From Charitable Inference to Active Credence

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Abstract. Young children routinely display a naturalistic understanding of the world. When asked for explanations, they rarely invoke supernatural or religious explanations even when confronted by puzzling or unexpected phenomena. Nevertheless, depending on the surrounding culture, children are eventually prone to accept God as a creator, to believe in the power of prayer and to expect there to be an afterlife. A plausible interpretation of this dual stance is that children adopt two different cognitive routes to understanding: one grounded in empirical observation and in trusted testimony about the observable world. Based on this route, children gradually build up a common-sense understanding of various natural domains, including the physical, the biological and the psychological. The second route is grounded in children's early emerging ability to engage in shared pretense. As members of a religious community, children will routinely observe community members engage in activities, such as prayer, which cannot be readily understood in terms of their standard, common-sense framework. Nevertheless, children can charitably interpret prayer as special form of communication, directed at an imagined interlocutor. Cumulative exposure to such belief-based activities is likely to encourage children to transition from charitable interpreters of religious activities to participant believers.

Keywords: cognition, development, belief, religion.

Introduction

In recent decades, the study of children's beliefs has increasingly high-lighted a paradox. On the one hand, children are gifted amateur scientists and theoreticians. By the time they go to school, they have a good understanding of various aspects of naïve physics (e.g., an appreciation that one solid object cannot pass through another or suddenly come into existence); of biological constraints (e.g., an appreciation that organisms get older over time and die); and of psychology (e.g., an appreciation that agents' desires and beliefs guide their actions and utterances) (Wellman & Gelman 1992). In addition to these insights, ordinarily acquired via observation and inference, rather than any direct instruction, children also come to accept notable scientific claims. For example, young children of 7 or 8 years accept that the earth is a spherical planet and that mental processes depend on the functioning of the brain. Children presumably arrive at these conclusions based on other people's teaching and testimony, given the limits to their own observational powers with respect to both the shape of the earth and the functioning of the brain (Harris & Koenig 2006).

Alongside this evidence concerning children's understanding of how the world works, there is a parallel body of evidence attesting to their preference for naturalistic explanations. Across a range of situations, whether prosaic or unexpected, children are prone to offer physical, biological or psychological explanation for the outcomes they observe. They rarely invoke magical or supernatural forces, contrary to early 20th century theorizing by Piaget (Harris 2012; 2022a).

In sum, a surprisingly coherent picture has emerged. When children reason about, or seek to explain the world and its workings, they display a competent appreciation of key facts and principles. They are not, of course, theoretical physicists or fully-fledged evolutionary biologists. Yet they show no spontaneous disposition to invoke supernatural powers or possibilities. On the other hand, many children do eventually come to endorse the religious claims espoused by their community (Harris & Corriveau 2019). This endorsement does not appear to spring – as just not-

ed – from any natural predilection for supernatural powers. Rather it is something that children grow into, as they become increasingly familiar with the religious claims of their community. For example, within Christian communities, 5- and 6-year-olds confidently believe in God (Harris et al. 2006), take God to be the creator of species (Evans 2001), subscribe to the efficacy of prayer (Woolley & Phelps 2001) and expect there to be an afterlife (Harris 2018). Accordingly, we arrive at a paradox and an interesting psychological question. How do young children, with their strong disposition toward naturalistic thinking, nevertheless end up subscribing to supernatural explanations and phenomena, which frequently run counter to the causal constraints that they acknowledge in other contexts. In attempting to resolve this paradox, I draw on research from a range of disciplines and fields, notably developmental psychology, cognitive science, and social anthropology.

Before turning to possible explanations for the alleged this paradox, it is worth noting three additional findings. First, a steady stream of research has shown that children express more confidence in the existence of various scientific phenomena – including ordinarily unobservable phenomena – as compared to equally unobservable religious phenomena. For example, they are prone to express more confidence in the existence of germs than of heaven. This differential confidence persists into adulthood (Harris & Corriveau 2020). Indeed, adults in a wide range of cultures and countries express more confidence in claims emanating from a scientific as compared to a religious source (Hoogeveen, Haaf, Bulbulia et al. 2022). In short, belief is not evenly distributed across the domains of science and religion: scientific phenomena typically enjoy greater credence.

Second, when children are presented with a variety of narratives, ranging from the fantastical to the realistic, and asked to categorize them as either fictional or factual, they typically make their appraisal based on their understanding of everyday causality. More specifically they are prone to categorize narratives with magical or fantastical causal elements (a magic sword, a fairy) as fictional whereas they categorize more prosaic narratives that include only everyday causal sequences as factual (Payir et al.

2021). Here, again, we see a bias toward the naturalistic and a skepticism toward the supernatural or magical. However, that bias is overridden by some children in specific contexts. When presented with narratives that involve divine intervention (i.e., echoing miracle stories in the Bible), children who have had a religious upbringing – as indexed by their enrolment in a parochial school, their family's participation in church services or both – are inclined to accept such narratives as true, factual accounts, unlike their more secular peers who are more likely to judge them as fictional (Corriveau, Chen & Harris 2015). Similar findings have emerged when children engage in thinking about counterfactual possibilities. Asked how a negative outcome might have been forestalled, children spontaneously invoke plausible, preventive measures that are likely to be available to human agents. Rarely, if ever, do they spontaneously invoke the possibility of divine intervention. In addition, even when children are asked to evaluate the plausibility of preventive measures presented to them by an adult rather than generated by their own reflection, they typically endorse the efficacy of naturalistic interventions. Nonetheless, religious children, unlike their secular peers, occasionally endorse the efficacy of divine intervention (Payir et al. 2022). In sum, whether children are asked to assess the real-world plausibility of a sequence of events, or to imagine how it might have turned out differently, their primary recourse is to naturalistic thinking. Supernatural possibilities are sometimes endorsed, but only by children with a religious background.

Finally, a third area of research casts further light on the relative weight or confidence attached to the naturalistic as compared to the supernatural stance. Some phenomena – the origin of species, illness and death, for example – can be viewed through either lens (Legare, Evans, Rosengren & Harris 2012). For example, a study targeting the understanding of AIDS conducted in South Africa showed that adolescents and adults were willing to endorse both viral infection and witchcraft as possible transmission mechanisms; in addition, ethnographic work shows that AIDS sufferers are likely to consult both medical practitioners and traditional healers in seeking help (Legare & Gelman 2008). Studies of the conceptualization of death in Spain (Harris & Giménez 2005), the USA (Lane, Zhu,

Evans & Wellman 2016), Madagascar (Astuti & Harris 2008) and Vanuatu (Watson-Jones, Busch, Harris & Legare 2017) have all shown that claims about the sequelae of death diverge markedly depending on the way that the death is contextualized. If it is presented in a secular, and especially in a medical context, children and adults are likely to affirm that most processes, whether mental or bodily, have ceased to function. On the other hand, if the death is presented within a religious framework involving a priest or funereal ritual, children and adults are more likely to affirm the continued functioning of bodily and mental processes in the afterlife. Thus, with respect to both illness and death, we observe the co-existence of, and recourse to, both naturalistic and supernatural thinking.

To synthesize these wide-ranging findings, there is considerable evidence that the naturalistic stance emerges early in childhood, is affirmed with greater confidence across diverse cultures, and is the dominant recourse in appraising a sequence of events for their real-world likelihood or in generating counterfactual alternatives to what has actually happened. Nonetheless, we see local evidence for the power and influence of supernatural thinking, especially with respect to phenomena such as illness and death where such thinking can provide an alternative lens.

How can we account for this balancing act? If children's dominant or default stance is to interpret the world via a naturalistic stance, how can we account for their receptivity to supernatural thinking in particular contexts. Stated differently, why are children not resolutely and pervasively naturalistic in their thinking, and how do religious communities succeed in transmitting their faith in the supernatural across successive generations? As a preliminary answer to this conundrum, I describe two overlapping but ultimately distinct routes that children appear to adopt in acquiring and consolidating their beliefs: what I will describe as the common-sense route on the one hand and the charitable route, on the other. In the context of the common-sense route, children assimilate incoming information to a model of the world that is based on their understanding of its ordinary operations. Via this route, children adopt beliefs that are based on first-hand, empirical evidence or alternatively on others' testimony about such evidence. In either case, however, the phenomena end

up being regarded as components of, and causal agents within, the natural world. In the context of the charitable route, by contrast, children assimilate information through their charitable interpretation of beliefs and practices that refer to phenomena that defy the ordinary workings of the world, as established via the direct route. These two routes and the conclusions that they yield can often operate independently. They are deployed in different contexts and to different ends. Sometimes, however, they converge on the same phenomenon, offering a different lens.

1. The Common-Sense Route

As noted earlier, a large volume of research with young children has documented the readiness with which they arrive at a common-sense understanding of the world. They form expectations about the way that objects and people behave. This conceptual apparatus is sufficient to ensure that children will construct a serviceable picture of the way that the world works even if their understanding and beliefs are partial or faulty with respect to large tracts of science, history and geography.

Children supplement their own conclusions and inferences – grounded in direct observation – with conclusions and inferences supplied to them by other people via teaching and testimony. There is a relatively seamless continuity between children's beliefs grounded in first-hand observation and those grounded in other people's claims because in each case, the observable world is the primary touchstone and referent. This applies even to phenomena that are not ordinarily observable. For example, assertions about germs or electricity invoke phenomena that are not directly observable, but such assertions take it for granted that those hidden entities are part of the ordinary, causal fabric of the world. They are not mysterious, other-worldly forces that intervene in an unpredictable or wayward fashion. Thus, the presence vs. absence of germs and of electricity can be inferred and discussed in terms of their systematic, measurable impact in the ordinary, observable world. This means that everyday discourse about such hidden phenomena is likely to present their existence within the common-sense framework that encompasses more

straightforwardly observable phenomena. Thus, according to this proposal, invisible but naturalistic phenomena, such as germs and viruses, are not conceptualized in a radically different way from other tiny biological agents such as ants or mosquitoes. Electricity, as a form of energy, is not conceptualized in a radically different way from a more readily tangible form energy, such as heat.

The implication of this analysis is that when children and adults encounter a consensual discourse, couched in common-sense terms, with respect to the existence and implications of a given naturalistic phenomenon, they infer that that consensus is ultimately grounded in ordinary reality. Hence, it makes sense to have confidence in the existence of ordinarily unobservable scientific phenomena, just as it makes sense to have confidence in the existence of dinosaurs or Antarctica. Thanks to the way such phenomena are talked about, they end up being taken for granted as part of the world's furniture, whether visible or invisible. Indeed, young children in various cultures express confidence in the existence of ordinarily invisible phenomena such as germs and vitamins (Harris et al. 2006; Harris & Corriveau 2020).

As described in the next section, there is an alternative route to belief, in which this tether to common-sense reality is suspended.

2. The Charitable Route

Unlike any other species, humans engage in sustained episodes of pretend play with each other from a young age. Pretend re-enactments of previously observed actions are occasionally seen in great apes, but such re-enactments are almost invariably carried out in a solitary fashion (Matzusawa 2020). There is no indication that apes enter a shared, pretend world. By contrast, human children, including 2-year-olds, readily engage in episodes of shared pretense – episodes where the pretend enactment of one partner is understood, accepted, and acted upon by another (Harris 2022a). For example, having watched an adult partner 'pour' make-believe tea from an objectively empty teapot, 2-year-olds will accept and act on the implied outcome of that pretend action by 'drinking'

the make-believe tea. By implication, young children are prepared to interpret someone's actions in light of a make-believe premise about the state of the world, namely that there was tea in the pot. Any knowledge that that premise is objectively false does not stop their active participation in the shared pretense. We may reasonably characterize this interpretive response as charitable because it endows an otherwise pointless or puzzling action – namely the lifting and tipping of an empty teapot – with a plausible rationale: insofar as tea is presumed to exist in the empty teapot, the partners' actions make good sense (Harris 2022a).

Arguably, children adopt a comparable, charitable stance toward religious actions and claims. Consider, for example, young children who regularly witness familiar adults kneel, clasp their hands together, and engage either individually or collectively in an act of prayer. In such contexts, the addressee is invariably absent, invisible, and silent – contrary to any mode of communication children will ordinarily observe or participate in. However, children can make sense of these actions and utterances by charitably supposing them to be directed at an interlocutor, even though objective signs of the interlocutor's existence are not available.

On this analysis, children are inducted into a religious community in much the same way as they are inducted into a shared pretense: in both cases, they charitably infer and accept the premises that guide the actions of leading participants and render those actions plausible. Nevertheless, it is evident that this parallelism is, in one key respect, over-stated. In the context of a joint episode of pretend play, both partners act on shared, make-believe premises whereas in the context of religious activities, the guiding premises are not generally regarded as make-believe by mature participants. Thus, in the context of religious activities, such as a baptism, a marriage, or a funeral, believers typically act on the assumption that God exists and is presiding over the activity. Similarly, in the case of prayer, believers typically act on the assumption that their prayers are heard and understood by God. Hence, a key developmental question is how children might go beyond the invocation of make-believe premises and eventually come to adopt a similar stance to the believers whose actors and utterances they charitably interpret.

Four factors are likely to facilitate children's progressive transition from charitable bystander to believer: (i) the frequency with which children are prompted to entertain a guiding premise; (ii) the pervasive tendency among children – and indeed adults – to undergo source amnesia, i.e., to lose track of the provenance of a given idea or belief; and (iii) the power of the so-called "availability" heuristic; and (iv) the construction of a shared reality. I describe each of these contributory factors in turn.

It is evident that, depending on their family and schooling, children will vary in the frequency with which they observe people engaged in religious activities such as prayer. Some children will do so regularly, others only rarely. As a result, children will vary in the frequency with which they are prompted to charitably interpret religious activities as being addressed to God and to acknowledge God's special status. Consistent with this prediction, religiously schooled preschoolers are more likely than secularly schooled children to know about God, and to acknowledge his special perceptual and cognitive abilities (Lane, Evans & Wellman 2010; 2014).

An increase in the frequency of charitable interpretation is likely to have an additional effect, namely, to increase the likelihood of source amnesia, i.e., the progressive loss of awareness with respect to how an idea originally arose. A clear demonstration of such frequency effects was provided by Ceci and his colleagues (Ceci et al. 1994). Preschoolers were invited to think about highly improbable events. For example, they were asked if they had ever gone on a ride in a hot-air balloon with their classmates. Initially, children almost invariably denied having had such experiences (consistent with their parents' report). However, when they were asked the same questions repeatedly over several week, there was a steady increase in false positives, with half the children eventually claiming that they had indeed experienced such extraordinary events – even though they had not. A plausible interpretation of these memory errors is that when initially invited to entertain any given improbable event, children conjured up a mental representation, arguably a visual image, of such an event. On subsequent occasions, children would likely retrieve that same representation, so that following repeated interviews, it would increasingly become subjectively familiar. It is plausible that such growing fa-

miliarity gradually persuades children that the source of the representation is not their own imagination-infused thinking about the question when it was initially posed but rather their participation in, and encoding of, an actual event. In sum, the frequent activation of a representation tends to increase the likelihood of amnesia with respect to the true source of that representation.

We can extend this same line of thinking to children's interpretation of religious rituals, including key activities such as prayer. As noted earlier, in making sense of such actions, it is plausible that children charitably represent the premise guiding those observed actions – namely that God exists, despite his sustained absence and invisibility. In the wake of repeated opportunities to observe religious actions, that representation is likely to become more subjectively familiar and more automatic. In consequence, children may end up losing sight of what triggered that representation in the first place, namely their own attempt to make sense of what adults are doing when they kneel and communicate with an invisible interlocutor. Thus, as such activities become more and more familiar, the premise that appears to guide them, namely that such an interlocutor exists and hears the prayers that are addressed to him, may become increasingly plausible as an encoding what is actually taking place. On this analysis, children will eventually come to think of their representation of God's existence as a familiar and credible assumption about reality rather than as a supposition or inference they have charitably generated in order to interpret adults' practices.

The so-called "availability heuristic" is a third factor that is likely to spur the transition from charitable bystander to believer. Based on classic work in cognitive psychology, we know that estimates of likelihood are impacted by mental availability. For example, when adults who have recently read about a plane accident are asked to estimate the future probability of such an accident, the comparative ease with which they can bring that relevant example to mind tends to increase their probability estimate – relative to adults who cannot so readily bring a relevant instance to mind (Tversky & Kahneman 1973). This heuristic is likely to play a role in religious belief. More specifically, among children who are repeatedly

prompted to charitably interpret religious activities, the idea of God and his existence will be easily brought to mind. That mental availability is likely to attenuate any tendency to regard such an idea as improbable.

Finally, research on the construction of a shared reality in the context of dialogue points to a fourth factor likely to promote the transition from charitable bystander to believer. When adults are invited to share a given piece of information with an interlocutor, they are prone to tune their message to the predilections of that interlocutor and such tuning impacts their subsequent recall. Thus, when adults are asked to recall the original information, their recall is prone to bias in the direction they adopted when speaking to the interlocutor (Higgins, Rossignac-Milon & Echterhoff 2021). Arguably, such shared reality effects operate among children. For example, when children are invited by an adult believer – such as a parent, teacher, or priest – to describe a religious activity or to report on a passage in the Bible, they are likely to tune their narrative to that interlocutor – to make references to God that presuppose his existence rather than represent him as a fictional or imaginary being. Such tuning may eventually shape children's own assumptions about God.

The above proposals offer a plausible explanation of how children, despite their naturalistic inclinations, are gradually inducted into a community of believers. However, the account so far explains the emergence of what might be characterized as a passive belief that God exists. Luhrmann and Morgain (2012) offer a persuasive account of how some individuals come to report an experience of God's presence and not just a tepid belief in his existence. They recruited participants from four evangelical congregations and assigned them to either a prayer or a Bible study group. In the prayer group, participants were given recorded passages from the Bible, together with instructions to use imagery (e.g., "The Lord is my shepherd…see the shepherd before you…see his face…his eyes…the light that streams from him"). The recorded passages included pauses in which listeners were invited to carry out a dialogue with the shepherd or Jesus, and to imagine his being present as a comforter during a past episode. In the Bible study condition, participants were provided with recorded lectures describing how different gospel authors chose to portray

Jesus. Thus, they learned about Jesus but were not prompted to imagine his presence. Participants in both conditions were asked to listen to the recordings regularly for one month. Both before and after the intervention, participants answered questions about their understanding of prayer, their experience of God interacting with them, as well as spiritual experiences more generally. The post-intervention interview revealed notable differences between the two groups. Thus, in comparison to the Bible study group, the prayer group were more likely to report that their mental images seemed sharper or different, and that they experienced God more like a person. Reviewing these findings, Luhrmann argues that prayer is an important context in which people can actively train themselves to apprehend God's presence (Luhrmann 2020).

Extending this line of thinking, Luhrmann and her colleagues have asked what psychological factors increase the likelihood that any given adult will report having religious experiences (Luhrmann et al. 2021). Across five cultural settings (the U.S., Ghana, Thailand, China, and Vanuatu), two factors proved important. One factor was cognitive in nature. Individuals vary in the degree to which they view mental experience as 'bounded' – i.e., private and separate from the external world – or as 'porous' – interconnected with the external world and with other people. On the bounded model of mental experience, one person's thoughts and feelings about another person will not ordinarily be expected to have any direct impact on that other person. By contrast, on the porous model, thoughts and feelings are viewed as potentially transmissible from one person to another in a quasi-telepathic fashion. Across all five cultural settings – individuals who more disposed to the porous as opposed to the bounded model of the mind – were likely to report more religious experiences. The second factor was a well-established personality dimension – "absorption" – the tendency to become fully engaged in an ongoing imaginary or sensory experience, (e.g., becoming absorbed in a novel, or listening intently to a piece of music, or getting immersed in a novel). Across all five cultural settings, individuals more prone to absorption reported more religious experiences.

Conclusions

Taken together, these findings highlight the duality of cognitive development. On the one hand, children are budding scientists, apparently wedded to a common-sense, empirically grounded conception of the world. Nevertheless, granted their early-emerging ability to entertain invisible agents and phenomena, they can also be inducted into a religious community, sharing its beliefs, and potentially having supernatural or religious experiences.

Acknowledgments

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