

# The Mind-Mindedness: Is It a Construct that Shapes Theory of Mind?

Zihin Yönelimliliği: Zihin Kuramını Şekillendiren Bir Kavram mıdır?

İlknur ÇOBAN<sup>1\*</sup> , Cansu PALA<sup>2</sup>

<sup>1</sup> Tekirdağ Namık Kemal University, Department of Psychology, Tekirdağ, Türkiye

<sup>2</sup> Ege University, Department of Psychology, İzmir, Türkiye

## Abstract

Mind-mindedness refers to the caregivers' ability to be sensitive to the cognitive and emotional states of their children. It may also pertain to the extent to which caregivers are able to accurately perceive the behavior of their infants and children. Mind-mindedness is operationalized through the assessment of remarks made by individuals regarding the behavior of infants, distinguishing between those that are pertinent and those that are not. In that context, infants' comprehension, and engagement with their environment through their caregivers is the basis for their cognitive development. It is widely reported that the mind-mindedness of caregivers, especially of mothers is positively correlated with children's cognitive abilities such as linguistic abilities, symbolic play, executive functions, and/or theory of mind. In this review paper, it is aimed to provide a summary of the definition and the measurement of mind-mindedness within the scope of recent studies focusing theory of mind and cognitive development of children. Since the concept has not been examined vastly in diverse cultural contexts yet, and it is not as popular as it should be among the social scientists and practitioners, it is vital to be aware of this relatively new construct.

**Keywords:** Mind-Mindedness, Theory of Mind, Mothers, Infancy, Cognitive Development.

## Öz

Zihin-yönelimliliği, annelerin çocuklarının bilişsel ve duygusal durumlarına duyarlı ve ilgili tepki verme becerilerini ifade eden ve annelerin bebeklerinin davranışlarını doğru bir şekilde algılayabilme derecesiyle de ilişkili olan bir kavramdır. Yetişkinlerin, bebeklerin davranışlarıyla ilgili yaptıkları yorumların değerlendirilmesi yoluyla tanımlanan zihin yönelimliliği, gerçekten bebekle ilgili ve yerinde olan çıkarımlar ile ilişkili olmayanlar üzerinden değerlendirilir. Bu bağlam içerisinde, bebeklerin anneleri aracılığıyla çevreleriyle anlam ve etkileşim kurmaları, bilişsel gelişimlerinin temelini oluşturmaktadır. Annelerin zihin-yönelimliliğinin, çocukların zihin kuramı, yönetici zihinsel işlevler, sembolik oyun ve/veya dil becerileri gibi bilişsel yetenekleriyle pozitif yönlü ilişkili olduğu yapılan araştırmalar kapsamında raporlanmıştır. Bu derleme makalesinde, son yıllarda yapılan zihin kuramına ve bebeklerin bilişsel gelişim özelliklerine odaklanan çalışmalar incelenerek, zihin-yönelimliliğinin tanımı ve ölçümüne dair kısa bir özet sunulması ve zihin-yönelimliliğinin zihin kuramı üzerinden kavramsallaştırılması amaçlanmıştır. Zihin-yönelimliliğinin oldukça yeni bir kavram olduğunun göz önünde bulundurulması ve farklı kültürel bağlamlarda incelenmesi oldukça önemlidir. Buna ek olarak, zihin yönelimliliğinin hem ebeveynler hem sosyal bilimciler hem de uygulayıcılar tarafından dikkate alınarak, çocukların bilişsel becerilerinin üzerindeki etkisinin incelenmesi kritiktir.

**Anahtar Kelimeler:** Zihin-Yönelimliliği, Zihin Kuramı, Annelik, Bebeklik Dönemi, Bilişsel Gelişim.

\* Corresponding Author / Sorumlu Yazar: [ilknur.cob@gmail.com](mailto:ilknur.cob@gmail.com)

Article Info / Makale Bilgileri:

Received / Gönderim: 25.07.2024 Accepted / Kabul: 13.05.2025

To cite this article / Atf için:

Çoban, İ., & Pala, C. (2025). The mind-mindedness: Is it a construct that shapes theory of mind?. *Curr Res Soc Sci*, 11(1), 39-50.

To link to this article / Bağlantı için:

<http://dx.doi.org/10.30613/uresosc.1521746>

## **The Mind-Mindedness: Is It a Construct that Shapes Theory of Mind?**

A developing child is capable of teaching new skills to those who are around as well as learning from their environment. In this two-way process, the communication between the child and the primary caregiver—usually the mother—have high importance in every step of life, including cognitive development. The development of cognition has been widely studied in various aspects, such as the theory of mind, social understanding, language, and memory, in infants and adults. However, rather than concepts, current research trends lead us into the different dynamics of those skills, focusing on how and why these dynamics engage in cognitive development.

One of the ascending segments of research in cognitive development is mind-mindedness. It is defined as maternal preference and ability to be attuned to her baby's mental status (Colonnesi et al., 2017; McMahan et al., 2016). Mind-mindedness is mothers' acknowledgement and acceptance that their baby is an individual with an independent mind (Easterbrooks et al., 2017; Fernyhough, 2011). In this manner, it allows mothers to interpret their babies' behaviors in a cognitive manner (Arnott & Meins, 2008). Previous studies defined mind-mindedness as either an inherently verbal behavior where mothers make verbal comments about a baby's mental status and activities (Bernier et al., 2017) or mothers' state of mind referring to their understanding of infants' mental state with infant-directed terms (Milligan et al., 2015). Mind-minded mothers tend to see their babies as interactive agents with independent thoughts and feelings (Wang et al., 2017).

The research focusing on mind-mindedness reports that this construct is highly related to attachment between the primary caregiver and the infant, and cognitive development including theory of mind, language abilities and executive functions of the child. Hence, it is important to comprehend this construct to support the development. From this perspective, this review aims to focus on maternal mind-mindedness as a fundamental basis for cognitive development of their children. The lack of culturally focused research on mind-mindedness brings the need of clarification to define this behavior within the scope of current article, and to clarify measuring methods. In addition, although many studies have structured mind-mindedness in relation to cognitive development of children, to the best of our knowledge, there is no other review solely focusing on mind-mindedness as the construct that shapes theory of mind. At this point, it is also important to preserve the developmental psychology perspective and reflect its principles. Hence, this review holds an important position to define mind-mindedness, re-evaluate the current perspective, and offer suggestions for forthcoming research.

### **Coding Mind-Mindedness**

Prior to evaluating the relationship between mind-mindedness and developmental outcomes, it is essential to measure it with proper definitions and boundaries (Meins & Fernyhough, 2015). In their significant works over the years, Meins and colleagues on mind-mindedness opened up a new field along with a contribution of the "Mind-Mindedness Coding Manual" with many collaborators (see Arnott & Meins, 2008; Bernier et al., 2017; Colonnesi et al., 2017; Costantini et al., 2017; Farrow & Blissett, 2014; Fishburn, et al., 2017; Hughes et al., 2017; Kirk et al., 2015; Laranjo et al., 2014; McMahan et al., 2016; Wang et al., 2017). This manual sees mind-mindedness as a construct and measure of maternal mentalization involving mothers' speech (Bigelow et al., 2015). Parental mind-mindedness can exist at every stage of life, but its measurement depends on children's interaction abilities, mainly because of language development. That is why mind-mindedness can be measured in two different ways according to the age of the child (Hughes et al., 2017). Measuring mind-mindedness

can either be observation-based or describe-your-child assessment. In both methods, all the comments are coded according to the coding system.

'Offline' or 'representational' measures of mind-mindedness include only parents' descriptions of their children as an answer to the question of 'Can you describe [child] for me?' The answer is coded according to whether it refers to mental, physical, behavioral, or general attributes of the child (Meins & Fernyhough, 1999). For studying preschool children, offline measures are more suitable than online measures (Hughes et al., 2017). On the other hand, online measures of mind-mindedness include mind-related comments on a child's mental state (Meins et al., 2001). It is measured within play sessions and obtained by coding appropriate or non-attuned comments of parents about their child's mental state (Meins & Fernyhough, 2015).

In both methods, the coding system consists of three sections: (1) mind-related comments; (2) comments that might or might not be mind-related; and (3) comments that are not mind-related. Mind-related comments consist of cognitions, epistemic states, emotions, desires, and preferences and talking on the infants' behalf. The comments that might or might not be mind-related are physical characteristics, comments including definitive adjectives, and intentions. Lastly, not mind-related comments include perception, saying or talking, and non-specific references to infants' mental states. Once all conversations and sentences are transcribed verbatim and all comments are identified, those comments are classified as appropriate or non-attuned in the next step. Online mind-mindedness, referring to comments about children's mental state, shows a moderate correlation with offline measures of mind-mindedness, which is basically describing the child (Meins et al., 2003). Moreover, both indicators of mind-mindedness have been found to be associated with the ability to understand others' mental states along with many other developmental aspects (Laranjo et al., 2014; Lundy, 2013; Meins et al., 1998; Hughes et al., 2017).

### **Mind-Mindedness from Developmental Psychology Perspective**

The research focusing on mind-mindedness reports that this skill is related to many different aspects of development and relationships (Fernyhough, 2011). Researchers began to understand those dynamics during pregnancy. It is known that although babies in the womb have not been born yet, their development starts there and continues throughout their lives. From this perspective, the relationship between mother and child is significant in terms of the child's cognitive and social development, which is why being mind-minded should be evaluated as early as in pregnancy. For instance, in a study, mothers were asked to think about their unborn babies in the sixth month of pregnancy. After the babies were born, the mother and child had a play session where they could talk to each other freely. Those conversations were transcribed and coded in terms containing explicit mental terms about their babies. It was found that mothers who predicted more details about their unborn babies' characteristics were more likely to show mind-minded behavior to their infants (Arnott & Meins, 2008). Research by McMahan and colleagues (2016) has also shown that maternal-fetal attachment in the third trimester of pregnancy predicts maternal mind-mindedness at both 7 and 19 months of age. These findings indicate that maternal mind-mindedness is a behavior that starts to evolve during pregnancy and continues through infancy. In addition, it has been reported that these abilities help mothers have healthier pregnancies. When the obstetric histories of pregnant mothers were examined, mothers with high mind-mindedness were found to have a high ratio of planned conception, higher positivity in the perception of pregnancy, and healthy recollections of first contact with the child (Meins et al., 2011).

Besides pregnancy, mind-mindedness has also been investigated in terms of parenting, especially motherhood. Within the parent-child relationship, it is known that mind-mindedness is related to

sensitive parenting and to child's secure attachment (Colonnesi et al., 2017), in addition to responsive parenting behavior (Farrow & Blissett, 2014). For instance, while breastfeeding mothers have higher mind-mindedness abilities compared to formula-feeding mothers, high maternal mind-mindedness was correlated with more positive and sensitive feeding behavior in 1-year-olds in addition to higher maternal sensitivity during play (Farrow & Blissett, 2014). In another study where the relationship between mind-mindedness and mothers' mirroring behaviors was investigated, mothers were asked to play with their children for a while, and they were videotaped. After, mothers watched their sessions, they were asked about their infants' mental states and possible thoughts and emotions they might have. It was found that higher-level mind-minded mothers showed more mirroring in their sessions (Bigelow et al., 2015).

In a study, the attachment security of three-year-olds was predicted by their parents' mind-minded comments. When it comes to gender difference, male and female caregivers did not differ in terms of their scores in mind-mindedness, children did not differ in terms of their attachment to their caregivers. The only thing is that their secure attachment was predicted by caregivers' mind-mindedness. It is essential to possess this knowledge, especially in cultures where mothers were traditionally viewed as the primary caregivers and where they bear most of the responsibility (Colonnesi et al., 2017). Other than parenting skills that are affected by mind-mindedness, there are also some parental behaviors and characteristics that shape their mind-minded behavior. In a study, biological and adoptive parents were compared in terms of mind-mindedness. Biological parents show higher mind-mindedness skills compared to foster carers and those involved with child protection. Foster carers and those involved with child protection have the same level of mind-mindedness, but both are lower compared to the community sample (Fishburn et al., 2017). In another point, studies showed that mothers with secure attachments were more likely to use emotion-related terms within mind-related conversations than mothers with dismissing attachments. In addition, the effects of secure and dismissing attachment on emotion-related words are more distinct in a negative context (Milligan et al., 2015).

Mind-mindedness has a direct relationship with not only parenting but also child development. In a longitudinal study, the relationship between the mind-mindedness skills of mothers and the language development of preterm infants was explored. It was found that mind-mindedness contributed to infants' linguistic abilities. In addition, this contribution is stronger in preterm infants. It was highlighted that preterm babies had higher linguistic abilities if their mothers had high mental abilities compared to full-term infants. The results showed that the tendency of mothers to treat their babies as cognitive agents might help them show resilience to psychosocial risk conditions (Costantini et al., 2017). Moreover, further studies reported that maternal mind-mindedness measured in toy-based free play at 12 months of age specifically predicted false belief and visual perspective-taking in preschoolers (Laranjo et al., 2014). The lie-telling behavior of preschoolers in Hong Kong was also predicted by the parents' level of mind-mindedness but not by false belief. This finding suggests that children of parents with high mind-mindedness are more likely to have autonomy skills in socially unclear situations (Wang et al., 2017).

On the other hand, the research on mind-mindedness continues in terms of social adjustment and adaptive behaviors during early and middle adolescence. In research, when controlling children's adjustment that has been experienced, mothers' mind-mindedness predicted disruptive behavior at the age of 12 (Hughes, et al., 2017). In addition, Meins et al. (2013) reported that maternal mind-mindedness was negatively related to children's externalizing and internalizing behaviors, especially in low socioeconomic status (SES) families when controlling for perceived social support, child language ability, maternal depressive symptoms and sensitivity, and child gender. Lastly, cognitive school

readiness was also predicted by mind-mindedness, and the relationship was mediated by language and effortful control (Bernier et al., 2017).

Other than these developmental aspects, the examination of the correlation between the theory of mind and maternal mind-mindedness should also be undertaken. Theory of mind is one of the key aspects of cognitive development, and it is known as fundamental for human social interaction including emotion comprehension, executive functions, and many other cognitive abilities during adulthood. In this manner, it is important to focus on theory of mind and its predictors. There is evidence that when parents talk with their children about minds and use mental talk, it facilitates children's ability to understand others' minds (Meins & Fernyhough, 1999; Meins et al., 2013), and that is why mind-mindedness is acknowledged as 'the earliest identified predictor of theory of mind and emotion understanding abilities' (Centifanti et al., 2016; Laranjo et al., 2010; Meins et al., 2013). Theoretically, Meins et al. (2002) argues that when mind-minded parents by perceiving their children as mental agents are more likely to focus on mental states and label thoughts and emotions during interaction and conversations (Kirk et al., 2015). Thus, children might also focus more on mental states and gain a better theory of mind skills when such interactions aided them. (Dore & Lillard, 2014). That is why mind-mindedness is perceived as an individual difference in the theory of mind (Meins et al., 2002).

Despite the scarcity of research on this subject matter, the mind-mindedness during infancy has been found to be indicative of the development of theory of mind abilities during the preschool years (Kirk et al., 2015). In another study, a comparison of Hong Kong and the United Kingdom showed that British children have better theory of mind skills, and their parents' mind-mindedness performance is higher. However, in both cultures, the theory of mind and mind-mindedness have been found to be positively correlated, which shows that mind-mindedness also accounts for cultural differences in preschoolers' theory of mind abilities (Hughes et al., 2017). These results showed that there is a possible strong connection between mind-mindedness and theory of mind that needs to be evaluated in detail within the scope of cognitive development theories and dynamics between aspects.

### **Mind-Mindedness and Theory of Mind**

Piaget claimed that children learn best from social interaction and experimentation, which lead them to have their own opinions and make them decide about the world (Fleming, 2004; Zhang, 2022). With his guidance, researchers focused on social interaction and the environment in which a child can learn. It is known that the first interaction occurs within the family, especially with the primary caregivers, who happen to be mainly mothers. This interaction with learning, adapting, and imitating becomes the essence of cognitive development.

The cognitive development research mainly focused on the 'theory of mind' (Lundy, 2013), which is defined as the ability to understand another's mind and their perspectives (Centifanti et al., 2016), as well as their mental states, such as, desires, perceptions, beliefs, and intentions (Laranjo et al., 2010). Research showed that understanding the mental state of others is reciprocally related to other sides of development, such as emotional understanding, executive functioning, and prosocial behaviors. (Wellman, 2017). That is why what children think about the mind (Wellman, 2017) and how children understand others' minds (Hughes et al., 2017) became a focus of interest for many researchers.

When the dynamics of the theory of mind are on the table, the mental jump that happens at 3 to 4 years of age should be considered. The researchers focused on this stage of development since studies show that this stage is passed differently in each child (Wellman, 2017). When individual differences are considered in terms of the theory of mind development, social interaction in the family and the

environment might be one of the factors, as Piaget claimed (Meins & Fernyhough, 1999). It is known that children use a mental state language and talk with their families about their intentions, desires, and feelings in their daily conversations (Dore & Lillard, 2014). However, it is found that children who talk with their families more often about their feelings are more successful in tasks that require an understanding of others (Meins et al., 2002).

From this idea, Meins and Fernyhough directed their research to one-to-one interaction between carers and children to understand the differences in the theory of mind and other cognitive development stages that might be related to mental understanding. They came up with the construct of mind-mindedness, which is defined as "the tendency to regard one's child as an individual with cognitive abilities" (Meins & Fernyhough, 1999). Parents who are mind-minded tend to focus on the mental attributes of their children rather than physical or behavioral traits (Dore & Lillard, 2014). It includes appropriately labelling the child's mental state (Meins et al., 2001) and commenting on the infant's thoughts and feelings in the first year of life (Laranjo et al., 2010; Meins et al., 2002), including the child's intentions, memories, thoughts, and desires (Lundy, 2013). Parents who possess a high level of mind-mindedness tend to provide more suitable and accurate remarks regarding their children's mental state. For instance, by acknowledging the child's interest in the item without making any reference to the child's potential boredom, when observing the child's active exploration (Lundy, 2013).

The beginning of the research on the relationship between mind-mindedness and theory of mind was with the idea of consistency and stability of mind-mindedness. Meins and Fernyhough (1999) argued that the mind-mindedness of a parent with an infant would continue until preschool ages and would affect the theory of mind abilities. They showed that there is consistency in being a mind-minded mother when the child is 20 months and three years old. The mind-mindedness of mothers when the baby is 20 months old, predicted performance on false belief tasks and emotion recognition abilities at three years of age, and surprisingly, it was not related to language acquisition style (Meins & Fernyhough, 1999). Later, Meins et al. (2003) continued their research with the construct and predictive validity of mind-mindedness, where the stream of consciousness defined as children's attribution of thoughts to a person engaged in various activities, like the theory of mind, was included.

In a study, both online and offline measures of mind-mindedness were collected from mothers when their children were six months, four, and five years old. Theory of mind abilities were also assessed when children were four and five years old. Mothers' appropriate comments related to mental states (mind-mindedness score) positively predicted their mind-mindedness at four years of age, indicating the stability in mind-mindedness, as well as theory of mind and stream of consciousness performance between the ages of four to five. This suggests a direct association between mothers' use of relevant mind-related comments and their children's later understanding of the mind (Meins et al., 2003). Furthermore, the persistence of mind-mindedness and its correlation with the theory of mind abilities were examined with older children. Mind-mindedness was evaluated when infants were 10, 12, 16, and 20 months old using online measures, while their theory of mind abilities were assessed when children were five and six years old through strange story tasks, a measure of advanced theory of mind skills. Children's theory of mind abilities at 5-6 years old were significantly predicted by their mother's mind-mindedness up to four years earlier, with mind-mindedness accounting for 40% of the variance in the scores on the strange stories task. This supports the claims of the stability of mind-mindedness as a construct (Kirk et al., 2015).

## **Reevaluating Mind-Mindedness as a Construct that Shapes Theory of Mind**

From this point, researchers took a step further and tried to understand other factors that might be involved in or related to the relationship between mind-mindedness and theory of mind. The mind-mindedness of parents when their babies were 6 months old, attachment when their babies were 12 months old, and theory of mind when their toddlers were 3 years old was measured by Meins et al. (2002) with online measures. According to the findings, only appropriate comments—not non-attuned ones or attachments—predicted theory of mind. A similar study has been conducted by taking gender into account (Laranjo et al., 2010). In that study the mind-mindedness of mothers was measured when babies were 12, 15, and 26 months old with online measures. In addition, babies' theory of mind abilities was measured with a discrepant desires task where babies tried to understand that agents might have different desires and a visual perspectives task where babies tried to acknowledge that agents might have different visual perspectives. It is found that children's understanding of different desires and visual perspectives was positively related to their mothers' use of appropriate mind-related comments at an early age, which might be evidence for the predictive power of mind-mindedness on theory of mind not just in toddlerhood but also as early as infancy. When gender was considered, more securely attached boys performed better on a task requiring comprehension of their mothers' visual perspective (Laranjo et al., 2010). As a follow-up, the same cohort was tested again when the toddlers were 4 years old. Identical results were obtained: mothers' use of appropriate mind-related comments at 12 months of age predicted children's understanding of false beliefs and visual perspective. Furthermore, more securely attached boys scored higher on a task requiring visual perspective taking, but not the girls (Laranjo et al., 2014). In addition to attachment, the mediating roles of language and perspectival symbolic play were studied. The play sessions were held, and mind-mindedness was measured with online measures when toddlers were two years of age, and theory of mind was assessed when children were four. Appropriate mental comments were related to theory of mind abilities but not with language or symbolic play, while non-attuned comments were related to language and symbolic play but not with theory of mind abilities (Meins et al., 2013). On the other hand, it has also been found that mothers' appropriate and attuned comments predicted complexity, maturity level and length of infants' symbolic play (Giovannelli, 2020). Findings showed that it is essential to acknowledge that only appropriate and attuned comments might foster theory of mind or cognitive abilities.

Besides attachment and other types of interactions, additional parental abilities were also considered in relation to mind-mindedness and theory of mind. Parental mental state talk, mind-mindedness, and false beliefs of preschoolers were measured. Mental state talk was measured with a wordless picture book where mothers were asked to tell a story to their children based on the book. Afterwards, mothers' mental attributions to the characters were coded. Both mind-mindedness and mental state talk were weakly associated with children's false belief performance (Devine & Hughes, 2017). In addition to mental state talk, the emotional availability of parents is defined as the expressiveness and responsiveness of their emotions to each other (Licata et al., 2016), was found to be an essential variable within this relationship. Mind-mindedness was measured when babies were 7 months old, and theory of mind was measured when children were 4 years old. Both dyadic emotional availability between mother and child and mind-mindedness predicted the child's theory of mind, even when controlling for child temperamental and cognitive characteristics as well as dyadic emotional availability at four years and early maternal mind-mindedness. Findings showed the importance of high emotional connection between mothers and infants and mind-mindedness for preschoolers' development of theory of mind skills (Licata et al., 2016).

Not only mothers' but also fathers' mind-mindedness is a critical indicator of theory of mind since both parents' attuning to their infants' emotions and cognitions is known to predict children's later theory of

mind and emotion understanding (Centifanti et al., 2016). Lundy (2013) considered the relationship between four-year-old children's theory of mind abilities, both mothers' and fathers' mind-mindedness, and parental interactional attunement. Interactional attunement was defined as the parent's ability to use feedback from the child's performance to handle the next step appropriately (Lundy & Fyfe, 2016). Attunement was measured with a problem-solving puzzle task, and both online and offline mind-mindedness measures were used. It was found that parental attunement and both mothers' and fathers' mind-mindedness positively predicted theory of mind abilities. In addition, mothers and fathers who scored higher on the mind-mindedness in the interview were more attuned to their children's mental processes during the online interaction (Lundy, 2013). As a follow-up, the same cohort was tested again with the same research design but also considering the interaction between family members. In addition to previous findings, it was found that parental encouragement of thinking independently for children and children's own mind-related comments mediated the relationship between mind-mindedness abilities of both parents and the theory of mind performance of preschoolers (Lundy & Fyfe, 2016).

Along with parental abilities, culture is also an immense factor. Hughes and colleagues (2017) compared British children with children in Hong Kong at four years of age and their mothers in terms of mind-mindedness and theory of mind abilities. Although within both cultures, maternal mind-mindedness was correlated with theory of mind, British mothers were found as high on mind-mindedness, and their children had better performances on their false belief tasks (Hughes et al., 2017). In Hong Kong, children's understanding of false belief is delayed but they are reported to lie as much as children from other cultures. For this purpose, Wang and her colleagues (2017) studied the lie-telling behavior of three to six-year-old children. It is necessary to understand the role of mind-mindedness for lie-telling and theory of mind since children can tell lies at two years of age; however, theory of mind develops around four. Lie-telling behavior was measured under the temptation-resistance paradigm<sup>i</sup>. It is found that the lie-telling behavior of these children was predicted by parental mind-mindedness and the children's age but was unrelated to the children's false belief understanding. Findings showed that not theory of mind, which is known as one of the core constructs of cognitive development, but parental mind-mindedness, which can be defined as the earliest cognitive interaction, predicts lie-telling, a critical mental ability that is known to be related to emotion understanding, prosocial behaviors, executive functioning, and memory (Wang et al., 2017). It shows that, contrary to expectations, theory of mind did not predict children's lie-telling behavior, instead, parental mind-mindedness—a foundational form of early cognitive interaction—emerged as the key predictor, underscoring its critical role not only in the development of theory of mind but also in broader cognitive functioning.

### **Conclusion and Future Studies**

Mind-mindedness has emerged as a central focus in recent developmental psychology research, particularly because of its implications for cognitive development. Interpreting the behavior of mind-minded parents—and how they support their children's emotional needs—provides valuable insight into the developmental trajectory of children's understanding of their own and others' mental states. In this study, we aimed to explore whether mind-mindedness should be conceptualized primarily as a relational bond or as a construct that can be developed independently of the parent-child relationship. It has been found that mind-mindedness is based on a relationship with their own child, and mothers' interpretation for other children is not related to their mind-mindedness (Larkin et al., 2020). For this reason, in particular, mind-mindedness is seen as a parent-child bond which can widely affect executive function, language, and social cognition (Aldrich et al., 2021).

In addition, mind-minded mothers' attuned comments start as early as first month and continue to increase as the baby grows (Bigelow et al., 2023). It is also found that not only with typically developed

but also with neurodivergent children mind-mindedness is a strong bond with mother and the child. It is reported that mothers with high mind-mindedness have lower levels of stress and describe their children with less reference to their disability (Larkin et al., 2021)<sup>ii</sup>.

To sum up, theory of mind as the ability to understand others' mental states such as beliefs, intentions, and desires (Wellman, 2017) is being strongly predicted by parental mind-mindedness, which is the ability and intention of treating babies as mental agents and acknowledging that they can have an independent mind (Meins & Fernyhough, 2015). This relationship is shown to become stronger when both parents are included and attuned (Lundy, 2013), and it depends whether parents have mental state talks (Devine & Hughes, 2017), or emotional availability (Licata et al., 2016). It is also significant to understand that different dynamics can exist in different cultures (Hughes et al., 2017).

Although mind-mindedness is a relatively new subject, and to the best of our knowledge, only few studies has been conducted in Türkiye yet, it is a fruitful and promising topic since it is related to many cognitive and social outcomes for both infants and caregivers. In a thesis, the relationship between preschool children's executive function skills and mothers' mind-mindedness were investigated, however no relation was found (Yılmaz, 2017). In another study, mothers with children aged between 6-14 participated and were asked their children's emotion regulation skills. Again, the results revealed no significant relationship (Demirkan & Yeşilyaprak, 2023). In another thesis, the mediation role of mind-mindedness in a relationship between attachment security and maternal sensitivity were investigated, however, again, no mediation model was reported (Güner Algan, 2021). Lastly, in another thesis, the effects of parental competence on theory of mind abilities of children were assessed and parental mind-mindedness was hypothesized as a moderator on this relationship. However, no relationship was found between mind-mindedness and theory of mind, as well as no moderation role was supported (Karaalioğlu, 2024). Although, there is no relationship found between mind-mindedness and theory of mind in Türkiye yet, it is important to keep in mind that there are only few studies conducted with limited number of participants. In addition, it is thought that there is more to this relationship to discover, and cultural effects also need to be considered. For example, a study by Şahin Acar and Leichtman (2015) examined mother-child memory conversations among families from Eastern Türkiye, Western Türkiye, and the USA. The findings revealed that USA mothers provided the most voluminous, descriptive, and elaborative talk, while Eastern Turkish mothers exhibited the highest level of repetitiveness, with Western Turkish mothers' talk falling in between. This suggests that Turkish mothers, particularly in Eastern regions, may engage in less elaborative verbal interactions with their children. This might lead that Turkish mothers may have a different level of maternal mind-mindedness. Another point might be that based on collectivist culture characteristics, there might be another factor affecting the relationship between mind-mindedness and theory of mind, such as emotion socialization of the parent. Although there are some inconsistencies, the results are also in line with some of the previous research. For that reason, these studies have been showing signs of initiation toward understanding the importance of mind-mindedness. Nonetheless further research is needed, and it would be beneficial to conduct interventions and prevention studies to understand the dynamics of mind-mindedness and increase its positive outcomes.

Since the relationship between theory of mind and mind-mindedness was presented thoroughly, mind-mindedness should be focused, and the surrounding dynamics should be evaluated. It is shown that parents who are high on mind-mindedness talk with and teach their children about emotions more; they may help the child understand emotions and may shape an empathic understanding of others (Centifanti et al., 2016). That is why it might be essential to foster mind-mindedness in parents in terms of helping children develop empathy and theory of mind abilities earlier and more substantially.

## Compliance with Ethical Standards

**Author Contribution:** All authors equally contributed to this review paper, and all reviewed and approved the final version of the manuscript. The first author developed the initial idea, conducted the literature review, and constructed the main framework. The second author supervised the project, provided guidance throughout the process, and significantly contributed to the transitional sections. Finally, the first author refined the structure, added final comments, and completed the review.

**Competing Interests:** The authors declare that they have no competing interests.

**Ethics Approval and Consent to Participate:** Not applicable.

**Funding:** This research did not receive any specific grant from funding agencies in the public, commercial or not-for-profit sectors.

## References

- Aldrich, N. J., Chen, J. & Alfieri, L. (2021). Evaluating associations between parental mind-mindedness and children's developmental capacities through meta-analysis. *Developmental Review*, 60, 100946. <https://doi.org/10.1016/j.dr.2021.100946>
- Arnott, B. & Meins, E. (2008). Continuity in mind-mindedness from pregnancy to the first year of life. *Infant Behavior and Development*, 31, 647-654. <https://doi.org/10.1016/j.infbeh.2008.07.001>
- Bernier, A., McMahon, C. A. & Perrier, R. (2017). Maternal mind-mindedness and children's school readiness: A longitudinal study of developmental processes. *Developmental Psychology*, 53(2), 210-221. <http://dx.doi.org/10.1037/dev0000225>
- Bigelow, A. E., Power, M. & Dadgar, H. (2023). Maternal mind-mindedness over infants' first three months. *Infant Behavior and Development*, 72, 101864. <https://doi.org/10.1016/j.infbeh.2023.101864>
- Bigelow, A. E., Power, M., Bulmer, M. & Gerrior, K. (2015). The relation between mothers' mirroring of infants' behavior and maternal mind-mindedness. *Infancy*, 20(3), 263-282. <https://doi.org/10.1111/inf.12079>
- Centifanti, L. C. M., Meins, E. & Fernyhough, C. (2016). Callous-unemotional traits and impulsivity: distinct longitudinal relations with mind-mindedness and understanding of others. *Journal of Child Psychology and Psychiatry*, 57(1), 84-92. <https://doi.org/10.1111/jcpp.12445>
- Colonnesi, C., van Polanen, M., Tavecchio, L. W. C. & Fukkink, R. G. (2017). Mind-mindedness of male and female caregivers in childcare and the relation to sensitivity and attachment: An exploratory study. *Infant Behavior and Development*, 48, 134-146. <http://dx.doi.org/10.1016/j.infbeh.2017.04.006>
- Costantini, A., Coppola, G., Fasolo, M. & Cassibba, A. (2017). Preterm birth enhances the contribution of mothers' mind-mindedness to infants' expressive language development: A longitudinal investigation. *Infant Behavior and Development*, 49, 322-329. <http://dx.doi.org/10.1016/j.infbeh.2017.10.006>
- Demirkan, E. & Yeşilyaprak, Y. (2023). Annelerin duygu düzenleme becerileri ve zihin yönelimlilikleri ile çocuklarının duygu düzenleme becerileri arasındaki bağlantıların incelenmesi. *Erciyes Akademisi*, 37(1), 242-260. <https://doi.org/10.48070/erciyesakademi.1225491>
- Devine, R. T. & Hughes, C. (2017). Let's talk: Parents' mental talk (not mind-mindedness or mindreading capacity) predicts children's false belief understanding. *Child Development*, 90(4), 1236-1253. <https://doi.org/10.1111/cdev.12990>
- Dore, R. A. & Lillard, A. S. (2014). Do children prefer mentalistic descriptions? *The Journal of Genetic Psychology*, 175(1), 1-15. <https://doi.org/10.1080/00221325.2013.805712>
- Easterbrooks, M. A., Crossman, M. K., Caruso, A., Raskin, M. & Miranda-Julian, C. (2017). Maternal mind-mindedness and toddler behavior problems: The moderating role of maternal trauma and posttraumatic stress. *Development and Psychopathology*, 29(4), 1431-1442. <https://doi.org/10.1017/S0954579417000360>
- Farrow, C. & Blissett, J. (2014). Maternal mind-mindedness during infancy, general parenting sensitivity and observed child feeding behavior: a longitudinal study. *Attachment & Human Development*, 16(3), 230-241. <http://dx.doi.org/10.1080/14616734.2014.898158>

- Fernyhough, C. (2011). Where mind-mindedness comes from. Retrieved from: <https://www.psychologytoday.com/blog/the-voices-within/201103/where-mind-mindedness-comes>
- Fishburn, S., Meins, E., Greenhow, S., Jones, C., Hackett, S., Biehal, N., Baldwin, H., Cusworth, L. & Wade, J. (2017). Mind-mindedness in parents of looked-after children. *Developmental Psychology*, 53(10), 1954-1965. <http://dx.doi.org/10.1037/dev0000304>
- Fleming, J. (2004). *Piaget and cognitive development*. Chapter 4. Retrieved from: <https://www.scribd.com/document/344977243/Piaget-and-Cognitive-Development-Fleming-2004-pdf>
- Giovanelli, C., Di Dio, C., Lombardi, E., Tagini, A., Meins, E., Marchetti, A. & Carli, L. (2020). Exploring the relation between maternal mind-mindedness and children's symbolic play: A longitudinal study from 6 to 18 months. *Infancy*, 25(1), 67-83. <http://dx.doi.org/10.1111/inf.12317>
- Güner Algan, A. (2021). *Okul öncesi çocuklarında bağlanma temsilleri ile annelerin duyarlılığı, zihin yönelimi ve çocukların mizacı arasındaki ilişkilerin incelenmesi* (Doctoral Dissertation). İstanbul University.
- Hughes, C., Devine, R. T. & Wang, Z. (2018). Does parental mind-mindedness account for cross cultural differences in preschoolers' theory of mind? *Child Development*, 89(4), 1296-1310. <http://dx.doi.org/10.1111/cdev.12746>
- Karaaliğlu, L. (2024). *Ebeveyn yetkinliğinin zihin kuramı gelişimi üzerindeki etkisi: Zihin yönelimliliğinin aracı rolü* (Master Thesis). Maltepe University.
- Kirk, E., Pine, K., Wheatley, L., Howlett, N., Schulz, J. & Flether, B. (2015). A longitudinal investigation of the relationship between maternal mind-mindedness and theory of mind. *British Journal of Developmental Psychology*, 33, 434-445. <http://dx.doi.org/10.1111/bjdp.12104>
- Laranjo, J., Bernier, A., Meins, E. & Carlson, S. M. (2010). Early manifestations of children's theory of mind: the roles of maternal mind-mindedness and infant security of attachment. *Infancy*, 15(3), 300-323. <http://dx.doi.org/10.1111/j.1532-7078.2009.00014.x>
- Laranjo, J., Bernier, A., Meins, E. & Carlson, S. M. (2014). The roles of maternal mind-mindedness and infant security of attachment in predicting preschoolers' understanding of visual perspective taking and false belief. *Journal of Experimental Child Psychology*, 125, 48-62. <http://dx.doi.org/10.1016/j.jecp.2014.02.005>
- Larkin, F., Hayiou-Thomas, M. E., Arshad, Z., Leonard, M., Williams, F. J., Katseniou, N., Malouta, R. N., Marshall C. R. P., Diamantopoulou, M., Tang, E., Mani, S. & Meins, E. (2021). Mind mindedness and stress in parents of children with developmental disorders. *Journal of Autism and Developmental Disorders*, 51, 600-612. <https://doi.org/10.1007/s10803-020-04570-9>
- Larkin, F., Schacht, R., Oostenbroek, J., Hayward, E., Fernyhough, C., Munoz Centifanti, L. C. & Meins, E. (2020). Mind-mindedness versus mentalistic interpretations of behavior: Is mind-mindedness a relational construct? *Infant Mental Health Journal*, 42(2), 176-187. <https://doi.org/10.1002/imhj.21901>
- Licata, M., Kristen, S. & Sodian, B. (2016). Mother-child interaction as a cradle of theory of mind: The role of maternal emotional availability. *Social Development*, 25(1), 139-156. <https://doi.org/10.1111/sode.12131>
- Lundy, B. L. (2013). Paternal and maternal mind-mindedness and preschoolers' theory of mind: The mediating role of interactional attunement. *Social Development*, 22(1), 58-74. <https://doi.org/10.1111/sode.12009>
- Lundy, B. L. & Fyfe, G. (2016). Preschoolers' mind-related comments during collaborative problem-solving: Parental contributions and developmental outcomes. *Social Development*, 25(4), 722-74. <https://doi.org/10.1111/sode.12176>
- McMahon, C., Camberis, A., Berry, S. & Gibson, F. (2016). Maternal mind-mindedness: relations with maternal-fetal attachment and stability in the first two years of life: Findings from an Australian prospective study. *Infant Mental Health Journal*, 37(1), 17-28. <https://doi.org/10.1002/imhj.21548>
- Meins, E. & Fernyhough, C. (1999). Linguistic acquisitional style and mentalizing development: The role of maternal mind-mindedness. *Cognitive Development*, 14, 363-380.
- Meins, E. & Fernyhough, C. (2015). *Mind-mindedness coding manual*, Version 2.2. Unpublished manuscript. University of York, York, UK.
- Meins, E., Fernyhough, C., Wainwright, R., Das Gupta, M., Fradley, E. & Tuckey, M. (2002). Maternal mind-mindedness and attachment security as predictors of theory of mind understanding. *Child Development*, 73(6), 1715-1726.

- Meins, E., Fernyhough, C., Wainwright, R., Clark-Carter, D., Das Gupta, M., Fradley, E. & Tuckey, M. (2003). Pathways to understanding mind: Construct validity and predictive validity of maternal mind-mindedness. *Child Development*, 74(4), 1194-1211.
- Meins, E., Fernyhough, C. & Russell, J. (1998). Security of attachment as a predictor of symbolic and mentalizing abilities: A longitudinal study. *Social Development*, 7(1), 1-24.
- Meins, E., Fernyhough, C., Arnott, B., Leekam, S. R. & de Rosnay, M. (2013). Mind-mindedness and theory of mind: Mediating roles of language and perspectival symbolic play. *Child Development*, 84(5), 1777-1790. <https://doi.org/10.1111/cdev.12061>
- Meins, E., Fernyhough, C., Arnott, B., Turner, M. & Leekam, S. R. (2011). Mother-versus infant-centered correlates of maternal mind-mindedness in the first year of life. *Infancy*, 16(2), 137-165. <https://doi.org/10.1111/j.1532-7078.2010.00039.x>
- Meins, E., Fernyhough, C., Fradley, E. & Tuckey, M. (2001). Rethinking maternal sensitivity: Mothers' comments on infants' mental processes predict security of attachment at 12 months. *Journal of Child Psychology and Psychiatry*, 42(5), 637-648.
- Milligan, K., Khoury, J. E., Benoit, D. & Atkinson, L. (2015). Maternal attachment and mind-mindedness: The role of emotional specificity. *Attachment & Human Development*, 17(3), 302-318. <http://dx.doi.org/10.1080/14616734.2014.996573>
- Sahin-Acar, B. & Leichtman, M. L. (2015) Mother-child memory conversations and self-construal in Eastern Turkey, Western Turkey and the USA. *Memory*, 23(1), 69-82. <https://doi.org/10.1080/09658211.2014.935437>
- Wang, L., Zhu, L. & Wang, Z. (2017). Parental mind-mindedness but not false belief understanding predicts Hong Kong children's lie-telling behavior in a temptation resistance task. *Journal of Experimental Child Psychology*, 162, 89-100. <http://dx.doi.org/10.1016/j.jecp.2017.04.023>
- Wellman, H. M. (2017). The development of theory of mind: Historical reflections. *Child Development Perspectives*, 11(3), 207-214. <https://doi.org/10.1111/cdep.12236>
- Yılmaz, E. (2017). *Annenin zihin yönelimliliğinin okul öncesi çocukların kendini düzenleme becerileri üzerindeki yordayıcı etkisi* (Master Thesis). İstanbul University.
- Zhang, J. (2022). The influence of Piaget in the field of learning science. *High. Educ. Stud.* 12, 162-168. <https://doi.org/10.5539/hes.v12n3p162>

## Notes

<sup>i</sup> Children were asked to guess an object under a cup using clues. Right before the third and last clue, the experimenter showed a gift and told the child that if they could guess correctly, the gift would be given to them. After that, the researcher had to leave the room for just a second and ask the child not to peek at the object. When the researcher came back, the child was asked whether she peeked or not. Children were divided into groups of non-peekers or peekers, and again coded among peekers, liars or truth-tellers.

<sup>ii</sup> Neurotypical refers to brain functions that are 'typically' comparable to the average of the general population and developmental milestones. The comparison between neurotypicality and neurodiversity was first proposed by sociologist Judy Singer in 1998. It is an assertion that the characteristics of neurally differentiated individuals should not be viewed from a 'disability' or 'deficiency' perspective, but rather as variations in the brain's capacity to function and adapt. Although the group that does not exhibit typical brain functions may be a singular diagnostic group, the most contentious aspect of this group is that it exhibits change and diversity in terms of neural functions and is therefore termed "neurodiverse." Attention Deficit Hyperactivity Disorder, Autism, Obsessive Compulsive Disorder, Dyspraxia, Dyslexia, Dyscalculia, or Tourette syndrome can be included in neurodivergent or neurodiversity, which asserts that there are more ways than the 'typical' way that the brain functions (Milton et al., 2020).