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Language and false belief in Korean-speaking and English-speaking children

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ABSTRACT

The link between language and false belief (FB) understanding has been the focus of considerable debate regarding which language component (semantics, general language, or complementation) is necessary for FB development. We examined the relative roles of complementation and receptive vocabulary in FB development in Korean-speaking and English-speaking children. FB understanding, memory for complements involving the verbs *think*, *say* and *want*, and receptive vocabulary were measured at three time points in 59 Korean-speaking children and 72 English-speaking children. A multi-level growth model indicated that the development of receptive vocabulary and separately the development of *think* understanding uniquely predicted the development of FB understanding. Neither *say* nor *want* was associated with FB understanding. The same pattern was found for Korean- and English-speaking children. The results provide evidence for the role of general language in FB understanding and against the unique role of sentential complementation.

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1. Introduction

Language plays an important role in theory of mind development, particularly the acquisition of false belief (FB; Astington & Baird, 2005; Milligan, Astington, & Dack, 2007). The aspect of language responsible for this achievement has been the center of considerable debate. A particular focus has been whether the specific grammatical structure of complementation is required for FB understanding (de Villiers & Pyers, 2002) or whether general language abilities are sufficient (Slade & Ruffman, 2005). The research on this topic, however, has produced mixed results. Collecting data at three time points, we investigated the relative role of sentential complementation and general language abilities in FB understanding in a cross-linguistic study of Korean- and English-speaking preschoolers.

1.1. False belief and language

During the preschool years, children make rapid progress in the understanding of minds (Wellman, Cross, & Watson, 2001). FB understanding is considered a key achievement in the development of theory of mind. This understanding reflects children's knowledge that people can have different beliefs about the same situation. It is often assessed by an unexpected-content task. For example, children are shown a familiar container, such as M & Ms, and asked what they think is in the container. After typically responding "M & Ms", they are shown that it contains marbles. They are then asked what someone else, who has not seen what is in the container, believes is in the container. Children younger than 4.5 years typically fail the task (replying "marbles") whereas older children succeed (replying "M & Ms") even though they know that there are marbles in the container.

Language is fundamentally important to the development of FB. However, there have been a number of different proposals regarding which dimension(s) of language are crucial to its development. These proposals typically fall into one of two categories, those that argue that the specific syntactic structure of complementation is required and those that argue that general language ability, as reflected in semantic and syntactic measures, is needed for FB, but not complementation per se. Although hundreds of studies have examined the relation between various language measures and FB, only a few have directly evaluated the preceding alternatives. To do so adequately, it is necessary to include both complementation and general language measures in the same longitudinal study.

1.2. Complementation and false belief

De Villiers (2005a, 2007) and de Villiers and de Villiers (2000) have argued that the acquisition of sentential complement structures is necessary for the development of FB understanding. Complement structures involving mental state verbs allow the embedding of one proposition in another. For instance in the sentence, *The girl thinks that it is raining but it is really the sprinkler*, the presence of the mental state verb *think* makes the truthfulness of the sentence independent of the real state of the world. Thus, sentential tensed complements allow a distinction between what a person thinks and what is actually true, which is the core of FB understanding. In contrast, desire terms, such as *want*, do not require such sentential complements, but rather infinitival complements, *to + infinitival* (e.g., *She wants to go to the movie*). De Villiers proposed that FB understanding requires the child have the full tensed complement structure to represent the belief. de Villiers and Pyers (2002) tested this proposition in a three-wave longitudinal study. Children's understanding of sentential complements was assessed by ability to correctly recall from a sentential complement sentence the fact that another person's thinking is different from the true state of reality. They found that children's understanding of sentential complement at time 2 accounted for the additional variance in FB understanding at time 3 controlling for general language measures at time 2, thus demonstrating the unique role of sentential complementation in FB understanding.

Other evidence supporting the importance of understanding complement structure as a predictor of FB understanding comes from training studies, investigations of special groups of children (e.g., those who are deaf or autistic) and a meta-analysis of relations between language and FB. Hale and Tager-Flusberg (2003) trained children who failed both a FB and sentential complement pretest in either FB understanding, sentential complements, or relative clauses (a control group). Children who