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Shared Intentionality

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Introduction

Shared intentionality, sometimes called ‘we-intentionality’, refers to collaborative interactions in which participants have a shared goal and coordinated action roles for pursuing that shared goal. The activity itself may be complex, such as playing a symphony, or simple, like walking together. The important aspect is that the goals and intentions of each participant must include in their content something of the goals and the intentions of the other. The focus of these recent discussions in philosophy has been primarily on the ideas of collective *intention*. My intention guides my daily activities, structures my desires in a variety of ways, and facilitates coordination with both my future self and others around me. While individual intentions shape individual actions, we do not always act alone, and it is the coordination with others that raises interesting issues about ‘collective intentions’. Many philosophers believe that the sum of individual intentions alone will not explain the resulting collective actions, and that joint action requires joint (sometimes called *shared* or *collective* in the literature) intentions. In other words, the sum is greater than the parts.

We propose to discuss these issues from three different perspectives:

- The *developmental perspective*: do infants understand the intentional actions of others, and do they participate in activities involving shared intentionality?
- The *neuroscientific perspective*: what are the neural prerequisites for collective intentional states, and which brain mechanisms underlie the understanding and sharing of others’ intentions?
- The *neuropsychiatric perspective*: do autistic children understand intentional actions, and do they participate in activities involving joint intentions and attention?

This list of research questions will provide the starting point for an interdisciplinary discussion on shared intentionality. We acknowledge that individual studies, taken in isolation, may not permit decisive conclusions, but

emphasizes that a accrual of data from multiple studies, based on different methodologies, can lead to new insights on social understanding.

Participants

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I-mode and We-mode Shared Intentionality

One can distinguish between shared intentionality in the I-mode and in the we-mode. The former means shared intentionality (the kind of ‘aboutness’ beliefs and intentions, for example, involve) that persons have in a purely personal or ‘private’ sense, without assuming that the participants in question form a group and think and acts as members of the group. In contrast, shared intentionality in the we-mode means precisely the latter, viz. thinking and acting (e.g. believing, intending, performing joint actions) as members of the group (however fleeting) that they form.

In my panel comments I will briefly discuss take up some issues relating to joint intentions as an example of shared intentionality. In particular, concentrating on the conceptual accounts of shared intentionality that philosophers have developed (actually they seem the only accounts available), I consider such theoreticians as John Searle, Margaret Gilbert, and myself as (primarily) we-mode theoreticians. In contrast, for instance, Michael Bratman’s and Seumas Miller’s theories give analyses I-mode of I-mode joint intentions, without recognizing we-mode joint intentions.

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Pretend Play, Cooperation, and Collective Intentionality in Early Child Development

In a long tradition in developmental psychology following Piaget, pretend play is seen as a mainly individual phenomenon, arising out of the child’s own creativity early in development, and only later becoming shared with other

persons. I will argue and present data (Rakoczy et al., 2005), in contrast, that early pretend play is essentially a social matter: pretense actions are acquired in basically the same way as are other action forms, through cultural imitative learning in social contexts.

I will then go on to pose the question whether early pretend play is not only learned in social contexts, but can be considered one of the earliest forms of shared cooperative actions in which young children participate. Drawing on recent conceptual analyses of shared cooperative activities (Bratman, 1992; Searle, 1990), some *minimal* criteria for cooperative action forms will be presented: that the individual participants act intentionally, with a mutual responsiveness and understanding of the other's intentional actions; that a shared "We" intention is formed (where it remains neutral, importantly, at this point of the inquiry whether such "We"-intentions can be analyzed in a reductive individualistic manner or not); involving commitment to the joint action and a sensitivity to the normative inferential structure such that certain actions of the other participants warrant certain own actions.

Another set of recent studies (Rakoczy et al., 2004) will be reported and interpreted as showing that young children's participation in shared pretense fulfills these minimal criteria. In these studies, 2- and 3-year-old children were presented with superficially similar, but intentionally different forms of "as-if" behaviour models: pretending to perform an action (e.g., to pour from a full container into a cup) and trying to perform the same action (e.g. pouring from a full container into a cup). Children systematically distinguished between the two types of models and respond inferentially appropriately: after trying models, they performed inferentially appropriate instrumental actions, e.g., used a tool to open the container and really poured then. In contrast, after pretense models, they performed inferentially appropriate pretense actions, e.g., pretended to drink from the cup into which the partner had pretended to pour. This latter pattern of systematic pretense responses fulfills the above mentioned minimal criteria for participation in a cooperative activity.

Drawing on some intuitive and technical distinctions within the class of broadly cooperative actions, I will try to specify more clearly what kind of cooperation is involved in children's early pretend play. Specifically, the role of joint creation of status functions (Searle, 1995; Walton, 1990) in pretense will be emphasized.

Finally, the conclusion that early pretending fulfills some minimal criteria for being a shared cooperative activity will be discussed in light of different types of conceptual analyses of cooperative actions more generally. Strongly reductive, individualist approaches (e.g., Tuomela & Miller, 1988), I will argue, face the problem –besides the well-known standard problems strongly reductive analyses have– that they pose too high cognitive demands on the individual to allow anything before the age of at least four or five years (when children acquire a concept of belief) to count as truly cooperative. Searle's (1990, 1995) non-reductive approach

in terms of primitive "We" intentions, in contrast, seems more promising for the description of early forms of cooperation because it does not pose such overly high demands. On the other hand, it is unsatisfying in that it poses too little demands, putting no constraints on ascribing primitive "We" intentions to creatures that do not even have an appreciation of each others' individual intentions (see e.g., Pacherie, 2003).

I conclude by arguing for the necessity of more fine-grained conceptual taxonomies of cooperative activities for the description of ontogenetic development.

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From mirror neurons to shared intentionality

The discovery of mirror neurons has given rise to a number of interpretations of their functions together with speculations on their potential role in the evolution of specifically human capacities. Thus, mirror neurons have been thought to ground many aspects of human social cognition, including the capacity to engage in cooperative collective actions and to understand them. I will propose an evaluation of this latter claim. On the one hand, I will argue that mirror neurons do not by themselves provide a sufficient basis for the forms of agentive understanding and shared intentionality involved in cooperative collective actions. On the other hand, I will also argue that mirror neurons can nevertheless play an important role in an account of the production and understanding of joint action, insofar as they provide the basic constituents of implicit agent-neutral representations and are useful elements in a process of online mutual adjustment of participants' actions.

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Intentional action understanding and sharing intentionality in children with autism

Understanding the intentional actions and perception of others is an early form of mental states attribution and it is a fundamental step in order to develop imitation ability, to learn from visual experience, to acquire and use linguistic symbols and to share experience with others (Tomasello, 1999). Intentional understanding has been identified as an early prerequisite for acquisition of theory of mind. Children with autism are typically weak in these areas of social development, and it is well documented their theory of mind deficit (Baron-Cohen, 2000 for a review). Thus, to study the understanding others' intentions in autism has important implication to understand the relationship between this early social ability and other social-cognitive skills. Recently, Tomasello et al (2004) proposed that the impairment of social understanding should be found in

children with autism at the “sharing intentions” level, (which imply the ability or motivation of share affect, interest and attention with others), but not at the simpler level of understanding agent’s intention.

It is well-known that lack of social exchange and emotional responses is a typical feature of autistic disorder (Hobson, 2002). The difficulty to be engaged in sharing activities is evident, for example, in the joint attention deficit that represents one of the diagnostic criteria. The lack of motivation in social engagement is also revealed in play attitude. Children with autism are rarely involved in pretend play, and in cooperative play.

However, the degree of understanding of intentional actions in children with autism is still controversial and the experimental results are mixed.

Children with autism do best in response to task requiring manipulation of object and worst in response to tasks requiring imitation of actions (Volkmar, 1993). Hobson and Lee (1999) found that children with autism imitated the particular style of a demonstrator’s actions less often than other children. Mari (2003) found that children with autism showed difference in movements planning and execution compared to a age-matched control group.

On the other hand, 3 to 4-year-old children with autism look more to an adult’s face following ambiguous actions than unambiguous actions - presumably in an attempt to discern the adult’s goal (Carpenter, Penningtn, Rogers, 2002). On the same line, Carpenter et al (2002) found that 3-to 4-year-old children with autism not only imitated an adult’s unusual action, such as turning on a light with a head, but they also look to the light in anticipation, indicating their understanding of the goal directed nature of actions. It might be that the difficulty of autistic children regards exclusively gestural imitation (e.g. tongue protrusion).

A new experimental study will be reported where different conditions of understanding and sharing intentionality were compared. In this study 4-year-old autistic children and normally developing children were presented with 2 different play sessions in which the behaviour models proposed different games:

Understanding intentional actions:

- imitation of finalized and unfinalized actions
- imitation of action object’s directed and imitation of body movements
- imitation of unfull-filled actions
- imitation of funny actions
- imitation of pretend actions

Sharing intentionality:

- sharing emotion
- sharing goals
- role reversal imitation
- pretend play

Our aim is to identify different degree of abilities in children with autism both at the understanding and sharing intentionality level.

Our finding will be used in order to better understand the relationship between these two early components of social-cognitive competence. The preliminary results of this study will be discussed on the light of Tomasello model of social cognitive development.

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Communicative intentions: the extreme case of shared intentionality

My formal account of Grice’s (1975) definition of communicative intention is:

$$\text{CommINT}_{A,B} p \equiv \text{INT}_A \text{ Shared}_{B,A} (p \wedge \text{CommINT}_{A,B} p)$$

All of this may be translated into English as follows. A (she) intends to communicate a certain thing to B (he). A concurrently desires that B takes as shared between the two not only the specific content she wishes to convey, but also the fact that she actually did wish to convey that content to him.

The focus of intentional communication is not on transmission of information, but on the sharing knowledge between cooperative agents that a specific information has been openly and intentionally made manifest by actor A to partner B.

The recursive propriety of communicative intention is problematic from the developmental perspective. How can a one-year-old child properly communicate something, at an age where she can not master embedded structures? My answer is that communicative intention is a primitive of human mind.

To consider communicative intention as a primitive of human mind means that it is not reducible to an infinite number of finite embeddings of intentions and shared beliefs. On the contrary, it ought to be a genetic structure, ready to function as soon as its neural components become active, it is not reducible. Empirical research (Bara, 2005) shows that only around puberty, thanks to the cognitive maturation, an agent manages to make sense of the sequence of embeddings.

Beyond logical proofs and developmental studies, converging evidence for the assumption that communicative intention is a primitive of the mind comes from fMRI studies conducted by Walter *et al.* (2004). They found that Anterior Paracingulate Cortex is primarily involved in the understanding of the intentions of people involved in social and communicative interactions.