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*an exploratory study*

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Full length article

## Mind-Mindedness of Male and Female Caregivers in Childcare and the Relation to Sensitivity and Attachment: An Exploratory Study



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### ABSTRACT

Mind-mindedness refers to the caregiver's ability to be attuned to the child's mental states. Within the parent-child relationship, mind-mindedness relates to parents' sensitive caregiving, and to children's secure attachment. However, the same relations are still unexplored in out-of-home care settings. We investigated the associations between childcare professionals' mind-mindedness, sensitive responsiveness and respect for autonomy, and child-caregiver attachment security. Moreover, we examined whether these relations are influenced by caregivers' and children's gender. Participants were 17 caregiver couples (17 males, 17 females) and 34 three-year-old children (17 boys, 17 girls), recruited in childcare centers. Mind-mindedness toward the boy or the girl (dyadic) or both children (non-dyadic), sensitive responsiveness and respect for autonomy were assessed during a semi-structured play. Attachment security was assessed through observations. Male and female caregivers had equivalent scores of mind-mindedness, sensitive responsiveness, and respect for autonomy. Similarly, children were securely attached to male and female caregivers. Girls' and boys' secure attachment was predicted by caregivers' use of non-dyadic mind-related comments. For girls, but not for boys, the relation was partially mediated by caregivers' respect for autonomy. The results are discussed in terms of their relevance for the quality of child-caregiver relationships, and children's socio-emotional development.

### 1. Introduction

In modern Western societies infants and young children are increasingly cared for by non-parental caregivers like professional caregivers in formal childcare (Howes & Spieker, 2007; Lamb, 1998). Professional caregivers have the main task to take care, to supervise, to engage in age-appropriate interactions, and to teach basic social skills to children in order to contribute to their socio-emotional development in infancy and early childhood (Belsky et al., 2007; Helmerhorst, Riksen-Walraven, Vermeer, Fukkink, & Tavecchio, 2014). Just as parents, professional caregivers' way to interact with children can have a direct impact on the child-caregiver relationship and, therefore, on the child's socio-emotional development (Goossens & Van IJzendoorn, 1990; Mortensen & Barnett, 2015; Phillips & Lowenstein, 2011). For instance, there is compelling evidence that children build attachment relationships with nonparental care providers (Cugmas, 2003; Goossens & Van IJzendoorn, 1990; Howes & Spieker, 2008), and that the security of this relationship is often comparable with the parent-child relationship (Goossens & Van IJzendoorn, 1990;

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Howes & Spieker, 2008).

Research is increasingly oriented toward detecting aspects involved in the quality of the relationship between professional caregivers and young children (e.g., Burchinal & Cryer, 2003; Lisonbee, Mize, Payne, & Granger, 2008). In the present study, we investigated a novel and specific aspect in the relationship between professional caregivers and children: caregivers' mind-mindedness (Meins, 1997). Mind-mindedness refers to the proclivity of caregivers to treat children as individuals with a mind. We examined to what extent female and male caregivers' mind-mindedness is related to their sensitive responsiveness, respect for autonomy, and boys' and girls' attachment security to the caregivers.

### 1.1. Mind-mindedness in childcare

Mind-mindedness is the caregivers' tendency to take the intentional stance toward their children (Meins, 1997, 1999, 2013). It concerns the inclination to comment on the putative internal state of their child (Meins, Fernyhough, Fradley, & Tuckey, 2001), manifesting the proclivity to represent the child's thoughts, desires, and feelings (Meins, 2013). For this reason, mind-mindedness can be conceptualized as an important aspect of the quality of a relation between caregiver and child (Barreto, Fearon, Osório, Meins, & Martins, 2016). As such, mind-mindedness should be distinguished from other caregiver socio-cognitive capacities like mental state language, which refers to the caregivers' propensity to use comments concerning mental states in general (e.g., Bretherton & Beeghly, 1982; Olson, & Astington, 1993; Taumoepeau & Ruffman, 2006, 2008).

Parents' level of mind-mindedness can be assessed by observing their attitude to comment, either appropriately or in a non-attuned manner, on infants' putative thoughts and feelings during interactions with them (Meins et al., 2001). A mind-related comment is appropriate when it is a correct interpretation of the child's state of mind, while it is non-attuned when the parent misinterprets the child's current internal state (Meins & Fernyhough, 2010). Parents' use of appropriate and absence of non-attuned mind-related comments during infancy and early childhood has shown to be associated with positive developmental outcomes in children, such as secure attachment (Arnott & Meins, 2007; Lundy, 2003; Meins et al., 2001, 2012), higher levels of social understanding (Laranjo, Bernier, Meins, & Carlson, 2010; Meins, Fernyhough, Arnott, Leekam, & Rosnay, 2013a), adequate self-regulation strategies (Bernier, Carlson, & Whipple, 2010), and fewer behavioral problems (Meins, Centifanti, Fernyhough, & Fishburn, 2013b).

While the relevance of mind-mindedness within the parent-child bond has become more evident, we know little about the importance of caregiver mind-mindedness in early childhood education and care. To our knowledge, only the study of Degotardi and Sweller (2012) explored mind-mindedness descriptions, mind-mindedness talk, sensitivity, and developmental stimulation in a childcare context. In their study of 24 female caregivers during dyadic interactions with 9- to 20-month-olds in childcare, concordance was found between mind-mindedness description and talk, and caregivers' production of mind-mindedness was similar to that of parents in family studies. In addition, Degotardi and Sweller's findings support previous childcare studies showing that caregivers who are able to interpret children's inner states and to use mentalistic language, provide more sensitive care (Manlove, Vazquez, & Vernon-Feagans, 2008), and have a more positive interaction style with children (Frampton, Perlman, & Jenkins, 2009).

Unlike parents, professional caregivers are generally used to interact with children in the context of non-dyadic situations. Caregivers' mind-related comments in the context of childcare should, therefore, be directed not only toward individual children, but also toward more than one child at the same time, or to the group as a whole. Hence, caregivers should correctly perceive and interpret the behavior and emotional signals of both individual children and the group (Degotardi & Davis, 2008; King & La Paro, 2015). Related to this, Ahnert, Pinquart and Lamb (2006) found that children's relationship with caregivers in childcare is associated with caregivers' behaviors toward the group as a whole. Mind-mindedness can, therefore, be a crucial aspect of the relationship between professional caregivers and children, in particular when it reflects the caregiver's ability to "tune in" to more than one child.

### 1.2. Mind-mindedness and the role of Caregivers' gender

At present, the proportion of male caregivers is approximately 3% in early childhood care and education in countries all over the world (OECD, 2012). The field of early education and care is predominantly female (Peeters, Rohrmann, & Emilsen, 2015; Warin & Adriany, 2015). The lack of male role models and the less positive relationships with boys, as compared to girls, of female caregivers in childcare raise questions about the importance of male caregivers in childcare, and about their relevance as attachment figures for children, particularly for boys (Ahnert, 2006; Ahnert et al., 2006; Brody, 2014; Drudy, 2008; De Schipper, Tavecchio, & Van Ijzendoorn, 2008; NICHD ECCRN, 1997; Wachs, Gurkas, & Kontos, 2004; Winer & Phillips, 2012). Exploring mind-mindedness in both male and female caregivers may provide a clearer understanding of the role of mind-mindedness as a factor involved in the quality of the relationship between caregivers and young children of both sexes.

To our knowledge, no studies explored differences in mind-mindedness between male and female professional caregivers. Family studies, however, already examined the differences between the paternal and maternal use of mind-related comments (Arnott & Meins, 2007; Lundy, 2003), and possible differences due to child gender (e.g., Laranjo et al., 2010; Meins et al., 2011). Arnott and Meins (2007) found that mothers and fathers did not differ in their use of appropriate mind-related comments to their 6-month-old infants. However, fathers produced more non-appropriate mind-related comments than mothers. Furthermore, fathers', but not mothers', appropriate and non-appropriate mind-related comments were positively related to each other, suggesting that fathers may be less skilled than mothers in reading and understanding infants' internal states (Arnott & Meins, 2007). Lundy (2003) found that mothers produced more mind-related comments about their 6-month-olds' thoughts, knowledge and desires, whereas fathers produced more mind-related comments about problem solving. However, both mothers' and fathers' comments related to

thoughts, knowledge and desires of the child predicted secure attachment. In more recent studies, where mind-mindedness was assessed by asking the caregiver to provide a description of children who were older than two years, no difference was found between maternal and paternal mind-mindedness (Barreto et al., 2015; Lundy, 2013). Family studies also did not report a relation between parents' use of mind-related comments and the child's gender (e.g., Laranjo et al., 2010; Meins et al., 2011; Meins, Harris-Waller, & Lloyd, 2008). These empirical findings from family research suggest modest parental gender differences in infancy and early childhood, and no differences due to child gender.

A few studies provided evidence on the effect of caregivers' gender on child-caregiver interaction and caregivers' sensitivity (Aigner, Huber, Traxl, Poscheschnik, & Burkhardt, 2013; Brandes, Andrä, Röseler, & Schneider-Andrich, 2015). Aigner et al. (2013) reported that male caregivers' interactions with children were more positive and less punitive than those of female caregivers. Conversely, Brandes et al. (2015) found no difference between male and female caregivers on measures of observed empathy, challenge, cooperation and quality of dyadic interaction. Investigating the effect of professional caregiver and child gender on the level of mind-mindedness, sensitivity, and child-caregiver secure attachment can advance our knowledge about individual factors that affect the quality of child-caregiver interactions.

### 1.3. Mind-mindedness, sensitivity, respect for autonomy, and children's attachment security

Family studies report a positive relation between parents' mind-mindedness, sensitivity, and children's secure attachment (Laranjo, Bernier, & Meins, 2008; McMahon & Meins, 2012; Meins et al., 2001, 2012). Meins et al. (2001) found that mothers' use of appropriate mind-related comments, as well as mothers' sensitivity when children were 6 months old, independently predicted children's attachment security at 12 months. Mind-mindedness accounted for 12.7% of the variance in infant security, whereas sensitivity accounted for 6.5% of the variance. More recently, Meins et al. (2012) found that maternal appropriate and non-attuned mind-related comments predicted children's secure attachment above the contribution of mothers' level of sensitivity. Lundy (2003) reported that parental interactional synchrony (as a measure of parent's sensitivity) with their 6-month-old infants mediated the relation between their use of mind-related comments and infants' secure attachment. Parental mind-mindedness seems, therefore, to be a prerequisite for the interactional synchrony with the child. Similarly, Laranjo et al. (2008) found that parental sensitive behavior mediated the positive relation between parental mind-mindedness and secure attachment in 12 and 15 months old infants. These findings suggest that parents' ability to be mind-minded can be both a direct predictor of children's secure attachment and a prerequisite for parents' sensitive behavior that is related to children's secure attachment.

The association between mind-mindedness and children's secure attachment has not yet been explored in childcare, and the relation between mind-mindedness and sensitivity seems anyway inconsistent. Degotardi and Sweller (2012) explored the association between caregivers' sensitivity and two dimensions of mind-mindedness talk: belief talk (i.e., comments referring to cognitive states of knowing and thinking and symbolic activities such as tricking and pretending), and non-belief talk (i.e., comments referring to likes, interests, emotions, desires, intentions and perceptions). Caregivers' sensitivity was found to be positively associated with belief talk but was negatively associated with non-belief talk. Given these non-expected results, it is of relevance to further investigate to what extent caregivers' mind-mindedness and sensitivity are related to each other in childcare, as well as their association with child-caregiver secure attachment.

While parents are often involved in individual interactions with their child, professional caregivers are also involved in group interactions, with two or more children. The meta-analysis of Ahnert et al. (2006), summarizing findings from 40 studies into the security of child-caregiver relationships in childcare, reported that children were more securely attached to caregivers who showed sensitive behavior toward the group as a whole instead of toward individual children. Viewed from this group perspective, a similar relation can be expected with regard to mind-mindedness in childcare contexts, as caregivers need to perceive and interpret the mental states of multiple children in order to respond in a sensitive manner toward the group. Professional caregivers' sensitive behavior toward the group is often measured in terms of sensitive responsiveness, which is the caregivers' capacity to interpret children's signals correctly and respond appropriately.

Another relevant aspect of caregiver's sensitive behavior is respect for autonomy, defined as the caregivers' ability to understand children's perspective and stimulate their autonomy (Helmerhorst et al., 2014). Autonomy is a salient aspect of children's development in late infancy and toddlerhood. At this age, thanks to new linguistic and motoric abilities, children become increasingly independent (Côté-Lecaldare, Joussement, & Dufour, 2016), and develop an intrinsic predisposition to explore the world and to seek new challenges and knowledge (Degotardi, 2013). Their autonomy is enhanced by caregivers' recognition and support of their agency (Degotardi, 2013; Nucci et al., 1996), and by promoting infants' active participation, exploration, and intrinsic motivation (Degotardi & Torr, 2007; Whipple, Bernier, & Mageau, 2011). Degotardi and Torr (2007) found, for instance, that mothers' use of encouragement-of-autonomy talk is a dominant way to talk to infants from 12 to 24 months. Côté-Lecaldare et al. (2016) explored childcare caregivers' autonomy-supportive practices with 18- to 36-months olds, finding three main aspects of supportive autonomy: taking the perspective of the child, engaging in a reciprocal and collaborative relationship, and attaching as much importance to the child's reality and experiences as to one's own. These three aspects seem to require the capacity to be attuned to the child's mental world. Similarly, Degotardi (2013) found that more mind-minded childcare educators used higher levels of agency promoting talk towards 9–20 months old infants than less mind-minded educators. Mind-mindedness might, therefore, be a possible prerequisite in order to respect and support children's autonomy. In addition, parental autonomy-supportive behavior has been found to be a predictor of infants' attachment (Whipple et al., 2011). Caregivers' respect for autonomy could, therefore, mediate the relationship between mind-mindedness and children's secure attachment, translating caregivers' propensity to take the intentional stance towards the child in supportive behavior, and enhancing secure attachment in children.

## 1.4. Study goals

The purpose of the present study was threefold. First, we sought to investigate the relation between male and female caregivers' mind-mindedness, sensitive responsiveness, respect for autonomy, and children's attachment. Second, we examined the role of caregiver and child gender in the aforementioned relations. Third, we explored the mediating role of caregivers' sensitive responsiveness and respect for autonomy in the relation between mind-mindedness and children's secure attachment. Caregivers' mind-mindedness was assessed observing the interaction between the caregivers and two 3-year-old children (a boy and a girl) during a semi-structured play situation. In order to explore the multi-respondent dimension of mind-mindedness in childcare, appropriate and non-attuned mind-related comments of the caregivers were scored as directed toward the boy or the girl (dyadic) or toward both children simultaneously (non-dyadic).

Based on the aforementioned studies we expected: (a) male and female professional caregivers to be able to use appropriate mind-related comments in a similar way; (b) male and female caregivers' use of mind-mindedness to be positively associated with their sensitive responsiveness, with respect for autonomy, and with children's attachment security; (c) the use of appropriate mind-related comments toward both children simultaneously to be more strongly related to children's secure attachment than dyadic mind-mindedness directed to one of the children; (d) and, finally, caregivers' sensitive responsiveness and respect for autonomy to mediate the relation between caregivers' mind-mindedness and children's attachment.

## 2. Method

### 2.1. Participants

Participants were 34 professional caregivers organized in 17 couples with a male and a female caregiver working in the same daycare group, and 34 three-year-old children organized in 17 couples of a boy and a girl attending together the same daycare group of the professional couples. Participants were recruited through 12 Dutch childcare organizations. Caregivers were on average 37.8 years old ( $SD = 8.1$ ; range 21–50 years). They had been employed at least three months as permanent pedagogical staff in one of three different types of daycare: daycare groups with children 0–4 years of age ( $n = 16$ ), daycare groups with children aged 2–4 years ( $n = 12$ ), or pre-school playgroups with half-day programs for children aged 2–4 ( $n = 6$ ). Male and female professionals had shared the same daycare group for an average of 32.93 months ( $SD = 17.45$ ). On average, caregivers worked 27 h per week in the group. Participating children were on average 36.15 months old ( $SD = 1.40$ ; range 33–38 months).

### 2.2. Procedure

Prior to participation, male and female caregivers received an informed consent letter providing information on the goals and procedures of this study. After both caregivers agreed to participate in the study, one boy and one girl in their care group were randomly selected according to the following selection criteria: a) age of 36 months; b) attending the same group of both participating caregivers; c) spending at least two days per week in the care group; and d) had attended the care group in the last three months. The groups adhered to national regulations, which specify that the caregiver-child ratio should be 1:5 for mixed age groups (0–4 years) and 1:8 for toddler groups. An active consent form was sent to the parents of the participating children to inform them about the study and to ask permission for observing and videotaping their children.

A trained experimenter visited each participating group in each daycare center during two regular days. The visits were scheduled based on the children's daily routine and sleeping patterns, could take place in the morning or in the afternoon, and had a duration of at least 3 h. On the first day, two dyads (e.g., boy with male caregiver and boy with female caregiver, or girl with male caregiver and girl with female caregiver) were observed during naturally occurring situations (e.g., game, lunch, transitional situation) in order to assess the child-caregiver attachment relationship (AQS; Waters, 1995; Waters & Deane, 1985). After the observation of the naturally occurring situation, a 10-min semi-structured play situation with one caregiver and the same two children was conducted and video-recorded in order to assess caregivers' mind-mindedness, sensitive responsiveness, and respect for autonomy. On the second day, the remaining dyads were observed, counterbalancing for both caregiver and child gender.

The observations during the structured-play game were conducted in a quiet setting, allowing us to systematically observe the interactions between a male or a female caregiver with both children. The caregiver and the children were sitting at a table, with the caregiver in between the two children. One high-definition digital camera was positioned diagonally in front of the caregiver and the children. Two games were selected for these semi-structured play situations: a) animal-upon-animal (HABA®); b) and buckaroo (Hasbro®). The animal-upon-animal game consists of small wooden animal figures that can be built into a tower. In the buckaroo game, small objects can be hung on the back of a horse that jumps when too much pressure is put on its saddle. The difficulty level of these games was assumed to provide opportunities for caregivers to stimulate children and to provide support. Male and female colleagues each played a different game, so that children played both games once. Games were randomly assigned, counterbalancing game type across caregiver gender (in total, 8 men and 9 women played 'buckaroo' and the other 9 men and 8 women played 'animal-upon-animal'). Short instructions for the games were provided to the caregiver before starting the session, emphasizing that caregivers were free to use the game at their own discretion. No reward was given for participation.

The authors declare that they have no conflict of interest. The study, involving both professionals and children, was approved by the Ethics Committee of the Faculty of Social and Behavioral Science of the University of Amsterdam, Registration No. 2013-CDE-3290.

## 2.3. Measures

### 2.3.1. Mind-Mindedness

Eight minutes of videotaped male and female caregivers' interactions with children during a semi-structured game were used to observe caregivers' mind-mindedness since this was the optimal duration of the semi-structured play situations. Every verbal comment (i.e., a discrete sound or single word or a sentence at longer utterances) of the caregiver was transcribed and coded following Meins and Fernyhough (2010). Although the original mind-mindedness coding scheme was developed for infants younger than 12 months, no adaptations were found to be necessary with the current sample. Caregivers' mind-mindedness comments were assigned to five categories: 1) Comments on *desires* and preferences related to things the child likes, dislikes, loves, wants or hates; 2) Comments on *cognitions* were associated with what the child thinks, decides, notices, or is interested in; 3) Comments on *emotions* referred to emotional states, like happiness, shyness, stress, or joy; 4) *Epistemic states* related to teasing and joking; 5) *Talking on behalf of the child* was coded for any comment that was obviously meant to be said or thought by the child. In the present study, none of the caregivers' comments could be coded as epistemic states and talking on behalf of the child. Mind-related comments produced as a repetition of the children's verbalization of their own mental states were not coded as mind-mindedness.

Furthermore, all mind-mindedness comments were dichotomously coded as appropriate when they were a reflection of children's mental states, or as non-attuned when they were not (Meins & Fernyhough, 2010). Comments were coded as appropriate when at least one of the following criteria was met: the researcher agreed with the caregiver's reading of the infants' mental states; the comment linked a current activity with similar events in the past or in the future; the comment served to clarify how to proceed after a lull in the interaction. Otherwise, comments were coded as non-attuned when any of the following criteria were met: the researcher disagreed with the caregiver's reading of the infants' current internal state; the comment refers to a past or future event and it is unrelated to the infants' current activity; the comment is not clear or directly applicable in the context.

In addition, comments of the caregivers were subsequently qualified as comments directed toward the boy, toward the girl, or toward both children. The target child to whom the comment was directed was established on the basis of the gaze direction, use of plural versus singular nouns in the sentences, and the use of the name of the children. Note that the Dutch word for "you" in the singular person (i.e., "je", "jij") is different from "you" in the plural (i.e., "jullie"). Mind-related comments directed to both children but appropriate for only one child never occurred. Table 1 shows examples of caregivers' appropriate and non-attuned mind-related comments (based on the behavior of the child/children in brackets), and descriptive statistics for the subcategories of mind-mindedness. On average, female caregivers produced 181.95 comments ( $SD = 35.33$ ) and male caregivers 164.68 ( $SD = 45.24$ ),  $t(36) = 1.31$ ,  $p = 0.198$ . A proportional score expressed as a percentage ( $(N$  of mental states comments/total number of comments)\*100) was used to account for caregivers' verbosity.

Data were double coded by two trained observers (training ICC coefficient > 0.80) blind to the hypotheses of the study and to all other measures. Inter-rater reliability was assessed across all of the videotaped interactions using intra-class correlations (ICC; two-way random effects model with an absolute agreement definition). Values for appropriate mind-related comments were excellent for the comments directed to the boy, ICC = 0.95, 95% CI [0.90, 0.97], to the girl, 0.99, 95% CI [0.98, 0.99], and to both children, 0.96, 95% CI [0.93, 0.98]. Values for non-attuned mind-mindedness were close to acceptance for comments directed to the girl, 0.69, 95% CI [0.40, 0.84], and good to both children, 0.83, 95% CI [0.67, 0.91]. Non-attuned mind-mindedness to the boy occurred only two times according to the first observer, and never occurred according to the second observer. Disagreements were resolved by discussion.

### 2.3.2. Caregiver sensitive responsiveness and respect for autonomy

The level of caregiver group-related sensitive responsiveness and respect for autonomy were measured using the validated Caregiver Interaction Profile Scales (CIP; Helmerhorst et al., 2014). The scales have good convergent, discriminant and predictive validity (Helmerhorst et al., 2014). In the present study two subscales were used: (a) sensitive responsiveness as a measure of

**Table 1**  
Types of Appropriate and Non-Attuned Mind-Related Comments: Descriptive Statistics (percentages) and Examples.

Mind-Related Comments	<i>M</i> ( <i>SD</i> )	Examples
Desires and Preferences	2.99 (2.02)	<i>Appropriate.</i> 'Oh, you <sup>p</sup> really like this game!' (the children are enjoying the game); 'Do you <sup>s</sup> want to hang one more piece on to the horse?'; 'Which animal do you <sup>s</sup> want?'; 'Do you <sup>p</sup> know what we are expected to do with this game?' (both children are looking to the figures on the game box). <i>Non-attuned.</i> 'You <sup>p</sup> don't want to play anymore' (when children are still playing), 'this one is your <sup>s</sup> favorite animal' (the child is taking another block).
Cognitions	7.93 (5.26)	<i>Appropriate.</i> 'Do you <sup>p</sup> know what the name of this animal is?'; 'You <sup>s</sup> really know how this game works!' (the child is easily hanging the pieces); 'Do you <sup>s</sup> think it will stuck that way?'; 'Do you <sup>p</sup> know what the sound of the lion is?'. <i>Non-attuned.</i> 'You <sup>s</sup> know it is not your turn now' (the child looks disoriented about who should play); 'No, that's not a rabbit, don't you <sup>s</sup> know? (the child just said it was a rabbit).
Emotions	0.51 (1.11)	<i>Appropriate.</i> 'You <sup>p</sup> look very happy with it!'; 'Do you <sup>s</sup> find it scary?'; 'Do you dare?'; 'Did it scare you <sup>p</sup> ?'; 'You <sup>p</sup> are having fun together!'; 'This is really exiting for you <sup>s</sup> [name of the child]!' <i>Non-attuned.</i> 'You <sup>p</sup> got scared!!' (both children do not look scared).

Note: <sup>s</sup> = singular use of 'you'; <sup>p</sup> = plural use of 'you'.

caregiver's recognition of children's individual emotional and physical needs, and ability to respond appropriately to children's cues and signals; (b) respect for autonomy as a measure of caregiver's ability to be nonintrusive and to recognize children's perspective and intentions. Both subscales are rated on a 7-point Likert-type scale. In the description of each of these scales, a general definition of the corresponding caregiver interactive skill is given, followed by a brief description distinguishing scores at the high (6, 7), middle (3, 4, 5), and low (1, 2) ranges of the scale. Finally, for each of the scales, a detailed behavioral description for each of the seven scale points is provided. A trained observer (ICC > 0.80 after training), who was blind to the aims of the study and to the other measures, watched the videotaped interactions, and rated the levels of sensitive responsiveness and respect for autonomy of the caregiver as general measures for all sessions. A random selection of 20% ( $n = 8$ ) of the videotapes was coded by a second trained rater, blind to all other measures. Intra-class correlation coefficients were acceptable for responsiveness 0.73, 95% CI [ $-0.39, 0.95$ ], and for respect for autonomy, 0.70, 95% CI [ $-0.32, 0.93$ ].

### 2.3.3. Child attachment

The Attachment Q-Sort 3.0 (AQS; Waters, 1995; Waters & Deane, 1985) consists of 90 individual statements that are descriptive of the behavior of infants and young children and was used to examine the level of attachment security in child-caregiver dyads after a 3-h observation during natural occurring situations in childcare. Items were slightly adapted to fit the childcare environment and the mixed-gender sample; 'mother' was replaced with 'caregiver', 'home' was replaced with 'care group', and 'she' or 'her' was replaced with 'he/she' or 'him/her' (e.g., 'child readily shares with caregiver or lets him/her hold things if he/she asks to' or 'child easily grows fond of adults who visit his care group and are friendly to him') (see also Elicker, Fortner-Wood, & Noppe, 1999). The attachment security scores were calculated using the criterion sort method (i.e., individual AQS scores were compared with a security criterion sort; see Waters, 1995) and range theoretically from  $-1.00$  to  $+1.00$ . The observer was trained in the use of the AQS observation and sorting procedure using videotaped observations at Purdue University, West Lafayette, IN. Attachment security scores of four observations from trainer and observer were compared, and inter-observer reliability (ICC) was 0.84 prior to data collection.

Although there is no natural cutoff for the Q-Sort, the developer of the instrument has suggested to use a cutoff of 0.33 for dichotomizing the security variable (Park & Waters, 1989). This score is based on the percentages observed in other samples of children who were securely and insecurely attached to parental caregivers (Ainsworth, Blehar, Waters, & Wall, 1978; van IJzendoorn & Sagi, 2008). In our sample, a cutoff of 0.33 resulted in 13 (76.47%) secure boys to the male caregiver, 14 (82.35%) secure girls to the male caregiver, 11 (64.71%) secure boys to the female caregiver, and 12 (70.59%) secure girls to the female caregiver. Security classification based on the percentages reported in Ahnert et al. yielded a cutoff of 0.45 in the present sample. This cutoff resulted in 12 (70.59%) secure boys to the male caregiver, 10 (58.82%) secure girls to the male caregiver, 9 (52.94%) secure boys to the female caregiver, and 7 (41.18%) secure girls to the female caregiver.

## 2.4. Data inspection and statistical approach

The majority ( $n = 31$ , 82%) of the caregivers never produced non-attuned comments during the interaction, and caregivers produced on average only 0.13% ( $SD = 0.32\%$ ) non-attuned mind-related comments during the interaction with the children. Because of the lack of variation in the data, non-attuned mind-related comments were not included in the analyses. AQS scores of 2 children (6%) were missing because during one visit the experimenter could only spend one hour in child care, and we did not succeed in organizing a new visit; during this visit, only the observation was conducted. A SPSS Missing Value Analysis showed that data were missing at random,  $\chi^2(17) = 17.54$ ,  $p = 0.419$ . Therefore, SPSS Expectation Maximization (EM) was used to estimate these missing values. All variables included in the analyses showed a normal distribution (values of both skewness/ $SE_{skew}$  and kurtosis/ $SE_{kurt}$  were between  $-1.96$  and  $+1.96$ ; Field, 2005).

Repeated measures ANOVAs were used to investigate the role of gender in the production of appropriate mind-related comments, sensitive responsiveness, respect for autonomy, and level of attachment security. Effect sizes for the GLM analyses are presented in terms of partial eta squared ( $\eta_p^2$ : 0.01 = small, 0.06 = medium, 0.14 = large). Associations between variables were explored with Pearson's two-tailed correlations.

Mediation analyses were performed to examine whether caregiver's respect for autonomy and sensitive responsiveness mediate the relation between caregivers' mind-mindedness and attachment security of girls and boys. Since a cross-sectional design was used, claims of mediation should be based on the cross-sectional or between person argument (Hayes, Preacher, & Myers, 2011): caregivers who differ in their level of mind-mindedness also differ in their level of respect for autonomy or sensitive responsiveness as a result of the difference in mind-mindedness, which in turn produce differences in children's secure attachment. The mediation analyses were conducted with the SPSS macro PROCESS (Hayes, 2013). We selected the simple mediation analysis (Model 4) using a bootstrapping procedure (5000 bootstrap samples). The model does not assume a parametric sampling distribution of the indirect effect, and increases power to detect indirect effects without increasing the type 1 error rate, especially in small samples (Hayes, 2013). The strength of the mediation effects and their statistical significance were estimated with point estimates and confidence intervals (CI 95%). A preliminary test indicated no multicollinearity ( $VIF = 1.24$  for respect for autonomy, 1.10 for sensitive responsiveness, and 1.15 for appropriate mind-related comments).

**Table 2**

Descriptive statistics for Caregivers' Percentages of Appropriate Mind-Related Comments (to the Boy, to the Girl, and to Both Children), Scores of Sensitive Responsiveness, Respect for Autonomy, and Boy's and Girls' Secure Attachment (AQS).

	Male caregiver		Female caregiver		Total	
	<i>M</i>	( <i>SD</i> )	<i>M</i>	( <i>SD</i> )	<i>M</i>	( <i>SD</i> )
AMRC to girl	4.39	(2.14)	4.48	(3.49)	4.43	(2.85)
AMRC to boy	5.84	(3.26)	5.37	(2.15)	5.61	(2.73)
AMRC to both children	1.86	(1.81)	1.40	(1.18)	1.63	(1.27)
Sensitive responsiveness	5.35	(0.70)	5.59	(0.62)	5.47	(0.66)
Respect for autonomy	4.76	(0.90)	4.65	(0.70)	4.71	(0.80)
AQS girls	0.48	(.19)	0.44	(.20)	0.46	(.20)
AQS boys	0.52	(.18)	0.45	(.14)	0.49	(.16)

Note. AMRC: appropriate mind-related comments; AQS: Attachment Q-Sort; \*\*  $p < 0.01$ ; \*  $p < 0.05$ ; †  $p < 0.10$ .

### 3. Results

#### 3.1. Preliminary analyses

Two-tailed Pearson's correlation analysis showed no significant relation between caregivers' work experience (in months) in childcare ( $M = 133.68$ ,  $SD = 78.03$ ) and mind-mindedness, sensitive responsiveness, respect for autonomy, and attachment variables (range  $r(32) = -0.07$  to  $0.30$ ). No significant difference was found either between male and female caregivers' experience in childcare ( $M_{male} = 144.58$ ,  $SD = 83.16$ ;  $M_{female} = 122.94$ ,  $SD = 73.46$ ),  $t(32) = 0.80$ ,  $p = 0.431$ . Therefore, caregivers' experience in childcare was not included in further analyses.

Caregivers produced an average of 11.65% ( $SD = 4.64$ ) appropriate mind-related comments. Descriptive statistics for the mind-mindedness variables (toward the girl, the boy, or both children), sensitive responsiveness and respect for autonomy, and attachment measures are presented in Table 2.

#### 3.2. Effect of gender

We found no significant correlations between male and female caregivers in their use of mind-related comments toward the boy,  $r(15) = 0.05$ ,  $p = 0.842$ , toward the girl,  $r(15) = -0.03$ ,  $p = 0.913$ , and toward both children,  $r(15) = -0.36$ ,  $p = 0.157$ . A repeated measures ANOVA was conducted on caregivers' percentage of appropriate mind-related comments with caregivers' gender (male, female) as between-subject variable, and target child (boy, girl, and both children) as within-subject variable. A main effect of target child was found,  $F(2, 64) = 26.75$ ,  $p < 0.001$ ,  $\eta_p^2 = 0.46$ . Sidaks post-hoc comparisons showed that, on average, caregivers directed significantly more mind-related comments toward either the boy or the girl ( $M = 5.61$ ,  $SE = 0.47$ ;  $M = 4.44$ ,  $SE = 0.50$  respectively) than toward both children ( $M = 1.63$ ,  $SE = 0.24$ ),  $p < 0.001$  for both effects. The main effect for caregiver's gender,  $F(1, 32) = 0.28$ ,  $p = 0.602$ ,  $\eta_p^2 = 0.01$ , and the interaction effect of caregiver gender and target child,  $F(2, 64) = 0.16$ ,  $p = 0.863$ ,  $\eta_p^2 = 0.01$ , were both not significant. Hence, male and female caregivers produced similar levels of mind-related comments in their interactions.

No significant correlations were found for male and female caregivers in sensitive responsiveness,  $r(15) = 0.21$ ,  $p = 0.415$ , and respect for autonomy,  $r(15) = 0.06$ ,  $p = 0.825$ , reflecting independence between male and female caregivers from the same group. A second repeated measures ANOVA was conducted on caregivers' gender (male, female) and level of sensitivity (sensitive responsiveness, respect for autonomy) as repeated measures. A significant effect was found for the level of sensitivity,  $F(1, 32) = 27.59$ ,  $p < 0.001$ ,  $\eta_p^2 = 0.46$ : both male and female caregivers had, on average, higher scores on sensitive responsiveness ( $M = 5.47$ ,  $SE = 0.11$ ) than on respect for autonomy ( $M = 4.71$ ,  $SE = 0.14$ ). The main effect for caregiver's gender and the interaction effect for gender and sensitivity did not reach statistical significance,  $F(1, 32) = 0.08$ ,  $p = 0.779$ ,  $\eta_p^2 = 0.00$  and  $F(1, 32) = 1.47$ ,  $p = 0.234$ ,  $\eta_p^2 = 0.04$ , respectively.

When looking at child-caregiver attachment security (i.e., AQS score), children's attachment to female caregivers was significantly correlated with their attachment to male caregivers,  $r(15) = 0.53$ ,  $p = 0.033$ . Both boys' and girls' AQS mean scores were above the cut-off of 0.33 (see Table 2), implicating secure attachment relationships for most children. A repeated measure ANOVA on children's attachment security with caregiver's gender (male, female) and child's gender as repeated measures, yielded no significant effect for caregiver's gender,  $F(1, 32) = 1.26$ ,  $p = 0.270$ ,  $\eta_p^2 = 0.04$ . No significant effect was found either for child's gender,  $F(1, 32) = 0.64$ ,  $p = 0.430$ ,  $\eta_p^2 = 0.02$ , or for the interaction between caregiver's and child's gender,  $F(1, 32) = 0.39$ ,  $p = 0.536$ ,  $\eta_p^2 = 0.01$ .

We additionally examined the difference between children's attachment security to male and female caregivers comparing the proportions of secure/not secure children with the binomial McNemar test. Using the cutoff of 0.33 for the AQS scores (Park & Waters, 1989), the number of children securely attached to the male caregiver (27 of 34, 79.41%) was not significantly different from the number of children securely attached to the female caregiver (23 of 34, 67.65%),  $p = 0.289$ . Also, when using the cutoff of 0.45 (Ahnert et al., 2006), the difference between children's attachment security to the male caregiver (22 of 34, 64.71%)

**Table 3**

Pearson Two-tailed Correlations for Caregivers' Appropriate Mind-Related Comments (to the Boy, to the Girl, and to Both Children), Sensitive Responsiveness, Respect for Autonomy, and Boy's and Girls' Secure Attachment (AQS). Zero-Order Correlations are Reported in the Upper Diagonal, and Partial Correlations Corrected for Caregiver's Gender are Reported in the Lower Diagonal.

	1.	2.	3.	4.	5.	6.	7.
1. AMRC to girl	–	0.20	0.00	–0.25	0.04	0.00	0.12
2. AMRC to boy	0.20	–	0.13	–0.25	0.15	0.02	–0.19
3. AMRC to both children	0.00	0.12	–	0.14	0.35*	0.40*	0.44*
4. Sensitive responsiveness	–0.26	–0.24	0.18	–	0.33 <sup>†</sup>	0.18	–0.10
5. Respect for autonomy	0.05	0.15	0.34 <sup>†</sup>	0.35*	–	0.42*	0.21
6. AQS girls	0.00	0.00	0.39*	0.21	0.42*	–	0.58**
7. AQS boys	0.13	–0.22	0.41*	–0.05	0.20	0.57**	–

Note. AMRC: appropriate mind-related comments; AQS: Attachment Q-Sort; \*\*  $p < .01$ ; \*  $p < .05$ ; <sup>†</sup>  $p < 0.10$ .

and to the female caregiver (16 of 34, 47.06%) did not reach significance,  $p = 0.109$ .

To summarize, no significant differences (or associations) were found for caregiver gender on the scores in mind-mindedness, sensitive responsiveness, and respect for autonomy. Even though children's attachment scores were on average higher for male than for female caregivers, children's attachment relationships with both male and female caregivers could be defined as equivalent.

### 3.3. Relation between mind-mindedness, sensitivity, and attachment security

Table 3 reports, in the upper diagonal, two-tailed correlations for caregivers' use of appropriate mind-related comments, sensitive responsiveness and respect for autonomy, and children's attachment security. The same correlations, corrected for caregivers' gender (partial correlations), are reported in the lower diagonal. Significant positive associations were found between caregivers' appropriate mind-related comments to both children and boys' and girls' secure attachment, and a significant positive association was found between appropriate mind-related comments toward both children and respect for autonomy. A moderate positive association was found between respect for autonomy and girls' secure attachment. No significant associations were found between appropriate mind-related comments toward the boy or the girl and the measures of sensitivity and secure attachment. In sum, caregivers' mind-related comments toward both children, but not toward boys or girls individually, were associated with caregivers' respect for autonomy and girls' and boys' secure attachment. These results did not change significantly after controlling for caregivers' gender.

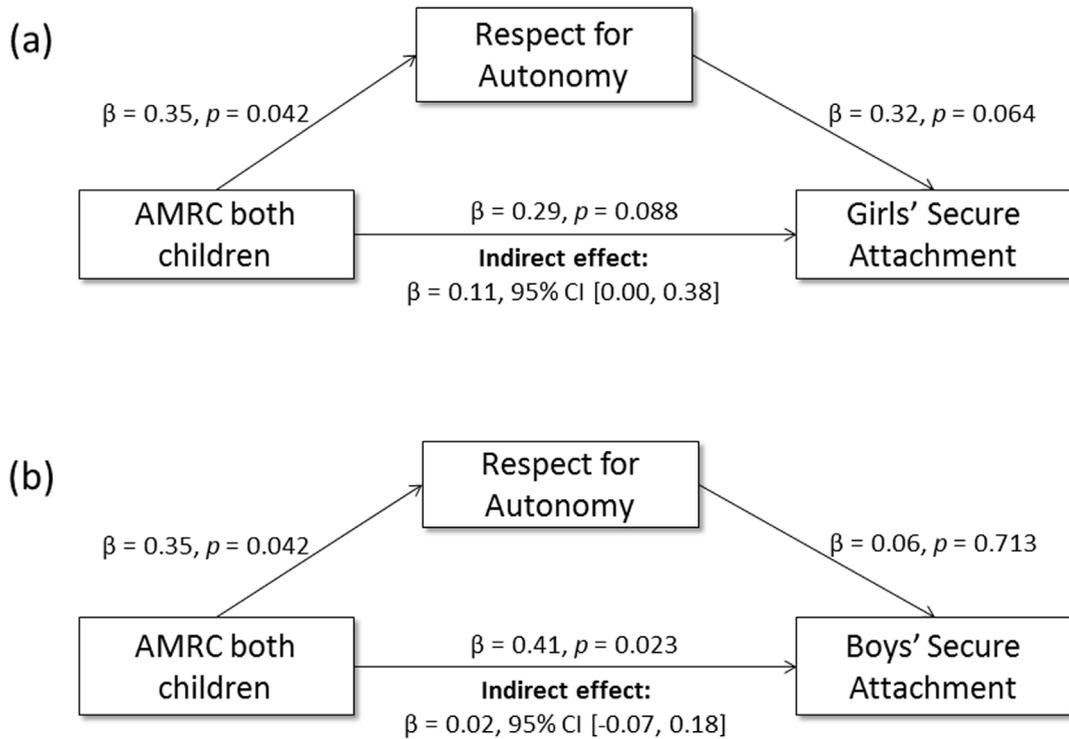
### 3.4. Mediating effect of caregivers' respect for autonomy and sensitive responsiveness

We examined to what extent caregivers' use of appropriate mind-related comments toward both children affects girl-caregiver and boy-caregiver attachment relationships, and whether this effect is mediated by caregivers' respect for autonomy and sensitive responsiveness. Four mediation analyses were conducted – for girls and for boys – with children's AQS score as dependent variable, caregivers' use of appropriate mind-related comments toward both children as predictors, and caregivers' respect for autonomy (in Model 1 and 2), and caregivers' sensitive responsiveness (in Model 3 and 4) as mediators.

The coefficients for the direct and indirect effects of Models 1 and 2 are reported in Fig. 1. The total effect model of the first regression model explaining the variance of girls' attachment security was significant,  $R^2 = 0.16$ ,  $F(1, 32) = 6.24$ ,  $p = 0.018$ . A significant association was found between appropriate mind-related comments toward both children and respect for autonomy,  $t(32) = 2.11$ ,  $p = 0.013$ , 95% CI [0.01, 0.69], and a close to significant relation was found between caregivers' respect for autonomy and girls' attachment,  $t(32) = 1.92$ ,  $p = 0.064$ , 95% CI [-0.02, 0.66]. While the direct effect between mind-mindedness and girls' attachment security was close to significance,  $t(32) = 1.76$ ,  $p = 0.088$ , 95% CI [-0.05, 0.63], the indirect effect of mind-mindedness toward both children through respect for autonomy was significant,  $\beta = 0.11$ ,  $SE = 0.10$ , 95% CI [0.01, 0.38], showing that caregivers' use of appropriate mind-related comments influenced girls' attachment security through the effects of caregivers' respect for autonomy.

Also the total model of the second regression model explaining the variance of boys' attachment security was significant,  $R^2 = 0.19$ ,  $F(1, 32) = 7.48$ ,  $p = 0.010$ . In this model no significant relation was found between caregivers' respect for autonomy and boys' attachment,  $t(32) = 0.37$ ,  $p = 0.713$ , 95% CI [-0.29, 0.41]. In the full model, the direct effect of caregivers' use of appropriate mind-related comments on boys' attachment security was significant,  $t(31) = 2.40$ ,  $p = 0.023$ , 95% CI [0.06, 0.76], and no significant indirect effect was found for respect for autonomy,  $\beta = 0.02$ ,  $SE = 0.06$ , 95% CI [-0.07, 0.18]. In conclusion, caregivers' use of mind-related comments had a direct effect on boys' attachment, independent of their respect for autonomy.

Model 3 and Model 4, in which sensitive responsiveness was included as a mediator of the relation between mind-mindedness toward both children and girl-caregivers and boy-caregivers attachment relationships, were both not significant,  $R^2 = 0.02$ ,  $F(1, 32) = 0.75$ ,  $p = 0.391$ . To conclude, caregivers' respect for autonomy, but not sensitive responsiveness, partially mediated the relation between caregivers' use of mind-related comments and girl's attachment security to the caregivers. Hence, no mediation effect was found for boys.



Note: Values on each path are standardized values (path coefficients).

Fig. 1. Caregiver's Respect for Autonomy as a mediator of the relation between Appropriate Mind-Related comments (AMRC) toward both Children and Girls' Secure attachment (a) and Boys' Secure Attachment (b).

#### 4. Discussion

In the present study, we investigated to what extent male and female professional caregivers' mind-mindedness is related to their sensitive responsiveness, respect for autonomy, and to boy-caregiver and girl-caregiver attachment security. Results revealed that professional caregivers' tendency to take the intentional stance toward the children was associated with their ability to respect the autonomy of the child, and with a more secure attachment relationship. Further, caregiver's gender had no impact on this relationship. Some relevant differences were found when children's gender was considered. While boys were more securely attached to caregivers with a higher level of mind-mindedness, girls were more securely attached to caregivers who showed high mind-mindedness and the related respect for autonomy. These results suggest that mind-mindedness can be a key predictive factor for a secure child-caregiver relationship in childcare.

##### 4.1. Mind-mindedness of professional caregivers

In this study, about 12% of caregivers' utterances were appropriate mind-related comments. This percentage is similar to the reported 13% of Meins et al. (2001), but it is slightly lower than the 19% reported by Degotardi and Sweller (2012) with infants in the childcare. The different observational settings and coding systems, used in these studies, may account for the variation in the caregivers' production of mind-related comments. First, in the study of Degotardi and Sweller, the caregivers' use of mind-minded comments was observed during a free play session, while in our study a more structured setting was used. The implicit goal of the task was to let caregivers and children focus their attention on the collaboration to reach a specific goal. This setting stimulates the caregivers' scaffolding but might restrict a more spontaneous use of mentalistic language (Beeghly, Bretherton, & Mervis, 1986). In fact, in the present study, most of the caregivers' mind-related comments referred to cognitive states (e.g., "you know this animal", "do you think this is the right position?"), while only a low number of mind-minded comments related to emotions and desires was produced. Second, in the study of Degotardi and Sweller no distinction was made between appropriate and non-attuned mind-related comments, accounting for a higher prevalence of mind-related comments (appropriate and non-attuned).

In the present study, mind-mindedness was assessed observing the interaction between a caregiver and 36-month-old children. According to Meins and Fernyhough (2010), the observation of mind-mindedness toward children older than 12 months might be less appropriate since the caregiver can more easily understand what the mental states of the child are because of their advanced motor

and expressive abilities. In our experience, the coding manual could be easily used with this age group and the average percentage of mind-mindedness was not significantly different from the percentages in previous studies with infants younger than 12 months (e.g., Meins et al., 2012), or to other studies with infants of 18 months (Demers, Bernier, Tarabulsky, & Provost, 2010), and 19 months (McMahon, Camberis, Berry, & Gibson, 2016). McMahon et al. also reported a positive significant correlation between maternal use of mind-mindedness at 7 months and 19 months (0.31), showing stability in parental use of mind-related comments from a prelinguistic to a linguistic developmental stage. Although caregivers' production of non-attuned mind-related comments in our study was around 1.5% (similar to the percentage of 2% of Meins et al. (2003)), we observed a high variation in caregivers' proclivity to refer in an appropriate way to the children's internal states. We, therefore, believe that observations of caregivers' mind-related comments, also when children are older than 12 months, can offer useful and valid information on the level of the caregiver's attunement to the children's mental activities.

A last aspect that should be taken into consideration is that caregivers' mind-related comments were expressed both in terms of utterance and questions (Meins & Fernyhough, 2010). Notably, while a mind-related comment is a clear and direct attempt to read the inner states of the child, the intention behind a mind-related question might be opaque. It could be a polite or a cautious attempt to read the stance of the child, a rhetoric comment, or just an interest in the child's mind without understanding. Future research should further explore possible quantitative and qualitative differences between mind-related comments and questions.

#### 4.2. Relations among mind-mindedness, sensitivity, and child-caregiver secure attachment

A remarkable finding of the present study was that caregivers' mind-mindedness toward both children simultaneously (non-dyadic), but not toward one of the children, was found to be positively associated with caregivers' respect for autonomy. Moreover, in line with the findings of Ahnert et al. (2006) about caregivers' sensitivity, our results show that non-dyadic mind-minded attitudes are related to children's secure attachment. Possibly, the use of non-dyadic mind-minded comments, rather than dyadic, may be the most sensitive measure of professionals caregivers' mind-mindedness since they are generally involved in group interactions, including two or more children (Ahnert et al., 2006). This should be true in particular for older infants (> 2 years) and with toddlers who are more often involved in group interactions. In these settings, mind-mindedness toward more than one child fits in with caregivers' behaviors that are likely to encourage children's involvement, sharing, feeling of affiliation, and creating opportunity to share the same thoughts, intentions, desires, and emotions.

In addition, it should be noted that the measures of caregiver sensitive responsiveness, respect for autonomy and of secure attachment used in the present study may better reflect the relationship quality in a non-dyadic group setting and can, therefore, better be related to a measure of mind-mindedness directed toward a small group instead of dyadic mind-mindedness. In the same direction, dyadic mind-related comments were found to be negatively associated with caregivers' general level of sensitive responsiveness and were not associated with their respect for autonomy. In conclusion, professional caregivers' mind-mindedness should be regarded as the capacity to "tune" appropriately to the children's mental states of the group climate.

A positive association was found between caregivers' mind-mindedness and their respect for autonomy. Respect for autonomy, as defined by Helmerhorst et al. (2014), requires the caregiver to understand and to respect children's perspective and intentions, and to enhance their autonomy. This skill becomes increasingly important after the second year of life with the need to learn new skills and to explore the world (Degotardi & Torr, 2007; Erikson, 1952; Whipple et al., 2010). In this stage, caregivers' respect and stimulation of children's autonomy can improve children's self-confidence and self-esteem, rendering the relation with the caregiver more positive (Whipple et al., 2011). Caregivers' mind-mindedness seems to be a logical prerequisite for caregivers' respect for autonomy during toddlerhood because it requires the caregiver to understand that the child is an individual person with independent emotions, desires, thoughts, and intentions.

Both caregivers' mind-mindedness and children's attachment security were found to be unrelated to sensitive responsiveness, coded as the caregiver's recognition of children's individual emotional and physical needs, and the ability to respond appropriately to children's cues and signals. The lack of relation between sensitivity and mind-mindedness confirms partially the results of Degotardi and Sweller (2012), who found a negative relation between non-belief talk and sensitivity. The authors explained these results suggesting that some mind-related comments, although they have important implications for young children's social developing, are not always expressed in a sensitive manner. It is also possible that children's age had an impact on the association between mind-mindedness and sensitivity. Studies where a clear positive association was found between mind-mindedness and sensitive responsiveness, were generally conducted during infancy (Laranjo et al., 2008; Meins et al., 2002). While the understanding of physical and emotional needs, in the absence of language, plays a crucial role in the child-caregiver relationship in early infancy, caregivers' respect for autonomy may have a more important role in the quality of their relationship with toddlers. The lack of a relationship between sensitivity and children's secure attachment was less expected (Goossens & Van IJzendoorn, 1990; Howes & Smith, 1995). Possibly, the observed situation did not trigger caregivers' sensitive responsiveness since the nature of the game did not activate children to seek proximity and reassurance or to show specific individual emotional or physical needs. Therefore, a high level and a restriction of range (all scores between 4 and 6) were observed for sensitive responsiveness, making this measure less sensitive to individual differences.

Our results advance the understanding of mind-mindedness in early childhood education settings, and suggest the possible relevance of training programs in order to improve caregivers' mind-mindedness and, therefore, the quality of child-caregiver relationships. Enhancing caregivers' ability to read children's intentions, emotions, and thoughts can render them more able to react appropriately to children's cues and make the relationship with children stronger and closer. This can improve children's feeling to be understood, increasing their trust in caregivers, self-regulations, and socio-emotional understanding. Video Enhanced Reflective

Practice (VERP) appeared a promising training program to enhance teachers' mind-mindedness in nurturing groups (children with social, emotional and behavioral difficulties associated with attachment problems) for children aged four to seven in the UK in the study of Quinn (2015). In this exploratory study, Quinn reported a significant increase of teachers' use of appropriate mind-related comments after a brief intervention; in particular, their use of emotions-focused mind-related comments increased. These findings suggest that similar programs in regular childcare may enhance children's early secure attachment to non-parental significant figures.

#### 4.3. The effect of gender

Caregivers' gender did not affect their level of mind-mindedness and sensitivity, as well as child-caregiver attachment security. These results are in line with previous studies on parental mind-mindedness (Lundy, 2003, 2013), and professional caregivers' quality of interactions with children in childcare (Brandes et al., 2015). Moreover, caregivers' gender did not affect the relation between mind-mindedness and children's secure attachment. In sum, our findings provide evidence that male and female caregivers do not differ significantly in their interactions with children, in mentalizing toward the child, in being sensitive and responsive, and in respecting the child's autonomy. These results suggest an equally important role of male and female caregivers in early childhood education and care, and support the relevance of stimulating male participation in early childcare (Peeters et al., 2015).

We found a specific effect of child gender. Caregivers' respect for autonomy mediated the relation between mind-mindedness and attachment security, but only for girls. For boys, caregivers' appropriate use of mind-mindedness was found to have a unique and direct relation to children's attachment security. A possible explanation is that mental stimulation is a key factor in building a secure relationship with boys. In other words, caregivers' ability to understand boys' inner states and to make contact at a mental level may be an essential component in the relationship with boys. Different results were found for girls. Although caregivers' proclivity to use appropriate mind-related comments was found to be positively related to girls' secure attachment, this effect was smaller for girls than for boys, and it was mediated by caregivers' respect for autonomy. Hence, respect for autonomy seems to be a vehicle by which caregivers' mind-mindedness is related to girls' secure attachment. This line of study may also explain why boys' attachment security in childcare is often lower, compared to girls (Ahnert et al., 2006; Howes & Smith, 1995). It might be argued that boys, more than girls, need caregivers to recognize their intentional stance in order to build a secure attachment relationship. This result should, however, be interpreted with caution because of the small sample and because we found a partial mediation. Future research should replicate these results in order to confirm possible different attachment mechanisms for boys and girls, related to mind-mindedness and respect for autonomy.

#### 4.4. Limitations and future research

A number of limitations of this study should be acknowledged. First, in order to compare male and female caregivers a limited number of participants were included in the study, which limited the statistical power of the analyses. Second, only an observational measure of mind-mindedness was used to evaluate mind-mindedness. The inclusion of off-line measures such as an interview about the children or a video stimulus to prompt the caregiver to explain children's behavior would provide more insight into caregivers' mentalization abilities. Third, caregivers' use of mind-minded comments should be further investigated in childcare during free-play situations or in routine situations like eating or tidying up. It may be expected that during non-structured interactional situations caregivers produce more non-attuned comments because of their own agenda. Similarly, natural contexts or different tasks might stimulate caregivers' mind-related comments related to emotions and desire. Likewise, these situations could be more appropriate contexts to investigate a possible relation between caregivers' mind-mindedness and their sensitive responsiveness. These observations should also include larger groups of children and explore mind-mindedness toward infants. Last, children in the present study are not representative of the general childcare population since only an estimated 3% of the population of children attends a Dutch daycare center with both male and female caregivers and, hence, we cannot generalize our findings to regular childcare with female staff.

## 5. Conclusion

Children's socio-emotional development occurs in social contexts, and depends on social interactions (Carpendale & Lewis, 2004). Both parents and other caregiving figures are involved in children's lives and take part in major developmental socio-emotional transactions. Mind-mindedness does not seem to be an exclusive parental ability to enhance secure attachment in children but seems also an essential requisite for professional caregivers as their (level of) mind-mindedness appears to be associated with their level of sensitivity, and with children's attachment security in the context of early childhood education and care.

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