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Preterm birth enhances the contribution of mothers' mind-mindedness to infants' expressive language development: A longitudinal investigation

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ABSTRACT

Maternal mind-mindedness has been shown to be a powerful predictor of many developmental outcomes and to buffer the impact of psychosocial risk conditions, but no study has investigated whether this parental feature might support child development in the presence of biological risk, such as preterm birth. The present study addresses this gap, by investigating whether early maternal mind-mindedness contributes to the growth of a child's linguistic abilities in the following two years of life, and if the contribution of this maternal feature might be stronger in the presence of preterm birth. Forty mother–child dyads (twenty with a preterm infant) were followed longitudinally, with maternal mind-mindedness assessed at 14 months of age and child's expressive linguistic abilities at 24 and 36 months through observational measures. Multilevel models showed that linguistic abilities increased from 24 to 36 months of age, but that this increase was stronger in full-term infants. Maternal mind-mindedness also contributed to this growth, playing a stronger role in preterm infants than in full-term infants. Altogether, these findings contribute more deeply to the understanding of language development in preterm infants and of the joint contribution made by biological risk and environmental factors; from a practical standpoint, they suggest the importance of addressing mother's mind-mindedness in order to support child's language development.

1. Introduction

One important legacy of John Bowlby and Mary Ainsworth's work on attachment is the ongoing research interest regarding the parental features contributing to a child's functioning and developmental outcomes. After decades of attention being given to the sensitivity of the caregiver (Mesman & Emmen, 2013; Verhage et al., 2016), new parental features have been conceptualized and investigated as important precursors of child development, related to both parenting behaviors, such as autonomy support (Bernier, Matte-Gagné, Bélanger, & Whipple, 2014) and to mental state, such as reflective functioning and insightfulness (Koren-Karie, Oppenheim, Dolev, Sher, & Etzion-Carasso, 2002; Slade, Grienenberger, Bernbach, Levy, & Locker, 2005). Among the latter, mind-mindedness has received growing attention over the last two decades: this construct refers to the caregiver's tendency to treat the child as an individual with mental states such as emotions, desires, and thoughts, and to "tune in" to them during interaction with the child or when providing a description of their child (Meins, 2013). According to Meins' conceptualization, this construct captures the

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main aspects of Ainsworth's definition of sensitivity including the ability to perceive things from the child's point of view and to regard the child as a separate person, by respecting his/her activity in-progress and avoiding interruptions (Ainsworth, Bell, & Stayton, 1971; Meins, 2013).

Since mind-mindedness was first conceptualized (Meins, 1997; Meins, Fernyhough, Fradley, & Tuckey, 2001), Meins and colleagues have put great effort into identifying reliable assessment procedures, research resulting in the creation of a coding scheme applicable to the online real life caregiver/child interactions which aims to identify, according to a set of criteria, appropriate and non − attuned mind-related comments on an infant's mental states. By focusing on these very specific indicators, the scheme makes it possible to assess caregivers' attunement to their infants in the context of a single and relatively brief interaction (Meins, 2013). This clear cut and focused operationalization of mind-mindedness appears to be a reliable alternative to the global scales usually implemented in attachment research to assess sensitivity (Mesman & Emmen, 2013): although such scales are provided with rich and detailed descriptions, they need to be used in the context of extensive home observations in order to provide reliable assessment, which is not always the case in research practice (Meins, 2013). As a confirmation of the robustness of the operationalization of mind-mindedness, accumulating evidence has shown that the caregiver's mind-mindedness is significantly associated with sensitivity (e.g., Demers, Bernier, Tarabulsy, & Provost, 2010; Farrow & Blissett, 2014; Laranjo, Bernier, & Meins, 2008) and is a powerful predictor of many developmental outcomes, besides attachment security (Meins et al., 2001, 2012). Mothers' appropriate mind – related comments have been found to predict concurrently a preschooler's use of mental state language and emotional understanding (Mcquaid, Bigelow, McLaughlin, & MacLean, 2008) and longitudinally expressive language, theory of mind abilities in toddlerhood (e.g., Bernier, McMahon, & Perrier, 2017; Laranjo & Bernier, 2013; Laranjo, Bernier, Meins, & Carlson, 2010; Meins, Fernyhough, Arnott, Leekam, & de Rosnay, 2013), by the age of 4 (Laranjo, Bernier, Meins, & Carlson, 2014; Meins, Fernyhough et al., 2013) and by the age of 5–6 years old (Kirk et al., 2015), as well as cognitive school readiness in 6 year – olds (Bernier et al., 2017). Recent evidence shows that the caregivers' mind-mindedness predicts their appropriate behaviors in distressed (Bigelow, Power, Bulmer, & Gerrior, 2015), clinical and intervention conditions (Colonnesi et al., 2013; Schacht, Meins, Fernyhough, & Centifanti, 2017).

One recent area of interest in research into mind-mindedness is whether such a parental feature has the potential to buffer the impact of various risk conditions in child development, acting therefore as a protective factor especially when risky conditions are present. Regarding this, Meins, Munoz Centifanti, Fernyhough, and Fishburn (2013) found that early maternal mind-mindedness negatively predicted a child's internalizing and externalizing problems at 44 months, only in the presence of low, and not high SES. Similarly, Hughes, Aldercotte, and Foley (2017) found that early maternal mind-mindedness negatively predicted disruptive behaviors at 12 years old, especially for children exposed to family adversities. Both of these studies provide evidence for the fact that mind-mindedness supports child development in the presence of psychosocial risk, but thus far no study has investigated whether this parental feature might support child development in the presence of biological risk, such as risk related to preterm birth.

In this study, we focus our attention of premature birth, which is a well know condition interfering with the development of linguistic abilities: delays and atypical developmental trajectories which persist up to school age seem to depend on a complex interplay between biological immaturity, neurological impairments, medical complications at birth and environmental factors (Fasolo, D'Odorico, Costantini, & Cassibba, 2010; Guarini et al., 2009; Le Normand & Cohen, 1999; Sansavini et al., 2014; van Noort-van der Spek, Franken, & Weisglas-Kuperus, 2012), although Barre, Morgan, Doyle, and Anderson (2011) conclude their meta-analysis on the topic by stating that more investigations are required to fully understand the specific nature of language difficulties in this population.

Longitudinal investigations into language development in preterm infants also show that there are great inter-individual differences in the rate of change across time which suggest that environmental factors might intervene by enhancing or buffering the biological risks associated with preterm birth (Sansavini et al., 2014; Siegel, 1982). Among these factors, those associated with the interactive behavior of the caregiver, such as responsiveness, stimulation and the ability to maintain the infant's attention seem to be the most relevant (Landry, Smith, Miller-Loncar, & Swank, 1997; Siegel, 1982; Rocissano & Yatchmink, 1983).

Thus far, no study has explored whether the caregivers' ability to comment appropriately on the infant's mental states might support linguistic development in preterm infants. Among the many factors related to the quality of the caregivers' interactive behavior, mind-mindedness might be an important candidate to investigate because literature consistently shows how difficult the beginnings of socio-emotional life can be for prematurely born infants. Due to their biological immaturity, preterm infants display signals which are difficult for the caregiver to understand, to interpret correctly and to respond to in an appropriate way. These difficulties lead mothers to experience intense emotional distress following premature birth which can interfere with their care-giving behaviors (e.g., Coppola, Cassibba, & Costantini, 2007; Ferber et al., 2005) and lead preterm infants to encounter interactive difficulties during the first year of life (e.g., Crnic, Ragozin, Greenberg, Robinson, & Basham, 1983; Goldberg & DiVitto, 1995; Green, Fox, & Lewis, 1983; Minde, 2000). Faced with ambiguous signals, it is plausible to suggest that mothers able to attribute appropriate mental states to their preterm infants and to treat them as intentional agents (Meins, 1997), might be able to tune in to their infants. As such, they might be more prone to share their infants' focus of attention and ongoing activities and, ultimately, support their language acquisition more effectively, than mothers with low mind-mindedness abilities. In the present study we address this issue, by testing firstly whether early maternal mind-mindedness contributes to the growth of a child's linguistic abilities in the following two years of life, and secondly, whether the contribution of this maternal feature might be stronger in the presence of biological and social vulnerability associated with preterm birth. In line with the findings reviewed above, we expect early mind-mindedness to be a significant predictor of a child's linguistic development; secondly, we expect such a predictive relation to be moderated by the infant's birth condition, turning out to be stronger in the presence of preterm birth.