article of religious faith*). ([14] p. 819, our italics)

This definition, from the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (*DSM-5*), is controversial, and those who seek to equate belief in God with delusion [15] may be frustrated by the final clause. However, the DSM’s cultural exemption – what Graham [16] calls its *popularity-exceptionalism* – is nosologically valuable, as a definition that pathologizes most of the world’s population would be of scant clinical utility [17].

What about the second case? As with the first, context is important. Once we learn that Ida is a five-year-old leaving out cookies and carrots for Santa and his reindeer, any worries about psychopathology should dissipate. However, while a child’s belief in Santa may not be delusional, is it religious? Is Santa a god? On the face of it, he shares many features with other gods. Compare *“God keeps watch on you; he knows. And he will reward you according to what you do”* (Proverbs 24:12) with *“He knows if you’ve been bad or good so be good for goodness sake”* [18]. Barrett [19], however, argues that (the concept of) Santa lacks the features necessary for attracting a community of true believers (but see [20]).

Chandni’s case (Case 3) requires careful consideration, as beliefs about jinn possession are common in some Muslim communities (jinn are frequently mentioned in the Qur'an) and, arguably, should not automatically be regarded as delusional [21]. Indeed, her husband also believes in jinn possession. This highlights the challenge for clinicians working with patients from different cultural backgrounds to themselves, who must consider a constellation of psychological, social, cultural and spiritual factors in formulating diagnoses and treatment plans [22-26].

Javier’s case (Case 4), however, is more straightforward. His beliefs are bizarrely implausible, harmful, and are not accepted in his culture (Javier is a white man in Australia, where penis theft is not a common belief; see [27][[2]](#footnote-2)). This is a clear example of delusion. But what if there *were* cultural scaffolds for a belief like this? Koro is a “culture-bound syndrome” involving beliefs in genital shrinkage, retraction or theft. Epidemics of such beliefs have been documented in various countries (especially in West Africa and Southeast Asia), with sufferers often resorting to injurious preventative methods [29,30].

In defining *delusion* in such a way as to exclude beliefs with wide cultural acceptance, the DSM drives an awkward wedge between isolated cases like Javier’s and the cases where (equally bizarre, equally harmful) beliefs spread through cultural-ethnic populations [16,31]. And popularity-exceptionalism has other implications too. If a key marker of pathology is a divergence from what most people believe, then one and the same belief could be delusional in some cultures but not others [32], and scientific revolutionaries and political dissidents may count as deluded: “When everyone believes the world is flat, is Columbus mad because he believes the world is round?” ([23] p. 335). Moreover, while adherents of popular religions may be exempt from delusion, the *founders* of those religions may not be [33,34; cf. 35,36].

Nevertheless, the DSM’s cultural exemption is consistent with a growing awareness of the social – as opposed to purely epistemic – function of beliefs. Belief formation is not just a matter of modelling the world, but of *moulding* it to our purposes. The beliefs we adopt (or at least those we express) signify our allegiances to social groups, securing the trust and cooperation of fellow group members [37]. Indeed, steadfast endorsement of propositions that are “counterintuitive, counterfactual and sometimes even transparently unreasonable” ([38] p. 230) may be equivalent to ritual scarification or firewalking – a signal of group commitment that is costly and thereby credible [39].

While multiple lines of evidence attest to the role of religion in social bonding [40,41], the prevailing psychiatric view is that delusions are idiosyncratic, alienating and stigmatizing [42]. What distinguishes adaptive religious beliefs from religious delusions may thus be partly a matter of whether or not belief conviction strengthens community ties [43,44].

**3. Religion, delusion, and cognitive continuity**

Distinctions between adaptive and maladaptive religious beliefs are, however, unlikely to be sharp: “any picture of spiritual or religious delusions as *clearly* differentiated or *finely* separable from non-delusional types of religious attitudes, notions or convictions is impossible to divine or construct” ([16] p. 28, italics in original). Accordingly, a number of theorists conceive of religious beliefs as lying on a continuum from healthy to delusional, with healthy individuals (religious or otherwise) at one end and deluded individuals at the other [24,45].

McCauley and Graham [46] have recently presented a more nuanced scheme of three cognitive continuities (see Figure 1): (1) a continuity between religious cognition and cognition associated with mental disorders (which they focus on); (2) a continuity between everyday experiences and beliefs, on the one hand, and symptoms of psychiatric disorders such as schizophrenia, on the other [47,48; cf. 49,50]; and (3) a continuity between religious cognition and everyday cognition (a prominent thesis in the Cognitive Science of Religion is that religious beliefs do not spring from bespoke cognitive mechanisms, but from the operations of standard cognitive machinery [51, cf. 52]).

Existing literature exploring McCauley and Graham's [46] first continuity tends to be cross-sectional, which renders it ill-suited for making inferences about whether changes in religious belief or engagement temporally precede the development of psychotic illness [24]. Nonetheless, there is much to learn by examining religious beliefs in clinical and non-clinical populations.



Figure 1: McCauley and Graham [46] (used with permission) outline three continuities in cognition.

The prevalence and psychological correlates of clinical delusions with religious content have been investigated in a large number of studies. A systematic review of 55 studies [53] found that between 1% and 80% of delusional patients had some religious content in their delusions (between 20% and 60% was typical). Some of these studies found a positive relationship between religiosity and religious delusions, while others found no relationship; and some studies found religious content was associated with more severe psychological symptoms and worse outcomes, while other studies found the opposite. The author concluded that religious content is relatively common in delusions, and that mixed findings about frequency and psychological correlates are likely due to two factors: (1) variable definitions of what counts as religious content; and (2) genuine differences in frequency of occurrence in different cultural contexts.

Related to the above, the religious content of psychiatrically diagnosed religious delusions tends to reflect the religious preoccupations of the culture at large. For example, a study of 632 psychotic patients in Muslim-majority Egypt [54] found that the most common religious content for psychotic experience was God (36%), the Devil (14%), sheikhs/priests (12%), Jesus (11%), the Prophet Mohammed (9%), ghosts/afreets (9%), saints (6%), jinns (6%), angels (4%), the Virgin Mary (3%), Judgment Day (1%), and the Antichrist (1%), all of which appear in the Qu'ran. Moreover, there may be differences across religious traditions. For example, a systematic review of studies reporting on the relationship between religion and delusions suggested that, overall, Christian patients exhibit a higher frequency of religious delusions, especially delusions of guilt and sin, compared to their counterparts from other religions [55].

Associations between religion and delusions have also been studied outside of a clinical context. One particularly large cross-cultural study (encompassing 18 countries and 26,107 participants) investigated the relationship between religion and psychotic experiences (hallucinations and delusions) in the general population using a structured interview [56]. While no overall association was found between being affiliated with a religion and delusions (or hallucinations), among those who were religiously affiliated four of five indices of intensity of religious belief and behaviour were positively associated with psychotic experiences (hallucinations and delusions were not reported separately for this analysis). However, none of these effects remained statistically significant when controlling for multiple comparisons [57]. Moreover, this study used coarse-grained dichotomous measures of delusional belief, which may have obscured genuine associations.

Other studies have used richer self-report measures of “delusion-like” beliefs, the most widely used such measure being the Peters et al. Delusions Inventory [58]. Responses on this measure have been found to predict membership in new religious movements [59,60], belief in God and in a spiritual power other than God [61], religious belief and engagement [62], and religious fundamentalism [63]. However, as with [56] these associations are not entirely surprising because particular questions in both the structured interview and the Peters et al. Delusions Inventory can be misinterpreted as inquiring about theologically normative beliefs (see [57] and [64] respectively). Nonetheless, additional evidence for a genuine association is supplied by a study that used a measure of “delusion-like” beliefs that carefully avoided using any obviously religious items [65].

**4. Summary and conclusion**

A prevailing psychiatric view is that cultural acceptance is a crucial marker of the boundary between healthy and delusional religious beliefs. We have suggested that this popularity-exceptionalism can be theoretically motivated in terms of social cohesion. We also documented an emerging picture of continuity between healthy and disordered religious cognition, but research examining this putative continuum is difficult to interpret. While it seems clear that culture plays an important role in determining the content of religious delusions, little is known about very basic cross-cultural issues, such as whether religious delusions are more frequent or severe in some cultures than others.

Research on “delusion-like” beliefs in the general population is somewhat clearer, with many studies finding associations between this construct and some form of religiosity. However, this literature needs to be interpreted with caution because (1) most studies use self-report measures; and (2) some items could be read as pertaining to theologically normative beliefs. Despite these issues, we believe that progress is possible, and future research could greatly benefit from the development of measures that focus on *belief* and that are used consistently across studies and cultures, and in both clinical and non-clinical populations [66-69].

**Competing interests statement**: The authors declare no conflicts of interest.

**Acknowledgements:** We thank Neil Levy and Vassilis Saroglou for valuable comments on a draft of the manuscript.

**Funding:** This work was supported by the Cogito Foundation [grant number R10917] and the Australian Research Council [grant number DP180102384]. Our funders had no involvement in the writing of this review or in the decision to submit the article for publication.

**References and recommended reading**

(\*) special interest

(\*\*) outstanding interest

[1] Barrett, J. L. (2017). Could we advance the science of religion (better) without the concept “religion”? *Religion Brain Behav, 7*(4), 282-284. doi:10.1080/2153599X.2016.1249926

[2] Harrison, V. (2006). The pragmatics of defining religion in a multi-cultural world. *The International Journal for Philosophy of Religion, 59*, 133–152. doi:10.1007/s11153-006-6961-z

[3] Coltheart, M., Langdon, R. & McKay, R. (2011). Delusional belief. *Annu Rev Psychol*, *62*, 271–98. doi:10.1146/annurev.psych.121208.131622

**\* An accessible review of delusions that focuses on the two-factor theory of delusion formation and that critiques the American Psychiatry Association’s prominent definition of delusions.**

[4] David, A. S. (1999). On the impossibility of defining delusions. *Philos. Psychiatry Psychol.,* 6, 17–20.

[5] Van Leeuwen, N. (2014). Religious credence is not factual belief. *Cognition, 133*, 698–715. doi:10.1016/j.cognition.2014.08.015

**\* Presents an innovative (and much debated) theory of “religious credences” which argues that many expressions of putative religious belief are actually expressions of another cognitive attitude. While this is not discussed, this theory has interesting parallels with some non-belief (“non-doxastic”) theories of delusions.**

[6] Dub, R. (2017). Delusions, acceptances, and cognitive feelings. *Philos* *Phenomenol Res, 94*(1), 27–60. doi:10.1111/phpr.12220

[7] Boudry, M., & Coyne, J. (2016). Disbelief in belief: On the cognitive status of supernatural beliefs. Philos Psychol, 29(4), 601–615. doi:10.1080/09515089.2015.1110852

[8] Levy, N. (2017). Religious beliefs are factual beliefs: Content does not correlate with context sensitivity. *Cognition, 161*, 109–116. doi:10.1016/j.cognition.2017.01.012

[9] Bayne, T. & Pacherie, E. (2005). In defence of the doxastic conception of delusion. Mind Lang, *20*(2), 163–188. doi:10.1111/j.0268-1064.2005.00281.x

[10] Bortolotti, L. (2010). *Delusions and other irrational beliefs*. Oxford University Press. doi:10.1093/med/9780199206162.001.1

**\* An influential defence of belief (“doxastic”) accounts of delusions, with a particular focus on the relationship between rationality, self-knowledge, and belief ascription. Some attention is paid to the relationship between religion and delusion.**

[11] Levy, N. (2018). You meta believe it. *Eur J Philos, 26*(2), 814-26. doi:10.1111/ejop.12344

[12] Sass, L. (1994). *The paradoxes of delusion: Wittgenstein, Schreber, and the schizophrenic mind*. Cornell University Press.

[13] Sullivan-Bissett, E., Bortolotti, L., Broome, M. & Mameli, M. (2016). Moral and legal implications of the continuity between delusional and non-delusional beliefs. In G. Keil, L. Keuck, & R. Hauswald (Eds.), *Vagueness in Psychiatry.* Oxford University Press. doi:10.1093/med/9780198722373.003.0010

[14] American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (5th ed.).* doi:10.1176/appi.books.9780890425596

[15] Dawkins, R. D. (2006). *The god delusion*. Transworld.

[16] Graham, G. (2015). *The Abraham dilemma: A divine delusion.* Oxford University Press. doi:10.1093/med/9780198728658.001.0001

**\*\* An empirically informed and philosophically rich examination of religious delusions. Includes an analysis of the Biblical account of Abraham, who believed that God had commanded him to sacrifice his son.**

[17] Ross, R. M. & McKay, R. (2017). Why is belief in god not a delusion? *Religion Brain Behav, 7*(4), 316-319. doi:10.1080/2153599X.2016.1249917

[18] Gillespie, H. & Coots, J. F. (1932). *Santa Claus is comin' to town.* Gillespie Haven Music Publishing.

[19] Barrett, J. L. (2008). Why Santa Claus is not a god. *Journal of Cognition and Culture, 8*, 149–161. doi:10.1163/156770908X289251

[20] Gervais, W. M. & Henrich, J. (2010). The Zeus problem: Why representational content biases cannot explain faith in gods. *Journal of Cognition and Culture, 10*, 383–9. doi:10.1163/156853710X531249

[21] Cheng, K. (2017). ‘My husband is possessed by a jinn’: A case study in transcultural mental health. *Australas Psychiatry, 25*(5), 471-473. doi:10.1177/1039856217707392

[22] Clark, S. M. & Harrison, D. A. (2012). How to care for patients who have delusions with religious content. *Current Psychiatry, 11*(1), 47-51.

[23] Frith, C. & Johnstone, E. (2003). *Schizophrenia: A very short introduction*. Oxford University Press. doi:10.1093/actrade/9780192802217.001.0001

[24] Koenig, H. G. (2018). *Religion and mental health: Research and clinical applications*. Academic Press.

**\*\* Chapter five of this book provides a detailed summary of research on relationships between psychotic disorders (schizophrenia and bipolar disorder) and religion, including topics not covered in the present review -- for example, research on positive and negative effects of religion on coping with psychotic illnesses.**

[25] Murphy, D. (2013). Delusions, modernist epistemology and irrational belief. *Mind Lang, 28*(1), 113–124. doi:10.1111/mila.12012

[26] Tuttle, M. C., Niu, K., Yang, F. & Xia, G. (2019). Culturally confounded diagnostic dilemmas: When religion and psychosis intersect. *Harv Rev Psychiatry*, 27(3), 201-208. doi:10.1097/HRP.0000000000000226

[27] Connors, M. H. & Lehmann-Waldau, F. (2018). Koro and denial of genital ownership. *Aust NZ J Psychiat, 52*(11), 1097–1099. doi: 10.1177/0004867418804061

[28] Blaney, P. H. (2015). Paranoid and delusional disorders. In P. H. Blaney, R. F. Krueger & T. Millon (Eds.), *Oxford Textbook of Psychopathology* (3rd ed., pp. 383–417). Oxford University Press.

[29] Banerjee, D., Sharma, S. & Antony, S. (2020). “Koro and migration”: Observational study of an outbreak of Koro in a migrant population working in South India. *Journal of Psychosexual Health, 2*(2), 174–178. doi:10.1177/2631831820934988

[30] Dzokoto, V. A. & Adams, G. (2005). Understanding genital-shrinking epidemics in West Africa: Koro, juju, or mass psychogenic illness? *Cult Med Psychiatry,**29*(1), 53-78. doi:10.1007/s11013-005-4623-8.

[31] Coltheart, M. (2015). Delusions. In R. Scott & S. Kosslyn (Eds.), *Emerging Trends in the Social and Behavioral Sciences* (pp. 1–12). John Wiley & Sons. doi:10.1002/9781118900772.etrds0072

[32] Pierre, J. M. (2001). Faith or delusion? At the crossroads of religion and psychosis. *J Psychiatr Pract, 7*(3), 163-172. doi:10.1097/00131746-200105000-00004

[33] Murray, E. D., Cunningham, M. G. & Price, B. H. (2012). The role of psychotic disorders in religious history considered. *J Neuropsychiatry Clin Neurosci, 24*, 410–426. doi:10.1176/appi.neuropsych.11090214

\*\* **Provides a neuropsychiatric analysis of Abraham, Moses, Jesus, and St. Paul, and suggests that the experiences of these religious figures may have been manifestations of psychotic disorders (in which case delusions may “have had a monumental influence on the shaping of Western civilization”).**

[34] Nicholson, P. T. (2014). Psychosis and paroxysmal visions in the lives of the founders of world religions. *J Neuropsychiatry Clin Neurosci, 26*(1), E13-E14. doi:10.1176/appi.neuropsych.12120412

[35] Cook, C. C. H. (2012). Psychiatry in scripture: Sacred texts and psychopathology. *The Psychiatrist, 36*, 225-229. doi:10.1192/pb.bp.111.036418

[36] Taves, A. (2016). *Revelatory events: Three case studies of the emergence of new spiritual paths*. Princeton University Press.

**\* Combines history and cognitive science to examine founding figures and early collaborators in three case studies of new spiritual paths: Mormonism, Alcoholics Anonymous, and *A Course in Miracles*. Argues that the skilled interpretation of unusual experiences, rather than clinical delusions (or fraud), is at the core of these religious innovations.**

[37] Williams, D. (2020). Socially adaptive belief. *Mind Lang*. Advanced online publication. doi:10.1111/mila.12294

**\* A clear explication of the thesis that human belief formation is sensitive to actual or anticipated social rewards and punishments.**

[38] Murray, M. J. & Moore, L. (2009). Costly signaling and the origin of religion.*Journal of Cognition and Culture, 9,* 225–245. doi:10.1163/156770909X12489459066264

[39] McKay, R. & Bentall, R. P. (in press). Malign magic and delusional belief: Comment on Singh. *Curr Anthropol.*

[40] Norenzayan, A., Shariff, A. F., Gervais, W. M., Willard, A. K., McNamara, R. A., Slingerland, E. & Henrich, J. (2016). The cultural evolution of prosocial religions. *Behav Brain Sci, 39*, 1–65. doi:10.1017/S0140525X14001356

[41] Saroglou, V. (2011). Believing, bonding, behaving, and belonging: The Big Four religious dimensions and cultural variation. *J Cross Cult Psychol, 42,* 1320 –1340. doi:10.1177/0022022111412267

[42] Radden, J. (2011). *On delusion*. Routledge.

[43] Bell, V., Raihani, N. & Wilkinson, S. (in press). De-rationalising delusions. *Clin Psychol Sci*. doi:10.31234/osf.io/4p9zs

**\* Argues that theories of delusions should incorporate dysfunction in “coalitional cognition” – processes involved in social influence, affiliation, group perception, and the strategic management of relationships.**

[44] Bentall, R. P. (2018). Delusions and other beliefs. In L. Bortolotti (Ed.), *Delusions in Context* (pp. 67-95). Palgrave Macmillan. doi:10.1007/978-3-319-97202-2\_3

**\* Argues that although delusions share many features of “master interpretive systems” such as religions and political ideologies, they differ because delusions are idiosyncratic and developed in social isolation.**

[45] Peters, E. R. (2010). Are delusions on a continuum? The case of religious and delusional beliefs. In I. Clark (Ed.), *Psychosis and Spirituality: Consolidating the New Paradigm* (2nd ed., p. 127-138). Wiley Blackwell. doi:10.1002/9780470970300.ch11

[46] McCauley, R. N. & Graham, G. (2020). *Hearing voices and other matters of the mind: What mental abnormalities can teach us about religions.* Oxford University Press. doi:10.1093/oso/9780190091149.001.0001

**\*\* Examines a variety of continuities between religious cognition and cognition associated with mental disorders (see Figure 1 above). This includes coverage of continuity between normal religious belief and pathological religious delusion.**

[47] Linscott, R. J. & van Os, J. (2013). An updated and conservative systematic review and meta-analysis of epidemiological evidence on psychotic experiences in children and adults: On the pathway from proneness to persistence to dimensional expression across mental disorders. *Psychol Med, 43*(6), 1133-1149. doi:10.1017/S0033291712001626

[48] van Os, J. & Reininghaus, U. (2016). Psychosis as a transdiagnostic and extended phenotype in the general population. *World Psychiatry, 15*(2), 118-124. doi:10.1002/wps.20310

**\* Summarizes an influential continuum model of psychosis. Accompanied by critical commentaries and a response by the authors.**

[49] David, A. S. (2010). Why we need more debate on whether psychotic symptoms lie on a continuum with normality. *Psychol Med, 40*(12), 1935-1942. doi:10.1017/S0033291710000188

[50] Lawrie, S. M., Hall, J., McIntosh, A. M., Owens, D. G. C. & Johnstone, E. C. (2010). The 'continuum of psychosis':Sscientifically unproven and clinically impractical. *Br J Psychiatry*, *197*, 423-425. doi: 10.1192/bjp.bp.109.072827

[51] Boyer, P. (2003). Religious thought and behaviour as by-products of brain function. *Trends Cogn Sci, 7*(3), 119-124. doi: 10.1016/s1364-6613(03)00031-7

[52] Sosis, R. (2019). The building blocks of religious systems: Approaching religion as a complex adaptive system. In G. Y. Georgiev, J. M. Smart, C. L. F. Martinez & M. E. Price (Eds.), *Evolution, Development and Complexity: Multiscale Evolutionary Models of Complex Adaptive Systems* (pp. 421-449). Springer. doi:10.1007/978-3-030-00075-2\_19

[53] Cook, C. C. (2015). Religious psychopathology: The prevalence of religious content of delusions and hallucinations in mental disorder. *Int J Soc Psychiatry, 61*(4), 404-425. doi:10.1177/0020764015573089

**\*\* A systematic review of clinical studies that examine religious content in hallucinations and delusions. Religious content is found to be relatively common, but the author reports that comparisons across studies, cultures and religions are hampered by inconsistent definitions.**

[54] Atallah, S. E., El-Dosoky, A. R., Coker, E. M, Nabil, K. M., & El-Islam, M. F. (2001). A 22-year retrospective analysis of the changing frequency and patterns of religious symptoms among inpatients with psychotic illness in Egypt. *Soc Psychiatry Psychiatr Epidemiol, 36*, 407–415. doi:10.1007/s001270170031

[55] Gearing, R. E., Alonzo, D., Smolak, A., McHugh, K., Harmon, S. & Baldwin, S. (2011). Association of religion with delusions and hallucinations in the context of schizophrenia: Implications for engagement and adherence. *Schizophr. Res., 126*, 150–163. doi:10.1016/j.schres.2010.11.005

[56] Kovess-Masfety, V., Saha, S., Lim, C. C. W., Aguilar-Gaxiola, S., Al-Hamzawi, A., Alonso, J., . . . Collaborators, W. H. O. W. M. H. S. (2018). Psychotic experiences and religiosity: data from the WHO World Mental Health Surveys. *Acta Psychiatr Scand, 137*(4), 306-315. doi:10.1111/acps.12859

**\* A large, cross-national investigation of associations between religiosity and psychotic experiences.**

[57] Rosmarin, D. H., Moreira-Almeida, A., & Koenig, H. (2018). Religion and psychotic experiences. *Acta Psychiatr Scand, 138*(2), 173. doi:10.1111/acps.12917

[58] Peters, E. R., Joseph, S. A. & Garety, P. A. (1999). Measurement of delusional ideation in the normal population: Introducing the PDI (Peters et al. Delusions Inventory). *Schizophr Bull, 25*(3), 553-576. doi:10.1093/oxfordjournals.schbul.a033401

[59] Peters, E. R., Day, S., McKenna, J. & Orbach, G. (1999). Delusional ideation in religious and psychotic populations. *Br J Clin Psychol, 38*, 83-96. doi:10.1348/014466599162683

[60] Smith, L., Riley, S. & Peters, E. R. (2009). Schizotypy, delusional ideation and well-being in an American new religious movement population. *Clin Psychol Psychother, 16*(6), 479-484. doi:10.1002/cpp.645

[61] Aird, R. L., Scott, J. G., McGrath, J., Najman, J. M. & Al Mamun, A. (2010). Is the New Age phenomenon connected to delusion-like experiences? Analysis of survey data from Australia. *Ment Health Relig Cult, 13*(1), 37-53. doi:10.1080/13674670903131843

[62] Ross, R. M., Pennycook, G., McKay, R., Gervais, W. M., Langdon, R. & Coltheart, M. (2016). Analytic cognitive style, not delusional ideation, predicts data gathering in a large beads task study. *Cogn Neuropsychiatry, 21*(4), 300-314. doi:10.1080/13546805.2016.1192025

[63] Bronstein, M. V., Pennycook, G., Bear, A., Rand, D. G. & Cannon, T. D. (2019). Belief in fake news is associated with delusionality, dogmatism, religious fundamentalism, and reduced analytic thinking. *J Appl Res Mem Cogn, 8*(1), 108-117. doi:10.1016/j.jarmac.2018.09.005

[64] Luhrmann, T. M. (2017). Diversity within the psychotic continuum. *Schizophr Bull, 43*(1), 27-31. doi:10.1093/schbul/sbw137

[65] Pechey, R., & Halligan, P. (2011). The prevalence of delusion-like beliefs relative to sociocultural beliefs in the general population. *Psychopathology, 44*(2), 106-115. doi:10.1159/000319788

[66] Brett, C. M. C., Peters, E. R., Johns, L. C., Tabraham, P., Valmaggia, L. R. & McGuire, P. (2007). Appraisals of Anomalous Experience Interview (AANEX): A multidimensional measure of psychological responses to anomalies associated with psychosis. *Br J Psychiatry, 191*, s23-s30. doi:10.1192/bjp.191.51.s23

[67] Jong, J., Baimel, A., Ross, R., McKay, R., Bluemke, M. & Halberstadt, J. (2020). Traumatic life experiences and religiosity in eight countries. *Sci Data*, *7*, 140. doi:10.1038/s41597-020-0482-y

[68] Ross, R. M., Hartig, B. & McKay, R. (2017). Analytic cognitive style predicts paranormal explanations of anomalous experiences but not the experiences themselves: Implications for cognitive theories of delusions. *Behav Ther Exp Psychiatry, 56*, 90-96. doi:10.1016/j.jbtep.2016.08.018

[69] Taves, A., Wolf, M. G., Ihm, E. D., Barlev, M., Kinsella, M., & Vyas, M. (2019, December 28). What counts as religious experience? The Inventory of Nonordinary Experiences as a tool for analysis across cultures. doi:10.31234/osf.io/ux28d

1. In the literature this conception is known as the "doxastic” conception (doxastic = of or relating to belief). [↑](#footnote-ref-1)
2. Cases 3 and 4 are real cases (with invented names) from the psychiatric literature (see [21] and [27], respectively). Case 1 is official Catholic doctrine, adapted from [28]. Case 2 is the first author’s daughter. Roughly, our cases illustrate religion (Case 1), delusion (Case 4), the intersection of religion and delusion (Case 3), and neither religion nor delusion (Case 2). [↑](#footnote-ref-2)