

essential for understanding the FPS, because each type implies drastically different cognitive procedures: type (1) accesses a realm of empirical and perceptual evidence that is ontologically closed to type (2) and type (2) accesses a realm which rests on descriptive resources and individual/collective imagination.

Ecological variability and religious beliefs

Adam B. Cohen, Douglas T. Kenrick, and Yexin Jessica Li
Department of Psychology, Arizona State University, Tempe, AZ 85287-1104.
adamcohen@asu.edu douglas.kenrick@asu.edu
yexin.li@asu.edu

Abstract: Religious beliefs, including those about an afterlife and omniscient spiritual beings, vary across cultures. We theorize that such variations may be predictably linked to ecological variations, just as differences in mating strategies covary with resource distribution. Perhaps beliefs in a soul or afterlife are more common when resources are unpredictable, and life is brutal and short.

Religious beliefs, including those about an afterlife and omniscient spiritual beings, vary across cultures (Cohen & Hall, submitted; Cohen et al. 2003). This does not mean they are not adaptations, because human behavior represents a continual and dynamic interplay between flexible evolved mechanisms and variable environmental inputs (Kenrick 2006; Kenrick et al. 2002). Rather, an evolutionary ecological perspective inspires questions about whether variations in religious beliefs and practices are adaptively keyed to variations in human physical and social environments (ranging from food and shelter to social structure: e.g., status hierarchies, access to mates, and geographical distribution of kin relative to self). Cultural norms surrounding sexual liaisons (often centrally incorporated into religious beliefs) provide one illustrative case. Such norms vary widely, with some societies and some religions sanctioning only monogamy, many also accepting polygyny, and a small percentage permitting polyandry. These variations correlate predictably with physical and social ecology. For example, Tibetan families in which one man marries one woman have fewer surviving children than do families in which brothers pool their resources (Crook & Crook 1988). By sharing one wife, brothers can preserve the family estate, which would not even support one family if it were subdivided each generation. Brothers in other species also engage in polyandrous mating when resources are scarce. Regarding polygyny, multiple women are particularly likely to marry one man when several conditions converge: (1) a steep social hierarchy, (2) a generally rich environment so one family can accumulate vast wealth, (3) occasional famines so the poor face occasional danger of starvation (Crook & Crook 1988). Under these circumstances, a woman who joins a large wealthy family reaps benefits, even if she would have to share her husband with other women. This pattern is also found in other species. For example, indigo buntings vary between monogamy and polygyny, but multiple females only pair up with the same male when that male controls a resource-rich territory and his neighbors have poorer territories (Orians 1969).

We wish to apply a similar analytic strategy to variations in belief in souls and the afterlife. Different religions have very different emphases on the importance of belief in an afterlife (emphasized less by Jews, more by Fundamentalist Protestants, for example; Cohen & Hall, submitted). And within a religion, some individuals have much stronger beliefs in an afterlife than others do (Cohen et al. 2005). Furthermore, there are vastly different forms of belief in life after death, including reincarnation, heaven and hell, ghosts, and so forth. Similarly, individuals and cultures vary in views of God as vengeful and punishing (Abramowitz et al. 2002). It is sometimes claimed that the Old Testament God is more vengeful, whereas the New Testament God is more forgiving (but see Cohen et al. 2006).

Certainly, such variations may be due to particular historical factors affecting the development of a particular religion or the learning history of a particular individual. However, taking a cue from Bering, and Atran and Norenzayan (2004) and others, we propose a novel direction for theorizing about belief in life after death. It would be worth investigating whether variations in beliefs in afterlife or observant spirits are linked to recurrent variations in social or physical ecology. Bering has proposed that belief in souls has a moral function, among others. Perhaps beliefs in a soul or afterlife are more common when resources are unpredictable, and life is brutal and short. If most people have predictable and sufficient resources, there may be less need to regulate cooperation. If resources are unpredictable or scarce, however, supernatural agents may be more necessary: As Durant and Durant (1968, p. 51) suggested, “as long as there is poverty there will be gods.”

Similarly, a belief in an omniscient God (who also metes out punishment, both during life and after) might be more common in societies in which people spend more time around non-relatives (who are more likely to punish your transgressions severely, and to cheat on you). If true, one would expect not to find such beliefs as commonly in small groups of closely related hunter-gatherers. In social groups including unrelated individuals, on the other hand, other people can't be watching you all the time to make sure you are not poaching others' mates or stealing their food. But invisible, supernatural agents can (or, at least, you don't know when they are and when they are not). According to this line of reasoning, one might suppose that the variable and harsh desert culture in which the Old Testament is rooted promoted a view of God as harsh and vindictive, whereas the more stable societal structure of the New Testament promoted a view of God as more forgiving. Religions that exist in harsh or unpredictable environments (or religions rooted in such environments) may be more prone to belief in souls, or may view God as more punitive. Religions that exist in stable or resource-rich environment (or religions rooted in such environments) may be less prone to belief in souls, or may view God as more forgiving.

This analysis suggests a need for a functionally based taxonomy of religious beliefs and practices, which can be mapped onto a taxonomy of ecological variations to which human groups need to adjust. An ecological approach suggests that the traditional beliefs of international religions originally emerged in interaction with particular environmental factors. There are likely pressures to maintain the belief systems intact as members migrate to new physical and social environments. Our analysis implies that the group-level beliefs will change (perhaps slowly) to match new habitats, and that individual commitment to particular features of those beliefs will change (perhaps more rapidly) to reflect operation of context-triggered behavioral and cognitive mechanisms. It may be, for example, that even Roman Catholics (who belong to a religion with strongly institutionalized checks on heretical thinking) have very different complexes of supernatural beliefs and imagined offenses depending on whether they are from an Irish fishing village, a Sicilian farming community, or a California suburb.

Production of supernatural beliefs during Cotard's syndrome, a rare psychotic depression

David Cohen and Angèle Consoli

Department of Child and Adolescent Psychiatry, CNRS FRE 2987 Cognition et Comportement, Université Pierre et Marie Curie, APHP, Hôpital Pitié-Salpêtrière, 75013 Paris, France.

david.cohen@psl.aphp.fr angele.consoli@psl.aphp.fr

Abstract: Cotard's syndrome is a psychotic condition that includes delusion of a supernatural nature. Based on insights from recovered

patients who were convinced of being immortal, we can (1) distinguish biographical experiences from cultural and evolutionary backgrounds; (2) show that cultural significance dominates biographical experiences; and (3) support Bering's view of a cognitive system dedicated to forming illusory representations of immortality.

Cotard's syndrome (CS) is a rare condition in which the central symptom is a delusion of negation. Patients suffering from the syndrome may deny that they exist or that a part of their body exists. They may also complain of damnation, possession, or other delusional ideas, such as feeling enormous and immortal or believing that nothing exists or that another person's identity (doctor, mother) is false. CS generally occurs in patients suffering from major depression with psychotic features, but it can also occur in patients suffering from schizophrenia or organic mental conditions (e.g., general paralysis, epilepsy) (Berrios & Luque 1995). In young people, it is often associated with bipolarity (Consoli et al., in press; Soultanian et al. 2005). While the descriptions of many psychiatric conditions have changed during the last century (e.g., catatonia, hysteria), CS has been shown to have very stable clinical characteristics since it was first described in 1880 (Berrios & Luque 1995). Healthy people's beliefs in an afterlife or in other closely related supernatural ideas are not expressed in a delusional way. In the case of CS, subjects are temporarily and without self-questioning convinced that both their soul and body are immortal, or, alternatively, that they are already dead or damned. The very existence of CS supports Bering's view of a cognitive system dedicated to forming illusory representations of immortality and symbolic meaning of natural events. We can hypothesize that, for unknown reasons, the system is productive during CS without any activation of inhibitory or elaborative repression. Because most patients recover, it gives us an opportunity to get some insights from subjects themselves regarding their feelings of being immortal, guilty, or damned. This allows us to distinguish biographical experiences from cultural and evolutionary backgrounds.

Table 1 summarizes the clinical characteristics of 8 patients who we have treated during the last 20 years. The first striking observation is that, for most of the subjects (6/8) with CS, their delusional ideas could be related to their own life stories (Table 1, column 5), despite their having a similar delusional framework that included delusions of immortality in 5 cases

(Table 1, column 4). The last two subjects provided little information about their CS state because of negativism and mental retardation, respectively. Case 3 is particularly interesting as she showed remarkable insight after treatment with electroconvulsive therapy (ECT) (Cohen et al. 1997). The delusion consisted of the patient's absolute conviction she was already dead and waiting to be buried, that she was immortal, that she had no teeth or hair, and that her uterus was malformed. When she recovered, we asked her to express the free associations that came to mind when her delusional ideas were evoked. Concerning having no teeth, she was surprised to find herself thinking of her brother-in-law, a dentist. She added that she would be ashamed to receive dental treatment from him, and that she had cried every night since her sister's wedding and departure. Concerning the idea of a genital malformation, she remembered guilty feelings associated with masturbation, which she had practiced from childhood until the onset of puberty.

The second striking observation relates on the fact that despite a history of syphilis confirmed by immunology testing, a 55-year-old man with CS (Case 5) had hypochondriacal concerns about AIDS, showing that collective and cultural significance dominates biographical experiences during CS. Because of pressure from the human social environment, AIDS has substituted for syphilis as God's punishment for sins of the flesh. In summary, over time, first syphilis then AIDS symbolized the amalgam of flesh, punishment, sin, guilt, sexuality, and the devil. Indeed, the last case of CS with hypochondriacal fears of syphilis was published in the 1970s (Bourgeois 1969). Since the 1980s, and in the current series ($N = 3$), AIDS has the same symbolic significance that syphilis had until the 1970s.

Based mainly on cognitive and developmental psychology, Bering has postulated that an organized system dedicated to forming illusory representations of immortality evolved in response to selective pressures by the human social environment. If we consider CS as a psychopathological model to explore the pathological production of supernatural beliefs, Bering's hypothesis implies that (1) the beliefs should associate personal elements with stable superstructured collective schemas; and (2), while stable in their significance, collective schemas should integrate influences from the social environment. As highlighted

Table 1 (Cohen & Consoli). Clinical characteristics of eight subjects with Cotard's syndrome focusing on delusional ideas related to biography

Age	Sex	History	Cotard's symptoms	Examples of delusions and links [↔] with biography
62	M	MDE Dementia	Negation, immortality, enormity	[Enormous medical knowledge] ↔ [Physician]
70	F	Bipolar	Negation, immortality, enormity, damnation, guilt	[Nazi criminal] ↔ [Family died in deportation] [Urines invaded the whole world killing all children] ↔ [First child was stillborn]
15	F	Bipolar	Negation, immortality, damnation	[No uterus] ↔ [Masturbation until age 9] [No teeth] ↔ [Brother-in-law a dentist]
58	M	Bipolar	Negation, immortality, damnation, hypochondria	[Father not dead] ↔ [Father died as a hero] [AIDS] ↔ [?]
55	M	Bipolar	Negation, damnation, hypochondria	[AIDS] ↔ [Guilt because of hypersexuality during mania]
19	F	Bipolar IQ = 65	Negation	[No blood] ↔ [?]
17	F	MDE	Negation, enormity, damnation, hypochondria	[Diabetes] ↔ [Mother died from diabetes] [AIDS] ↔ [?]
19	F	MDE	Negation, immortality	[No body] ↔ [?]

MDE = Major Depressive Episode; IQ = Intellectual Quotient.

by the data from recovered patients with CS, both hypotheses are supported.

Taking a psychodynamic view that is not part of Bering's report, we can also refer to the theory of archetypes (Jung 1934), where an archetype is the collective schema or *architecture of ancestral human mind* (see Bering's conclusion). Interestingly, Jung's hypothesis was based on comparative studies of religious and supernatural beliefs. In particular, following Levy-Bruhl's studies of primitive societies (1910) and mythology (1935), Darwin's theory of selection, and his own experience with the psychodynamic approach to psychotic patients, Jung also postulated that humans have a natural disposition to believe in an afterlife and religious concepts, influenced by evolution.

Evidence for early dualism and a more direct path to afterlife beliefs

David Estes

Department of Psychology, University of Wyoming, Laramie, WY 82071.
estes@uwyo.edu

Abstract: Ample evidence for dualism in early childhood already exists. Young children have explicit knowledge of the distinction between mental and physical phenomena, which provides the foundation for a rapidly developing theory of mind. Belief in psychological immortality might then follow naturally from this mentalistic conception of human existence and thus require no organized cognitive system dedicated to producing it.

Bering proposes an organized cognitive system dedicated to forming what he terms illusory representations of an afterlife and psychological immortality. Belief in the continuation of psychological states after death is, as Bering notes, a radical form of mind–body dualism, and he seeks evidence for this dualism early in individual development. In this commentary I briefly summarize existing empirical evidence, not mentioned by Bering, demonstrating that very young children are already and explicitly dualists. I conclude by questioning the claim that belief in psychological immortality requires a cognitive system dedicated to producing it. I suggest instead a more parsimonious alternative in which this belief is just a natural extension of how people, including young children, already think about human existence.

Bering is astute to focus on the common-sense dualism between mind and body because this conceptual distinction and its close relatives play a key role in cognitive development by providing the foundation for a mentalistic understanding of human behavior. This “theory of mind,” as I will argue, might then be extended to become one source of intuitive notions about the soul and an afterlife. However, it is simply not the case that research into “whether humans are common-sense dualists” is just beginning, as Bering implies. In fact, abundant research, some of it now two decades old, clearly demonstrates that very early in the preschool years children already understand and use a whole family of conceptual distinctions closely related to mind–body dualism. These include the basic ontological distinction between the mind and the external world, as well as kindred distinctions between mental and physical phenomena, between fantasy and reality, and between specific thoughts and the things they represent (Estes 1994; Estes et al. 1989; Wellman & Estes 1986).

Briefly, this research shows that by 3 years of age children already recognize the defining criteria that distinguish the internal-mental from the external-physical world. They know that mental entities (thoughts, memories, dreams, mental images) are not real in the way that physical entities are, and that they have no permanent existence apart from the mind in

which they occur, are inherently private rather than public, and cannot be seen, touched, used, or shared with others in the way that corresponding physical objects can. It is important to emphasize here that preschool children's knowledge of this fundamental dualism is not just implicit in their behavior and not merely inferred from their responses in different experimental conditions. Instead, they clearly have explicit knowledge of how mental and physical phenomena differ, as demonstrated by their capacity to articulate this understanding with convincing verbal justifications for their responses. These explanations are typically telegraphic but interpretable at 3 or 4 years of age and become remarkably adult-like by the age of 5 or 6. These experimental findings are supported and extended by naturalistic research on language development showing that even before 3 years of age children spontaneously refer to the distinction between mind and external reality in their conversations in natural settings (Bartsch & Wellman 1995).

How do young children comprehend with such apparent ease this fundamental distinction between the internal-mental-subjective realm and the external-physical-objective realm, of which mind–body dualism is one aspect? It may well be the case that this distinction is of such crucial importance in human social life that, like language or face recognition, we are prepared by evolution to get it quickly and easily. But at another level of analysis, that of everyday human experience, it is also the case that this is just how the world is. Children, perceptive creatures that they are, rapidly discern this fundamental distinction, which is constantly manifesting itself in their experience, just as it is in ours. We have minds and we have bodies; there is an internal-mental realm and an external-physical realm; and there is ample evidence in the child's ongoing experience from which to abstract these natural categories.¹ The boundary between them may of course break down under rigorous philosophical or scientific analysis, but regardless of our expertise or theoretical allegiances, we all take this foundational distinction for granted and constantly use it in everyday life. The research cited earlier shows that preschool children do so, as well.

How do we get from this basic dualism to belief in souls, an afterlife, and psychological immortality? Bering's rather clever solution involves a collection of cognitive biases and errors that together produce these “functional illusions” and thereby enhance genetic fitness by making it less likely that individuals will engage in acts harmful to their reputations. Leaving aside the perennial question of whether there might really be an afterlife of some unknown variety,² and granting that the specific mechanisms in Bering's account (e.g., simulation constraints, offline social reasoning) may indeed be part of the story, perhaps the path from the young child's dualism to belief in an afterlife for immortal souls might be fairly direct and require no special evolutionary solution. As we have seen, very young children already have the distinction between mental and physical phenomena solidly in hand and thus recognize the existence and nature of immaterial entities. This provides the essential basis for a mentalistic folk theory of human behavior and the framework on which our more general beliefs about human existence are based. Beliefs about an afterlife can thus be seen as just beliefs about this life, idealized and extended in our imagination beyond the mystery of death. And who wouldn't want more of such a good thing?

NOTES

1. In addition to abundant naturalistic evidence documenting that they spontaneously talk about their mental states (e.g., Bartsch & Wellman 1995), there is also experimental evidence indicating that preschool children have conscious access to some types of mental activity (Estes 1998), which of course would be a prerequisite for abstracting the mental–physical distinction from their own experience.

2. And who knows for sure? Not Bering. And not Francis Crick (1994), Theodosius Dobzhansky (1967), Martin Gardner (1999), or me.