Mentalization and attachment in educational relationships at primary school

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Abstract

Mentalization is a key social ability that develops from infancy to adulthood, starting from early familiar attachment relationships. Children experience several contexts, in particular, educational ones such as school, where they build new attachment relationships with teachers. Although the amount of research on the links between mentalization and attachment has been increasing in recent years, there is still little evidence on the teacher-child relationship from a mentalization perspective. Moreover, only few studies focus on middle childhood, a crucial age for building positive school relationships. This study aims to investigate the possible effects of some measures of teachers' mentalization, namely,

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mind-mindedness and mentalised affectivity, and of pupils' representation of the educational attachment relationship on the mentalization abilities of children aged 8 to 10. The results show that a teacher's tendency to describe a pupil through physical comments and not mental comments, and her/his ability to use autobiographical memory to interpret the present emotional experience, impact children's mentalization abilities. This highlights the important role of the teacher in the construction of a class climate that supports pupils' mentalization.

Keywords: mentalization, attachment, teacher-child relationship, middle childhood, mentalised affectivity, mind-mindedness

Introduction

Mentalization is defined as 'the process by which we realise that having a mind mediates our experience of the world' (Fonagy et al., 2002, p. 3), and it constitutes the mental activity used to interpret human behaviour in terms of mental states. Mentalization refers to both the contents of the mind (emotions, desires, thoughts, beliefs, etc.) and the activity of thinking about one's own and others' minds. The cognitive and affective levels are not separate, because when people mentalise, they 'think feelings and feel thoughts' (Allen et al., 2008). In fact, to be aware of another's mind means to reflect on its contents and its functioning from a cognitive point of view, but also to be empathic, to consider the emotional states of the other, and to make them the object of one's own reflections.

The development of mentalization starts from infancy and has its foundations in the first attachment relationships. A parent's sensitivity in responding to the physical and emotional needs of their infant (Fonagy & Campbell, 2017), the tendency to consider the child's mental states (Meins, 2013), and the capacity to construct intersubjective emotional exchanges (Trevarthen & Aitken, 2001), typical of secure attachment, show the child that other people and herself/himself have a mind with emotional and cognitive contents that guide behaviour. Then, the acquisition of language improves mentalization abilities, enriching the parent-child relationships with explicit references to mental contents and actions, both of the emotional and the cognitive type (Antonietti et al., 2014). Conversations about mental states in a family are considered a

fundamental way to understand minds, and they are more likely to take place with secure attachment bonds rather than in insecure ones (Fonagy et al., 2016).

A useful construct that operationalises a parent's sensitivity is mind-mindedness, defined as the propensity of the mother to consider and treat infants and children as individuals endowed with a mind (Meins & Russell, 1997). Mind-mindedness is evaluated during mother-infant interactions (Giovanelli et al., 2020) by observing the mother's behaviour and language, or the comments the mother uses to describe her infant/child (Meins et al., 1998). These types of assessment reflect the complexity of the concept of maternal sensitivity, which comprises two abilities (Meins, 2013). The first one refers to the tendency to describe the child as able to recognise her/his internal world: it characterises the attachment security and it predicts the child's mentalization abilities throughout the preschool years. The second one refers to the attunement between verbal comments and behaviours during mother-child interactions, and it is not related to mentalization development in children.

Another construct involved in mentalization is mentalized affectivity, which develops in adulthood and takes mentalization into account in the emotional regulatory process (Greenberg et al., 2017). Jurist (2018) assumes that emotions are both regulated through behavioural and cognitive strategies, and then revaluated in their meaning. Individuals mentalize about their emotions by reflecting on their past emotional experiences and understanding how these experiences influence the present situation, to better understand themselves and to anticipate their own emotional reaction in the future. Mentalised affectivity is evaluated using the Mentalized Affectivity Scale (MAS), consisting of three factors: identifying emotions, which involves the ability to make sense of emotions and to attribute a meaning to them based on personal experiences; processing emotions, which refers to emotion-regulation strategies; and expressing emotions, the tendency to communicate emotions from the inside to the outside. The Italian validation of the MAS (Rinaldi et al., 2021) evidences the complexity of this construct, due to the emergence of two new factor: Curiosity about Emotions, referring to the interest that a subject demonstrate about her/his emotions, and Autobiographical Memory, referring to one's tendency to use memories of childhood emotional experiences to attribute meanings to current emotions. Therefore, mentalized affectivity can be considered the affective facet of mentalization, and its levels could represent people's approach towards their minds, a sort of 'starting point' from which people understand their minds' functioning from an affective point of view.

Mentalization and attachment in multiple educational contexts

Mentalization and attachment play an important role not only inside the family, but also in other contexts in which adults and children build affective relationships-first of all, the school. Teachers, like parents, although in a professional role, take care of a child's needs, participate continuously in her/his experiences, and they are emotionally involved with her/him; for all these reasons, they are conceived as extrafamilial or professional caregivers (Howes & Spieker, 2008).

Although the number of studies on the development of mentalization is still limited, their results highlight the role of school relationships in supporting children's mentalization abilities. For example, Bak and colleagues (2015) suggested that the creation of an adult mentalizing community promotes children's mentalization, and further studies have supported this hypothesis for primary schools (Bracaglia et al., 2016; Valle et al., 2018; Valle et al., 2016) and communities for adolescents (Twemlow et al., 2005).

Further, mind-mindedness has recently been studied in relational contexts different from the family, such as peer relationships (Meins et al., 2006; Pequet & Warnell, 2020), early child-care centres (Colonnesi et al., 2017; Ornaghi et al., 2020), and primary schools (Florio, Cornaggia, Caso, & Castelli, *in prep.*). These studies evidence the important role of mind-mindedness in the assessment of an adult's sensitivity and allow the possibility to use this construct to analyse mentalization and affective relationships in educational and school contexts, with adults different from the parental caregivers.

In the theory of the developmental systems, Pianta (1999) highlights the important role of teachers as attachment figures. The author shows that the teacher-child relationship has a direct impact on a child's emotional development, behaviours, school well-being, and academic skills (Pianta et al., 2003; Pianta, 2019), and has a regulatory function of a child's social development (Pianta et al., 1995). Although much research has focused on the quality of children's relationships with educators and teachers in the early years of life, Ansari and Pianta (2018) have recently demonstrated that children benefit until adolescence from the positive relationship with their teacher that has been built since infancy, provided that they experience high-quality care during primary school. In this context, Pianta and Stuhlman (2004) indicate the teacher's perception of conflict and of the closeness in the relationship with the child as the core aspects of this relationship, which in turn impact children's prosocial behaviour and their academic adjustment. In line with these results, Valle and colleagues (2019) evidenced the links among mentalization, attach-

ment representation, and emotion regulation abilities in primary school children, suggesting that the characteristics of the teacher-child relationship contribute to creating a relational classroom climate where children can mentalize in a secure environment (Fonagy et al., 2016).

Aims and Hypotheses

This study aims to explore the possible impact of the teacher's mind-mindedness, mentalized affectivity and the pupil's representation of the educational attachment relationship on the mentalization abilities of children aged 8 to 10.

We hypothesise that a teacher's tendency to describe a pupil as endowed with mental states, her/his level of mentalized affectivity, and the pupils' secure attachment representation may contribute to improving the child's mentalization abilities.

In this research, we decided to analyze the link between teacher's mentalization and pupils' representation of attachment in middle childhood, an age named by Mah and Ford-Jones (2012) "the forgotten years," because of the limited attention devoted to it so far. At this age, children have Internal Working Models for the teachers already stable, because their experience in the school context. Then, we think that to study this age offers the opportunity to better understand the role of mentalization and attachment, from a representational point of view, in one of the main extra-familiar relationship.

Materials and methods

Participants

A total of 47 children (in their 3rd to 5th year of primary school, corresponding to the same grades in the British and American school systems) and their 16 female teachers were recruited in the area of Bergamo, northern Italy. The children's mean age was 9 years and 4 months, or 113.94 months (S.D.=7.77 months; Min=99 months; Max=126 months; Females=21). The teachers' mean age was 50.50 years (S.D.=8.53 years; Min=29 years; Max=63 years). The inclusion criterium was that teacher knew the pupils since at least two-year: all teachers that decided to participate in this research were in the respective classrooms since first grade.

Procedures

The research project was presented to the school's Director and, upon her/his approval, to teachers and parents.

Informed written consent for participation in the research was collected from teachers and parents. All participants were treated in accordance with the ethical guidelines for research provided by the Declaration of Helsinki (World Medical Association, 2014), the American Psychological Association (APA, 2020) and the Italian Psychological Association (AIP, 2013). The study was approved by the local ethical committee of the Department of Psychology of the Catholic University of the Sacred Heart of Milan, based on APA ethical standards.

Teachers filled in an online survey launched on the Qualtrics platform, lasting approximately 30 minutes, comprising items measuring the mind-mindedness of the participating students and the mentalized affectivity [MAS]

Children were tested at school, in one collective session for the mentalistic control measure (the Reading the Mind in the Eyes test [RME] and the Yoni task) and the linguistic control measure (the Primary Mental Ability [PMA]) tasks (approx. 30 minutes) and in one individual section for the attachment test, the Separation Anxiety test (SAT; approx. 10 minutes) and eventually for the inibitory control the Fruit Stroop (Stroop; approx. 20 minutes).

Tasks for the teachers

Mind-mindedness

The researchers randomly extracted two to four pupils' names out of each teacher's class list: the teacher performed the mind-mindedness task for these pupils only.

Teachers had to freely describe each selected pupil. Each description was analysed using the coding system devised by Meins and Fernyhough (2015), which categorises all the comments in the following categories: physical (MM_P, describing the child's physical characteristics); behavioural (MM_B, indicating the child's ways of behaving); mental (MM_M, describing the child's mental and personality characteristics); self-referential (MM_S, describing the child's personal experience in relation to that of the teacher); relational (MM_R, describing the child in her/his interactions with other subjects); general (MM_G, attributes that do not fall into the previous categories). A score was obtained by calculating the number of attributes in each category. A total score (MM_TOT) was also computed. To control for teachers' verbosity, we calculated the percentage of comments for each category out of the total number of comments produced. Two independent coders coded the min-

d-mindedness task, and the inter-rater reliability was calculated (K MM_P=1; K MM_B=.68; K MM_M=.74; K MM_S=1; K MM_R=1; K MM_G=.64).

MAS – Italian version

The Italian version of the MAS (Greenberg et al., 2017), devised by Rinaldi et al. (2021), is composed of 35 items; for each of them, the subject has to indicate her/his degree of agreement on a 7-point Likert scale. The Italian version of the MAS consists of 5 factors: Identifying Emotions (MAS_IE), a self-evaluation of one's ability to be aware of one's own emotions (score 10-70); Expressing Emotions (MAS_EE), assessing the tendency to express and communicate emotions with others (score 8-56); Curiosity about Emotions (MAS_CE), assessing people's tendency and interest in recognizing and label their emotions (score 7-49); Processing Emotions (MAS_PE), evaluating people's capacity to cognitively control their emotions using cognition (score 7-49); Autobiographical Memory (MAS_AM), assessing people's tendency to remember personal childhood emotional experiences (score 3-21).

Tasks for the children

SAT - School Version

The SAT (Fonagy, Redfern, & Charman, 1997) is an assessment of the internal working models of child-parents relationships. The Italian SAT-School Version (Liverta Sempio et al., 2001) concerns the representation of the pupil-teacher attachment relationship. It is a semi-projective test composed of six items, each of which presents a story describing a separation between a teacher and a child. Each item requires participants to answer three questions. The first is about the protagonist's emotion, the second is about the justification of the origin of this emotion, and the third is the anticipation of the protagonist's coping strategies. The coder places each item in different categories (from 1 to 21) and computes scores on three scales: Attachment, Self-Reliance, and Avoidance. The final total score is a combination of these three scores (range 6-36); higher scores correspond to a more secure internal working model. Two independent coders encoded the SAT-SV, and inter-rater reliability was determined to be 20% (Cronbach's alpha=.93).

RME test

The RMET (Baron- Cohen et al., 1997), in its Italian version for children (Castelli, 2010), assesses the affective theory of mind (ToM): the ability to attribute mental states to individuals by observing only their

eyes. The RMET is composed of 28 pictures of the eye region from various human faces; subjects have to choose what the depicted character is feeling or thinking from among four mental states written underneath each picture. The scoring system assigns 1 point to each correct answer and 0 points to each incorrect answer, for a total score ranging from 0 to 28 (cut-off = 9/28).

Yoni task

The Yoni task (Rossetto et al., 2018; Shamay-Tsoory & Aharon-Peretz, 2007) assesses the cognitive and affective theory of mind (TOM). It consists of 98 trials, in each of which the image of Yoni's face is shown in the centre of the screen, surrounded by four images at the four corners of the screen. The images refer to various semantic categories of faces; the participants have to indicate which one Yoni's face is referring to, based on a sentence that appears at the top of the screen and some available cues, such as Yoni's eye gaze or facial expression, or the eye gaze/facial expression of the other faces around him. Each trial differs by the level and the type of reasoning that the subject has to apply to obtain the correct answer: first- or second-order ToM levels, affective ToM, cognitive ToM, or a physical (control) condition. As regards the first-order ToM, for the cognitive condition, participants were asked to indicate which prompt the main character named Yoni was thinking about, out of a group of four choices. For the affective condition, subjects had to indicate which image Yoni loves/does not love, again out of four choices. Regarding the second-order ToM, participants had to understand the interaction between Yoni's mental state and those of other characters in the four choices around him (e.g. 'Yoni is thinking of the chair that X wants' or 'Yoni loves the animal that X loves'). Only one of the four alternatives is correct.

The participants' performance is rated in terms of accuracy (1 point for each correct answer). The total score (YONI_TOT) ranged from 0 to 98; as regards the subscales, the total affective items score ranged from 0 to 48 (YONI_A), and the total cognitive items score ranged from 0 to 36 (YONI_C). No participants exhibited an accuracy rate lower than 50% on the physical (control) condition, so no participants were excluded.

Control measures

PMA

Verbal ability was assessed through the vocabulary subtest of the PMA test (Thurstone & Thurstone, 1962; Italian version: Rubini & Rossi, 1982). Children had to choose the correct synonym among four

words. The task has 30 items, and the score is calculated by assigning one point for each correct answer; the total score is the number of correct answers (range: 0-30).

Fruit Stroop task

Inhibitory control was tested by the Fruit Stroop task (Archibald & Kerns, 1999). This task comprises four pages of stimuli, each constituting three fruits and one vegetable in rows consisting of five items arranged in a pseudo-random order. The familiarisation phase is three pages long: the researcher presents a stimuli page with fruit and vegetables displayed in incongruent colours (e.g. a red salad) and the child is asked to name the real colours of the fruit and vegetables (e.g. green for a salad). Children were instructed to do this as quickly as possible, with a 45-second time limit. Scores is calculated by counting the number of items completed within the time limit for each stimuli page.

Results

The descriptive statistics of the measures collected on teachers and children are reported in Tables 1-3. The variables related to language, to the Yoni test (mentalization), and to some mind-mindedness scales do not have a normal distribution, so non-parametric analyses were conducted.

Tab. 1 - *Descriptive of children's variables*

		Min	Max	Mean	S.D.
Attachment	SAT	18	35	28.66	3.87
Mentalization	YONI_C	10	35	28.51	5.55
	YONI_A	16	47	39.60	6.52
	YONI_TOT	26	80	68.11	11.78
	RMET	9	25	17.55	3.81
Inhibition	Stroop	0	54	34.23	9.69
Language	PMA	8	30	27.07	3.61

Tab. 2 - *Descriptive of the teachers' mentalized affectivity*

	Min	Max	Mean	S.D.
MAS_ IE	40	64	55.75	6.07
MAS_EE	12	43	27.31	7.84
MAS_CE	29	48	39.56	5.75
MAS_PE	24	43	33.56	5.70
MAS_ AM	9	19	15.75	3.11

Tab. 3 - *Descriptive of teachers' mind-mindedness*

	Min	Max	Mean	S.D.
MM_M	0	9	2.60	1.57
MM_B	1	14	6.17	3.33
MM_P	0	4	0.38	0.85
MM_G	0	4	1	1.14
MM_S	0	2	0.15	0.47
MM_R	0	2	0.04	0.29

We computed non-parametric correlations to determine the possible links between (1) mentalization, mind-mindedness and attachment and (2) inhibition, language, and age. Only significant correlations were reported in Table 4.

Tab. 4 - *Correlation among language and (1) attachment and (2) mentalization*

		Attachment	Mentalization			
		SAT	YONI_A	YONI_C	YONI_TOT	RMET
Language	PMA	rho=.37 p<.05	rho=.48; p=.001	rho=.31; p<.05	rho=.42; p<.005	rho=.47; p=.001

Moreover, age is negatively correlated with the mind-mindedness physical scale (rho=-.30; p<.05).

We obtained the partial correlations between (1) attachment, mind-mindedness, and mentalized affectivity and (2) children mentalization, controlling for language and age. The significant partial correlations are shown in Table 5.

Tab. 5 - *Partial correlations between (1) attachment, mind-mindedness and mentalized affectivity and (2) mentalization, controlled for language and age*

		Mentalization		
		YONI_A	YONI_C	YONI_TOT
Mind-Mindedness	MM_P	r=-.48; p=.001	r=-.57; p=.00	r=-.52; p=.00
Mentalized affectivity	MAS_AM	r=.37; p<.05	r=.32; p=.05	r=.36; p<.05

Based on the results of the correlation analysis above, we performed linear regression with the mind-mindedness physical scale (MM_P), autobiographical memory of the mentalised affectivity, language, and age as independent variables (MAS5) and mentalization as the dependent variable. Of all the models, only the one for the mind-mindedness physical scale (Table 6) is significant.

Tab. 6 - *Linear regression with mind-mindedness physical scale as IV and mentalization as DV*

		ß; F (p)	R2	R2Adj
Mentalization	YONI_A	-.444; 4.86 (<.005)	.316	.251
	YONI_C	-.489; 5.48 (=.001)	.343	.281
	YONI_TOT	-.934; 5.43 (=.001)	.341	.278

In light of the negative correlation between children's age and the mind-mindedness physical scale, and of the significant linear regression models involving the latter variable, we decided to explore the differences in the performances of younger vs. older children. Therefore, we divided the total sample into two groups based on mean age: Group 1 was composed of children aged 8 (N=25; M age in months=107.88,

S.D.=5.04; Min=99; Max=114, Females=12), and Group 2 consisted of children aged 10 (N=22; M age in months=120.82, S.D.=3.58; Min=115; Max=126, Females=9).

The Mann-Whitney test applied to the inhibition, language, mentalization, and mind-mindedness variables evidenced significant differences in (1) the Yoni_Cognitive mentalization scale (Z=-2.10; p<.05), with the performance of Group 1 (mean rank=20.10) being lower than that of Group 2 (mean rank= 28.43); (2) the Yoni_Affective mentalization scale (Z=-2.10; p<.05), with the performance of Group 1 (mean rank=20.08) being lower than that of Group 2 (mean rank= 28.45); (3) the Yoni_total mentalization scale (Z=-2.30; p<.05), with the performance of Group 1 (mean rank=19.70) being lower than that of Group 2 (mean rank= 28.89); and (4) the mind-mindedness physical scale (Z=-1.98; p<.05), with the performance of the teachers in Group 1 (mean rank=26.66) being higher than that of the teachers in Group 2 (mean rank= 20.98).

To determine the possible link between (1) inhibition and language and (2) children's performances, for each group, we computed the non-parametric correlations between (1) inhibition and language tasks and (2) attachment and mentalization tasks. No significant correlations are found for Group 1. The significant correlations in Group 2 are shown in Table 7.

Tab. 7 - *Correlations among (1) language task and (2) attachment and mentalization tasks for the Group 2*

		Attachment	Mentalization			
		SAT	YONI_C	YONI_A	YONI_TOT	RMET
Language	PMA	rho=.47 p<.05	rho=.53 p<.05	rho=.50 p<.05	rho=.60 p<.005	rho=.50 p<.05

Then, controlling for language in the case of the Group 2, we computed the correlations between (1) attachment, mentalized affectivity, and mind-mindedness and (2) mentalization, to explore the links between these variables in each group. The significant results found are shown in Table 8.

Tab. 8 - *Correlations between (1) mentalization and (2) attachment, mentalized affectivity and mind-mindedness (*=significant correlations)*

			Mind-min-dedness	Mentalized affectivity	
			MM_P	MAS_EE	MAS_CE
Mentaliza-tion	Group 1	YONI_C	*rho=-.54, p=.005	rho=-.19, p=.37	*rho=-.45, p<.05
		YONI_A	*rho=-.58, p<.005	rho=-.20, p=.34	rho=-.28, p=.17
		YONI_TOT	*rho=-.56, p<.005	rho=-.21, p=.32	rho=-.37, p=.07
		RMET	rho=.06, p=.68	*rho=-.48, p<.05	rho=.22, p=.28
	Group 2	YONI_C	rho=.28, p=.24	rho=.21, p=.36	*rho=.47, p<.05
		YONI_A	rho=.42, p=.06	rho=.40, p=.07	*rho=.63, p<.005
		YONI_TOT	rho=.41, p=.07	rho=.36, p=.11	*rho=.64, p<.05
		RMET	rho=.01, p=.96	rho=-.05, p=.81	rho=.31, p=.17

Based on these results, we conducted linear regressions for each group. For the Group 1, we used (1) mind-mindedness and mentalized affectivity as independent variables and (2) mentalization tasks as dependent variables. All the models for the mind-mindedness physical scale were significant (Table 9)

Tab. 9 - *Linear regressions with mind-mindedness physical scale as IV and mentalization as DV for the Group 1*

		ß; F (p)	R2	R2Adj
Mentalization	YONI_A	-.589; 9.30 (<.01)	.288	.257
	YONI_C	-.432; 6.99 (<.01)	.389	.333
	YONI_TOT	-1.122; 10.61 (<.01)	.316	.286

For the Group 2, we used (1) mentalized affectivity and language as independent variables and (2) mentalization tasks as dependent variables. All the models were significant for the mentalized affectivity (Table 10)

Tab. 10 - *Linear regressions with mentalized affectivity – curiosity about emotions as IV and mentalization as DV for the Group 2*

		ß; F (p)	R2	R2Adj
Mentalization	YONI_A	.378; 7.68 (<.005)	.447	.389
	YONI_C	.22; 3.55 (<.05)	.272	.196
	YONI_TOT	.593; 8.451 (<.005)	.471	.415

Discussion

This study aimed to expand our knowledge of the teacher-child relationship, focusing on the psychological constructs of mentalization and attachment. Our hypothesis was that the mentalization of children aged 8 to 10 could be influenced by the teachers' mind-mindedness ability and mentalized affectivity, and by the children's attachment representation of the educational relationship. For the total sample, our results show that the larger the number of physical comments the teacher makes about the pupils in terms of mind-mindedness, the lower children's performance is on the Yoni task, both in terms of the total score and scores on the cognitive and affective scales. Physical comments refer to a teacher describing her pupils in terms of physical characteristics that are objectively observable by the children themselves. We can assume that a teacher thinking about her pupils in a physical way may direct their attention on external and concrete aspects of the world rather than on internal ones, so that

children anchor themselves and their reasoning about the social world to external aspects of people rather than to those evaluated by the Yoni task (i.e. mental states inferred from eye-gaze detection).

Our results also evidenced a link between the Autobiographical Memory component of the mentalised affectivity and the Yoni mentalization task: the greater the teachers' ability to use their autobiographical memory in the emotional analysis of their experience, the greater the children's mentalization abilities. Fivush (2003) defines autobiographical memory as a skill that develops from childhood onwards and consists of talking about one's past in an organised and coherent way, building a framework for evaluating events themselves, and promoting self-understanding, self-regulation, and self-management in relation to others. The construction of self-narratives takes place within meaningful relationships, where a competent adult guides the recovery of memories, their organisation, and the attribution of a meaning to them, also from an affective point of view (Oppenheim, 2006). This may suggest that a teacher with a high tendency to reflect on her/his own experiences brings this competence back into her/his relationship with the pupils through, for example, emotional matching dialogues (Valle et al., 2019a). This may build an enviroment where it is possible for all the children to recover their emotional experiences and to construct new meanings together. This result is in line with the proposal of Valle and colleagues (2019b), which refers to the school context the Fonagy and Campbell (2017) hypothesis that the adult mentalization represents an important cue for the child about the possibility of mentalizing in a specific relational context. Moreover, the teacher's proclivity to reflect on her/his own experiences may be a relevant factor in preventing possible challenging situations at school. Ansari and colleagues (2020) have recently demonstrated that a teacher's emotional exhaustion impacts the quality of the class interactions in a preschool context, so we may consider a teacher's ability to mentalize about her/his personal and professional experience as a possible protective factor, both for the quality of their relationships with her/his pupils and for their professional well-being.

Considering the two group of age, the results partially confirm those of the total sample. In the younger group of children, when the Yoni task performances are lower than those of the older children, teachers tend to use more physical comments; this result disappears in children' older group, where the Yoni performances are higher and the teachers tend to use fewer physical comments. Furthermore, in the 8-years-old group, the teachers' tendency to use physical comments negatively predicts children's mentalization abilities, whereas n the 10-years-old pupils' group

there is no such link. We think that the observed differences in the two age groups may depend on two factors: teachers' individual characteristics or children increased age.

With respect to the first factor, in the Italian context, most of primary school teachers mainly teach one class, spending most of their work time with the same students. Thus, the tendency of some teachers to provide physical comments may be a subjective factor, which could deserve further attention in future research. There is already a relevant body of literature that has investigated the possible factors that may shape teacher-student interactions, such as the teachers' own personal skills in emotion regulation, self-awareness, stress management, and emotional exhaustion (Abenavoli et al., 2013; Ansari et al., 2020; Jennings, 2015; Kemeny et al., 2012; Pianta, 2016; Roeser et al., 2012). Other teachers' personal characteristics, such as the degree of mind-mindedness and mentalising skills, may be new candidate factors to better understand the dynamics of teachers' relational abilities over time. Regarding the second factor, children's increased age, several possible explanations can be suggested. First, this phenomenon may occur because the teacher knows her/his pupils better at the end of the five-year school cycle, so she/he may tend to focus her/his attention on other aspects that characterise them. Second, a fifth-grade teacher is preparing her/his students for the transition to secondary school, so she/he pays particular attention to didactic preparation and to the cognitive skills they need to acquire so as to achieve good academic results. It is possible that the teacher, when describing the children, focuses less on the physical aspect and considers other characteristics as more important. Moreover, the children's performances on the Yoni task increase with age, highlighting the sensitivity of this mentalization task in discriminating differences between children aged 8 to 10, as in the development of the theory of mind in middle childhood (see, e.g. Bianco et al., 2019). Consequently, it is possible that in the older group, the impact of the teacher's tendency to physically describing pupils, due to the tendency of older children's teachers to use fewer physical comments than those of younger ones, encourages children to focus their minds on other aspects of the social world. Alternatively, it is possible that the increase in pupils' mentalising abilities allows them to better understand the social world, independently from their teacher's comments.

A further difference that emerges between the two age groups concerns the relationship between the teacher's mentalized affectivity and the children's mentalization. If in the group of little pupils, the correlational pattern seems ill-defined (we found only one negative correlation between the teacher's ability to recognize and label her emotions and the

pupils' cognitive mentalization), in the group of 10-year-olds we found positive correlations between this mentalized affectivity component and mentalization abilities in children (abilities that are higher respect to the other group). Moreover, linear regression shown that, in this group of age, the more the teacher is interest in her emotions, the higher the children mentalization score. Curiosity about emotions is a component of the mentalized affectivity referring to the interest and the ability to recognize and to name emotions and to be aware of their meaning in the situations in which they occur or, later on, when rethinking about past experiences. The complexity of this factor, referred to the recognition and the awareness of emotions both in the present and in the past, well exemplifies the fact that mentalised affectivity is considered a construct that develops in adulthood, thanks to high cognitive and emotional-affective skills and experiences. It is possible that the impact of the teacher's emotions emerges at the end of the primary school because pupils reach a level of development that allows them to grasp and use the teacher's tendency and ability to improve their own mentalization skills (Apperly et al., 2010). Moreover, it is possible that the teacher has to apply this capacity for a long time in the relationship with her pupils to train them in the mentalization, then the positive impact of her mentalized affectivity emerges after a long period of time, in which the relationship has also been fostered by its mentalized affectivity.

Finally, our results show that the children's attachment representation of their relationship with their teachers is not involved in the pupils' mentalization abilities; only teachers' mentalization abilities correlate with and impact those of the children, highlighting the asymmetry in the teacher-child relationship. In fact, the teacher guides the relationship and she/he can support the construction of a mentalising community, the classroom, in which pupils can mentalise about their minds and, consequently, can recognise their selves and improve their own abilities (Valle et al., 2016). Thus, in schools, educational interventions aimed at supporting the teachers' mentalising ability should be improved because of the positive effects they can have in building a mentalising environment.

There already exists interesting evidence for the positive effects of interventions on student-teacher interactions, such as the evidence found by the research group by Robert Pianta (Hamre et al., 2012) with the coaching program 'My Teaching Partner' across different school grades. This program, based on the observation of the teacher-student interactions used to train teachers in relational competences, evidences that the increase in the relational quality between teacher and child is related to educational achievements, efforts, and motivation in all school grades (Allen et al., 2019; Ansari & Pianta, 2018; Hatfield et al., 2016). This in-

dicates the relevance of teachers' characteristics and relational competences in the children's well-being. In the future, it could be interesting to include some interventions on mentalising in this program, to further improve the quality of teacher-student interactions, which is known to be a key element of students' achievement and motivation, independent of the subject being taught.

Starting from the mentalization literature, according to which mentalization abilities develops in the attachment relationships thank to the adult support (Fonagy et al, 2002), we discuss the results mainly in the hypothesis that the teacher's mentalization abilities impacts on pupils' mentalization development; data seem to confirm this hypothesis, showing that children' internal working models do not correlate with the teacher's characteristics. Nevertheless, the teacher-child relationship at this age is complex and consists of the characteristics of both partners. Primary school children develop increasingly refined mentalistic abilities: it cannot be excluded, therefore, that they influence the teacher's representation of each pupil, as well as the change in that representation over time. We think that future studies focused on the middle childhood will clarify this point, individuating all the aspects involved in this attachment relationship and the reciprocal influences.

We are aware that the results above do not yet allow a generalisation, given the main limitation of this study, i.e. the number of teachers, which is small compared to the number of children; in fact, in the mind-mindedness task, one teacher described several children. In the future, it will be interesting to examine the one-to-one relationship between a teacher and a child, to better control the role of the teachers' individual differences in mentalization and their impact on each child. In particular, the present study does not allow us to disentangle the link between the teacher's mind-mindedness and the children's age, as it is a cross-sectional study with a single teacher for each class, so it is not possible to state if this link is due to the teacher's personal characteristics or the children's increased age. To overcome this obstacle, it would be useful to study the aforementioned link through longitudinal research in the future. Moreover, future research could analyse attachment and mentalization concurrently in teacher-child and parent-child relationships, to compare the role of these two types of caregivers in the development of children's mentalization.

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