the emergence of a so-called "theory of mind" in young children: theory-theory, simulation, and modularity accounts. They neglect, however, to address how a constructivist account might be related to a newer, rapidly maturing, alternative theoretical perspective – the executive function account.

The term "executive function" broadly refers to those cognitive functions that underlie goal-directed behavior and that are thought to be mediated by the prefrontal cortex (e.g., Welsh et al. 1991). A growing number of researchers maintain that gains made in executive function abilities in the preschool years contribute significantly to theory-of-mind performance (e.g., Carlson & Moses 2001; Carlson et al. 1998; 2002; Frye et al. 1995b; Hala & Russell 2001; Hala et al. 2003; Hughes 1998; Russell 1996; Zelazo et al. 1997). As children increase their capacity to control and direct their own actions, they become able to view alternative courses of action – including actions based on beliefs (Russell 1996).

In contrast to the theories criticized by C&L, an executive account can readily incorporate the notion of a more gradual onset of social understanding. Development of both executive control and social understanding begin early and emerge over an extended period of time. Indeed, the precocious performance found in many "modified" false belief and deception tasks (which the authors highlight as increasing personal or social activity) may be explained in terms of reductions in the executive demands of the tasks.

To illustrate: typical false belief tasks draw on at least two executive demands: (1) working memory (of where the object was in the beginning or what the child thought was in a box) combined with (2) inhibitory control (inhibit pointing to the spot where the object is now known to be or reporting what one now knows is really in the box). Recent research has confirmed that those executive tasks that combine both working memory and inhibitory control are most strongly related to theory-of-mind performance (Carlson et al. 2002; Hala et al. 2003). Reducing one or both of these executive demands may result in improved performance. For example, Freeman and Lacohée (1995) found that having children "post" a picture of what they thought was in a box helped them later to recall their own false belief in a contents task. Although personal activity is certainly increased in this version, at the same time so are the executive demands reduced (in this case, working memory). Similarly, reducing the inhibitory demands of deception tasks also results in improved performance (Carlson et al. 1998; Hala & Russell 2001), whereas simply removing the opponent – and hence reducing the social demands – does not (Hala & Russell 2001). The reverse pattern is also found. That is, increasing the inhibitory demands of theory-of-mind tasks detracts from performance (Leslie & Polizzi 1998).

Though I use these examples of modified tasks to illustrate that a more gradual onset of social understanding is consistent with an executive account, I am not claiming that it is simply information-processing complexities of specific tasks that stand in the way of young children and their supposed theories of mind. Instead, I, and others, suggest that there is a deeper relation between executive function and developing social understanding. Exactly what this relation is has yet to be specified. Development of executive function may make possible the emergence of a theory of mind (Moses 2001). Alternatively, it may be that a strong relation is consistently found between theory of mind and executive control, not because one is causally implicated in the other in a linear fashion, but because the two are interdependent in their development.

Admittedly, the bulk of the research on the relation between executive function and social understanding is of the individual-differences variety and has not, as yet, wed itself to charting the social interactions the child is surrounded by. In principle, however, the executive and constructivist accounts are not mutually exclusive. Interaction with others challenges children's current executive abilities, and, in Piaget's terms, adaptation in knowledge structures may result, leading to increased knowledge and flexibility in their thinking about their own and others' mental lives. As children grow in their executive function abilities, they become more adept at interacting with and understanding others.

Introducing executive function ability into the epistemic equation affords a view of the process of development as bidirectional. As has long been maintained by those who adopt a dynamic systems approach (e.g., Bronfenbrenner 1989; Gottlieb 1991; Scarr & McCartney 1983/1984), the characteristics of the child influence the response of the environment just as the environment influences the child. In this vein, children's executive maturity will, at least in part, influence how their parents respond to them, which in turn will influence and further enhance their developing executive control and social understanding.

ACKNOWLEDGMENT

The author is supported by a grant from the Natural Sciences and Economic Research Council, Canada.

Understanding self and other

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Abstract: Interpersonal understanding is rooted in social engagement. The question is: How? What features of intersubjective coordination are essential for the growth of concepts about the mind, and how does development proceed on this basis? Carpendale & Lewis (C&L) offer many telling insights, but their account begs questions about the earliest forms of self-other linkage and differentiation, especially as mediated by processes of identification.

The article by Carpendale & Lewis (C&L) is an important corrective to contemporary misconceptions about the development of interpersonal understanding. The authors analyse distortions introduced by individualistic "theory of mind" perspectives that purport to show how children might derive concepts (even concepts of mind) without appropriate forms of interpersonal engagement, and they highlight the equally devastating limitations of simulationist accounts that presuppose understanding of one's own mind as a basis for understanding the minds of others. The arguments they marshal from Wittgenstein and Chapman in particular are, in my view, decisive. As C&L indicate, a theory in which social exchanges are constitutive of understanding does not lead to cultural relativism. On the contrary, it is only through involvement with others that human beings are in a position to accord objective reality the status it deserves, and only when objective reality is conceived as such do concepts such as "belief" gain a purchase. Moreover, mutual interpersonal relations that entail communication and reference vis-à-vis a shared external world provide a necessary basis for uniquely human ways of (1) acquiring knowledge about that world; (2) understanding what it is to be a person with alternative psychological perspectives on that world; and even (3) thinking symbolically and creatively about people and things and constructing concepts with which to think.

How, then, should we frame our account of early human development if we are to elucidate how all this is possible and how development proceeds from its starting point? Here I wonder whether C&L are sufficiently radical in their revamping of theory.

Consider how concepts of "self" and "other" are integral to concepts of mind. There is a paradox at the heart of any attempt to reconcile developmental accounts of self-other understanding that focus on the individual's cognitive endowment, on the one hand, and social influences, on the other. The paradox is that an individual has to have bedrock experience of the social *as* social in order to build upon this to construct progressively elaborated understandings of minds as connected and differentiated centres of consciousness. Without some primitive modes of experiencing self *as* self in relation to others, and of others *as* others in relation to self, it is difficult to see how concepts of self and other could be derived. (Note: this does not mean that infants, even infants at the

https://doi.org/10.1017/S0140525X04360036 Published online by Cambridge University Press

end of the first year of life, have concepts or "understandings" of the mental lives of others.)

The direction in which C&L move on this one, is to stress the activities within which human interaction is embedded, adopting what they call "a relational, action-based perspective" within which communicative interaction also plays an essential role. Yes, but what is the grounding for communication? When the authors state that "Children's social knowledge is based on action" (sect. 3, para. 4), they are in danger of losing the plot. The crux is how infants *experience* the activities and attitudes of self and other in interpersonal relations, not merely how they act or interact with others. C&L refer to the embodied nature of human exchanges, but they do little to explain how infants are aware of persons as having a mental as well as physical dimension, and how the nature of this awareness is such as to allow for the partitioning into what belongs to the other and what to the self over successive phases of development. What we need to explain, after all, is how a child comes to understand persons as centres of individual experience, not merely as centres of causality, and how the child's concepts about the different facets of subjective orientation towards the world (intentions, feelings, wishes, beliefs, and so on) develop in the early years of life. Alongside this, we need to account for the forms of reflection and thinking about people – oneself as well as others – that such concepts entail.

I think the solution to the conundrum is that humans are equipped with a propensity for forms of role-taking that both link an individual infant or child or adult with someone else, and at the same time register the distinctiveness of self and other. At first such role-taking is cognitively unelaborated, not yet amounting to understanding: It takes place without pre-existing thought and in a manner that is heavily imbued with emotion. From early in life, children are moved by the attitudes of others: They are drawn to identify with the psychological stance of a person with whom they engage. It is through this mechanism that mutual relations with others vis-à-vis a shared world yield the ability to relate to one's own mental relations, and with this, creates a kind of mental space within which new forms of thinking are possible. A prime example of how individuals interiorize the social, Vygotsky-style.

There is another sense in which this approach is more radical than that of C&L. These authors give weight to the influence of mother-child as well as peer relations in the ability to acquire and apply concepts of mind. Here the active ingredients of development are conceptualised in terms of cooperative social interaction and exposure to talk about mental states. No doubt these things are important. Beyond this, however, powerful socio-emotional forces are at play.

Especially when you are in the heat of relating to others, it can be an emotionally taxing business to think flexibly and to deploy mental concepts effectively. Critically important for the early development of this capacity are young children's relations with at least one other person who is able to tune into their minds. The developmental influences are not merely intellectual, they are also emotional. Studies in developmental psychopathology reveal that in order to employ mind-related thinking effectively, one needs to do more than construct understanding. To maintain a reflective stance towards one's own and others' minds, one also needs to be in appropriate forms of relation with oneself and others. Emotional relatedness towards persons-as-represented in the mind is a vital force in intrapsychic as well as interpersonal functioning, and such relatedness and representation are powerfully influenced by identification with the attitudes of others.

The sources of mentalistic understanding involve much more than action, even co-action with others.

The sibling relationship as a context for the development of social understanding

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Abstract: Carpendale & Lewis (C&L) provide a convincing argument for how children construct social understanding through social interaction. Certainly mothers are important in family interaction; however, sibling interaction may also be key in the process of developing social understanding. In particular, the highly affective and reciprocal dynamics of the sibling relationship in both positive and conflictual interaction may be critical.

Jeremy Carpendale and Charlie Lewis (C&L) have provided an insightful and thoughtful discussion of the development of children's social understanding. To quote these authors, "What benefits can be gained by adopting a constructivist approach to the development of children's social understanding?" (target article, sect. 5). To my mind, there are many. First, as they indicate in their review of the theory of mind (TOM) literature, the focus on the False Belief Task has become very narrow and convoluted in its perspective. Indeed, this literature suffers from the "neurotic task fixation" syndrome that the authors outline. Lab studies can inform us only to a certain degree about children's development and they frequently suffer from overcontrol, a nondevelopmental perspective, and fail to consider the importance of the familial context. Ultimately, such a path may doom the field to a slow and painful death; the history of psychology is littered with many such examples.

However, C&L provide an escape from this depressing scenario. Humans are social, and therefore to study TOM or, as I prefer, social understanding, within the context of relationships seems ultimately a more satisfying, and theoretically compelling and constructive, approach. By placing children's development within the context of social relationships, the authors provide a framework for their constructivist view of social understanding. As they argue, there is a long tradition of constructivist ideas regarding children's development. Indeed, in the field of early childhood education, this approach has long acquired popularity. The notion that "understanding comes through action" has been a fixture of early-years programs for many decades and is one of the basic premises of currently fashionable constructivist programs such as Reggio Emilio's.

Thus, I am in basic agreement with C&L's premises, but some important points should be emphasized more strongly. Clearly, it is not the quantity but the quality and nature of children's close relationships that are important for social understanding. For more than 20 years, Judy Dunn's work (see Dunn 2002) has suggested that the quality of young children's relationships is related to their social understanding. She has been a leader in reminding us that children's social worlds involve more than just parents and that children spend considerable amounts of time with other youngsters, especially siblings, but also peers. The field of child psychology has suffered from a focus on the mother-child relationship, and, to some degree, C&L fall into this trap. One of their arguments is that triadic interactions are key to the development of social understanding. Certainly mothers are important (we know very little about fathers in relation to social understanding), but the power of the dyadic sibling relationship should not be overlooked once again. Dunn (2002) emphasizes that particular relationships are important, namely those in which children have a vested interest and which are colored by intense affective dimensions, because these elements may provide the motivation for making one's points understood. The reciprocal nature of the sibling relationship, as opposed to the more complementary or hierarchical parent-child relationship, affords children many opportunities to develop their social understanding in the context of ongoing interaction.

C&L have identified cooperative parent-child relationships as

https://doi.org/10.1017/S0140525X04360036 Published online by Cambridge University Press