

# Origins of Mindreading Abilities in Children and Monkeys

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One central issue in research on precursors to a “theory of mind” and representation of intentional relations is how the epistemic aspects of seeing and attention are construed. By combining research on phylogenetic and ontogenetic origins from different theoretical viewpoints and different research paradigms the symposium aims at contributing to a better understanding of the origins and mechanisms of theory of mind development.

## **Judith Burkart & Adolf Heschl**

### **Do Nonhuman Primates Understand the Mentalistic Content of Seeing?**

The evolutionary roots of gaze understanding are traced back in a series of studies with a New World monkey species, the common marmoset (*Callithrix jacchus*). Study 1 investigated whether marmosets know what conspecifics do and do not see, using a food competition paradigm. Subdominant marmosets consistently chose a piece of food only visible to themselves, indicating a simple mentalistic understanding of visual access. Study 2, attempts to validate these results using a different experimental approach, building on the marmosets’ ability of using gaze as a cue. While demonstrating precise extrapolation of gaze direction, no indication of true perspective taking in marmosets could be found in this task. Experiment 3 provides a solution to these contradictory findings by demonstrating a non-mentalistic mechanism to account for the outcome in Study 1. In sum, marmosets show high proficiency in extrapolating gaze direction but fail to show consistent and context-independent perspective taking abilities.

## **Luca Surian & Stefania Caldi**

### **Preverbal Infants Read Minds**

Computer animations were used to assess infants’ ability to mentalize. 13-month-old were familiarized with the following event: a caterpillar appeared and stopped in front of two screens; a hand put one object (an apple) behind one screen and another object (a piece of cheese) behind the other screen; the caterpillar then went four times behind the same screen to chew on the same object. After these trials, half the children (‘Agent-knows’ condition) received two test trials identical to the first four familiarization trials, but with a hand placing the objects in the opposite locations. The other participants (‘Agent-doesn’t-know’ condition), received two test trials where the agent arrived *after* the objects had been placed. In both conditions, in one test trial the agent went to the same goal object as before and therefore to a new location, whereas in the other test trial it

went to the same location as before and therefore to a new goal object. Infants looked at the two test trials differently in the two conditions, suggesting an implicit mindreading ability when interpreting the animation events.

## **Claudia Thoermer & Beate Sodian**

### **Understanding Visual Perspectives in the Second Year of Life**

A set of studies addresses the early understanding of visual perspectives by using habituation-dishabituation techniques. Study 1 showed that infants as young as 12 months of age were sensitive to a speaker’s visual access to relevant information when presented with a false labeling event. However, study 2 showed that it was not until 14 months that infants attended to barriers in the actor’s line of sight when making sense of simple goal-oriented actions. Previous research indicates that when the task is to judge a subsequent action based on information about visual access infants do not succeed before the age of 18 to 24 months. Thus, even though a sensitivity to lines of sight appears to be present relatively early in development, the integration of the epistemic aspect of seeing with the parsing of intentional action is a later achievement.

## **Henrike Moll & Michael Tomasello**

### **How Infants Know What’s New for Others**

Moll & Tomasello report a set of studies that investigated infants’ ability to understand knowledge and ignorance in others (where knowledge in this context means “being acquainted with”). Study 1 showed that 14-month-olds knew which objects an adult knew (versus which one was new for her), only if they were jointly engaged with her activities around the familiar objects. 18-month-olds understood the adult’s familiarity with the objects also if they saw her manipulate them individually. At neither age did children distinguish between the known and unknown objects when the adult simply looked at the familiar toys. In Study 2, using a different procedure and response measure, it again was found that 14-month-olds have an understanding of what an adult is and is not familiar with. On the other hand, as evidenced in Study 3, positive results in a level 1 perspective taking task were not found in children younger than 24 months of age. The discussion will center around an integrative theoretical explanation for the developmental patterns reported.

## **Beate Sodian (Discussant)**