Would someone raised without exposure to religious views nonetheless come to believe in the existence of God, an afterlife, and the intentional creation of humans and other animals? Many scholars would answer yes, proposing that universal cognitive biases generate religious ideas anew within each individual mind. Drawing on evidence from developmental psychology, we argue here that the answer is no: children lack spontaneous theistic views and the emergence of religion is crucially dependent on culture.

Would an individual never exposed to religious ideas – such as Edgar Rice Burrough’s character, Tarzan, who was raised by apes after his first birthday – nonetheless come to believe in God, an afterlife, and the divine creation of humans and other creatures? That is, do core religious beliefs emerge spontaneously in the course of development, even in the absence of cultural support? If one classifies religion as yet another cultural invention, akin to agriculture or writing, the answer to these questions is plainly no. However, many cognitive scientists see the universality and pervasiveness of religious belief as suggesting that it is a natural feature of evolved human psychology. Some propose that certain aspects of religion are biological adaptations – perhaps belief in a punitive supernatural entity makes individuals more moral and hence more desirable as mates and social partners [1]; or perhaps religion promotes social cohesion and cooperation, such that groups with religion do better than those without [2]. Other researchers, including ourselves, see religion in general, and religious belief in particular, as a biological accident – a natural byproduct of cognitive systems that have evolved for other purposes [3–6].

If one is an adaptationist, then the answer to the Tarzan question might be yes, because some adaptations emerge in the absence of cultural support. How should a byproduct theorist answer, however? Some byproduct theorists would also reply affirmatively. It is sometimes proposed that cognitive biases, such as an evolved hypersensitivity to environmental cues to agency, produce religious concepts within individual minds. Barrett, for instance, suggests that ‘it may even be that were children not provided with ideas about gods, they would discover gods for themselves when combined with a tendency […] of finding design and purpose in the natural world’ ([4], p. 42). If correct, this would constitute a simple explanation for why belief in gods exists in every known human culture, past and present.

In this article, we argue that the answer is no: cognitive biases make humans ‘receptive’ to religious ideas, but do not themselves generate them. This means that an explanation for the universality of religion has to be found elsewhere (P. Harris, unpublished; see also Gervais et al. [7] and Rottman and Kelemen [8] for similar arguments). Our argument is based on research in child development. This might seem surprising, because findings from developmental psychology are often interpreted as providing support for the naturalness of religious ideas. We think that they do – only up to a point, however: they support receptivity, but not generativity.

Consider belief in a divine creator. Young children are prone to generate purpose-based explanations of the origins of natural objects and biological kinds. They believe, for example, that clouds are ‘for raining’ and animals are ‘to go in the zoo’ [9]. However, there is no evidence that children spontaneously come to believe in one or more divine creators. It is one thing, after all, to think about natural entities as intentionally designed artifacts of a sort; it is quite another to generate an enduring belief in invisible agents who have created these artifacts. Indeed, other studies find that young children are not committed creationists; they are equally likely to provide explanations of species origins that involve spontaneous generation [10].

Older children, by contrast, do exclusively endorse creationist explanations. This shift to a robust creationist preference arises in part because older children are more adept at grasping the existential themes invoked by the question of species origins (e.g., existence and final cause) and also because the notion of a divine creator of nature meshes well with their early-emerging teleological biases [10]. However, these older children do not spontaneously propose novel divine creators. Instead, they adopt the particular creationist account that their culture supplies. This might be a singular God or multiple gods; it might be alien visitors or Mother Earth. If children are not exposed to such cultural beliefs, the explicit notion of an intentional creator might never arise.

Children also appear to readily acquire the concept of an afterlife. When children are directly questioned, they tend to assert that certain psychological traits, but not biological traits, persist after bodily death [11]. These responses are arguably rooted in the psychologically intuitive – and universal – distinction between minds and bodies, which makes it natural to consider mental life enduring without
the presence of a body [5]. Some, such as Barrett [4], take children’s readiness to reason about life after death as evidence that they are ‘born believers’ in an afterlife.

This conclusion is probably too strong, however. There is no evidence that belief in the afterlife arises spontaneously in the absence of cultural support. For instance, research in rural Madagascar, where there is widespread belief in ancestral spirits, finds that the conception of an afterlife emerges in the course of development [12]. Even if children are ‘natural-born dualists’ [5], this initial stance need not directly give rise to the afterlife beliefs that are characteristic of many of the world’s religions.

More generally, if universal, early-emerging cognitive biases generate religious ideas, we would expect to see these ideas emerge spontaneously. This would be akin to the process of creolization, such as when deaf children who are exposed to non-linguistic communication systems create their own sign language [13]. However, such cases are, as best we know, non-existent. There are many examples where children are quick to endorse religious beliefs, often surprising their atheist parents [4]. But this is consistent with receptivity, not generativity, as these beliefs correspond to those endorsed within the social environment in which children are raised.

Consider, as a test case, belief in multiple deities. This is the historically foundational religious stance, with monotheism a more recent invention [14]. It would be striking support for the generativity position if children raised in monotheistic societies declared their belief in multiple gods. However, to our knowledge, they never do. They come to believe instead in the same singular omnipotent deity that everyone else believes in.

The findings from developmental psychology support the following theory of the emergence of religious belief: humans possess a suite of sophisticated cognitive adaptations for social life, which make accessible certain concepts that are associated with religion, including design, purpose, agency, and body–soul dualism. However, more is needed to generate fully-fledged, sustained, and conscious religious beliefs, including a belief in gods, in divine creation of natural entities, and in life after death. Such beliefs require cultural support.

If our analysis is correct, then certain conclusions follow. First, this analysis suggests that any theory, adaptationist or otherwise, that posits that religious belief will emerge without cultural support – an affirmative answer to the Tarzan question – is mistaken. Second, this perspective shifts the emphasis from representational biases towards learning mechanisms (see also [7]). Any adequate theory has to explain how such beliefs are acquired. Third, we are now left with the question of where religious beliefs came from in the first place. Why do people think them up?

Of course, the diversity of world religions is not the result of a series of wholly independent moments of cultural invention. Rather, once religious ideas emerge, historical processes of social movement and geopolitical conquest spread them around the globe [14]. Nonetheless, an origin story – or a series of origin stories – is still needed and here the emphasis might shift to the types of analyses presented by scholars such as Freud, Marx, and Durkheim, who explored the social and motivational forces that lead people to generate religious ideas. Although current developments in the cognitive science of religion may explain why religion sticks once it has got off the ground, an explanation for why humans have it in the first place requires a very different approach, one that moves away from biases in learning and representation and explores, instead, considerations of motivation, needs, fears, and creative insights.

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