Is shared intentionality widespread among and unique to humans?

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Abstract: We agree that motivation to share emotions and other mental states is crucial for communicative development, but human infants are highly selective in sharing mental states, and this is well taken evolutionarily. Young chimpanzees may also have motivation to imitate mothers. Thus, uniquely human cognition and culture may not be reduced to a few basic abilities and/or inclinations.

Because we assume that emotion influences cognition, with effects ranging from what is given processing priority to how widely information is used (Hatano et al. 2001), we welcome Tomasello et al.'s adding the motivational prerequisite of shared intentionality for uniquely human cognition and culture. However, we must point out two problems that their formulation seems to have, one technical and the other philosophical.

Shared intentionality with whom? In their formulation, Tomasello et al. almost neglected the issue of whom infants share intentionality with. We are afraid this neglect is a serious problem for our understanding of "we intentionality" that mediates cultural learning. We believe that human infants and toddlers do not want to share emotions and other mental states with every conspecific. We offer two arguments for the selectivity in sharing intentionality. Evolutionarily, whereas mind-reading ability is always useful, an overly extended intentionality sharing may be dangerous. Thus, infants and toddlers are expected to be highly selective in sharing those mental states initially and extend the act of sharing only gradually from the attachment or most reliable figure to other humans who are like the attachment figure and/or whom the figure interacts with positively.

In fact, studies on attachment strongly suggest this is the case. Here we indicate two essential features of social relationships of infants that inevitably affect the nature of shared intentionality. First, as soon as attachment is established toward the end of the first year, infants tend to share intentionality mostly with the attachment figure. As Campos and Stenberg (1981) demonstrated, the attachment figure, usually the caregiver, is the target of *social referencing*. Through references to facial, vocal, and gestural affect-specifying messages of the mother, 1-year-old infants can recognize her evaluation of a given situation. Also by referencing, the infants vicariously learn appropriate responses to the situation (Sorce et al. 1985). This evidence supports the affect-facilitation assumption of socialization; that is, affective figures can draw infants' attention and convey social influence (e.g., see Bandura & Huston 1961). For instance, attachment studies indicate that securely attached infants are characterized as compliant toward the mother, whereas incompliance and deviant behaviors toward the mother characterize insecurely attached infants (e.g., see Londerville & Main 1981). Thus, we can reasonably assume that infants share intentionality with special figures that they consider important.

Second, we know that infants and toddlers sometimes refuse to share intentionality. We agree with Tomasello et al. that infants in their early months are very sensitive to social contingencies. However, infants do not direct the hardwired capacity of sharing mental states indiscriminately toward others. Infants not only identify and love to interact with the specific attachment figure, but they also avoid other people. A *fear of strangers* is common among infants at around 8 months of age, which arguably shows that, for their safety, they reject unfamiliar people. Moreover, infants can often interact with a stranger if the mother stays in the room, but they reject proximal and physical contact with the stranger (Ainsworth et al. 1978).

Investigators of social relationships generally assert that even infants have multiple social figures, including parents, siblings, and grandparents (e.g., see Lewis 1982). In fact, infants are reported to have affective interactions not only with the mother but also with the father (Takahashi 1990). However, even these investigators do not believe that infants' sharing of intentionality is so widespread that it can be applied to virtually all conspecifics.

More evidence of that attachment-based selectivity comes from the case report of a long-term intervention of socially and physically deprived children in Japan (Fujinaga et al. 1990). When a 6-year-old girl and her 5-year-old brother were rescued from a small shack after 19 months of deprivation and taken into custody, their developmental levels were evaluated as equivalent to those of 1-year-olds or even younger normal children. However, they caught up on their development when they began to express attachment behavior toward each specific caregiver.

Another attempt to justify "human exceptionalism"? The foregoing concerns variations within the human species. Can this affective factor explain the between-species differences in individual and collective intellectual achievements? To generalize, can we maintain that *human exceptionalism* (i.e., unique human cognition and culture) be causally attributed to a few basic abilities and/or inclinations or perhaps a single one? Tomasello et al. seem to believe so, but their data are persuasive only with regard to the inadequacy of mind-reading ability alone, and not with regard to the adequacy of mind reading plus the motivation to share. This is the second philosophical problem.

A few recent studies by Japanese primatologists suggest that the "general ape line" has the motivation to share. Hirata and Morimura (2000) found that, in honey fishing (an experimental simulation of ant/termite fishing found in the wild), naive chimpanzees often observe after their failure their experienced partners and use the experienced partners' leftover tools. Hirata and Celli (2003) further suggest that infant chimpanzees acquire honey-fishing behaviors earlier than recorded in the wild not only by repeatedly observing the behaviors of experienced mothers but also by selectively using the tools often used by mothers. Matsuzawa et al. (2001), taking nut cracking as an example, suggest that young chimpanzees develop a strong affective bond with their mothers, who they use as models for imitative learning, like human apprentices do who are expected to possess a strong motivation to imitate. The mothers, like human masters, do not offer any form of active teaching but just tolerate the youngs' observation of their behavior. Matsuzawa et al. claim that infant chimpanzees' extended imitative learning is supported "by the motivation to copy the mothers' behavior" (p. 574). Why, then, are human intellectual achievements so different from those of chimpanzees? Our speculation is that there is only a small, quantitative difference in many basic aspects (including sharing intentionality) between humans and great apes, but the aggregate of a number of these small differences produces the remarkable qualitative difference in collaborative skills, culture, and cognition.

The interpersonal foundations of thinking

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Abstract: Tomasello et al. provide a convincing account of the origins of cultural cognition. I highlight how emotionally grounded sharing of *experiences* (not merely or predominantly intentions) is critical for the development of interpersonal understanding and perspective-sensitive thinking. Such sharing is specifically human in quality as well as motivation, and entails forms of self–other connectedness and differentiation that are essential to communication and symbolic functioning.

Some years ago, evidence emerged from studies in autism that there is a dissociation between affected children's relatively intact

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