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How physical information explains infants' supposed psychological world

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In their Perspective, Liu et al. (Liu, S., Karakose-Akbiyik, S., Outa, J. & Kim, M. J. How physical information is used to make sense of the psychological world. *Nat. Rev. Psychol.* **5**, 59–73 (2025))[1] argued that infants possess separate domain-specific systems – naive physics and naive psychology – that interact based on shared input and support reasoning about objects and agents.

Our concern with the Perspective is twofold. First, Liu et al. present the developmental evidence as if it unambiguously supports their proposed domain-specific systems. In doing so, they fail to acknowledge that domain-general processes that operate over perceptual regularities can just as readily account for the very same data. Second, the interaction that Liu et al. attribute to separate systems might instead reflect the structure of infants' experience. Because action is inherently both physical and psychological, there is no need to posit separate systems with integrated output.

On the first point, Liu et al.'s proposal implies that infants represent objects and agents in terms of abstract notions such as contact and causality. The evidence that Liu et al. rely on to make this case comes from studies that demonstrate that 6-month-old infants distinguish causal from non-causal 'launching' sequences[2] and find it anomalous when inert objects move on their own[3]. Yet both findings have been argued to have a perceptual basis. For example, whether an event looks causal depends on the dimensionality of the objects involved[4] and the persistence of their surface appearances[5]. Similarly, computer simulations suggest that the reason infants show heightened looking to self-propelled objects is because they have learned – via domain-general associative learning – that things with object-like features (for example, rigid bodies with smooth rectilinear boundaries) tend only to move when contacted[6]. Seeing an object move in the absence of contact might therefore elicit longer looking simply because this event violates a learned perceptual regularity.

On the second point, we question the scientific utility of positing separate domain-specific systems given that 'physical' and 'psychological' information is not so neatly partitioned in the real world[7]. Goal-directed actions – that infants both witness and produce – are always embedded in bodily movement, physical constraints, objects, and spatial relations[8]. Thus, perceptual regularities that link physical events to psychological outcomes are readily available for learning. Moreover, infants' own motor behaviours provide a rich source of input: they experience how their own goal-directed actions are constrained by the physical environment and have predictable effects on objects and other people. Sensitivity to effort, obstacles, motion and goal-directed behaviour can therefore emerge through domain-general learning grounded in infants' own actions and perceptions.

In sum, the developmental evidence reviewed by Liu et al. is consistent with their proposal but is not uniquely supported by it. Many of the findings interpreted as supporting separate domain-specific systems are equally compatible with domain-general accounts of development, in which infants' own movements combine with associative-learning processes to co-construct perceptual experiences that inherently integrate physical and psychological information.

There is a reply to this letter by Liu, S., Karakose-Akbiyik, S., Outa, J. & Kim, M. J. *Nat. Rev. Psychol.* https://doi.org/10.1038/s44159-026-00629-z (2026).

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Competing interests

The authors declare no competing interests.