Mind matters

On mothers’ and fathers’ mentalizing about their child
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General introduction and outline of the dissertation
This is a transcript of a recording of a father playing with his 6-month-old son.

‘Aha yes, you want to grab the ball. Oh, there you go, you’ve got it. The ball is your absolute favorite, isn’t it?(…) Wow, you are very busy with your legs today. Let’s see if you remember how to kick the ball. Yes, you do. You know, Ajax could use a good striker. Do you like playing football? Yes? Yes! [baby turns his body away from the ball, grabs a different toy] Haha, o.k., oh all right, maybe I was the one enjoying.

Besides expressing his dream to have a son with a professional football career, this father is also showing signs of mentalizing—performing an imaginative mental activity about his son and himself, namely, perceiving and interpreting his baby’s and his own behavior in terms of intentional mental states (e.g., feelings, thoughts, needs, desires, beliefs, reasons, and purposes) (Bateman & Fonagy, 2012). A mentalizing parent understands that his or her mind is separate from the baby’s mind (“I think/feel something, my baby thinks/feels something”). A mentalizing parent also understands that his or her baby does not yet have the abilities to conceive the world the way adults do, and is aware that he or she is never sure of what is going on in the mind of the baby—one can merely make an educated guess about the thoughts or feelings that may symbolize the behavior of the baby. It is the high quality of a parent’s mentalizing that is thought to be crucial in the extent to which children come to perceive themselves as autonomous, efficacious agents (Sharp & Fonagy, 2008). The child’s socioemotional development can become impaired if a parent consistently fails to provide the child with representations of his or her internal world and mind and either ignores endeavors or represents them back with distortion or without adjustment (Fonagy, Gergely, Jurist, & Target, 2002). The present dissertation aimed to shed further light on the impact of parents’ mentalizing capacity on the security of the infant-parent attachment relationship and socioemotional development of young children, as well as the adaptability of parents’ mentalizing stance through intervention.

**Mentalizing - A General Introduction**

Over the years different terms arose to describe people’s ability and proclivity to think about their own and others’ state of mind, of which mentalizing and having a ‘theory of mind’ are used most often. Mentalizing was first introduced as a psychoanalytic concept in France (l’École Psychomatique de Paris) in the 1960s, as a result of analyzing adult patients with psychosomatic disorders (Freeman, 2016). Somaticizing patients seemed to be unaware of their affective arousal, showing a lack of attunement...
to their own feelings - a lack of mentalizing (Luquet, 1987; Marty, 1991). Inspired by these observations, Fonagy and colleagues (1991) further developed the concept of mentalizing within the context of parenting and attachment relationships. Around the same time, developmental scientists started to investigate when and how children come to know that other people think, want, feel, believe things (Baron-Cohen, Leslie, & Frith, 1985; Premack & Woodruff, 1978; Wimmer & Perner, 1983). This developmental ability in children was termed a representational theory of mind. So, the term mentalizing arose from clinical observations of adult patients, while theory of mind arose from developmental research, but both terms tap into the same mental capacity.

The extent to which humans are able to mentalize is unique to our kind (Harari, 2011). Our mentalizing ability is probably the result of the evolutionary process of language development and social cooperation (Dunbar, 1998). To increase the chance of survival in a potentially frightening and increasingly complex social world, conscious reflection and planning of action were required (Cortina & Liotti, 2010). It was, and still is, an apparent asset to have this form of social cognition, to be aware of one’s own and others’ thoughts, beliefs and feelings so that one is able to anticipate peoples’ behavior, make choices and manage ourselves (Damasio, 2010; Freeman, 2016). The evolutionary development of language was crucial in this process, since the unique feature of language is the ability to transmit information about things in the physical and mental realm (Harari, 2011). By using language and symbols, humans became able to bridge the world of imagination and reality (Slade, 2005; Winnicott, 1965, 1971).

Typically developing (adult) humans are capable of connecting behavior to mental states and verbalizing these connections. In fact, trying to understand one’s own and others’ minds is part of daily life. We understand that actions of ourselves and others are typically goal driven, motivated by an intent, a feeling, a desire, a wish. It may be evident that mentalizing is a multifaceted and hugely complex construct. Our mentalizing capacity concerns basic emotion understanding, recognizing that we feel happy because the sun is shining. But it also concerns a more complex understanding of how thoughts, feelings, and behavior are intertwined, for instance, being aware that we avoid things that we believe are dangerous and make us feel worried or anxious. We use our mentalizing capacity when we try to guess which way – left or right – a passing individual will go, but also when we understand that our partner is acting agitated at home about putting things in the dishwasher while actually he or she is frustrated about a missed opportunity at work. Hence, the capacity to mentalize is not only functional, important during daily actions and interactions with strangers, but also fundamental to the quality of the interactions and relationships we form with the people close to us. So, how can one make sense of mentalizing conceptually and which aspects of mentalizing are key to people’s mental health and relationships?
Neuroscience studies have greatly advanced our understanding of what constitutes (good) mentalization. So far, it seems that many distinct neural circuits are active during mentalizing, and neural activity depends on the particular features of the mentalization activity (Luyten, Fonagy, Lowyck & Vermote, 2012; Luyten & Fonagy, 2015; Nolte et al., 2013). Mentalizing may therefore best be clarified in terms of four dimensions that can be organized along polarities (Luyten, Fonagy, Lemma, & Target, 2012). These polarities are: (a) automatic (unconscious) versus controlled (conscious) mentalizing, (b) mentalizing with regard to self and to others, (c) mentalizing based on external features (e.g., he points to the milk; he wants me to pass him the milk) or internal features (e.g., she thinks he got the job; she feels excited) of self and others, and (d) thinking about thinking and beliefs (cognitive domain) versus the feeling and thinking-about-the-feeling (affective domain). The quality of mentalizing—“good” mentalizing—is dependent on the balance in the systems underlying the abovementioned polarities, so being conscious and reflective of how oneself and others feel and think (Luyten, Fonagy, Lemma et al., 2012).

A question that follows is: what enables people to maintain a balance in the several dimensions of mentalizing? Although there is still much to learn about this question, another major outcome of neuroscience studies indicates that the interaction between two specific factors largely determines whether someone is able to maintain good mentalizing: (a) stress or arousal and (b) the use of attachment strategies in response to stress or arousal (see Luyten & Fonagy, 2015, for an elaborate review). In short, the experience of stress or arousal has a negative impact on brain areas that are essential to mentalizing. For instance, stress impedes people’s ability to keep a balance in thinking about their own versus others’ thoughts and feelings, or in controlled versus automatic mentalizing processes (Arnsten, Mathew, Ubriani, Taylor, & Li, 1999; Mayes, 2000; 2006). Moreover, individuals who predominantly use secure attachment strategies in response to stress are better able to maintain control over their mentalizing, as they are able to seek proximity to internalized attachment figures when faced with adversity (Fonagy & Luyten, 2009; Luyten, Fonagy, Lowyck, et al., 2012). In other words, past attachment experiences with important others are proposed to underlie people’s capacity to either maintain or lose the awareness of their own and others’ thoughts and feelings during stressful situations.

Research has demonstrated that in normative samples of children and adults, variation in mentalizing abilities predicts ‘healthy’ socioemotional functioning (e.g., Hughes & Ensor, 2006; Maclntosh, 2013; Song, Waller, Hyde, & Olson, 2016). The literature on mentalizing and socioemotional functioning is complex, though, since for instance research has shown that bullies have excellent mentalizing abilities (e.g., Sutton, Smith, & Swettenham, 1999), and bully-victims have poor mentalizing abilities.
(Shakoor et al., 2012). Perhaps the importance of mentalization is highlighted most clearly by the large body of studies in the past 30 years demonstrating that imbalances in the dimensions of mentalizing seem to be a transdiagnostic factor across almost all mental health disorders (e.g., autism, anxiety, psychosis, depression, eating disorders, narcissistic personality disorder, borderline personality disorder; Chung, Barch, & Strube, 2014; Cusi, Nazarov, Holshausen, Macqueen, & McKinnon, 2012; Fonagy & Luyten, 2016; Kuipers & Bekker, 2012; Ladegaard, Larsen, Videbech, & Lysaker, 2014; Luyten, Fonagy, Lemma, & Target, 2012; Skårderud, 2007). It appears that mentalizing is a fundamental capacity of people that determines the depth to which social information is processed, affecting behavior and mental health in all people.

Studying Mentalization in the Parenting Context

The term mentalizing became embedded in parenting research in the context of studying attachment security in children and the intergenerational transmission of attachment from parent to child (Fonagy, Steele, Moran, Steel, & Higgit, 1991; 2002; van IJzendoorn, 1995; Meins, 1997; Meins et al. 2001; Oppenheim & Koren-Karie, 2002; Slade, 2005). That is, at one point (van IJzendoorn, 1995), it became clear that a robust large association exists between parents’ adult attachment classification and infant–parent attachment, and that parents’ sensitive responsiveness to their infant’s signals only partially explains this link (Verhage et al., 2016). Meta-analytic data indicated that parental sensitivity explains 25% of the association between adult and child attachment, with around 75% of the variation remaining unexplained (referred to as the attachment transmission gap), suggesting that other mechanisms may underlie the transmission of attachment from parent to child (Verhage et al., 2016).

Attention to the parent’s mentalizing capacity as a possible predictor of attachment security arose after a study demonstrated that adults who displayed coherent and autonomous representations of attachment relationships during the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985) were prone to explain their own and their caregivers’ behaviors in terms of internal states, such as motives and intentions (Fonagy et al., 1991). On the other hand, adults with insecure (dismissive, preoccupied, or unresolved) AAI classifications showed less understanding of their own and others’ intentionality when describing their childhood experiences (Fonagy et al., 1991). These results thus led to questions about whether mentalizing capacity plays a role in predicting child–parent attachment or explaining the transmission of attachment from parent to child (e.g., Meins, 1997; Oppenheim & Koren-Karie, 2002; Slade, Grienenerberger, Bernbach, Levy, & Locker, 2005).

Since then, four validated assessments of parents’ tendency to mentalize with respect to their child have been developed: a) mind-mindedness, b) parental reflective
functioning, c) insightfulness, and d) parental embodied mentalization; Meins, 1997; Oppenheim & Koren-Karie, 2002; Shai & Belsky, 2011; Slade et al., 2005). Three of the approaches (a, b, and c) focus on an analysis of the frequency and content of mind-related speech during an interview or parent–infant interaction (Meins et al., 2001, 2012; Oppenheim & Koren-Karie, 2002; Slade et al., 2005). These constructs tap into mostly conscious, verbal, and reflective processing of social information that requires the capacity to reflect consciously and deliberately on and make adequate attributions about the feelings, thoughts, and intentions of self and others (Luyten et al., 2012). This emphasis on speech may reflect the fact that the human evolution of mentalizing is theorized to be accompanied by the evolution of language, and the two are developmentally intertwined (Harari, 2011). On the other hand, mentalizing also involves processes that are implicit and inaccessible to awareness and flexible control. These processes are captured in the assessment of parental embodied mentalization by considering sequences of parent-child body-to-body movements (e.g., Shai & Belsky, 2011a; Van Overwalle & Vanderkerckhove, 2013).

Parental Mind-Mindedness

The empirical studies in the present dissertation focused on the construct of mind-mindedness, originally defined as caregivers’ tendency to treat their children as individuals with minds of their own (Meins, 1997). The construct of mind-mindedness is operationalized in different ways depending on the age of the child. From the preschool years onward, mind-mindedness is assessed in terms of the extent to which the parent talks about mental and emotional characteristics when given an open-ended invitation to describe the child (Meins et al., 1998). In infancy, mind-mindedness is assessed in terms of parents’ appropriate versus nonattuned comments on their infant’s internal states during parent–infant interaction. The observational assessment of mind-mindedness grew from a rethinking of Ainsworth, Bell, and Stayton’s (1971, 1974) construct of parental sensitivity (Meins, 2013; Meins et al., 2001). Meins et al. (2001) argued that there was a lack of agreement on the kind of parenting behaviors and attitudes that epitomize sensitivity. Furthermore, Meins et al. questioned whether general global rating scales typically used to measure sensitivity (e.g., the Maternal Sensitivity Scales; Ainsworth et al., 1974) were the most accurate method of assessing a parent’s attunement to their infant’s current state. The researchers thus sought to explore other ways in which mothers could demonstrate attunement to their preverbal infants’ internal states, considering multiple possible indices of mind-mindedness, ultimately leading to defining mind-mindedness in terms of parents’ use of mind-related comments during interactions (Meins et al., 2001).
General introduction

The most substantial lines of research on mind-mindedness concern studies on predicting a) infant-parent attachment security, over and above parental sensitivity, and b) children’s own mentalizing abilities (theory of mind). With regard to the prediction of attachment, a body of studies on mind-mindedness considered parents’ appropriate and nonattuned mind-related speech as a correlate of parental sensitivity and predictor of attachment security. So far, most studies support the hypothesis that appropriate and nonattuned mind-related comments reflect two orthogonal dimensions of mind-mindedness, as they are unrelated to each other, and only appropriate mind-related comments associate with sensitive behavior of parents (e.g., Arnott & Meins, 2007; Demers, Bernier, Tarabulsy, & Provost, 2010a; Meins et al., 2001, 2012; Meins, 2013). Appropriate mind-related comments indicate attunement to and validation of the infant’s internal state. Nonattuned comments reflect the extent to which misinterpretations of the infant’s state emerge as a result of parents projecting their own state of mind or imposing their own agenda on the infant (Meins, 2013). A few studies demonstrated that mind-mindedness, specifically the proportion of nonattuned mind-related comments, predicts more (and unique) variance in attachment than sensitivity (e.g., Meins et al., 2001; 2012; 2017). Other studies demonstrated that (appropriate) mind-mindedness did not emerge as a significant predictor of attachment when sensitivity was taken into account (e.g., Laranjo et al., 2008; Lundy, 2003; Oppenheim et al., 2005). Hence, mixed findings have been presented on the unique contribution of mind-mindedness to the prediction of infant-parent attachment, next to parental sensitivity (McMahon & Bernier, 2017). With regard to the prediction of children’s mentalizing abilities there seems to be more convergent support for the hypothesis that appropriate mind-related comments during interactions with infants predict different aspects of children’s mentalizing abilities assessed between 2 and 5 years (Kirk et al., 2015, Laranjo et al., 2010, 2014; Meins et al., 2002, 2003; Meins, Fernyhough et al., 2013). Thus, the child’s capacity to develop a mentalizing stance depends on the capacity to be mind-minded, allowing the parent to “create a world for the child in which he may experience himself as a feeling, wanting, thinking being” (Target & Fonagy, 1996, p. 461).

Other than predicting attachment and children’s understanding of mind, it has been proposed that mind-related comments provide children with verbal scaffolds, structuring interactions in terms of clear mental concepts of the self and others. These scaffolds act as external regulators of the child’s affect and behavior at first, but later become internalized in the form of private speech, enabling children to self-regulate (Fernyhough, 2008; McMahon & Bernier, 2017; Vygotsky, 1987). Few studies have addressed these propositions to date by examining mind-mindedness in relation to executive functioning in toddlerhood and externalizing and internalizing behavior problems in preschoolers (Bernier, Carlson, & Whipple, 2010; Gagné, Bernier, &
None of these studies, however, used direct assessments of children’s emotion regulation capacity.

**The Present Dissertation**

This dissertation aimed to investigate the propositions made in earlier studies that parents’ mentalizing capacity and mind-mindedness are important predictors of children’s attachment security and socioemotional functioning (e.g., Fernyhough, 2008; Fonagy et al., 2002; Meins, 1997; Meins et al., 2001; Slade, 2005). Thereby, this dissertation also sheds further light on the two core hypotheses of attachment theory (Bowlby, 1969/1982) that postulate that a) the parent’s sensitive responsiveness to the infant’s signals is key to shaping individual differences in secure attachment and b) early attachment experiences greatly affect later socioemotional functioning, which may extend to adult attachment and parenting (Bowlby, 1973). This dissertation is divided into three sections, each with a separate aim. The first section aimed to examine the associations among parent and child mentalization, parental sensitivity and child-parent attachment security (Chapters 2 and 3). The second section aimed to examine unexplored relations between both parents’ mind-mindedness and young children’s socioemotional development (Chapters 4 and 5). The third section aimed to evaluate interventions that aim to change parents’ mentalizing stance and/or mind-mindedness (Chapters 6, 7, 8). Below I explain the rationale for the studies in each section.

Since research on the association between people’s mentalizing and attachment relationships expanded hugely the past two decades, the aim of Section 1 was to synthesize the research on the associations among the parent’s and child’s mentalizing capacity and child-parent attachment security. As mentioned above, parental mentalization has been introduced in the light of understanding variation in attachment (in)security and the intergenerational transmission of attachment security. Ever since it became clear that parental sensitivity was not an exclusive or the most important predictor of attachment security, it seemed important to continue observing parental features and behavior that could explain why some children feel secure in the presence of their caregiver and others do not (van IJzendoorn, 1995; Meins et al., 2001; Slade, 2005; Oppenheim).

Chapter 2 presents a meta-analytic study that considered whether parental mentalization (i.e., mind-mindedness, parental reflective functioning, and insightfulness) should be incorporated in models that map child-parent attachment. In this study, we examined to what extent parental mentalization predicts unique variation in attachment over and above parental sensitivity. Secondly, we examined whether parental mentalization is associated with and predicts attachment via sensitive caregiving behavior.
Chapter 3 presents a second meta-analysis. This study synthesized research on attachment as a predictor of two measures of children's mentalizing abilities; false-belief understanding (FBU) and emotion understanding (EU). The review was initiated because a) questions were raised on whether attachment possibly relates more strongly to children's emotion understanding than to false belief understanding (e.g., Greig & Howe, 2001), and b) doubts about the direct nature of the attachment–mentalization relation (Meins et al., in preparation). The meta-analysis explored the potential moderating effect of the method of assessing attachment, as well as the potential mediating effect of children's verbal ability, on the association between attachment security and children's mentalizing ability.

Since it is the premise of attachment theory that a secure parent-child relationship facilitates healthy social and emotional development (Bowlby, 1973), we investigated in Section 2 whether the positive effects of parents' early mentalizing capacity extend to young children's socioemotional development. Section 2 furthermore taps into the call for research on the mentalizing capacity of fathers (Camoirano, 2017; McMahon & Bernier, 2017). So far, research on parental mentalization, or parenting research in general, focuses on the effects of a single parent, typically the mother, on the child's development. It has been long established that in two-parent families (mother-father), two separate child-caregiver attachment relationships are formed that are each of utmost importance to the child's sense of security and developmental health (Lucassen et al., 2011). However, parenting research rarely examines the unique and complementary effects of both parents on their child's development. Fathers have been included in 11 (typically) small-sample studies on mind-mindedness, and 8 of these studies investigated paternal mind-mindedness as a predictor of children's developmental outcomes (see McMahon & Bernier, 2017; Gagné et al., 2018; Miller, Kim, Boldt, Goffin, & Kochanska, 2019). Furthermore, none of these studies examined the possible joint effects of couples' mind-mindedness on child outcomes.

The two studies in Section 3 were part of a longitudinal study on the antecedents of anxiety from infancy to middle childhood (de Vente, Majdandžić, Colonnesi, & Bögels, 2011). Chapter 4 examined whether a pathway exists from mothers and fathers' mind-mindedness to infants' physiological emotion regulation via parents' caregiving behavior across the first year of life (from 4 to 12 months). Only one study so far examined the relation between early mind-mindedness and toddlers' executive functions relevant to self-regulation (working memory, impulse control, and set shifting; Bernier et al., 2010). No study has yet explored whether mind-mindedness exerts an effect on emotion regulation throughout the first year of life.

Chapter 5 investigated to what extent mothers' and fathers' mind-mindedness in early infancy (4 months), late infancy (12 months) and toddlerhood (30 months), as well
as the interaction between mothers’ and fathers’ mind-mindedness, predict children’s social competence and behavior problems at 4.5 years. In other words, this study considered whether the combination of mind-mindedness in two parents predicted their child’s later social and behavioral development.

If the models that link parental mentalization and mind-mindedness to child attachment and socioemotional development hold, these models have implications for modifying existing (attachment oriented) interventions by incorporating an explicit focus on enhancing parental mentalization. There are multiple ways through which interventions can bring about changes in parents’ mentalizing, some of which have proven to be more successful than others (e.g., Sadler et al., 2013; for an overview see Camoirano, 2017). The complex developmental history of an individual’s mentalizing capacity (i.e., seeing that it is linked to attachment experiences; Arnott & Meins, 2007; Luyten & Fonagy, 2015), leads to the question of whether mentalizing could be readily adapted by short parenting interventions, and whether such adaptations remain over a longer time span. Section 3 examined the effectiveness of two parenting interventions that aim to change parents’ “online” moment-to-moment representations of their child’s mind.

The Mindful with your baby/toddler intervention is an 8-week group intervention for parents of children aged zero to 4 years with increased levels of parenting stress, and incorporates mindful parenting training and attachment oriented psycho-education. The aim of the training is to increase parents’ awareness of their own and their child’s inner states in a non-judgemental manner through meditation practices (Potharst et al., 2017). Chapter 6 presents a small-sample pilot study on the self-reported effects of the Mindful with your toddler interventions, since only the effectiveness of the Mindful with your baby intervention had previously been examined. In Chapter 7 we investigated whether the Mindful with your Baby/Toddler training led to observed changes in maternal mind-mindedness, sensitivity, and mother and child synchrony.

Chapter 8 presents an evaluation of an attachment-based intervention, Basic Trust, that aims to decrease child attachment insecurity through explicitly improving both mothers’ and fathers’ use of child-directed mind-related speech through video feedback training. The intervention teaches parents to use a stepwise method of interacting with their child, whereby parents consistently refer to the child’s mental states or behavior, before mentioning their own opinions, instructions, and initiatives (Polderman, 2017). We investigated whether the training led to improvements in children’s insecure attachment and internalizing/externalizing problems, as well as changes in mothers’ and fathers’ mind-mindedness, sensitivity, and self-reported parenting stress directly, and six months after the training had ended.
Finally, Chapter 9 includes a discussion on the present dissertation's contribution to the research on parental mentalization (for each of the three sections separately) along with its implications for future fundamental and intervention research.