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## Religious belief and atheism are not mutually exclusive

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Scientific thinking has almost certainly been with us from the beginning . . . A proclivity for science is embedded deeply within us, in all times, places and cultures. It has been the means for our survival. (Carl Sagan, 1996, pp. 315, 317)

In his target article, Johnson provides a framework for answering the question, “What are atheists for?” Johnson uses Tinbergen’s “four questions” to guide his analysis of atheism, from which he formulates several hypotheses. We commend Johnson for applying an evolutionary perspective toward better understanding atheism, and we expect that Johnson’s efforts may facilitate further research.

In this commentary, we begin by briefly addressing several concerns we have with Johnson’s arguments. We then focus for the remainder of the commentary on a particular set of arguments. We have some concern about the way in which Johnson applies evolutionary principles to understanding religious beliefs and atheism. First, Johnson suggests, or at least implies, that natural selection operates at the level of the

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group to select for atheism. Nearly half a century ago, Williams (1966) carefully and meticulously unraveled any sensible arguments in favor of group selection operating as an important selective force. Because natural selection operates at the individual-gene level, the question, “What are atheists for?” is nonsensical if Johnson’s goal is to understand the evolved psychological mechanisms that motivate or result in atheism. A proper evolutionary psychological analysis might begin with the question: “What selection pressures might our ancestors have faced recurrently that caused the evolution of psychological mechanisms that produce religious beliefs?” Or perhaps: “What selection pressures might our ancestors have faced recurrently that caused the evolution of psychological mechanisms that motivate critical thinking and, therefore, atheism?”

Second, aside from the unjustified group selectionism implicit in the question “What are atheists for?” this question confuses manifest beliefs (or non-belief) with the evolved mechanisms that produce those beliefs. Religious belief is a manifestation of human evolved psychology, as is atheism. A proper evolutionary psychological analysis of religious beliefs and of atheism should focus on the evolved mechanisms that produce religious beliefs or atheism, not on the manifest beliefs themselves (Confer et al., 2010; Tooby & Cosmides, 1992). Johnson seems to be arguing that there is a continuum from religious belief to non-belief or atheism, and that this continuum is a consequence of both religious beliefs and non-belief being produced by the same set of evolved mechanisms.

In the remainder of our commentary, we offer a different argument: critical thinking based on an assessment of evidence-based reality (and, therefore, in this context, atheism) has been an important feature of human evolutionary history and is not generated by the evolved psychology that produces religious beliefs.

Human psychology may include mechanisms specifically “designed” to motivate gullibility and, therefore, religious beliefs – an argument that Dennett (2006) presents. In addition, or alternatively, religious beliefs may be generated as a by-product of evolved mechanisms designed to solve a different set of problems, perhaps related to social navigation (see Bering, 2010). The argument that religious belief (whether produced as a designed outcome or as a by-product) is sensibly organized along a continuum from strong belief to atheism implies that religious belief and atheism are produced by the same evolved mechanisms. But there is an alternative argument, made clearer with a proper focus on evolved psychological mechanisms rather than on the beliefs produced by these mechanisms. We propose that, in addition to the evolved mechanisms that make us susceptible to religious beliefs (whether by design or as a by-product), there is a different set of evolved mechanisms designed to motivate critical thinking, including forming conclusions based on facts and evidence. One manifestation of such an evolved psychology is atheism.

Thus, rather than a single set of psychological mechanisms producing a continuum of religious belief (from strong belief to atheism), we propose that there are *two* sets of evolved mechanisms, both of which are universal features of human psychology: (1) mechanisms that produce gullibility, including a susceptibility to religious beliefs; and (2) mechanisms that motivate critical thinking. We might call the first set of mechanisms “gullibility mechanisms” and the second set of mechanisms “critical thinking” mechanisms. Religious beliefs are key products of the gullibility mechanisms, and they may indeed fall along a continuum from committed belief to weak belief. A key product of the critical thinking mechanisms is atheism, which is a consequence of the evidence-based assessment of events in the real world. Although we propose two distinct sets of evolved mechanisms that

generate religious belief and atheism, respectively, we acknowledge that both sets of mechanisms may operate independently and even simultaneously. The woman who is pregnant with triplets (at risk of preterm delivery and other complications), for example, praises God for each day that her triplets remain in utero, and yet remains under 24-hour medical observation in her state-of-the-art hospital room. Does she believe that God is helping her? Or does she believe that those trained in medical science are helping her? In this example, both sets of mechanisms are operating, but produce objectively contradictory beliefs and behaviors (see Kurzban, 2010).

In conclusion, we appreciate Johnson's arguments and agree that more research should be conducted on atheism. We also agree that an evolutionary perspective will shed light on religious belief and atheism like no other perspective can. We offer our comments and suggestions in the service of these broader agreements.

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## RESPONSE

### Atheists: accidents of nature?

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I am grateful to the editors and commentary authors for helping to lift the veil of ignorance about atheism, and especially its role in the evolution of religion.<sup>1</sup> Given the mounting evidence that religion is a product (or at least a by-product) of evolution, atheism sometimes seems to be a greater puzzle than belief. At the least, this exercise has served to hone key questions that we need to ask (and answer) in order to tackle the puzzle. The main conclusion I draw from this debate is that, as most of us appear to agree, atheism is a result of natural variation in individuals' propensities to hold religious beliefs. This implies that religion has been favored by natural selection while atheism has not – it is the tail end of a distribution of belief. In one sense, therefore, atheists are merely accidents of nature.

We owe a debt of gratitude to Caldwell-Harris for her painstaking work in unearthing the characteristics of atheists. She argues that atheism is a by-product of

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