

Religious Beliefs as Reflective Elaborations on Intuitions: A Modified Dual-Process Model

Author(s): Nicolas Baumard and Pascal Boyer

Source: *Current Directions in Psychological Science*, August 2013, Vol. 22, No. 4 (August 2013), pp. 295-300

Published by: Sage Publications, Inc. on behalf of Association for Psychological Science

Stable URL: <https://www.jstor.org/stable/44318678>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <https://about.jstor.org/terms>



JSTOR

Sage Publications, Inc. and Association for Psychological Science are collaborating with JSTOR to digitize, preserve and extend access to *Current Directions in Psychological Science*

Religious Beliefs as Reflective Elaborations on Intuitions: A Modified Dual-Process Model

Nicolas Baumard^{1,2} and Pascal Boyer³

¹University of Oxford, ²University of Pennsylvania, and ³Washington University in St. Louis

Current Directions in Psychological Science
22(4) 295–300

© The Author(s) 2013

Reprints and permissions:

sagepub.com/journalsPermissions.nav

DOI: 10.1177/0963721413478610

cdps.sagepub.com



Abstract

Religious beliefs apparently challenge our view of human cognition as an evolved system that provides reliable information about environments. We propose that properties of religious beliefs are best understood in terms of a dual-processing model, in which a variety of evolved domain-specific systems provide stable intuitions, whereas other systems produce explicit, often deliberate comments on those intuitions. This perspective accounts for the fact that religious beliefs are apparently diverse but thematically similar and that they are immune to refutation and more attractive to imaginative individuals.

Keywords

religion, dual process, metarepresentation, cultural evolution

What Sort of Beliefs Are Religious Beliefs?

Religious beliefs are, from a cognitive standpoint, a puzzling phenomenon. They are not empirically motivated and often contradict the believers' own assumption that the world obeys a set of stable rules. They are also apparently very different from one cultural group to another. Assuming that we have cognitive systems because these provide us with reliable information to navigate our environment, it would seem that being strongly committed to hugely variable, nonempirical beliefs is wasteful if not downright damaging (McKay & Dennett, 2009). Although some evolutionary anthropologists and psychologists conjecture that such beliefs may actually have adaptive advantages (Bulbulia, 2004; Irons, 2001), others see them mostly as by-products of other adaptive cognitive functions (Boyer, 1994b, 2001). This debate is orthogonal to the question of how such beliefs occur in human minds. One possibility is that religious representations lie in post hoc explicit elaborations on common intuitions (Boyer, 1994a, 2001). In this perspective, beliefs about ancestors feed on intuitions about persons in the way that notions of contagious magic are engendered by intuitions about pathogens, and beliefs about the afterworld

are engendered by intuitions about dead people (Boyer, 2001; Pyysiäinen, 2001). But, if religious beliefs are derivative, what sorts of "beliefs" are they, and how do they get triggered and sustained in cognitive systems?

Intuitions Come First and Reflections Second

Dual-process models distinguish between *intuitive processes* (often called System 1) that are quick, automatic, and implicit and *reflective processes* (called System 2 by contrast) that are slow, deliberate, explicit, and general (J. S. B. Evans, 2008). The specific perspective we adopt here, which bears some resemblance to the dual-process perspective, implies that religious beliefs are reflective and serve to justify, comment on, and explain prior intuitions. Before explaining the processes engaged, let us consider a few illustrations.

Corresponding Author:

Pascal Boyer, Washington University in St. Louis, 1 Brookings Dr., Campus Box 1125, St. Louis, MO 63130
E-mail: pboyer@artsci.wustl.edu

Threat detection and magic

Specific cognitive systems attend to potential threats in the environment (e.g., predator traces, signs of possible contagion and contamination, signs of enemy presence). These trigger both emotional responses and a motivation for precautionary behaviors (e.g., avoidance or flight, washing, rubbing; Boyer & Lienard, 2006). Our pathogen-avoidance systems deliver the intuitions that (a) illness can be carried from one person to another, (b) any type of contact with a sick person is dangerous, and (c) the amount of contact is irrelevant (Rozin, Millman, & Nemeroff, 1986). But the system does not deliver a description of the vectors or modes of transmission. This creates a niche for reflective representations regarding the invisible vectors for disease, which we find in cultural theories of disease the world over (e.g., notions of tiny animals, miasma, or bad air). This in turn creates the possibility of extending intuitions of contagion to other domains, which explains why people may want to touch relics and kiss saints (or their statues). Notions of magical contagion, positive or negative, “hitchhike” on pathogen-directed intuitions.

Synchrony and collective ceremonies

Acting in synchrony (e.g. in a military parade, a rowing team, or a religious ceremony) creates an endorphin surge (Cohen, Ejsmond-Frey, Knight, & Dunbar, 2010), increasing social bonding and cooperation (Wiltermuth & Heath, 2009). Unaware of the origin of this pleasure and change in motivation, people often impute their experience to supernatural phenomena such as the actual presence of superhuman agents (Konvalinka et al., 2011). These reflections are all the more plausible because synchronicity blurs the boundaries between self and others (Paladino, Mazzurega, Pavani, & Schubert, 2010).

Dead persons and afterlife notions

Human beings’ cognitions of recently dead, personally known individuals are inconsistent. On the one hand, beginning with early childhood, people have a clear intuition about the cessation of agency (H. C. Barrett & Behne, 2005). On the other hand, intuitive psychology is still activated by thoughts of a recently deceased person, who is represented as still having thoughts and feelings (Bering, 2002). This discrepancy between two intuitive systems provides a context in which explicit, reflective notions about the “soul” and the dual nature of persons become particularly relevant (Bloom, 2007; Boyer, 2001). Such reflections take the form of both idiosyncratic thoughts (e.g., that the dead person is somehow “still around”) and of specially transmitted theories of spirits and ancestors.

Moral intuitions and penance

Humans have principled moral intuitions, but they are often not supported by explicit and accessible moral principles (Haidt, 2001). For instance, in cases when people have clearly diminished someone’s welfare without provocation, they (and most third parties) expect compensation (Trivers, 1971). This makes evolutionary sense, because the function of morality is to maintain fair relationships with others so as to get a good reputation and to be recruited in future cooperative interactions (Baumard, André, & Sperber, 2013). However, when compensation is not possible, the working of moral intuitions makes people feel that their relation with the victim is now asymmetric and therefore unfair. In this kind of situation, people may find it appealing to engage in self-inflicted suffering (by fasts, flagellations, or mutilations) or donations to third parties (orphans, churches, or monks). In laboratory studies, guilty people punish themselves if they have no opportunity to compensate victims (Nelissen & Zeelenberg, 2009) and pain reduces guilt (Bastian, Jetten, & Fasoli, 2011). Viewed from the perspective of people’s moral intuitions, these actions seem to restore some symmetry between the victim (whose interests have been hurt) and the wrongdoer (whose interests are now hurt as well). Yet the reason why hurting oneself and giving to a third party would restore fairness remains mysterious, which gives additional relevance to reflective thoughts on, for example, divine justice (there are gods watching us and making sure we do not get away with misdeeds), immanent justice (what goes round must come round), or karma (your good deeds will offset your sins; Baumard & Chevallier, 2012).

Attentional processing and meditation

In many cultures, people have created cognitive techniques such as mindfulness or meditation, which attempt, among other things, to allay anxiety by controlling attention and detaching it from immediate stimuli. People engaged in these practices have definite intuitions about their effects on mood, yet they cannot explain these effects because the workings of attention are impenetrable to conscious inspection. As a result, reflective understandings of these techniques as, for example, access to another world or detachment from an illusory reality, are particularly relevant to practitioners (Wallace & Shapiro, 2006).

Beyond these examples, anthropologists and psychologists have shown that intuitive expectations are at the origin of a range of religious beliefs: animacy and intuitive psychology systems make gods and spirits plausible (J. L. Barrett, 2004; Epley, Waytz, & Cacioppo, 2007), disgust reactions make taboos apparently sensible (Fessler & Navarrete, 2003), and pragmatic intuitions about

conversations feed notions of divine communication (Luhmann, 2005).

Why Religious Beliefs Are Similar, but Not Special

In many domains, reflective elaborations from different cultures often converge on similar themes, what anthropologists call cultural “attractors” (Sperber, 1996). This occurs because post hoc reflective beliefs are strongly constrained by intuitive systems in two different ways.

First, reflections are often triggered by the limitations or inconsistencies of intuitions or by the need to provide to other agents a consistent account of one's own intuitions. But intuitive systems are very similar in human beings the world over, so intuitions are likely to trigger similar reflections. For instance, all over the world, people are puzzled by conflicting intuitions about death (Astuti, 2001) and people everywhere have to justify behaviors that depart from what is intuitively moral (Haidt, 2001). So we should expect recurrent spontaneous reflections about such matters. Or consider reflections on living things. People, including young children, cannot help but form the intuition that mouths serve for eating, eyes for seeing, and so forth (Kelemen, 2004). A common way of thinking about function is to recruit intuitions from our tool-making systems, describing function in terms of an agent's prior goals. This may be why explanations of natural features in terms of a conscious designer are highly relevant, such that even adults taught about natural selection can inadvertently revert to notions of “Nature's” goals and foresight (E. M. Evans, 2001).

Second, speculations in certain domains tend to go in a particular direction (almost) no matter where one starts from. This is particularly obvious in beliefs in superhuman agents, which enjoy great cultural success relative to other possible supernatural concepts, because humans are a social species, prone to use intuitive psychology to explain events (J. L. Barrett, 2000). As a result, imagined agents are likely to figure in reflections focused on extremely diverse kinds of phenomena—illness, accident, coalitional changes, or moral behavior. These processes are illustrated in Figure 1.

The dual-process model also suggests that there is nothing special or unique to religion, as many anthropologists have pointed out (Bloch, 2008). We commonly call religious those representations that include ancestors, ghosts, or angels. However, from a cognitive viewpoint, that is not a special domain. The intuitive systems that trigger religious beliefs also trigger nonreligious beliefs—one can understand meditation as either access to a superior reality or as a journey inside one's self. The fact that superhuman agents are included in some

reflections does not imply any specific functional features. All the relevant features of the beliefs in question stem from the fact that they are included in the much broader domain of potential reflective beliefs (see Fig. 2).

Intuitions and Reflections in Dual Processing

Our model of religious beliefs is based on the distinction between intuitions and reflections. The former, sometimes called intuitive beliefs or architectural beliefs, are the output of specialized cognitive systems (Boyer & Barrett, 2005). They pop up without deliberation. Note that the output of some intuitive systems can serve as input to other such systems; this occurs when, for example, intuitive physics and intuitive psychology are integrated in a predator's mind when stalking a prey. Reflections, by contrast, are explicit, sometimes deliberate representations that explain, extend, or restrict the scope of, comment on, or link intuitions to specific sources. In logical terms, they are metarepresentations of intuitions (Sperber, 2000).

This account is somewhat more specific than standard “dual-processing” models. In particular, there is no need to assume that cognition comprises two large systems. Both intuitions and reflections are probably produced by large numbers of domain-specific systems. In addition, reflections are not just parallel to intuitions, as some dual-processing models imply. Reflections are triggered and constrained by the specific contents of intuitions.

Very different epistemic constraints apply to these two kinds of beliefs. Intuitive beliefs stably guide behavior in a fast and automatic way, tailored by natural selection to maximize fitness (Tooby & Cosmides, 1995). This implies, if not altogether true beliefs, at least a strong grasp on those aspects of environments that affect fitness. By contrast, reflective beliefs are highly unstable even within an individual, and they may or may not affect behavior. The main force that drives their occurrence is relevance, not truth. They are all the more stable, frequent, and culturally recurrent if they either fit our intuitions or else contradict them in an attention-grabbing manner (Boyer, 1998). This model makes sense of otherwise puzzling properties of religious beliefs, beyond their apparent variety and common themes.

- In many cases, the believers do not seem to have a stable and specific interpretation of the beliefs (Sperber, 2000). For instance, people may state that “ancestors are watching us,” but they are not sure that ancestors have eyes or heads—such details are either never considered at all or are left to idiosyncratic interpretations.

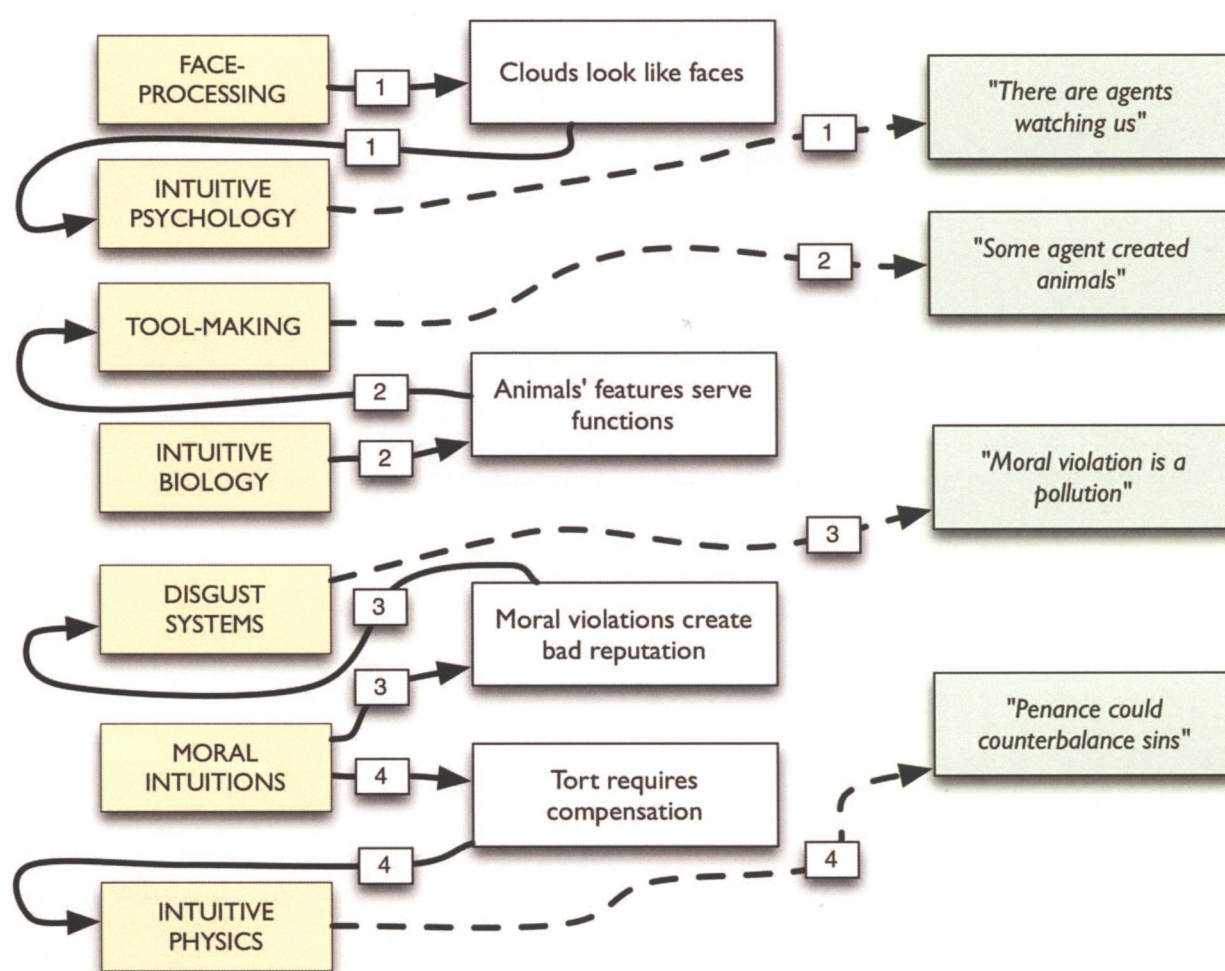


Fig. 1. Examples of inferential paths from intuitive systems (left boxes) that produce intuitions (middle boxes) to reflective representations (right boxes), sometimes including re-elaboration by intuitive systems. Numbers identify specific inferential paths between systems. For instance, Path 1 identifies the information flow between a face-processing system that produces occasional false alarms, activating an intuitive psychology system and potentially leading (dashed line) to a reflective thought (there are agents watching us). Or, Path 2 identifies the flow from intuitive biological and tool-making systems to potential (dashed line) reflective notions of teleology.

- Religious beliefs are quite immune to argumentative refutation (Legare & Gelman, 2008). Indeed, what makes the beliefs compelling is their grounding in intuitions (e.g. the experience of misfortune, a visceral reaction to moral violations). By contrast, the explicit refutation of beliefs usually has no relevant connection with intuitions.
- Religious beliefs are favored more by intuitive than reflective individuals (Gervais & Norenzayan, 2012). Because religious beliefs emerge for intuitive reasons, people who are especially likely to listen to their intuitions and ignore reflective arguments are especially likely to accept religious beliefs.

The modified dual-process perspective may help us address the question of why humans have religious representations in a more tractable way. The model proposed here suggests that such representations are to be expected in a system that produces reflective elaborations on intuitions. Religious notions are not special. Understanding why humans have religion, then, requires “only” that we understand why human cognition is often supported by dual-process mechanisms or, in our formulation, why human minds are motivated, as a result of evolution, to produce metarepresentational comments on their own representations—a goal that is of course more ambitious than just explaining religion.

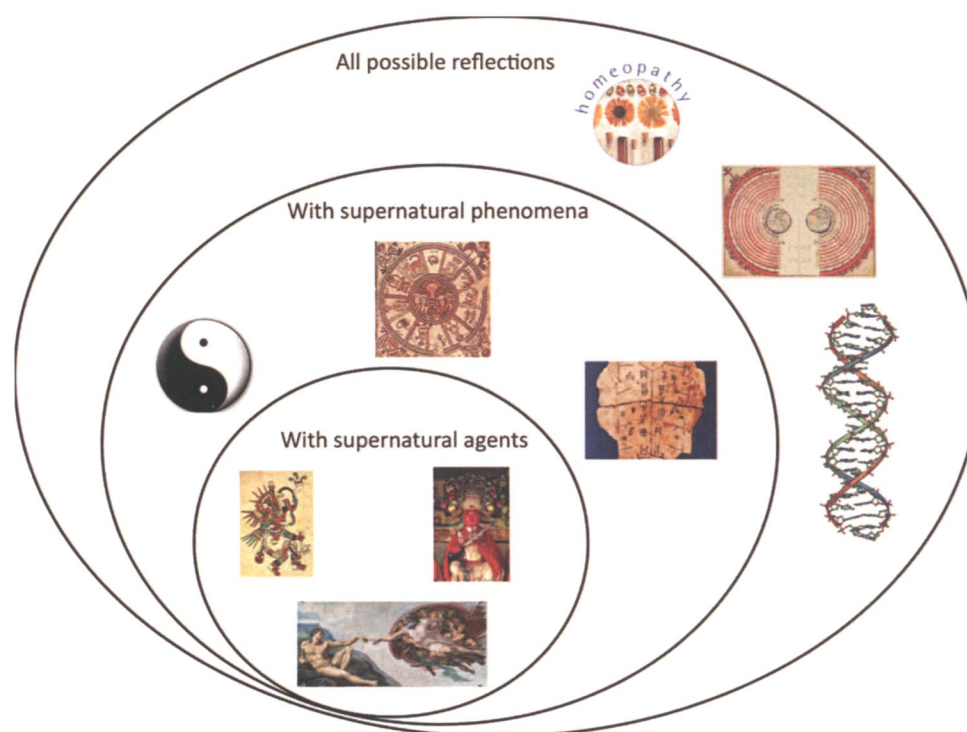


Fig. 2. Religious beliefs are just a subset of mental representations focused on superhuman agents, which in turn are a subset of supernatural reflections, themselves included in reflective representations in general. This very large set comprises all our explicit, deliberate cogitations, including scientific and scholarly representations as well as all the supernatural ones.

Recommended Reading

- Boyer, P. (2001). (See References). Survey of the cognitive processes engaged in acquisition and transmission of religion.
- Bloch, M. (2008). (See References). On the profound differences between “tribal” religious behavior and organized religions in large-scale societies.
- Sperber, D. (2000). (See References). On the distinction between intuitive and reflective beliefs, and the metarepresentational status of reflective beliefs.

Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

References

- Astuti, R. (2001). Are we all natural dualists? A cognitive developmental approach. *Journal of the Royal Anthropological Institute*, 7, 1–18.
- Barrett, H. C., & Behne, T. (2005). Children’s understanding of death as the cessation of agency: A test using sleep versus death. *Cognition*, 96, 93–108.
- Barrett, J. L. (2000). Exploring the natural foundations of religion. *Trends in Cognitive Sciences*, 4, 29–34.
- Barrett, J. L. (2004). *Why would anyone believe in God?* Walnut Creek, CA: Altamira Press.
- Bastian, B., Jetten, J., & Fasoli, F. (2011). Cleansing the soul by hurting the flesh. *Psychological Science*, 22, 334–335.
- Baumard, N., André, J.-B., & Sperber, D. (2013). A mutualistic approach to morality. *Behavioral and Brain Sciences*, 36, 1–36.
- Baumard, N., & Chevallier, C. (2012). What goes around comes around: The evolutionary roots of the belief in immanent justice. *Journal of Cognition and Culture*, 12, 67–80.
- Bering, J. M. (2002). Intuitive conceptions of dead agents’ minds: The natural foundations of afterlife beliefs as phenomenological boundary. *Journal of Cognition and Culture*, 2, 263–308.
- Bloch, M. (2008). Why religion is nothing special but is central. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 363, 2055–2061.
- Bloom, P. (2007). Religion is natural. *Developmental Science*, 10, 147–151.
- Boyer, P. (1994a). Cognitive constraints on cultural representations: Natural ontologies and religious ideas. In L. A. Hirschfeld & S. Gelman (Eds.), *Mapping the mind: Domain-specificity in culture and cognition* (pp. 391–411). New York: Cambridge University Press.
- Boyer, P. (1994b). *The naturalness of religious ideas: A cognitive theory of religion*. Berkeley: University of California Press.
- Boyer, P. (1998). Cognitive tracks of cultural inheritance: How evolved intuitive ontology governs cultural transmission. *American Anthropologist*, 100, 876–889.
- Boyer, P. (2001). *Religion explained: Evolutionary origins of religious thought*. New York: Basic Books.

- Boyer, P., & Barrett, H. C. (2005). Domain specificity and intuitive ontology. In D. M. Buss (Ed.), *The handbook of evolutionary psychology* (pp. 96–118). Hoboken, NJ: John Wiley & Sons.
- Boyer, P., & Lienard, P. (2006). Why ritualized behavior? Precaution systems and action parsing in developmental, pathological and cultural rituals. *Behavioral and Brain Sciences*, 29, 595–613.
- Bulbulia, J. (2004). Religious costs as adaptations that signal altruistic intention. *Evolution and Cognition*, 10, 19–42.
- Cohen, E. E. A., Ejsmond-Frey, R., Knight, N., & Dunbar, R. I. M. (2010). Rowers' high: Behavioural synchrony is correlated with elevated pain thresholds. *Biology Letters*, 6, 106–108.
- Epley, N., Waytz, A., & Cacioppo, J. T. (2007). On seeing human: A three-factor theory of anthropomorphism. *Psychological Review*, 114, 864–886.
- Evans, E. M. (2001). Cognitive and contextual factors in the emergence of diverse belief systems: Creation versus evolution. *Cognitive Psychology*, 42, 217–226.
- Evans, J. S. B. (2008). Dual-processing accounts of reasoning, judgment, and social cognition. *Annual Review of Psychology*, 59, 255–278.
- Fessler, D., & Navarrete, C. (2003). Meat is good to taboo: Dietary proscriptions as a product of the interaction of psychological mechanisms and social processes. *Journal of Cognition and Culture*, 3, 1–40.
- Gervais, W. M., & Norenzayan, A. (2012). Analytic thinking promotes religious disbelief. *Science*, 336, 493–496.
- Haidt, J. (2001). The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological Review*, 108, 814–834.
- Irons, W. (2001). Religion as a hard-to-fake sign of commitment. In R. Nesse (Ed.), *Evolution and the capacity for commitment* (pp. 292–309). New York: Russell Sage Foundation.
- Kelemen, D. (2004). Are children "intuitive theists?" Reasoning about purpose and design in nature. *Psychological Science*, 15, 295–301.
- Konvalinka, I., Xygalatas, D., Bulbulia, J., Schjødt, U., Jegindø, E.-M., Wallot, S., et al. (2011). Synchronized arousal between performers and related spectators in a fire-walking ritual. *Proceedings of the National Academy of Sciences, USA*, 108, 8514–8519.
- Legare, C. H., & Gelman, S. A. (2008). Bewitchment, biology, or both: The co-existence of natural and supernatural explanatory frameworks across development. *Cognitive Science*, 32, 607–642.
- Luhmann, T. M. (2005). The art of hearing God: Absorption, dissociation, and contemporary American spirituality. *Spiritus: A Journal of Christian Spirituality*, 5, 133–157.
- McKay, R. T., & Dennett, D. C. (2009). The evolution of misbelief. *Behavioral and Brain Sciences*, 32, 493–561.
- Nelissen, R., & Zeelenberg, M. (2009). When guilt evokes self-punishment: Evidence for the existence of a Dobby effect. *Emotion*, 9, 118–122.
- Paladino, M. P., Mazzurega, M., Pavani, F., & Schubert, T. W. (2010). Synchronous multisensory stimulation blurs self-other boundaries. *Psychological Science*, 21, 1202–1207.
- Pyysiäinen, I. (2001). *How religion works: Towards a new cognitive science of religion*. Leiden, The Netherlands: Brill.
- Rozin, P., Millman, L., & Nemeroff, C. (1986). Operation of the laws of sympathetic magic in disgust and other domains. *Journal of Personality and Social Psychology*, 50, 703–712.
- Sperber, D. (1996). *Explaining culture: A naturalistic approach*. Oxford, England: Blackwell.
- Sperber, D. (2000). Metarepresentation in an evolutionary perspective. In D. Sperber (Ed.), *Metarepresentations: A multidisciplinary perspective* (pp. 117–138). New York: Oxford University Press.
- Tooby, J., & Cosmides, L. (1995). Mapping the evolved functional organization of mind and brain. In M. S. Gazzaniga, E. Bizzi, & A. Caramazza (Eds.), *The cognitive neurosciences* (pp. 1185–1197). Cambridge, MA: MIT Press.
- Trivers, R. L. (1971). The evolution of reciprocal altruism. *Quarterly Review of Biology*, 46, 35–57.
- Wallace, B. A., & Shapiro, S. L. (2006). Mental balance and well-being: Building bridges between Buddhism and Western psychology. *American Psychologist*, 61, 690–701.
- Wiltermuth, S. S., & Heath, C. (2009). Synchrony and cooperation. *Psychological Science*, 20, 1–5.