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Learning in the Social Being System

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Abstract:	We argue that the core social being system is unlike other core systems in that it participates in frequent, widespread learning. As a result, the social being system is less constant throughout the lifespan and less informationally encapsulated than other core systems. This learning supports the development of the precursors of bias, but also provides avenues for preempting it.

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Abstract:

We argue that the core social being system is unlike other core systems in that it participates in frequent, widespread learning. As a result, the social being system is less constant throughout the lifespan and less informationally encapsulated than other core systems. This learning supports the development of the precursors of bias, but also provides avenues for preempting it.

Main text:

Among Spelke's important and novel contributions in *What Babies Know* is the idea of a core cognitive system for representing social beings. We share Spelke's view that such a system exists, and that it functions to produce abstract conceptual representations of social beings, social engagement, shareable experience, and social value. However, we argue that the social being system differs from other core cognitive systems with respect to several of the characteristic properties of core knowledge. The social being system is 1) more affected by learning, 2) less constant throughout the lifespan, and 3) less informationally encapsulated than other core systems, especially with respect to its representations of social value. Unlike other core systems, the social being system's computations are environmentally dependent, allowing the system to amplify and morph in ways other core systems do not.

Spelke presents an array of powerful data in favor of the core social being system. In our view, whereas this data on the whole supports the existence of such a system, it also supports certain interesting divergences from the paradigm of core cognition. For example, Spelke reviews evidence that infants are especially sensitive to perceptual cues that carry important social information, such

as faces (e.g., Field et al., 1984; Meltzoff & Moore, 1994) and speech (e.g., Werker, 1989). However, as Spelke notes, the developmental patterns of infants' face and speech processing between birth and 12-months are highly dependent on input from the infant's social environment. Newborn infants are equally good at recognizing and differentiating faces of all races, and even discriminate between human and chimpanzee faces. Sometime around 6 months of age infants begin to display the "Other Race Effect," a diminished ability to recognize and differentiate human faces of other races (Sangrigoli & De Schoen, 2004; Pascalis et al., 2005; Kelly et al., 2005, 2007). However, perceptual training (i.e., exposure to faces of other races) can diminish or even eliminate the Other Race Effect in 6- to 9-month-old infants (Heron-Delaney et al., 2011). Similar patterns appear in infants' differentiation of non-human primate faces (the "Other Species Effect," Pascalis et al., 2005) and non-native speech sounds (Werker 1989, Kuhl, Tsao, & Liu, 2003): between birth and 12-months, wide initial sensitivity to a type of perceptual social cue (faces or speech sounds) either narrows or remains wide, depending on the breadth and diversity of the infants' experiences.

These developmental patterns indicate that whereas the social being system emerges early, it is remarkably malleable. Compared to the core systems for object, place, number, and agent, which are relatively insensitive to environmental factors, the social being system learns from the input it receives. For example, in the case of face processing, during the first year of life the system learns which kinds of faces are regularly present and thus worth recognizing and differentiating. Similarly, in the case of speech processing, the system learns which speech sounds, or phonemes, are meaningful in one's language. These capacities reflect the faces and speech sounds with which an infant is familiar. Whereas such capacity limits may simply reflect what is familiar, not bias (Wang, Laming & Andrews 2022), they may be precursors to learned in-group/out-group divisions, that have the potential to lead to the development of bias (Hughes et al., 2019; Vingilis-Jaremko, Kawakami, & Friesen, 2020).

The social being system's susceptibility to learning implies that it is not constant throughout the lifespan. Whereas the system is present from infancy to adulthood, as is characteristic of core cognitive systems, it operates differently at different periods, depending on when and how it has learned [stages]. This is especially evident with respect to social preferences and values. For example, Singh et al. (2022) studied infants living in Singapore, which is a multiracial society (with a predominantly Chinese population, but with also large Indian and Malay populations), who are raised by caregivers of other races. At 3, 6, and 9-months these infants showed an increasing visual preference for faces of their caregiver's race. This other-race preference was predicted by the extent of contact with members of the other race. This data indicates that experience shapes the social being system over time, such that an infant's social being system at 3-months may look very different from the same infant's social being system at 9-months or older. Another study in Singapore found that extensive experience with caregivers of other races had mitigated the development of preschool age children's explicit racial bias (Setoh et al., 2023).

Such environmentally driven effects on the social being system continue into childhood. For example, 3- to 7-year-old children's neighborhood and school demographics can affect their racial preferences, as can the race of white childrens' preschool teachers (Hwang & Markson 2023). This data thus reflects both micro- and macro-level influences on preschoolers' social preferences. Imitation behaviors are also socially influenced from infancy to early childhood. For example, 14-month-old infants are more likely to imitate a native- over foreign-language speaker, suggesting differential learning and affiliation based on social elements of the input (Buttelman et al., 2013).

Four- and 5-year-old children overimitate actions only of adults who demonstrate social affiliations (Nielsen & Blank, 2011), and 4- and 6-year-old children overimitate actions that are described as normative (Clay et al., 2018). As children begin to develop richer cognitive concepts of race, gender, class, status, and norms, it becomes more difficult to disentangle effects on the core social being system from effects on other forms of social cognition. Nonetheless, these are examples of effects on representations of social value and imitation behavior, which are among the outputs of Spelke's core social being system.

These examples also indicate that the social being system may be less informationally encapsulated than other core systems. As Spelke argues, the core object, place, number, form, and agent systems are informationally encapsulated, both from central cognition and from each other (Spelke, 2022, p. 194). However, the examples discussed above indicate that the core social being system can be influenced by children's beliefs about social norms and affiliations, as well as by environmental factors such as neighborhood and school demographics. Such influences may be automatic and unconscious, but they do reflect that the social being system is sensitive to a large variety of inputs, and that its boundaries are more porous.

Other core cognitive systems also participate in learning, but they typically do so in different or more minimal ways. For example, the core number system facilitates young children's learning of natural number concepts (Spelke, 2022, p. 171-185), but this learning does not alter the core number system itself. Rather, it is an example of a core system supporting the construction of a separate cognitive system. Minimal learning does occur within the core object system, when between 5- to 7-months infants learn that objects will fall when unsupported (Kim & Spelke 1992). But this is a relatively minor addition to the constraints of the system. In contrast, the effects of learning on the social being system are greater and more pervasive. It can be influenced at various developmental periods, and by various factors, such as the members of our family, the people who live in our neighborhoods and attend our schools, children's friends and their parents' social networks (Eason, Kaiser, & Somerville, 2018; Hwang & Markson, 2023, Markson & Luo, 2020; Roberts, Williams, & Gelman, 2017). As children's social interactions and circles expand, or their neighborhoods and schools become more diverse, so might their racial attitudes, biases, and preferences for members of different social groups. This extensive susceptibility to learning sets the social being system apart from other core cognitive systems.

In conclusion, we share Spelke's view that the early emergence of sensitivity to faces and speech sounds support positing a core social being system that is at least in part innate. We depart from Spelke in emphasizing that the system also allows for different learning trajectories and takes in a wider range of inputs than other core systems do. The malleability of the social being system enables the development of the precursors of bias, but it also enables the prevention of the development of bias. Because the system is relatively plastic, environmental interventions are effective in ways they are not for other core systems.

The environmental dependency of the social being system also raises questions about the relationship between the characteristic properties of core knowledge, and more broadly about what it means for a cognitive system to be 'core.' Spelke outlines twelve characteristic properties of core knowledge, and argues that if a system has some of them, it is likely to have them all (Spelke 2022, pp. 190-200). However, if the above arguments are correct, the core social being system has some, but not all, of these characteristic properties (or at least varies in the way these properties manifest).

In particular, it is neither developmentally invariant nor entirely encapsulated, and whereas it is innate, it can also be changed by learning. What then should we make of developmental invariance, encapsulation, and innateness as characteristics of core cognition? One option is to say that only some of the characteristic properties of core cognition are necessary to classify a system as part of core knowledge, whereas others are common among core systems but irrelevant to their classification. A second option is to say that the characteristic properties of core cognition function like a cluster concept, such that no individual property from the set is necessary for a system to count as core knowledge, but the presence of a sufficient number of the properties is jointly necessary. In either case, the resulting picture of core cognition is one on which some systems, such as the social being system, are less paradigmatically 'core' than others.

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