

mechanisms at different levels, as stipulated in Johnson's null hypothesis? I am inclined to accept the latter, and I have argued elsewhere (Lanman, 2012) that secure environments lower religious commitment, extrinsic reasons for religious participation, and superstitious behavior. All of these serve as credibility enhancing displays for supernatural ideas (Henrich, 2009), and without them subsequent generations are less likely to accept religious claims. The dynamics of existential security and credibility enhancing displays may, in fact, account for more of the variance in atheism than other facets of modernity mentioned in *Hypothesis 3: Unnatural variation*, namely scientific education and modern philosophy. The narrow gap between the US and Sweden in science education and the presence of modern philosophy cannot account for the vast gap in theistic belief between the two countries. Perhaps the larger gap in economic inequality, social welfare programs, and ethnic homogeneity can.

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The sleep of reason: do atheists improve the stock?

Ryan McKay^{a*} and Daniel Dennett^b

^aARC Centre of Excellence in Cognition and its Disorders, Department of Psychology, Royal Holloway, University of London, UK; ^bCenter for Cognitive Studies, Tufts University, Medford, USA

The question of why animals sleep is an important and still largely unresolved issue in evolutionary biology. A more fruitful approach might be to turn this question on its head: why do animals have waking periods? After all, being awake consumes more energy than being asleep, and in some respects entails more risk (Cirelli & Tononi, 2008). In his stimulating Target Article, Johnson suggests a similar figure-ground inversion, inviting us to consider the biological origins of religion from a fresh point of view: ask not what religion is “for,” but what *atheists* are for.

We appreciate this switch of perspective, and agree that we should at least check that the inverse question isn't the one we should all be focusing on. We applaud

*Corresponding author. Email: ryanmckay@mac.com

Johnson's pioneering spirit – now we have before us a family of ideas to take seriously if we can, and to say why not if we think we shouldn't. Of course, it's only to be expected that venturing in a pioneering spirit is fraught with peril, and our aim in this brief commentary is to try to help clear the path a little.

Just as Cirelli and Tononi (2008) consider alternatives to the null hypothesis that sleep serves no essential function, Johnson considers alternatives to the null hypothesis that atheism simply represents one end of a continuum of belief (see McKay & Dennett, 2009, for related hypotheses about disordered reading and Attention-Deficit Hyperactivity Disorder). He is reluctant, however, to champion any of these alternatives, and we think this reticence is telling. He suggests that many of the predictions he outlines “could be relatively easily explored using mathematical models, empirical studies, or laboratory experiments,” but we suspect that a serious effort to sharpen many of them would expose numerous problems of interpretation and equivocation.

Although Johnson favors the null hypothesis of natural variation, the alternative hypothesis that he finds most compelling is his “Hypothesis 8,” that atheists foster solidarity among the religious and thereby increase the fitness of religious believers. Although we are amused by the irony in this suggestion (imagine how horrified Richard Dawkins and P.Z. Myers would be to discover that, all along, they had been doing God's work!), we are unconvinced by the claim that this hypothesis has “copious contemporary evidence.” The evidence that Johnson cites seems to consist of little more than a quote by Jonathan Sacks, the United Kingdom's Chief Rabbi. One could with equal (that is to say, slender) justification surmise that the new atheists are bolstering religious solidarity (and hence “doing God's work”) by predated the weak and inferior believers from congregations around the world, leaving leaner, more robust flocks! In any case, while it is uncontroversial to suggest that atheists may have the *effect* of bolstering religious communities, it is far from clear how any group selection phenomenon could secure that this is a *function* of atheist activities, requiring differential replication of religious communities.

For new atheists like Dennett, whose professed aim is not to extinguish religion but to provoke its metamorphosis into more benign forms,¹ it would be interesting and valuable to discover if the positive effects of new atheism are outweighed by the hardening of the attitudes of those who feel threatened (see Nyhan & Reifler, 2010, for a similar effect in the political sphere). Dennett and LaScola's (2010) confidential interviews with closeted non-believing preachers have turned up clergy who set out to read the works of the new atheists in order to better understand “the enemy” and ended up switching sides, largely on the strength of those forcefully written books (e.g., Dawkins, 2006; Dennett, 2006; Harris, 2004; Hitchens, 2007).

The important question which remains, to our knowledge, unaddressed, is whether such attrition of believers leaves the residual congregation more or less open to change, and more or less likely to thrive. Time will tell, but time's message will probably be equivocal: some congregations will go extinct in the wake of departures of apostates, and others will close ranks and thrive (or not); some will reform and some will resist reform. It seems unlikely that any clear selective signal will emerge from this, and certainly not over any short time span of, say, a century.

On this last point, the distinction between genetic and cultural evolution needs to be more closely observed, as it is only cultural evolution that can produce the sort of swift and visible effects described in some of the scenarios Johnson proposes. At times he seems to forget that it takes persistent selection pressure over many

generations to achieve a genetic effect. Moreover, genetic evolution entails variable numbers of surviving offspring, but the burden of demonstrating increases in reproductive fitness for atheists over the relevant time spans is onerous (and contemporary evidence suggests just the opposite; see Blume, 2009; Frejka & Westhoff, 2008; Zhang, 2008).

Perhaps the strangest hypothesis that Johnson considers is his “Hypothesis 1,” that there are no atheists (and never have been). Clearly, much will rest on issues of definition with a suggestion like this, but on even the most minimal definitions of “belief” and “supernatural agency” it seems plain that there are individuals who do not believe in supernatural agents – individuals who would bet not just their lives but their afterlives on the proposition that such agents do not exist. Nevertheless, if relevant falsifiable predictions could be identified we might at least concede the empirical possibility that atheists do not exist (however unlikely we might think it). According to Johnson, however, the hypothesis that there are no atheists predicts “no fitness effects on atheists (because there are none)” and “no fitness effects on believers.” It’s not at all clear that these are testable – or even logically coherent – empirical predictions.

In summary, although we find Johnson’s approach novel and thought-provoking, we think the path he has sketched is much stonier than he acknowledges. We know from personal experience (McKay & Dennett, 2009) how difficult it is to transform a plausible hunch into a testable hypothesis, and we think more clarity – and more caution – is needed to delineate the various theoretical possibilities and the empirical predictions that follow from them.

Note

1. Johnson quotes Wilson’s (2009) mischaracterization of Dennett’s (2006) *Breaking the spell* – the “spell” in question is actually not religion itself but the taboo against investigating religion as a natural phenomenon.

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