

Can bifocal stance theory explain children's selectivity in active information transmission?

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Abstract: To shed light on the key premise of the BST that social learners flexibly take instrumental and ritual stances, we focus on developmental origins of child-led information transmission, or teaching, as a core social learning strategy. We highlight children's emerging selectivity in information transmission influenced by epistemic and social factors and call for systematic investigation of proposed stance-taking.

In light of the BST's main premise that social learners flexibly take instrumental and ritual stances, we review emerging literature on child-initiated information transmission as a crucial component of active social learning toolkit. We argue that to fully understand the developmental origins of the proposed stances, we need to consider child-led teaching which is currently overlooked in the target article's focus on imitation.

Active teaching – or pedagogical information transmission – is a complex social learning strategy enabling knowledge exchange as an essential element of human cumulative culture (Burdett et al., 2017; Kline, 2015; Strauss & Ziv, 2012). It allows to effectively convey acquired information or practical skills to less knowledgeable others, without the need for independent learning through trial and error. The presence of teaching behaviors early in human ontogeny supports the premise that children are not merely passive recipients of knowledge, but also actively seek and further propagate knowledge to others (Bazhydai & Harris, 2021; Gweon, 2022). Therefore, focusing on children as active teachers in complex social learning contexts can help uncover the underlying cognitive mechanism and the emergence of the proposed stances. Can we observe the indices of instrumental and ritual stance-taking in children's own information transmission?

Developmental research suggests that children start to actively share information with others from infancy (Gweon, 2022; Ronfard & Harris, 2018). Behavioral strategies used to propagate knowledge increase in sophistication with development (Strauss & Ziv, 2012). In the first two years of life, children use gestures, such as pointing to the location of objects for a naïve observer, and action demonstrations; at 3 years of age, they inform others by using elaborate demonstrations (e.g., how a game is played); demonstrations are accompanied by explanations when they are 5-year-old; and at around 7, they tailor information for learners' specific needs, such as by correcting mistakes and providing individual feedback.

The crucial question arising here is whether children are *selective* when they propagate information to others, and if so, how early in ontogeny such selectivity emerges? While the target article evidences stance switching from infancy by focusing on imitation behavior, more direct evidence to assess this key premise of the BST would come from child-initiated teaching behaviors. The expectation that children will be selective in their teaching,

rather than exhibit a ‘teach all’ pattern, arises, first, from evidence of children’s selective trust in others’ testimony based on informant’s epistemic or social characteristics (Tong et al., 2020). Second, already by preschool years, children hold explicit ideas about what constitutes good teaching (Sobel & Letourneau, 2016, 2018) and view providing relevant information as key to good teaching (Gweon, 2022). The relevance of information depends both on the nature of information itself and on the characteristics of the learners who vary in their goals, abilities, prior knowledge levels, and social affiliations, among other factors. A natural outcome of this relationship would lead to employing tailored approaches when teaching others.

Emerging findings support the notion that children flexibly make selective decisions on what kind of information to transmit, to whom and when. They consider learners’ goals and abilities (Gweon & Schulz, 2019), social group affiliation (Karadağ & Soley, 2022; Schmidt et al., 2012) and occupations (Danovitch, 2020). Further, children do not transmit all learned information indiscriminately, but variably prioritise generalizable (Baer & Friedman, 2018; Gelman et al., 2013), cognitively opaque (Ronfard et al., 2016), simple (Bazhydai, Silverstein et al., 2020), and information acquired through explicit pedagogy (Vredenburg et al., 2015). Finally, children consider how much it would benefit the learner and how costly it would be for the learner to acquire information independently (Bridgers et al., 2020).

Can BST explain children’s selectivity in active information transmission? Research to date, while limited, lends support to this idea. For example, instrumental stance-taking may explain the finding that children provided more comprehensive information to the learner who requested information to enable them to effectively complete an action, and also when the learner was introduced as being ‘silly’ compared to exceptionally smart (Gweon & Schulz, 2019). Ritual stance-taking might account for children’s use of normative language and enforcement of conventional norms selectively with ingroup but not outgroup members (Karadağ & Soley, 2022; Schmidt et al., 2012). To directly investigate whether observed selectivity in information transmission stems from flexible stance-taking, future studies should focus on systematically manipulating factors that may potentially trigger these stances during transmission – those regarding both the nature of information and the social attributes of the learner. Here, while the target article acknowledges the role of information opacity and resolvability when discussing selectivity in imitation behavior, other epistemic and social factors may provide insight into children’s motivations and pave the way for more targeted research into underlying cognitive mechanisms of stance-taking across social learning strategies. Thus, future studies should focus on selectivity in information properties, such as complexity, efficiency and relevance, in conjunction with epistemic and social attributes, such as knowledgeability or group membership of both informants and learners.

Finally, while most of research to date stems from children of preschool age and above, when representations of knowledge and explicit understanding of its transmission develop (Ziv & Frye, 2004), research on active information transmission in pre-mentalizing age is in its infancy (Bazhydai, Silverstein et al., 2020; Flynn, 2008; Karadağ, Bazhydai, & Westermann, 2022; Liskowski et al., 2006, 2008; O’Neill, 1996). This limits our ability to draw generalizable conclusions with regards to the developmental trajectory of children’s selectivity and stance-taking, domain specificity or generality of the underlying cognitive mechanism and deliberateness or automaticity of these processes.

We conclude that BST has the potential to explain children’s emerging selectivity in active information transmission and propose future directions for systematic investigation of

instrumental and ritualistic stance-taking to further our understanding of the factors that affect the level of sophistication, diversity, and flexibility of the developing social learning toolkit.

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