Why religion is so prevalent

Religions, however loose or formal, are present in all societies, including in those that attempt to suppress religion. People with religious beliefs and practices of one kind or another are common everywhere and throughout human history. Specific theories abound as to why this is so.

As Wildman et al. (2015) point out, focusing on only one potential answer is not a good way to tell the whole story. For example, the subject of neural networks and brain development is not the sole answer, and neither is sole attention to social institutions and cultural products.

In this section, a range of explanations is synthesised into two sections: firstly, factors that contribute to the disposition of *individual minds* to be religious, and secondly, considerations of religion in *group* contexts.

Individual factors

The human mind is uniquely predisposed to religious thought, yet religion is far from universal. A busy cluster of factors helps explain why some individuals are more religious while others are less so, or not religious at all.

Nature versus nurture

There has been longstanding debate about whether religion emanates from nature or nurture (Granqvist & Nkara 2017).

Under nature, for example, a 'hypersensitive agency detection device' may have been helpful for survival and evolution. The benefits of interpreting a negative but unclear event to the general malevolent agency of a predator has fewer immediate downsides than does merely wondering. Similarly, a trait for anthropomorphic thinking (nature) along with positive experiences with family carers (nurture), would induce a tendency to attribute unclear positive causation — say, of a bountiful harvest — to a caring supernatural agent.

Under nurture, communal beliefs, and norms about expected and prohibited behaviours and roles help shape and steward religious tendencies into specific forms of expression. And coerce those who don't agree into compliance.

A USA study of identical and fraternal twins found that around half of individual religiosity was explained by biological characteristics (nature), and half by environmental influences (nurture) (Waller et al. 1990), though it is suggested that such measures tend to overestimate heritability (Sapolsky 2018, p 243).

While a disposition towards religious beliefs is somewhat heritable, specific denominational expression is certainly environmental (Kandler 2021). It's no accident then, that children of religious parents might be more religious than children of others, at the same time that it's unlikely for a Hindu child to naturally evolve within a Jewish family.

The answer to the question is, of course, not nature *versus* nurture, but nature *and* nurture acting in concert to invigorate religion (Granqvist & Nkara 2017).

> **Summary:** While a tendency to religiosity is heritable (nature), specific forms and expression of religion are learned (nurture).

General brain mechanisms, not a 'God spot'

Some religious commentators attempt to explain religiosity as the result of a 'God spot' in the human brain, animated by a 'God gene' (e.g. Meyer 2013). Self-referential anchoring bias is evident in such explanations, however. Meyer, a Christian commentator, equates 'religion' with 'belief in God', consistent with her monotheistic faith and in denial of non-theistic religions. Meyer's argument that the gene and hence 'God spot' is "ultimately controlled by God the Creator", reveals circular reasoning as well.

The supposed 'spot' is, in fact, an interaction of the temporal lobes under epileptic seizure (Shermer 2000, p 65 ff): temporal lobe epilepsy (TLE). These seizures may be partial, in which no overt convulsions occur, yet cause mystical experiences. Normally, a sense of self is maintained by matching systems in the left and right temporal cortices. But if the two systems become uncoordinated, the person may feel a transient sense of "another self" or "sensed presence".

Persinger et al (2010) report that the two cortices can be manually uncoordinated in most people by the application of a magnetic field device, popularly called the "God helmet". Rationally-prone individuals are likely to interpret experiences as *inside* the mind: e.g. dreams or hallucinations. However, fantasy-prone individuals are likely to interpret experiences as *outside* the mind: e.g. angels, demons, ghosts, aliens, astral projection or god.

Despite its popularity in the media, Persinger's work has been criticised, with other studies failing to replicate its effects, and any effects said to be largely the result of suggestibility (Granqvist et al. 2005). Indeed, no spiritual effects of any kind could be stimulated in the mind of one of the world's most famous atheists, Richard Dawkins (BBC Science & Nature 2001).

Some people experience TLE events as mystical or ecstatic and describe them as divine. When the amygdala is involved, feelings can be particularly intense. Individuals having these experiences react far more strongly to religious stimuli even than otherwise "very religious" people.

At the same time, there is a cluster of other behaviours (Waxman & Geschwind 1975). For example, they respond far *less* to sexual imagery, instead displaying a distinct lack of interest. This may go some way to account for the sexual control and repression present in some religions.

Likewise, they exhibit a tendency for extensive and compulsive writing and drawing, which may go some way to explain the abundance of religious art and texts.

Further, they can exhibit elevated levels of aggression (Devinsky et al. 1994), often explosive, which may account for "demonic possession".

> A cluster of experiential and behavioural traits associated with temporal lobe epilepsy (TLE) offers partial explanations for religiosity, sexual repression, an abundance of religious art and texts, and demons as well as angels.

A small Adelaide, Australia, study found that 47% of Christians and 58% of Muslims were sure they had experienced the presence of God/Allah, with 30% and 21% respectively saying they hadn't (Hassan 2002). The remainder (23%, 21%) thought they possibly had. In a national survey, only slightly more than a quarter (28%) of all Australians (not just Christians and Muslims) said they had experienced "a mystical or supernatural experience" (Powell & Pepper 2016).

> **Summary:** Partial temporal lobe epilepsy (TLE) provides one explanation for supernatural experiences, sexual repression, the abundance of religious art and texts, and demonic possession.

Complex interactions

Rather than a single, dedicated 'God spot' (and its monotheistic bias), more recent research reveals that personal religion is extremely complex, not just the temporal lobes involved in epilepsy (Albright 2000).

For example, the parietal lobes, thalamus, limbic system, and autonomic nervous systems may be involved, including a mix of dopamine, serotonin, acetylcholine and other molecules (Newberg & Newberg 2005). These might, for example, suppress the senses of time and place, invoking transcendental experience, or stimulating holistic (versus reductionist) thinking.

A more recent model suggests at least four separate brain mechanisms involved in religion and spirituality (van Elk & Aleman 2017): not only the temporal lobes involved with visions and ecstatic experiences, and multisensory areas involved in self-transcendent experiences, but the theory-of-mind network (more later) involved with prayer and over-attribution of intentionality, and various top-down mechanisms in the anterior cingulate and medial pre-frontal cortices regarding intuitive supernatural beliefs. These are common general brain mechanisms, not the result of either overall or specific regional differences in brain morphology (van Elk & Snoek 2020).

Van Eyghen (2020) argues that these mechanisms are not self-triggering (nature), but triggered by cultural learning (nurture) — with religious interpretations the product of cognitive and content biases passed on from others.

Indeed, individuals with TLE and its attendant mystical experiences are revered in some cultures but persecuted in others, (Devinsky & Lai 2008) emphasising the complex interaction between nature and nurture, and how *others* interpret a person's unique experiences.

> **Summary:** A cluster of brain mechanisms, not based on differences in brain structure and which may be learned, gives rise to mystical and transcendent experiences through the suppression of time and place, and through other complex but ordinary paths.

Next, we'll take a look at an illustrative but not exhaustive range of cognitive and affective dispositions that facilitates personal religiosity. These dispositions help explain mankind's tendency to religiosity, but do not serve to either confirm or debunk specific religious beliefs themselves (Launonen 2021).

Preferred cognitive style

Intuitive versus analytic cognitive preferences

Religiosity correlates with intuitive (versus analytic) thinking. Further, an analytic style is negatively associated with literal interpretation of religious ideas (that is, closed views with fixed answers), but not with a more symbolic experience of religion (open to alternative interpretations) (Freidin & Martini 2020).

Similarly, intuition underlies moral thinking in the absence of systematised reasoning and is rooted in emotion and socialisation (Horne, Powell & Hummel 2015; Thagard 2005). Thus, moral concern is similarly and robustly associated with religious belief and negatively with analytic reasoning (Jack et al. 2016).

Yet, due to cognitive biases, moral intuition is unreliable and may amount to wishful thinking (Paulo 2020). Cognitive biases and overconfidence are significantly more prevalent amongst those with an intuitive cognitive style (Białek & Domurat 2018), which may account for a lower tendency for reflection — i.e. the analytical cognitive effort of critical appraisal — amongst the religious (Pennycook et al. 2016).

Thagard (2005) describes religious faith as attracting 'birds of a feather':

> Religious faith is "*a kind of emotional coherence in which people adopt religious beliefs that fit with their emotional needs as well as with their other beliefs*".
> — (Thagard 2005)

The relationship between religion and intuitive thinking, too, spans the nature-nurture divide (Stagnaro 2018). Religious individuals who are deliberative may be seen by their fellows as less religious and therefore be subject to isolation and penalty rather than cooperation. Thus, actively avoiding analytical cognition may be advantageous in a religious context.

Women have higher rates of intuitive and lower rates of analytical thinking, which may account for their higher rates of paranormal and religious beliefs (Aarnio & Lindeman 2005).

The general effect is given support by the stronger association of intuitive thinking amongst those affiliated with a religious denomination, but not those

who are metaphysically-inclined but not affiliated: the spiritual but not religious (SBNR) (Browne et al. 2014).

Thus, a tendency to overconfident intuitive thinking is mostly a feature of religion — that is, organised, structured, and institutionalised supernatural beliefs — and not an essential feature of mere supernatural belief itself.

> Religionists — that is, those subscribing to organised or institutionalised supernatural beliefs — are especially prone to overconfident intuitive thinking.

While a single moral counterexample might lead a person to revise their moral beliefs (Horne, Powell & Hummel 2015), continual social reinforcement of religious thoughts and feelings can create significant resistance to revision of religious beliefs. Conservatives are more resistant to belief change than are progressives (White et al. 2020), and those who endorse religious claims are far less likely to believe that contrary evidence *ought* to change beliefs (Pennycook et al. 2020).

> **Australian politics**
>
> The empirical evidence regarding conservatives' greater resistance to belief change and the tendency of those who endorse religious claims to reject that contrary evidence *ought* to change beliefs, offers a useful peek into contemporary Australian politics. A religious cohort within the current federal Coalition (conservative) government is vocal in its entrenched opposition to addressing fossil fuel's contribution to climate change, in the face of extensive scientific consensus and social support for reform. This presents a major challenge for urgently needed policy realignment.

> **Summary:** Religious conservatives are more prone than others to intuitive thinking and to overconfidence in their beliefs. They are far more prone to resist assessing and especially revising their beliefs, and they are the most likely to believe that contrary evidence is *not* a reason to change belief. These associations are strong amongst members of organised or institutionalised religion.

Deontological preference

Deontology is a normative system in which predetermined moral rules dictate actions that are required, allowed or forbidden. Since a person must follow the rules in order to be moral under the system, it's also known as "duty ethics".

Like religiosity, deontological ethics (and social conservatism) are associated with intuitive cognition (Chan 2019). Religiosity increases emotion, and along with intuitive cognition, increases reliance on deontological choices (Szekely, Opre & Miu 2015) and preferences for moral absolutism, but mostly among intrinsic rather than extrinsic religionists (Reynolds 2018).

> **Summary:** Intrinsic religionists in particular favour deontological (rules-based) cognition based on intuition.

Randomness, pattern recognition, and compensatory control

The human mind is by necessity skilled at pattern recognition in support of prediction and control (Bulbulia & Schjoedt 2012). But these talents are not without flaw.

Illusory pattern perception is one of the core cognitive mechanisms underlying supernatural beliefs and conspiracy theories (van Prooijen, Douglas & De Inocencio 2018). Those who see patterns in random coin toss outcomes and in chaotic paintings not only are more likely to infer patterns where they don't exist, but are more susceptible to pattern *suggestion* in both search tasks and in texts about paranormal phenomena. This applies to true randomness, not merely to hidden or difficult-to-discern patterns (Heltzer & Vyse 1994).

Developing superstitions, perceiving conspiracies, seeing false patterns in noisy images and illusory correlations in longitudinal data like stock market prices, all correlate positively with perceived lack of control (Whitson & Galinsky 2008). Illusory pattern perception is a *compensatory* mechanism against perceived threats to personal control. So too is defending the legitimacy of favoured institutions that offer control (e.g. political and religious groups), and believing in an interventionist God (Kay et al. 2009a; Kay et al. 2009b). This is true whether or not the distress experienced as a result of perceived randomness is related to actual trauma (Kay, Moscovitch & Laurin 2010). God beliefs hold several advantages over alternatives in addressing such distress (Laurin & Kay 2017).

Like the religious, conservatives are higher in need for control (Ponce de Leon & Kay 2020). The effect may be compounded amongst religious conservatives.

While Australia's most religious report a greater sense of fatalism (Francis 2021, p 35), most likely connected to abstract belief in God's control, when asked directly about a sense of control over their own lives, Diligents and Ardents are the most confident (Figure 3).[14]

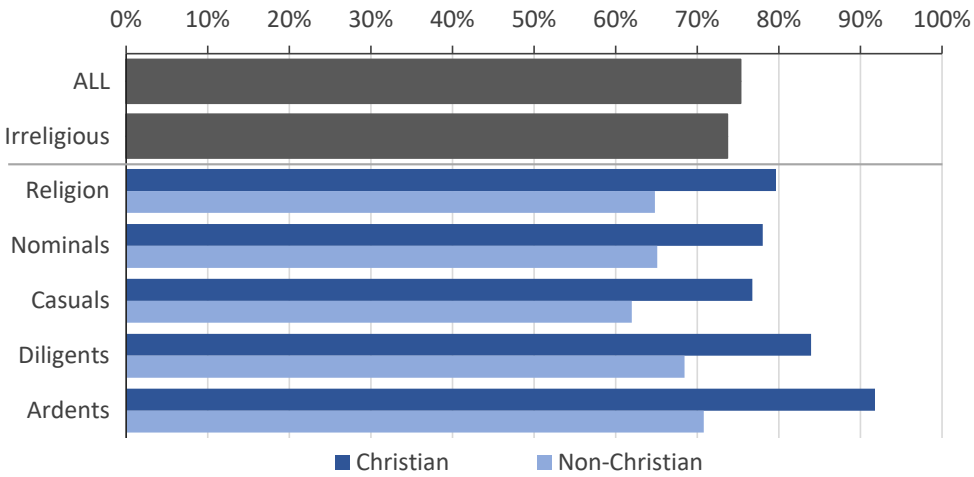

Figure 3: Feeling strong control over one's own life, by ARI6
Source: AVS 2018

Even though the greater confidence of Diligents and Ardents is consistent across Christian and non-Christian religions, non-Christian religionists are significantly less likely to be confident, and Christian religionists significantly more likely, overall. This may reflect prejudice against people from cultural minorities who, while being significantly better educated, experience significantly greater rates of unemployment.

Compensatory beliefs of control drive expediting behaviours such as the social manipulation of gods (e.g. through prayer) and the mechanical compulsion of evil spirits to withdraw (e.g. through exorcism) (Ellis 2016), as well alignment or affiliation with institutions perceived to act on one's behalf (Landau, Kay & Whitson 2015).

This interplay between institutional control (power) and personal control (choice) is itself compensatory: as one increases the other diminishes in salience and necessity (Inesi et al. 2011). Another compensatory mechanism is that denominational affiliates can increase their belief in the power of *other* religions' deities and spirits in response to control threats (Boucher & Millard 2016).

[14] See Part I for an explanation of the Australian Religious Identity (ARI5 and ARI6) scales.

Australian politics

The current push of religious conservatives in Australia amply illustrates attempts at compensatory manoeuvres in response to perceived loss of control and in the absence of actual trauma. In 2017, the prohibition by one institution (federal parliament) against the marriage of non-binary and non-heterosexual Australians, was overturned. This prohibition was a favoured form of control by religious conservatives, who now propose to substitute a different form of control: the privileged legal right to discriminate against outgroups of whom they disapprove.

In an additional cycle of reinforcement, intuitive thinking's poor understanding of physical and biological phenomena can contribute to a sense of low control (Lindeman & Svedholm-Häkknen 2016), which then amplifies intuitive but false pattern recognition and belief in supernatural phenomena.

Compensatory control, and its perception of illusory patterns and supernatural powers, are attempts to reduce anxiety by attempting to increase *predictability*. This offers an explanation as to why religion and moral judgements are so closely associated: predictability is a central factor in moral judgements (Walker et al. 2020). Those who commit moral violations for no discernible motive are judged far more harshly than those who do so for identifiable reasons. Further, actions that violate current moral norms in a *predictable* manner can in fact, like moral actions, engender cooperation.

The specific mechanisms influencing the tendency to favour compensatory control appear to vary somewhat by culture (Hoogeveen et al. 2019). An explanatory factor may be that those who view themselves as separate and distinct from others ("independent self-construal") are more likely to experience the need for such compensation (Alper & Sümer 2017).

Summary: For some, religion acts as an internal compensatory system to increase feelings of control and thereby reduce anxiety. Such controls may include increased belief in God or religious tenets, and affiliating with religious organisations that are expected to act on one's behalf. A common facet of religion and morality is their acting as compensatory control to increase *predictability*.

Magical thinking and paranormal beliefs

Those prone to ontological confusions, that is, being less able to consider and describe coherent explanations of natural existence and reality, are prone to magical thinking (Lindeman & Aarnio 2007). Intuitive thinking, mystical experiences and positive supernatural attitudes of friends distinguish both religious and paranormal believers from sceptics. In addition, tradition, conformity and universalism, security and benevolence are unique features of the religious (Aarnio & Lindeman 2007).

It's no surprise then, that existential threats increase magical religious thinking. Financial insecurity — the modern version of unreliable access to resources — correlates with experiencing magical thinking in the form of religious miracles (Eschler 2020). This is even more so for Protestants than Catholics, a finding that is supported by Australian research which shows that efforts to *avoid* financial insecurity through ownership of investment properties and company shares, is by far the highest amongst Protestants (Francis 2021, p 82).

This illuminates the foundations of Protestantism's prosperity gospel, especially amongst Pentecostals for whom the experience of religious miracles is a central tenet (Almond 2019a). It further illustrates the principle of the socio-cultural dimensions of religion, and why some might gravitate to one religious denomination rather than another.

But 'threats' don't necessarily have to be existential to stimulate magical thinking. Mere threats to meaning and coping mechanisms can also give rise to magical thinking (Routledge, Roylance & Abeyta 2017).

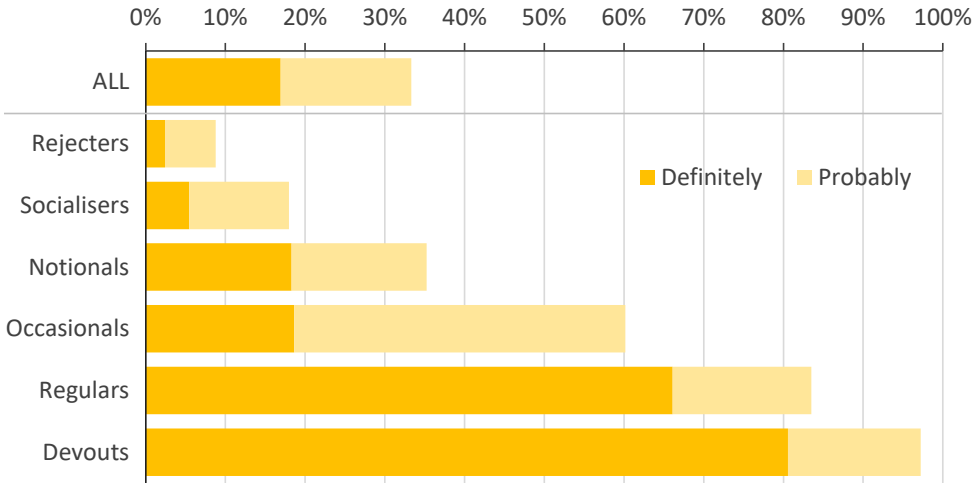

Figure 4: Belief in religious miracles, by ARI6
Source: AuSSA 2018

In Australia, only a small minority (17%) are certain of religious miracles, with a further 16% "probably" believing in them (Figure 4). Belief in religious miracles correlates strongly and positively with religiosity.

Across the political spectrum, Greens are least likely (10%), and those preferring minor parties and independents most likely (25%), to definitely subscribe to magical thinking (Figure 5). These are small minorities across the political spectrum. Including those who "probably" believe in religious miracles, magical thinking is highest for the Coalition (42%) and Labor (37%).

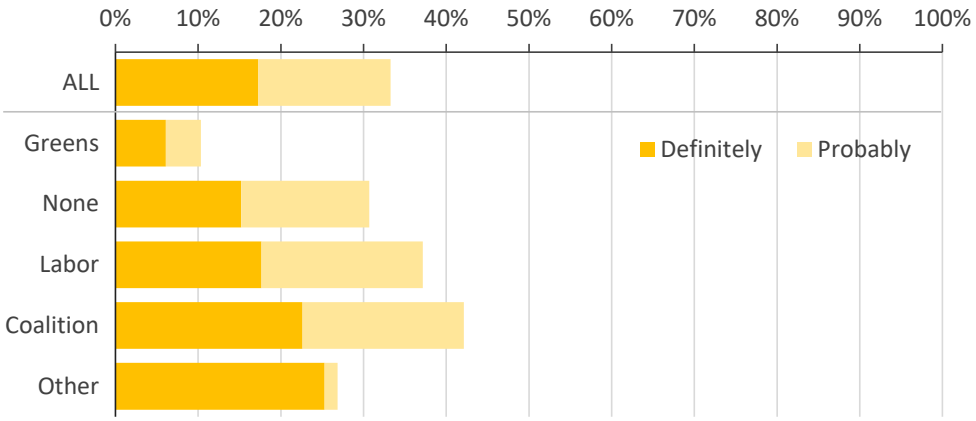

Figure 5: Belief in religious miracles, by party preference
Source: AuSSA 2018. Note: Preference means "usually think of yourself as", not party membership.

Once again, it's important to distinguish common from essential features of religiosity. While correlations between magical thinking, paranormal beliefs and scepticism towards science are demonstrated in western, and in African populations (Peltzer 2003), they are common but not essential features of religiosity: acceptance of science is *higher* amongst the religious in Korea (Clobert & Saroglou 2015).

Intercessory prayer

A specific form of magical thinking, intercessory prayer (IP), posits that praying to a powerful deity will result in the deity interceding in a situation to the benefit of those prayed for.

Empirical testing of masked prayers[15] for unwell patients showed that IPs were no more effective than doing nothing, and less effective than MIT (music, imagery and touch) therapy (Krucoff et al. 2005). Patients uncertain of whether or not they were the subject of prayers did equally well whether they received prayers or not, while those who were told they would (and did) receive IPs did significantly worse (Benson et al. 2006). Those who knew they

[15] Masked: those being prayed for were either entirely unaware of being prayed for, or not aware if they were in a test (prayed for) or control (not prayed for) group.

were being prayed for may have experienced increased anxiety as a result of perceived "pressure" to get well.

Pregnant women experienced adverse outcomes at similar rates regardless of whether or not they received masked IPs, or themselves made IPs (da Rosa et al. 2013). Conversely, another study found slight increases in spiritual and emotional wellbeing among cancer patients receiving IPs, even though those praying did not specifically know who they were praying for (Olver & Dutney 2012).

Overall, depending on conceptual clarity and quality of research design, studies have returned mixed results (Csizmar Carvalho et al. 2013; de Aguiar, Tatton-Ramos & Alminhana 2017; Turner 2006).

A significant incoherence of popular IP is its reactive nature to negative circumstances. If those who pray genuinely believe in its effectiveness, then preventative IPs — for example prayers to *avert* floods, droughts, earthquakes and pandemics — would be far more useful than post-onset restorative IPs. However, failed preventative IPs could create a more visible and direct challenge to the beliefs of those who pray, which may reduce their inclination to employ preventative IPs.

Summary: Limited ability to offer coherent explanations for the natural world, increased perceived threats (whether existential or not), friends who say they have mystical experiences and endorse supernatural phenomena, and other factors, contribute to magical thinking amongst the religious, as well as amongst SBNRs.

One specific form of magical thinking, intercessory prayer, is popular, though scientific testing of its efficacy fails to provide consistent confirmatory results, and sometimes negative results.

Theory of mind and mentalisation

Theory of mind (ToM) refers to the appreciation that others have preferences, beliefs, mental states, and motives that are different from one's own.

ToM skills underpin affiliation and empathy, not just in responding appropriately in social interactions and increasing cooperation, but in anticipating challenges and reacting adaptively to setbacks (Seyfarth & Cheney 2013). These of course, are not unique features of religion.

Nor are they a unique feature of the human animal. Levels of ToM have been found in, for example, corvids (crows and jays), dogs and of course apes (Krupenye & Call 2019).

However, humans, with vastly more brain power than other animals, exhibit a type of ToM found in no other species: *secondary* ToM. It's the appreciation that other minds can appreciate that other minds have their own beliefs and motives (Kirschenmann 2016). This allows, for example, Jenny to understand that Sam is aware that Leigh thinks there's a cookie in the jar at the same time Jenny understands that Sam knows there isn't one.

This advanced mentalising capability is often adaptive, but can also be maladaptive. The tendency to explain the world via complex mentalised landscapes contributes to the disposition to imaginatively assign mental explanations to *non-mental* phenomena, which is associated with belief in the supernatural (Lindeman & Svedholm-Häkknen 2016). It's a key factor that helps explain the prevalence of religion around the world in the cultural shaping of belief (White, Baimel & Norenzayan 2021).

Secondary ToM also facilitates the *personal* morality of religion, since we can conceive of supernatural beings with minds that can detect and judge what's in our own. Uniquely, we can conjure up our own thought police, and we're adept at calling them in. For example, even in an anonymous economics game, priming participants in relation to God increases religionists' prosocial behaviour (Shariff & Norenzayan 2007), though God-priming doesn't influence non-religious participants (Shariff et al. 2016).

Teleological explanations

Secondary ToM also accounts for mankind's wide disposition to generate teleological explanations for natural phenomena (Schachner et al. 2017). These are explanations of the *purpose the phenomenon serves* rather than explanations of how it was *caused*. While all people including atheists sometimes employ teleological explanations, the trait is much higher amongst the religious (Heywood & Bering 2014) and is linked to endorsement of supernatural agents (Roberts, Wastell & Polito 2020).

For example, the head of the Ukrainian Orthodox Church (in Ukraine), Patriarch Filaret, explained the COVID-19 pandemic as God's punishment for gay marriage rather than being caused by the transmission of a highly infectious strain of coronavirus (Wyatt 2020).

Teleological explanations in combination with positive emotions mediate the effect of religion on perceived wellbeing (Ramsay et al. 2019).

Patriarch Filaret later contracted COVID-19 (Wyatt 2020). No teleological explanation for his infection could be found online.

> **Summary:** Theory of mind (ToM) is not unique to but is especially advanced in humans. This allows us to imagine the existence of specific or general supernatural minds — which may monitor our own — and drives a tendency to a teleological (purpose, rather than cause) explanatory style.

Cognitive content

Religious beliefs fall into a broad class of beliefs whose function is to convey meaning and purpose in life (Oviedo & Szocik 2020). About the only way to distinguish religious from non-religious beliefs of the same class (conveying meaning and purpose) is in their content: religious beliefs attempt to explain via appeals to supernatural forces, while non-religious beliefs do not.

While nature may contribute to a disposition of an individual to accept intuitive, supernatural claims, it is the cultural transmission (i.e. nurture) of *content* — the particular representations of supernatural forces or entities, including gods — and how that content is enlivened through ritual, that contribute to the cultural persistence of religion (Gervais et al. 2011).

However, given the greater cognitive biases inherent in beliefs in and appeals to the supernatural, and the inappropriate confidence with which they are held, it would be inappropriate to grant superior weight, status or authority to religious over non-religious beliefs.

> **Summary:** Religion centres on a common class of beliefs: those that convey meaning and purpose. It is its cognitive *content* that differs: the appeal to supernatural explanations.

Awe and inspiration

Awe is the experiential state of "small self" in response to perceived vast, difficult-to-explain phenomena (Keltner & Haidt 2003). Phenomena may be spatially vast such as in natural phenomena, or vast in meaning such as childbirth.

Awe decreases tolerance for uncertainty, which increases illusory pattern perception, false detection of agency, spiritual feelings and supernatural belief (Valdesolo & Graham 2014; Van Cappellen & Saroglou 2012).

Possibly by situating the awe-ee within a broader context (including the social) and enhancing collective concern, awe is associated with increases in prosocial behaviour and decreased entitlement (Piff et al. 2015).

Trait **inspiration** is a disposition to experience mental stimulation towards something creative. When people with this trait are inspired by an external stimulus — someone or something — they show stronger belief in God through spiritual transcendence, feeling connected to something beyond themselves (Critcher & Lee 2018). This may account for the higher religiosity of evangelicals (Pew Research Center 2015) through an energetic and uplifting worship style that is likely to engender inspiration.

> **Summary:** Both awe and inspiration can increase religiosity, through decreased tolerance for uncertainty, increased false detection of agency, spiritually transcendent feelings, and supernatural belief including in God.

Attachment style

Attachment style is one's dominant style of attachment to others that develops during early childhood, related to the relationship between the infant and its carers. The relationship is influenced by the degree to which carers provide a *safe haven* for retreat in times of distress, and a *secure base* from which to explore the world in the absence of direct threats. The three attachment styles are: secure; insecure-anxious (ambivalent/resistant); and insecure-avoidant — the latter two being somewhat dysfunctional (Kirkpatrick & Shaver 1990). Attachment style is considered to influence religiosity through two major mechanisms: compensation and correspondence.

Compensation: For people with a history of avoidant attachment, God can serve in a compensatory role, that is, as substitute attachment figure (Birgegard & Granqvist 2004; Kirkpatrick 1997).[16] In particular, those with a negative self-model but positive models of others are more likely to become religious (Kirkpatrick 1998). Insecure-anxious and insecure-avoidant women are more likely to find a relationship with God, with insecure-anxious more likely to experience their conversion as a religious epiphany (Kirkpatrick 1997). Attempts at compensation aren't always effective, however. Those with an anxious personal attachment style who perceive God as distant experience worse mental health (Malinakova et al. 2020).

Correspondence: In addition, socialised correspondence of child-parent religion and religiosity is more likely to occur as a result of secure child-parent attachments. For example, members of evangelical congregations show higher rates of secure attachment style than demographic-matched controls (Ross 2006), helping explain their higher rates of intergenerational religious transmission. Similarly, children of non-religious parents feel less close to God if they feel close to their parents (Homan 2019).

In either case, secure, symbolic attachment to God has been found to correlate with higher mental wellbeing (Homan 2014). This is true for the three major monotheisms, Judaism, Christianity and Islam, through increases over time in attributes like self-esteem, perceived interconnectedness and optimism (Cherniak et al. 2021).[17] The relationship is bi-directional though. For example, those developing depression are likely to later experience insecure attachment to God. If this occurs, prayer interventions can help restore secure attachment to God and consequently mental health.

> **Summary:** A secure child-parent attachment style promotes correspondence between parental and child religiosity (or non-religiosity). The dysfunctional attachment styles insecure-anxious and insecure-avoidant can lead to compensatory increases in religion of the child, with God as a substitute attachment figure. This is more common amongst women than men, with insecure-anxious parental attachment more often associated with religious conversion by epiphany rather than evolution.

[16] Note the *mono*theistic emphasis.

[17] Research in respect of polytheistic religions is at present lacking.

Terror management theory

> "*Even if the forces of darkness appear to prevail, those who believe in God know that evil and death do not have the final say*."
> — Pope John Paul II

Terror management theory suggests that increased salience of death, either as reminders of mortality or real existential threat, promotes terror whose anxiety is reduced through appeals to the supernatural (Shults et al. 2018b) and belief in both literal and symbolic immortality (Jackson et al. 2017).

Its contribution to religiosity is well-established, with many studies identifying associations between death anxiety and religious belief. However, its effect in some contexts is not overly strong. For example, reminders of death (a weaker form of salience than existential threat) only temporarily strengthen the religious beliefs of believers, and don't increase belief amongst non-believers (Jong 2021).

Across cultures there are strong links between intrinsic religiosity and expectations of eternal life in heaven, as well as God's help in everyday life (Lavric & Flere 2011). This comprises a rational-choice, utilitarian, instrumental motive of religiosity.

In Australia, the Australian Values Survey contains a proxy measure of terror management: that religion is about making sense of life after death (versus making sense of this life). A small minority (22%) of Australians favour the meaning of religion as making sense of life after death rather than making sense of this life (Figure 6).

Favouring a life-after-death explanation of religion correlates somewhat with religiosity, being lowest among Casuals (9%), higher among Diligents (21%), and highest among Ardents (34%). The relatively higher rate for the Irreligious (29%) may be a metacognitive effect — what the Irreligious *think* the religious think — since the irreligious have the lowest rate of *belief* in an afterlife.

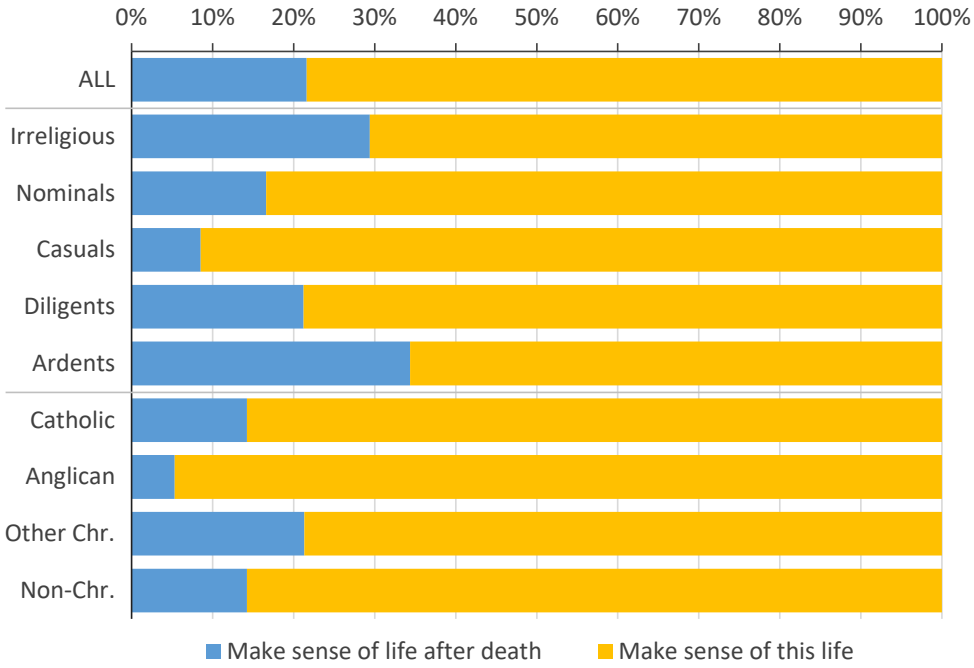

Figure 6: Weighted meaning of religion, by ARI5 and denomination
Source: AVS 2018

> **Summary:** Terror management theory suggests that religious beliefs of symbolic immortality help reduce death anxiety. While its effects have been found in many studies, they seem to be modest in strength.

Combating boredom

Religiosity acts as a resource against boredom, reducing the intensity of this unpleasant existential experience and thereby reducing the search for either meaningful engagement or meaning in life while performing boring tasks (van Tilburg et al. 2019). This effect seems to arise from the individual's life meaning conferred by religion rather than any correlation between need for cognition and boredom.

> **Summary:** Religion can help combat boredom through conferring meaning on repetitive or menial tasks, or creating greater meaning in life.

In summary, there is a complex assortment of characteristics of the human brain and mind which predispose it to sensing or favourably considering supernatural agentic solutions that help promote improved mental health — though it can in practice sometimes result in worse mental health. When the expression of these characteristics coalesces into accepted norms of belief, belonging, bonding and behaviour, they are known as 'religion'.

Neurological studies indicate that there is no "God" spot in the brain. Rather the assortment of general characteristics may act individually or in concert to increase the religiosity of the individual, and the prevalence of religion in society.

> Therefore, at the level of the individual person, religion might be understood as a "*by-product of mundane cognitive machinery*."
> — Voland (2009)