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Thinking *with* other minds

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Abstract

We applaud the ambition of Veissière et al's account of cultural learning, and the attempt to ground higher order thinking in embodied theory. However, the account is limited by loose terminology, and by its commitment to a view of the child learner as inference-maker. Vygotsky offers a more powerful view of cultural learning, one that is fully compatible with embodiment.

Main text

Embodied approaches to cognition are compelling when they are invoked as explanations for perceptually controlled action phenomena: how do people catch balls, or continuously maintain an upright posture—that kind of thing. A challenge is to extend this kind of explanation to an account of 'higher order' tasks that are characteristic of human behavior, i.e. those involving language and social interaction. The authors seek to rise to this challenge. They offer an account of cultural learning based on a predictive coding view of cognition. We applaud the ambition of their project. We think the authors are right to ground this project in an account of learning, and we agree that the account must begin with a conception of the child as an embodied agent.

In its details, though, the proposal is rather limited. The authors' stretching of conceptual terminology leads them to pursue a solution that remains fundamentally disembodied and inferential. And they overlook a long-standing approach which offers a promising solution to the problem they are addressing.

First: the vague terminology. The authors are too flexible in their use of terms. Particularly problematic is the word "expectation". The authors use the word

interchangeably to mean both a prediction generated by the brain of an actor as part of its perceptual foraging, and socially-enforced norms of 'expected' behavior, e.g. that one should sit up straight. The problem here is that the latter meaning is the thing the authors are trying to explain. By using the same term interchangeably for both meanings, they are effectively presupposing the solution to the problem. (Such ambiguity in the use of terms seems to be a recurring problem in predictive coding accounts, see Anderson and Chemero 2013).

The authors attempt to address this problem by appealing to the concept of affordances, but in doing so stretch that concept beyond its useful boundaries. Just as the action possibilities of objects can be described in terms of affordances, the authors suggest, so *culturally appropriate* behavior can be described in terms of *cultural* affordances. Unfortunately, affordances don't work as explanations for the things the authors seek to explain, namely: how individual humans learn to act appropriately according to the prevailing mores of their neighbors. This is not what the concept of affordances was invented for. The concept was originally intended to resolve a dualism in the philosophy of perception between phenomenal and physical worlds (Heft 2017). It achieved this by suggesting that meaning resides not inside the organism but in the fit between an organism and its surroundings, specifically in the fit between the organism and some structure that the organism can act upon. In practice, it has proved remarkably difficult to leverage this concept as part of a fruitful empirical program, even when the target of explanation is a single actor performing a simple task (see Wagman 2019 for a review). It is much more difficult to apply the concept to culture, and to our knowledge no one, including the current authors, has succeeded in doing so non-metaphorically. You can say 'cultural affordances' all you want, but that does not constitute an empirical research program.

To solve the problem the authors set out to solve, they need an account of how you get from situated action in the infant to enculturated behavior in later childhood and adulthood. That is, of how you get from one kind of expectation to the other, from the if-I-put-my-hand-in-that-fire-it-will-be-hot type of expectation to the children-should-sit-up-straight type of expectation. It is not enough to say that the child simply learns a set of behavioral norms by observing adults. The question is: how?

Essentially the authors think learning is inference—another term whose meaning is stretched—and view the child as a scientist in the crib. It is here that their account remains a disembodied one. It has been pointed out that to view the child learner as fundamentally an inference-maker is to inappropriately project onto the child the worldview of the adult (and, traditionally, male) scientist: in pursuit of experimental control, the scientist imposes certain restrictions on himself in how he can gather data about the world, and he then wrongly assumes that the child is subject to similar restrictions (Donaldson 1978). This sort of account acts as if the child learns everything on her own, without scaffolding provided by others.

It doesn't have to be this way. A compelling non-inferential account of cultural learning already exists, and the authors overlook it. This is the cultural historical approach associated with Vygotsky and later activity theorists (Vygotsky 1962, 1978; Leont'ev 1974; Cole 1996). On this view, the child is not an incomplete adult who must collect a set of cultural norms before she is able to act in a fully adult manner. Rather, the child is already a complete actor. She continuously learns new skills as part of her coping with situations involving others. Crucially, social activity comes first. Language starts off as concrete acts of speaking and being spoken to. It is only later, after the child has developed some linguistic competence in the presence of others, that she can engage in private mental cognition: construct an internal narrative, engage quietly in counterfactual reasoning, develop inferences and scientific theories.

A key argument for Vygotsky was that the acquisition of language (and culture) leads to a qualitatively different form of cognition: norms are no longer imposed exclusively by evolutionary fitness but can be self-imposed through language. Given this view of cultural learning, the present 'variational' account of higher cognitive functions misses the point: language-involving cognition operates according to a different set of norms, and is not merely a more elaborated form of adaptive fitness.

The Vygotskian view is, we submit, a more attractive one. It provides an escape from the adaptationist trap that the current proposal falls into. It is also compatible with an embodied, socially embedded understanding of human behavior. Instead of seeing other minds in instrumental terms, as things we think *through*, it sees other minds as people we can think *with*.

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