

***Empiricist intuitions arise from an ontological dissonance—
Reply to Carruthers¹***

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Abstract. People are systematically biased against the possibility that ideas are innate. Berent (2020) traces these attitudes to an ontological dissonance, arising from the collision of two fundamental principles of human cognition—Dualism and Essentialism. Carruthers (in press) challenges this hypothesis and attributes our empiricist bias primarily to mindreading intuitions. Here, I counter Carruthers' concerns and show that mindreading cannot be the sole source of the empiricist bias. Specifically, mindreading fails to explain why our empiricist intuitions depend on the perceived immateriality of ideas. The ontological dissonance hypothesis accounts for these facts. Because Essentialism requires innate traits to be material, and because, per Dualism, ideas are immaterial, people conclude that ideas cannot be innate.

The origins of knowledge have been the topic of age-old controversy (Carruthers, Laurence, & Stich, 2005). Recent results from my lab suggest that the difficulty to advance the innateness debate could be partly due the human inquirer. Indeed, laypeople demonstrate a systematic bias against the possibility that ideas are innate (Berent, Barrett, & Platt, 2019a; Berent, Platt, & Sandoboe, 2019b; Berent, Platt, & Sandoboe, 2019c; see also Wang & Feigenson, 2019). At stake is why.

I trace our empiricist bias to an ontological dissonance between two fundamental principles of human cognition that are rooted in innate core knowledge—intuitive Dualism and Essentialism. Thus, the bias against human nature may well be grounded in human nature itself (Berent, 2020). Carruthers (Carruthers, in press) agrees that human nature may give rise to anti-nativist intuitions, but in his view, our empiricist bias results primarily from mindreading intuitions.

Here, I respond to these assertions. After briefly introducing the two competing accounts of anti-nativism—ontological dissonance vs. mindreading, I move to consider Carruthers' critique of my proposal and counter his concerns. I next review some experimental findings that support the ontological dissonance hypothesis. To be sure, I do not argue that an ontological dissonance is the sole cause of our naïve empiricist intuitions nor do I reject the possibility that mindreading could contribute to our anti-nativist bias. I am also mindful

¹ I thank Peter Carruthers for his insightful comments on a previous draft. All remaining errors are mine.

that Carruthers' pursuit and mine are partly distinct—he concerns himself mostly with scientific discourse, whereas I explore laypeople's intuitions; it is certainly possible that the psychological mechanisms that support reasoning in these two contexts are distinct. My comments here thus specifically concern laypeople's intuitions. I show that a closer look at the empirical facts suggests that the ontological dissonance plays a causal role.

1. *Why we are blind to innate ideas: two competing views*

Few questions in cognitive science are more controversial than the origins of knowledge. Scholars have long suspected that our difficulty with the notion of innateness is not accidental nor are they unique to scientists. Lila Gleitman, the distinguished child language scholar, has famously joked that anti-nativism is innate, and Steven Pinker has written extensively about our resistance to human nature (Pinker, 2002). But these arguments are based on anecdotal impression, not systematic experimentation.

Recent results from my lab have shown that laypeople are indeed biased as charged, but their empiricist penchant is more nuanced than previously assumed (Berent et al., 2019a; Berent et al., 2019b; Berent et al., 2019c; Sandoboe, 2019; see also Wang & Feigenson, 2019). People are not uniformly resistant to all forms of innateness. They have no troubles recognizing that certain sensory and motor capacities are innate. In fact, people are *positively* biased to presume that emotions like anger are inborn (Berent et al., 2019a). But when asked to reason about ideas (e.g., having a concept of “person” and “time”), people are reluctant to assume an innate source, and they maintain this position even when they are explicitly informed that the ideas in question are universal, early emerging, and likely inborn. So the puzzle is why our empiricist intuitions specifically target innates ideas.

The culprit, I suggest, is an ontological dissonance between two basic principles of human cognition-- Dualism and Essentialism. Intuitive Dualism suggests that minds are immaterial, distinct from the material body (Bloom, 2004; for experimental support, see Chudek, McNamara, Birch, Bloom, & Henrich, 2018; Hood, Gjersoe, & Bloom, 2012; Kuhlmeier, Bloom, & Wynn, 2004). Essentialism, in turn, attributes inheritance to the transmission of material essence from parents to offspring (e.g., the kitten's essence is a piece of matter inherited from its mother; Gelman, 2003; Keil, 1986; Newman & Keil, 2008)². Dualism and Essentialism are each evident cross culturally (e.g., Chudek et al., 2018; Sousa, Atran, & Medin, 2002), and they appear to be grounded in core knowledge of objects, agents and living things that is present in young infants (e.g., Hamlin, Wynn, & Bloom, 2010; Setoh, Wu, Baillargeon, & Gelman, 2013; Spelke, Breinlinger, Macomber, &

² The hypothesis advanced here specifically concerns the role of essentialism in reasoning about inheritance in biological kinds. Other proposals, however, have extended “essentialism” to socially-constructed kinds (e.g., Chalik, Leslie, & Rhodes, 2017; Newman & Knobe, 2019; Rhodes, Leslie, & Tworek, 2012). Whether reasoning about social and biological essence relies on a single set of principles remains a critical open question (Noyes & Keil, 2019; Prasada, 2017; Rhodes et al., 2012).

Jacobson, 1992; Wertz & Wynn, 2014). So there is reason to believe that the roots of Dualism and Essentialism are innate.

These two principles collide when we reason about innate ideas. If (per Dualism) ideas (mental states) are immaterial, whereas innate traits must be material (per Essentialism), it follows that ideas cannot be innate. It is this ontological dissonance between the materiality of innate essence, on the one hand, and the immateriality of ideas, on the other, that renders the notion of innate ideas an oxymoron. It's a perfect cognitive storm, and our empiricist intuitions are its byproducts.

Carruthers (in press) doubts whether such dissonance exists. In his view, the primary source of our empiricist intuitions is mindreading. Per mindreading, knowledge arises from three sources only (sensation, inference, and communication)—so there is no need to postulate innateness as a fourth (innate) source. Carruthers also delegates some explanatory work to Dualism (in “shoring up empiricist appeal to theoretical simplicity”, p. 17), but this comes at a “second and subsequent stage”, and Dualism is strictly invoked in the context of scientific discourse, so it is unclear whether it is relevant to laypeople's gut intuitions. Here, mindreading would appear to play a key role, and offer a superior account of our empiricist intuitions.

2. *Is the ontological dissonance real?*

Let us take a closer look at Carruthers' critique. Per ontological dissonance, anti-nativism emerges from the clash between the immateriality of ideas (per Dualism) and the materiality of innate essence (per Essentialism), their presumed cause. Carruthers questions this assertion on logical grounds. In his analysis, an ontological dissonance requires certain conditions for it to emerge, and in Carruthers' view, these conditions fail to materialize. Since the conditions for the dissonance are not met, no dissonance could possibly exist.

A dissonance, in Carruthers' view, “requires us to think that the cognitive scientists who are thus biased are conflating causation with constitution”-- they must assume that “the properties of the biological essence that result in innate ideas don't just cause those ideas but constitute them” (Carruthers, in press, p. 15). This presumed conflation, then, is necessary for dissonance to emerge. But this presumption is false, for “nearly everyone has always accepted that there are causal relations between body and mind”, and “that physical events happening in our brains can have consequences for our minds”. (p. 15). And since the requisites for dissonance are not met, no dissonance could exist. So cognitive dissonance is unlikely to explain our anti-nativist intuitions.

Before I address Carruthers' substantive point, let me set the record straight by removing a red herring out of the way. My dissonance theory concerns *laypeople's* understanding, not scientific reasoning. While no one denies that scientists are people, from this, it doesn't follow that novices and experts reason alike. So the argument *ad absurdum*--*how could smart scientists possibly conflate causation with constitution when even humble laypeople*

know better--is an unfortunate red herring. I do not actually assert that scientists conflate causation with constitution. More to the point, I do not assert that laypeople do so either.

As Dennett points out (Dennett, 1991), Casper the ghost can both go through walls and lift a towel. So despite his immaterial ghostly constitution, in our naïve cognition, Casper can effect change in matter. By the same token, my immaterial thought of my morning coffee can make my very material body move towards the coffeemaker and lift my arm to grab my mug. I can entertain all these thoughts without assuming that my coffee ideas are made of matter, let alone coffee, mug, or a coffeemaker. So, in our naïve psychology, causation does not necessarily imply constitution. This, however, does not show that such causation invokes no dissonance. And that substantive aspect of Carruthers' critique merits closer scrutiny.

Mind-body dissonance is evident in a wide array of phenomena, ranging from how we reason about innate ideas to our intuitions about embodied cognition and emotions, our misconceptions about mental disorders, the afterlife, and free will (Berent, 2020). Our irrational love affair with neuroscience presents one representative case.

People are endlessly fascinated by the “discovery” that the brains effect thinking. Newspapers headlines announce that musicians' brains differ from non-musicians' brains, and that learning to read can “actually” change your brain. But why are such headlines newsworthy?

Westerner adults (and children) know too well that thinking “happens” in the brain, they are well aware of the differences between literate and illiterate people, and they can hear the differences between musicians and non-musicians right from the first sound. Our irrational fascination with the brain is likewise not due solely to the power of images, the authority of scientific jargon, or the mention of complex technology. In fact, people find brain-explanations more satisfying than comparable behavioral explanations even when the explanation itself is bogus (Weisberg, Keil, Goodstein, Rawson, & Gray, 2008; Fernandez-Duque, Evans, Christian, & Hodges, 2015; Hopkins, Weisberg, & Taylor, 2016; Rhodes, Rodriguez, & Shah, 2014). Why, then, do people get so excited by the thinking brains?

The ontological dissonance hypothesis presents a ready explanation. Learning that the material brain gives rise to immaterial ideas is akin to seeing Casper the ghost lift a towel. Both cases present an ontological dissonance between the immaterial ontological status of the cause and its material effects. This hypothesis further predicts that our fascination with the brain depends on the perceived materiality of our mental activity—the greater its perceived immateriality, the stronger the dissonance, hence, the fascination. In line with this prediction, research from my lab has shown that people are more likely to fall for brain-based explanations when they reason about psychological phenomena that explicitly invoke ideas (e.g., theory of mind) compared to sensory and motor conditions that are readily linked to the material body (e.g., sensory hypersensitivity, Sandoboe, 2019).

Why does the dissonance arise? I suggest that the dissonance reflects the different causal mechanisms we intuitively invoke in reasoning about mind and matter. Our intuitive understanding of the interactions between material objects is couched in terms of naïve physics, and per naïve physics, objects are cohesive, they move in continuous paths, and they can change their course only by contact (Spelke, 1994; Spelke & Kinzler, 2007). Agents, on the other hand, can change their course spontaneously; even young infants know that agents do not require contact for them to move (Spelke, Phillips, & Woodward, 1995) nor do they move continuously (Kuhlmeier et al., 2004). Thus, mind and matter must each obey distinct principles, and these principles don't mix and match.

So Carruthers is right to point out that we don't conflate causation and constitution. But I believe he is wrong to suggest that this conflation is necessary for the ontological dissonance to emerge. On the contrary, it is precisely *because* people draw a sharp distinction between immaterial ideas and material essence that they have troubles conceiving of causation between minds and matter. And if they have troubles conceiving that their everyday mental life could originate from a material cause (their brain), then it is not at all unlikely that they would experience a similar dissonance in reasoning about innate essence. As we will next see, such dissonance demonstrably exists. And that presents a plausible account for our anti-nativist intuitions.

3. *The mind-body dissonance is the cause of our empiricist intuitions*

To evaluate the evidence in support of the ontological dissonance hypothesis, let us briefly review its tenets. In this view, reasoning about the innateness of psychological traits evaluates their perceived materiality, as Essentialism demands that innate traits be material. Per Dualism, however, ideas (mental states) are immaterial. The ontological dissonance between Dualism and Essentialism thus biases us to conclude that ideas cannot be innate.

(1) *The ontological dissonance hypothesis*

- a. Innate traits must be material (Per Essentialism).
- b. Ideas are immaterial (per Dualism).
- c. Ideas cannot be innate.

A large research program from my lab establishes tight causal links between the status of mental states as ideas, their presumed materiality, and innateness, in line with (1) above. (Berent et al., 2019b; Berent et al., 2019c). One set of studies asked people to reason about a large number of psychological traits—either traits that capture ideas, or traits that are non-cognitive, like sensations, motor skills, and emotions. All traits in question concerned capacities that can be plausibly viewed as innate. Some studies examined adult traits that have been documented ethnographically across cultures; other studies concerned the psychological traits capacities of young infants. In these studies, participants were asked to evaluate whether these traits would emerge spontaneously in a group of adults/infants raised in a desert island situation. Results showed that people systematically viewed ideas as less likely to be innate compared to non-cognitive traits. Moreover, innateness reliably

correlated with the status of a trait as “ideas”—the stronger the association of the trait with “ideas”, the less likely it was to be viewed as innate.

A second set of experiments directly evaluated whether people indeed view ideas as immaterial. Materiality, here, was evaluated by asking people to reason whether the relevant trait is likely to be instantiated in the brain, and whether it is likely to transfer to a replica that precisely preserved the body of an adult/infant donor. Results showed that ideas were viewed as less material than non-cognitive traits (sensations, actions, and emotions)—the stronger the presumed materiality of ideas, the more likely people were to consider them innate (in line with Dualism).

A third set of studies showed that people believe that innate traits are material—when informed that a trait was innate, people were more likely to conclude that the trait was material (e.g., instantiated in the brain) compared to when the same trait was presented as acquired (in line with Essentialism).

A final set of experiments examined whether the link between materiality and innateness is causal. To evaluate the casual role of Dualism, we had one group of participants read a passage suggesting that minds and bodies are distinct (in line with Dualism); another group read a passage suggesting that minds and bodies are one and the same (in line with Physicalism). After reading the passage, we asked people to evaluate the innateness of psychological traits. Results showed that “innateness” ratings were higher in the Physicalist condition relative to the Dualist condition, and perceived innateness was further modulated by the perceived strength of the mind/body link.

The complementary study primed people towards Essentialism. Here, we either told people that the traits in question were materially instantiated in a specific brain region (in line with Essentialism) or that they did not have any known instantiation in the brain (contrary to Essentialism). Participants gave higher “innateness” ratings to traits presented as material, in line with Essentialism.

Not only does the dissonance theory explain our empiricist intuitions towards ideas, it also predicts opposite, nativist intuitions towards basic emotions—states that laypeople typically view as embodied (e.g., in the face, the guts). Recent results bear this out (Berent et al., 2019a; Berent et al., 2019b). People are biased to believe that basic emotions are innate--the more embodied is an emotion, the more likely people are to view it as innate. And when informed that a given emotion “shows up” in the (material) brain, people jump to the conclusion that the emotion in question is innate.

Altogether, the dissonance hypothesis explains why people hold empiricist biases towards ideas, why they show the opposite nativist intuitions towards basic emotions, and why both sets of attitudes are systematically linked to the perceived materiality of mental states.

Carruthers does not acknowledge this innateness/materiality link. He notes that (unlike ideas) emotions are viewed as innate, but in his view, this is due to the opaqueness of

emotions and desires to mindreading, not their materiality. In his words, “we often have the experience of finding ourselves with a desire without any idea of why we have it” (p. 15). This may hold for some emotions, but it is not invariably true for others—I can feel elated because I won the lottery; I’m angry because she just cut me in the supermarket line. And the experimental evidence shows our nativist biases towards emotions arises from their anchoring in the material body (Berent et al., 2019a).

To evaluate the origins of our empiricist intuitions, one needs to go beyond anecdotal reports and systematically compare the perception of ideas and emotions and their link to their perceived materiality. Moreover, one should keep in mind that the empiricist intuitions of scientists (the primary focus of Carruthers’ piece) and laypeople (my topic of inquiry) may not necessarily arise from the same origins; it is unfortunate that Carruthers obscures this distinction, and does not fully engage with the experimental findings. In short, to understand laypeople’s empiricist intuitions, we ought to start by taking a careful look at the empirical facts.

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