Links among parents' mental state language, family socioeconomic status, and preschoolers' theory of mind development ☆

Susanne Ebert[a],[*], Candida Peterson[b], Virginia Slaughter[b], Sabine Weinert[a]

[a] Department of Psychology I, University of Bamberg, Germany
[b] School of Psychology, University of Queensland, Australia

ABSTRACT

Individual differences in preschoolers' theory of mind (ToM) development were studied in relation to parents' preferences for using mental state language in conversations with their child in 121 German families from two different socioeconomic (SES) levels in a 3-phase longitudinal design. We also cross-sectionally tested 47 Australian mother-child dyads to explore similarities and differences to the German sample and to validate a shortened version of the Maternal Mentalistic Input Inventory (MMSII: Peterson & Slaughter, 2003). Results made a number of novel contributions. For the German sample SES contrasts in children's ToM development were evident at all three longitudinal measurement points. Furthermore, results for the middle SES German and Australian groups replicated past studies in showing links between parents' self-reported use of elaborated mentalistic conversation and children's higher ToM scores. Additional longitudinal analyses for the German sample revealed contrasting effects of parents' preferences for the use of elaborated versus simple non-elaborated mental state language according to SES. Lower SES German children gained ToM understanding at a faster rate from age 3 to age 5 when their parents showed a high preference for using non-elaborated mental state language. By contrast, in middle-class German families, a high preference for causally elaborated mental state language was positively linked with children's developmental path of ToM. These associations between parental conversational style and children's ToM varying with SES were discussed in terms of their implications both for developmental theory and for future research.

1. Introduction

A mother who is a university professor and a mother who is a shop assistant are each talking to their four-year-old child about how best to surprise Dad for his birthday. Will they differ in how they frame their discussions of the birthday surprise? If so, do these differences in their talk interconnect with differences in their children's development of an understanding of others' minds, including internal, non-visible mental phenomena like surprises, thoughts or beliefs?

1.1. Parental language input and children's theory-of-mind development

In the psychological literature, children's understanding of mental phenomena such as thoughts, beliefs or surprises and how these shape behavior is widely known as theory of mind (ToM). One of the most important steps in its development is children's explicit understanding of false beliefs. This typically develops between the ages of 3 and 5 years (Wellman, Cross, & Watson, 2001). Past evidence has shown that the development of ToM (especially the development of explicit false belief understanding) is critically influenced by children's opportunities to share language and ideas about others' thoughts and feelings with family members through informal conversations that include frequent references to mental states (de Rosnay & Hughes, 2006; Harris, 2005; Slaughter & Peterson, 2012). This is suggested indirectly by the atypical case of profoundly deaf children. When reared in hearing, non-signing families their sensory loss limits their capacity to converse in speech. Research shows that these children are often substantially delayed in ToM mastery (see Peterson, 2009; Wellman & Peterson, 2013 for reviews). However, deaf children who are native signers (i.e., they are born into families where at least one parent is a deaf signer) typically master ToM on the same early timetable as hearing children (Peterson & Siegal, 1999; Schick et al., 2007; Woolfe, Want, & Siegal, 2002). In addition, studies of hearing children using cross-sectional, training, and longitudinal methodologies have shown that aspects of children's language exchanges with others correlate with individual differences in the pace of developing ToM understanding (e.g., Astington & Jenkins, 1999; Lohmann & Tomasello, 2003; Peterson & Slaughter, 2003; Ruffman, Slade, & Crowe, 2002).

However, what specific talk about mental state topics is most influential is not fully clear. Parents' explicit use of mental terms (e.g., *think, know, guess*) is one likely contributor to young children's learning about mental states and processes (e.g., Adrian, Clemente, Villanueva, & Rieffe, 2005; Ornaghi, Brockmeier, & Gavazzi, 2011; Ruffman et al., 2002). Yet some studies suggest that even more effective than merely using mental-state terms is the integration of mental-state terms into causally connected conversation during meaningful social exchange (Lohmann & Tomasello, 2003; Ontai & Thompson, 2008; Peskin & Astington, 2004; Peterson & Slaughter, 2003; Turnbull, Carpendale, & Racine, 2008). Parents who provide reasons for why people think or feel the way they do supply insights into the way the human mind operates. Perhaps this is why individual differences in preschoolers' rates of ToM development seem especially closely connected to adult-child conversation involving elaborations upon and/or explanations of mental states (Adrian, Clemente, & Villanueva, 2007; Clements, Rustin, & McCallum, 2000; Peterson & Slaughter, 2003; Slaughter et al., 2007).

To observe, transcribe, and code everyday conversational interactions between parents and children in enough depth to uncover such associations is very time consuming and potentially unreliable given the low frequency of family talk about mental states. Long observation intervals are needed and due to the effort only small numbers of parent-child dyads are likely to be included. Thus, the power of statistical analyses is limited and longitudinal follow up may not be feasible. Another possibility is to ask parents' about their language use and modes of conversing with their children. To ensure that such parental self-reports are veridical, comprehensive, and reliable is a major challenge. Peterson and Slaughter (2003) found a rather ecologically valid way to assess parents' preference for mental state language using a scenario-based approach. In this approach parents are presented with vignettes that depict episodes of everyday interactions between a mother and a four-year old child. Parents' task is to rank four possible verbal reactions (an elaborated mental one, an elaborated non-mental one, an unelaborated non-mental one, an unelaborated mental one) in the likelihood they would give these answers. Slaughter and Peterson (2012) reported good external validity of this Maternal Mental State Input Inventory (MMSII) via significant correlations between the mother's self-reported preferences for elaborated mental state talk on the MMSII and their spontaneous causal and elaborated talk about mental states while telling a story to her child. Similar to results of direct observation studies, Peterson and Slaughter (2003) found that mothers' preferences for using mental state terms in elaborated causally-connected discourse (e.g., "I wasn't there so I did not *know* you moved it) correlated significantly with preschool children's ToM understanding as assessed via false belief tests. In addition, the ToM link was clearer for this causally elaborated mental state discourse than it was for mothers' preferences for merely mentioning mental-state verbs in simple non-elaborated mentalistic utterances.

This result using the MMSII has been replicated in two more recent studies. Farrant, Maybery, and Fletcher (2012), like Peterson and Slaughter (2003), used the full (12-item) MMSII questionnaire in a study of 91 typically-developing, English-speaking Australian children (mean of 5.12 years) and their parents. Results showed a statistically significant association between parental preferences for using elaborated (causally coherent) mental state talk and their children's scores on a ToM battery. The same result emerged for an additional group of 30 Australian children who had specific language disorders. Also, a study with 30 Hindi-speaking children in India (mean age 6.80 years) using the MMSII revealed a statistically significant link between children's false-belief understanding and their mother's preference for using elaborated mental state talk on an abbreviated (7-item) Hindi MMSII adaptation (Babu, 2011). This Indian sample included 15 middle-class children and 15 from low-income families living in slums. Mothers' preferences for elaborated mental state talk did not differ between these two subgroups, even though the slum-dwelling children scored lower on the false belief tasks than their middle-class peers. However, Babu (2011) reports that within the subgroup of slum-dwelling Hindu children, those children who failed the ToM tasks (false belief) had mothers with lower preference for elaborated mental state talk than those who passed. These suggestive results commend further study of MMSII preferences, parental socioeconomic status (SES), and children's ToM in non-English-speaking cultures despite the sample being too small for any firm conclusion to be drawn.

1.2. Situating the present study in the context of past research

Overall, studies using the MMSII are few in number. Yet they reveal some interesting and consistent trends for links between child ToM and parental conversational styles, especially parental causal elaborations and preferences for elaborating causally on people's