



The interface of language and Theory of Mind

Jill de Villiers

Departments of Psychology and Philosophy, Smith College, Northampton, MA 01063, United States

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Abstract

The proposal is made that the interface between language and Theory of Mind is bidirectional. It seems probable that the conceptual developments of early Theory of Mind form an essential basis for helping to fix at least word reference. In development from 2 to 4 years, no basis exists in research for conclusions about the direction of influence between language and Theory of Mind. At the stage of false belief reasoning, after age 4, the role of the mastery of syntactic complementation is highlighted as a representational tool, that is, language development assists reasoning. The paper presents a brief summary of Theory of Mind, ranging from its earliest beginnings in infancy to the appreciation around age 4 years that others might hold false beliefs and act according to them. For each development, the parallel language developments are described, and questions are raised about the interface between the two. In particular, research that might determine the direction of influence from one to the other is discussed. More work is called for, especially with nonverbal tasks, good experimental linguistic work and other special populations, that might allow a more precise delineation of how language and Theory of Mind interrelate at the interface.

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1. Introduction

In this paper, I address the question of the interface between language, on the one hand, and the cognitive skills known as ‘Theory of Mind’ on the other. It has become a very popular form of explanation in the field of language acquisition to invoke Theory of Mind requirements for a range of achievements within language development, at least in the explanation of performance if not grammar itself. I will try to map out the steps in acquiring Theory of Mind skills, and where possible, the linguistic achievements they seem to interact with. There are many unanswered questions, but it is important to consider more closely the nature of this interface and its

E-mail address: jdevil@smith.edu.

directionality, namely whether any language achievements are causally related to some aspects of Theory of Mind, or whether certain aspects of Theory of Mind are causally connected to some parts of language acquisition. This paper should not be mistaken for an introductory review of Theory of Mind, as the topic is too vast for a single paper (see Astington, 1993; Perner, 1991; Wellman, 1990; Gopnik, 1993). It is necessarily selective about the conceptual topics considered, for example, work on teasing (Reddy, 1991), deception (Sodian, 1991) and pretense (Garfield et al., 2001) are not discussed even though there are fascinating connections to be explored. Neither can it attempt to survey adequately the many theoretical positions on the relationship between language and Theory of Mind contained, for example, in Astington and Baird (2005). Instead, the paper is organized as follows: after a brief summary of the major stages in developing a Theory of Mind, the achievements in language development that parallel them will be described. Wherever there are relevant data on the causal relationship between the parallel cognitive and linguistic achievements, this will be discussed. The goals are to determine whether and when ToM is implicated in language acquisition, and conversely, whether and when language is implicated in ToM development.

2. What is Theory of Mind?

Theory of Mind refers to the folk psychological theory that we use to predict and explain others' behavior on the basis of their internal workings: their feelings, intentions, desires, attitudes, beliefs, knowledge and point of view. That is, we need to posit a mental state inside a person to accommodate the occasional disjunction between an external stimulus and a response. In the most minimal example, a person is seen doing something clearly foolish, such as using mouthwash to wash his hair. To explain the aberrant behavior, we say "Oh, he thinks that bottle is the shampoo!" The false belief that the bottle is the shampoo is the content of the mental state, and by invoking it we keep the world around us "normal", in which people do not randomly wash their hair with mouthwash. Much ink has been spilled and thousands of children have been tested to answer the question: when do children think like us in this respect?

Understanding false beliefs is the culmination of a long developmental path that begins in early infancy, and typically ends in at least the start of this understanding at around 4 or 5 years of age. Recent meta-analyses (Wellman et al., 2001) suggest astonishing convergence across the hundreds of studies, in which despite variations in wording, materials, testing conditions and, to a lesser extent, social class and culture, this seems to be the consensus on time course. Even more recent analyses suggest that success on certain types of Theory of Mind task reliably precedes success on others (Wellman and Liu, 2004). For this reason, it is important to consider the other types of conceptual understanding under the heading 'Theory of Mind', so as not to limit it to false belief understanding. In doing so, we will be better able to trace the possible connections to language phenomena that may call upon similar understandings.

2.1. Intention

Appreciation of the "mental" states of others may begin in infancy. For example, the acute attention given to the human voice and face by neonates may reflect an innate understanding that these are the keys to reading emotion and intent (Baron-Cohen, 1995). In experimental tasks, there is evidence that infants read the actions of meaningful animate objects, such as human hands, as intentional or purposive towards a given object, but they are not inclined to attribute intent to inanimate objects such as a stick or a tool (Woodward, 1998, 1999, 2005). Carpenter

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