RUNNING HEAD: Interpretive Understanding, Morality, and Social Behavior

# Children's Interpretive Understanding, Moral Judgments, and Emotion Attributions: Relations to Social Behavior

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## Abstract

The study investigated interpretive understanding, moral judgments, and emotion attributions in relation to social behavior in a sample of 59 five-year-old, 123 seven-year-old, and 130 nine-year-old children. Interpretive understanding was assessed by two tasks measuring children's understanding of ambiguous situations. Moral judgments and emotion attributions were measured using two moral rule transgressions. Social behavior was assessed using teachers' ratings of aggressive and prosocial behavior. Aggressive behavior was positively related to interpretive understanding and negatively related to moral reasoning. Prosocial behavior was positively associated with attribution of fear. Moral judgments and emotion attributions were related, depending on age. Interpretive understanding was unrelated to moral judgments and emotion attributions. The findings are discussed in regard to the role of interpretive understanding and moral and affective knowledge in understanding children's social behavior.

# Children's Interpretive Understanding, Moral Judgments, and Emotion Attributions: Relations to Social Behavior

Is children's developing understanding of another's mind a sufficient facilitator of their social behavior? Or do children's moral judgments and caring about another's welfare serve as a developmental impetus for prosocial behavior and impede antisocial behavior? Throughout history, narratives on antisocial leaders indicate that an advanced understanding of how others think and feel—sometimes even including highly differentiated moral judgment skills—can serve selfish, antisocial ends. In contrast, prosocial leaders such as Mahatma Gandhi have been frequently characterized by an exceptionally strong inclination to care about others' welfare. These are certainly telling historical typologies. Nevertheless, the complexities inherent in the developmental relations between young children's emerging understanding of another's mind, morality, and social behavior still present a challenge to developmental psychologists and clinicians.

This study aimed to contribute to this complex research field. We investigated the relations between aspects of children's social understanding (i.e., interpretive understanding), the different components of morality (i.e., moral judgments and emotion attributions), and social behavior (i.e., pro- and antisocial conduct) in a sample of 5-, 7-, and 9-year-old children. Previous research has provided insights into various aspects of these relationships, such as the relation between social and moral understanding (e.g., Keller, Gummerum, Wang, & Lindsey, 2004; Selman, 1971). Nevertheless, past studies have rarely addressed explicitly the relative contributions of interpretive understanding and the different indicators of morality to children's pro- and antisocial behavior across

different age groups. The present research thus contributes to filling some of the research gaps regarding children's descriptive (i.e., factual) and prescriptive (i.e., evaluative or moral) understanding of social relationships, and the relation of this understanding to social behavior. Such knowledge can be useful in guiding educational efforts to promote the development of children's social competence (Malti & Perren, 2008).

*Children's Interpretive Understanding and Pro- and Antisocial Behavior*

In this study, we focused on an aspect of children's social understanding or theory of the mind, dealing with their knowledge of interpretation, i.e., *interpretive understanding*. Children with interpretive understanding not only recognize that others sometimes construct false representations of the world, but that they may also actively **re-**construct situations that can be understood in different ways and are therefore open to subjective interpretation (Chandler & Lalonde, 1996). From a constructivist perspective, measures of interpretive understanding place children's understanding of beliefs in a fuller social-developmental context than the common false-belief tasks meant to uncover consistencies in epistemic development (Ross, Recchia, & Carpendale, 2005). As many social and moral situations involve conflicting perspectives in everyday social interactions and are inherently ambiguous, interpretive understanding is well suited to investigating the links of understanding another's mind to children's moral and social development (Chandler, Sokol, & Wainryb, 2000; Sokol, Chandler, & Jones, 2004).

Indicators of understanding of the other's mind, such as interpretive or false-belief understanding, are acknowledged to play a role in children's social behavior (Astington, 2003; Baird & Astington, 2004). Strikingly enough, a well-supported research finding is that children who frequently engage in aggressive behavior display a high degree of

understanding the other's mind (Arsenio & Gold, 2006; Gasser & Keller, in press; Gini, 2006; Sutton, Smith, & Swettenham, 1999). This understanding may allow them to strategically attain their own goals. Knowing how others think and feel might also be important for prosocial behavior, because it may help children think about and care about the other's welfare (Hoffman, 2000). However, the latter is not necessarily a given (Moore & Macgillivray, 2004), and studies on the relation between prosocial behavior and the understanding of another's mind have yielded inconsistent results (see Hughes & Leekam, 2004, for a review). Taken together, these findings suggest that interpretive understanding, although an important feature of individuals' social understanding, is far from sufficient (Astington, 2003; Roland, Happé, Hughes, & Plomin, 2005).

*Interpretive Understanding, Moral Judgments, and Emotion Attributions*

From a prescriptive moral perspective, the question arises as to whether children use their interpretive understanding of another's mind for moral or self-serving purposes. By analyzing the moral judgments and motives that underlie children's social actions, we aim to shed light on this question.

Recent research has addressed young children's emergent moral judgments, emotion attributions, and interpretive understanding. Social-domain studies have shown that children's prescriptive understanding of social relationships differs from their descriptive knowledge of social interactions (Smetana & Killen, 2008). Research in this tradition has also provided ample evidence that even at 3 or 4 years of age, children have developed an understanding of the validity of the norms of justice and care, and they distinguish these rules from other social rules (Turiel, 1983). Thus, young children might be able to make moral and affective judgments about moral issues even though they have

not yet attained interpretive understanding, which typically emerges around 7 years of age (Ross et al., 2005). On the other hand, the emergence of more differentiated moral judgments and the ability to attribute multi-valence (i.e., mixed) emotions to wrongdoers may require that children already possess elements of interpretive understanding, because the ability to understand and coordinate conflicting perspectives of the self and others is a sine qua non for reaching these benchmarks of moral development (Sokol, 2004). Interpretive understanding has also been shown to be meaningfully related to other measures of children's ability to interpret social interactions (Ross et al., 2005). Children may be increasingly able to integrate the domains of interpretive understanding and moral judgments (Chandler et al., 2000). Thus, our objective was to investigate whether these two domains of children's social knowledge become increasingly coordinated over the course of development.

Regarding emotion attributions, most previous research has been conducted in the *happy victimizer* paradigm. This research has documented that young children expect a moral wrongdoer to be happy, even though they understand the validity of the moral rule (see Arsenio, Gold, & Adams, 2006, for a review), because they focus exclusively on the personal gain of the wrongdoer. In contrast, the attribution of negative (i.e., moral) emotions such as sadness or guilt feelings indicates that a child not only understands, but also takes into account the harm done to the victim and the victimizer's consideration of these consequences.

Our study focused on the single-valence emotions that children attribute to hypothetical wrongdoers. We assess the spontaneous types of emotional states that children evaluate as important in a moral transgression (e.g., the attribution of sadness as

expression of moral concern); as such, these emotion attributions reflect the affective meaning of the rule transgression for the child; however, unlike the assessment of multi-valence emotions, these attributions by themselves do not reveal whether the child coordinates the perspectives of the victim and perpetrator (Sokol, 2004). Thus, we did not necessarily expect a significant relation between these emotion attributions and interpretive understanding.

Social-cognitive researchers have recently called for an integrative-developmental approach to the study of moral judgments and moral emotion (Arsenio & Lemerise, 2004; Smetana & Killen, 2008). According to Arsenio et al. (2006), children judge moral transgressions negatively because they experience them as emotionally salient, and they associate moral emotions such as guilt with these events. It is likely that with children's increasing moral understanding they recognize that moral transgressions are serious, generally wrong, and deserving of punishment. This understanding, in turn, is linked to corresponding emotional reactions, such as the attribution of guilt and a decline in attributions of positive emotions to wrongdoers (Turiel, 2002). However, in a study by Smetana, Campione-Barr, and Yell (2003), few associations were found between emotion attributions and the moral judgments of 6- to 8-year-olds. In contrast, in a recent longitudinal study, Malti, Eisenberg, and Buchmann (2008) documented that the moral judgment skills of 6- to 7-year-old children were related to their moral emotion attributions. In the present study, we aim to disentangle the previous inconsistencies regarding the relation between moral judgments and emotion attributions by using a larger sample and a broader age range than were employed in previous studies.

*Children's Moral Judgments, Emotion Attributions, and Pro- and Antisocial Behavior*

Recent research suggests that children's moral judgments and emotion attributions may be particularly important antecedents of pro- and antisocial behavior (Arsenio & Lemerise, 2004; Arsenio et al., 2006). From a social-cognitive perspective, both moral judgments and moral emotion attributions are likely to be related to (im)moral actions such as aggressive and prosocial behavior, as they both may serve as motives for such action tendencies (Gibbs, 2003; Krettenauer, Malti, & Sokol, 2008; Malti, Gummerum, Keller, & Buchmann, in press). Moral (i.e., negative) emotion attributions to hypothetical wrongdoers have been interpreted as indicating moral motivation, because they reveal that the child personally accepts the validity of the moral norm (Keller, 1996). From the perspective of Kant's ethical rationalism, expressed in his notion of a *Verstandeswelt*, moral judgments intrinsically motivate moral action, because one's autonomous, self-reflective standpoint determines one's moral actions a priori.

Regarding the developmental relations between moral judgments, emotion attributions, and aggression, Malti and Keller (in press) found that elementary school children's externalizing behavior was negatively related to moral reasoning and moral (i.e., negative) emotion attributions. The latter finding on the relation between aggression and positive emotion attributions was further supported in a study of 6-year-old kindergarteners (Malti, 2007; see also Arsenio et al., 2006; Krettenauer & Eichler, 2006). Interestingly, a recent study by Gasser and Keller (in press) found that children involved in bullying demonstrated a good understanding of another's mind but did not make moral emotion attributions. The authors concluded that these results point to a domain-specific deficit in moral competence in children with aggressive behavior problems.

Evidence for a positive relationship between moral emotion attributions and prosocial behavior was found in a study by Malti, Gasser, and Buchmann (2009). Six-year-old children who were identified as prosocial by their teachers attributed moral emotions more often than did children who were classified as aggressive. Furthermore, in a longitudinal study, Malti et al. (in press) showed that moral emotion attributions predicted later prosocial sharing behavior as assessed by the dictator game (Gummerum, Keller, Takezawa, & Mata, 2008). In a study on children's bullying, Menesini and Camodeca (2008) documented that guilt feelings are higher in prosocial than in uninvolved or victimized children. Furthermore, in a study by Miller, Eisenberg, Fabes, and Shell (1996), higher levels of moral reasoning were positively related to prosocial behavior in 4- to 5-year-old children.

In the present study, we followed up on this line of research and combined moral judgments and emotion attributions in an attempt to understand their meaning for children's social behavior. We assessed moral judgments along multiple dimensions, because social domain research has emphasized that this procedure more reliably indicates how morally acceptable a child believes a given event to be (Smetana et al., 2003). On the other hand, we also assessed different types of emotion attributions. Most previous research has classified children's emotion attributions to wrongdoers as negative, mixed, or positive (Arsenio et al., 2006). However, the moral meaning of negative attributions is not clear in such cases. One child might identify negative emotions with anger and another with feelings of guilt. By elucidating the types of emotional states that children evaluate as personally important, the content of the attributed emotion (e.g., sadness versus anger) provides insight into adaptive behavior

(Selman, 1980). As anger has been shown to exacerbate aggressive behavior and attributions of hostility (e.g., Camodeca & Goossens, 2005; Orobio de Castro, Slot, Bosch, Koops, & Veerman, 2003), it seems important to distinguish it from emotions such as guilt or fear.

To sum up, the study aimed to investigate (a) relations between children's moral judgments, emotion attributions, and interpretive understanding, and (b) the relative contributions of interpretive understanding, moral judgments, and emotion attributions in relation to pro- and antisocial behavior in a sample of 5-, 7- and 9-year-old children. We expected interpretive understanding to be positively associated with moral judgments in older children, but not necessarily in younger children, because the ability of children to integrate different domains of social knowledge may increase with age. No relation between interpretive understanding and emotion attributions was expected. Further, in accordance with Malti et al. (2008), we hypothesized that the strength of moral judgments is positively associated with the attribution of sadness, and negatively related to the attribution of happiness. Based on previous studies, we expected both happy and angry emotion attributions, as well as interpretive understanding, to be related to aggression; on the other hand, moral judgments and moral emotion attributions were hypothesized to be better than interpretive understanding as predictors of prosocial behavior. All these relationships are expected to depend on development. Gender and language skills were controlled for in our analyses, as previous research has clearly shown that gender and language influence the study variables (Astington & Jenkins, 1999; Eisenberg, Spinrad, & Sadovsky, 2006; Malti & Keller, in press).

## Method

*Participants*

The participants included 312 children living in Switzerland and their teachers. The youngest group consisted of 59 five-year-old kindergartners (25 girls, total *M* = 5.5 years, *SD* = 0.44), the intermediate group consisted of 123 seven-year-old first graders (66 girls, total *M* = 7.04 years, *SD* = 0.40), and the oldest group consisted of 130 nine-year-old third graders (67 girls, total *M* = 9.5 years, *SD* = 0.41). The children were randomly sampled from kindergartens and elementary schools in seven communities in the German speaking part of Switzerland. An estimate of the socioeconomic background of the families was calculated based on the type of community in which the parents lived. This information is provided by the Swiss Federal Statistical Office (BFS). Accordingly, approximately 23% of the children's parents had little or no secondary education, and approximately 23% had earned a higher vocational diploma or a university degree. These numbers are fairly representative of the German speaking part of Switzerland (Malti et al., in press). Ethnic composition in the German part of Switzerland is rather homogeneous, and a recent representative study of 6-year-old children has shown that approximately 98% of the primary caregivers are Swiss or of another European nationality (Malti et al., in press).

*Measures*

*Interpretive understanding*. Two tasks from Lalonde and Chandler (2002) were used to assess children's interpretive understanding (Sokol, 2004). The children had to interpret the ambiguous parts of drawings from the perspective of two hand puppets. For example, the first task consisted of drawing "a ship arriving too late to save a drowning witch." After discussing the picture with the child, the experimenter placed it in an

envelope with a small rectangular cutout that formed a small viewing window. The cutout concealed the part of the picture showing the ship's bow and the witch's pointed hat. Thus, the visible part of the picture showed two triangles. This ambiguous picture was shown to two different hand puppets. The experimenter told the child that the two puppets had never seen the picture before nor heard any part of the discussion of what the full drawing actually depicted. The experimenter then presented the first puppet and asked, "What does puppet X think this is?" The question was then repeated for the second puppet. The second task presented another line drawing ("an elephant and an orange"), and the same procedure was used as in the first task.

The coding procedure outlined by Lalonde and Chandler (2002) was used. Responses that reflected the mistaken conclusion that the puppets could see what the pictures entailed (e.g., a ship) were coded as reality errors. Less explicit mistakes that still contained trace elements from the fuller picture were scored as contamination errors. Next, the combined belief attributions within each task were scored. A response was scored as noninterpretive if the child gave identical responses for the two puppets or if either response contained a reality or contamination error. Responses were scored as reflecting interpretive understanding if the child attributed clearly different beliefs to each puppet (i.e., puppet 1 thinks it is X, puppet 2 thinks it is Y). Children with an interpretive response in one task, but not in the other, were scored as transitional if the response pair in the noninterpretive task contained at least one divergent belief attribution. The scores of the two tasks were significantly correlated, $r(308) = .26$, $p < .001$. The children's overall social understanding was scored 2 if interpretive, 1 if transitional, and 0 if noninterpretive.

*Moral development.* Moral and affective judgments were assessed by interviewing the children individually. The interview consisted of two stories on hypothetical moral rule transgressions frequently found in the literature (Smetana et al., 2003): (a) bullying another child verbally, and (b) physically harming another child (Keller, Lourenço, Malti, & Saalbach, 2003; Nunner-Winkler & Sodian, 1988). The stories were gender-matched and illustrated with color cartoons. After the stories were presented to the children, they were asked questions about: (a) the severity of the moral transgression and its justification: "Is it right or wrong for the child to do X?," and if no, "Is it a little bit bad or very bad? Why?"; (b) authority independence: "If the teacher did not see the child, is it OK or not OK for the child to (x)?"; (c) rule independence: "If the teacher never told the child that he shouldn't (x), is it OK or not OK for the child to (x)?"; (d) generalizability: "This child did (x) at kindergarten/school, is it OK or not OK for the child to (x) at home?"; (e) deserved punishment: "Should the transgressor get in trouble?", and if yes, "a little bit or a lot?"; (f) attributions of emotion to the victimizer (affective judgment): "How do you think this child will feel after s/he (x)es?" Why?" After presentation of the last question, the children were shown emotion labels selected from previous research (Arsenio, 1988; Smetana et al., 1999). These labels consisted of schematic line drawings of faces depicting an emotion (happiness, anger, sadness, fear, none), with the verbal label of the emotion (i.e., happy, angry, sad, fearful, neutral) printed below the face. The emotion labels were also explained orally, and the children were repeatedly asked to name the respective labels to ensure adequate understanding. Due to our theoretical interest in single-valence emotions, the children were asked to name only one emotion.

The moral judgments on the severity of the transgression and the necessity of punishment were coded on 3-point scales ranging from 1 (*right*) to 3 (*very bad*) for severity, and from 1 (*none*) to 3 (*a lot*) for deserved punishment (Smetana et al., 2003). The judgments of rule independence, authority independence, and generalizability were dummy-coded, with responses that the behavior was right coded as 0, and responses that the behavior was wrong coded as 1. The three judgments were then summed and labeled "moral evaluation" (range 0-3), with a higher score indicating a higher moral evaluation. The variables of severity judgment, deserved punishment, and moral evaluation were all significantly intercorrelated across the two stories (*r*s ranging from .40 to .53, all significant at $p < .001$), and the three means across the stories were therefore calculated.

The variables of severity judgment and moral evaluation were correlated as well, $r(311) = .20$, $p < .01$, and we therefore created an overall mean score labeled "moral evaluation," using *z*-standardized scores. Thus, there were two overall indices: (a) moral evaluation and (b) deserved punishment. Higher scores indicate higher moral evaluation and more deserved punishment, respectively.

The children's justifications of their moral judgments and emotion attributions were classified using categories adapted from previous research (e.g., Arsenio & Fleiss, 1996; Smetana et al., 2003): (a) moral: unfairness of the action or considerations of the other's welfare (e.g., "It's not right, because it is unfair," "It's not right, because it hurts the other"); (b) authority oriented: negative sanctions from authorities or peers after the transgression (e.g., "You will be punished by the teacher"); (c) hedonistic: satisfaction of personal needs (e.g. "It's fun to pull her hair"); and (d) undifferentiated: failure to give a specific reason or nothing beyond a simple repetition of mere facts ("because he did

this"). All responses were probed and the resulting arguments coded. For example, if the child initially responded with "It is not right" and then after probing "because you should not steal," the argument was classified as moral. If a child also responded with "because it is not right" after probing, this argument was classified as moral as well, because it represents a naive moral concept (Keller, 1996). The children's answers were coded as 1 if they fit in one of the above categories and as 0 if they did not; to control for the varying number of responses, the mean proportions of each type of justification were calculated for each child. The interrater reliability between the original coder and a second coder, based on 15% of the interviews, is $\kappa = .86$.

Next, a measure representing level of moral reasoning in the context of moral judgments and emotion attributions was computed for each child. This coding was adapted from previous research (Malti et al., 2008). The children were assigned composite scores by weighting the child's proportional reasoning scores. The scores for moral/altruistic reasons were weighted 4, sanction-oriented reasons 3, unelaborated reasons 2, and hedonistic reasons 1. Only one child judged the rule to be invalid and justified this with undifferentiated reasons. Furthermore, no child judged the rule to be valid or attributed negative emotions with a hedonistic justification. It thus seemed justified to code undifferentiated reasons higher than hedonistic reasons, because the former are accompanied by a naïve understanding of rule validity or moral emotion attribution, whereas the latter are not (Malti et al., 2008). The final scores were labelled "moral judgment reasoning" and "emotion attribution reasoning." The two scores are significantly correlated, $r(294) = .31$, $p < .001$, and an overall mean score, labelled "moral reasoning," was computed.

Emotion attributions were placed in one of five affect categories. The categories were dummy-coded 1 if the respective category was used and 0 if it was not. Very few children spontaneously mentioned more than one emotion (< 4%), and these second emotions were not considered further. As the emotion attribution scores are significantly correlated across the two stories (*r*s ranging from .20 to .47, all significant at $p < .001$), overall mean scores were computed for each category.

*Aggressive and prosocial behavior*. Aggressive behavior was assessed by teacher ratings on four items (e.g., "This child verbally threatens to hit or beat up other children"), taken from Crick, Casas, and Mosher (1997) and the Strength and Difficulties Questionnaire (Goodman, 1997). Prosocial behavior was assessed by teacher ratings on five items (e.g., "This child frequently helps other children"). The teachers indicated on a 4-point scale how well each item described the child, and mean scale scores were then calculated. Cronbach's $\alpha$ is .91 for the aggressive behavior scale and .84 for the prosocial behavior scale. Higher scores indicate more aggressive and more prosocial behavior, respectively.

*Language ability*. The children's language ability was assessed with the Sentence Imitation subtest of the Heidelberg Evaluation of Language Development Test (Grimm & Schöler, 1991). It measures children's ability to verbally repeat 12 spoken sentences of differing complexity. The children's answers were transcribed verbatim and later scored. A sentence reproduction was scored 2 if completely correct, 1 if partly correct, and 0 if totally incorrect. The mean verbal reproduction score is 20.31 ($SD = 5.16$), $\alpha = .91$. There is a significant age effect, $F(2, 309) = 10.12$, $p < .001$, $\eta^2 = .06$, indicating that the 5-year-

olds scored lower than both the 7- and the 9-year-olds on verbal reproduction (*M*s = 17.88, 20.23, 21.45; Bonferroni adjusted $p < .01$).

*Procedure*

The children were interviewed individually in a separate, quiet room of the kindergarten or school. Written informed parental consent for participation was obtained. The interviewers were trained undergraduate psychology or education students. There were two interview sessions, each lasting about 20-30 minutes. In the first session, the moral development interview was conducted. In the second session, the children took the interpretive understanding and language tests. The teachers filled in a questionnaire on each child's social behavior and returned these to the tester after the second session.

## Results

*Descriptive Analyses*

Table 1 shows the means and standard deviations for the study variables by age group, and Table 2 displays the correlations of age, gender, and language with the other study variables.

Age is significantly related to interpretive understanding and most of the moral measures. Gender is not significantly related to any of the social-cognitive measures. Boys reported more deserved punishment than girls, whereas girls were more prosocial and less aggressive than boys. Language skills are positively related to interpretive understanding and to some of the moral measures, as well as to prosocial behavior.

*Relations Between Moral Judgments, Emotion Attributions, and Interpretive Understanding*

First, correlations were calculated for each age group, with language partialled out, to examine the relations between moral judgments and emotion attributions (Table 3). Moral evaluation and moral reasoning are negatively associated with attributions of neutral feelings in the 5-year-olds, and they are negatively associated with attributions of happiness in the 7-year-olds. Ratings of deserved punishment are positively associated with attribution of anger, and negatively with attribution of fear, in the 7-year-olds. Moral reasoning is negatively associated with happy and angry attributions, and positively associated with attributions of sadness, in the 9-year-olds.

Additional correlations were calculated to determine the relations between interpretive understanding, moral judgments, and emotion attributions. As age and language are significantly correlated with these measures, the correlations were computed within each age group, with language partialled out. Analyses were not performed separately for boys and girls because gender was not related to any of the other measures. We found that the 9-year-olds' interpretive understanding is negatively associated with moral reasoning, $r(126) = -.22$, $p < .05$.

*Relations of Social Behavior with Interpretive Understanding, Moral Judgment, and Emotion Attributions*

Correlations were calculated to test the hypotheses concerning the relationships of prosocial and aggressive behavior with interpretive understanding, moral judgments, and emotion attributions (Table 4). Aggression is positively related to interpretive understanding and attribution of happy emotions; it is negatively associated with moral reasoning. Prosocial behavior is negatively associated with anger but positively associated with fear.

To further test the effects of interpretive understanding, moral judgments, and emotion attributions on pro- and antisocial behavior, two hierarchical linear regression analyses were performed with prosocial behavior and aggressive behavior as the respective dependent variables. As preliminary analyses determined that the interactions between age and both interpretive understanding and the moral measures are not significant, the interactions were not considered in further analyses. In both models, age, language skills, and gender were entered in the first step. Interpretive understanding was entered in the second step. The moral judgment variables (i.e., moral evaluations, deserved punishment, and moral reasoning) and the emotion attribution variables were entered in the third step. Preliminary tests indicated multicollinearity among the emotion attribution variables (eigenvalues < .03 and many proportions with shared variance >. 50; Belsley, Kuh, & Welsch, 1980). As this multicollinearity could cause instability in the coefficient estimates and problems for predictive validity, we decided to drop neutral emotion attributions from the final analyses, all the more so because we had no specific hypothesis for this attribution in relation to social behavior and preliminary analyses revealed it to be unrelated to social behavior (Table 5).

Aggressive behavior is significantly predicted by the independent variables, $R^2$ = .10, $F(11, 290) = 2.61$, $p < .01$, Cohen's $f^2 = .11$; it is positively predicted by gender, $\beta = .16$, $p < .01$, and interpretive understanding, $\beta = .14$, $p < .05$; it is negatively predicted by moral reasoning, $\beta = -.17$, $p < .05$. Prosocial behavior is significantly predicted by the independent variables, $R^2 = .14$, $F(11, 290) = 4.10$, $p < .001$, Cohen's $f^2 = .16$; it is negatively predicted by age, $\beta = -.13$, $p < .05$, and by gender, $\beta = -.14$, $p < .05$, and positively by language skills, $\beta = .23$, $p < .001$, and fearful emotions, $\beta = .17$, $p < .05$.

## Discussion

The present study investigated in a sample of 5-, 7- and 9-year-old children (a) the interrelations between moral judgments, emotion attributions, and interpretive understanding and (b) the relative roles of interpretive understanding, moral judgments, and emotion attributions in determining behavioral differences. The results contribute to integrative empirical research on this topic.

Strikingly, no significant relationships were found between moral judgments and interpretive understanding, except for one correlation. The direction of this correlation is surprising, as 9-year-old children with advanced interpretive understanding showed less moral reasoning. These findings seem to contradict the claim that the domains of moral and social understanding are interdependent (Wellman & Miller, 2008). Rather, the findings support the conclusion that development within the different domains of social knowledge is highly domain-specific (Smetana, 2006). Thus, young children seem to be "intuitive moral philosophers" (Lourenço, 2001) who construct moral judgments even before they have acquired interpretive theory of mind understanding; even the 5-year-olds partly justified their moral evaluations and emotion attributions following transgressions with moral rationales. Most probably, young children are able to construct these moral judgments because they experience these situations as emotionally salient, and therefore they do not need the more complex forms of perspective-taking ability in order to interpret everyday social interactions (Arsenio et al., 2006). On the other hand, perspective-taking abilities may be important in resolving some more complex types of moral dilemmas, for example, interpersonal conflicts in which two individuals act to further their mutually opposed goals, but both have legitimate reasons for their

conflicting interpretations (Ross et al. 2005). However, in the absence of a moral concern about caring or justice, these skills can just as well be used to deceive others (Turiel, 1977). Nevertheless, the process of constructing early moral judgments is likely to be related to the development of perspective-taking and empathic skills (Helwig, 2008). There is evidence that those indicators of perspective taking that tap most deeply into the emotional experiences associated with social interactions (e.g., emotion understanding) are related to children's emerging moral sensitivity (Dunn, Brown, & Maguire, 1995). Understanding what others feel may facilitate the early anticipation of moral emotions such as empathy and caring (Harris, 1989; Hoffman, 2000).

As expected, no significant relationships were found between emotion attributions and interpretive understanding. An interpretive theory of mind may not be necessary for a spontaneous empathic identification with a victim's situation (as expressed in negative emotion attributions to wrongdoers). Interpretive understanding might represent "cold cognition," whereas the attribution of single-valence emotions is more likely to represent "hot cognition" (i.e., an expression of caring about the victim).

The findings reveal an interesting developmental association between moral judgments and emotional attributions. Whereas the youngest children associated neutral emotions less frequently with moral judgments, the 7- and 9-year-olds associated moral judgments more frequently with less happy emotions. The 9-year-olds also related moral judgments to sad feelings (e.g., guilt). These findings suggest that the affective meaning associated with moral judgment may differ as a function of age. These findings support the results from a study by Malti et al. (2008), which documented the relation between moral judgments and the attribution of moral emotions. Perhaps older children are

increasingly capable of anticipating the negative social and psychological consequences of a transgression through their multi-faceted experiences in conflicting social situations. These everyday experiences may help them to increasingly coordinate their moral judgments with their corresponding moral emotions, such as guilt feelings (Kochanska & Aksan, 2004).

The second research question focused on the roles played by interpretive understanding, moral judgments, and emotion attributions in children's pro- and antisocial behavior. Prosocial behavior was negatively related to deserved punishment and anger, whereas it is positively related to fear. In contrast, aggression was positively associated with interpretive understanding, deserved punishment, and happy emotion attributions; it was negatively associated with moral reasoning. On the one hand, these relations support the view that emotion attributions are important prerequisites for individual differences in behavior, because they tell us about children's motives regarding (im)moral actions (Krettenauer et al., 2008). Thus, the positive relation between aggression and happy emotion attributions is in line with the results of previous studies (Arsenio et al., 2006). On the other hand, the negative relationship between aggression and moral reasoning suggests that aggression may be associated with a domain-specific deficit of moral knowledge (Stams et al., 2006). As judgments of deserved punishment may indicate an external, heteronomous conception of morality, the negative relations between these judgments and aggression may imply that children who behave aggressively judge the external consequences of transgressions as great (i.e. punishment), because they know about the punitive consequences of their behavior through their everyday experiences; in contrast, children who behave prosocially gave

low ratings of deserved punishment, because they potentially focus more on internal consequences (guilt) than on anger or punishment.

It is important to note that there was a positive relationship between interpretive understanding and aggressive behavior, which continued to appear in the multivariate analyses. This suggests that children who behave aggressively may even have superior social-cognitive skills (Gasser & Keller, in press). In this study, we did not differentiate instrumental, proactive forms of aggression from more reactive, impulsive forms of aggression. However, it is likely that particularly proactive forms of aggression are related to superior social-cognitive skills, because this behavior is more planful than reactive aggression (Sutton et al., 1999). The items we used may capture proactive forms of aggression better than reactive forms, as they did not explicitly refer to impulsivity indicators such as temper tantrums. Future research that disentangles the relations between interpretive understanding with proactive and reactive aggression is warranted.

Furthermore, the multivariate analyses show that prosocial behavior was predicted by the attribution of fear. Possibly, prosocial behavior is motivated by fear elicited through the associated internal or social consequences resulting from a transgression, such as remorse or the loss of a social relationship. Further research is needed to elaborate this speculative interpretation. As far as moral judgments and prosocial behavior are concerned, the effect of deserved punishment on prosocial behavior vanished when other variables were controlled. This result points to the well-known gap between moral judgments and moral actions (Blasi, 1983), and it emphasizes the significance of moral emotions. This finding is important, particularly in regard to interventions, because it might mean that we should focus not on the promotion of

prosocial behavior, but rather on the facilitation of moral emotions (Maxwell & Reichenbach, 2005), because the latter inherently indicates moral concern and the acceptance of personal responsibility (Keller, 1996; Malti et al., in press). Thus, future educational interventions to promote the development of children's social competence may want to incorporate and/ or more strongly emphasize efforts to facilitate moral emotions.

We found no developmental effects in the relationships of interpretive understanding, moral judgments, and emotion attributions to social behavior. This negative pattern of results is somewhat inconsistent with the previous literature (Hughes & Leekam, 2004). Some of the discrepancy may be related to the fact our study used different measures than other studies. For example, many of the other studies coded only negative and positive emotion attributions, whereas we distinguished between different types of negative emotions. Our study suggests that these attributions develop along distinctive pathways (e.g., angry and happy emotions declined with age, whereas fearful emotions increased with age); potentially, different relationships to social behavior may occur. Longitudinal studies using multi-informant, multi-measures designs may shed further light on the developmental relationships studied here.

Our study has several limitations. First, we relied exclusively on teachers' reports of prosocial and aggressive behavior. We thus cannot entirely exclude the possibility that our finding that prosocial behavior is related to moral emotions, but not to interpretive understanding, might be due to the behavioral measures we used; that is, the forms teachers used to rate helping others in need were rather crude. The items in these forms might be more similar structurally to the moral measures than to the more complex

measure of interpretive understanding. Nevertheless, our findings support the expected conceptual relations and thus validate our measurement strategy; furthermore, previous studies have also shown that the positive relation between moral emotion attributions and prosocial behavior applies to both teacher ratings and behavioral measures of prosocial behavior (Malti et al., in press), as well as teacher and peer ratings of aggressive behavior (Gasser & Keller, in press). Future research that utilizes both peer reports and observational measures of social behavior and addresses more complex forms of behavior (such as distributive justice behavior) seems warranted to verify the relations found in the present study. Second, only emotion attributions to a wrongdoer, rather than to the self, were assessed. As previous research indicates that children attribute more negative emotions to the self than to wrongdoers (Keller et al., 2003), research that differentiates between self-attributed and other-attributed emotions and that connects moral judgments with social behavior is needed. Third, our measure of interpretive understanding tapped only one dimension of social understanding. Although it is a key dimension (Chandler & Lalonde, 1996) and was chosen to reflect our constructivist perspective, a multi-dimensional assessment might have yielded more differentiated findings, because different dimensions of social understanding may involve different developmental trajectories (Chandler, 1987). Fourth, our sample of 5-year-olds was only about half as large as our samples of 7- and 9-year-olds, thus limiting the power of the research design. Fifth, it is very difficult to draw causal inferences on the relationships of interest, as this study was correlational.

Despite these limitations, our study provides useful insights into the relations between children's interpretive understanding, moral competencies, and pro- and

antisocial behavior. As such knowledge has implications for selecting educational strategies aimed at promoting social competence and prosociality, the present findings provide a new impetus for preventive practice.

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Table 1

*Means (Standard Deviations) of Interpretive Understanding, Moral Judgments, Emotion Attributions, and Social Behavior by Age Group*

| | Age group | | |
|---|---|---|---|
| | 5 | 7 | 9 |
| Language | 17.87 (6.59) | 20.23 (5.26) | 21.45 (5.16) |
| Interpretive understanding | 0.44 (0.63) | 0.90 (0.82) | 0.91 (.75) |
| Moral judgments | | | |
| Moral evaluation | -0.42 (1.42) | -0.09 (0.49) | 0.24 (0.58) |
| Deserved punishment | 2.32 (0.68) | 2.01 (0.62) | 1.97 (0.51) |
| Moral reasoning | 2.99 (0.67) | 3.34 (0.56) | 3.55 (0.39) |
| Emotion attributions | | | |
| Happy | 0.11 (0.28) | 0.15 (0.31) | 0.04 (0.15) |
| Angry | 0.36 (0.43) | 0.26 (0.35) | 0.12 (0.26) |
| Fearful | 0.08 (0.20) | 0.16 (0.30) | 0.25 (0.36) |
| Sad | 0.35 (0.44) | 0.18 (0.33) | 0.33 (0.40) |
| Neutral | 0.11 (0.25) | 0.27 (0.34) | 0.26 (0.34) |
| Social behavior | | | |
| Aggressive | 1.48 (0.64) | 1.62 (0.71) | 1.54 (0.64) |
| Prosocial | 3.20 (0.56) | 2.72 (0.77) | 2.91 (0.49) |

Table 2

*Correlations of Age, Gender, and Language with Study Variables*

| | Age | Gender | Language |
|---|---|---|---|
| Interpretive understanding | .18** | -.08 | .16** |
| Moral judgments | | | |
| Moral evaluation | .30*** | -.03 | -.06 |
| Deserved punishment | -.18** | .12* | -.21*** |
| Moral reasoning | .35*** | -.10† | .20*** |
| Emotion attributions | | | |
| Happy | -.15* | .09 | -.10† |
| Angry | -.25*** | .00 | -.10† |
| Fearful | .20** | -.06 | .16** |
| Sad | .04 | .03 | .00 |
| Neutral | .13* | -.01 | .00 |
| Social behavior | | | |
| Aggressive | .01 | .15** | -.03 |
| Prosocial | -.10 | -.15* | .19** |

† $p < .10$. $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3

*Correlations between Moral Judgments and Emotion Attributions by Age Group, with Language Partialled Out*

| | Moral judgments | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Moral evaluation | | | Deserved punishment | | | Moral reasoning | | |
| Emotion attributions | 5-year-olds | 7-year-olds | 9-year-olds | 5-year-olds | 7-year-olds | 9-year-olds | 5-year-olds | 7-year-olds | 9-year-olds |
| Happy | -.15 | -.23* | -.11 | -.20 | -.08 | -.04 | -.01 | -.35*** | -.43*** |
| Angry | .28† | .10 | -.02 | .05 | .21* | .07 | -.13 | .23* | -.17* |
| Fearful | .20 | -.10 | .13 | .21 | -.19* | .04 | .14 | .02 | .03 |
| Sad | -.08 | .11 | -.02 | .12 | -.01 | .05 | .22 | .17† | .20* |
| Neutral | -.32* | .05 | .06 | -.24† | .03 | -.13 | -.28* | -.07 | .07 |

† $p < .10$. * $p < .05$. ** $p < .01$.*** $p < .001$.

Table 4

*Correlations of Social Behavior with Moral Judgments, Emotion Attributions, and Interpretive Understanding*

| | Aggressive behavior | Prosocial behavior |
|---|---|---|
| Moral judgments | | |
| Moral evaluation | .07 | -.02 |
| Deserved punishment | .12* | -.11* |
| Moral reasoning | -.17** | .06 |
| Emotion attributions | | |
| Happy | .12* | -.06 |
| Angry | .06 | -.14* |
| Fearful | -.04 | .17** |
| Sad | -.07 | .07 |
| Neutral | -.02 | -.06 |
| Interpretive understanding | .12* | -.07 |

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5

*Results of the Hierarchical Linear Regression Analyses Predicting Social Behavior by Interpretive Understanding, Moral Judgments, and Emotion Attributions*

| Aggressive behavior | | | Prosocial behavior | | |
|---|---|---|---|---|---|
| Independent variables | β | $\Delta R^2$ / $f^2$ / $\Delta F$ for step | Independent variables | β | $\Delta R^2$ / $f^2$ / $\Delta F$ for step |
| Step 1 | | .03/ .03 / 2.72* | Step 1 | | .08 / .09 / 8.39*** |
| Age | .01 | | Age | -.16** | |
| Language skills | -.02 | | Language skills | .22*** | |
| Gender | .16** | | Gender | -.14* | |
| Step 2 | | .02 / .05 / 6.03* | Step 2 | | .01 / .10 / 3.64 |
| Interpretive understanding | .14* | | Interpretive understanding | -.10 | |
| Step 3 | | 05 / .11 / 2.06* | Step 3 | | .05 / .16 / 2.30* |
| Moral evaluation | .08 | | Moral evaluation | .02 | |
| Deserved punishment | .07 | | Deserved punishment | -.07 | |
| Moral reasoning | -.16* | | Moral reasoning | .02 | |
| Happy EA | .10 | | Happy EA | -.02 | |
| Angry EA | .06 | | Angry EA | -.06 | |
| Fearful EA | .01 | | Fearful EA | .17* | |

| | | | |
|---|---|---|---|
| Sad EA | -.01 | Sad EA | .12 |

*Note.* EA = Emotion attribution.

* $p < .05$. ** $p < .01$. *** $p < .001$.