The Role of Moral Emotions in Children’s Sharing

by

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Abstract

This study examined the development of sharing and its associations with moral emotions in an ethnically diverse sample of 244 4-, 8-, and 12-year-old children. Sharing was measured through participants’ allocation of resources in the dictator game. Participants completed self-report measures of sympathy and anticipated their negatively and positively valenced moral emotions (i.e., guilt and pride) following actions that either violated or upheld moral norms. Results demonstrated an age-related increase in sharing between ages 4 and 8. For children with low levels of sympathy, sharing was predicted by negatively valenced moral emotions following the failure to perform prosocial duties. Sympathy also emerged as a significant predictor of sharing behaviour in early childhood. The implications of these results are discussed in relation to children’s developing norms of fairness and the emergence of two compensatory emotional pathways to altruistic sharing, one via sympathy and one via negatively valenced moral emotions.
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Chapter 1
Introduction

The study of prosocial behaviour is widely considered to be central to the understanding of children’s moral development (e.g., Eisenberg, 1986; Hoffman, 2000), and over the past several decades much research in developmental psychology has focused on understanding the affective antecedents of prosocial behaviour in childhood and adolescence (for a review, see Eisenberg, Spinrad, & Sadovsky, 2006). What remains unclear, however, is how specific subtypes of prosocial behaviour develop, and how their development is associated with children’s moral emotions.

Because of its immediate relevance for moral development, the present study focuses on altruistic sharing as a subtype of prosocial behaviour. Although non-altruistic prosocial behaviours, by definition, result in benefit to another individual, their motives are unspecified and may be focused on the self (e.g., the avoidance of punishment or the expectation of external rewards) (Eisenberg & Miller, 1987). Altruistic prosocial behaviours, in contrast, are specifically motivated by concern for others or by internalized moral values, and they are performed without the expectation of external reward (Carlo, 2006; Eisenberg & Miller, 1987).

Recent research in behavioural economics has made valuable contributions to our understanding of sharing and resource allocation (e.g., Benenson, Pascoe, & Radmore, 2007; Fehr, Bernhard, & Rockenbach, 2008). However there still remains a marked lack of research examining the development and affective-moral correlates of altruistic sharing across childhood and early adolescence. The present study aimed to address these research gaps, in part, by investigating the development of sharing behaviour in an ethnically diverse sample of 4-, 8-, and 12-year old children, and by examining the role of moral emotions in the development of altruistic sharing.

1. The Development of Sharing

Both cross-sectional and longitudinal research on prosocial behaviour has generally found that overt prosocial behaviour increases from early childhood to early adolescence (for a review, see Eisenberg et al., 2006). Yet there are variations in this effect depending on the methodology and measure of prosocial behaviour used. This variation in age-related findings points to the benefit
of isolating specific prosocial behaviours (Fehr et al., 2008) and using a consistent measure across age groups (Gummerum, Keller, Takezawa, & Mata, 2008).

In the present study, we focused on sharing behaviour specifically. Despite its relevance for the development of large-scale cooperation, fairness, and care (Malti, Gummerum, Keller, Chaparro, & Buchmann, 2012; Olson & Spelke, 2008), sharing remains one of the less-frequently studied forms of prosociality in developmental research (for exceptions, see Gummerum et al., 2008; Malti et al., 2012). Most developmental studies have focused on other types of prosocial behaviour, such as helping or the provision of emotional support (Warneken & Tomasello, 2006) or have defined prosocial behaviour broadly so that it encompasses a range of behaviours (e.g., cooperation, social competence) from which sharing cannot be isolated (Eisenberg & Miller, 1987).

Recently, an upswell of interest in children’s sharing behaviour has occurred in the field of behavioural economics. In line with the moral relevance ascribed to altruistic behaviour in developmental science, researchers studying the sharing of resources within a behavioural economics paradigm have identified it as an exemplar of concern for others’ welfare, even at a cost to oneself (e.g., Fehr et al., 2008). The existing developmental studies on altruistic sharing have adopted methodological approaches derived from economic game theory (e.g., Kahneman, Knetsch, & Thaler, 1986), specifically the dictator game (e.g., Gummerum, Hanoch, Keller, Parsons, & Hummel, 2010). The dictator game is widely considered to be a measure of altruistic (as opposed to non-altruistic) sharing, as selfless allocations of resources in the dictator game have no external benefits (Fehr et al., 2008). In the simplest one-shot version of the dictator game, a single player chooses how many (if any) of a set number of items to allocate to an anonymous other. Sharing is completed anonymously and there is no opportunity for the recipient to respond, retaliate, or form a negative evaluation of the (non)sharer. Inversely, there are no external consequences for selfish allocations (Gummerum et al., 2010).

Previous studies have found that the number of items shared in the dictator game increases between early to middle childhood (Blake & Rand, 2010; Kogut, 2012). For example, Benenson and colleagues (2007) examined the sharing allocations of children aged 4, 6, and 9, and found that the number of stickers shared in the dictator game was significantly higher for 9-year-olds.
than for 4-year-olds. In the only longitudinal study to date on children’s altruistic sharing, Malti and colleagues (2012) similarly found that Swiss children’s sharing allocations were significantly higher at age 9 than at age 6. Conflicting findings have emerged, however, regarding developmental differences in sharing beyond middle childhood, with no consensus on whether sharing remains stable (Almås, Cappelen, Sørensen, & Tungodden, 2010), increases (Harbaugh, Krause, & Liday, 2002), or decreases (Leman, Keller, Takezawa, & Gummerum, 2009) between middle to late childhood and early adolescence. Taken together, developmental findings on sharing behaviour indicate a general increase between early and middle childhood, whereas no clear developmental trend has been established for sharing behaviour beyond middle childhood. We extend this line of research by investigating whether age-related increases, which are evident between early and middle childhood, also exist between middle childhood and early adolescence.

2. The Role of Moral Emotions in the Development of Children’s Sharing Behaviour

Negatively and positively valenced moral emotions, such as guilt and pride, have been defined as self-conscious or self-evaluative emotions because they are evoked by the individual’s understanding and evaluation of the self (Eisenberg, 2000; Tangney, Stuewig, & Mashek, 2007). They are considered to arise when one acts, or makes the decision to act, in violation of (or in accordance with) one’s moral standards (Tangney et al., 2007). For example, intentionally causing pain to another violates the norm against causing harm and may elicit negatively valenced moral emotions (NVME) such as guilt. In contrast, positively valenced moral emotions (PVME), such as moral pride, arise when one has acted in a manner congruent with internalized moral standards (Malti & Keller, 2010; Mascolo & Fischer, 1995). By providing emotional feedback about the moral acceptability of one’s actions (Tangney et al., 2007), negatively and positively valenced moral emotions such as guilt and pride may facilitate other-oriented, prosocial behaviours (Eisenberg, 2000; Hoffman, 2000).

In addition to NVME (i.e., guilt) and PVME (i.e., pride), the current study focuses on the distinct moral emotion of sympathy. Sympathy (i.e., other-oriented concern), like empathy (i.e., emotional contagion), involves the comprehension or apprehension of another’s affective state.
Unlike empathy, however, sympathy primarily entails other-oriented concern and not the experience of the same or a similar emotion as the other. In this way, sympathy entails a degree of distancing between the self and the other that is not present in empathy (Eisenberg, 2000). Sympathy has been posited by theorists to be an important motive of morally relevant, prosocial behaviour (Eisenberg, 1986).

It is also necessary to draw a distinction between sympathy and other negatively valenced moral emotions (i.e. guilt). Although both sympathy and NVME such as guilt are negatively valenced, sympathy is focused on others (i.e., concern over another’s emotional state), whereas other NVME (guilt) are focused on the self (i.e., evaluation of the self or behaviour in reference to a moral norm). In the current discussion we will use the terms negatively valenced moral emotions (NVME) and positively valenced moral emotions (PVME) to describe the self-oriented and self-evaluative moral emotions of guilt and pride and their basic emotional correlates (i.e., sad, bad, happy, good), whereas sympathy will be measured and discussed separately from other NVME as it is distinct in its orientation towards others (Malti & Ongley, in press).

Previous research has provided evidence that sympathy plays an important role in the development of children’s overt prosocial behaviour (for a review, see Eisenberg et al., 2006), however few studies have investigated the role of sympathy in altruistic sharing. In a first study on sympathy and altruistic sharing, Malti and colleagues (2012) showed that children’s sympathy with anonymous peers at ages 6 and 7 predicted subsequent sharing behaviour at ages 7 and 9, respectively.

The majority of research on the development of children’s NVME (i.e., guilt and its basic emotional correlates) has been conducted within the happy victimizer tradition (for reviews, see Arsenio, Gold, & Adams, 2006; Krettenauer, Malti, & Sokol, 2008). In this research paradigm, children are presented with hypothetical moral rule violations (e.g., stealing another child’s chocolates) and are asked to anticipate the emotion they would expect the hypothetical victimizer (or themselves in the role of the victimizer) to feel as a result of the transgression. Typically, the attribution of negatively valenced emotions to the self-as-wrongdoer is interpreted as an indication of the internalization of moral norms and moral obligations and as the beginnings of
the development of moral autonomy and agency (see Krettenauer et al., 2008; Piaget, 1954/1981; Sokol, Hammond, & Berkowitz, 2010).

Previous research with children and adolescents has also demonstrated direct relations between attributions of NVME (i.e., guilt) and various types of prosocial behaviours (for a review, see Malti & Krettenauer, in press). For example, Chapman, Zahn-Waxler, Cooperman, and Iannotti (1987) found a positive association between the attribution of guilt to story characters and engaging in subsequent helping behaviour in a sample of children in Preschool through Grade 6. In a study examining the moral development of physically abused and neglected 5-year olds, Koenig, Cicchetti, and Rogosch (2004) found that the lower levels of NVME (i.e., guilt) displayed by girls who were physically abused were associated with lower levels of donation behaviours. Malti, Gummerum, and Buchmann (2007) found that self-attributed NVME predicted 6-year-olds’ mother-rated overt prosocial behaviour and Olthof (2012) found that NVME predicted 10- to 13-year-olds’ peer-rated prosocial behaviour.

Although previous research has established a positive association between NVME and other forms of prosociality, very few studies have yet to provide evidence for a direct relationship between NVME and altruistic sharing. In one existing study with 3- to 5-year-olds, Gummerum and colleagues (2010) found that self-attributed NVME in the happy victimizer task significantly predicted altruistic sharing in the dictator game. Whether this relationship holds in older age groups, however, and what role, if any, is played by sympathy in the association between NVME and sharing, are questions that remain unanswered.

In contrast to the body of research on NVME and prosocial behaviour, positively valenced moral emotions (PVME) have gone almost entirely unstudied in moral development research thus far (for two exceptions with adolescent samples, see Krettenauer, Jia, & Mosleh, 2011; and Krettenauer & Johnston, 2011). Several developmental researchers, however, have highlighted the need for such investigations (Hart & Matsuba, 2007; Malti & Ongley, in press). The experience of PVME in moral contexts (i.e., when helping, including, or sharing with another) is a rewarding one. When acting in accordance with moral norms, pride (and its basic emotional correlates, such as happiness) makes children feel good about either themselves or their specific
moral behaviours. This positive, rewarding affective experience may serve to encourage future other-oriented and prosocial behaviours.

3. The Current Study

In summary, the current study aimed to examine the development of altruistic sharing across early childhood, middle childhood, and early adolescence in an ethnically diverse sample, and to investigate how sharing relates to sympathy, negatively valenced moral emotions (i.e., guilt), and positively valenced moral emotions (i.e., pride). In line with previous research findings (e.g., Takezawa, Gummerum, & Keller, 2006), we hypothesized that there would be an overall age-related increase in sharing between early and middle childhood (i.e., age 4 and 8). We extended this research into early adolescence. Although studies using the dictator game have yielded conflicting findings regarding age-related changes in sharing behaviour after middle childhood, earlier studies using a donation paradigm have found that donating increases between middle childhood and early adolescence (e.g., Barnett, King, & Howard, 1979), and, accordingly, we expected to find an increase in sharing between ages 8 and 12. Studies using the dictator game differ from those using a donation paradigm (e.g., dictator game studies do not clearly delineate the resource recipients’ need), however we expected that our findings regarding developmental changes in sharing would be similar to those found in donation studies.

Based on findings from a previous study showing that sympathy predicted sharing in middle childhood (Malti et al., 2012), we hypothesized that sympathy would emerge as a significant predictor of altruistic sharing across all age groups. We also expected that the anticipation of NVME and PVME would be positively associated with sharing. The former hypothesis was drawn from previous research demonstrating a positive relationship between NVME and overt prosocial behaviour (for a review, see Malti & Krettenauer, in press) and between NVME and sharing behaviour in young children (Gummerum et al., 2010). The latter hypothesis was necessarily exploratory, as no previous research has investigated the association between PVME and prosocial behaviours. However, based on current theorizing that both negatively and positively valenced moral emotions may facilitate morally relevant behaviour (Krettenauer & Johnston, 2011), we hypothesized that PVME would predict altruistic sharing.
We examined the role of PVME and NVME in the prediction of sharing in two separate contexts: 1) the performance (or omission) of prosocial duties, and 2) social inclusion (or exclusion) of an out-group peer. We hypothesized contextual differences in the effect of NVME/PVME on sharing. This expectation was based on previous findings from social-domain research (e.g., Smetana, 2006) and happy-victimizer research (e.g., Nunner-Winkler, 1999) in which children have differentially evaluated and anticipated emotions following transgressions as they involve different types of moral norms. Specifically, we expected that NVME/PVME anticipated in prosocial contexts would be more strongly related to altruistic sharing than NVME/PVME anticipated in inclusion contexts.

Finally, we examined potential moderating effects of NVME/PVME in the association between sympathy and altruistic sharing. Related previous research (e.g., Malti, Gummerum, Keller, & Buchmann, 2009) has shown that for children with low levels of sympathy, prosocial behaviour increases with increasing levels of moral motivation (a combined measure of NVME and moral reasoning), and accordingly, we expected that this might also be the case for the association between sympathy and altruistic sharing.
Chapter 2
Method

1. Participants

The participants in the current study were a community sample of 244 children and their primary caregivers from a suburban area of a major Canadian city. Participants were 78 4-year-olds ($M$ age = 4.44 years, $SD = 0.27$; 38 girls [49%]); 82 8-year-olds ($M$ age = 8.49, $SD = 0.24$, 43 girls [52%]); and 84 12-year-olds ($M$ age = 12.50, $SD = 0.26$, 42 girls [50%]). Participating children were fluent in English (speaking and comprehension), as were their primary caregivers (speaking, writing, and comprehension). As a proxy for socioeconomic status, we asked primary caregivers to report their highest level of education. Fifty-five percent of primary caregivers reported that they had completed a university degree, followed in frequency by the completion of a college degree (23%), graduate degree (14%), and high school (7%). One percent of the primary caregivers chose not to report their level of education. As compared to data from the 2006 Census (Statistics Canada, 2007), the level of education of participants’ primary caregivers is representative of the general education level in the city from which our sample was drawn.

2. Procedure

Children and their primary caregivers visited the research laboratory once. Primary caregivers provided written informed consent for their child’s participation at the onset of the session. Children were tested independently in a separate room while their primary caregiver filled out a supplementary paper-and-pencil questionnaire on the child’s moral and social development and family demographic information. Each session lasted approximately 45 minutes and consisted of an interview and interactive game using paper-and-pencil tests and video recording. The testers were undergraduate psychology students who had been extensively trained in the relevant interview and observation techniques.

3. Measures

3.1 Sharing
Children’s sharing behaviour was measured using the dictator game (Kahneman et al., 1986). In line with existing research, 4- and 8-year-olds received 6 stickers (Benenson et al., 2007; Gummerum et al., 2010), whereas 12-year-olds received 6 chocolate coins. Chocolate coins were given to the 12-year-olds instead of stickers, as early adolescents generally do not value stickers to the same extent as younger children and we aimed for comparable perceived attractiveness of the shared items. After receiving their stickers/chocolate coins, participants were given the opportunity to share (or not share) any number of these items with an anonymous hypothetical child of the same age and gender (see Appendix A for a detailed description of the dictator game used in the current study). Consistent with previous research (Gummerum et al., 2010), a proportional sharing score was calculated in which the number of items each participant shared was divided by the total number of items they received from the experimenter.

3.2 Sympathy

Sympathy was measured with five items from Zhou, Valiente, and Eisenberg’s (2003) child-report sympathy scale, which is used widely in research with children (see, for example, Catherine & Schonert-Reichl, 2011; Malti et al., 2009). Participants heard five statements read aloud (e.g., “I often feel sorry for other children who are sad or in trouble”), and after each was asked whether the sentence is like him/her or not, and if so, how much. Participants were asked to answer spontaneously and not think too long about their answers. Responses were scored as follows: this is not like me was scored as 0, this is sort of like me was scored as 1, and this is really like me was scored as 2. Cronbach’s α for the sympathy scale was .80.

3.3 Anticipation of Negatively and Positively Valenced Moral Emotions

To measure children’s anticipation of NVME and PVME (i.e., guilt, pride, and their basic emotional correlates), participants responded to eight vignettes that were designed to elicit moral emotions (Malti, 2011; see Olthof, Schouten, Kuiper, Stegge, & Jennekens-Schinkel, 2000). The vignettes used in the current study were adapted from those used in previous research examining the development of moral emotions in the happy-victimizer paradigm (see Krettenauer et al., 2008). Each vignette was read aloud with accompanying illustrations. The vignettes represented two distinct moral contexts: 1) social inclusion (or exclusion) of an out-group peer, and 2) the
performance (or omission) of prosocial duties. Specifically, children’s anticipation of NVME was measured in contexts in which they imagined that they had failed to perform a prosocial duty (e.g., “Imagine that you and another boy are both making sand castles. The other boy asks you to help him finish his big sand castle and you say ‘no’”) or excluded another child from a social activity (e.g., “Jason and Noah are playing a game on the computer. Another boy asks if he can play too, but Jason says ‘no’”). Children’s anticipation of PVME was measured in hypothetical contexts in which they either performed a prosocial duty (e.g., “Imagine that a boy in school is crying and you decide to bring him some of this toys to make him laugh”) or included another child in a social activity (e.g., “Imagine that you are in school and playing a game with some kids. A new classmate asks you if he can join you playing the game and you say ‘Yes, I am going to let you join us’”) (see Appendix B for a complete list of vignettes). The gender of the characters in each vignette was matched to that of the participant and vignettes were modified to be appropriate for each age group. After hearing each of the eight vignettes, participants were asked to describe how they would feel if they had acted in the same way as the protagonist (e.g., “How would you feel if you had done what [protagonist’s name] did?”) and responses were transcribed verbatim by the experimenter.

3.3.1 Coding

In contexts designed to elicit negatively valenced moral emotions (i.e., those depicting moral rule violations), the anticipation of feeling “guilty”, “sad”, or “bad” was combined and coded as representing the anticipation of NVME. In contexts designed to elicit positively valenced moral emotions (i.e., those depicting moral rule abidance), the anticipation of feeling “proud”, “happy”, or “good” was combined and coded as representing the anticipation of PVME. This coding system was based on those used previously in happy-victimizer research (Keller, Lourenço, Malti, & Saalbach, 2003; Malti et al., 2009) and it includes the basic emotional correlates of guilt and pride so that NVME and PVME expectancies can be examined in young children who may not be able to explicitly label complex emotions (i.e., guilt and pride) but can already name their basic emotional correlates (Malti & Ongley, in press; Tracy, Robins, & Lagattuta, 2005).

Context-specific proportional scores were created by aggregating scores from the two vignettes within each context (i.e., NVME in prosocial omission contexts, NVME in exclusion contexts, PVME in prosocial contexts, and PVME in inclusion contexts): 0 = no anticipation of
PVME/NVME in response to either vignette, .50 = anticipation of PVME/NVME in response to one of the two vignettes, and 1.00 = anticipation of PVME/NVME in response to both vignettes. This coding is in line with other studies in the social domain and happy victimizer tradition (e.g., Malti, Killen, & Gasser, 2012; Posada & Wainryb, 2008). The aggregation of scores within each context was justified as there was a significant association between the two scores within each context: PVME in prosocial contexts, $r_{\phi}(231) = .28$, $p < .001$, PVME in inclusion contexts, $r_{\phi}(234) = .32$, $p < .001$, NVME in prosocial omission contexts, $r_{\phi}(227) = .41$, $p < .001$, and NVME in exclusion contexts, $r_{\phi}(234) = .22$, $p < .001$. 
Chapter 3
Results

1. Descriptive Statistics

Table 1 displays the means and standard deviations of the study variables by age group. Differences in each of the independent variables were examined across age groups using one-way analyses of variance (ANOVA) with Bonferroni correction for multiple comparisons ($\alpha = .05$). Main effects of age were found for sympathy, $F(2, 229) = 97.15, p < .001, \eta^2 = .46$, PVME in prosocial contexts, $F(2, 235) = 6.02, p = .003, \eta^2 = .05$, and PVME in inclusion contexts, $F(2, 236) = 4.85, p = .009, \eta^2 = .04$. Post hoc pairwise comparisons of age differences in sympathy and PVME revealed that 8- and 12-year-olds reported higher levels of sympathy than 4-year-olds ($ps < .001$) and that 8-year-olds reported higher levels of PVME than 4-year-olds in both prosocial ($p = .002$) and inclusion contexts ($p = .009$).

Preliminary analyses revealed significant gender differences in only two of the study variables: sympathy and NVME in prosocial omission contexts, with females reporting higher levels of each, $t(230) = 2.22, p = .03, d = 0.29$ and $t(235) = 2.12, p = .04, d = 0.28$, respectively.

Table 2 displays the correlations between study and control variables (i.e., primary caregiver’s level of education and child gender). Sharing was positively correlated with sympathy, NVME in prosocial omission contexts, and PVME in inclusion contexts. Sympathy was positively associated with PVME in both contexts. NVME in prosocial omission contexts was positively related to PVME in prosocial contexts, and both NVME and PVME were positively correlated across contexts; specifically, children’s anticipation of NVME after the failure to perform a prosocial duty was positively associated with the anticipation of NVME after excluding a peer, and children’s anticipation of PVME after performing a prosocial duty was positively correlated with the anticipation of PVME after including a peer.

2. Developmental Differences in Sharing
Differences in sharing were examined across age groups using one-way ANOVA with Bonferroni correction for multiple comparisons ($\alpha = .05$). Main effects of age were found for sharing, $F(2, 241) = 12.01, p < .001, \eta^2 = .09$. Post hoc pairwise comparisons of age differences in sharing revealed that the mean proportion of shared items was higher for 8- and 12-year-olds than 4-year-olds ($p < .001$ for 4-year-olds vs. 8-year-olds, $p = .032$ for 4-year-olds vs. 12-year-olds, see Table 1).

In line with previous research and our hypotheses, we also examined different patterns of sharing across age groups (e.g., Gummerum et al., 2010). Figure 1 shows the percentage of participants in each age group who shared nothing, shared less than half, or shared half of their stickers/chocolate coins. Sharing more than half occurred rarely (10% of total sharing allocations), and so this pattern of sharing is not included in the following analysis of specific sharing patterns.

As displayed in Figure 1, the percentage of participants sharing half was higher for the 8- and 12-year-olds than for the 4-year-olds (69% and 54% vs. 41%, respectively), while sharing nothing was a frequent sharing distribution for 4-year-olds only (41% vs. 3% and 1%, for 4-, 8-, and 12-year-olds respectively). Significant overall differences between age groups were found for each pattern of sharing, including sharing nothing, $\chi^2(2) = 59.39, p < .001$, sharing less than half, $\chi^2(2) = 13.51, p < .001$, and sharing half, $\chi^2(2) = 10.69, p = .005$. For the pattern of sharing nothing, 4-year-olds differed from both 8-year-olds, $\chi^2(1) = 29.33, p < .001$, and 12-year olds, $\chi^2(1) = 38.10, p < .001$, but 8- and 12-year-olds did not differ from each other, Fisher’s exact test, ns.

For the pattern of sharing less than half, 12-year-olds differed from both 4- and 8-year-olds, $\chi^2(1) = 12.91, p < .001$ and $\chi^2(1) = 4.32, p = .042$, respectively, but no significant difference was found between 4- and 8-year-olds, $\chi^2(1) = 2.31, ns$. For the pattern of sharing half, 8-year-olds differed from 4-year-olds, $\chi^2(1) = 10.69, p < .001$, but no significant differences emerged between 8- and 12-year olds, $\chi^2(1) = 3.40, ns$, or 4- and 12-year olds, $\chi^2(1) = 2.50, ns$.

To test the predictive effects of sympathy, NVME, and PVME on sharing, two separate hierarchical regression models were run with sharing as the dependent variable in both. As previous research has found associations between sharing and gender (e.g., Benenson et al., 2007; Leman et al., 2009) and socioeconomic status (SES) (e.g., Carlo, Padilla-Walker, & Day, 2011), we entered child’s gender and primary caregiver’s level of education as control variables in step 1 of both regression models. In the first model, we entered sympathy, NVME in prosocial omission contexts, NVME in exclusion contexts, and age group as predictor variables in step 2. Interaction terms were entered in step 3.

In the second model, we entered child’s gender and primary caregiver’s level of education in step 1, sympathy, PVME in prosocial contexts, PVME in inclusion contexts, and age group in step 2, and interaction terms in step 3. All predictor variables were centered at the mean, with the exception of gender and age group. Interaction terms were created by calculating the products of the mean-centered variables (Aiken & West, 1991). In preliminary analyses, we tested all possible interactions between the independent variables (i.e., all emotion variables with age, sympathy with PVME and NVME in each context). Only interactions that were significant in preliminary analyses were retained in the final models.

Table 3 displays the results of the final analyses. Results from model 1 indicated that sharing behaviour is predicted by NVME in prosocial omission contexts and by the interactions of (a) sympathy and age group, and (b) sympathy and NVME in prosocial omission contexts, $R^2 = .18$, $F(8, 217) = 5.88$, $p < .001$. Cohen’s $f^2$ is .22, which indicates a medium-large effect size (Cohen, 1988). To plot the interaction between age group and sympathy, we used the procedure recommended by Aiken and West (1991) and the worksheet created by Dawson (n.d.) for plotting the interaction between an unstandardized, centered continuous variable and a binary moderator. We modified Dawson’s worksheet to accommodate three levels of the moderating variable (i.e., age group). As recommended by Aiken and West (1991), we restructured the regression equation to represent the regression of sharing on sympathy for each of the three different age groups (i.e., $\hat{Y} = [b_1 + b_3Z]X + [b_2Z + b_0]$) and calculated three regression equations. We then performed $t$ tests on each simple slope (i.e., $b = b_1 + b_3Z$) to determine if they differed significantly from zero. The simple slopes for 4-year-olds, 8-year-olds, and 12-year-olds were .14, .06, and -.02, $p < .001$, $ns$, and $ns$, respectively. As shown in Figure 2, 4-year-olds’ sharing
increased significantly with level of sympathy, whereas 8- and 12-year olds’ sharing did not depend on level of sympathy.

To plot the interaction between sympathy and NVME in prosocial omission contexts and to test the significance of the simple slopes, we used the procedure described by Aiken and West (1991), described above, and the worksheet developed by Dawson (n.d.) for unstandardized, centered continuous variables. In cases in which sympathy was high, both low and high NVME had no implications for sharing (simple slope $b = -0.04$, ns); however, in cases in which sympathy was low, guilt was associated with sharing, with high guilt associated with higher sharing than low guilt (simple slope $b = 0.15$, $p < .001$; see Figure 3).

The results of model 2 showed that sharing behaviour is predicted by an interaction between sympathy and age group, $R^2 = .10$, $F(7, 218) = 3.62$, $p < .001$. Cohen’s $f^2$ is .11, which indicates a medium effect size (Cohen, 1988). As in Model 1, the interaction effect revealed that 4-year-olds’ sharing increased significantly with level of sympathy, whereas 8- and 12-year olds’ sharing did not depend on level of sympathy.
Chapter 4
Discussion

This study sought to investigate the development of sharing and its associations with moral emotions across early childhood, middle childhood, and early adolescence. Because previous developmental studies have only rarely investigated the role of moral emotions (i.e., sympathy, NVME, and PVME) in children’s sharing, this study contributes to our understanding of the affective-moral antecedents of other-oriented behaviour, an issue of key importance to the development of cooperation, fairness, and care.

In line with research conducted in England, Switzerland, the United States, and Israel (e.g., Benenson et al., 2007; Fehr et al., 2008; Harbaugh et al., 2002; Kogut, 2012) findings from the present study demonstrate that children’s altruistic sharing increases significantly between early and middle childhood. The proportion of stickers shared within each age group, as well as the comparative frequency with which 4-year-olds chose to allocate nothing to a hypothetical peer, provide support for the idea that inequality aversion and the internalization of fairness norms develop sharply between early and middle childhood (see Fehr et al., 2008; Kogut, 2012). Here, using an ethnically diverse Canadian sample, we validate and extend findings that demonstrate a transition, occurring between early and middle childhood, between self-oriented allocations that prioritize selfish desires and towards other-oriented allocations that prioritize fairness, equality, and the needs of others (Benenson et al., 2007). Together with the results of previous research, the current findings provide evidence that this developmental transition away from self-focused and towards other-focused sharing allocations may be a process that occurs across cultures.

Surprisingly, and contrary to our prediction, we found that mean levels of altruistic sharing remained stable between the 8- and 12-year-old age groups. This is an interesting finding, as previous research has indicated a general age-related increase extending from middle childhood into adolescence in children’s overt prosociality (e.g., Eisenberg & Fabes, 1998) and donation behaviours (e.g., Barnett et al., 1979). The findings from our study may diverge from those measuring overt prosociality as there is no social approval to be gained from sharing in the dictator game, whereas this is not the case for the public prosocial behaviours that comprise overt prosociality. The divergence of our findings from those of donation studies may be related to the
high need that is explicitly ascribed to recipients of donations, whereas the need of recipients in the dictator game is implicit and ambiguous. The limited set of existing studies that have used the dictator game to examine change in sharing across middle childhood and early adolescence have yielded conflicting results (e.g., Almås et al., 2010; Harbaugh et al., 2002; Leman et al., 2009). Our findings converge with those of a related study by Almås and colleagues (2010) who found that the mean dictator game allocations of children in Grade 5 were equivalent to those of early adolescents in Grade 7. This finding may suggest that most children have internalized norms of fairness and equality by middle childhood. In addition to mean sharing scores, however, we also examined age-related changes in specific sharing allocations and found that 12-year-olds shared less than half (i.e., 1 or 2 of their stickers/chocolate coins) with greater frequency than 8-year-olds. This finding suggests that conceptions of fairness in resource allocation in early adolescence may not be based solely on equality. Previous research has found that, with age, merit becomes an increasingly important factor in children’s conceptions of fairness and distributive justice (e.g., Almås et al., 2010; Damon, 1977). It may be the case that those 12-year-olds in the current study who shared less than half thought that their completion of study’s tasks warranted a meritocratic, as opposed to equal, distribution of chocolate coins. Future longitudinal research is warranted to further investigate developmental stability and change in sharing allocations from middle childhood to adolescence.

Importantly, our results on moral emotions and sharing suggest that there are two compensatory emotional pathways to altruistic sharing: one via sympathy and one via NVME (i.e., guilt). More specifically, the current findings showed that NVME anticipated in prosocial omission contexts predicted altruistic sharing significantly across age groups. This effect was qualified, however, by an interaction between NVME and sympathy, in which high levels of NVME (i.e., guilt) predicted increased sharing when the child’s level of sympathy was low, and, inversely, high levels of sympathy predicted increased sharing, but only when anticipated NVME was low. This finding may imply that NVME and sympathy are compensatory antecedents of altruistic sharing. Prior theory has drawn important links between empathy/sympathy and guilt as antecedents of prosocial action (e.g., Hoffman, 1982, 2000) but the ways in which sympathy and NVME (i.e., guilt) independently and conjointly contribute to children’s sharing behaviour have yet to be elaborated empirically. Our findings suggest that sympathy and guilt may work in a
compensatory fashion in motivating children to share valuable resources. In related research, Carlo, McGinley, Davis, and Streit (in press) found support for two distinct pathways in the prediction of young adults’ prosocial tendencies. Similarly to the current study, one pathway was based on guilt, and the other on sympathy. Carlo and colleagues (in press) proposed that guilt motivates prosocial tendencies by encouraging individuals to live up to their moral standards, while sympathy motivates prosocial tendencies by encouraging individuals to reduce distress in others. Our results suggest that children with low levels of other-oriented concern (i.e., sympathy) may be motivated to share instead by negative self-evaluative moral emotions (i.e., guilt), which compensate for a lack of sympathy. In contrast, children who have high levels of other-oriented concern (i.e., sympathy) are motivated to share independently of their level of anticipated self-evaluative moral emotions (i.e., guilt) because they want to reduce distress in others.

We also found that sympathy is of particular importance to the prediction of altruistic sharing in early childhood. Many 4-year-olds have not yet internalized norms of fairness and equality and, as is evident by the large proportion (approximately 40%) of 4-year-olds who chose to keep all of their stickers for themselves, children’s early sharing allocations often prioritize the self and personal desires (see also Arsenio et al., 2006). It is all the more intriguing that 4-year-olds who are high in sympathy diverge from this pattern. They are motivated to share by concern for others, and their sharing allocations mirror those of children in middle childhood and early adolescence. The affective experience of sympathy in early childhood may lead to a general orientation to consider the needs of others and the early development (relative to peers with low levels of sympathy) of norms of fairness and care (see Knafo, Zahn-Waxler, Van Hulle, Robinson, & Rhee, 2008; Malti et al., 2012).

Furthermore, we found evidence for our hypothesis that the association between moral emotions and sharing is context-specific. Specifically, only NVME anticipated in contexts in which children failed to behave prosocially yielded predictive effects on sharing. This was not the case for NVME anticipated in contexts of social exclusion, despite the fact that there was a significant positive association between NVME across the two contexts. This differential finding across the two moral transgression contexts suggests that behaviour that is strongly prosocial (i.e., altruistic sharing) is only predicted by NVME anticipated within closely related prosocial contexts (i.e.,
NVME anticipated when one fails to help or share). The anticipation of NVME in social exclusion contexts is likely to be too distant an affective process to be relevant to decisions regarding whether one will or will not share. This finding extends previous research that has demonstrated the domain-specificity of children’s anticipated emotions and reasoning following the violation of different types of moral norms (e.g., Nunner-Winkler, 1999; Malti, Ongley, Dys & Colasante, in press; Smetana, 2006) by linking domain-specific moral emotions to domain-specific morally relevant, prosocial behaviour.

In contrast to NVME, PVME (i.e., pride) did not predict sharing. This finding runs contrary to our hypotheses and suggests that PVME, though associated at the bivariate level with sharing, sympathy, and NVME in prosocial omission contexts, are not powerful enough to elicit costly sharing behaviour when other morally relevant emotional processes are controlled for. It may be the case that children, who are taught by teachers and parents to feel proud of many diverse accomplishments, experience PVME too frequently and too broadly for it to motivate the allocation of valuable resources to others. It may also be the case that sympathy and NVME are more salient than PVME in issues of fairness and equality. Alternatively, the finding that there is a positive bivariate correlation between sharing and PVME in inclusion contexts, but not sharing and PVME in prosocial contexts, may indicate that the cost of the behaviour that elicits PVME is an important factor in the association between PVME and sharing. The inclusion of an out-group peer is a costly social behaviour, having potential consequences for in-group functioning and for the including child’s social reputation. Inter-individual differences in the anticipation of PVME in high cost contexts may be differentially related to altruistic behavioural outcomes.

There are several limitations to the current study. Firstly, it relies solely upon cross-sectional data, which does not allow for the investigation of change in individual differences related to altruistic sharing over time. Future studies on the intra-individual development in sharing and moral emotions are warranted. Secondly, the participants in this study, though ethnically diverse and representative of the population from which they were drawn, are mainly from families with mid- to high-SES and as a result, the current findings may not generalize to children and adolescents from less advantaged backgrounds. As previous research has found variations in sharing by level of SES (e.g., Benenson et al., 2007), future work should seek to broaden the range of SES backgrounds that are represented in participant populations. Thirdly, the current
study provides valuable insight into the development and emotional antecedents of altruistic sharing, but does not contribute to our understanding of other, related prosocial outcomes (e.g., helping). Investigation of the development and differential emotional correlates of diverse prosocial behaviours remains a fruitful area for future research.

Despite these limitations, the current study has several notable strengths. Most importantly, this study is among the first to examine the role of moral emotions in children’s altruistic sharing. Additionally, we investigated these relations in an ethnically diverse sample and in a broad age range spanning from early childhood to early adolescence. As a result, the current study provides valuable insight into the development of altruistic sharing and its emotional antecedents across early childhood, middle childhood, and early adolescence.
References


Krettenauer, T., Malti, T., & Sokol, B. W. (2008). Development of moral emotions and the


emotions in situations involving moral conflict and social exclusion. *New Directions for Youth Development.*


Tables

Table 1. Means and Standard Deviations of Study Variables by Age Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>4-Year-Olds</th>
<th></th>
<th>8-Year-Olds</th>
<th></th>
<th>12-Year-Olds</th>
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<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
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<td>Sharing</td>
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<td>0.48</td>
<td>0.19</td>
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<td>0.14</td>
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<td>Sympathy</td>
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<td>1.39</td>
<td>0.47</td>
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<tr>
<td>NVME in prosocial omission contexts</td>
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<td>0.46</td>
<td>0.52</td>
<td>0.41</td>
<td>0.49</td>
<td>0.39</td>
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<td>NVME in exclusion contexts</td>
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<td>PVME in inclusion contexts</td>
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<td>0.91</td>
<td>0.23</td>
<td>0.80</td>
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*Note.* NVME = Negatively valenced moral emotions. PVME = Positively valenced moral emotions.
Table 2. Correlation Matrix of Study and Control Variables

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<tr>
<th>Variable</th>
<th>1</th>
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<th>3</th>
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<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
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<td>1. Sharing</td>
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<td></td>
<td></td>
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<tr>
<td>2. Sympathy</td>
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<td>3. NVME in prosocial omission contexts</td>
<td></td>
<td>0.12†</td>
<td>0.18**</td>
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<td></td>
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<td>4. NVME in exclusion contexts</td>
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<td>5. PVME in prosocial contexts</td>
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<td>6. PVME in inclusion contexts</td>
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<td>7. Primary caregiver’s level of education</td>
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<td>0.11†</td>
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<td>0.03</td>
<td>0.04</td>
<td>0.00</td>
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<td>8. Child age</td>
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<td>-0.06</td>
<td>0.11</td>
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<td>9. Child gender</td>
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<td>-0.05</td>
<td>0.15*</td>
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</table>

Note. NVME = Negatively valenced moral emotions. PVME = Positively valenced moral emotions. Child age is measured in years. Child gender is dummy-coded (girls =0, boys = 1). †p < .10. *p < .05. **p < .01. ***p < .001.
Table 3. Hierarchical Multiple Regression Analyses Predicting Sharing from Age Group, Sympathy, Negatively Valenced Moral Emotions in Prosocial Omission and Exclusion Contexts, and Positively Valenced Moral Emotions in Prosocial and Inclusion Contexts

<table>
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<tr>
<th>Predictor</th>
<th>ΔR²/ ΔF²</th>
<th>β</th>
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<tr>
<td><strong>Model 1</strong></td>
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</tr>
<tr>
<td>Step 1</td>
<td>.02/2.58†</td>
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<tr>
<td>Gender</td>
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<td></td>
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<tr>
<td>Primary caregiver’s level of education</td>
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<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>.08/4.71***</td>
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</tr>
<tr>
<td>Age group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sympathy</td>
<td>.22**</td>
<td></td>
</tr>
<tr>
<td>NVME in prosocial omission contexts</td>
<td>.19**</td>
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<tr>
<td>NVME in exclusion contexts</td>
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</tr>
<tr>
<td>Step 3</td>
<td>.08/10.33***</td>
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</tr>
<tr>
<td>Sympathy x age group</td>
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<td>Sympathy x NVME in prosocial omission contexts</td>
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<tr>
<td>Total R²</td>
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</tr>
<tr>
<td>N</td>
<td>226</td>
<td></td>
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<tr>
<td><strong>Model 2</strong></td>
<td></td>
<td></td>
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<tr>
<td>Step 1</td>
<td>.02/2.63†</td>
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<tr>
<td>Gender</td>
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<tr>
<td>Primary caregiver’s level of education</td>
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<tr>
<td>Step 2</td>
<td>.06/3.77**</td>
<td>-0.02</td>
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<tr>
<td>Age group</td>
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<td>Sympathy</td>
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<td>PVME in prosocial contexts</td>
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<td>PVME in inclusion contexts</td>
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<td>Step 3</td>
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<td>Sympathy x age group</td>
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<tr>
<td>Total R²</td>
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<td>226</td>
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</tbody>
</table>

Note. NVME = Negatively valenced moral emotions. PVME = Positively valenced moral emotions.  
†p < .10. *p < .05. **p < .01. ***p < .001.
Figure 1. Sharing Allocations by Age Group

Note. Participants who shared nothing shared 0 of their 6 stickers/chocolate coins with a hypothetical peer. Participants who shared less than half shared 1 or 2 of their 6 stickers/chocolate coins with a hypothetical peer. Participants who shared half shared 3 of their 6 stickers or chocolate coins with a hypothetical peer.
Figure 2. Interaction of Age Group with Sympathy: Prediction of Sharing

![Graph showing the interaction of age group with sympathy](image-url)
Figure 3. Interaction of Sympathy with Negatively Valenced Moral Emotions in Prosocial Omission Contexts: Prediction of Sharing

Note. NVME = Negatively valenced moral emotions.
Appendices

Appendix A. Measurement of Sharing Behaviour: Experimenter Script for the Dictator Game

Experimenter:

“We’re going to play a choosing game. In this game you can keep stickers/chocolate coins for yourself, or you may choose to give some stickers/chocolate coins to another child.”

“This is your box.” *Show participant the box for their stickers/chocolate coins.*

“If you choose to give any stickers/chocolate coins to the other child, you can put them in this box.” *Show participant the box for the other child’s stickers/chocolate coins.*

“Can you count the stickers/chocolate coins for me?” *Make sure participant can count from 1-6.*

“Now, let’s look at this picture.” *Show picture of gender- and age-matched child.*

“This girl/boy is 4/8/12 years old, just like you. This is her/his box.” *Point to other child’s box.*

“This is your box.” *Point to participant’s box.*

“If you would like to give her/him any stickers/chocolate coins, you can put them in her/his box, and put your stickers/chocolate coins in your box.”

“OK, you can now choose if you’d like to give some stickers/chocolate coins to her/him, or not.” *Turn away from participant until he/she has finished allocating stickers/chocolate coins.*
Appendix B. Vignettes for Measuring Anticipation of Negatively and Positively Valenced Moral Emotions

Anticipation of NVME (Moral Transgression)

Prosocial Omission Context

Vignette 1
Imagine that you and another girl both are making sand castles. The other girl asks you to help her finish her big sand castle and you say “no”.

Vignette 2
Imagine that you and another girl both like pizza. You have a large piece of pizza and the other girl asks you if she can have a slice of your pizza. You say “no”.

Exclusion Context

Vignette 1
The new girl at school wants to hang out with Nicole and her friends at lunch break. Nicole doesn’t like the new girl and decides to hide from her during lunch break.

Vignette 2
Julie and Amy are playing a game on the computer. Another girl asks if she can play too, but Julie says “no”.

Anticipation of PVME (Moral Rule Abidance)

Prosocial Context

Vignette 1
Imagine that a girl asks you if you can help her open a bag of candy because she cannot open it. You open the bag for her.

Vignette 2
Imagine that a girl in school is crying and you decide to bring her some of her toys to make her laugh.

Inclusion Context

Vignette 1
Imagine that you are in school. A classmate asks you if you want to play with her, and none of the other children want to play with her. You say, “yes, I am going to play with you”.

Vignette 2
Imagine that you are in school playing a game with some kids. A new kid asks you if she can join you playing the game and you say, “yes, I am going to let you join us”.

Note. NVME = Negatively valenced moral emotions. PVME = Positively valenced moral emotions. The vignettes presented above were read to girls in the 4- and 8-year-old age groups. The gender of the characters in each vignette was matched to that of the participant. Adapted, age-appropriate versions of the above vignettes were used with participants in the 12-year-old age group.