

Cultural Evolutionary Psychology of Belief

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10.1 Introduction

Evolutionary approaches in the human social sciences have gained traction in recent decades (Barrett, 2020; Smith, 2000). Humans are evolved organisms, and our physiology and psychology are therefore targets for research drawn from evolutionary biological theory, arguably one of the most successful enterprises of modern science (Buss, 2019). However, while valuable as first approximations, some strains of evolutionary thinking as applied to human mentality and behavior – what we will refer to as (*standard*) *evolutionary psychology* – maintain unrealistic theoretical assumptions (Bolhuis et al., 2011; Goldfinch, 2015; Gray, Heany, & Fairhall, 2003). These include over-simplified conceptions of the ecological and social dependencies of prehistoric human societies as well as questionable models of the cognitive architecture of the human mind. In this chapter, we show how social and cognitive science researchers can approach the study of beliefs from an evolutionary perspective without relying on such assumptions. First, we present a primer on standard evolutionary psychology, which serves as a contrast throughout. We then discuss a *cultural* evolutionary psychology¹ of belief and demonstrate the utility of such a framework as applied to two illustrative case studies – religious belief systems and conspiracy theory beliefs.² We conclude with a discussion of the merits and prospects of a cultural evolutionary psychology of belief.

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¹ Our approach is distinct from, but largely consistent with, the “Cognitive Gadgets” hypothesis (Heyes, 2019), which is also sometimes referred to as cultural evolutionary psychology. For another consistent framework, see Kashima, Bain, & Perfors (2019).

² We build on and extend previous work, in which we applied a similar framework to domains such as economy and political issues (Bendixen, 2019), science communication and misinformation (Bendixen, 2020), and religious systems more broadly (Bendixen & Purzycki, 2021a, 2021b).

10.2 (Cultural) Evolutionary Psychology

10.2.1 *Standard Evolutionary Psychology*

A core claim of standard evolutionary psychology is that humans have inherited a number of innate, domain-specific cognitive modules (Barkow, Cosmides, & Tooby, 1992), sometimes known as the assumption of “massive modularity.”³ Each of these modules handles a narrow domain of input and results in psychological or behavioral outputs. These functions are purported to be adaptations to life under prehistorical conditions, the so-called “environment of evolutionary adaptedness” (EEA) in which humans as a species evolved and have lived for most of its time on the planet.⁴ In terms of explaining beliefs, evolutionary psychologists therefore tend to focus on how certain beliefs resonate with evolved modules. Cognitive representations that “trigger” certain modules will make those representations more intuitive and in turn improve the probability of retention and transmission of those representations (for a recent application of standard evolutionary psychology to a particular belief domain – so-called folk-economic beliefs – see Boyer & Petersen, 2018; cf., Bendixen, 2019).

Evolutionary psychology tends to downplay the importance of social learning, both in original work⁵ (e.g., Tooby and Cosmides, 1992, p. 116)

³ Even if the terminology has changed slightly, massive modularity remains a core feature of standard evolutionary psychology. In a recent position piece, for instance, Tooby notes that “Our ability to prevail ancestrally against a large set of inescapably incommensurable computational problems entails that our species’ neural architecture contains a large, heterogeneous constellation of distinct behavior-regulating computational adaptations” (Tooby, 2020, p. 394).

⁴ For example, one widely postulated module is the “cheater-detection” module (Cosmides, 1989). This module is supposedly triggered by cues of free-riding or social defection and results in the activation of emotional, motivational and behavioral responses (e.g., anger, spite, vengefulness and acts of retribution) to rectify the defection and deter future cheaters.

⁵ Note that Tooby and Cosmides, often regarded as co-founders of evolutionary psychology, have been criticized for neglecting social learning accounts based on passages such as the following:

“Imagine that extraterrestrials replaced each human being on earth with a state-of-the-art compact disk juke box that has thousands of songs in its repertoire. Each juke box is identical. [...] Moreover, each juke box’s behavior would change over time, because the song it plays is a function of the date and time, as well as of its location. Juke boxes that were moved from location to location would appear to adopt the local songs, sequences, and ‘fashions.’ *Yet the generation of this distinctive, culture-like pattern involves no social learning or transmission whatsoever.* This pattern is brought about because, like humans, the juke boxes (1) share a universal, highly organized, architecture, that (2) is designed to respond to inputs from the local situation [...]” (Tooby and Cosmides, 1992, pp. 115–116, our emphasis).

They did, however, acknowledge the importance of social learning (“transmitted culture”) for explaining variation in beliefs and traditions:

and in subsequent work (cf., Bendixen, 2019; Bendixen & Purzycki, 2021b). Instead, evolutionary psychologists often appeal to a process known as “evocation.” Evocation – or evoked culture – refers to a process whereby the environment triggers some constellation of modules resulting in certain distinct beliefs and behavioral patterns. For instance, some suggest that cues of parasitic pressures in the local environment trigger domain-specific cognition, which in turn accounts for cross-cultural variation in mate preferences (Gangestad, Haselton, & Buss, 2006).

However, while pioneers of evolutionary psychology were doubtless pivotal in sparking engaging debates on the roles of biology and culture in several corners of the human social sciences, some researchers have raised issues with the validity of the foundations of the standard approach. Some critical queries include: Is the “EEA”, as it is often applied, a constructive and realistic representation of the ecological and social dependencies of prehistoric human societies (e.g., Gray et al., 2003)? Why would a conglomerate of a large number of domain-specific modules be more adaptive than relatively fewer domain-general learning mechanisms (e.g., Shapiro & Epstein, 1998)? How “domain-specific” are these modules, and what is the appropriate analytic level for their domain-specificity (e.g., Bolhuis et al., 2011; Frankenhuys & Ploeger, 2007; Pietraszewski & Wertz, 2022)? How do we avoid explanatory “ad-hocery,” namely positing a new module for every “novel” psychological finding (e.g., Bendixen, 2019)? Do we currently have solid empirical evidence for any specific module (e.g., Gray et al., 2003)? (For rebuttals, see e.g., Confer et al., 2010; Hagen, 2015.) These limitations motivate our call for a *cultural* evolutionary psychology, to which we now turn.

10.2.2 *Toward a Cultural Evolutionary Psychology of Belief*

Broadly construed, cultural evolution research studies how cultural variants or traits, such as beliefs, behavioral patterns, and material objects, diffuse and evolve in a population (Mesoudi, 2011). Cultural evolutionists take a population-level approach, meaning that we want to account for why some variants are more culturally “attractive” (i.e., more likely to arise

“[C]omplex shared patterns that differ from group to group may be evoked by circumstances or may be produced by differential transmission. [...] Given that the mind contains many mechanisms, we expect that both transmitted and evoked factors will play complementary roles in the generation of differentiated local cultures. *The operation of a richly responsive psychology, plus the ability to socially ‘learn,’ can jointly explain far more about ‘culture’ and cultural change than either can alone* (Tooby & Cosmides, 1992, p. 116, our emphasis).

and spread) than others in populations (Sperber, 1996) as well as understand the consequences of different population features (e.g., size, interconnectedness, types of social learning) on the evolutionary trajectories of populations and the complexity of cultural traits (Boyd & Richerson, 1985; Creanza, Kolodny, & Feldman, 2017; Cavalli-Sforza & Feldman, 1981; Lumsden & Wilson, 1981). As a field, cultural evolution research is highly interdisciplinary, as it includes formal mathematical models, fieldwork, database analyses, and lab experiments. While cultural evolutionists generally assume some fundamental similarities between genetic and cultural evolutionary processes, the study of cultural evolution does not hinge on this analog being a perfect one (Smolla et al., 2021).

According to our framework, consideration of at least four broad sets of forces or factors is critical for understanding the cultural evolution of beliefs. These pertain to: (1) the *content properties* of a belief; (2) a belief's fit with *individual conditions* (personal attitudes, worldviews, cognitive styles, needs, etc.); (3) the *social dynamics* of a belief (social learning, norms, etc.); and (4) *socioecological conditions* of a belief (environmental events, resource types, availability, etc.). We briefly present each set of forces in turn below, before applying this framework to our two case studies.

10.2.3 Cultural Evolutionary Forces

The attractiveness of a cultural trait, such as a belief, depends partly on the content of that trait. In cultural evolutionary terms, this is sometimes referred to as “content bias”⁶ (Henrich & McElreath, 2003; Richerson & Boyd, 2005). Beliefs may be culturally attractive because of their perceived utility (a sort of “pay-off bias”) or because they resonate with learned or evolved cognitive mechanisms. Examples of well-documented content biases in humans include preferences for socially relevant information as well as emotion-eliciting information, especially negative emotions such as fear and disgust, meaning that beliefs with such content are, all else being equal, more attention-grabbing and hence “attractive” (for a recent review, see Acerbi, 2019, chapter 6).

⁶ Also known as “direct bias” (Boyd and Richerson, 1985), it is related to the notion of “psychological factors of attraction”, the idea that during cultural transmission, cultural traits will be “transformed” or “reconstructed” into ever more attractive content because of the attraction of certain evolved or learned cognitive mechanisms (Sperber, 1996, pp. 113–118).

In order for a belief to “catch on,” its content needs to fit a focal individual’s psychological priors. These prior individual conditions are sometimes referred to as “inductive biases” (Griffiths, Kalish, & Lewandowsky, 2008) and they include personal attitudes, values and worldviews as well as cognitive styles, needs, predispositions, etc. This insight generally entails that some cultural traits (i.e., beliefs) may be more attractive to some individuals than others (Henrich & McElreath, 2003). While individual conditions have traditionally received less attention in formal cultural evolution theory, some recent work points to ways in which the preferential adopting of beliefs across individuals may have important implications for cultural evolutionary dynamics (Buskell, Enquist, & Jansson, 2019; Jansson et al., 2021; Rodriguez, Bollen, & Ahn, 2016; Yeh, Fogarty, & Kandler, 2018).

Much of the original cultural evolution work formally modeled the roles that so-called *transmission biases* or *social learning strategies* might play in the diffusion of cultural traits (Boyd & Richerson, 1985). Such social learning strategies are posited to have evolved in order to flexibly extract relevant information from local surroundings and they include heuristics on *when* (when individual learning is costly, when in novel and uncertain situations, etc.), *whom* (the majority, the successful, the prestigious, the self-similar, etc.) and *what* (e.g., content biases, see above) to imitate (for a recent review, see Kendal et al., 2018). Various social learning strategies have been identified in non-human animals and are both thought of as reliably developing as well culturally malleable in humans (Mesoudi et al., 2016). As a result of humans’ dependence on social learning, some researchers have posited the existence of a “norm psychology,” a suite of cognitive features that support the perception, acquirement, and enforcement of social rules in one’s local community, giving rise in turn to complex social signaling and sanctioning systems that may stabilize cultural traits more or less independent of the content of those traits (Chudek, Zhao, & Henrich, 2013; Richerson and Boyd, 2005, chapter 6).

Features of the environment may also powerfully shape what kinds of cultural traits, practices, and beliefs are “culturally attractive” (Sperber, 1996). Such socioecological⁷ features include environmental affordances, resource types and availability as well as stochastic shocks and events, such as natural disasters, pandemics, societal instability, and war. For instance, human behavioral ecologists have documented a historical and cross-cultural

⁷ Technically understood as the distribution of energy in a given system.

association between resource scarcity and culturally mandated beliefs and practices surrounding marriage (Kaplan, Hooper, & Gurven, 2009). Recently, the central tenets of behavioral ecology have been further bolstered by findings that humans, mammals, and birds living in the same environments evolve similar foraging, reproductive, and social behaviors (Barsbai, Lukas, & Ponderfer, 2021). Such analyses highlight the importance of ecological conditions in cultural evolutionary processes (e.g., Hill & Boyd, 2021; Odling-Smee & Laland, 2011; Varnum & Grossman, 2017).

We now apply this framework to two case studies, religious belief systems and conspiracy theory beliefs. These overviews are intended not as exhaustive treatments, but rather as proofs-of-concept as well as road maps for organizing further inquiry.

10.3 Case Studies

10.3.1 *Religious Belief Systems*

A central component of religion is the notion of spiritual beings or forces that take some interest in human behavior (Jensen, 2019; Tylor, 1920). This component has spun a rich literature on the possible content properties that make gods, ghosts, and spirits culturally attractive to the human mind. Many cognitive and evolutionary accounts of religious belief posit that the human “theory of mind” system is one foundational building block for understanding the ubiquity of religion (e.g., Barrett, 2000; Boyer, 2001; Guthrie, 1995; Norenzayan et al., 2016; Rossano, 2007; Purzycki et al., 2012; Schjoedt et al., 2009). Theory of mind (or “mentalizing”) allows humans to infer that other beings have minds, thus facilitating anticipating others’ behavior. Indeed, humans’ reliably developing theory of mind appears sensitive enough to infer the presence or intention of agentive beings, even when they are absent. This over-sensitivity to cues of other beings infuses the world with unseen and intentional forces, and is likely a cognitive prerequisite, among others, for many forms of religious belief (Peoples, Duda, & Marlowe, 2016).

A long list of candidate individual-level and demographic predictors for religiosity – including age, socioeconomic status, education, cultural upbringing (see next subsection), genetics, personal traits and predispositions – are likely to interact in complicated ways to influence an individual’s religious inclinations. To highlight just one example which has been investigated cross-culturally, consider “absorption” (Luhmann et al., 2021). Absorption is an individual’s tendency to become immersed in

perceptual and imaginative experiences, and it appears to predict the degree to which people report vivid presences of spiritual beings across different cultures and religious denominations. Interestingly, absorption itself may be malleable by training and other cultural influences (Lifshitz, van Elk, & Luhrmann, 2019).

Further, popular views hold that religious beliefs soothe people in existential need, which may partially account for differing levels of religious commitment and beliefs (e.g., Nichols, 2004). It has also been suggested that the religious views, beliefs, and practices of a person or a culture constitute a dynamic “immunology,” in the sense that new views and beliefs need to be consonant with the current constellation of beliefs in order to be adopted (Sørensen, 2004). This immunology, then, acts to effectively “select” which novelties enter the belief system of a person or a culture. And while this immunology may be an emergent group-level property, ultimately it is likely to depend on individual-level cognitive processes, such as inductive biases (see above) and various other protective mechanisms (e.g., “epistemic vigilance”; Sperber et al., 2010).

While cognitive inquiries into religious belief formation have tended to focus on the content properties and individual predispositions that make religious beliefs more or less appealing, there are sizable limitations to this focus (Bendixen & Purzycki, 2021a, 2021b). For instance, the vast majority of deities of historical human societies are now effectively culturally extinct. This poses a problem for standard evolutionary psychological approaches, since these deities were likely just as cognitively appealing as deities in contemporary religious systems. For a simple illustration, consider that no one today is building grand temples to honor the ancient Greek or Roman pantheon, though these deities played central social and political roles at various historic times (Gervais & Henrich, 2010).

This puzzle highlights that while cognitive biases and appeals are possibly essential for religious belief formation, they are not sufficient. Humans are cultural creatures and so are powerfully shaped by cultural cues, likely obtained through various social learning strategies (Atran & Henrich, 2010). By observing and participating in a cultural community, an individual’s peers, parents, and role models thus serve as filters for selecting the deity or deities to believe and invest in – or whether to believe in a god at all (Gervais, Najle, & Caluori, 2019; Willard & Cingl, 2017).

However, any account of the cultural evolution of religious beliefs would be incomplete without also taking ecological and environmental factors into account (Botero et al., 2014; Sosis & Bulbulia, 2011). In a general sense, changing states and events in the local social and ecological

landscape (the “socioecology”) may impact religious expressions. For instance, cross-national analyses in natural experimental settings indicate that both war (Henrich et al., 2019) and natural catastrophes increase religiosity (Bentzen, 2019; Sibley & Bulbulia, 2012; however, see also Mauritsen, Bendixen, & Christensen, 2022).

More specifically, however, the kinds of practices and interests that local spirits and gods are associated with are also likely to be functions of the local socioecology (Atran et al., 2002; Bendixen, T., Apicella, C. L., Atkinson, Q. et al. (forthcoming); Botero et al., 2014; Purzycki, 2011, 2013, 2016; Purzycki & McNamara, 2016). For instance, some studies have found that so-called “moralistic high gods” – creator deities that know and care about inter-human behavior and that can punish deviations from communal norms – are more likely to evolve in societies where resources are scarce, perhaps because belief in moralistic deities curbs moral transgressions and thus ensures a more fair distribution of resources (Roes & Raymond, 2003; Skogsgard et al., 2020; Snarey, 1996; for critical discussion, see Purzycki & McKay, 2022). In a game-theoretic sense, beliefs in monitoring and punitive deities may change the perceived pay-off of engaging in selfish behaviors and may then be one cultural evolutionary pathway to solve local problems of cooperation and coordination, even if such deities are not explicitly conceived of as “moralistic” (Bendixen & Purzycki, 2021b; Johnson, 2016).

So while considerations of individual conditions and social dynamics solve crucial “selection problems” of their own (e.g., how do individuals come to believe in the specific gods of their cultural group, when many gods are equally cognitively appealing?), considerations of the local socioecology solve another selection problem: how do the deities of a given cultural group come to be associated with locally relevant and salient features of the social and ecological environment (Bendixen and Purzycki, 2021b)?

10.3.2 *Conspiracy Theory Beliefs*

Conspiracy beliefs are “attempts to explain the ultimate causes of significant social and political events and circumstances with claims of secret plots by two or more powerful actors” (Douglas et al., 2019, p. 4). A central feature of conspiracy thinking is the suspicion that “someone must be pulling the strings” on the world’s social and political events. This notion likely stems from an over-sensitive theory of mind infusing the world with intentions (Douglas et al., 2016), as is also likely the case for the cognitive appeal of god beliefs (see above). Further, conspiracy theories

are captivating narratives. This same process may explain the prevalence of stories about good against evil, a powerful elite against the masses, and about secret plots and grand revelations (Brotherton, 2015). Such narrative structures, combined with an immunity to counterevidence, might constitute content biases of their own (e.g., Boudry, 2020). Some recent psychological research has indeed emphasized the importance of narrative appeal for understanding the spread of conspiracy theories. When asked directly in a survey setting, participants indicate that they would share conspiracy theories (and other “fake news”) even if they know they are not true, but simply because they are fascinating stories (“imagine if this *were* true!”) (Altay, de Araujo, & Mercier, 2020).

There is broad agreement that conspiracy theories speak to a variety of psychological motives and needs, including epistemic, existential, and social (Douglas et al., 2019; Prooijen, 2018). In general, conspiracy theories offer explanations for local and global events as well as potential sources of meaning in times of crisis and uncertainty. Moreover, recurrent predictors of conspiracy beliefs include a general lack of sense of agency and control as well as a fundamental mistrust in official and established media and institutions (Douglas et al., 2017). A sense of powerlessness and mistrust can have many origins, one of which may be socioeconomic marginalization. Conspiracy beliefs have been shown to be more prevalent in minority and “low-status” groups. Thus, conspiracy theories might be a way of making sense of one’s disadvantaged position in society (Douglas et al., 2019). Social communities may also establish around conspiracy beliefs and hence conspiracy beliefs can come to fulfill a sense of belonging (Uscinski, 2020). Other studies have documented how conspiracy beliefs may constitute a “conspiratorial worldview” in that people who endorse one conspiracy theory are also likely to endorse several others (Miller, 2020; Wood, Douglas, & Sutton, 2012). This is the case even when the conspiracy theories under question are logically mutually exclusive, revealing a key driver of conspiracy beliefs, namely contrarianism to the “official” accounts of local and global events. Among people enmeshed in a conspiratorial worldview (a candidate set of inductive biases), beliefs are thus more likely to proliferate if they are consonant with this worldview.

Various social dynamics might further motivate conspiracy thinking (Stubbersfield, 2021). For instance, research on beliefs about politically controversial issues has indicated that such beliefs might be adopted for their socially signaling value, rather than their epistemic accuracy *per se* (Kahan, 2015). In other words, individuals may have a tendency to first and foremost “endorse whichever position reinforces their connection to

others with whom they share important ties” (Kahan, 2010, p. 296). It is likely that beliefs generally (Williams, 2021), and conspiracy beliefs specifically, serve similar socially signaling functions (Douglas et al., 2019). Given their often privileged media platform, large outreach, and central societal position, politicians and other opinion leaders may also increase the spread of conspiracy theories by publicly endorsing variants thereof. Additionally, since many conspiracy theories deal with significant and current political events with wide-ranging societal implications, they have the potential to induce outrage and encourage civil action. Some research has pointed to the goal of mobilizing collective action as a key motivation behind the spread of conspiracy theories (Arceneaux et al., 2021).

Which events and persons end up as part of conspiratorial narratives? This question constitutes a “selection problem” (see above and below) in that not all events become cocooned in conspiratorial suspicion. Conspiracy theories first and foremost appear to be about grand societal events with substantial consequences (Leman & Cinnirella, 2013). For instance, there is a whole industry of conspiracy theories surrounding the assassination of John F. Kennedy. However, few conspiracy theories exist about the failed assassination attempt on Ronald Reagan, suggesting that a grand event without grave repercussions (successful assassination vs failed assassination) does not in itself constitute an attractive conspiracy theory event (Brotherton, 2015). Moreover, conspiracy theories often pertain to publicly salient issues. Consider the human papillomavirus (HPV) vaccine, which continues to be subject to widespread conspiratorial suspicion in some countries, and the Hepatitis B (HBV) vaccine, which has provoked no noteworthy opposition. Kahan and Landrum (2017) argue that, at least in the U.S., the HPV vaccine was introduced in a “polluted” and polarized information environment (e.g., the vaccine became, for various reasons, publicly associated with great risks and sociopolitical conflict), whereas this was not the case for the HBV vaccine, potentially explaining the diverging fates of the two vaccines.

Finally, if marginalization is one key driver of conspiracy theory beliefs, it would entail that times of socioecological crisis and catastrophes, such as wars, pandemics, and financial breakdowns, fuel conspiracy thinking. Crises leave in their wake a heightened sense of existential uncertainty and anxiety, as well as vacuums in which alternative narratives can flourish. Indeed, conspiracy thinking appears to be more prevalent in times of crisis – perhaps partly as a result of a drive toward epistemic and emotional closure or stronger in-group identification – and hence lends support to this suggestion (for reviews, see Douglas et al., 2019; Prooijen, 2018; van Mulukom et al., 2022).

10.3.3 Summary

These case studies illustrate the prospects for a cultural evolutionary psychology of belief. Taking into account the four broad sets of cultural evolutionary factors paints a richer portrait of the intricacies of belief dynamics. However, the case studies also underscore the limitations of a standard evolutionary psychological account of beliefs. As laid out above, standard evolutionary psychology emphasizes how certain mental representations are appealing and salient, because they resonate with the input systems of evolved cognitive modules. As such, standard evolutionary psychology is concerned with the content properties of a belief when explaining its (lack of) cultural success. Content properties are indeed crucial, as they give some cultural traits an advantage in a given population due to their inherent “attractiveness” or “catchiness,” all else being equal.

However, a narrow focus on content properties is limited in that content appeals pertain more to the memorability of a trait than the “believability” or “transmitability” of the trait, at least in how content biases are often operationalized in the cultural evolutionary study of religious belief (Bendixen & Purzycki, 2021a; Gervais & Henrich, 2010) and in general (Bendixen, 2020). But there is a critical distinction to be drawn between remembering something and believing in it. Further, a narrow focus on a belief’s content cannot obviously account for individual differences (e.g., why are some beliefs more attractive to some people than others?) or cultural variation (e.g., why are some beliefs more attractive in some cultures than others?). For this, considerations of the remaining sets of factors are inevitable. However, except perhaps for ecological influences (but see below), such considerations are not part of a standard evolutionary psychological approach to beliefs, and hence they severely limit the potential of evolutionary psychology as a science of beliefs.

Standard evolutionary psychology does include consideration of environmental influences via “evocation.” While this would broadly qualify as ecological conditions in our cultural evolutionary framework, there is a critical caveat: Evocation *fundamentally* depends on the environmental activation of hypothetical innate cognitive modules, whereas a cultural evolutionary framework includes a typology of more domain-general learning strategies, which are themselves contingent on individual life courses and cultural influences (Mesoudi et al., 2016). This relieves the cultural evolutionary framework from relying on problematic assumptions inherent in standard evolutionary psychology.

Now that we have illustrated the prospects of a cultural evolutionary psychology of belief, we take stock and ask: *What does cultural evolutionary psychology offer uniquely to the science of beliefs compared to standard evolutionary psychology?*

10.4 Merits of a Cultural Evolutionary Psychology

Above and beyond the merits pointed out above, there are some further benefits to be gained from adopting a cultural evolutionary view on beliefs.

First, cultural evolution dissects the study of beliefs (and cultural traits in general) into distinct and tractable cultural processes. These are processes such as *origin* or *generation* (e.g., how does a belief arise in a population?), *maintenance* (e.g., how is a belief stabilized in a population?) and *diffusion* (e.g., how does a belief spread in a population?). The presented set of cultural evolutionary factors, we claim, serves as solutions to these unique “selection problems,” as also alluded to in the case studies.

For instance, since beliefs (and cultural traits in general) are constrained by their appeal to learned or evolved cognitive propensities, content biases “select” among the virtually infinite number of notions that the human mind could conceive of, and only a limited set of representations are therefore realized (Sperber, 1996). While “attractive” content might primarily account for a belief’s genesis, they can also support maintenance and diffusion of the belief. Yet, individual conditions also “select” among available cultural traits for any given individual (Griffiths et al., 2008), and may therefore also account for maintenance and diffusion. Additionally, social dynamics “select” among available cultural traits, but may favor (or not) traits relatively independent of their content properties (Boyd & Richerson, 1992). Thus, social dynamics can also account for much of the maintenance and diffusion of beliefs. Finally, ecological conditions may both induce the generation of and selection for cultural traits (e.g., certain traits are more relevant in some environments than others) (see, e.g., Fogarty & Creanza, 2017). By extension, then, ecological conditions can account for both the genesis, selection, and maintenance of beliefs.

Second, mounting evidence suggests that human psychology is quite malleable and especially influenced by cultural learning. Cognitive and perceptual biases that were previously thought to be universal in humans have been shown to vary – even to the point of non-existence – cross-culturally (e.g., Mesoudi, 2019). However, with its strict focus on pan-human and reliably developing cognitive machinery, evolutionary psychology is not easily reconcilable with these findings. In contrast, cultural

evolutionary theory is perfectly consistent with this evidence, as humans, in this view, are considered fundamentally cultural creatures, which in turn predicts important co-evolutionary processes between culture and cognition (e.g., Boyd, 2017; Laland, 2017).

Third, a satisfactorily rich scientific account of beliefs would account for beneficial, neutral, and harmful beliefs alike. Here, we have focused on how generic beliefs arise and spread, but a cultural evolutionary psychology explicitly predicts several pathways to the diffusion of harmful – as well as beneficial and neutral – beliefs. Despite its fitness disadvantages, a harmful belief can arise and spread either if it is inherently attractive due to its content appeals (e.g., a belief may be cognitively appealing but detrimental, such as some folk-medical beliefs; Miton, Claidière, & Mercier, 2015); if it is individually appealing (e.g., a belief may satisfy some psychological need but be detrimental overall, such as may be the case for extreme conspiracy beliefs; Douglas et al., 2019); if it is favored by social dynamics (e.g., if the belief is associated with social prestige or enforced by majority consensus; Richerson & Boyd, 2005, chapter 5); or if it is subject to ecological spatiotemporal lag (e.g., a belief can be neutral or beneficial at one point in time or space but harmful at another). In standard evolutionary psychology, sub-optimal beliefs are most often explained with reference to either cognitive attractiveness or a “mismatch” between contemporary and ancestral environments (see e.g., Boyer & Petersen, 2018; cf., Bendixen, 2019). These correspond roughly to content biases and ecological spatiotemporal lag in our cultural evolutionary framework. But, again, since individual conditions and social learning dynamics are not seriously considered, standard evolutionary psychology can miss considerable predictive and explanatory leverage for accounting for harmful – as well as beneficial and inconsequential – beliefs.

10.4.1 Competing and Interacting Forces of Cultural Evolution

On a final note, we want to stress that the various forces of cultural evolution can overlap, compete, and interact in important ways (Bendixen, 2019, 2020; Bendixen & Purzycki, 2021a, 2021b). For instance, social and ecological influences may shape an individual's dispositions (worldview, attitudes, etc.) and, hence, their inductive biases. Inductive biases may in turn limit other forces, such as social learning (when the inductive biases are strong, learning might only be “faithful” to the extent that the learned trait fits with the inductive bias) and pay-off bias (“a highly counter-intuitive hypothesis will fail to dominate a population, even if there are strong advantages to

adopting it”) (Griffiths et al., 2008, p. 3513). Conversely, since people tend to seek the company of self-similar others (known as *homophily* in social network theory) (McPherson, Smith-Lovin, & Cook, 2001), an individual’s personal dispositions may shape their social environment. Further, due to their content properties, some cultural traits may resonate more with some people and some cultural traits than others, potentially creating linkages between cultural traits that then spread not as independent traits but instead as “cultural packages” (Buskell et al., 2019; Yeh et al., 2018). Additionally, social dynamics may select and diffuse traits more or less independently of their content, particularly if there are substantial costs associated with deviating from what is locally deemed socially desirable (Williams, 2021). Social learning and sanctioning (via norm enforcement, reputation management, etc.) might even stabilize unbeneficial traits in a group, if the costs of being sanctioned are large enough (Boyd & Richerson, 1992).

We regard such interactions between various cultural evolutionary forces ripe for future inquiry. While exceptions can be found in the theoretical (e.g., Rodriguez et al., 2016) and empirical (e.g., Acerbi & Tehrani, 2018; Berl et al., 2021; Willard, Henrich, & Norenzayan, 2016) literature, there remains a paucity of work that assesses multiple cultural evolutionary forces to gauge their relative influences on beliefs. A pressing research question therefore pertains to whether one set of factors is more important than others in explaining and predicting cultural evolutionary outcomes, or whether the relative strength of the factors vary from case to case.

In this chapter, we discussed a *cultural evolutionary psychological* framework for understanding the origin, maintenance, and diffusion of beliefs. We illustrated the prospects of such a framework with two case studies: religious beliefs and conspiracy theory beliefs. In contrast to standard evolutionary psychology, a cultural evolutionary psychology of belief considers four broad sets of competing and interacting factors: the content appeals of a belief, a belief’s fit with individual conditions, the social dynamics of a belief system, and socioecological conditions. The competing and interacting nature of the various cultural evolutionary forces presents promising avenues for future theoretical and empirical research.

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