

# Mind Reading Skills and Empathy: Evidence for Nice and Nasty ToM Behaviours in School-Aged Children

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**Abstract** We investigated the social use of theory of mind in school-aged children. The expressions Nice Theory of Mind and Nasty Theory of Mind are used to differentiate behaviours requiring a prosocial use and an antisocial use of ToM abilities respectively. Our goal was to investigate whether and how mind reading abilities and empathy affect nice and nasty ToM behaviours. One hundred and ninety-seven children who were fourth and fifth graders took part in this study. Participants were administered stories that assessed cognitive, affective or moral mental state reasoning abilities and they also completed a self-report measure of empathy. Teachers' rating on children's prosocial and antisocial behaviours that underpin ToM abilities led us to identify nice and nasty ToM behaviours. We found that children who engage in nasty ToM behaviour showed good abilities to understand others' thoughts and beliefs. However, children with nice ToM behaviour showed more moral and emotional sensitivity as compared to children who engage in nasty ToM behaviour. Furthermore, the hot component of empathy is stronger in fostering prosocial behaviours and inhibiting antisocial acts than cognitive component.

**Keywords** Nasty theory of mind · Nice theory of mind · Empathy · Prosocial behaviour · Antisocial behaviour · School-aged children

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## Introduction

Theory of mind is the specific human ability to attribute mental states to themselves and others in order to explain and predict behaviour (Flavell 2004). The understanding of mind is one of the most important attainments in childhood which allows children to function socially and to distinguish accidental and intended behaviour, wishes and reality, truth and deception (Bellagamba et al. 2012). Thus, theory of mind is fundamental for the understanding of the social world and engaging human interactions (Mull and Evans 2010).

Over the past two decades, a large amount of research has highlighted that mind reading abilities underpin particular aspects of children's social functioning (Astington 2003). Socially competent behaviours rely on the understanding of mental states and, to date, several studies have pointed out the existence of a strong bond between children's performance on false belief tasks and their social conduct (Capage and Watson 2001; Hay et al. 2004; Hughes and Leekam 2004; Liddle and Nettle 2006; Razza and Blair 2009). Children with more advanced ToM abilities receive lower peers' negative behavioural and teachers' aggressiveness evaluations and they show better social abilities in the classroom (Belacchi and Farina 2010; Diesendruck and Ben-Eliyahu 2006). Furthermore, children who perform better on standard ToM tests have positive peer interactions, thus gaining their peers' liking and preference (Slaughter et al. 2002). They are more able to adapt to the school context, showing higher levels of cooperation both with pupils and teachers (Denham 2006). In general, the awareness of the existence of counterfactual thinking lead children to treat with peers.

These findings seem to suggest that ToM is a powerful social tool which affects social relationships and fosters adjustment in everyday social contexts. Consequently,

antisocial behaviour seems to reflect a weakness of social-cognitive skills. This issue is explained by Crick and Dodge's (1994) social skills deficit model, according to which aggressive children are not able to correctly read social cues, leading to a hostile attributive bias. Indeed, this model which lays stress on cognitive aspects of social information processing has been revised in order to integrate emotion processes. The new model proposed by Lemerise and Arsenio (2000), according to which the understanding of and the response to social cues are influenced by both cognition and emotion processes, points out the complexity of social information processing. The ability to coordinate multiple cognitive and affective perspectives during social interactions fosters social adjustment. On the contrary, maladjustment develops from reduced ability of reading social cues and managing one's own emotionality.

Attempting to investigate further the ToM role in different forms of aggressive behaviour, a few researchers have only partially confirmed the social skills deficit (Badenes et al. 2000; Happé and Frith 1996). As argued by Sutton et al. (1999a), lower theory of mind skills may only be related to physical aggression behaviour, but not to indirect aggression. Ringleader bullies showed to display intact or, in some instances, even superior theory of mind skills (Sutton et al. 1999a, 1999b). Some children and adults consistently use their mind reading skills for everyday antisocial purposes. Hence, the relationship between ToM and prosocial conduct is far from straightforward and simple. If a child is able to discern what other people need does not mean that he necessarily meets those needs. Children may use their mind reading abilities to manipulate, outwit, tease or trick their peers (Astington 2003). Theory of mind skills may be helpful in concealing the brat child's true intentions and goals by making the behaviour appear inoffensive or at least ambiguous to others (Renouf et al. 2010). Thus, theory of mind seems to be rather a neutral tool, which can be used to engage both prosocial and antisocial or Machiavellian behaviours (Arefi 2010).

The expressions *nice theory of mind* and *nasty theory of mind* are used to differentiate behaviours requiring prosocial use and antisocial use of ToM abilities respectively (McEwen et al. 2007; Ronald et al. 2005). Happé and Frith (1996) first proposed the expression *theory of nasty minds* to explain an intact but skewed mentalizing ability in the domain of antisocial behaviour by children with conduct disorder. Hughes et al. (1998) found poorer affective perspective-taking among hard-to-manage preschoolers than controls. Conversely, both of the groups performed well on a deception task. The authors of the study concluded that for children with behavioural problems the successfully performance might be different depending on whether they are involved in trick or treat tasks.

Recently, Ronald et al. (2005) pointed out how classical ToM tasks are neutral with respect to the nature of social behaviour involved. Indeed, in real life, few situations requiring ToM are neutral. Furthermore, they suggested how it is important to evaluate mind reading abilities using tasks that are motivating and with real-life appearance for children. For these reasons, Ronald et al. suggested the relevance to distinguish prosocial and antisocial ToM abilities, identifying nice ToM behaviours, such as cooperating, comforting, considering others' feelings, and nasty ToM behaviours, lying, cheating, blaming or teasing in preschool children. Their findings pointed out how preschool children are able to engage in both prosocial or antisocial behaviours that necessitating ToM and not necessitating ToM, suggesting that children's conduct is complex and the ability to understand others' thoughts and emotions may be used in different ways. The interest in the different social uses of theory of mind is growing in bullying and Machiavellianism fields, but these studies do not always agree with each other (Arefi 2010; Barlow et al. 2010; Caravita et al. 2009; Caravita et al. 2010; Gini 2006; Lyons et al. 2010; Slaughter 2011). Gini (2006) found a positive relationship between bullying behaviour and the ability to understand others' mental states in school-aged children. Caravita et al. (2010) confirm this relationship only for boys, but not for girls in the preadolescent group. Observational studies on children (Andreou 2004; Sutton and Keogh 2000) have found some evidence for high Mach superiority in ToM skills, hinting towards a link between bullying, manipulation and social cognition. On the contrary, studies with adults have partially confirmed these findings revealing that Machiavellianism is not always related to the ability to infer mental states (Ali and Chamorro-Premuzic 2010) or it is negatively related to ToM (Lyons et al. 2010). Indeed, it is hard and hazardous to match these studies for several reasons: the use of different paradigms to assess ToM abilities, the different ages of the participants (adults and children) and the different forms of aggressive behaviour. Renouf et al. (2010) demonstrated that indirect aggression is positively associated with theory of mind skills, but only in children with average or low levels of prosocial behaviour. The latter has been defined as a voluntary behaviour intended to benefit others and it indicates a concern for the well-being of another person (Eisenberg et al. 2006). Children whose advanced mind reading abilities make them particularly sensitive to what the other children think and feel are also particularly good at helping and comforting others (Caputi et al. 2012). When the child becomes more aware of others' feelings and situations, his or her prosocial actions reflect awareness of others' needs. However, mentalizing skills are not the exclusive variable which may influence the prosocial behaviour. Indeed, the emotional foundation of

prosocial conduct is provided by empathic capacity (Eisenberg and Liew 2009).

Empathy has been defined as an affective response that stems from the apprehension of another's emotional state (Eisenberg et al. 2006). Empathic people are able to understand the others' emotional states and to internalize these states. Empathy-related responding, which tends to increase both in frequency and complexity with age, takes several forms, such as matching the other person's emotion, expressing concern or compassion in response to another's distress, or feeling another appropriate emotion in response to another person's situation (Eisenberg 2000; Slaughter 2011). In most studies empathy is not considered as a unitary construct but as a two-dimensional one, differentiating cognitive and emotional empathy (Stavrinides et al. 2010). The former refers to the ability to grasp and understand the feelings of others in a particular situation, while the latter reflects the ability to respond to the emotional needs of another person in a spontaneous and altruistic way (Arefi 2010).

Several more recent studies suggest that empathy plays a significant role in social life because it facilitates prosocial behaviour and inhibits antisocial behaviour (Gini et al. 2007; Marshall and Marshall 2011). High levels of empathy seem to foster the likelihood to respond in order to alleviate negative emotions in others either for selfish reasons or for altruistic reasons. Empathic abilities could facilitate actions undertaken to benefit others as the subsequent positive emotions would also be experienced or understood (Lovett and Sheffield 2006; Warden and Mackinnon 2003).

Many researchers have claimed that the affective trait has a stronger weight on social behaviour than cognitive trait (de Wied et al. 2005; Jolliffe and Farrington 2006; LeSure-Lester 2000; Warden and Mackinnon 2003). In particular, Jolliffe and Farrington (2006) demonstrated that males who bullied violently and females who bullied indirectly had lower levels of affective empathy than children who did not engage in bullying acts. In a longitudinal study, Stavrinides et al. (2010) found that children's affective empathy negatively predicted bullying. Yet, studies showed that overbearing or bi-controllers children have advanced ToM abilities but reduced empathy (Hawley 2003).

### The present study

The general aim of our study was to understand the social use of theory of mind in school-aged children. We moved from bullying and Machiavellianism to focus on simple and mild forms of everyday antisocial behaviours. We adopted Ronald et al. perspective (2005), trying to adapt it

to children aged nine and 10 years. Thus, following this perspective, we wanted to verify whether the distinction between nice and nasty behaviours which require ToM was suitable to describe social school-aged children's conduct. The advanced ToM skills acquired at this age allow children to plan accurate behavioural and cognitive strategies for fulfilling their hopes and goals. If children become more aware of the power and the advantages of their mentalizing abilities, they may use ToM in a prosocial way or in an antisocial way. Thus, we hypothesized that the differentiation between nice ToM behaviour and nasty ToM behaviour could be appropriate in this age group. The second aim of our study was to verify whether and how children who use their ToM abilities in different social ways (prosocial versus antisocial) differentiated between them on mentalizing skills. Furthermore, we hypothesized that children who use their ToM prosocially are more able to understand emotional states than children who engage in nasty ToM behaviours. The last aim was to verify whether and how cognitive and affective traits of empathy could be related to nice and nasty ToM behaviours.

## Method

### Participants

One hundred and ninety-seven school-aged children (99 boys and 98 girls) took part in this study. Eighty-eight (48 boys and 40 girls) were fourth graders (*mean age* = 9.20, *SD* = .45) and one hundred and nine (51 boys and 58 girls) were fifth graders (*mean age* = 10.14, *SD* = .35) from primary schools in the centre-south of Italy. All children spoke Italian as their first language and no child with any developmental disorder was included in the study group.

### Procedure

Children were recruited by sending an information sheet and consent form to the principals and parents of all enrolled pupils. Each school provided study spaces for data collection. All testing was done by one experimenter. Children participated in two testing sessions: Session 1 was conducted collectively in the classroom and it lasted approximately 40 min., while Session 2 was conducted individually in a quiet room of the school and it lasted 15–20 min. In the collective session, the experimenter administered a battery for ToM and empathy assessment. Language abilities were assessed in Session 2. For each child the two testing sessions took place later than 2 weeks from each other.

The teacher, who spent the most time in the classroom with the pupils, completed a questionnaire about prosocial and antisocial behaviour for each child.

## Measures

### *Social Cognition Task*

Children's understanding of mental states and emotions was assessed by administering *Stories* (Gini 2006), a set of 15 short stories. Some of these stories were translated from Happé (1994) and Sutton et al. (1999a), while others were devised by Gini (2006), following the same structure of pre-existing stories. The 15 stories were divided into three categories, five stories for each category: cognitive, emotional and moral stories. Cognitive stories test the ability to understand beliefs, intentions and thoughts of the story characters (Eg. During the war, the Red army captures a member of the Blue army. They want him to tell them where his army's tanks are; they know they are either by sea or in mountains. They know that the prisoner will not want to tell them, he will want to save his army, and so he will certainly lie to them. The prisoner is very brave and very clever, he will not let them find his tanks. The tanks are really in the mountains. Now when the other side asks him where his tanks are, he says, "They are in the mountains").

Emotion stories investigate the capacity to distinguish the characters' real feelings from the emotions shown to other people. The child must understand what kind of emotion is suitable within a specific context in order to influence and modify others' knowledge (Eg. Gianni wants to go out with his friends, but he has a really bad tummy ache. He knows that if his mum notices he is ill, she won't let him go out to play. Gianni goes downstairs and asks his mum, "Can I go out to play please?").

Moral stories test the ability to understand moral emotions (Eg. Claudia has just moved to her new school. She has brown hair, green eyes and she is a little bit shorter than her classmates. During the maths class, without being noticed by her teacher, Susan, who sits behind Claudia, sends her a written note like "Pigmy, dwarf". Claudia reads this note and starts crying in front of all her classmates). Both for emotional and moral stories, pictures of faces expressing different emotions (happiness, sadness, anger, guilt and a neutral face) were presented to the participants in order to help them with their answers.

Each story was followed by a control question, based on the content of the story in order to verify if the child understood what he really read, and an experimental question assessing the understanding of the mental states or emotions. Comprehension questions were asked before the main questions, to check for memory and comprehension effects. If the comprehension questions were answered incorrectly, ToM abilities were not evaluated. For experimental questions, children score 0 if they do not answer the question, 1 if their answer is not correct, 2 if they answer

right but without referring mental state, and 3 if they give a complete answer with the reference to inner state. In particular, for the cognitive stories, an answer was completely right if the child referred the correct thoughts or beliefs of the story character (Eg. Experimental question: "Where will the Red army look for the Blue army and why?"; correct answer: They will look by the sea because they think that the prisoner is lying to save his army). For the emotion stories, the answer was considered complete if the child identified the correct emotion as well as referencing it to the intention or wish of the main character to hide his/her own real emotion to the other characters (Eg. Experimental question: "How will Gianni appear when he asks his mother to go out with his friends and why?"; correct answer: He will appear happy because if his mother notices that he is feeling bad he should remain at home). For the moral stories, the answer was right if the child recognised that the character of the story should have felt a moral emotion (guilty or shame) for his/her behaviour (Eg. Experimental question: "How will Susan feel and why?"; correct answer: Susan will feel guilty because she offended her classmate).

A total of 10 children were excluded from analyses which included ToM abilities because they did not answer right to the control questions. Scoring agreement was assessed by having 20 % of the children (N = 40) codified by two independent scorers. The coders attained an almost perfect agreement. Cohen's Kappa was .93. Discrepancies were resolved by a third scorer.

### *Empathy*

*How I feel in Different Situations* (HIFDS; Bonino et al. 1998; Feshbach et al. 1991) was used to assess empathy. The self-report questionnaire consists of 12 items, six measure cognitive empathy (Eg. "I'm able to recognize, before many other children, that other people's feelings have changed") and six affective empathy (Eg. "When somebody tells me a nice story, I feel as if the story is happening to me"). For each item, the children were asked to evaluate the extent to which it was true for them on a 4-point scale (from 1 = never true to 4 = always true).

In our study, the instrument demonstrated an acceptable internal consistency for each subscale and total score (Cronbach's  $\alpha = .70$  for cognitive empathy; Cronbach's  $\alpha = .71$  for affective empathy; Cronbach's  $\alpha = .70$  for total empathy).

### *Social Behaviour*

The Italian version of *Strength and Difficulties Questionnaire* (SDQ-Ita; Goodman et al. 1998) consists of 25 items, divided into five subscales of five items covering emotional

problems, conduct problems, hyperactivity problems, peer problems and prosocial behaviour. Each item uses a three-point ordinal Likert format (0 = not true, 1 = somewhat true or 2 = certainly true). Responses can be rated 0–2 for negatively worded items and rated inversely 2–0 for positively worded items. Subscores are generated for each subscale (range 0–10). All subscores, except the prosocial score, are added up to a total difficulties score (range: 0–40). The prosocial subscale measures the children’s ability to act prosocially, independent of the difficulties measured by the other subscales. SDQ-Ita was administered to teachers. These scores have exhibited good levels of internal consistency (Cronbach’s  $\alpha = .74$  for emotional problems; Cronbach’s  $\alpha = .72$  for conduct problems; Cronbach’s  $\alpha = .81$  for hyperactivity problems; Cronbach’s  $\alpha = .70$  for peer problems; Cronbach’s  $\alpha = .86$  for prosocial behaviour).

*Language Ability*

The Italian version of the *Peabody Picture Vocabulary Tes—Revised* (PPVT-R, Dunn and Dunn 1981; Stella et al. 2000) is designed to assess listening comprehension for spoken words in Standard Italian for children and early adolescents (from 3 to 12 years old). The PPVT-R represents a measure of receptive language. The test consists of 175 stimulus words from different categories. Children are shown a series of sets of four pictures and they must identify the picture that best represents the target vocabulary word said by the experimenter. The test is graduated such that simpler pictures are presented earlier with progressive difficulty until a ceiling is reached. Higher raw scores indicate that more vocabulary words were correctly identified. The PPVT-R is widely used both in clinical and research fields due to its ease of administration and psychometric proprieties. In particular, in the research about children’s ToM, vocabulary assessment is carried out to check language influence on mind reading performance.

**Results**

*Preliminary analyses*

To analyze the gender and age differences a multivariate analysis of covariance (MANCOVA) with a 2 (males vs. females)  $\times$  2 (9 vs. 10 year old) design, in which ToM abilities and empathy dimensions were entered as the dependent variables was carried out. Hence PPVT-R scores correlated with ToM task performance (for cognitive stories  $r = .29, p < .01$ ; for emotion stories  $r = .17, p < .05$ ), receptive language scores were entered in this analysis as a covariate.

The MANCOVA on the three ToM measures (cognitive, emotion and moral stories) revealed both a main age effect,  $\lambda = .88, F(1,178) = 8.03, p = .00, \eta_p^2 = .12$ , and a main gender effect,  $\lambda = .95, F(1,178) = 2.96, p < .01, \eta_p^2 = .04$ ; there was no significant interaction between the variables,  $\lambda = .99, F(3,176) = .49, p = .69$ . Linguistic abilities had a significant effect in the design,  $\lambda = .89, F(3,176) = 8.77, p < .001, \eta_p^2 = .13$ . Adjusted means for vocabulary are reported in Table 1.

Results from the univariate tests (ANCOVA) revealed that older children obtained higher cognitive,  $F(1,178) = 13.98, p < .001$ , and emotion ToM scores,  $F(1,178) = 19.19, p < .001$ , than younger children. Girls reported higher emotion ToM scores than boys,  $F(1,178) = 8.80, p < .001$ .

As regards empathy, the MANOVA yielded a main gender effect,  $\lambda = .94, F(1,193) = 6.11, p = .001, \eta_p^2 = .07$ , and a main age effect,  $\lambda = .92, F(1,193) = 7.87, p < .001, \eta_p^2 = .07$ . There was no significant interaction between the variables,  $\lambda = .99, F(3,191) = .57, p = .57$ . Results from the univariate tests (ANOVA) revealed that females obtained higher affective,  $F(1,193) = 11.94, p < .001$ , and total empathy scores,  $F(1,193) = 8.80, p < .001$ , than males. Older children reported higher scores than younger children on all empathy dimensions: cognitive empathy,  $F(1,193) = 10.66, p < .001$ , affective empathy,  $F(1,193) = 7.36, p = .01$ , and total empathy,  $F(1,193) = 15.69, p < .001$  (Table 2).

*Nice and Nasty Theory of Mind*

In order to distinguish children who use ToM in a prosocial way from children who use ToM in an antisocial way two steps were carried out. The first one was to identify prosocial behaviour necessitating ToM (nice ToM) and antisocial behaviour necessitating ToM (nasty ToM). Following the same procedure adopted by Ronald et al. (2005, 2007), a factor analysis carried out. We were

**Table 1** Descriptive statistics and significant age effects on the study variables

Variables	9 year old		10 year old	
	(N = 82–88)		(N = 98–109)	
	Mean	SD	Mean	SD
Cognitive ToM	10.18	.22	11.28	.20
Emotion ToM	9.37	.21	10.59	.19
Moral ToM	9.86	.19	10.13	.17
Cognitive empathy	15.59	3.14	17.14	3.27
Affective empathy	15.28	3.15	16.67	3.27
Total empathy	30.86	4.58	33.81	5.10
Receptive language	129.20	17.10	137.28	17.04



**Table 2** Descriptive statistics and significant gender effects on the study variables

Variables	Males		Femals	
	(N = 91–99)		(N = 89–98)	
	Mean	SD	Mean	SD
Cognitive ToM	10.52	.21	10.95	.21
Emotion ToM	9.55	.20	10.41	.20
Moral ToM	9.95	.18	10.05	.18
Cognitive empathy	16.18	3.43	16.71	3.16
Affective empathy	15.10	3.28	17.00	3.02
Total empathy	31.29	5.15	33.71	4.72
Receptive language	138.14	16.94	129.15	16.95

interested only to behaviours which require mind reading abilities. For this reason we did not consider nice and nasty behaviours which do not involve ToM. Items were selected from the Strengths and Difficulties Questionnaire. A factor analysis using varimax rotation was used to analyse data. The screen plot suggested that two factors should be extracted, termed Nice ToM and Nasty ToM, explaining 41.05 and 16.55 % of the variance respectively. All the items of each dimension were loaded on the same factor with a correlation of at least .30. Example items are “Helpful if someone is hurt, upset or feeling ill” (Nice ToM), and “Often lies or cheats” (Nasty ToM). The ToM questions were taken to represent socially insightful behaviour and not a measure of false belief understanding (Table 3).

The second step aimed to identify child groups differentiated on social behaviours which require ToM. In particular, children were divided into four groups on their standardized nice and nasty factor scores: (a) children with low social ToM behaviour ( $n = 42$ ; 21.3 %), those with two standard deviations below the mean on both factors; (b) children with nice ToM behaviour ( $n = 92$ ; 46.7 %), those with two deviations above the mean on the nice ToM score and with two standard deviations below the mean on the nasty ToM score; (c) children with nasty ToM behaviour ( $n = 37$ ; 18.8 %), those with two standard deviations below the mean on the nice ToM score and with two standard deviations above the mean on the nasty ToM score; (d) children with contradictory ToM behaviour ( $n = 26$ , 13.2 %), those with two standard deviations above the mean on both scores.

Chi square analysis pointed out gender,  $\chi^2(3) = 11.59$ ;  $p < .001$ , and age,  $\chi^2(3) = 42.11$ ;  $p < .001$ , differences between the ToM behaviour groups. Females were more likely to report high nice ToM scores and low nasty ToM scores than males (58.2 vs 35.4 %). Younger children were more likely to report low nice ToM and low nasty ToM scores than older children (40.9 vs 5.5 %).

## Nice and Nasty ToM Behaviour and Mentalizing Abilities

The multivariate analysis of variance (MANCOVA) was carried out assuming ToM behaviour groups as an independent variable, cognitive, emotion and morale stories as dependent variables, and gender, age and language abilities as covariates. Gender,  $\lambda = .97$ ,  $F(1,178) = 2.00$ ,  $p = .12$ , and age,  $\lambda = .97$ ,  $F(1,178) = 1.68$ ,  $p = .17$ , were not significant. On the contrary, language had a significant effect on the ToM task performances,  $\lambda = .81$ ,  $F(1,178) = 13.36$ ,  $p < .001$ ,  $\eta_p^2 = .19$ . MANCOVA pointed out the differences between ToM groups on the ToM tasks,  $\lambda = .61$ ,  $F(3,176) = 10.43$ ,  $p < .001$ ,  $\eta_p^2 = .15$ . Results from the univariate tests (ANCOVA) and post hoc (Tukey Test,  $p < .001$ ) showed differences on cognitive, emotional and moral stories (Table 4).

On cognitive stories,  $F(3,176) = 14.73$ ,  $p < .001$ , children with nice ToM behaviour and children with nasty ToM behaviour obtained higher mean scores than the other groups who did not differentiate from each other. With respect to emotion stories,  $F(3,176) = 20.59$ ,  $p < .001$ , children with nice ToM behaviour reported higher mean scores than the other groups, while children with low ToM behaviour obtained lower mean scores. Children with nasty ToM behaviour and children with a contradictory ToM behaviour reported the same mean scores. On moral stories,  $F(3,176) = 8.86$ ,  $p < .001$ , children with nice ToM behaviour obtained higher mean scores than the other groups who had the same mean scores.

## Nice and Nasty ToM Behaviour and Empathy

The MANCOVA was computed to verify the nice and nasty ToM behaviour groups' differences on empathic capacities, using gender and age as covariates. Gender,  $\lambda = .956$ ,  $F(1,193) = 4.26$ ,  $p < .01$ ,  $\eta_p^2 = .04$ , and age,  $\lambda = .95$ ,  $F(1,193) = 4.66$ ,  $p < .001$ ,  $\eta_p^2 = .04$ , were significant. Results from the univariate tests (ANCOVA) and post hoc (Tukey Test,  $p < .001$ ) revealed that the nice and nasty ToM groups were differentiated from each other,  $\lambda = .79$ ,  $F(3,191) = 7.62$ ,  $p < .001$ ,  $\eta_p^2 = .11$ , only on affective empathy,  $F(3,191) = 14.35$ ,  $p < .001$ , and total empathy,  $F(3,191) = 3.49$ ,  $p < .001$ . Children with nice ToM behaviour and children with contradictory ToM behaviour reported higher affective and total empathy scores than the other two groups who did not differentiate from each other (Table 5).

## Discussion

The current study aimed to investigate the social use of mentalizing and empathic abilities in school-aged-children.

**Table 3** Sorted rotated factor loading matrix for the 9 items in 3 scales (maximum likelihood analysis with varimax rotation)

Item	Factor 1	Factor 2
Helpful if someone is hurt, upset or feeling ill	.85	
Kind to younger children	.84	
Cares about other people’s feelings	.82	
Often volunteer to help others (parents, teachers and other children)	.77	
Shares readily with other children (treats, toys, pencils and so on)	.69	
Often lies or cheats		.72
Steals things at home, at school or elsewhere		.68
Gets on better with adults than with people my own age		.57
Annoys and teases other children		.56
Eigenvalues	3.70	1.49
% explained variance	41.05	16.55

Coefficients <.25 are omitted from the table

**Table 4** Descriptive statistics and significant tom group effects on the cognitive, emotion and moral stories

	Children with low ToM behaviour (N = 42)	Children with nice ToM behaviour (N = 80)	Children with nasty ToM behaviour (N = 35)	Children with contradictory ToM behaviour (N = 23)
Cognitive ToM	9.41 <sup>b</sup> (.30)	11.55 <sup>a</sup> (.20)	11.28 <sup>a</sup> (.30)	9.87 <sup>b</sup> (.38)
Emotion ToM	8.44 <sup>c</sup> (.27)	11.08 <sup>a</sup> (.19)	9.86 <sup>b</sup> (.27)	9.63 <sup>b</sup> (.35)
Moral ToM	9.08 <sup>b</sup> (.27)	10.68 <sup>a</sup> (.18)	9.94 <sup>b</sup> (.27)	9.53 <sup>b</sup> (.34)

Post-hoc comparisons (Tukey Test; *p* < .001): different letters indicate mean differences between groups

The classroom is a special social stage where children’s social functioning comes into view (Binnie 2005). Children engage in different social behaviours which rely on the understanding of others’ inner states (Hughes 2011). The ability to grasp others’ intentions, beliefs, desires and emotions can be used by children in a prosocial or an antisocial way. The first step of our study was to verify whether the model proposed by Ronald et al. (2005), who demonstrated the existence of nice and nasty behaviours necessitating and not necessitating ToM in preschooler children, was suitable in school-aged children. We focused on the only distinction between nice and nasty ToM behaviours which require mind reading abilities, demonstrating

that at this age this differentiation is appropriate. Children who engage in nice ToM behaviours use their mind reading abilities to offer benefits to others, such as cooperating, collaborating, caring about others and considering peers’ feelings. Nasty ToM behaviours represent an antisocial use of mentalizing abilities.

We distinguished children according to their social use of theory of mind, identifying four groups of children with: low ToM behaviour, nice ToM behaviour, nasty ToM behaviour and contradictory ToM behaviour. Children with low ToM behaviour engage in few nice and few nasty ToM behaviours. Children with nice ToM behaviour use their mind reading abilities in a prosocial way, offering comfort,

**Table 5** Descriptive statistics and significant tom group effects on the cognitive, affective and total empathy

	Children with low ToM behaviour (N = 42)	Children with nice ToM behaviour (N = 91)	Children with nasty ToM behaviour (N = 36)	Children with contradictory ToM behaviour (N = 26)
Cognitive empathy	16.47 (.54)	16.25 (.35)	17.00 (.55)	16.35 (.65)
Affective empathy	15.00 <sup>b</sup> (.47)	17.32 <sup>a</sup> (.31)	13.74 <sup>b</sup> (.48)	16.47 <sup>a</sup> (.57)
Total empathy	31.46 <sup>b</sup> (.78)	33.57 <sup>a</sup> (.51)	30.74 <sup>b</sup> (.79)	32.82 <sup>a</sup> (.94)

Post-hoc comparisons (Tukey Test; *p* < .001): different letters indicate mean differences between groups

help and support to peers in a spontaneous manner. On the contrary, children with nasty ToM behaviour make use of mentalizing skills in an antisocial way without considering the negative emotional consequences for their peers. Finally, children with contradictory ToM behaviour show both nice and nasty ToM behaviours.

Our results point out that children with nasty ToM behaviour seem to possess the same cognitive ToM abilities like children with nice ToM behaviour. Both of them accurately identify others' thoughts, desires and beliefs. However, children with nice ToM behaviour are more able to correctly recognize others' emotions and feelings than children with nasty ToM behaviour. Children who use mind reading skills in a prosocial way distinguish more precisely real from expressed emotions in order to adapt their own reactions to social expectancies. Furthermore, children with nice ToM behaviour are more aware of moral emotions derived from their own and others' conduct than children with nasty ToM behaviour. Children with low ToM behaviour show the worst abilities to understand others' emotions and low skills to recognize inner cognitive and morale states.

In our study, the equal skill in the understanding of cognitive states and the discrepancy in the understanding of emotional and moral states found between children with nice ToM behaviour and children with nasty ToM behaviour suggest that two components of theory of mind have a different weight on social functioning. In particular, the hot component of ToM seems to be more salient in social functioning than the cold component. The awareness of others' emotions and motives and the sophisticated ability to coordinate these emotional states with one's own is more likely to be related to social competence than to the cognitive interpretative understanding. As suggested by Hoglund and his colleagues (2008), socially competent behaviours require not only the understanding of epistemic and emotional mental states but also the coordination of one's own and others' states. The possess of the advanced understanding of emotional and moral mental states may therefore allow children to appreciate the feelings of others and be less likely to act in a manner that may hurt or upset a peer.

In addition, everyday social interactions are influenced by empathy. Although both mentalizing and empathy require an understanding of someone else's mental or emotional state, empathy additionally requires sharing the emotional experience of the other person (Decety and Jackson 2004; Singer 2006). In our sample groups, children with nice Tom behaviour obtained the highest scores on affective and total empathy. This finding confirms, as is well documented in the literature, that the hot component of empathy is stronger in fostering prosocial behaviours and inhibiting antisocial ones than the cognitive component (de Wied et al. 2005; LeSure-Lester 2000).

More controversial are the abilities possessed by children with contradictory ToM behaviour. These children obtained lower ToM abilities than children with nice ToM behaviour but the same empathic abilities. This issue seems suggest that behaviour ambiguity reflects a lower mind reading ability. Probably children are not always able to grasp others' intentions and emotions and may therefore engage behaviours which are far from or opposite to others' needs.

Children with nasty ToM behaviour possess lower affective empathy abilities than children with nice ToM behaviour and children with contradictory ToM behaviour. In addition, lower mind reading skills and lower empathic abilities characterized children with low ToM behaviour, who show lesser abilities to inference others' mental states and to empathize with others during social interactions.

Our findings confirm that theory of mind is a powerful tool which affects social functioning. In particular, our study suggests that the understanding and coordination of one's own and others' emotional and moral states play a significant role in prosocial behaviour. On the contrary, cognitive ToM abilities seem have an ambiguous role in social conduct. Thus, theory of mind is a necessary condition but not sufficient to determine social behaviours (Astington 2003). It is plausible to consider that the capacity to empathize with others, in particular the ability to experience others' emotions and feelings, strengthens and affects the bond between theory of mind and social functioning.

#### Study limitations and future implications

There are some limitations to the study that must be acknowledged. Whilst empathy, theory of mind and language were assessed directly, children's social behaviours were based on teachers reports.

Furthermore, we only considered the influence of theory of mind and empathy on prosocial and antisocial behaviours which underpin mentalizing abilities without analysing any kind of mediators or moderators, such as emotional intelligence and moral reasoning and disengagement.

Our distinction between nice and nasty ToM behaviours is only a first step, but further investigation will be useful to understand better the social use of theory of mind.

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