

Revisiting an extant framework: Concerns about culture and task generalization

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ABSTRACT (ENGLISH)

The target article elaborates upon an extant theoretical framework, "Imitation and Innovation: The Dual Engines of Cultural Learning." We raise three major concerns: (1) There is limited discussion of cross-cultural universality and variation; (2) overgeneralization of overimitation and omission of other social learning types; and (3) selective imitation in infants and toddlers is not discussed.

FULL TEXT

The target article brings renewed attention to the complexity of cultural evolution and the many ways the instrumental and conventional/ritual stances complement each other. We look forward to the continued debate it will generate and encourage the authors to consider additional relevant literatures not covered in the current article.

It is well-documented that children will flexibly switch learning approaches based on the ebb and flow of changing social and instrumental motivations (Carpenter & Call, 2009; Over & Carpenter, 2012). Children's proclivity for doing so was highlighted in several overimitation studies (e.g., Herrmann, Legare, Harris, & Whitehouse, 2013; Legare, Wen, Herrmann, & Whitehouse, 2015) and then elaborated as the "Dual Engines of cultural learning" – an integrative account that outlines how the instrumental (innovation) and conventional/ritual (imitation) stances (Herrmann et al., 2013; Legare et al., 2015) can work in tandem to facilitate cumulative cultural evolution (Legare & Nielsen, 2015). The target article reiterates much of this theoretical framework, adding greater emphasis on rituals and cognition. We appreciate Jagiello et al.'s detailed explanation of relevant key concepts, but note omissions regarding cross-cultural generalizability issues, other types of social learning, and imitative flexibility in infancy and toddlerhood.

First, although some questions related to cultural factors are raised (target article, sect. 5), Jagiello et al. have not discussed extant theories and evidence of the ways cultural factors can influence the development of stance behavior. They mention that overimitation has been studied in a broad range of cultural groups (target article, sect. 3.1), but none of the cross-cultural study results are discussed. For example, imitative nuances between Ni-

Vanuatu and US children in Clegg and Legare (2016) are neglected. Compared to US children, the instrumental stance of Ni-Vanuatu children involved higher fidelity, likely because of the population valuing conformity more than those from the United States (Clegg, Wen, & Legare, 2017). Similarly, within-population variation in Corriveau et al. (2017) is not mentioned. In that study, more Asian (but not Caucasian) American children opted for a conventional/ritual stance when social pressure was high. This risks perpetuation of a false assumption that high-fidelity imitation mechanisms across all populations are universal. Although children seem to generally display a propensity for high-fidelity imitation, its degree, underlying motivations, and contexts across different populations remain uncertain.

For example, overimitation studies conducted with hunter–gatherers in Africa reported mixed findings. Aka (Congo Basin) adults but not children displayed overimitation in a classic puzzlebox task (Berl & Hewlett, 2015). Hai||om children (Namibia) tended to overimitate only in tasks that involved tool-use (Stengelin, Hepach, & Haun, 2020). However, !Xun and Khwe children (Platfontein) replicated ritual-like actions with high fidelity (Nielsen, Tomaselli, & Kapitány, 2018). The underlying mechanisms and motivations for imitation among hunter–gatherer children should not be assumed to resemble those in other societies. They grow up in an egalitarian society, are given a high level of autonomy, and engage primarily in observational and peer-to-peer collaborative learning (e.g., Boyette & Lew-Levy, 2020; Lew-Levy et al., 2020). Their social dynamics contradict typical didactic, pedagogical interactions in socially stratified societies. How the bifocal stance theory (BST) may be applied to explain social learning of other forms, such as observational, collaborative, and explorative learning remains unclear (see Legare, 2017). Second, “Instrumentality cues” under “schematic overview” (Fig. 1) covers overimitation but does not include the context of other imitation and conformity instances. Notably, many human learning scenarios do not necessarily involve causally opaque behaviors, but instead feature culturally unique methods, which are often arbitrary and less efficient (e.g., eating rice with chopsticks even when lacking experience and a spoon is available). The classic example of Sylvia's recipe (target article, sect. 2.1) also does not involve causally opaque actions (cutting both ends of the ham is causally transparent). High-fidelity copying in this case is driven by the arbitrariness of Sylvia's behavior, but not causal opacity (Gergely & Csibra, 2006).

Many social learning paradigms (including some cited in sect. 2.4.1) do not include causally opaque actions, but examine how children process the interplay between conventional and instrumental factors by manipulating effectiveness/optimality of the modeled approach (e.g., Corriveau et al., 2017; Dickerson, Gerhardstein, Zack, & Barr, 2012; DiYanni, Corriveau, Kurkul, Nasrini, & Nini, 2015; Fong, Imuta, Redshaw, & Nielsen, 2021a, 2021b, 2021c; Liskai-Peres, Kampis, & Király, 2021; Schillaci & Kelemen, 2014), prior experience (Williamson, Meltzoff, & Markman, 2008), agent (Fong, Sommer, Redshaw, Kang, & Nielsen, 2021c; Sommer, Redshaw, Slaughter, Wiles, & Nielsen, 2021), presentation medium (Fong et al., 2021a; Strouse & Troseth, 2008), or time pressure (Fong, Imuta, Redshaw, & Nielsen, 2021b). Children's performance in these studies can be interpreted using the BST, yet we cannot assume social and cognitive mechanisms discovered in overimitation studies to be generalizable to these contexts. Although the authors indicate that children differentiate between the ritual and instrumental stances based on behavioral measures beginning around age of 3, the target article is silent against flexible imitation in infancy and toddlerhood. Jagiello et al. describes “rational imitation” established in Gergely, Bekkering, and Király (2002) (target article, sect. 3.2) without considering that it was discovered in 14-month-old children. A substantial body of research suggests that infants and toddlers do not learn and copy blindly, but make decisions about who, when, and what to copy based on various contextual factors (e.g., Buttelmann, Zmyj, Daum, & Carpenter, 2013; Howard, Henderson, Carrazza, & Woodward, 2015; Woodward, 1998). For example, 18-month-olds tended to employ an imitative rather than an emulative approach only when the model was socially engaging (Nielsen, 2006). In Meltzoff (1995), 18-month-olds produced the target actions even after observing only failed attempts, instead of replicating the failures blindly. They also only did so when the demonstration was shown by an adult but not a machine. Does early flexible social learning serve as an early marker of the development of stance behavior? Lastly, Jagiello et al. point out that while cultural learning research has focused on instrumental learning (innovation), it has paid less attention to high-fidelity transmission. Missed is noting how in developmental

psychology the opposite is true, where there is a long history of investigation into children's developing imitative proclivities but study of their capacity for innovation may be considered an emerging field. Our understanding of cultural evolution will be richer with continued efforts at more fully integrating disparate fields of study such as these.

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