Theory of Mind, Linguistic Development and Mental Language

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Three-year-olds generally have a rather limited understanding of other people's mental states, especially if they are contrary to their own. When they are around 4,5 years old, however, most children understand that others can believe things that they do not believe. At this point, they are said to have a "Theory of Mind" (ToM). The role that language plays in this development is debated. Is ToM pivotal in the development of language? Or is language a prerequisite for the development of ToM (cf. Milligan et al. 2007 for a review)?

The poster will present ongoing research that considers this debate from a slightly different angle. In this work, the developmental relationship between ToM, general language and "mental language" is explored. Mental language refers to aspects of language that directly require an understanding of mental states, like mental state verbs (*know*, *think*, *guess*) and indirect requests. These linguistic areas are thus at the interface between ToM and language. Given the ToM-language debate, it is interesting to consider how ToM and *general* language bear on the development of *mental* language.

This issue is currently being investigated by giving three, four and five year old Dutch children a battery of tailor-made ToM, general language and mental language tests. ToM tests consist of false belief tests (in which the child has to predict the behaviour of a story character with an outdated belief); general language tests comprise vocabulary and syntax measures. Mental language is tested at a lexical and a discourse level. The lexical tests look at the child's understanding of mental states as expressed by individual words (mental state verbs, modal auxiliaries and modal adjectives). At the discourse level, the child's understanding of indirect requests is tested, as is their ability to describe a picture accurately to an individual without visual access to that picture. In order to pass the tests, children thus require both linguistic and ToM ability. The outcome of the study will show which of these abilities will prove to be more important in mental language performance.

At this moment, the results from a pilot study on 32 three to five year olds have been analysed. Three regression analyses were conducted with age, ToM and mental language as independent variables and total mental language (MLtot), mental language discourse (MLD) and mental language lexicon (MLL) as dependent variables. The analyses show that whereas the regression model does not show a significant effect for general language or ToM on mental language performance for the MLtot and MLL scores, the model is significant for MLD score. Aside from being significant, the MDL regression model also explains a good amount of the variance in MLD performance (R^2= 53.3% and R^2_{adj}= 48.3%; $F_{3,28}$=10.655, p = 0.000). Age, ToM and general language are all positively related to MLD performance, but only age (t_{33}= 2.324, p=0.028) and ToM (t_{33}= 2.182, p=0.038) have a significant effect on MLD performance.

These results show that for at least some aspects of mental language, ToM, but not general language, predicts performance. Understanding of others thus seems to be more useful in producing and understanding mental language than verbal skills in a general sense. From a broader point of view, this result can be considered to offer

support to the idea that ToM plays an important role in the development of (complex) language.