https://doi.org/10.1558/jcsr.23717
JCSR ISSN (print) 2049-7555
JCSR ISSN (online) 2049-7563

Religion Is of Reduced Importance When Not Needed to Solve the Problems of Social Living

Catherine L. Caldwell-Harris

Department of Psychological & Brain Sciences
Boston University

charris@bu.edu

Daniel L. Everett

Department of Sociology
Bentley University

deverett@bentley.edu

Purzycki and Sosis (2022) review six categories of how religious traditions solve problems of social living. We apply the six categories to the Pirahã, which the authors discuss as a religious small-scale society. We contend that the Pirahã are not religious, drawing on the six categories to explain why. All members of the Pirahã know each other. Supernatural punishment is thus not needed to curtail dishonesty and norm breaking. Food is sufficient and often abundant. Lack of competition for territory reduces a role for Gods in enforcing wise use of environmental resources. The Pirahã also have a powerful norm, the Immediacy of Experience Principle, which may reduce speculation and eventual reification of supernatural forces. We conclude that the powerful functions served by religion are not evidence that religion is fundamental to human psychology, but the opposite: religion emerges and grows in power as a result of pressure to solve compelling problems of group living. When these problems are absent or are solved by secular mechanisms, religion is absent or of reduced importance.

Introduction

Religion is a potent solution to many of the problems of group living. Solutions include mechanisms for fostering in-group cohesion, reducing dishonesty via the threat of supernatural punishment, and facilitating the wise use of

Keywords: Amazonian tribes, Eurocentric, religion, cultural evolution

Submitted: 2022-08-06 Accepted: 2023-05-24

environmental resources. Purzycki and Sosis (2022) describe these and other functions of religion in chapter 2 (originally Shariff, Purzycki, & Sosis, 2014; see also Purzycki & Sosis, 2019).

We find convincing Purzycki and Sosis's list of 6 categories of functions. Purzycki and Sosis use these categories to explain why religions are present in so many human societies, and why religious traditions share a set of overlapping features that improve individual and group fitness. We depart from Purzycki and Sosis when they use evidence for the functional role of religion to claim that religion is an enduring aspect of human nature and will thus be present in every society.

The powerful functions served by religion are not evidence that religion is fundamental to the human condition, but we contend, the opposite: religion emerges as a result of pressure to solve compelling problems of social living. When these problems are absent or are solved by secular mechanisms, religion is absent or of reduced importance. The Pirahã provide one example. The second example (not discussed in depth in this commentary) is modern WEIRD societies, where religion is of reduced importance because secular institutions have evolved over centuries to solve many problems of group living (Brauer, 2018; Henrich, 2020; Inglehart, 2020).

The Absence of Religion Among the Pirahã

Purzycki and Sosis review the controversy over the extent of religiousness among people living in traditional societies in chapter 3. They open the discussion by noting that "various scholars have argued that some traditional societies are devoid of religious commitment or even a system of religion; we contest these claims and look closely at several alleged examples, specifically the Hazda and Pirahã" (p. 46).

Purzycki and Sosis do not use their taxonomy of six examples (described in chapter 2) in categorizing the function of religion for the Pirahã – but we will, as it is illuminating. Purzycki and Sosis instead restrict their discussion to "religious commitment and non-commitment – that is, individual's belief about spiritual agents and human behaviors performed to influence the disposition of these agents" (p. 46).

Everett (2005; 2009a; 2009b) has described the Pirahã as lacking ritual and religious beliefs, being an unusual culture in having a pragmatic worldview focused on immediate experience. Yet, as Purzycki and Sosis review, in prior writings Everett mentioned the Pirahã having practices that could be construed as suggesting a belief in supernatural agents.

Our immediate goals are to set the record straight about Pirahã being religious. We argue:

1. Religion is absent in Pirahã life.
2. Religion is absent in Pirahã life because Pirahã society lacks the problems of social living for which religions provide solutions.

Our purpose is to answer the plea of Purzycki and Sosis at the conclusion of their chapter, where they note: "...it is no exaggeration to say that just about every aspect of the social science of (non)belief in traditional societies needs more attention if it is to be of use to understanding the human experience" (p. 63).

A claim that religion is absent requires a definition of religion. Definitions of religion frequently emphasize belief in supernatural forces, as in the description by Purzycki and Sosis (p. 46) we cited above. Contemporary theorists often avoid definitions consisting of necessary and sufficient conditions, embracing a family resemblance (prototype) perspective (Saler, 2008; Guthrie, 1996). If we use a prototype category for "religious," it may be difficult to determine whether a society is a non-member or a marginal member of the category of religious societies. Our view is that the Pirahã are not religious, however, a longer manuscript will be needed to fully defend that position (Everett, forthcoming). Here we first respond to how Purzycki and Sosis characterized Everett's prior writings, and second, illustrate how the six categories of chapter 2 explain why the Pirahã evince so astonishingly few (or no) religious characteristics.

Drawing on Everett's writings, Purzycki and Sosis discuss three aspects where religion is present in Pirahã life: myths, rituals, and beliefs in spirits. Each of these is discussed in turn below.

In this co-authored commentary, Everett is the only expert on the Pirahã. We temporarily shift to a first-person narrative for Daniel Everett to explain from his decades of field research that the Pirahã do not believe in supernatural spirits.

The Pirahã Do Not Have Creation Myths

Purzycki and Sosis reference my writings (Everett, 2005) but discount my claim that the Pirahã have no creation stories or myths (Everett, 2009b). They write:

> Everett concludes, "the Pirahãs are repeating back amalgams of many of the stories that they have 'pieced together' over the years from caboclo [ethnically mixed] traders who share in the myths that pervade almost all Amazonian societies. These are not indigenous." Here, Everett concludes that the Pirahã had to learn these myths from outsiders, but the requirement that myths be exclusively indigenous is entirely arbitrary. (pp. 54–55)

Directly asking people about specific beliefs must be done with care (Everett, 2009b). Drawing strong conclusions from the answers, absent other evidence, is worrisome. "Demand characteristics" is the idea that informants will try to figure out and deliver what their interviewer wants to hear (McCambridge, 2012).

Better than asking is to observe. In my years of fieldwork, I have never observed the Pirahã referencing or using the stories they pieced together from traders. When questioned carefully about their beliefs, they do not repeat the stories heard from foreign sources.

Other evidence comes from my attempts to elicit information about Pirahã creation beliefs, during my early years of field research (see Everett, forthcoming).

I would ask a Pirahã:

> "What was the jungle like long ago? Before there were people? Before there were trees? Before there were animals?"

Or I might ask:

> "Can you tell me a story about the Pirahãs coming to this jungle?"

They would reply:

> "Did you see the jungle without trees?"
>
> "Did you see a jungle with no people? No animals?"
>
> "The Pirahãs have always been here."

The Pirahã Do Not Participate in Religious Rituals

Purzycki and Sosis write:

> Everett ponders that "the activity closest to ritual among the Pirahã is their dancing [which brings] the village together. They are often marked by promiscuity, fun, laughing, and merriment.... Such dances might be classified as a weak form of ritual, in the sense that they are witnessed and imitated and clearly have value and meaning to the community." (p. 54)

Elaborating on this quote, dances do help participants experience group membership, but the dances are informal, often spontaneous, and not tied to any religious practice (for example, are not attempts to influence natural or supernatural forces). If everyone is well fed and healthy and the moon is full, one or more Pirahã will begin "talking with a big jaw," a phrase referring to musical speech. Someone will say, "You want to talk – You talk." They will begin "walking with a big foot," the term meaning to walk around in the circles that form the dance. If there are just a few families, the dance will consist of just one circle. If there are more families, concentric circles will form.

The Pirahã Do Not Believe in Spirits

During field work the ethnographer's understanding of the people and setting typically evolves, consistent with knowledge growth. This reflects the challenges of grappling with a hunter-gatherer culture, such as the Pirahã, which is deeply different not just from my own background as a former Christian missionary, but also from other Amazonian peoples.

In my earlier writing, including Everett (2005) cited by Purzycki and Sosis, I used the term *spirits* to be consistent with my understanding at the time and the writing of other ethnolinguists working in the Amazon. Using the English word spirits was an incorrect rendering of the Pirahã perspective into a Eurocentric worldview (see also Saler, 1977). Since then, I have used the less specific term, *entity*.

The Pirahã refer to several types of ambiguous humanoid entities, using the names *Kaoáíbógí* or *ʔaítoii*. These words do not easily map onto categories of fact or fiction. Consider these examples from my earlier writings, discussed by Purzycki and Sosis.

- Villager dresses up as an *ʔaítoii*, emerges from rain forest singing of his lack of fear and throws snakes at observers, who scramble away. *ʔaítoii* have big teeth, go naked except for palm frond skirts and wreaths on their heads. They usually talk in low voices.
- Villager pretends to be a *Kaoáíbógí* in the forest, singing in a high falsetto with themes of avoiding night dangers or how to spend the next day. *Kaoáíbógí* talk in falsettos but do not don any special clothing or accessories.

Consider the man who goes into the forest at night and calls out to the rest of the village in a falsetto voice (note: women do not do this). If I confront him in the forest, he will cease the falsetto voice and talk to me in his normal voice, relating to me as he would in a typical day-time encounter. If I confront him the next day about our conversation during the night, most of time he will respond, "I don't know, I wasn't there; that wasn't me." There have been some rare instances where the person I confronted will respond with a grin or acknowledging facial expression.

This practice straddles the borders between entertainment, advice-giving, and the thrill of contemplating human-like entities with some ambiguous and unknown properties, similar to ghost and horror fiction in our own society. Consider a villager dressed up as an *ʔaítoii*, emerging from the rain forest singing of his lack of fear while throwing snakes at observers. This is make-believe but may serve the helpful purpose of reminding people that the rainforest does not have to be perceived as a scary place.

Pretending to be humanoid entities resembles play-acting events Americans may use to entertain each other. On a camping trip or a children's sleepover, during the night one of the adults can pretend to be a ghost while using a fake voice to scare the others. If children are present, adults may add in some admonishments to behave better the next day. In these cases, the parents usually improvise

their reprimands or scary comments, with the goal of fun, and perhaps teaching a lesson to children.

Pirahã sometimes refer to their traditional enemies using the terms for entity (rather than *toipií* for "Parintintíns person"). For example, they use these terms to share that their enemy had made an unseen but suspected incursion into the Pirahã hunting grounds. Note that the Pirahã can also use one of the terms for humanoid entity to refer to western visitors such as myself.

The different uses of the term I have been glossing as entity includes physical humans, such as the Pirahã's traditional enemies and western visitors. I thus suggest a better translation than spirit is "a non-Pirahã humanoid with ambiguous or unverified properties."

The Pirahã experience of the *Kaoáíbógí* and *ʔaítoii* cannot easily be categorized as real, fictional, or supernatural. When I ask Pirahã if the *Kaoáíbógí* or *ʔaítoii* are real, some will say yes and some will say no. But note that even translating real is difficult. Real may refer to nonphysical but culturally created abstract institutions such as an honor code or the legal system. Philosophers from Peirce (1906) to Searle (2010) have discussed the cultural reality of invented concepts. Assimilating the Pirahã's mention of a culturally created concept to the category of a supernatural spirit disallows an indigenous group from possessing the spectrum of abstract conceptual categories allowed to Western societies (Saler, 1977).

As an example of the ambiguous state of the terms *Kaoáíbógí* and *ʔaítoii*, note that everyone knows that there is an actual Pirahã man creating the falsetto voice in the jungle. However, the Pirahã appear to believe that something beyond the human person is also present. William James (1902) investigated similar phenomena regarding intuitions about what may exist beyond the physical world. A detailed characterization of Pirahã's views of these entities is beyond the scope of this commentary (see Everett, 2009a; 2017; forthcoming). My point is that it would be wrong or at least premature to label Pirahã's "entities" as spirits or as indicating belief in supernatural beings.

The Pirahã Do Not Attempt to Influence Spirits' Temperaments

Purzycki and Sosis comment on Pirahã wearing necklaces to ward off spirits. As noted, I would now use the word *entities*, not the word *spirits*. The necklaces are visually appealing, but their primary purpose is as noise makers. Pirahã wear the necklaces when walking through the forest to alert dangerous jungle entities of their presence. These dangerous entities include jaguars, snakes, and the Pirahã's human enemies. Women habitually wear the necklaces when walking in the forest, because men are more often in the forest to hunt, when stealth is needed.

It is for these reasons that I maintain that wearing necklaces serves practical, rather than supernatural, purposes.

Examining the Six Categories of Religious Functions among the Pirahã

In the next sections we apply to the Pirahã PURZYCKI AND SOSIS 's taxonomy of 6 categories of solutions (from chapter 2) that religion frequently provides to solve problems of social living.

1. Monitoring and Punishing Selfish Behavior

Purzycki and Sosis discuss the usefulness of moralizing Gods as follows:

> Knowing that a potential interaction partner fears supernatural reprisal builds faith that this partner will behave with moral constraint, and thus heightens trust among people. (p. 31)

However, Purzycki and Sosis note that moralizing Gods were less important for people living in small groups, where one's personal reputation could be used to determine trustworthiness. They write:

> With increasing population size, anonymous encounters become increasingly frequent, and with them opportunities to engage in self-interested, other-damaging behavior *without* sacrificing one's reputation. (p. 31)

The Pirahã live in small groups and do not need moralizing Gods to enforce ethical treatment.

Stealing does not exist (Everett, 2009a). This can be understood as an outcome of small group size, where people know everyone in their group, but also know who created and thus who owns what valuable possessions. However, the Pirahã also have an ethical system (described in Everett, forthcoming), as follows.

Pirahã have specific behavioral expectations, socialized during childhood and throughout life. Social norms and expectations are the enforcers, rather than people or religious ideas.

(i) Do not harm or endanger other Pirahãs.

(ii) Do not tell others what to do.

(iii) Share what you have with as many Pirahãs as you can, via the concentric circles of attachment. These concentric circles are: baby + mother at the center; children and parents in the next ring; followed by family units + fellow villagers; then village + Pirahãs, and finally, outsiders.

There is a ranking of what objects may never be taken. No one may take another man's bow and arrow. The ownership of useful items such as baskets is also respected. However, Everett (2009a) noted that the Pirahã felt free to

appropriate his children's toys which had been left unattended, as they were seen as playthings that could be examined to satisfy curiosity.

Given the lack of anonymous interaction and lack of theft, and abundant resources (see next section), there is no need for moralizing, punishing Gods.

2. Resource Regulation and Management

Purzycki and Sosis provide many helpful examples, such as Bali's temple-focused religion system in which "farmers resolve essential conflicts over water use for rice paddies by timing water flows with ritualized appeals to supernaturally sanctioned irrigation practices" (p. 34).

The Pirahã do not draw on religious beliefs to facilitate the wise use of shared resources because there is no tragedy of the commons among the Pirahã. The Pirahã live with abundant resources, an example of the original affluent society (Sahlins, 1972). Their villages are surrounded by groves of Brazil nuts, full of protein and oil. They hunt when they desire game, but because that takes more effort than fishing, the Pirahã mostly hunt when they are journeying out to do something else, such as find Brazil nuts.

In the rainy season resources diminish. Pirahã villagers spread out into family groups, a less dense living arrangement. Summer brings the return of plentiful food, allowing three separate villages of about 100 people to coalesce together on one beach, allowing people to enjoy mingling with a larger group.

3. Signaling Rituals

A benefit of religion is that counter-intuitive beliefs and costly rituals signal one's ingroup status, thus minimizing the problems of nongroup members trying to gain ingroup benefits. "[R]ituals can specifically serve as proxies for reputation, credibly linking trustworthiness thanks to their public visibility and their somatic, economic, social, time or opportunity costs" (p. 34).

The Pirahã are a society of intimates. Every person in a village knows who is a Pirahã vs. who is an outsider; outsiders are treated with caution.

4. Cohesion Rituals: The Case of Synchrony

Purzycki and Sosis review the evidence that synchronized activities, such as dancing, marching, and singing, serve to bond group members. Synchronization reduces feelings of individuality and can create rewarding feelings of belonging to a larger entity. We reviewed earlier that the Pirahã participate in dances, but these do not contain any religious elements. The dances support group cohesion and feelings of togetherness much as do dances in contemporary secular societies (Reddish, Fischer, & Bulbulia, 2013).

5. Management of Competitors, Defectors, and Other Threats to Influence

"As religious systems bind in-group members, they also often endorse mechanisms that mitigate potential disruptions to social order caused by insiders (real or scapegoats) or outsiders" (p. 36). Purzycki and Sosis discuss the witch hunts of Europe which coincided with the Protestant reformation. They also note how anti-atheist sentiments have historically been part of controlling threats to the status quo. Again, due to being a small-scale society, the Pirahã do not need to rely on religious practices to control social disruption. The reason is that the social hierarchy is flat; no one has power over anyone else. If a tyrant did try to exert power, the Pirahã would ignore, taunt, or laugh at the person, or if necessary, move away to an adjacent part of the forest.

6. Marriage: Regulating Sexuality/Reproduction

Polygyny creates a socially disruptive underclass of unpaired men (Courtwright, 1996). Societies thus benefit when sacred values constrain high-status males' desire for multiple wives; although secular forces can accomplish this also (Henrich, Boyd, & Richerson, 2012).

The Pirahã subsistence lifestyle affords few opportunities to hoard resources or gain power over others. The strong social norm of Pirahã society, of not telling others what to do, is an additional barrier to some males hoarding wives. There is also an absence of constraints on female sexual agency. A result is that marriage and sexuality do not need to be regulated by religion among the Pirahã.

The Pirahã practice serial monogamy with occasional extra-pair partnerings. As in the French term *ma femme*, the term for partner is "my man" or "my woman." The Pirahã have no marriage ceremony or terms that differentiate long-term from short-term partners. Everett knows of couples who have been together since his first visit in 1977 and people who have had many partners since then. Lack of polygyny facilitates individual and group flourishing (Henrich et al., 2012). The absence of polygyny among the Pirahã may thus contribute towards the relative success and happiness observed by Everett (2009a) and by independent film makers (O'Neill & Wood, 2012).

One can wonder why Pirahã males don't fear paternity uncertainty. In many small-scale societies, calories were rare enough that a tight parental pair-bond was required so that fathers (or other relatives) could provision food for mother and child, thus allowing closer birth spacing and less child mortality (Sear & Mace, 2008; Hrdy, 2009). Men had to be careful to reserve resources for their genetic offspring. Some societies, including hunter-gather groups, have pursued diverse measures to enhance paternity certainty. An example is the use of menstrual huts to visibly mark womens' continued or ceasing menstruation (Strassmann, 1992).

The reason for reduced concern about paternity among the Pirahã is first the abundance of food, but also a system of social norms in which children's well-being is secured by concentric circles of care. If the mother or father cannot provide food, members of their extended family step in; if those are lacking or unwilling, then others in the village will take over. No village will allow a child to go hungry. But note that children are economically independent by age 9. Boys can kill fish with a bow and arrow by then and will feed sisters or female friends who tag along with a can to catch and pack the fish. Everett has observed a pair of 8-year-olds wander down to the river to get fish, return to the beach to cook the fish over a fire and then sit down to eat together, all on their own.

Implications and Open Questions

The Pirahã present an example of how religion can be fully absent in a small-scale society. Absence can be explained by drawing on what Shariff et al. (2014) claimed (Chapter 2): religion evolved to solve problems of social living. Above we reviewed how the 6 categories of problems are absent in Pirahã society. The small size of villages obviates problems like resource hoarding and individuals' exploiting in-group altruism. Small scale allows social norms to be monitored and enforced by individuals. Our analysis thus supports anthropologists' proposals that morally involved "high" gods are found predominantly in societies with complex state-level organization (Shariff, Norenzayan, & Henrich, 2011; Swanson, 1960).

We could end our account here, except it is well-known that other small-scale societies with abundant resources do have religious beliefs and rituals. An example is the Matsigenka of the Peruvian Amazon, a group that has high individual agency and lack of hierarchy, as well as other similar social norms to Pirahã (Johnson, 2003). Are attributes like no need to compete for resources and small-scale sufficient to explain the absence of religion? What is the contribution of the unique cultural value of the Pirahã, the Immediacy of Experience Principle (Everett, 1986)? This is the principle that conversation is restricted to concrete topics that have been personally experienced by those speaking. Is it this value of prioritizing the visible here-and-now which accounts for lack of religion? Or does this principle combine with small-scale attributes to explain the absence of religious beliefs and practices?

The Immediacy of Experience Principle (Everett, 1986) can explain why supernatural forces are not needed to organize group cohesion, signaling, and management of defectors. Consider what Purzycki and Sosis say about the function of supernatural beliefs in holding a community together: "...ritual actions and the communities they support are less likely to endure without appeals to supernatural agents" (p. 79). Purzycki and Sosis reference compelling research

showing that religious kibbutzim and communes had longer duration than did secular communes. Humans will better endure the daily frustrations of group living if a larger purpose can trump individual preferences and needs. The implication is that shared religious beliefs are helpful even for small-scale societies, by providing a larger purpose for which a society will maintain its traditions and resist erosion into other groups.

We propose that religious practices would be superfluous for the Pirahã to maintain their traditions and resist cultural change, because of their unique package of cultural values (Everett, 2009a; 2017). These include The Immediacy of Experience Principle, along with monolingualism and the firm philosophy that the customs of the Pirahã are best for the Pirahã, and the customs of other cultures are best for those cultures.[1]

Pirahãs reject outsiders, except under rare circumstances. A core value (meaning highly ranked value, see Everett, 2017) among the Pirahãs is, as mentioned previously, "no one tells anyone else what to do." The Pirahã are resistant to outside influence. This is the reason that they have rejected all outside religion for more than 300 years, which is rare for South American indigenous groups.

Conclusion

What is important here, following Purzycki and Sosis's plea to learn more about small-scale societies such as the Pirahã, is that a non-religious set of cultural practices has functioned to address problems whose solution in other societies depended on religion. Secular mechanisms have also solved many problems of group living in contemporary urban societies such as the U.S. and other WEIRD cultures where the importance of religion has declined in recent years (Brauer, 2018; Inglehart, 2020). In the modern U.S., government authorities, social infrastructures, and intensively taught social norms together solve many of the problems of group living described by Purzycki and Sosis.

Absence of religion in a hunter-gather society and a vastly reduced role for religion in WEIRD societies opens the door to what we call the *Religious prosocial scaffolding hypothesis*. Religious ideas, rituals, and institutions coordinate the need for group cooperation with the biological imperative for individuals to pursue their individual reproductive fitness. Religious institutions scaffold prosocial behavior until technology and other cultural inventions allow secular solutions to gradually, over centuries, supplant the solutions provided by religion.

This does not mean that religion is destined to fade away, although it likely entails a much-reduced role for religion. In WEIRD cultures, religious practices

1 See Blackledge (2002) for discussion of how monolingualism as an ideology maintains power and the status quo.

are credited with helping individuals connect with their family, even their nuclear family (Edgell, 2006).[2] Religions may adapt to serve problems that did not exist in early phases of human history.

References

Blackledge, A. (2002). The discursive construction of national identity in multilingual Britain. *Journal of Language, Identity, and Education*, *1*(1), 67–87. https://doi.org/10.1207/S15327701JLIE0101_5

Brauer, S. (2018). The surprising predictable decline of religion in the United States. *Journal for the Scientific Study of Religion*, *57*(4), 654–675. https://doi.org/10.1111/jssr.12551

Courtwright, D. (1996). Violent land: Single men and social disorder from the frontier to the inner city. Cambridge: Harvard University Press.

Edgell, P. (2006). *Religion and family in a changing society*. Princeton: Princeton University Press.

Everett, D. L. (1986). *Pirahã*. In D. C. Derbyshire & G. K. Pullum (Eds.). *Handbook of Amazonian languages*, vol. 1 (pp. 200–326). Berlin: Mouton de Gruyter.

———. (2005). Cultural constraints on grammar and cognition in Pirahã. *Current Anthropology*, *46*(4), 621–646. https://doi.org/10.1086/431525

———. (2009a). *Don't sleep, there are snakes: Life and language in the Amazonian jungle*. London: Profile Books.

———. (2009b). Pirahã culture and grammar: A response to some criticisms. *Language*, *85*(2), 405–442. https://www.jstor.org/stable/40492872

———. (2017). *Dark matter of the mind: The culturally articulated unconscious*. Chicago: University of Chicago Press.

———. (forthcoming). *Inferential cognition: Charles S. Peirce and the search for meaning in the world*. Oxford: Oxford University Press.

Guthrie, S. E. (1996). Religion: What is it? *Journal for the Scientific Study of Religion*, *35*(4), 412–419. https://doi.org/10.2307/1386417

Henrich, J. (2020). *The WEIRDest people in the world: How the West became psychologically peculiar and particularly prosperous*. London: Penguin UK.

Henrich, J., Boyd, R., & Richerson, P. J. (2012). The puzzle of monogamous marriage. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *367*(1589), 657–669. https://doi.org/10.1098/rstb.2011.0290

Hrdy, S. B. (2009). *Mothers and others: The evolutionary origins of mutual understanding*. Cambridge: Harvard University Press.

Inglehart, R. F. (2020). Giving up on god: The global decline of religion. *Foreign Affairs*, *99*, 110. https://www.foreignaffairs.com/articles/world/2020-08-11/religion-giving-god

2 This is ironic given that the "Marriage and Family Project" of the early Christian church broke-up Europe's powerful family clans (Henrich, 2020). However, continued individualism in WEIRD cultures now threatens even the cohesiveness of the nuclear family.

James, W. (1902). *The varieties of religious experience: A study in human nature*. Cambridge: Harvard University Press.

Johnson, A. (2003). *Families of the forest: Matsigenka Indians of the Peruvian Amazon*. Berkeley: University of California Press.

McCambridge, J., De Bruin, M., & Witton, J. (2012). The effects of demand characteristics on research participant behaviours in non-laboratory settings: A systematic review. *PloS ONE*, *7*(6), e39116. https://doi.org/10.1371/journal.pone.0039116

O'Neill, M., & Wood, R. (2012). The grammar of happiness [Film]. Stonington: Green Planet Films.

Peirce, C. S. (1906). Answers to questions concerning my belief in God. *Collected papers of Charles Sanders Peirce*. Cambridge: Harvard University Press.

Purzycki, B. G., & Sosis, R. (2019). Resistance, subversion, and the absence of religion in traditional societies. In S. Bullivant & M. Ruse (Eds.). *The Cambridge history of atheism* (pp. 982–1004). Cambridge: Cambridge University Press.

———. (2022). *Religion evolving: Cultural, cognitive, and ecological dynamics*. Sheffield: Equinox Publishing.

Reddish, P., Fischer, R., & Bulbulia, J. (2013). Let's dance together: Synchrony, shared intentionality and cooperation. *PloS ONE*, *8*(8), e71182. https://doi.org/10.1371/journal.pone.0071182

Sahlins, M. (1972). *Stone age economics*. New York: Aldine-Atherton.

Saler, B. (2008). Conceptualizing religion: Some recent reflections. *Religion*, *38*(3), 219–225. https://doi.org/10.1016/j.religion.2008.03.008

———. (1977). Supernatural as a Western category. *Ethos*, *5*(1), 31–53. https://www.jstor.org/stable/640071

Sear, R., & Mace, R. (2008). Who keeps children alive? A review of the effects of kin on child survival. *Evolution and Human Behavior*, *29*(1), 1–18. https://doi.org/10.1016/j.evolhumbehav.2007.10.001

Searle, John. (2010). *Making the social world: The structure of human civilization*. Oxford: Oxford University Press.

Shariff, A. F., Purzycki, B. G., & Sosis, R. (2014). Religions as cultural solutions to social living. In A. B. Cohen (Ed.), *Culture reexamined: Broadening our understanding of social and evolutionary influences* (pp. 217–238). Washington, D.C.: American Psychological Association. https://doi.org/10.1037/14274-008

Shariff, A. F., Norenzayan, A., & Henrich, J. (2011). The birth of high gods: How the cultural evolution of supernatural policing influenced the emergence of complex, cooperative human societies. In M. Schaller, A. Norenzayan, S. Heine, T. Yamaguishi, and T. Kameda (Eds.). *Evolution, culture and the human mind* (pp. 119–136). Mahwah: Lawrence Erlbaum Associates.

Strassmann, B. I. (1992). The function of menstrual taboos among the Dogon: Defense against cuckoldry? *Human Nature*, *3*(2), 89–131. https://link.springer.com/article/10.1007/BF02692249

Swanson, Guy E. (1960). *The birth of the Gods: The origin of primitive beliefs*. Ann Arbor: University of Michigan Press.