The Role of Comparison in Social Cognition

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Motivation

How does comparison affect the way we think of others? Comparison has been shown to be a powerful learning tool in a variety of conceptual domains, ranging from basic spatial relations, to concepts in algebra and heat flow (e.g., Gentner, 2010). Comparison recruits a structure-mapping process that highlights common relational structure between two situations. It helps novice learners see meaningful similarities and differences which can then be transferred to novel situations. This process can help infants and children move beyond the particular features of any one situation and gain a more abstract understanding of complex concepts.

While comparison has been established as an important tool in cognitive development, less work has illustrated how it may function as a key process in the social domain. The goal of this symposium will be to show how these benefits of comparison can also influence the development of social cognition. We bring together empirical work addressing comparison in infancy through early childhood to illustrate how this basic process has profound effects throughout social cognitive development.

A. Meltzoff will discuss the kinds of mapping processes that underpin the "Like me" hypothesis. S. Christie will show how comparison can guide imitation in young children. C. Hoyos will present work showing that explicitly asking children to compare mental states can aid false belief understanding. V. San Juan will examine how language can invite comparison across instances to improve false belief reasoning. We will end with a discussion by T. Bach on the implications of this work for social cognition and theories of comparison.

Infant Imitation and the "Like-Me" Hypothesis for Developing Human Social Cognition

Andrew N. Meltzoff

Newborn humans imitate facial gestures they have never seen themselves make. There is a tight coupling between perception and production that allows newborns to cross-modally map gestures they see another perform and their own unseen acts. I will explore the mechanisms underlying such interpersonal mapping, and articulate the "Like-Me" hypothesis about the roots of human social cognition. According to this view, preverbal social learning is facilitated by infants' identification of others as "like me." This allows human infants to rapidly learn about physical laws and social conventions through observing the actions of other people. In addition to manipulating the world themselves, children learn simply from watching and imitating experts in their culture. Human infants exploit others as proxies, a strategy that multiplies their learning opportunities prior to taking action themselves. They learn from the trial and error and insights of others. I will draw on various research studies in developmental psychology to make these ideas concrete, and will discuss more general theoretical lessons for the formation of human social cognition.

Within Group Comparison Affects Social Imitation Learning

Stella Christie, Zachary Murphy, & Averill Obee

Imitation has been suggested as a powerful learning mechanism for cultural transmissions. Idiosyncratic cultural norms such as greeting forms (hand-shake or cheek-kiss) are spread widely and efficiently because learners have the ability and the tendency to imitate them. What prompts this imitation learning? Since a critical component of cultural transmission is the cultural group itself, we investigate whether learners compare the individuals *within* the group in order to decide to imitate or not. Specifically, we asked whether preschoolers are more likely to imitate the action of a homogenous group (containing two similar people) or a heterogeneous group (two different people). Most studies on imitation have used the framework of participants imitating only one individual. This is the first effort that considers how the social group affects imitation learning.

Four-year-olds were randomly assigned to the homogenous (2 same-gender models) or the heterogeneous (2 different-gender models) groups. All children saw a novel toy (a cube that plays music), and two ways of playing with the toy: functionally relevant (press one side of the cube which plays the sound) and irrelevant action (first knock, then press). The key question is whether children imitate the *irrelevant* act, as this is an act of social imitation. If children compare the individuals within the group, they should be more likely to imitate the heterogeneous than the homogenous group, since comparing two alignably different entities results in better abstraction and generalization. We found that none of the children in the homogenous-model group imitated the irrelevant action, while 40% of the heterogeneous-model group did. Our results suggest that children make use of comparison when evaluating whether or not to imitate a group.

Different Ways to Speak Your Mind: Do Comparisons of Mental State Terms and Contexts Promote the Development of False-Belief?

Valerie San Juan, Kelly O'Driscoll, & Patricia Ganea

While it has previously been suggested that analogical processes may play a critical role in the abstraction of mental state concepts (Baldwin & Saylor, 2005), it is unclear to what extent linguistic and contextual variability are necessary for this process to occur. This study examines whether exposure to varying contexts and mental state terms promotes false-belief understanding in preschool children. Approximately 120 children (M = 3.63 years) are being recruited. Children who fail pre-training assessment of false-belief are randomly assigned to one of six training conditions. In each condition, children are read a picture book containing scenarios of false-belief. Picture books critically vary between conditions based on the number of contexts (single repeated context vs. two contexts) and mental state terms (no terms, 1 repeated term, or multiple terms) presented. Differences between pre- and post-training assessment scores are then used to measure changes in false-belief understanding. Preliminary findings indicate that children show improvements in explicit false-belief understanding following training with single repeated contexts. However, more children trained with multiple mental state terms (50%) showed improvement between pre- and post-training assessment than children trained with either one repeated term (22%) or no mental state terms (33%). This suggests that variability in linguistic input may play a role in children's development of mental state concepts. Further findings will clarify the extent to which linguistic variability interacts with contextual variability to promote false-belief understanding within this age group.

Comparing Mental States Aids Children's False Belief Understanding

Christian Hoyos, William S. Horton, & Dedre Gentner

Recent work has suggested that analogical comparison may be a key process in the development of false belief reasoning. We propose that false belief understanding is dependent on the abstraction of belief structures that allow the child to understand how beliefs are linked to action, how beliefs may differ between individuals, and how they may change over time. Our hypothesis is that comparing mental states helps 4-year-olds generalize these belief structures, which in turn helps them pass false belief tasks.

Seventy-two four-year-olds were tested on their false belief understanding at pre- and post-test. There were three between-subjects training conditions. First, all three groups received training in interpreting thought-bubbles. In the Comparing Thoughts condition, children were explicitly asked to compare between mental states that were represented by thought bubbles. In these scenes, one character held a true belief and the other held a false belief. In the Comparing Items condition, children also made explicit comparisons, but instead of thoughts, they compared items that different characters possessed. In the Baseline condition, there was no additional training. Children in the Comparing Thoughts condition passed more false-belief tasks at post-test than those in the Baseline condition. This effect appears stronger for females. Being able to compare true and false beliefs may be an important aspect of young children's capacity for reasoning about others' minds.

References

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