Religion is natural

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Abstract

Despite its considerable intellectual interest and great social relevance, religion has been neglected by contemporary developmental psychologists. But in the last few years, there has been an emerging body of research exploring children's grasp of certain universal religious ideas. Some recent findings suggest that two foundational aspects of religious belief – belief in divine agents, and belief in mind–body dualism – come naturally to young children. This research is briefly reviewed, and some future directions are discussed.

Introduction

It can be revelatory to pick up one of the best textbooks in developmental psychology – *How children develop*, by Robert Siegler, Judy Deloache and Nancy Eisenberg (2006) – and see what it has to say about religious belief and practice. There is almost nothing. There are no index entries for *God*, *Christianity*, *Judaism*, *Islam*, *ritual*, *creationism*, *afterlife*, or *supernatural belief*. There is an entry for *death*, but it refers to infant mortality, not what children think about death. The only mention of the topic is *religion*, *social judgments*, and this refers to a single page that mentions Hinduism in the context of 'cultural and socioeconomic differences' in social norms.

This omission might be in part because textbooks tend to avoid controversial issues. But my sense from the field is that Siegler *et al.* actually have it about right. They don't discuss the development of religion because this is not a major concern of developmental psychologists. If you search through any of the top journals in developmental psychology – such as *Developmental Science* – you will find little on this topic, either empirical or theoretical.

What I will do in this brief article is first speculate about why religion has been so neglected, and then focus on the small body of work that exists, looking at what we have discovered so far and what needs to be done in the future.[1]

[1] The discussion that follows will be limited to the question of the developmental origins of religious belief, putting aside the very interesting topic of the origins of religious ritual (see, e.g. Boyer & Lienard, in press).

Religion as taboo

The simplest explanation for why developmental psychologists do not tend to study religion is that the topic is not interesting enough. Topics that scientists choose to devote time and energy to have to pass some threshold of theoretical interest or real-world relevance (or, in some lucky cases, both). Perhaps religion does not make the cut.

This is not plausible. For one thing, religion seems to interest everyone else. Just about every major philosopher has had a crack at it, and there are university departments devoted to its study (theology, religious studies). And religion is of obvious importance in our lives. It plays a central role in violent conflicts, for instance – including ones that are ongoing. Many contemporary social and political debates – over gay marriage, abortion, capital punishment, stem cell research, the teaching of evolution in schools, and so on – are dramatically affected by people's religious views. And many people (perhaps most people) see religion or spirituality as central to their lives (Shermer, 2003). Any complete theory of human nature has to make sense of this.

There is a more specific reason why developmental psychologists should be interested in religious belief. Much of the research in cognitive development concerns aspects of understanding that are plainly true of the world, and that are manifest in the input – such as how children come to know that objects are solid, or people have beliefs, or languages have nouns. Religion is unusual because it is about entities and processes and events that are *not* evident in the senses. As H.L. Mencken put it, the existence of religion illustrates humans' 'stupendous

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capacity for believing the incredible'. The study of religion thus has the potential of informing us about aspects of the developing mind that might not be evident from the study of other domains.

The real reason why psychologists so avoid religion, I think, is that it is a taboo topic (see Dennett, 2006, for discussion). Religion is a sacrosanct domain. Developmental psychologists avoid it either because they are themselves sensitive to the taboo or because they are wary of offending others.

This touchiness is not unreasonable. Religious belief systems carry within them assumptions about their own origins, and scientific inquiry runs the risk of proving assumptions wrong (Mackie, 1984). People who believe in God, for instance, may assume that they do so because of divine intervention (they believe in God because God wants them to do so), or because the existence of God can be inferred from the complexity or beauty of the world around them (they believe in God because this is a rational inference). They would be less willing to accept alternatives such that religion emerges due to a pathological need for a father figure (Freud) or through indoctrination by the powerful as part of an ongoing class struggle (Marx). They might react negatively as well to the claim made by many cognitive scientists that religious belief is an evolutionary accident, an unexpected by-product of cognitive systems that have evolved for other purposes. The developmental psychology of religious belief runs the risk, then, of offending people – including family, colleagues, and friends, as well as members of human subjects committees, grant panels, and tenure review committees. This might partially explain why there has been so little work done in what is such an interesting and important topic.

This situation is changing, however. Largely as a consequence of progress in other areas, such as evolutionary psychology and cultural anthropology, there is a small community of cognitive scientists exploring religious belief using the same sorts of theories and methods that have been applied to domains such as language, object perception, theory of mind, and so on. This work has led to some quite interesting findings, which I will discuss below.

Religion and language

Once we put aside its taboo nature, religion can be studied in the same way as any subfield of developmental psychology. Indeed, the most promising analogy might be to language acquisition.

Like language, religion is universal. All societies have at least one language; all societies have at least one religion. Also like language, religion is not present at birth. It develops instead through immersion in a social environment. The specific language or religion that a child develops is determined by the culture in which the child is raised, not by genes or the physical environment.

There are universals of language. Every language has words and sentences, as well as principles of phonology, morphology, and syntax (see, e.g. Baker, 2001; Pinker, 1994). There are also universals of religion. The anthropologist Edward Tylor proposed, in 1871, that all religions include a belief in spiritual beings, in the supernatural. Every religion assumes entities such as ghosts, angels, ancestor spirits, and so on. These often have mental lives (desires, beliefs, goals), but no physical form (Boyer, 2001; Bloom, 2004). In addition, most, if not all, religions posit an afterlife, and the purposeful creation of the universe, including humans and other animals. You are not going to find a place, anywhere, where such notions are alien.

This does raise the issue, however, of an apparent *disanalogy* with language. Everyone has language, but there do exist normal adults who profess not to believe in spiritual beings, in an afterlife, or in creationism. Atheists are mentioned in the Bible. ('The fool hath said in his heart, There is no God'; Psalm 14:1) and there are even communities of atheists, small enclaves in which the majority of people profess no supernatural beliefs. If polls are to be believed, for instance, most members of the National Academy of Sciences do not believe in God (Larson & Witham, 1998).

It might be, then, that religion is less universal, or less inevitable, than language. An alternative view, explored below, is that people everywhere naturally have some tacit supernatural beliefs; these arise in children regardless of the culture. For instance, even the most sophisticated of cognitive neuroscientists might believe, at an intuitive level, that their mental life is something above and beyond their physical nature (see Bloom, 2006).

Is religion natural?

The study of language provides many examples of how the universality of X does not entail that X is innate (see Pinker, 1994, for discussion). All languages have a word that refers to hands, for instance, but this is probably because it is important for people everywhere to talk about hands, not because of a specific innate propensity toward hand-naming. Similarly, beliefs in Gods, the afterlife, and so on may be universal, not because they are innate, but because such beliefs emerge in all societies, perhaps as solutions to some problems that all human groups face. From this perspective, universals of

religious belief are cultural inventions, created by adults. A complete developmental account of the growth of religious belief, then, would be one of cultural learning.

There is a growing body of work, however, that suggests that this is not entirely right. Instead, while culture plainly plays some role, some of the universals of religion are unlearned (see Atran, 2004; Barrett, 2004; Bering, in press; Boyer, 2001; Bloom, 2004, 2005; Evans, 2000, 2001; Guthrie, 1993; Kelemen, 2004; Pinker, 1997). There are two main threads of this argument.

1. Common-sense dualism

It is not controversial that young children naturally make sense of physical entities in different terms than psychological entities: naïve physics is different from naïve psychology. The claim explored here is considerably stronger. It is the idea that we think of bodies and souls as *distinct*; we implicitly endorse a strong substance dualism of the sort defended by philosophers like Plato and Descartes. Under one variant of this account, our dualism is a natural by-product of the fact that we have two distinct cognitive systems, one for dealing with material objects, the other for social entities. These systems have incommensurable outputs. Hence dualism emerges as an evolutionary accident (Bloom, 2004).

Dualism has interesting consequences. If bodies and souls are thought to be separate, you can have one without the other. Most things, such as chairs, cups, and trees, are thought of as bodies without souls, not possessing goals, beliefs, will, or consciousness. More significant for religion, dualism makes it possible to imagine souls without bodies. Christianity and Judaism, for instance, involve a God who created the universe, performs miracles, and listens to prayers. He is omnipotent and omniscient, possessing infinite kindness, justice, and mercy. But he does not, in any literal sense, have a body.

Our dualism also opens the possibility that people can survive the death of their bodies. Religions provide different accounts as to the fate of the soul: It might ascend to heaven, descend to hell, go off into some sort of parallel world, or occupy some other body, human or animal. Indeed, a belief that the world teems with ancestor spirits, the souls of people who have been liberated from their bodies through death, is common cross-culturally (Boyer, 2001).

Dualism comes naturally to children. When asked, in implicit and explicit ways, preschool children will say that they believe the brain is only responsible for some aspects of mental life, typically those involving deliberative mental work, such as solving math problems. But the brain is not essential for activities such as pretending to be a kangaroo, loving one's brother, or brushing your teeth (e.g. Gottfried, Gelman & Schultz, 1999; Johnson, 1990; Lillard, 1996). This is done by people, not their brains.

The most dramatic demonstration of childhood dualism concerns the development of afterlife beliefs. Bering and Bjorklund (2004) told children of different ages stories about a mouse that died, and asked about the persistence of certain properties. When asked about biological properties of the mouse, the children appreciated the effects of death, including that the brain no longer worked. But when asked about the psychological properties, most the children said that these would continue – the dead mouse can have feel hunger, think thoughts, and hold desires. The body was gone, but the soul survives. And children believe this more than adults do, suggesting that while we have to learn the specific sort of afterlife that people in our culture believe in (heaven, reincarnation, spirit world, and so on), the notion that consciousness is separable from the body is not learned at all; it comes for free.

One of the first things an undergraduate learns in an introduction to psychology class is that substance dualism is mistaken. It is assumed by virtually all scientists that mental life is the product of physical brains (though there is little consensus as to *how* this all works). Here, as in other domains, common-sense – which is entrenched in religion – clashes with science.

2. Over-attribution of agency and design

We have what Boyer (2001) has called a 'hypertrophy of social cognition': a willingness to attribute psychological states, including agency and design, even when it is inappropriate to do so.

The classic demonstration here is that of Heider and Simmel (1944), who made a simple movie in which geometrical figures – circles, squares, triangles – moved in certain systematic ways, designed, based on the psychologists' intuitions, to tell a tale. When shown this movie, people instinctively describe the figures as if they were specific people (bullies, victims, heroes) who have goals and desires, and they repeat back pretty much the same story that the psychologists had intended to tell. Further research finds that you do not even need bounded figures – you can get much the same effect with moving dots, as well as in movies where the 'characters' are not single objects at all, but moving groups, such as swarms of tiny squares (Bloom & Veres, 1999).

The anthropologist Stewart Guthrie (1993) was the first modern scholar to notice the importance of this tendency as an explanation for religious thought. In his book, *Faces in the Clouds*, Guthrie presents anecdotes and experiments showing that people attribute human

characteristics to a striking range of real-world entities; his list includes: airplanes, automobiles, bags, bells, bicycles, boats, bottles, buildings, cities, clouds, clothing, earthquakes, fire, fog, food, garbage, hats, hurricanes, insects, locks, leaves, the moon, mountains, paper, pens, plants, pottery, rain, the sun, rivers, rocks, sirens, swords, tools, toys, trains, trees, volcanoes, water, and wind. We are hypersensitive to signs of human agency, so much so that we see intention where all that really exists is artifice or accident. As Guthrie puts it: 'The clothes have no emperor'. This capacity to attribute agency based on minimal cues is not a late-emerging developing accomplishment. One can get the same sorts of intentional attributions even in babies (e.g. Csibra, Bíró, Koós & Gergely, 2003; Scholl & Tremoulet, 2000).

We have a similar bias to attribute an agent when we see nonrandom structure. This is the impetus for the argument for design – the intuition that the design that is apparent in the natural and biological world is evidence for a designer. In one recent poll in the United States (July 2005), 42% of the respondents said that they believed that humans and other animals existed in their present form since the beginning of time, and most of the rest said that evolution occurred, but was guided by God. Even among the minority of those who claim to endorse Darwinian evolution, many distort it in one way or another, often seeing it as a mysterious internal force driving species towards perfection. Natural selection is like quantum physics, then; we might intellectually grasp it, with considerable effort, but it will never feel right to us. When we see complex structure, we see it as the product of beliefs and goals and desires. We chew over the natural word with our social mode of understanding, and it is difficult to make sense of it in any other way. Our gut feeling that design requires a designer is no secret, and is understandably exploited by those who argue against natural selection, such as Michael Behe (2005), who, in a recent *New York Times* Op Ed piece, wrote, 'The strong appearance of design allows a disarmingly simple argument: if it looks, walks and quacks like a duck, then, absent compelling evidence to the contrary, we have warrant to conclude it's a duck.'

One of the most interesting discoveries in the developmental psychology of religion is that this bias toward creationism appears to be cognitively natural. Four-year-olds insist that everything has a purpose, including things like lions ('to go in the zoo') and clouds ('for raining'). When asked to explain why a bunch of rocks are pointy, adults prefer a physical explanation, while children choose functional answers, such as 'so that animals could scratch on them when they get itchy'. Based on such findings, Kelemen has proposed that children are prone to 'promiscuous teleology' – they tend, more so than adults, to see the world in terms of design and purpose (see Kelemen, 2004, for review). Other research finds that when children are directly asked about the origin of animals and people, they tend to prefer explanations that involve an intentional creator, even if the adults who raised them do not (Evans, 2000, 2001).

Further directions

The proposal here is that there are certain early-emerging cognitive biases that give rise to religious belief. These include body–soul dualism and a hyper-sensitivity to signs of agency and design. These biases make it natural to believe in Gods and spirits, in an afterlife, and in the divine creation of the universe. These are the seeds from which religion grows.

One might argue that the above proposal attributes too much to young children. It is obvious that *some* religious beliefs are entirely learned – nobody is born with the idea that the birthplace of humanity was the Garden of Eden, or that the soul enters the body at the moment of conception, or that martyrs will be rewarded with sexual access to scores of virgins. Some might argue that *all* religious beliefs are, including dualism and creationism. The developmental research above suggests that this is not the case, since children seem to have some beliefs that are not present, or at least not as strong, in the adults surrounding them. But the evidence here is still, admittedly, scanty. Further progress in this area will come from experiments with children from other cultures, as well as studies with younger children and even in pre-linguistic babies. The notion of studying religious belief in babies might seem strange, but there is some recent work along these lines, such as Kuhlmeier, Bloom and Wynn (2004) on dualist thought and Newman, Keil, Kuhlmeier and Wynn (under review) on intuitions about design and agency.

A different alternative rejects the notion that religion is an evolutionary accident – a by-product of cognitive systems that evolved for other purposes. Instead religion is a biological adaptation. Bering (in press), for instance, argues that our early-emerging tendency to believe in supernatural beings is the product of direct selection, possibly because of its role in shaping altruistic thought and behavior. From this perspective, Bering predicts that certain specific religious notions, including that of an afterlife, will inevitability emerge in the course of development. This is a stronger claim that the one made here, which is that our common-sense dualism makes such religious notions readily understandable, but does not necessarily entail them. The data at this point are unclear, with some evidence for Bering's claim (e.g. Bering &

Bjorklund, 2004) and some evidence against it (e.g. Harris & Giménez, 2005; Astuti & Harris, 2006).

Consider, finally, one last analogy with language. Linguists and psycholinguists have observed a process known as 'creolization', where children who are not exposed to a full-fledged language will create one, adding abstract principles and structures (Bickerton, 1984). Some of the most dramatic demonstrations of this occur in cases in which deaf children who are not exposed to sign language will create one, using inborn capacities to go beyond the input (e.g. Goldin-Meadow, 2005; Senghas, Kita & Özyürek, 2004).

Is there creolization in religion? In particular, do children raised by atheist parents spontaneously create their own religious beliefs? What sorts of beliefs will they be, and when will they emerge? Just as the study of creolization in language has given us insight into which aspects of language are culture-dependent and which are unlearned and universal, the study of religious creolization might give us similar insights. And, with luck, undergraduates in 2016 will be able to learn the answers to such questions in their developmental psychology textbook.

Acknowledgement

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