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Theory of Mind: Future Directions

Introduction

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The topic of theory of mind concerns children's early mentalistic conceptions of persons and of human action. Entailing a view of the child as actively contributing meanings to experience, research on theory of mind addresses philosophically complex questions of human agency while exploring respects in which theory of mind represents the outcome of fundamentally social processes that embody neuropsychological underpinnings.

The essays in the Special Section offer a broadly based overview of contemporary work on theory of mind and ideas for future theory and research. Consideration is given to evidence pointing to common developmental changes in early theory of mind understandings as well as to evidence suggesting the existence of cultural variability in its developmental course. Contrasting arguments are offered for whether theory of mind understandings can be understood in domain specific versus domain general terms, and whether theory of mind is a unitary domain or the outcome of multiple cognitive processes, including representational abilities, executive functioning, memory, and language skills. The socio-cultural foundations of children's theory of mind understandings are highlighted through attention to the language socialization practices that underlie its emergence and development. Addressing fundamental questions of nature vs. nurture, a consideration of theory of mind development in children with developmental disabilities provides as well an opportunity to examine the roles of social interaction and of brain mechanisms in its emergence.

The authors and commentators in this Special Section constitute a distinguished group of international scholars whose work has contributed to making the study of theory of mind one of the most prolific areas of research in contemporary developmental psychology. The Special Section provides an exciting opportunity for these leading theorists not only to discuss the contemporary state of the field but to convey their own visions of promising new theoretical and methodological directions for future inquiry.

Theory of Mind: Developing Core Human Cognitions

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A woman and boy walk from a car; the boy stops, frowns, and turns around. The woman takes him back to the car and points in the window. This behavior makes immediate sense: The boy has *forgotten* something. The woman *believes* it is in the car. She *wants* him to see it is there. The claim behind research on "theory of mind" is that these construals—believing, forgetting, wanting—provide the fabric of our everyday understanding of persons.

Twenty years ago theory of mind was almost unheard of; today it is widely discussed. A prime reason for this widespread interest is developmental data showing young children's increasingly insistent attribution of such states as desires, beliefs and emotions, to self and other. Such findings have intrigued various scholars: Primatologists have considered the extent to which "mentalizing" self and others is uniquely human. Evolutionary scientists have considered how theory of mind evolved, and whether it was the breeding ground for advances in human intelligence more generally. Certain anthropological accounts claim that early childhood theory of mind is crucial for all cultural learning to take place. Neuroscientists have asked whether mentalizing is specially supported in the human brain and the extent to which it is modularized and specific. Religious

scholars have suggested that an everyday theory of mind provides the foundation for a universal human interest in god and the supernatural.

These discussions reflect consideration of theory of mind as a core human cognition, an early developing knowledge system that shapes human thought and learning. One way to define core knowledge is that it involves concepts *shared* with other primates and other mammals. Early understandings of objects, number, and space may be core in this sense (Spelke, 2003). By most accounts, however, distinctive and prolific capacities for understanding mental states are uniquely human. Theory of mind thus stands alongside language as a distinctively *human* core capacity.

The literature on theory of mind encompasses several disputes, such as the validity of modular versus theory-theory accounts. These disputes, in turn, reflect current divides about how to best characterize human cognition—as massively domain-specific or domain-general, as manifesting naïve theories, conceptual modules, or networks of learned connections. Amidst such disputes, however, several consensuses have emerged: (1) theory of mind develops, (2) theory of mind is distinctive (concepts of the mental world differ from concepts of the physical world of inanimate objects), and (3) thinking about persons in terms of inner psychological states (at some level of analysis) is characteristic of people in all cultural and language communities. Here I focus on the developmental character of theory of mind, pointing out what I believe are especially exciting topics of current research.

Thinking about development always includes two parts: initial states and change from initial to later states.

Initial understandings. Even toddlers use psychological terms like *want, gonna, happy,* in their everyday conversation, and use them to refer to inner psychological states as opposed to overt behavior or facial displays. In laboratory tasks as well, 2-year-olds evidence early understanding of desires, emotion, and perception. These competences suggest initial conceptions of persons in infancy.

Infants' understanding of persons is a classic question, but also a new topic addressed with new methods such as preferential looking and imitation paradigms. Infants cannot talk about mental states, so contemporary research investigates infants' perception of and reaction to observable intentional actions, actions that adults see as manifesting goals, desires, and knowledge. Consider a person reaching awkwardly over a TV to get an object on the other side. Infants might view such acts in terms of movement dynamics alone—an irregular arm motion. But even 6- and 9-month-old infants seem to view such motions in intentional terms, as the person trying to get the target object (e.g., Gergely, Nadasdy, Csibra, Biro 1995; Woodward, 1998). Beyond assessing infants' understanding of goal-directed movement, recent studies focus on infants' understanding of emotion and perception as referential (as signaling the focus of persons' attention and interests; Phillips, Wellman, & Spelke, E., 2002; Barna & Legerstee, in press), and infants' ability to parse the continuous stream of human movement into intentional-action units or chunks (Baldwin & Baird, 2001).

> *"Theory of mind stands alongside language as a distinctively human core capacity"*

One assumption of these studies is that early intention-understanding sets the stage for later theory of mind achievements. Wellman and his colleagues (Wellman, Philips, Dunphy-Lelii & LaLonde, in press) provide initial validation of this assumption; they show significant connections between infants' attention to intentional action and the same children's theory of mind achievements as 4-year-olds.

Change. The most frequently studied developmental change concerns false belief understanding. A now-familiar false belief task goes like this: Jill puts some chocolate in a drawer but then while she is away, and cannot see what happens, someone moves the chocolate to a cupboard instead. "Where will Jill look for her chocolate, in the drawer or in the cupboard?" A recent meta-analysis of more than 170 false belief studies (Wellman Cross, & Watson, 2001) found overwhelming support for a crucial developmental transition. Young preschoolers say that Jill will look for the chocolate in the drawer, reasoning solely on the basis of Jill's desires coupled with the real situation. After several years, children say that Jill will look for the chocolate in the cupboard – providing evidence that they now recognize that actions are based on the actor's representation of the world rather than her desires alone or the world itself. The meta-analysis documented that even the most simplified, child-sensitive tasks reveal this fundamental progression from a simple desire, or situation-based, understanding of action to an understanding based on beliefs. Progression in children's everyday conversations provides similar data (Bartsch & Wellman, 1995; Ruffman, Slade & Crowe, 2002).

On many accounts, false belief should be considered only a single milestone within an unfolding conceptual progression. A recent study tested for such a progression with a "theory of mind scale," encompassing a battery of tasks that were highly comparable in procedural format, demands and materials (Wellman & Liu, in press). Children's responses formed a consistent developmental sequence, where they first understood about persons' desires, then knowledge and ignorance, then false belief, and then hidden emotion.

Explanations. Most theory of mind research has focused on children's predictions and attributions, but recent studies demonstrate that children's explanations are equally revealing. In everyday conversation even 2-year-olds seek and provide explanations several times a day (Callanan & Oaks, 1992; Hickling & Wellman, 2001). Young children largely ask for and offer explanations about people—more than 70% of the time —and provide distinctively psychological explanations (e.g., "She wanted to."). Moreover, family differences in explanatory conversations are especially linked to differences in children's theory of mind, both concurrently and prospectively (Dunn, Brown & Beardsall, 1991; Bartsch & Wellman 1995).

Researchers initially focused on tasks eliciting predictions, rather than explanations, because the complexities of providing explanations seemed likely to overtax young children's verbal competences. However, when the topic is human action, even young children offer revealing, mentalistic explanations.

Universality. Core aspects of the child's conception of mind appear to be universal in the early years. False-belief understanding provides the most extensive cross-cultural data. Children in the US, China, Austria, Germany, Canada, UK, Australia, Turkey, and Japan, as well as hunter-gathering Africans, native Pacific islanders, and indigenous Quecha-speaking Peruvians achieve better-than-chance false-belief performance. They do so at different average ages ranging from 4 to 6 or 8 years, however, in all countries the underlying developmental trajectory is similar in shape and in slope (Wellman, et al., 2001; Vinden, 1999). Moreover, just as English-speaking children talk about persons' desires well before later conversations about their beliefs, so too do Beijing and Hong Kong children learning Mandarin and Cantonese (Tardif & Wellman, 2000).

Abnormal theory of mind. Everyday theory of mind is demonstrably important to children's social interaction and functioning. This is clear, in part, from considerable evidence that shows that severe social impairments found in individuals with autism are closely linked to deficits in their ability to construe persons in terms of their mental lives (see Baron-Cohen, Tager-Flusberg, Cohen., 2000).

"Everyday theory of mind is demonstrably important to children's social interaction and functioning"

Related developmental phenomena. Of course, theory of mind is not the only cognitive phenomenon developing during the preschool years. Two other sources of rapid change are language skill and executive function. Theory of mind achievements (such as understanding false belief) correlate significantly with verbal IQ, executive function, and language competence in normal children in the preschool years. With regard to language, theory of mind is seriously delayed not only for individuals with autism but also deaf children of hearing parents (Peterson & Siegal, 2000). Moreover interventions that manipulate children's linguistic interactions significantly influence theory of mind understandings (Lohman & Tomasello, 2003). Nonetheless theory of mind makes independent contributions to analyses of preschool cognition beyond verbal ability and beyond executive function performance (Carlson & Moses, 2001) . Moreover, individuals with autism have marked deficits in theory of mind understandings even when they have high verbal skills (Happe, 1995).

This recent research suggests two things. First, children's difficulties with theory of mind tasks, such as false belief, reflect more than simple task difficulties due to the linguistic or executive function demands of such tasks. Second, both language developments as well as developing executive function skills aid children in developing theory of mind conceptions. At the very least, language exchanges inform children about people through their content—because much everyday talk to children is talk about people. Beyond references to people, using language requires dealing with meanings, and the exchange of ideas and emotions (Bloom, 1993). Dealing with language is thus a key forum for encountering the difference between one person's state and another's, and the difference between mental states and reality (Astington & Baird, this newsletter). Thinking about mental states also requires coordination of several factors. Consider: "Jill wants her chocolate." Here there is a person

(Jill); the person's state (desire); and the object or content of that state (chocolate). Executive function abilities to flexibly consider these various parts, to increasingly inhibit attention to a single component in favor of multiple ones, help children better attend to the complex social-mental world (Carlson & Moses, 2001; Leslie & Polizzi, 1998).

How does change occur? Accounting for exactly how language, executive function, and theory of mind weave together developmentally is a frontier for current research. More generally, providing "learning" accounts of theory of mind development is a pressing challenge for all theoretical positions. The general outline of a needed account now seems clear: infants begin with a focus on actions that leads to an awareness of mental states such as intentions; initial awareness of at least some mental states develops into an increasingly broad and fluent competence. This picture encompasses at least three critical conceptual primitives, understandings of Intention, Desire, and Belief. Accounts differ as to which, if any, of these conceptions are innately given, and which are learned and how. However, even current accounts, which insist that the basic conceptual primitives are all innately evolved, conceive of this conceptual infrastructure as a "learning mechanism". This learning mechanism "allows the child to attend to (some) mental states" and" therefore to learn about them" (Roth & Leslie 1998). Early understandings that allow further learning thus play a key role in all current theories, as do mechanisms to account for the nature and sequence of later learning.

I am most excited by approaches to these learning mechanisms that accord a large role to processes of explanation. I see the robustness and frequency of psychological explanations in early childhood as not only revealing children's theory of mind but as a key part of the mechanisms that produce change. A particularly important emerging research focus, I predict, is the increasing interest in explanation apparent in several areas of cognition and development, along with exciting advances in thinking about causal learning mechanisms (Gopnik, Glymour, Schulz, Kushnir, & Danks, 2004).

Conclusion

Twenty years ago research on theory of mind began by staking claims as to the importance of the topic. These initial claims struck rich ore: Theory of mind is a core human competence, early achieved yet dramatically developmental. Of course, adult understandings of persons are highly variable worldwide, reflecting sharply different collective representations about persons, actions, and mind. Yet, children everywhere seem to arrive at a core set of construals, providing them with basic conceptions that widely impact their thinking and that set the stage for cultural learning.

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Tracking the Essential Mind

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Theory of Mind denotes the research that investigates the ability to attribute mental states like wanting, thinking, feeling, to ourselves and others. Its somewhat pretentious name derives from Premack's and Woodruff's (1978) provocative title question, "Do chimpanzees have a theory of mind?" The "theory" was to indicate that mental terms are unobservable, inferred terms in a body of causal knowledge, from which behavioral predictions can be made. A popular view is that this knowledge is domain specific (Leslie, 1994). It may well be a domain in terms of the causal interrelatedness of the different mental and behavioral states. However, I suggest we refocus on its special feature, which makes it the domain of the mental, because this feature leads to intriguing developmental connections between seemingly unrelated abilities and other areas of investigation.

The Mind

The causal mind. Domains of knowledge exist because the facts of a domain are causally dependent on each other. In classical physics I can't determine an object's velocity from its mass without any knowledge about its acceleration. I can't predict behavior from a person's beliefs without knowing what that person wants. But I can do a lot of physics without any knowledge of psychology. That's what makes physics and psychology different domains, causally speaking. However, even most recent theoretical developments in understanding causality (e.g., Bayes nets, Gopnik, Glymour, Sobel, Schulz, Kushnir & Danks, 2004) omit an important prerequisite. In order to infer the causal connection between states of the world, one needs a mental medium or conceptual repertoire for describing these states. This depends on the expressive power of the mind (or language).

The representational mind. The special feature of theory of mind is *Intentionality* or *aboutness*. My physical body can be about—somewhere, but it can't be about somebody (or something) in contrast to my mind. My thoughts, my desires, my feelings are typically about objects, events or abstract entities. This *aboutness* requires special expressive powers, as the history of logic shows. Logicians and semanticists are able to give logically coherent interpretations to descriptions of the world, but our talk about the mental still resists their attempts.

Besides the mind, representations like pictures or linguistic expressions are also characterized by *aboutness*. Cognitive Science uses this fact to explain the mystery of the mental by treating the mind as a representational system.

This move doesn't solve the puzzle of *aboutness* but helps to explicate it with more tangible examples like pictures. We can discern three essential elements of representation: representational *medium* (vehicle), *target* (object), and *content*. In the case of a picture, the *medium* is the piece of paper with its pattern of colors. The *target* is the object or event in the real (or in a fictitious) world, and the *content* is the way in which that object or event is depicted. In the context of linguistic expressions, content and target are related to Frege's distinction between sense and referent. This distinction captures the fact that a representation (picture, word, or mind) inevitably gives a particular perspective on what it represents, never the represented thing itself. My thesis is that whenever the ability to represent a particular feature of *aboutness* emerges we observe a particular boost in theory of mind development.

Development

There are at least two early such boosts. One important development takes place in infancy around 9 to 18 months (Tomasello, 1999). In my view, it hinges on the ability to see the mind relating to non-existing things. This shows in understanding goal directedness and perhaps even normative constraints of rationality (Csibra & Gergely, 1998).

My own contributions concentrate on 3 to 5 years when an understanding of perspective develops (point of view, sense; Perner, Brandl & Garnham, 2003), which provides a specific boost to theory of mind as well as other domains.

Sue Leekam's test for understanding the distinction between jokes (falsehood without intention to mislead) and lies (falsehood with intention to mislead) being demonstrated with a group of 5-year olds.

Domain specific progress. We already know many abilities that develop around this age all depend on contrasting different perspectives, e.g., false beliefs. What we now start to realize (Perner, Zauner, & Sprung, in press) is that perspective contrasts are also involved in understanding conflicting desires (Moore, Jarrold, Russell, Sapp, & MacCallum, 1995) and competition (Gratch, 1964). This realization provides an important starting point for conflict management programs for preschoolers that Winfried Kain and I are planning.

Progress across domains. Less well known than this developmental spurt within theory of mind is the fact that important changes occur in seemingly unrelated domains. Parkin (1994) found that understanding false direction signs (e.g., Where does the sign for toy town show that toy town is, when the sign points in the wrong direction?) correlates strongly with understanding false belief. Doherty & Perner (1998) found an even more remote link between theory of mind and meta-linguistic awareness. As children understand false belief, they become able to play an alternative naming game: If one player says "this is *a rabbit*" then the other one has to say "this is a *bunny*" (or vice versa). The same holds *for rabbit* and *anima*l. It's not the complexity of the task, because even young 3-year olds do very well if the game is to name the rabbit's color if the other person says what it is, or vice versa. Perner, Stummer, Sprung, Doherty (2002) argued that the false belief task as well as alternative naming requires a contrast of perspectives (Clark, 1997)—an argument which is not easy to sustain (Perner, Brandl, & Garnham, in press).

We recently discovered that young children's problem in switching dimensions when sorting cards (considered an *executive* problem), which also relates strongly to their problems with false belief (Frye, Zelazo, & Palfai, 1995), may be due to their inability to switch object labels. The difficulty with this task depends on the cards showing an object that can be described as a particular thing (e.g., car) or as a thing of a particular color (e.g., red thing). Children's difficulty switching sorting criterion all but vanishes when the cards show the outline of a car and a red splotch next to it. Moreover, training children on either false belief tasks or card sorting seems to transfer to the other kind of task (Kloo & Perner, 2003, in press).

We can see how a quest for children's grasp of the essential features of mind (e.g., understanding the perspectivity of mental content) sheds light on developmental connections that remain otherwise puzzling. Analysis of different aspects has opened up other promising research venues. For instance, progress in understanding of the origin of their own knowledge relates to changes in episodic memory (Perner, 2000) and the end of childhood amnesia. Also, the intriguing link between theory of mind and language development has become a hot topic recently discussed in a workshop in Toronto (Astington & Baird, in press).

Later Development—Further Distinctions

Theory of mind development, of course, does not stop at 5 or 6 years. Many important distinctions are acquired later. An interesting question is whether this later development is primarily a figuring out of more complex interactions or whether some basic insights are required.

The recursive mind. A principled insight might be required for realizing that mental states can take themselves as content (e.g., second order beliefs). Besides mathematics, such recursiveness is limited to areas dealing with *aboutness*. This ability develops around 6 years (e.g., Perner & Howes, 1992). Many of the later acquired mental concepts do require such recursive embeddings, e.g., to distinguish jokes from lies one needs to distinguish two types of intended falsehoods by whether they are intended by the speaker to be believed by the listener (Leekam, 1991).

The introspective mind. In the last ten years, John Flavell has discovered surprisingly late onset of truly introspective skills. When asked to sit in a chair and not think of anything for a minute, we discover that we can't stop ourselves from having thoughts. Children younger than 8 years, however, seem oblivious to this fact (Flavell, Green & Flavell, 2000), which suggests that the earlier theory of mind competence is not based on introspective self observation.

The simulating mind. Philosophers distinguish two profoundly different approaches to other people's mind. Either we have knowledge (theory) of how the mind works, i.e., how it links to situations and to action, or we figure it out by imagining ourselves in these situations and experience our mental and behavioral reaction in simulation (i.e., putting oneself into the other person's shoes). There is a recent upsurge of an interest in simulation in action (Knoblich & Flach, 2001) and decisions predictions (Perner & Kühberger, 2003) and the discovery of mirror neurons (Gallese & Goldman, 1998) and other areas (Malle & Hodges, forthcoming). I think we need to have a new developmental look at this issue.

The neural mind. This day and age I cannot close without mentioning what we know about the neural structures involved in theory of mind tasks. Gallagher and Frith (2003) review several PET and fMRI studies and consider the quite consistent activation of anterior cingulate (ACC) and paracingulate cortex as specifically involved in theory of mind. ACC is also activated by executive tasks involving response competition (Frith, Gallagher & Macguire, in press). Could this part of ACC be responsible for perspective contrasts? This is an area where neuroimaging can help answer developmental questions without having to subject young children to the claustrophobic experience of lying inside a noisy tube.

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Why Language Matters for Theory of Mind

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Recently, we organized an international conference at the University of Toronto on why language matters for the development of a theory of mind (Astington & Baird, in press). We believe that this topic is an important new direction in the study of children's theory of mind. Earlier, one of us was co-organizer of another international conference at the University of Toronto; the resulting publication (Astington, Harris, & Olson, 1988) helped establish children's theory of mind as a new, lively, and important area of research in developmental psychology. "Theory of mind" became the way researchers referred to children's understanding of people as mental beings, who have beliefs, desires, emotions, and intentions, and whose actions and interactions can be interpreted and explained by taking account of these mental states.

Initially, in the 1980s, research focused on demonstrating normative changes in children's understanding of mental states, particularly as seen in their performance on experimental false belief tasks (Wimmer & Perner, 1983). In the 1990s, researchers also began to investigate individual differences in theory-of-mind development and its possible association with language and social behavior. At the present time, the development of children's theory of mind is well described in the literature, and we have much information regarding the antecedents, correlates, and sequelae of its development, in both typically developing and special populations, particularly children with autism and deaf children. However, what is still lacking, although not for lack of debate on the topic, is a decisive theoretical explanation of how children's theory of mind is acquired. With regards to this consequential issue, recent work has shown strong relations between children's linguistic abilities and their theory of mind (e.g., Astington & Jenkins, 1999; de Villiers, 2000), leading to the important question: Why does language matter for theory of mind?

From some theoretical perspectives, such as the innate modular view, language may not play any important role in development of a theory of mind. On this view children apprehend minds from the beginning but cannot express their understanding until a certain level of cognitive and linguistic development is achieved (Fodor, 1992). The language faculty is seen as a separate, independent module, and language use as dependent on the theory-of-mind module (Baron Cohen, 1999). Undoubtedly, and from other perspectives as well as the innate modular one, language does depend on theory of mind. However, importantly and reciprocally, theory of mind depends on language.

We must recognize that both "language" and "theory of mind" are broad terms for multifaceted systems; each comprised of a number of components. Their interdependent relation is thus a complex one because there is the prospect of different relations among the different components. There is also the possibility of change in these relations over developmental time, as well as individual differences in the relations. Thus, although many researchers agree with the proposal that language contributes significantly to theory-of-mind development, they may disagree with one another over the nature of this contribution, in part perhaps, because they focus on different aspects of the language system.

Language is a single system that is used for two purposes: representation and communication. Many species represent and communicate, but only humans use one and the same system for both representing and communicating. Language competence includes semantic and syntactic knowledge and the pragmatic ability to express and interpret intended meanings in communicative exchanges. Furthermore, with regard to the relation of language to theory of mind, it is important to separate the contributions of the individual child from those of the social environment. That is to say, we must distinguish between children's individual linguistic abilities which include semantics, syntax, and pragmatics– and their participation in social interactive discourse. Obviously these two will be related but they may make somewhat independent contributions to theory-of-mind development. Although researchers may focus on different aspects of children's linguistic competence and experience, it is important that we do not treat their explanations as competing hypotheses, but rather as complementary accounts (Astington & Baird, in press). What is needed now is a new conceptualization that reconciles and combines insights from various viewpoints.

There is a burgeoning literature, too large to review comprehensively here, showing the interdependence of language and theory of mind in development. Joint attention behaviors, developing towards the end of the first year, underlie the acquisition of first words and the first awareness of others' mental states. By 18 months of age, the child's recognition of speakers' referential intentions allows for accurate mapping of word-referent relations (Baldwin, 1993). At this early stage, theory-of-mind abilities facilitate language development and from this point on, language develops rapidly.

Thenceforth, language becomes important for theory-of-mind development. In conversational exchanges children are frequently exposed to the fact that different people want and know different things, and this experience leads them to an awareness of different points of view (Harris, 1999). Moreover, conversation provides a means of abstracting the underlying mental-state concepts from the ongoing stream of social interaction because these concepts are semantically

> *"Importantly and reciprocally, theory of mind depends on language"*

encoded in the language of the culture. Parents use such terms (e.g., *think, know, want*) in talking to and about the child and other people, which helps children map their own experiences onto those of others, and so come to attribute mental states to themselves and others. That is, children's phenomenal experience leads to conceptual understanding because language allows for a level of abstraction that can support concepts about unobservable mental states (Baldwin & Saylor, in press).

Such conceptual understanding develops over time. Nelson (1996) points out that young children's use of mental terms does not, at least at first, indicate that they understand the mental concepts to which those terms refer. Instead, she makes the Wittgenstein argument that children use these terms before they know the meaning of them; in fact, they acquire meaning from use. Children's growing use of a language rich with mental state terms may facilitate their ability to reflect upon and label their own mental states, as well as foster their understanding of the mental states of others. A full understanding of mentalistic concepts thus may take years to acquire.

"importance of both individual language skills and social interaction to theory-of-mind development"

Importantly, participation in conversation leads to an understanding of perspective and an awareness of mental states. But is this sufficient to allow for meta-representational interpretations of human behavior, as required, for example, in the false-belief task? Other researchers argue that it is not; they put less emphasis on the importance of semantics, the terms and concepts encountered in conversation, and more on the syntactic structures that are required to attribute different points of view using mental state terms. Mental state terms allow the embedding of sentences so that a false sentence can be embedded in a true one. For example, the sentence "Maxi thinks the chocolate is in the drawer" can be true, even if the chocolate is in the cupboard. The embedded sentence is a sentential complement, and some researchers (e.g., de Villiers, 2000) argue that the acquisition of this syntactic ability promotes theory-of-mind development (in particular, false-belief understanding) because the syntax of complementation provides the format needed to represent false beliefs.

Of course, it is more than likely that both are important– that is, acquiring perspectival understanding and acquiring the syntax that expresses it. They are certainly related, and in natural conversation, mental state terms like *think* and *know* give information about perspectives and also about syntactic structures. But in experimental work, researchers can show that each has an independent role to play. In a training study, Lohmann and Tomasello (2003) found that conversation about deceptive objects (with no mental terms and no syntactic complementation) and specific training on the syntax of complementation (in the absence of deceptive objects) promoted 3-year-olds' false-belief understanding. Moreover, the largest training effect occurred in a condition that combined conversation and complements. This suggests that social interactive discourse and individual language abilities (e.g., syntactic competence) make independent contributions to theory-of-mind development.

Similarly, Jenkins and Astington (1996) found evidence for the interaction of social activity (as measured by number of siblings) and individual language ability in theory-of-mind development: Children with lower language ability

and two siblings were equal to children with higher language ability and no siblings in their false-belief understanding. These findings highlight the importance of both individual language skills and social interaction to theory-of-mind development, and suggest that either one of these can compensate for a deficit in the other.

One problem in investigating the relative importance of these different factors is that, in general, linguistic, cognitive, and social development are closely correlated in typically developing children. However, insight into their influence on theory-of-mind development can be examined in populations where the typical correlations are not found. Children with autism, for example, have deficits in theory of mind and in communication and language skills (Tager-Flusberg, 2000). High functioning children with autism eventually develop false-belief understanding, but they require far higher verbal mental age to pass these tasks than do typically developing children (Happé, 1995). Likewise, deaf children with hearing parents are delayed in their false-belief understanding, whereas deaf children with deaf parents are not (Peterson & Siegal, 1999). Although both groups of children engage in social interaction, the children with hearing parents are delayed in their acquisition of sign language. Together, these findings suggest that children's individual linguistic abilities play a role in the development of theory of mind, independent of that played by social communication.

In conclusion, we would argue that the now common claim that there is relation between language and theory of mind is too simplistic. Language and theory of mind are multifaceted systems with a complex interdependent relationship. We need to show how the different components of each system are related, how the relations change over developmental time, and how they may differ among different individuals. This will bring us closer to an understanding of why language matters for theory of mind.

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Is Theory of Mind a Universal and Unitary Construct?

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During the last two decades, children's social cognition has been extensively studied under the now broadly known title "theory of mind," that includes various understandings of people's internal states, ranging from belief, desire, knowledge and its origins to emotion. Theory of mind research has shown that, despite the variety of social understandings, these abilities appear to develop quite synchronously during the preschool years and hence to be a universal human capacity deriving from a core theory or module of mind reading, or from an ability to simulate or metarepresent other people's minds. However, much recent literature presents contradictory findings regarding this received view with respect to two points: One is concerned with the universality of theory of mind; the other is related to the nature of the constructs held together within this umbrella term.

In the past, a large literature has repeatedly shown that children acquire, for example, false beliefs at around 4 years of age. Wellman, Cross, and Watson's (2001) comprehensive meta-analysis also revealed that the development of false belief understanding did not differ among different tasks and that this understanding occurred between the ages of 2.5 and 5 years across countries. These findings appear to support the view that such an understanding reflects children's universal conceptions of other people's mental states.

However, there exists growing evidence of cultural as well as individual differences in theory of mind. Cultural studies have often found that the theory of mind performance of children from non-Western cultures, such as Asia, Africa, and South America, falls short of that reported in the Western literature (e.g., Vinden, 1999). In Wellman et al. (2001) as well, one of the factors that had a significant impact on children's belief understanding was the country in which the studies were conducted. Even within Western cultures, theory of mind differs depending on children's family background: The development of children from underprivileged families is later than typically reported with children from middle class families (Cutting & Dunn, 1999; Holmes, Black, & Miller, 1996). Moreover, when directly compared within each study, children's mastery of theory of mind differed between tasks and sometimes between sexes (e.g., Holmes et al., 1996; Naito, 2003). Children's inconsistent performance across tasks, cultures, and individuals suggests no evidence for synchronous acquisition of theory of mind abilities. As Holmes et al. (1996) concluded, the emergence of theories of mind is not simultaneous nor does it follow an invariant sequence but goes through a fairly extended transitional phase, during which children's competencies are in the process of development but not yet complete; and the duration of this phase differs across groups or populations of children, as well as individual children.

One reason for the universal view of theory of mind would be, in the research climate, that findings are predominantly from Western middle class samples and that researchers interpret or theorize about their findings, though irresistibly, within or basing them on the Western framework of social understanding. Lillard (1998) has pointed out, however, that the Western, or what she labeled European-American, premise that people's behaviors are guided by underlying mental states is just one type of various folk psychologies. If we take this legitimate claim seriously, cultural and individual variations in theory of mind and its development should be considered not merely a measurement error but a reality that has distinct aspects, causes, and implications.

In such an attempt, we have focused on substantial evidence that Japanese children lag behind their Western counterparts on theory of mind performance. For example, in the Wellman et al. (2001) meta-analysis, Japanese children's false belief performance was significantly lower than that of Western children; similarly in our studies (Naito, 2003; Naito & Koyama, 2003), Japanese children understood false beliefs and knowledge origins between the ages of 4 and 6 to 8 years, more than one year later and slower than Western children's development. Moreover, Naito and Koyama (2003) found that Japanese children base their

"growing evidence of cultural as well as individual differences in theory of mind"

justifications for false belief judgments primarily on the protagonists' overt behaviors and social rules rather than their internal mental states.

These findings led us to speculate that a cause of Japanese children's delay in theory of mind development might be a difference in people's inferences about human action across cultures (Naito, 2003; Naito & Koyama, 2003). That is, in Asian cultures, including Japanese culture, people are more likely to attribute human action to contextual or relational factors than Western people, who tend to attribute it to individual's internal causes (e.g., Lillard, 1998); and children within each community grow gradually to exhibit an attribution pattern preferred by the community (e.g., Miller, 1986). Japanese children may hence find it more difficult to solve problems that chiefly concern how the mind works independently of contextual or behavioral cues. This speculation is also corroborated by studies that emphasize effects of social interactions (e.g., collaborative narratives and discourse about events and people's behaviors) on cognitive development, including language, memory, and social cognition (e.g., Dunn, 2000; Nelson, 1996). However, there are differences among populations with each culture varying, for example, in residential circumstances, social class, and the degree of maintaining a traditional orientation; most studies include just one type of various subpopulations within a cultural milieu. Moreover, the above hypothesis of Asian theory of mind is just a speculation without thorough investigation. Theory of mind development and its trajectory merit further examination in various non-Western cultures.

The other issue to reconsider in theory of mind research is the nature of this concept. Theory of mind has generally been referred to as an ability to impute mental states to people's behavior, although as mentioned earlier, social understandings include a range of diverse domains of internal states. While it has surely contributed to the marked research progress in this area to view the different social cognitive abilities as an integrated capacity, this attitude does have a drawback that has hampered us from analyzing the precise nature of each of distinct social understandings. Indeed, close examinations of different false belief tasks, such as unexpected transfer and deceptive appearance, have revealed no or only weak correlations between these conventional, seemingly interchangeable tasks, after controlling for the general developmental factors of age and language ability.

Among such examinations, Naito (2003) hypothesized that the degree of relations between false belief under-standings and a recollective awareness of episodic memory (i.e., one has experienced an event at a certain place and time) varied depending on the different belief tasks. In the deceptive appearance tasks, children are shown an object (e.g., a sweets box) in its deceptive appearance (e.g., it apparently contains sweets), and after discovering its true identity (e.g., it really contains a pencil) children are asked to predict another person's false belief as well as to remember their own past false belief about the object's identity; in the unexpected transfer tasks, a protagonist puts an object in a place and, unknown to him/her, it is transferred to another place, and children who observed the whole event are asked to infer the protagonist's false belief about the object's

"theory of mind abilities may not be a unitary concept"

location. Hence, whereas the appearance tasks involve children's experience or memory of a change in their own belief states, the transfer tasks do not. Giving 4- to 6-year-olds the two versions of false belief tasks and a task of aspectuality or knowledge origins, Naito examined intercorrelations among the theory of mind tasks and correlations of these tasks to children's memory performance. Memory tasks included source memory, free recall, memory of temporal order, and listening span. Among these, source memory, an ability to recall when and how one had acquired his/her knowledge, was considered the best measure of the subjective aspect of episodic memory; free recall and temporal order memory has been used in the adult memory literature as similarly reflecting episodic memory. The listening span test was a measure of working memory, a type of executive function known to be related to theory of mind.

Naito (2003) demonstrated that except between own and other's false belief within the appearance tasks, no significant intercorrelation was obtained between different theory of mind tasks. These and other findings (Holmes et al., 1996; Hughes, 1998) indicate that theory of mind abilities may not be a unitary concept but consist of a set of multifaceted, comparatively independent constructs. Furthermore, although most of the associations between theory of mind and memory tasks were non-significant, source memory still exhibited significant associations with own and other's false beliefs in the appearance task, even when age was controlled. When verbal intelligence was additionally controlled, the relation of source memory with own false belief was still significant, whereas that with other's false belief was not; this pattern of correlation was especially strong in 6-year-olds, but not in 4- and 5-year-olds. The finding of significant correlations between source memory and the appearance task performance supports the original hypothesis of a connection between episodic memory and theory of mind. The fact that the source memory-appearance task correlations were especially strong in the 6-year-old age group suggests an age-related transition, in which various cognitive abilities become more integrated during development: Until the age of 4 or 5 years, children would attain tasks of source memory and false belief understandings relying on separate cognitive abilities; around the age of 6 years, these parts of their abilities would be integrated into an ability to reflect on their past experiences in terms of time and space.

Most theory of mind literature has considered different false belief tasks as reflecting the same metarepresentational ability to understand multiple, conflicting representations. For example, Perner (1991) has theorized that false belief understanding, or more broadly theory of mind, reflects children's metarepresentational ability to understand mental states as representing something as being a certain way and that this ability allows children to be aware of an event as subjectively experienced. Referring to aspectuality and related knowledge origins tasks, he has claimed that this experiential awareness reflected in these theory of mind tasks drives episodic memory, especially measured by free recall. However, the Naito (2003) study demonstrated that every theory of mind ability was not always correlated with episodic memory: The study did not generalize the link between aspectuality and free recall but found the link, as

well as its developmental change, between false beliefs, measured solely by the appearance task and source memory. These findings cast doubt on Perner's claim that one cognitive ability (i.e., theory of mind, in general) precedes and underlies another (i.e., episodic memory). Instead, they suggest that even false belief understandings in the transfer and the appearance tasks are differentiated in their involvement of recollective awareness and that, in the late preschool years, children's episodic memory and a component of theory of mind are grounded on this common subjective aspect of recollective experience, which would not necessarily be a product of metarepresentational ability.

Finally, although the relevance of executive function, including working memory, to theory of mind has received attention, previous findings have not been consistent, particularly on the relation between working memory and theory of mind (Hughes, 1998). Naito (2003) also showed that working memory, as measured by the listening span test, was not associated with any theory of mind ability after controlling for age. Further research is needed to determine not only the exact nature and development of each component comprising theory of mind constructs but precisely which aspect of theories of mind is related to other cognitive abilities such as memory and executive function.

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Journeys of Mind: ToM Development in Children with Autism, Sensory or Motor Disabilities

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Theory of mind (ToM), or the understanding of how true or false mental states govern behavior, is a foundation for communication and social intelligence and develops rapidly during the preschool period. At age 3, most children fail the "litmus" tests for ToM that require inferences about the behavioral consequences of false beliefs. By age 5, typical children's false belief performance is so adept as to suggest: "understanding of belief and, relatedly, understanding of mind, exhibit genuine conceptual change in the preschool period" (Wellman, Cross & Watson, 2001, p. 655). However, there are some notable exceptions. Indeed, severe delays, specific to the ToM domain, often persist up to adolescence in some groups of children with sensory, motor or developmental disabilities. After examining its empirical support, this essay explores "nature" and "nurture" explanations for the finding of unusually delayed mindreading in children from special populations.

Autism and ToM

Baron-Cohen, Leslie and Frith (1985), "transformed the field of autism" (Tager-Flusberg & Sullivan, 1994, p. 1059), by studying high functioning autistic children and adolescents, 80 percent of whom failed a simple false belief test that was passed overwhelmingly both by individuals with Down Syndrome of lower mental age, and by typically developing preschoolers. This finding has been widely replicated. Happé (1995) reviewed 28 studies of over 300 autistic participants aged 4 to 30. Results confirmed that participants with autism consistently fail false belief tasks that preschool and/or mentally retarded groups pass. Happé estimated that a verbal mental age of 11 years was needed for autistic children to reach pass odds of 80 percent, compared with 5 years for typical preschoolers. Similarly, Yirmiya, Erel, Shaked and Solomonica-Levi (1998) conducted a meta-analysis of false belief research and found, for 22 studies with typically developing control groups, "individuals with autism perform significantly less well than normally developing individuals on tasks assessing ToM abilities" (p. 289).

Other research comparing mentalistic thinking with other kinds of reasoning has shown that the ToM deficit in autism is domain specific. Those who fail false belief tests very often pass nearly identical tasks involving non-cognitive themes, like false photographs (e.g., Leslie & Thaiss, 1992).

Deafness, Family Communication and ToM

Peterson and Siegal (1995) administered Baron-Cohen et al.'s (1985) false belief tests to a group of severely and profoundly deaf children aged 5 to 13 years who were "late signers". Growing up in a hearing family, they had acquired their fluent communication mode, sign language, belatedly

A signing deaf child in Australia taking the "Sally" test of false belief understanding.

upon school entry. These deaf children were behind hearing 4-year-olds and as delayed as autistic children in ToM development, a finding that has been widely replicated. For example, results of 11 studies of false belief understanding in late signers of normal intelligence and social responsiveness that were conducted from 1995 to 1999 (Peterson & Siegal, 2000), along with those of newer research (e.g., Woolfe, Want & Siegal, 2002), have consistently shown that late signing deaf children do no better on a range of ToM tests than high-functioning children with autism, and are outperformed by hearing children who are considerably younger. As with autism, the ToM problems of late signing deaf children seem to be confined to the mental domain (e.g., Peterson, 2002).

Up to 90 percent of deaf children have hearing parents. But not all of these children grow up to become late signers. Some are trained in a purely oral modality to perceive and express speech with the assistance of lip-reading, amplifying hearing aids or cochlear implants. When their hearing losses are serious, oral deaf children are also slow to develop ToM. The results of 8 published studies, testing false belief in a total of 223 oral deaf children from different countries, have indicated mean performance comparable to autistic children's and late signers' (see Peterson, in press). Whereas advanced language predicts better ToM in oral deaf children, those with cochlear implants are as delayed as those using conventional amplification.

From the perspective of how early linguistic and social experiences may influence ToM development, the most interesting deaf children are the 10 percent minority with a signing deaf parent or sibling. These "native signers" grow up with ready access to fluently signing conversational partners. Studies using standard ToM tests reveal consistently better performance by native signers than by late signers or oral deaf children (Courtin & Melot, 1998; Peterson & Siegal, 1999; Remmel, Bettger & Weinberg, 2001) and the advantage persists even after executive functioning, nonverbal mental age and language ability are partialled out (Woolfe, et. al, 2002). Furthermore, native signers appear to acquire false belief understanding as early as hearing children, or possibly slightly sooner (Courtin & Melot, 1998).

In other words, delays in ToM development are evidently not related to deafness per se, but rather to deafness in conjunction with upbringing in a hearing family.

Children with Blindness or Cerebral Palsy

While hearing impairments block access to speech, severe visual impairments deny access to facial expressions, gaze, pointing and other nonverbal information about feelings and thoughts. Children who are congenitally blind are typically slow to develop language and pragmatic communication so that their participation in family conversations about beliefs, feelings and other intangible mental states is further curtailed. Consequently, it is perhaps not surprising that three published studies have shown blind children's ToM development to be as delayed as late-signing deaf or autistic children's. For example, only 14 percent of one blind group passed false belief at age 6, compared with 70 percent at age 12 (Peterson, Peterson & Webb, 2000). The delay was specific to the cognitive domain.

Cerebral palsy is a congenital motor disability caused by brain damage. Speech may be affected in varying degrees up to total inability, whereas intelligence is often normal. Non-speaking children with cerebral palsy will have only limited access to conversation with peers and family members, with possible implications for their ToM development. Dahlgren, Dahlgren-Sandberg and Hjelmquist (2003) tested the false belief understanding of a group of 14 nonvocal cerebral palsy (CP) young people aged 5 to 15 years. For everyday communication, these children used Bliss symbolics, an artificial language with simple shapes and line drawings to represent words. By sequencing the symbols on a mechanical board, compound words and sentences are produced. The CP children in Dahlgren et al.'s study were skilled users of Bliss, enabling administration of Baron-Cohen et al.'s (1985) standard false belief tests. The results revealed a high ToM failure rate, beyond what would have been expected on the basis of chronological age and general intelligence. In fact, only 33 percent of the non-speaking CP children with IQ scores in the normal range passed false belief, compared with 100 percent of an age-matched group of typical children and 88 percent of another group who had mental retardation. Yet the children with cerebral palsy did not meet the diagnostic criteria for autism and they "showed an obvious interest in social interaction and took part in reciprocal communication, though limited by their motor disabilities" (p.148). The authors concluded: "deficits in theory of mind are not specific to the autistic continuum but can be found in other groups with communicative disabilities" (p. 129).

In summary, the notion that unexpectedly late ToM development is unique to autism has now been challenged. Children with severe impairments of hearing, vision or motor functioning may all suffer similar ToM delays, despite normal intelligence and lack of autistic symptomatology.

How Can These ToM Delays Be Explained?

Autistic children's ToM problems have been explained in two different ways. Nativist, neurobiological accounts (e.g., Baron-Cohen, 2000) presume that "theory of mind has a specific innate basis" (Scholl & Leslie, 2001, p. 697) and that "a specialized cognitive mechanism which sub-serves the development of folk psychological notions is dissociably damaged in autism" (Leslie & Thaiss, 1992, p. 229). In

other words, the same congenital neurological abnormalities underlying autism's diagnostic symptoms of impaired language, imagination, and socialization are held responsible for mindblindness. The domain specificity of autistic children's ToM problems is viewed, along with their severity, as evidence that a modular neurobiological defect is responsible.

In contrast to the view that ToM development reflects the maturational unfolding of an innate brain mechanism, social-experiential accounts adopt a "nurture" position, viewing the growth of mental state understanding as the product of a child's participation in social and conversational interaction. While varying in detail, these theories stress the importance of language and social interaction through family disputes, pretend play and discussions of feelings (Dunn, 1994) as vehicles for "drawing mental states to children's attention" (Astington, 2001, p. 686). For children with deafness, blindness, or cerebral palsy, ToM development is delayed, according to the nurture view, by the restrictions that the child's disability imposes upon the fluent sharing of mentalistic information with family members. The unimpaired ToM development of deaf native signers, who have fluent partners at home with whom to converse mentalistically, lends empirical support to these suggestions. The domain specificity of deaf and blind children's ToM problems can be likewise be explained by the inaccessibility of false beliefs through routes other than language, whereas drawings and photos can be seen and touched (Peterson, 2002).

It is conceivable that the ToM problems associated with autism might be the product of nurture rather than nature. Tager-Flusberg's (1993) naturalistic observations revealed unusually sparse use of mentalistic terms in family conversations involving children with autism. While this could be the outcome of an innate ToM deficit, a nurture position would argue that false belief difficulties will follow as a consequence of restricted mentalistic conversation. Indeed, the diagnostic symptoms of social aloofness, impaired imagination and language deficits are likely to make family conversations about intangible mental states quite difficult for an autistic child.

Of course, the root causes could well be different for diagnostic groups. Neurobiological damage could delay ToM in autism while limited social and conversational experience could operate for children with sensory or motor disabilities. Both nature and nurture could likewise interact together in each condition. While discoveries to date have been promising, ample scope remains for further research into this exciting controversy.

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COMMENTARY: *Broadening the Framework of Theory-of-Mind Research*

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How do these leading researchers view the future of the study of children's theory of mind—a topic that has dominated cognitive developmental research for the last 15 years? There are both common themes running through these 5 very valuable, succinct

accounts, and some notably different inferences drawn from the findings of current research. In general terms, it is most encouraging that perspectives are broadening from a focus on children's success or failure on particular tasks such as false belief tests, to consider links across cognitive domains, development in different cultural worlds and with different disabilities, and the significance of individual differences in children's developing understanding. Thus Perner writes of related 'developmental spurts' across apparently unrelated cognitive domains, and describes training studies that lead to improvements across domains, Naito sets out the key importance of cross-cultural studies and of the links between episodic memory and theory of mind, while the links between language, communicative experiences and theory of mind receive detailed and stimulating attention in the accounts of Wellman, Astington and Baird, and Peterson. There is a growing focus (see Perner and Astington) on early understanding of intentionality as a stage-setter for later understanding of theory of mind, and agreement that the growth of the understanding of mind is of very general significance for a wide range of human developments: as Wellman summarizes, it's a knowledge system that shapes human thought and learning.

> *"the discourse… linked to later theory of mind flourishes within certain sorts of relationships"*

The disagreements and differences of emphasis between the accounts are also interesting and informative; among these, the following issues stand out. First, should theory of mind be viewed as a unitary construct? Naito argues that the focus on theory of mind as an integrated capacity has hampered us from investigating the precise nature of different aspects of social understanding. Longitudinal research also indicates that both the antecedents and sequelae of these different features of social understanding differ (Dunn, 1995). Naito discusses the intriguing possibility that various cognitive abilities become more integrated with development—clearly a valuable issue for further research. Within a different framework, Wellman views false belief understanding as only a single milestone in the development of understanding of mind, and emphasises the importance of mapping out the sequence of developmental changes.

A second area of difference in the accounts concerns the issue of universality or cultural differences in the development of theory of mind. The meta-analysis conducted by Wellman, Cross and Watson (2001) provided convincing evidence for the commonalities in the development of false-belief understanding among children growing up within different cultural groups and countries. In contrast, Naito here emphasizes what we can learn from the differences in children's performance across tasks and cultures, drawing on the analysis of Japanese children's relative delay in theory of mind development. Unquestionably, further investigation of these developments in non-Western cultures would be very valuable.

Language, Communication and Understanding of Mind

A third particularly lively area of investigation concerns the links between theory of mind and language. Astington and Baird note some of the differences in theoretical perspectives on these relations—contrasting, for example, the innate modular view with the argument for the interdependence of the domains. They argue that researchers disagree about the nature of the relation of language to theory-of-mind development, in part, because they focus on different aspects of language—the communicative and the representational aspects. Wellman convincingly emphasises the

increasing evidence from Western research for conversations involving explanation as a crucial part of the developmental story (though this may well be an area in which children's experiences differ across cultures).

Beyond the points raised by the contributors here, a focus on individual differences in communication and understanding of mind raises a further set of lessons about the social processes implicated in children's developing social understanding (Dunn & Brophy, in press). Central is the notion that we should look at children's language not solely in terms of their cognitive skills or individual characteristics, but in terms of their relationship experiences. There is now an accumulation of evidence that participation in discourse about inner states is related to the growth of children's understanding of mind. But we need now to examine such conversations to gain precision about what matters, in such discourse, for children's discovery of the mind: we know that beyond the content of such conversations about inner states, the particular context, the pragmatics of the discourse, the characteristics and theory-of-mind skills of the interlocutor are all important (Dunn & Brophy, in press). Moreover, these features of the discourse depend importantly on the quality of the relationship between child and interlocutor; the discourse shown to be linked to later theory of mind flourishes within certain sorts of relationships.

Among the promising research directions highlighted by the contributors, three are notable. One is the power of intervention research to help us address the intractable causal question of what lies behind change in children's understanding of mind (see Perner, also Lohmann & Tomasello (2003); Kloo & Perner, in press). A second is the progress on investigation of the links across language, executive function, theory of mind and emotion understanding and a third, the illumination that comes from research on children with autism or sensory disabilities (Peterson). Among the relatively neglected questions, some concern emotion—for instance, do emotional experiences and emotion understanding have a role in the developmental story, including developments beyond the preschool years? And what governs children's use of their understanding of mind? Evidence that children demonstrate quite different powers of understanding other people's feelings, intentions or perspectives in the context of their different relationships (Dunn, 1999) remains provocative. The most difficult challenge remains the explanation of changes in children's understanding, changes now documented with increasing sensitivity, as these useful and stimulating contributions show.

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COMMENTARY: *Socializing and Relativizing ToM*

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The five preceding articles illustrate two different approaches to and perspectives on the development of Theory of Mind (ToM): (a) the domain-general approach, trying to characterize ToM in terms of some basic mechanisms, and (b) the domain-specific approach, focusing on unique features of ToM. Investigators taking the domain-general approach have identified a few cognitive capabilities underlying ToM, such as executive function skills and elaborate memory skills (Naito, this issue). They also assert that ToM is a product of the more general ability to understand unobservable "mediating forces" for a set of external events (Tomasello, 1999); and ToM assessed by the false belief and related tasks is based on the ability to contrast perspectives and build their embedded hierarchy (Perner, this issue). The latter conceptualization of ToM as the "super-domain" of the mental, in fact, led to finding the connections between ToM and not a few "seemingly unrelated" abilities. I discuss two issues here, however, from a domain-specific perspective, because, as convincingly argued by Wellman (2002), these domain-general mechanisms, though undoubtedly impact ToM, fail to explain it fully.

"even young children may understand that humans act differently when they are fulfilling roles"

ToM Develops in Social Interaction

What are the current focuses of the domain-specific approach to ToM? It has generally been agreed, especially after Wellman, Cross and Watson's (2001) comprehensive meta-analysis, that further examinations of the false belief tasks is not productive. Instead, the domain-specific researchers pay attention to ToM's precursors, close correlates, and consequences, and are collecting data from young children as the target (Astington & Baird, this issue). They have also found some sociocultural variables that influence the acquisition and change of ToM.

As indicated by Astington & Baird (this issue), two of these variables seem especially important for the development of ToM: Communication with significant others and the use of language as a tool representing mental states. Complex forms of communication, such as negotiation of meanings, are possible only when both speakers and listeners can effectively mentalize. Therefore, in a process of influence in the reverse direction, engaging in communication facilitates the development of ToM because repeated participation in an activity enhances skills that are needed to perform competently in the activity (Goodnow, Miller, & Kessel, 1995). To put it differently, though the minimal level of ToM is necessary as a prerequisite for elaborate communication (Sperber, 1996), this minimal level ToM operates first in the communication activity in which the child participates, and then is applied to laboratory ToM tasks in which an unknown person acts in a hypothetical, arbitrary situation. The significance of communication for ToM development is most clearly shown by Peterson and Siegal's study on deaf children who grew up with fluently signing parents in comparison with their counterparts having hearing parents (Peterson, this issue).

The use of linguistic devices as psychological tools for representing mental states conceivably facilitates ToM development, too. Although seeming to be "individual" linguistic abilities (Astington & Baird, this issue), these devices are likely to be products of prior social interactions. Thus, we have to consider sociocultural foundations of ToM when we investigate how it develops. It will be fascinating to study how "intermental" activities relying on ToM enhance "intramental" ToM skills by combining analyses of everyday conversations, comparisons of cognitive performances of different populations of children, and training studies.

Needless to say, emphasizing the significance of sociocultural influences on ToM development does not imply that ToM is NOT a privileged domain. As neatly summarized by Wellman (this issue), ToM is acquired early, easily, and universally, though not exactly at the same age (Naito, this issue). In other words, it is a privileged or innate domain in the sense that humans have genetically endowed learning mechanisms for it (Carey, 1995), though it develops under sociocultural constraints (Hatano & Inagaki, 2000). Moreover, as noted by a few contributors, there is a particular part of the brain associated with ToM, that is, the medial prefrontal region, more specifically, the anterior paracingulate cortex (Gallagher & Frith, 2003). This strongly suggests that the human brain is prepared to acquire ToM.

Explaining Everyday Behaviors in Multiple Ways

Most ToM researchers, including a majority of the contributors to this issue, assume that human behaviors are interpreted by attributing to his or her mental states such as desire, belief, intention and emotion. However, both school-aged children and lay adults possess multiple causal frameworks — they explain human behaviors not always by folk psychology, and, even within folk psychology, other knowledge systems than ToM are included.

People understand fairly often behaviors of self and others in terms of naive biology, that is, by referring to physiological needs or necessities. Naive biology may even be an earlier acquisition evolutionarily, because paying attention to the estimated bodily states of predators and/or preys was crucial for the survival of our ancestors. Human behaviors are sometimes explained by folk sociology as well — even young children may understand that humans act differently when they are fulfilling roles in their institutions from when they behave in "private" situations, in other words, can differentiate what they want to do from what they have to do. Children and lay adults usually attribute psycho-social behaviors to the operations of individual minds only where humans are under no physiological needs or societal duties.

In addition, there are multiple folk psychologies (Lillard, 1998). At the least, I assume, because there are two disciplines of scientific psychology (Cronbach, 1957), that is, experimental psychology and differential psychology, folk psychology also has two subtheories, only one of which is represented by ToM.

An example may make this point clearer. In answering a question, "She heaped all sorts of abuse on him. Why did she do so?" a typical ToM explanation would be "Because she believed that he had cheated her." However, another explanation in terms of one's personal characteristic, such as "Because she was an aggressive person," seems also natural. Theory of personal characteristic concerns several interesting questions of its own, such as how children and lay adults assume human traits to be acquired and modified and how the theory varies from culture to culture.

To sum, we have to specify when an explanation in terms of ToM is readily generated and considered to be natural and plausible within children's and adults' multiple causal frameworks.

Through such investigations we can better locate ToM in the total picture of conceptual development.

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COMMENTARY: *The Future of ToM lies in CoM*

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Given the extraordinary amount of research activity into Theory of Mind (ToM) over the past 20 years, this special section is well-timed. Unfortunately, the "future directions" promised by the title are less clear than past achievements. Mainly, the authors cover ground already harvested rather than venturing onto unploughed land, although some new forays in empirical directions are notable. My commentary focuses on the issues raised there with the aim of further broadening their horizons.

Common themes suggest some of the ways in which the horizons might be broadened. For example, the idea of ToM as a multifaceted construct, with developmental relations to other multifaceted constructs such as language and executive control, and recognition of developmental change taking place over a longer span of time than generally assumed are all important, reflecting work underway in different research centers. Astington and Baird relate research progress on the relation of language and ToM from this broader perspective, rightly stressing the multifacetedness of both areas, as well as their interdependence. Studies by Naito on cultural dissociations and Peterson on the severe delays seen in children who, for one reason or another, do not have access to the same linguistically based opportunities for

social-communicative interactions within the family context are also notable. Naito and Peterson each emphasize the necessary contributions of social and communicative interactions to the emergence of ToM competence, noting that differences in such experiences may account for cultural variations as well as for delays in children with autistic, hearing, vision or motor disabilities. Among the latter, absence of normal family conversation may lie behind the failure to attain the expected level of understanding.

"new metaphor replaces the idea of ToM as an individual cognitive achievement"

Most ToM researchers have concentrated their focus on individual cognitive structures and processes – core knowledge, episodic memory, representation, executive control, or mental comparison process. This focus reflects a view of development that is independent of its social context, which is surely mistaken. A new approach that centrally focuses on social interaction is needed. Toward that end it is time that researchers recognized that language measures reflect varying expertise in the use of a vital social-cognitive and communicative tool, one that enables participation in the very social-interactive practices that are thought to foster ToM. Thus it is time to free language from its "control" function (similar to age) in cognitive tasks to observe its central role in social-cognitive development in the pre-school years.

Ideally, in my view new directions for ToM would eliminate the metaphor of a cognitive theory (albeit implicit) and invoke a new metaphor allowing a more comprehensive approach to issues of social understanding, one that reflects its cultural and inter-subjective nature. My colleagues and I have suggested the metaphor of "entering the Community of Minds (eCOM)" (Nelson, Plesa, & Henseler, 1998; Nelson, Henseler, & Plesa; Nelson, Plesa, Goldman, Henseler, Presler, & Walkenfeld, 2003; Nelson, in press). This metaphor replaces the idea of ToM as an individual cognitive achievement, one involving different "conceptual primitives" to be identified as either innate or learned plus some learning mechanisms (Wellman, this issue), a conception based on an outmoded additive view of nature and nurture. Any future conceptualization must be based on the understanding that nurture is the nature of human cognition, and that the functions of language and other semiotic forms are its platform.

It is our contention that Communities of Minds constitute the human cultural world into which children are born and within which they grow up. However, infants and young children metaphorically stand outside the COM and only begin to enter into it when they can begin to share the perspective of other members and to interpret the discourse about mind topics that members engage in. Among the important constituents of COMs is first the idea of community, the larger social-cultural-linguistic group within which the child is embedded. It is this group that regulates acceptable behavior, and defines community values, history, and societal institutions. These, in turn, provide the social context within which the child establishes identity, understands self, and relates to others in ways common to the COM. COM emphasizes plural minds, not just the dyadic I-you mind relation of infancy and early childhood. Entering the COM thus is to enter into human cultural life while the language of the community reflects the specific structures of the culture.

The entry point to COM then is through the symbolic systems of language, including conversations (about other people, about past and future), personal narratives, stories, and explanations. Through these essential experiences, COM nurtures a broad developmental sweep, involving self and social relationships, ideas of past and future, mental state concepts, and autobiographical memory (Nelson & Fivush, in press), that bring the child into the

Communities of Minds. Thus to enter the COM the child must be led and guided by others. Whether or not such guidance affects "hard" cognition, such as memory and executive control, the latter do not operate effectively in the social domain unless the content is explicated by more seasoned community members. The question is not whether the child can "read" another's mind, but whether he or she can enter into the cultural discourse that abstracts from ongoing action to talk about what is in the minds of others: their perspectives, ideas, beliefs, and so on, as well as their reasoning that may lead to anger or happiness or perhaps a change in goals.

Thus I hope the future of ToM study takes the child, not only beyond his/her own head and its cognitive properties, but also beyond the one-on-one social situation to the larger cultural group to which the COM allows entry. In COM, members engage in discourse about the community as a whole: its history and traditions, its governance, its goals, its ideals. These are the contents of the community of minds and the contents of cultural learning. Studying the communal narratives that concern these matters and children's understanding of them may then reveal the connections between individuals, social relationships and cultural groups that have been missing from ToM study thus far.

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SPECIAL ESSAYS

Child and Family Research in Cross-Cultural Perspective[1]

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PREVIEW

Child and Family Research is a laboratory in the National Institute of Child Health and Human Development in the National Institutes of Health in Bethesda, MD, USA. We investigate dispositional, experiential, and environmental factors that contribute to physical, mental, emotional, and social development. Our research goals are to describe, analyze, and assess (a) the capabilities and proclivities of developing children, including their genetic endowment, physiological functioning, perceptual, cognitive, and language abilities, and emotional, social, and interactional styles; (b) the nature and consequences of interactions within the family and the social world for children and parents; and (c) the influences on development of children's exposure to and interactions with the natural and man-made environment. *Child and Family Research* was established with the broad aim of pursuing an investigative program on the ways in which development is affected by variations in the conditions under which human beings are reared.

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[1] This article is based, in part, on an invited presentation at the ISSBD meeting on "Parenting Beliefs, Parenting, and Child Development in Cross-Cultural Perspectives" in Seoul, South Korea, 2003.

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To meet this multifaceted charge, we have undertaken an integrated multicultural, multivariate, multiage research program that is supplemented by a wide variety of ancillary investigations. We assess families in contrasting cultural and social contexts in convergent ways and attempt to evaluate the contributions of a comprehensive set of direct and indirect, independent and interdependent factors from a systems view that emphasizes simultaneous and multiple

THE CONTEXTUAL ECOLOGICAL VIEW OF DEVELOPMENT
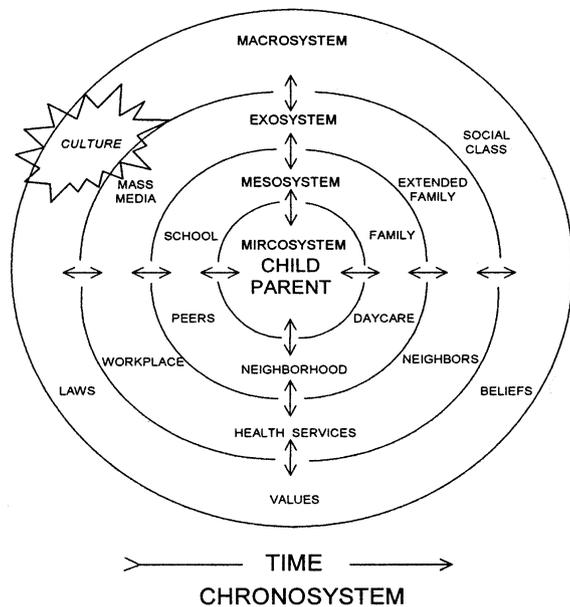
sources in predicting child, parent, and family outcomes. The program of research utilizes a framework based on the ecological developmental perspective to identify influential variables both distal and proximal to the child and the family. Figure 1 shows the contextual ecological model that underlies our research program. Toward the goal of utilizing and testing this model, and most relevant to the IBBSD, I have founded an International Network of Parenting and Child Development research collaborators (Table 1, column 2). Our cultural study sites include Argentina, Australia, Belgium, Brazil, Cameroon, Canada, England, France, Israel, Italy, Japan, Kenya, Peru, the Republic of Korea, and the United States. Other sites are planned. The project provides for cross-cultural as well as intra-cultural evaluations. Several thousand families from around the world now take part in our study.

VIEW

Our research effort embodies a variety of notable features. Most contemporary developmental science is of Western origin, and much less is currently known scientifically about children, parenting, and families in other cultural settings. Indeed, it has been pointed out that three different cultural limitations constrain our understanding of development: a

TABLE—CROSS-CULTURAL SAMPLES			
Country	*Principal Collaborator(s)*	*Location(s)*	*Intra-Cultural Contrast*
Argentina	C. Galperín, L. Pascual E. Berti	Buenos Aires Córdoba	SES Urban-Rural
Australia	S. Wyver	Sydney Outback	SES Aboriginal
Belgium	A. De Houwer, A. Vyt	Antwerp, Ghent	Monolingual Bilingual
Brazil	M. L. Moura de Siedel R. Ribas	Rio de Janeiro	SES
Cameroon	A. Bame Nsamenang	Bameda	Rural low-SES Nso Urban low-SES Nso Urban middle-SES Nso
Canada	C. S. L. Cheah	Saskatoon	Urban-reserve First-nations Cree
England	A. SlaterBristol	Longitudinal	
France	M.-G. Pêcheux J. Ruel	Paris	Cohort 1 Cohort 2
Israel	S. Maital, A. Sagi-Schwartz	Haifa Kibbutzim	City-kibbutz
Italy	P. Venuti	Padua Naples/Ruoti	North-South
Japan	H. Azuma, M. Ogino, S. Toda	Tokyo Hokkaido	City Provincal
Kenya	S. Bali, M. Kabiru	Kamba	Rural-Urban Migration
Peru	L. Caulfield		
Republic of Korea	K. Kwak, S.-Y. Song	Seoul	Nuclear-Traditional Family
Acculturation in the United States	L. Cote	Washington, DC Maryland Virginia	Japanese American South American Korean American
United States	CFR Staff		See text

narrow participant data base, a biased sampling of world cultures in its authorship, and a corresponding bias in the audience to which it is addressed. For these reasons, our project focuses on documenting child development, caregiving, and family life in *multiple cultural contexts* (Table, columns 1 and 4). The settings selected in this research program represent an appealing and informative comparative base on which to investigate specific, as well as universal, aspects of parenting and human development. Many of the cultural groups recruited are similar in terms of modernity, urbanity, education, and living standards. In many sites, families are nuclear in organization, the mother is normally the primary caregiver, and parents share several ultimate goals for their children, notably social adjustment, educational achievement, and economic security. Other cultural groups have been recruited so as to contrast extreme cultural variations in circumstances of development, and substantial differences exist across our samples in terms of history, beliefs, and values associated with childrearing.

The core of our research protocol is constant, but variations are included to accommodate pre-selected culture-specific questions as well as the unique requirements of certain societies. This perspective opens a vista on revealing cross-cultural comparisons. For example, we compare language, play, and adaptive function in young children. One study of the composition of vocabulary in seven linguistic communities showed, with the exception of children just learning to talk, children's vocabularies were ordered with respect to word classes (nouns > verbs > adjectives > closed-class words). Complementary studies focus on parenting. One example unearthed a consistent latent structure of parenting infants in nine societies. Other multicultural studies of parenting have assessed personality and parenting cognitions, like knowledge of childrearing and child development, self-perceptions, and attributions. For example, mothers in seven cultures evaluated their competence, satisfaction, investment, and role balance in parenting, and rated their attributions of successes and failures in seven parenting tasks to their own ability, effort, or mood, to difficulty of the task, or to child behavior. Parents' self-perceptions and attributions help to explain how and why parents parent, and provide further insight into the broader cultural contexts of children's development.

Another study reported multiple dimensions of maternal speech (affect-salient and information-salient) to young children of two ages (5 and 13 months) in four cultures (Argentina, France, Japan, United States) to probe how dimensions of language, child age, and cultural variation influence what mothers say to their children. One of the principal ways children become cultural is through mother-child communication. Maternal language regularly contained both affect-salient and information-salient topics: Mothers everywhere share feelings with their children and contribute to emotional exchanges via their affect-salient speech, just as they impart or confirm cognitive information referential of children's perceptual experiences. Of course, mothers spoke more frequently to their 13-month-olds than to their 5-month-olds, but they favored affect over information in speaking to their 5-month-olds and information over affect in speaking to their 13-month-olds. Mothers appear to know that, as their children grow, they

"insight into the broader cultural contexts of children's development"

need more direction and more information about the children themselves, their mothers, and the environment. Finally, growth patterns of maternal speech varied by culture. Japanese mothers stressed affect-salient speech, whereas mothers from the three Western cultures favored information-salient speech. These findings submit to cross-cultural evaluation the universality of certain processes related to mother-child speech. By sampling different cultural groups at different ages in different domains, we learned about the similar and different functions of parenting in different cultures.

Related to this cross-cultural dimension, our program of research is also intensively *intra-cultural* in the sense that at least two comparison groups have been recruited at almost all study sites. These groups form meaningful intra-cultural comparisons for each culture (see Table 1, column 4). In Italy, for example, we study the classic North-South contrast in a northern city, a southern city, and southern town. We have compared how girls and boys in these two regions cope with the demands of their physical and social environments through the expression of adaptive behaviors in performing everyday activities. With respect to region, northern and southern children showed different patterns of adaptive behaviors. In terms of Italian mothers' parenting beliefs and behaviors, northern and southern mothers reported that they engage more in social than didactic parenting interactions, when in actuality both groups engaged in didactic parenting for longer periods of time than they engaged in social domains of parenting. The aim of another report was to evaluate variation in mothers' language. We found intra-cultural similarities in some maternal communicative functions (tutorial and asynchronous) but significant intra-cultural differences in other communicative functions (didactic and control) that related to different life environments and childrearing practices. A longitudinal analysis assessed exploratory, symbolic, and social play: Mothers varied by region and type of play, and individual variation in children's exploratory and symbolic play was specifically associated with individual variation in mothers' play.

In the United States, we study major sociodemographic contrasts such as maternal age (the age range of participating primiparous mothers at the birth of their child is 13-46 years), parenthood status (biological mothers, adoptive mothers), parity (firstborns, laterborns), employment status (full-time homemaker mothers, mothers who combine homemaking with employment outside of the home), childcare experience, and family SES. In addition, we have recruited two contrasting immigrant groups living in the United States: Japanese Americans and South Americans. The United States is a country of immigrants, and immigrants face multiple challenges in acculturating to U.S. society – deciding which cultural behaviors or beliefs to adopt from American culture and which to retain from their country of origin. Acculturation is a major transforming force on child health and human development, yet acculturation as a scientific phenomenon is not at all well understood. One of our studies compared mothers' actual parenting with mothers' reported parenting. Contrary to their self-reports, mothers in both groups engaged in more didactic than social parenting and did so for longer periods of time. We also found that parenting behaviors acculturate more quickly and

readily than do parenting beliefs among acculturating mothers. Whereas immigrant mothers' and children's play resembled the play of European Americans, cultural differences and developmental continuity and stability in attributions, self-perceptions, and knowledge showed that parenting cognitions of immigrant mothers reflected traditional cultural beliefs about children and parenting. Studies of parenting behaviors and cognitions provide insight into the nature of parenting generally and those of immigrant mothers specifically, and therefore the parenting climate in which immigrant children are reared.

In connection with this acculturation research, on 16 July 2004, immediately following the ISSBD meetings in Ghent, Belgium, *Child and Family Research* will sponsor an open workshop on "Acculturation and Parent-Child Relationships: Measurement and Development."

From these brief accounts, it should be clear that our program of study is also *multivariate*. A major assumption of our research is that specific modes of caregiving and environmental events experienced at specific times influence specific aspects of development in specific ways. Informed by this differentiated and modular view of development, our research attempts to discern which experiences affect what aspects of development, when, and how; how individual variation among children moderates those influences; as well as how individual children affect caregiving and their own development. Furthermore, our research program is *prospective* and *longitudinal* with assessment points in many cultures in infancy, toddlerhood, middle childhood, pre-adolescence, early adolescence, and adolescence, and the research (at least in the United States) is projected to continue into adulthood when the infants first studied become parents themselves. At different ages, we investigate child behavior, cognition and language, self-understanding and identity development, socioemotional competencies, relationships with peers and family members, health, and family characteristics from independent sources (examiner, child, mother, father, and teacher). Among mothers, we assess interactive behaviors as well as intelligence and personality, parenting attitudes, attributions, interaction styles, and knowledge. Multiple assessments of mothers and children together also permit continuing evaluation of dyadic interaction. Basic information is also collected at each age about maternal employment and child care, family functioning, and family SES and sociodemographics.

The data we analyze at each time period permit in-depth cross-sectional examinations of contemporaneous influences on children's emerging capabilities and parenting functions, while the longitudinal design of the project provides an invaluable opportunity to trace their antecedents and developmental course, and to test models of stability, continuity, and correspondence across varying social and cultural contexts. Appreciating factors that are stable in development and those that change, factors that broadly affect development and those that are more specific, promises to inform and refine efforts at intervention and remediation.

OVERVIEW

In *Child and Family Research*, we attempt to study some of the most important of the many factors that influence development in human beings. One notable focus is parents, whom we take to be the "final common pathway" to childhood oversight and caregiving, adjustment and success. It is the particular and continuing task of parents (and other caregivers) to "enculturate" children. Parenting can mediate between cultural and social forces on the one hand and growth and development in children on the other. Our combined cross-cultural and intra-cultural perspectives help us specify contexts of development more accurately and comprehensively so as to evaluate their influences on child development and childrearing.

A central concern of our studies is the identification and assessment of forces bound up in ontogenetic advances. Central to development is transaction in the child-caregiver dyad in its sociocultural context. Our research is therefore concerned with longitudinal assessment, evaluation of children and caregiving, culture and environment, and the interface between biology and behavior. The ultimate aims of the project are concerned with promoting aware, fit, regulated, and motivated children who, as a hopeful eventuality, will grow into knowledgeable, healthy, happy, contributing adults.

To learn more about *Child and Family Research*, visit our websites: www.cfr.nichd.nih.gov and www.parentingscienceandpractice.com.

Notes from The President

In the last Newsletter, I explained the need for ISSBD to look for a more pragmatic solution to handling some of its affairs and, in particular, to find a more beneficial contract for the publication of its Journal, the International Journal of Behavioral Development (IJBD). To this end we had received a very favorable offer from a well-known publishing house. The latest developments are that the current publishers of IJBD, Psychology Press, are in the process of making us an offer to continue publishing the Journal and to handle the services I outlined in my last Notes from the President. I am looking forward to receiving their proposal very soon and expect that the whole matter will be resolved by the time I next write these Notes in the autumn. I am also very optimistic that the Society will benefit greatly whichever publishing house is awarded the contract for IJBD and undertakes to manage several of the administrative tasks related to the handling of the Society's day to day affairs.

Apart from continuing to pursue negotiations with publishing houses in order to secure the very best deal possible for the Society, I have also been keeping in close contact with the Organizing Committee of the next ISSBD Biennial Meetings that will take place in Ghent in July this year. In particular, I have liaised with Leni Verhofstadt-Denève (Chair ISSBD Ghent 2004) and her colleagues concerning a grant application to support a conference workshop on Developmental Psychopathology – see the Congress web site at http://allserv.rug.ac.be/ISSBD2004). It gives me very great pleasure to tell you that we have been

Notes from The President continued

successful in this regard and that the Jacobs Foundation will provide funds to enable young scientists from countries with currency restrictions to attend the workshop and congress. Beside the Jacobs Foundation grant, the congress will be sponsored by the Flemish community, French and Flemish Scientific Foundation, the province, the town and Ghent University. Congratulations to Leni and her team for successfully negotiating this support.

In terms of the Congress itself, all is proceeding very well indeed and we seem set for a resoundingly successful meeting. Applications for posters and symposia have been astounding and many more than could be scheduled in four days were received. This meant, of course, that some people were not successful this time and that we were not able to fulfil their hopes. However, where this was the case, I know that everything possible was done to offer an adequate alternative for active participation. Eventually 92 paper symposia, about 30 poster symposia, and more than 800 individual posters were selected. Together with the 12 keynote addresses, 7 invited symposia and, last but not least, the three scientific 'get-together' sessions, the conference promises to be a highly dynamic and scientifically appealing event, with a program offering something for everybody.

Of the scientific get-together sessions, the Young Scholars Initiative seems to be attracting a lot of interest, especially among the student members because it promises to provide them with an opportunity to interact with other participants representing different parts of the world and to deliberate on their current areas of research interest. Feedback from the convenors of the Initiative suggests that applications have been received from young scholars mainly involved in the field of cross-cultural research who come from countries as diverse as Russia, Israel, India, Germany, the United States of America, Canada, Cameroon, and the United Kingdom. It is hoped that this forum is the beginning of a concerted networking for future research collaborations among these participants.

I have just received word that there will also be a 'writing clinic' overseen by Alexander Grob and supported by the Jacobs Foundation. The aim is to help young scholars with their scientific writing skills so as to improve their publication effectiveness. More information on this can be found on the Congress website from the end of March.

Re financial affairs of the Society – I have been in regular contact with the Society's Acting Treasurer and Membership Secretary, Fred Vondracek, and know that he has been involved in strenuous activities on behalf of the Society. In particular, he has been in close contact with the former Treasurer and Membership Secretary, Barry Schneider, Canada, in order to complete the transfer of the Society's financial matters from Canada to the US. This has proved to be extremely complex and time-consuming so that our thanks have to go to Fred for his efforts that have been definitely 'above and beyond the call of duty'. In light of the many challenges encountered during this time, Fred has also been working to optimize the Society's financial affairs and to bring the administrative procedures related to them up to date. Thanks also to Brett Laursen (our Treasurer and Membership Secretary before Barry) for all his help in these matters.

Related to issues of finance, that of membership has also been at the forefront of discussions engaging myself and other members of the Society. Membership is, after all, the life-blood of the Society and as such must attract all our concern. Certainly a major step forward concerning the membership and, in part, the Treasurer's role is likely once we have accomplished our

reforms in this regard. We decided, therefore, to wait with an election for Treasurer and Membership Secretary until the new contract is signed when much of this work will be undertaken by the publishers.

Fred Vondracek has also spent a lot of time in dealing with membership issues, often related to dues and Journal delivery – or more correctly, non delivery. If there is any problem, do get back to him. Contact details are given for all officers on the ISSBD web site - http://www.issbd.org . With regard to membership issues, I must remind the readership that we have a Membership Committee that has been very active and successful under its Chair, Andrew Collins. One important piece of news received via the Membership Committee came from Professor Huichang Chen, ISSBD's coordinator in China. They have been able to increase membership by almost 70% from 2003 to 2004, when they admitted in the region of 170 members. This is the sort of news we need and like. Congratulations to all concerned.

As you will know, the Society has been considering establishing an awards system for excellent scientific achievements at various stages in a career, and in various fields. Ken Rubin has been helpful in handling the nominations process. However, we received a limited number of recommendations. This is most probably due to it being a new step for ISSBD and yet to embed itself in the membership's psyche, but I sincerely hope that in the future many more nominations for all the award categories will be forthcoming. The first awards will be presented this summer on the occasion of the Biennial Meetings in Ghent. I should just mention here that we have also been discussing the idea of establishing "fellows" within the Society but this has yet to be finalized. I or any member of the Executive Committee would be happy to hear any ideas you might have on this subject.

Since I last wrote we have had elections in the Society for places on the Executive Committee and I am happy to tell you that the new EC members are: W. Andrew Collins, Arnold Sameroff (both USA) and Marcel van Aken (the Netherlands). The new Executive Committee will be operational as of the EC meeting in Ghent. On the subject of elections, I would add that, although our Secretary General, Jari-Erik Nurmi, received a respectable number of valid ballots, I should be happier if there was a greater involvement by the membership in the democratic ruling of our Society. As I have already mentioned, the membership is the life-blood of the Society but it needs to be an active one for the Society to be really healthy.

To end on a very positive note, I have recently received the latest proposal from Ann Sanson concerning the plan to hold the 19th Biennial Meetings of ISSBD (2006) in Melbourne, Australia. The proposal and budget are highly professional and our congratulations have to go to Ann and her team for their sterling work on behalf of the Society. Once again, all looks very promising for a rich meeting in a wonderful setting. She and her colleagues will present their plans in Ghent. Don't forget to go and visit them to find out more – and to attend our Business Meeting in which all members of ISSBD are entitled to participate.

All that I have to do now is to wish you all a very happy and productive 2004. As always there is much to do but much to anticipate. Most of all, I look forward to seeing you all, plus colleagues, husbands, wives, boyfriends, girlfriends, whomsoever, in Ghent in July for our 18th Biennial Meetings. In the meantime, if you have any issue you would like to raise, please feel free to contact me via email - rainer.silbereisen@uni-jena.de .

CALL FOR PAPERS FOR THE SIXTH ISSBD INTERNATIONAL AFRICA REGIONAL WORKSHOP

Submission of a 250-word abstract is solicited for the Sixth ISSBD International Africa Regional Workshop to be held in *Yaoundé, Cameroon, July 25-31 2004* on the **theme**: *HIV/AIDS and the African Youth: Theory, Research and Practice with Youth in Peer Education, Families and Communities*. This theme will be handled by way of symposia, workshops, roundtables, poster sessions and special events. Tailor your abstract to any of these forums. Besides other scientific criteria, your submission will be evaluated as it fits any of these forums. There will also be a keynote address by the President of the ISSBD and 12 invited papers.

The Organizing Committee plans to bring together 70 international and local researchers, scholars, practitioners and HIV/AIDS actors and persons living with HIV/AIDS to exchange and share perspectives and best practices and examine controversies and gaps in knowledge and practice in the small-scale, interactive forum which a workshop format offers. Note that we intend to publish the "proceedings" of the workshop and it would be in your own interest to submit your completed paper to the workshop secretariat before or at the beginning of the workshop.

If you are African living in Africa and not yet a registered member of ISSBD, we wish to remind you that *limited financial support will be available for African members of ISSBD on a competitive basis.* The deadline for receipt of abstracts is May 31, 2004.

To obtain more information on the workshop, please contact either: Prof. Therese M. Tchombe: tmtchombe@yahoo.co.uk, Prof. Bame Nsamenang: bame51@yahoo.com, Prof. Jacques-Philippe Tsala-Tsala: tsalatsala2003@yahoo.fr for Francophones, or visit ISSBD webpage www.issbd.org.

The Organizing Committee comprises: **Chair** – Prof. Therese M. Tchombe (tmtchombe@yahoo.co.uk), **Secretary** – Dr/Sr. Euphresia Yuh (e_yuh2001@yahoo.com), **Workshop Coordinator** – Dr. Bame Nsamenang (bame51@yahoo.com), **Coordinator, Francophonie** – Prof. Jacques-Philippe Tsala-Tsala, (tsalatsala2003@yahoo.fr) **Members –** ISSBD President, ISSBD Secretary, ISSBD Treasurer, ISSBD Past President, Dr. Brigitte Matchinda, Prof. Peter Baguma, and Prof. Robert Serpell.

ISSBD Ghent 2004
Not too late but … register now and meet your colleagues in Ghent next summer!

Dear colleagues,

The Ghent congress is running fine. Too fine perhaps as we received much more posters and symposia than we can schedule in four days… but in the end ninety-two *oral symposia*, about thirty *poster symposia* and more than eight-hundred *individual posters* were selected for the next meeting.

Together with the twelve *keynotes*, 7 *invited symposia* and last but not least the three *"scientific-get-together" sessions* ("young scholars initiative", current "hot topics" in developmental psychology, and the so called "writing clinic workshops"), the conference promises to be a highly dynamic and scientifically appealing event.

A prime focus will also be the pre-conference on *Developmental Psychopathology* and the post-conference on *Acculturation and Parent-Child Relationships,* and dear colleagues, keep in mind the exquisite post-post-conference: the flamboyant Ghent festivity week with street-theatre, jazz-cafes, special performances in the open air, street parades, musicians, acrobats, singers and… the famous Belgian bears and food.

See you in the conference and in our sparkling city next summer!
Leni Verhofstadt-Denève

COMPLETE PROGRAMME AVAILABLE ON WEBSITE NOW!

Visit us at **http://allserv.rug.ac.be/ISSBD2004**

E-mail: **issbd@semico.be**

Fax: +32 9 233 85 97

Postal address:

Semico, ISSBD,

Korte Meer 16

9000 Ghent-Belgium

ISSBD GHENT 2004—BELGIUM

REGISTRATION FORM FOR 18th BIENNIAL ISSBD MEETING

PARTICIPANT:

TITLE: ☐ PROF. ☐ DR. ☐ MR. ☐ MRS. ☐ MISS ☐ MS.

FAMILY NAME: .... FIRST NAME: ....

University/Institution: ....

Department: ....

P.O. Box/Street Address: ....

Zip Code and City:.. Country: ....

Telephone: .... Fax:.................................... E-mail: ....

ACCOMPANYING PERSON(S):

Family Name: .... First Name: ....

Family Name: .... First Name: ....

REGISTRATION

	Early Before February 1, 2004	Middle February 2, 2004	Late From June 1, 2004 & on-site	Number of persons	EURO
Price per person	Euro	Euro	Euro		
Normal fees					
ISSBD Members	**227**	**284**	**351**	x......	......
Non-members	**324**	**386**	**448**	x......	......
Students*					
Members	**103**	**132**	**147**	x......	......
Non-members	**156**	**183**	**201**	x......	......
Reduced fees*					
Members	**103**	**113**	**125**	x......	......
Non-members	**113**	**125**	**136**	x......	......
Accompanying person	**50**	**50**	**60**	x......	......
PRE-CONFERENCE COURSE (10-11 July, 2004)	**50**	**50**	**60**	x......	......
** Those registering as students must attach proof of full-time student status to their registration forms				**TOTAL**	

PAYMENT:

All payments should be made in Euro to ISSBD Conference, Ghent 2004 (vzw). Mark your payment with your name.

☐ Bank Transfer: Account number: 001-3708275-41 (IBAN: BE88 0013 7082 7541 – BIC: GEBABEBB)
(Bankers address Fortis Bank 819467, Martelaarslaan 290, 9000, Ghent, Belgium)

☐ Visa ☐ American Express ☐ Eurocard/Mastercard

Having signed below, I hereby confirm that I have read and am fully aware of the cancellation conditions stipulated in the announcement.

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Cardholder's signature .... Date: ....

Please return this form to: Semico n.v., ISSBD, Korte Meer, 16 Belgium – 9000 Ghent (Fax: +32 9 233 85 97)

ISSBD GHENT 2004—BELGIUM
ACCOMMODATION & SOCIAL PROGRAM FORM

PARTICIPANT:

FAMILY NAME: .... FIRST NAME: ....

University/Institution: ....

Department: ....

P.O. Box/Street Address: ....

Zip Code and City:.. Country: ....

Telephone: .... Fax:.................................... E-mail: ....

ACCOMPANYING PERSON(S):

Family Name: .... First Name: ....

Family Name: .... First Name: ....

SECTION A: HOTEL ACCOMMODATION

Arrival date: ___/___   Departure date: ___/___   No of nights: ___/___

Type of room: ☐ Single room   ☐ Double room

Category	RATE (EURO)		No. of Nights	Euro
	Single	**Double**		
✳✳✳✳**Luxe**				
Sofitel Ghent	200	220		
✳✳✳✳				
Holiday Inn UZ	127	137		
Holiday Inn Expo	127	137		
NH Gent Hotel	120	130		
Chamade Hotel	102	120		
✳✳✳				
Ascona	65	78		
Novotel Ghent	140	151		
Gravensteen Ghent	146	180		
Poortackere	70	115		
Ibis Cathedral	88	97		
Ibis Opera	84	93		
New Carlton	68	81		
Budget University Rooms	20	N/A		
Breakfast and VAT are included in the price			**TOTAL SECTION A**	

Please mention your second hotel choice: _____

No confirmation can be supplied unless we receive your payment for the accommodation.

For Youth Hostel and/or Bed & Breakfast Accommodation, please contact Semico (E-mail: issbd@semico.be, phone +32 9 233 86 60).

Please see and complete details on the next page of this Accommodation and Social Program Form.

ACCOMMODATION & SOCIAL PROGRAM FORM

SECTION B: SOCIAL PROGRAM AND LUNCH

	Date	Price/ Person €	No of persons	EURO €
Opening Ceremony	11 July	incl.	_____	☐ yes ☐ no
Welcome Reception	11 July	incl.	_____	☐ yes ☐ no
Farewell Reception	15 July	incl.	_____	☐ yes ☐ no
4 lunch packets	12-15 July	26	_____	_____
Conference Dinner	14 July	65	_____	_____
TOTAL SECTION B				

SECTION C: TOUR PROGRAM

	Date	Price/ Person €	No of persons	EURO €
Guided walk to Ghent	12 July	18	_____	_____
Visit to Bruges	13 July	72	_____	_____
Antwerp	14 July	72	_____	_____
Oudenaarde with tapestries	15 July	65	_____	_____
Brussels	16 July	73	_____	_____
TOTAL SECTION C				

SECTION D: TOTAL PAYMENT

Section A: Hotel Accommodation	_____ Euro
Section B: Social Program	_____ Euro
Section C: Tour Program	_____ Euro
TOTAL PAYMENT	

PAYMENT:

All payments should be made in Euro to Semico n.v. Mark your payment with your name.

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(Bankers address KBC, Drapstraat 1, 9810 Nazareth, Belgium)

☐ Visa   ☐ American Express   ☐ Eurocard/Mastercard

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Card Number: ____ ____ ____ ____ ____

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DO NOT SEND BY MAIL THE FORM YOU HAVE PREVIOUSLY SENT BY FAX IN ORDER TO AVOID DUPLICATIONS

MAJOR CONFERENCES OF INTEREST

2004 May 27- 30

The 16th Annual Convention of the American Psychological Society (APS)

Location: Chicago, Illinois, USA

Contact: mweiner@aps.Washington.dc.us

Website: convention@aps.Washington.dc.us

2004 July 28- August 1

The 112th Annual Convention of the American Psychological Association (APA)

Location: Honolulu, Hawaii, USA

Contact: Convention Office, APA, 750 First Street NE, Washington, DC 20002-4242, USA

Website: www.apa.org/convention

2004 August 2-6

17th Congress of the International Association of Cross-Cultural Psychology (IACCP)

Location: Xi'an, China

Contact: Dr Zheng Gang, Institute of Psychology, Chinese Academy of Sciences,

100101 Beijing, China,
Email: iaccp2004@psych.ac.cn

Website: www.iaccp2004.org

2004 August 8-13

XXVIII   International Congress of Psychology (ICP)

Location: Beijing, China

Contact: XiaoLan FU, Deputy Director, Committee for International Cooperation, Chinese Psychological Society, Institute of Psychology, Chinese Academy of Sciences, P.O. Box 1603, Beijing 100101, China

Website: www.icp2004.psych.ac.cn

2006 July 16-21

26th International Congress of Applied Psychology of the International Association of Applied Psychology (ICAP)

Location: Athens, Greece

Contact: icap2006@psych.uoa.gr

Website: www.iaapsy.org

ERRATUM

Please note that in ISSBD November Newsletter Number 2 Serial No. 44, published November 2003, in Catherine Cooper, Bridging Multiple Worlds: Immigrant Youth Identity and Pathways to College, (pp. 1–4), the figure 'The Bridging Multiple Worlds Model' (Cooper, 1999) was incorrectly published.

The correct figure is printed below:

The Bridging Multiple Worlds Model (Cooper, 1999)