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Infants track action goals within and across agents *,***

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Abstract

The ability to understand that goals and other intentional relations are attributes of individual people is of fundamental importance to social life. It enables us to predict and interpret actions on-line by relating a person's prior and current behaviors, and distinguishing them from the behaviors of other persons. In this paper, we consider the origins of the ability to mark goals as attributes of individual people. Using a visual habituation paradigm to assess infants' tracking of goals, we tested whether infants represented goals are specific to particular agents. Thirteen-month-old infants restricted reaching goals to particular agents, but generalized a conventional linguistic action, labeling, across agents. Nine-month-old showed the former pattern but not the latter. We discuss these findings in the context of developing understandings of person specific and person general action knowledge.

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1. Introduction

To adult eyes, human behavior is organized in two critical ways. First, human actions are seen as organized by underlying goals or intentions, rather than as random movements through space. Second, goals and intentions are conceived of as residing in the individual person. The idea that individuals carry with them consistent goals and behavioral propensities is fundamental to our conceptions of both intentions and persons. Adults readily attribute to others enduring personality traits, emotional states, and behavioral propensities based on only "thin slices" of observed behavior (Ambady & Rosenthal, 1992). This ability yields the perception of coherent persons, and underlies our ability to interpret and predict others' actions over various timescales. Conceptions of persons vary across cultures; nevertheless, people across the globe infer stable intentional states in others, and use them to predict and explain behavior (Callaghan et al., 2005; Knowles, Morris, Chiu, & Hong, 2001; Lieberman, Jarcho, & Obayashi, 2005; Lillard, 1998; Norenzayan & Nisbett, 2000).

In this paper, we consider the origins of the ability to mark goals as attributes of individual people. Previous findings have shown that by 18–24 months of age, children are able to track the goals of individuals. Other studies have revealed that younger infants seem to understand some actions as goal directed. Taken together, these findings raise the question of whether infants understand the individual nature of goals.

1.1. Infants' understanding of goal-directed action

A prerequisite to associating intentions with individuals is representing the particular action an actor performs in terms of its intentional structure. Results from a growing number of studies indicate that infants represent purposeful actions in terms of the agent's goals (Gergely & Csibra, 2003; Johnson, 2000; Tomasello, 1999; Woodward, 2005). This evidence comes from studies of infants' social responses and social learning (Behne, Carpenter, Call, & Tomasello, 2005; Gergely, Bekkering, & Kiraly, 2002; Meltzoff, 1995; Repacholi & Gopnik, 1997; Tomasello & Haberl, 2003), and infants' visual responses to observed events (Csibra, Gergely, Biro, Koos, & Brockbank, 1999; Gergely, Nasady, Csibra, & Biro, 1995; Phillips, Wellman, & Spelke, 2002; Kuhlmeier, Wynn, & Bloom, 2003; Luo & Baillargeon, 2005; Shimizu & Johnson, 2004; Sodian & Thoermer, 2004; Sommerville & Woodward, 2005; Woodward, 1998, 1999, 2003; Woodward & Guajardo, 2002; Woodward & Sommerville, 2000).

To illustrate the latter kind of evidence, Woodward (2003) showed infants an event in which a person grasped one of two objects mounted on a stage (see Fig. 1). There are at least two aspects of this event that infants could attend to and remember—the relation between the actor and his goal, and the spatial properties of the actor's motion. Adults most readily describe the grasping event in terms of the relation between the agent and his goal, (e.g., "He grasped the bear.") rather than in terms of the perceptual properties of the person's motion, (e.g., "Moving

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