

Running Head: MORAL DEVELOPMENT

Developmental Relations between Sympathy, Moral Emotion Attributions, Moral Reasoning,  
and Social Justice Values from Childhood to Early Adolescence

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Citation: Daniel, E., Dys, S. P., Buchmann, M., & Malti, T. (2014). Developmental relations between sympathy, moral emotion attributions, moral reasoning, and social justice values from childhood to early adolescence. *Journal of Adolescence*, 37(7), 1201-1214.  
doi:10.1016/j.adolescence.2014.08.009

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**Abstract**

This study examined the development of sympathy, moral emotion attributions (MEA), moral reasoning, and social justice values in a representative sample of Swiss children ( $N = 1,273$ ) at 6 years of age (Time 1), 9 years of age (Time 2), and 12 years of age (Time 3). Cross-lagged panel analyses revealed that sympathy predicted subsequent increases in MEA and moral reasoning, but not vice versa. In addition, sympathy and moral reasoning at 6 and 9 years of age were associated with social justice values at 12 years of age. The results point to increased integration of affect and cognition in children's morality from middle childhood to early adolescence, as well as to the role of moral development in the emergence of social justice values.

*Keywords:* Sympathy, Moral Emotion Attributions, Moral Reasoning, Social Justice Values, Longitudinal Study

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Developmental scientists have recently called for an integrative approach to children's morality (Malti & Ongley, 2014) which examines how emotions and cognitions in moral contexts dynamically interact and become increasingly coordinated throughout development. Accordingly, moral emotions such as sympathy help children differentiate moral rules from other rules, such as social conventions (Arsenio, 2014). In addition, moral emotions, conjointly with moral judgment, can serve as antecedents in the development of moral action tendencies and value preferences (Eisenberg, 2000; Tangney, Stuewig, & Mashek, 2007). The increasing coordination processes between moral emotions and moral cognition from childhood to adolescence can serve as critical cornerstones for the development of moral identity in adolescence (Bergman, 2002).

Despite this theoretical emphasis, developmental research that integrates children's emotions and reasoning about moral issues has remained relatively scarce, especially in middle childhood. In addition, few if any studies have explored the association between moral emotions and moral cognition and the development of morally relevant values, such as social justice values. For example, Aksan and Kochanska (2005) found that early moral emotions predicted subsequent rule internalization. In addition, there is evidence that moral emotions predicted moral decision-making from middle adolescence to young adulthood (Krettenauer, Colasante, Buchmann, & Malti, 2014). Yet, most of the existing studies on the joint development of moral emotions and cognitions are concurrent, short-term longitudinal studies (Carlo, Mestre, Samper, Tur, & Armenta, 2010), or focus on small, non-representative samples (Eisenberg, Miller, Shell, McNalley, & Shea, 1991). The current study systematically extended this literature by investigating developmental relations of sympathy, moral emotion attributions (MEA), and moral

reasoning from middle childhood to early adolescence in a large scale, representative sample.

Another aspect in the development of moral identity during adolescence is the formation of moral values (Hardy & Carlo, 2011). Researchers have argued that values become increasingly coordinated with moral emotion and moral cognition during the process of moral identity formation (Krettenauer & Johnston, 2011). Few, if any, studies have integrated these two aspects of moral identity development by examining the role of moral emotions and cognitions in middle childhood in the subsequent development of social justice values in early adolescence. We therefore aimed to address this research gap by examining the developmental relations between moral emotions and moral reasoning, as well as association with social justice values, over the course of six years from middle childhood to early adolescence. We utilized a large scale, nationally representative sample from Switzerland to investigate these research questions.

### **Developmental Relations between Sympathy and MEA**

The present study focuses on emotions that are considered to be central in the development of human morality: sympathy and moral emotion attributions (Malti & Ongley, 2014). Sympathy has been conceptualized as an emotional response of sorrow or concern for the distress of another (Eisenberg, 2000). It stems from the apprehension or comprehension of another's emotional state or condition. As sympathy is a negatively-valenced emotion of concern or sadness, individuals are motivated to act prosocially in order to avoid these emotions. Sympathy, unlike empathy, is not an identical emotional response to what the other person is feeling or is expected to feel (Eisenberg, 2000). Sympathy develops substantially throughout middle childhood and previous research has shown that there is an increase in reports of feeling sympathy at this age (Eisenberg, Spinrad, & Morris, 2014).

Moral emotion attributions have been defined as the negative emotions that children expect

to experience following wrongdoing in a morally-relevant context (Arsenio, 2014; Malti, Gummerum, Keller & Buchmann, 2009; Malti & Ongley, 2014). MEA are considered self-conscious moral emotions, as they are experienced when an individual reflects upon and evaluates his or her own actions in relation to the consequences of these actions for others and one's own moral standards (Tangney, et al., 2007). In developmental research, MEA have mostly been investigated in the happy-victimizer paradigm. In this paradigm, MEA is operationalized as the emotion attributed to protagonists or to the self-as-transgressor in hypothetical scenarios of moral transgression (Arsenio, 2014; Malti & Krettenauer, 2013). Studies have demonstrated that only at the age of six or seven years, children increasingly begin to associate MEA with transgressions (i.e., they attribute negative emotions to themselves in the role of the transgressor; for a review, see Arsenio, 2014).

Researchers have argued that MEA reflect children's guilt feelings because they reflect a child's internalized knowledge about a moral norm, as well as a negative affective response associated with wrongdoing (Malti et al., 2009; Malti & Ongley, 2014). Guilt feelings can be based on sympathy and/or on the more cognitive understanding and internalization of moral norms (Malti & Ongley, 2014). Sympathy-based guilt has been defined as a feeling of disesteem for oneself that results from sympathy for another's distress, combined with awareness of being the cause of that distress (Hoffman, 2000). Thus, sympathy and MEA are conceptually related. They both describe negative emotional reactions that may emerge when one is confronted with a moral transgression. They both may arise from the concern for the other's distress (Tangney & Dearing, 2002). However, sympathy can be a pre-requisite to MEA feelings when it is accompanied by self-scrutiny and acceptance of one's responsibility (Hoffman, 2000).

Despite these conceptual overlaps, few studies have tested the developmental relations

between sympathy and MEA. Among these, there is some evidence that sympathy and MEA are concurrently positively associated in middle childhood (Malti et al., 2009). Based on the theoretical premise that sympathy may be a pre-requisite for MEA but not vice versa, we examined whether children's sympathy would predict subsequent levels of MEA. In line with this theorizing, we expected earlier sympathy to predict later MEA, whereas earlier MEA not to predict later sympathy. The latter expectation was based on the assumption that sympathy is a simpler emotion than MEA which can be based on either sympathy or on mere cognitive reflection about, and internalization of, moral rules (Malti & Ongley, 2014).

### **Developmental Relations between Sympathy and Moral Reasoning**

Moral reasoning describes judgement of moral merit using moral considerations such as fairness, justice, and empathy (Carlo et al., 2011). Specifically, children judge acts as moral if they concern issues of justice and equality, abstaining from harm, and caring for others (Carlo et al., 2011; Eisenberg et al., 2014). Here we investigate children's moral reasoning in two different contexts, i.e., omission of prosocial duties and harming others. These two types of moral transgressions have been chosen because our previous work has shown that children's reasoning differs across these contexts (Malti & Ongley, 2014). While contexts of harm frequently elicit fairness reasoning, which refers to concerns about justice, equality, or abstaining from harm, contexts of prosocial omission frequently elicit altruistic reasoning, which refers to empathy, care, and concern for others. Research indicates that there are substantial increases throughout middle childhood in complex moral reasoning that involves empathic concerns or fairness considerations. In contrast, simplistic kinds of reasoning, such as hedonistic reasoning, decrease (Carlo et al., 2010; Eisenberg et al., 1987).

Developmental scientists have argued that sympathy may stimulate the development of

moral reasoning skills. Specifically, sympathy may enhance the development of concern for others' welfare, leading to an increased consideration for care, but also for fairness and equality while sharing resources (Hoffman, 2000). In accord with this notion, there is some research evidence supporting the relations between sympathy and moral reasoning across childhood. For example, it has been shown that sympathy and altruistic moral reasoning were concurrently related among 10- and 11-year-old children (Eisenberg et al., 1987), and concurrently related within a sample of 12-year-old adolescents who were tested again a year later when they were 13 years old (Carlo et al., 2011). Furthermore, sympathy at 10 years of age has been shown to be related to increases in moral reasoning at 11 years of age but not vice versa (Carlo et al., 2010).

Here we investigated the relations between sympathy and moral reasoning over a time period of six years. Based on the previous research, we hypothesized that sympathy would predict subsequent moral reasoning, as concern for others' distress is essential to the development of other-oriented and fairness-related concerns. We did not expect moral reasoning to predict subsequent levels of sympathy.

### **The Association between Sympathy, MEA, Moral Reasoning, and Social Justice Values**

The integration of various moral emotions and moral cognitions is likely to promote the development of the moral identity (Lapsley & Narvaez, 2004), the degree to which being a moral person is important to one's self (Hardy & Carlo, 2011). Social justice values, which describe the degree of importance to one's self of social justice principles, are an important part of one's moral identity (Frimer & Walker, 2009). Social justice values (SJV) are evaluative beliefs that suggest justice in the social treatment of individuals to be a desirable end state (Killen & Smetana, 2010; Marini, 2000; Moshman, 2008; Schwartz, 1992). SJV are assumed to operate in dynamic interaction with social context to motivate an individual's morally relevant behavior (Aquino,



Freeman, Reed, Lim, & Felps, 2009; Lapsley, & Narvaez, 2004). Research has shown that MEAs are based in the cognitive understanding that one's advantages are not fully justified relative to the less fortunate (Montada & Schneider, 1989). For that reason, MEA is also likely to facilitate the development of SJV and a generalized sense of responsibility. Furthermore, sympathy and moral reasoning genuinely reflect sensitivity towards issues of justice and/or care (see Hoffman, 2000). Based on this theorizing, it is reasonable to expect that SJVs are predicted by both moral emotions and moral reasoning.

SJV are assumed to emerge in early adolescence. Children initially learn principles of equality and apply them in their interpersonal relations during middle childhood (Nucci, 2001). For example, 6-year-olds judged rules as unjust based on their concrete negative consequences for individuals (Helwig & Jasiobedzka, 2001). Until at least 10 years of age, children understand fairness in terms of direct reciprocity and strict equality (Nucci, 2001; Smetana, 2006). During early adolescence, more elaborated concepts of fairness and justice are consolidated as adolescents learn to transcend direct reciprocal relationships and address fair treatment to all individuals (Nucci, 2001). For example, research has shown that 10-year-olds judge rules as unjust based on moral principles, such as fairness and equality (Helwig & Jasiobedzka, 2001). On the basis of this theorizing, we chose to measure the importance that children place on social justice values in early adolescence only (i.e., at the age of 12), but not in middle childhood. Measures that are appropriate to studying values prior to 12 years of age were only recently developed. Moreover, values studied in middle childhood show somewhat different structure and meaning than values in adolescence and adulthood (Bilsky et al., 2013). In middle childhood, values are more concrete and less abstract than in adolescence, and similar values are often undifferentiated (Bilsky et al., 2013).

Researchers have argued that the emergence of one's moral identity can only be

understood by examining the increasing integration of moral emotions and cognitions (Bergman, 2002). Conceptually, moral emotions and cognitions, and identity or the self-concept, are assumed to become increasingly integrated during adolescence, forming the cognitive-affective system of the moral identity, which includes SJV (Hardy & Carlo, 2011; Johnston & Krettenauer, 2011). When holding a mature moral identity, adolescents put a strong emphasis on moral values in their self-definitions, i.e. the goals they see as morally desirable (Frimer & Walker, 2009; Hardy & Carlo, 2011). Due to this integration process, the moral emotions and cognitions that have been acquired during childhood may form a basis for the moral identity that adolescents adopt (Bergman, 2002; Krettenauer, 2012). The presence of a strong moral identity motivates them to profoundly care about SJV and act upon these sentiments (Colby & Damon, 1993; Johnston & Krettenauer, 2011; Montada & Schneider, 1989). We thus hypothesized that the moral emotions and moral reasoning that develop during middle-childhood, i.e., sympathy, MEA, and moral reasoning, will be related to SJV in early adolescence.

In support of this notion, there is some evidence that moral values are related to morally relevant emotions and cognitions in adolescence. For example, Silfver, Helkama, Lonnqvist, and Verkasalo (2008) documented a link between guilt, empathic concern, and values of care for others among 15- to 19-year-olds. Similarly, a study by Perren and Gutzwiller-Helfenfinger (2012) revealed that remorse feelings following wrongdoing concurrently predicted social justice values among 12- to 19-year-olds. In addition, moral motivation, a measure combining MEA and moral reasoning, has been shown to be concurrently associated with the importance attributed to social justice values among 15-year-olds (Malti & Buchmann, 2010; see also Johnston & Krettenauer, 2011; Tarry & Emler, 2010). Thus, there is evidence for concurrent relations between moral values, including an orientation toward social justice, with moral emotions and moral

cognitions in early to late adolescence. However, few, if any, studies have investigated the links across time between moral emotions, moral reasoning, and the formation of social justice values from mid-childhood to early adolescence.

### **The Current Study**

In summary, this study investigated relations between sympathy, MEA, moral reasoning, and SJV. Based on the notion that these components of moral development are important for moral identity formation between middle childhood and early adolescence, our study aimed to investigate three overt research questions: Our first aim was to investigate the cross-lagged links of sympathy and MEA between 6 and 12 years of age. Based on the idea that MEA stems from sympathy (Hoffman, 2000; Malti & Latzko, 2012), we hypothesized that sympathy would predict MEA over time. Our second aim was to examine the cross-lagged links between sympathy and moral reasoning between 6 and 12 years of age. We expected that sympathy would predict moral reasoning over time based on previous developmental literature showing that sympathy may stimulate the development of other-oriented moral reasoning skills (Eisenberg, 2000; Hoffman, 2000). Our third aim was to test the relations between sympathy, MEA, and moral reasoning in middle childhood and SJV in early adolescence. Based on theoretical models that assume increasing integration of moral affect and moral cognition into one's moral identity, and the associated formation of self-important SJV (Bergman, 2002), we hypothesized that 6- to 9-year-olds' sympathy, MEA and moral reasoning would be associated with their SJV at 12 years of age.

The current study tested these relations using a representative, large-scale sample of children. Our previous work (Malti et al., 2009), as well as the work of others (e.g. Gershoff, Lansford, Sexton, Davis-Kean, & Sameroff, 2012), demonstrated that effect sizes tend to be

smaller in large, representative samples. This may be attributed to the high variance between individuals in representative samples. At the same time, the existence of even small effects within a representative sample can contribute to increased external validity of the results.

A number of demographic variables were previously found related to moral emotions, moral reasoning, and SJV. First and foremost, sex was consistently established as a predictor of moral emotions and cognitions, as girls reported more moral emotions, moral reasoning, and moral values than boys (e.g. Nunner-Winkler, Meyer-Nikele, & Wohlrab, 2007). Although previous studies established that sex is related to higher levels of moral emotions and cognitions, no study examined how sex relates to the relations between moral emotions and cognitions. The current study will address this question. Cognitive ability (Malti, Eisenberg, Kim, & Buchmann, 2013) and socioeconomic status (Edelstein, Keller, & Schröder, 1990) are also known to be related to the development of children's moral emotions, moral reasoning and SJV. We will therefore control for these demographic variables in the multivariate analyses.

### **Method**

The data were taken from the first, second and third waves of the Swiss Survey of Children and Youth. This ongoing survey includes representative samples of the German- and French-speaking parts of Switzerland and studies the life course and social development of participants from three age cohorts (6, 15 and 21 years). The present study was based on the data of the 6-year-olds, who were re-assessed at ages 9 and 12.

### **Participants**

The sample was drawn from the population by a two-stage process in which 131 communities (divided by community type and size) were selected. Using information provided by the official community register, residents were randomly sampled. The response rate was 78%.

The final sample consisted of 1,273 children (627 girls) with an average age of 6.17 years, ( $SD = .22$ ) at the first assessment (T1). The primary caregiver of each participant was interviewed ( $N = 1,273$ ), and 1,266 of them filled out a supplementary questionnaire. The primary caregiver was defined as the person who had the main responsibility for the upbringing of the child, which was predominantly the mother (93%). At the second assessment (T2), 1,118 (88%) children participated (mean age = 9.26,  $SD = .21$ ; 543 girls). At T2, 1,118 of their primary caregivers participated in the interview, and 1,112 completed a supplementary questionnaire. At the third assessment (T3), 1,038 (82%) children participated (mean age = 12.24,  $SD = .21$ ; 504 girls). At T3, 1,038 of the primary caregivers participated in the interview and 1,024 of the primary caregivers filled out a supplementary questionnaire.

We analyzed sample attrition in terms of demographic variables (i.e., sex, socioeconomic status (SES), cognitive skills) and main study variables (i.e., sympathy, MEA, moral reasoning). We contrasted children of the sample at T1 who participated at T3 ( $n = 1038$ ) with the children who did not participate ( $n = 235$ ). For the socio-demographic variables, the T3 non-responders had lower levels of SES,  $t(1230) = -5.38, p < .01$ , Cohen's  $d = .41$ ; and lower cognitive skills,  $t(1266) = -2.14, p = .03$ , Cohen's  $d = .16$  than T3 responders. In addition, the T3 non-responders displayed lower levels of MEA,  $t(1198) = -2.08, p = .04$ , Cohen's  $d = .15$ .

### **Procedure**

At T1-T3, the children and primary caregivers were individually interviewed at home via a computer-assisted personal interview (CAPI). The interview included questions regarding children's moral, social, and academic development, as well as questions on the quality of parent- and peer relationships. All questions were tested in pilot studies and slightly revised for the different ages to ensure their developmental appropriateness. The primary caregivers provided

written informed consent for participation. During the interview with the child, the primary caregiver filled out a supplementary questionnaire measuring the child's social and moral development. As the primary caregivers were predominantly the children's mothers, we refer to them as "mothers" in the following. The children were interviewed by 44 female interviewers at T1, 43 at T2, and 34 at T3. The interviewers were recruited from a professional research institute specializing in social science interviewing. They had been intensively trained by the research team, especially in child interviewing techniques

### **Measures**

As the sample contained both German- and French-speaking participants, all of the measures were translated from German to French by bilingual native speakers, and then back-translated to correct ambiguous meanings. The children were interviewed in their native language. A pilot study was conducted with 214 6-years old kindergarten children to ensure the adequacy of the interview techniques and questions, as well as their age-appropriateness.

**Sympathy.** At T1-T3, the children's sympathy was assessed by children's self-reports and mothers' ratings. The children's interview included five items from Zhou, Valiente, and Eisenberg (2003). A sample item is "When I see another child who is hurt or upset, I feel sorry for him or her." In T1 and T2, items were rated using a 3-point scale, and in T3 they were rated using a 6-point scale ranging from 'not at all like me' to 'very much like me'. The response format and some wording of items was changed from T2 to T3 to make it more age appropriate and comparable with other scales that assess dimensions of social-emotional development in adolescence, as well as to achieve greater variability in responses and to match the sympathy scale with a number of other self-report scales on social-emotional development that were additionally included into the CAPI at this measurement point. Both scale formats were tested in pilot studies

with samples of 6-year-olds (3-point scale) and 15-year-olds, respectively (6-point scale); the results of our pilot testing revealed that the scale format worked well in the respective age group.

For subsequent multivariate analyses, scale scores were *z*-standardized. Cronbach's  $\alpha$  for the child-reported sympathy scale was .68 at T1, .72 at T2, and .79 at T3. Mean scale scores were computed, and higher scores indicate higher levels of sympathy.

The mothers' questionnaire included ratings of their children's sympathy on items from Zhou et al. (2003). The questionnaire included three items at T1, five items at T2, and six items at T3. Additional items were added to improve scale reliability and a 6-point scale was used at all three time points. A sample item is "My child usually feels sorry for other children who are being teased." Items were rated using a 6-point scale, ranging from 'not at all like my child' to 'very much like my child'. Cronbach's  $\alpha$  for the mother-rated sympathy scale was .69 at T1, .79 at T2, and .84 at T3. Mean scale scores were computed, higher scores indicate higher levels of sympathy.

**Moral emotion attributions (MEA) and moral reasoning.** At T1-T3, the children responded to two hypothetical moral rule violations: the omission of prosocial duties (i.e., not sharing a pencil) and harm (i.e., stealing another child's chocolate). These stories were chosen because they vary in severity of the transgression and domain of morality. The first transgression is a neglect of a prosocial duty, which causes less psychological harm than the second transgression of stealing (see Malti et al., 2009). The two scenarios were validated in previous research within the happy-victimizer paradigm (Arsenio, 2014). They consisted of a two-frame sequence of gender-matched illustrations. While looking at the images, each child was read a matching text. For the prosocial omission story, the child was read: "Tim is drawing a picture. Max [victim] asks to borrow one pencil but Tim [victimizer] refuses." For the harm story, the child was read: "Sarah [victim] leaves her jacket with a chocolate bar at kindergarten/school. Linda [victimizer] takes the

chocolate bar. Sarah [victim] realizes that the chocolate bar has been stolen.” After each story, children were asked the following questions: a) Understanding of rule validity: “Is it right, what the protagonist did?” b) Attribution of moral emotions to the self as victimizer: “How would you feel afterwards if you had done this?” c) Moral reasoning: “Why would you feel this way?”

**Coding of rule validity.** Understanding of rule validity was coded 0 ‘right’ or 1 ‘wrong’. Not sharing was judged to be wrong by 90% of the children at T1, 92% of the children at T2, and 81% of the children at T3. Stealing was judged to be wrong by 95% of the children at T1, 98% of the children at T2, and 99% of the children at T3.

**Coding of MEA.** In line with previous research, attributed emotions were coded 1 ‘positive’ or 2 ‘mixed or negative’ (see Malti et al., 2009; Malti & Ongley, 2014). Positive emotions included feeling happy. Negative emotions included feeling bad, sad or guilty. In line with previous research, mixed emotions occurred only rarely but were also coded as negative emotions (Arsenio, 2014). Neutral emotions or negative emotions with ambiguous moral meaning (angry, anxious) were not included in either of these categories. Previous studies within the happy-victimizer paradigm indicated that the negative emotions coded here can be considered as guilt feelings, or as developmental precursors of guilt feelings (Arsenio, 2014; Malti & Ongley, 2014). In line with previous research, more negative emotions were attributed in response to the more severe transgression of stealing versus the omission of prosocial duties, i.e., not sharing (Malti, Ongley, Dys, & Colasante, 2012). A sum score across the two stories was created. Higher scores indicate higher levels of MEA.

**Coding of moral reasoning.** Moral reasoning was assessed based on the justification given for the emotion attributed to the self (See Malti et al., 2009). Previous studies indicated that children use more varied justifications to justify their emotions than to defend their evaluation of



rule validity (e.g., Chaparro, Kim, Fernandez, & Malti, 2013). The justifications were coded from the open-ended questions in the CAPI interview and placed in the following categories: a) Moral reasons, which refer to moral rules, such as fairness considerations, the golden rule, or the prescriptive nature of a moral norm (e.g., “It is not fair to steal”), or empathic concern for the victim (e.g., “The other child will be sad”), b) Sanction-oriented reasons, which refer to sanctions by an authority (e.g., “The teacher may find out and get angry”), c) Hedonistic, self-serving reasons (e.g., “He just likes chocolate”), d) Unelaborated and unclassifiable reasons, which reflect undifferentiated statements, unclassifiable reasons, or no reason at all (e.g., “It is not nice”). All initial responses were probed, and the results of the probing figured into the coding. For example, if a child had initially responded “because it is not right” and then after probing said “because you should not steal, it is unfair” this reasoning was coded as moral. In contrast, if a child had answered “because the teacher will find out and you will get into trouble” after probing, then this was coded as sanction-oriented. If the child did not change or add to the initial response, then the original answer was coded as unelaborated. A child’s answer was coded 1 if it was assigned to a category and 0 if it was not. As children mentioned more than one justification after probing only infrequently (< 5%), only one argument was coded. Because of our interest in moral reasoning, we only analyzed responses that referred to moral reasons in the multivariate analyses. A sum score across all of the moral reasons in the two stories was created. Higher scores indicate higher moral reasoning.

Inter-rater reliability was determined by the raters’ independent coding of a randomly selected subsample of 77 interview transcripts at T1, 50 interview transcripts at T2, and 80 interview transcripts at T3. The inter-rater agreement, as provided by the two coders, was very good ( $\kappa = .90$  at T1,  $.92$  at T2,  $.95$  at T3). Disagreements were solved by discussion until a

consensus was reached. As an additional measure of quality control, 5% of the data (3% at T2 and 4% at T3, respectively) were randomly chosen at T1-T3 and coded by the last author. The agreement between this coder and the consensus-coded categories was very high ( $\kappa = .96$  at T1,  $.98$  at T2,  $.97$  at T3).

**Social justice values (SJV).** At T3, children's SJV were assessed using self-reports. The scale consisted of three items taken from the German Youth Survey (DJI), which is a representative, large-scale repeated cross-sectional survey; the SJV scale has shown to be reliable and valid, both in the DJI (Gille, Sardei-Biermann, Gaiser, & de Rijke, 2006), as well as in our pilot study with the adolescent cohort of the Swiss Survey of Children and Youth. The scale asked how important it is "to interact with others in a fair way", "to treat all humans equally", and "to minimize inequalities between humans." The items were rated on a Likert scale, ranging between 1 'not important at all' to 10 'extremely important'. Mean scale scores were computed, higher scores indicate higher importance of SJV. Cronbach's  $\alpha$  for the value scale at T3 was  $.69$ .

**Socioeconomic status (SES).** The SES of participants' families was measured at T1 using the Socio-Economic Index of occupational status (ISEI). This is a measure of occupational status based on mother-reported information on the current or last profession of both caregivers, which is scored according to an international index (Ganzeboom, De Graaf, & Treiman, 1992). The mean SES score in the sample was  $52.20$ ,  $SD = 16.83$ .

**Cognitive ability.** Respondents' cognitive competences were assessed at T1 using the matrices subscale of the culture fair intelligence test (CFT-1; Cattell, Weiß, & Osterland, 1997). Higher scores indicate higher cognitive competences. The mean cognitive ability score was  $.41$  (range 0-1;  $SD = .27$ ).

### **Treatment of Missing Data and Analysis Plan**

The percentage of missing data ranged between .3% and 9% at T1; between 14% and 16% at T2; and between 23% and 32% at T3. Little's MCAR test was significant,  $\chi^2(649) = 3234.12$ ,  $p < .01$ , indicating that the variables were not missing completely at random. For that reason, we could not use the Full Information Maximum Likelihood method to account for missing data and chose to use multiple imputation. All study variables were used to create ten imputed data sets, and the models were conducted using the TYPE = Imputation feature of Mplus 6.11. This feature carries out the analysis for each of the ten data sets. The parameter estimates are averaged over the set of analyses, and standard errors are computed using the average of the standard errors over the set of analyses and the between analysis variation of parameter estimates (Muthén & Muthén, 2010).

To test our hypotheses about the longitudinal relations between sympathy, MEA, and moral reasoning, we performed cross-lagged panel path analyses (Kenny, 1975). The first model estimated the relations using mother-rated sympathy, and the second model used child-reported sympathy. The models included the autoregressive paths for sympathy, MEA, and moral reasoning, estimating the association between sympathy at time T and sympathy at time T+1, MEA at time T and MEA at time T+1, and moral reasoning at time T and moral reasoning at time T+1. The models included the cross-lagged associations between sympathy at time T and MEA and moral reasoning at time T+1, and the reciprocal associations between MEA and moral reasoning at time T and sympathy at time T+1. Additionally, the models included the cross-lagged relations between MEA at time T and moral reasoning at time T+1, as well as the reciprocal associations between moral reasoning at time T and MEA at time T+1. Lastly, the model included covariances between the three constructs at T1, as well as between the residual variances of the constructs at T2 and T3.

To test our hypothesis on the relations between moral emotions and moral reasoning and subsequent social justice values, path models were utilized. Again, the first model estimated the relations using mother-rated sympathy, and the second model used child-reported sympathy. Sympathy, MEA, and moral reasoning at T1 and T2 were estimated as predictors of social justice values at T3. In addition, the autoregressive, the cross-lagged, and the concurrent relations between sympathy, MEA and moral reasoning at T1 and T2 were estimated.

Using the  $\chi^2$  difference test, we compared models in which the relations were constrained to equality across time to models in which the relations were allowed to vary freely. Thus, the models constrained the stability path between a construct at T1 and the same construct at T2 to be equal to the stability path between this construct at T2 and the same construct at T3; they also constrained the cross-lagged path between a construct at T1 and a different construct at T2 to be equal to the cross-lagged path between the former construct at T2 the latter construct at T3; last, they constrained all concurrent relations between each two variables to be equal in all three time points. The models testing the relations between moral emotions and moral reasoning and social justice values constrained the path between each T1 construct and social justice values to be equal to the path between the same T2 construct and social justice values. When the constrained and unconstrained models were significantly different, we used partially constrained models to examine the source of the differences and reported a model constrained on all paths that do not vary significantly across times (Kline, 2011). All models controlled for participant's SES and cognitive ability at time of their measurement (T1), and for participant's sex at all time points.

A combination of fit indices was used to determine the adequacy of the model fit, including the comparative fit index (*CFI*; Bentler, 1990), root mean square error of approximation (*RMSEA*; Kline, 2011), and the standardized root-mean-square residuals (*SRMR*; Hu & Bentler, 1999).

Models resulting in a  $CFI > .95$ ,  $RMSEA < .06$  and  $SRMR < .06$  were deemed an excellent fit, while models resulting in  $CFI > .90$ ,  $RMSEA < .08$  and  $SRMR < .09$  were deemed an adequate fit (Schermelleh-Engel, Moosbrugger, & Müller, 2003). Because  $\chi^2$  becomes increasingly sensitive with growing sample size (Marsh, Balla, & McDonald, 1988), it was not considered during the evaluation of the model fit.

## Results

### Descriptive Statistics and Preliminary Analyses

Table 1 shows the mean scores of the study variables by sex. The correlations among the study variables are presented in Table 2. Independent samples  $t$  tests indicated that girls showed higher sympathy according to both mother- and child-reports at T1-T3 with effect sizes ranging between Cohen's  $d = .16$  and Cohen's  $d = .54$ . Girls also showed higher levels of moral reasoning than boys at T1-T3 (Cohen's  $d = .19$ ,  $.16$  and  $.24$ , respectively), and higher levels of MEA than boys at T2 and T3 (Cohen's  $d = .16$  and  $.22$ , respectively). Furthermore, girls assigned higher importance to social justice values at T3 than boys, Cohen's  $d = .36$ . To examine the role of sex in the relations between the variables, we conducted multi-group analyses, estimating the models separately among boys and girls. Models in which paths between the constructs were constrained to equality between sexes were compared to models in which paths varied freely. The models did not differ significantly (emotions and cognitions mother-report:  $\chi^2(15) = 12.53$ ,  $p = .64$ ; child-report:  $\chi^2(16) = 14.19$ ,  $p = .58$ ; predicting values mother-report:  $\chi^2(12) = 3.88$ ,  $p = .99$ ; child-report:  $\chi^2(12) = 6.94$ ,  $p = .86$ ). Additionally, we compared models in which all paths were constrained to equality between sexes to models in which the cross lagged paths varied freely. These models did not differ significantly either (emotions and cognitions mother-report:  $\chi^2(6) = 3.84$ ,  $p = .70$ ; child-report:  $\chi^2(6) = 4.40$ ,  $p = .62$ ; predicting values mother-report:  $\chi^2(9) = 3.22$ ,  $p =$

.95; child-report:  $\chi^2(7) = 3.31, p = .85$ ). We therefore report parsimonious models, across sex, in all further steps.

Using one way ANOVA and linear contrasts, children reported significantly higher levels of sympathy across time, demonstrating a linear increase  $Mean_{T1} = 1.07, SD = .60; Mean_{T2} = 1.30, SD = .48; Mean_{T3} = 1.49, SD = .27; F(1,1006) = 467.75, p < .01$ ; Cohen's  $d_{T1-T3} = 1.06$  (using transformed variables to adjust scales to a similar range at all time points). Mothers reported significantly lower levels of sympathy across time, demonstrating a linear decrease  $Mean_{T1} = 5.12, SD = .77; Mean_{T2} = 5.02, SD = .80; Mean_{T3} = 4.85, SD = .83; F(1,898) = 84.318, p < .01$ ; Cohen's  $d_{T1-T3} = .45$ . Children reported increasing and then slightly decreasing levels of MEA, demonstrating a quadratic effect  $Mean_{T1} = 1.79, SD = .36; Mean_{T2} = 1.90, SD = .22; Mean_{T3} = 1.83, SD = .25; F(1, 955) = 66.62, p < .01$ ; Cohen's  $d_{T1-T3} = .13$ , and a similar effect of change in moral reasoning  $Mean_{T1} = .62, SD = .70; Mean_{T2} = 1.14, SD = .76; Mean_{T3} = 1.00, SD = .71; F(1,821) = 122.23, p < .01$ ; Cohen's  $d_{T1-T3} = .53$ .

### **Longitudinal Relations between Sympathy, MEA, and Moral Reasoning**

Two models of longitudinal relations between mother- and child-reported sympathy, MEA and moral reasoning in which paths between the constructs were constrained to equality across times were compared to models in which paths varied freely across times. The constrained and free models differed significantly (mother-report:  $\chi^2(21) = 105.84, p < .001$ ; child-report:  $\chi^2(21) = 137.56, p < .001$ ). Further models established that the paths indicating stability in child reported sympathy, stability in moral reasoning, the cross-lagged relations between MEA and moral reasoning, and lastly, the relations between sex and child reported sympathy, were different between times. The final models constrained all other paths.

The standardized path coefficients for the model on longitudinal relations between

mother-reported sympathy, MEA and moral reasoning are displayed in Figure 1(A), and the standardized path coefficients for the model on longitudinal relations between child-reported sympathy, MEA, and moral reasoning are displayed in Figure 1(B). The final models met standard criteria of good to excellent fit (mother report:  $CFI = .94$ ,  $RMSEA = .03$ ,  $SRMR = .03$ ; child report:  $CFI = .97$ ,  $RMSEA = .02$ ,  $SRMR = .03$ ). Stability was found in mother-reported sympathy across time. Stability in child-reported sympathy was stronger between T2 and T3 than between T1 and T2, although significant in both. In addition, stability was found in MEA between T2 and T3, but not between T1 and T2. Stability was found in moral reasoning between T1 and T2 and between T2 and T3. The cross-lagged relations between mother- and child-reported sympathy and MEA were significant, indicating that sympathy predicted subsequent levels of MEA. As expected, the reciprocal cross-lagged relations between MEA and subsequent mother- and child-reported sympathy were not significant. Similarly, the cross-lagged relations between mother- and child-reported sympathy and moral reasoning were significant, indicating that sympathy predicted subsequent levels of moral reasoning. As expected, the reciprocal cross-lagged relations between moral reasoning and subsequent mother- and child-reported sympathy were not significant.

Sex predicted all variables at every time points. Cognitive abilities predicted child-reported sympathy and moral reasoning, but not mother reported sympathy or MEA. SES was not related to any of the variables.

### **Sympathy, MEA, and Moral Reasoning as Predictors of Social Justice Values**

We first tested for equivalence across time of the paths between constructs in the two models using mother- or child-reported sympathy, MEA and moral reasoning at T1 and T2 to predict social justice values at T3. The models differed significantly (mother-report:  $\chi^2(9) = 91.83$ ,  $p < .001$ ; child-report:  $\chi^2(18) = 93.63$ ,  $p < .001$ ). Further models established that the concurrent

relations between MEA and moral reasoning were different between times. The final models constrained all other paths.

The models met standard criteria of good to excellent fit (mother report:  $CFI = .95$ ,  $RMSEA = .03$ ,  $SRMR = .03$ ; child report:  $CFI = .93$ ,  $RMSEA = .03$ ,  $SRMR = .03$ ; see Figure 2(A) and 2(B) for the standardized path coefficients of models using mother- and child-report, respectively). Positive relations were found between mother- and child-reported sympathy at T1 and T2 and social justice values at T3. Positive relations were also found between moral reasoning at T1 and T2 and social justice values at T3. MEA was not related to subsequent social justice values. Sex predicted mother- and child-reported sympathy and moral reasoning. Cognitive abilities predicted child-reported sympathy and moral reasoning, but not mother-reported sympathy or MEA. SES was not related to any of the variables.

### **Discussion**

Researchers have repeatedly argued that the development of children's moral emotions and moral reasoning are critical for subsequent moral values and moral identity formation in adolescence (Bergman, 2002; Krettenauer, 2012). Yet, few long term studies have been conducted to test these developmental relations empirically. Specifically, although children's moral emotions and moral cognitions have been linked conceptually (e.g., Arsenio, 2014; Malti & Ongley, 2014), empirical research on the developmental relations between moral affect and cognition during the developmental periods of middle childhood to early adolescence remains sparse. Similarly, the theoretically assumed link between moral emotions, moral cognition, and SJV (Turiel, 2006) has not been tested across time. The present study was intended to address these research gaps, in part, by examining the relations among moral emotions, moral reasoning, and SJV in a large-scale sample of 6 years old Swiss children who were re-assessed at 9 and 12 years of age.



The first aim of this study was to investigate the longitudinal relations between sympathy and MEA. Conceptually, sympathy was hypothesized to give rise to MEA (Eisenberg, 2000; Hoffman, 2000). In line with this expectation, our findings confirmed that both mother- and child-reported sympathy, when the children were 6 and 9 years of age, predicted increases in MEA when they were 9 and 12 years of age, respectively. In contrast and in line with our hypotheses, MEA did not predict increases in subsequent levels of mother- or child-reported sympathy. One potential explanation for these findings is that sympathy is a simpler emotion than MEA, as it does not require that the individual takes personal responsibility for the wrongdoing (Malti et al., 2009; Tangney, et al., 2007; see Davidov, Zahn-Waxler, Roth-Hanania, & Knafo, 2013). Moreover, sympathy is focused on the other's emotions (Eisenberg, 2000), while MEA is focused on the emotions of the self in relation to the other. Thus, sympathy, the simpler and other-focused emotion, is likely to promote MEA, while the more complex and self-focused MEA is less likely to promote sympathy.

The second aim of this study was to examine the longitudinal relations between sympathy and moral reasoning. Developmental scientists have argued that sympathy and moral reasoning are linked, as sympathy may enhance the use of both fairness- and care-oriented considerations when reasoning about moral dilemmas (Carlo et al., 2010, 2011; Hoffman, 2000; Malti & Ongley, 2014). In line with this argument, our findings revealed that mother- and child-reported sympathy predicted subsequent moral reasoning. In contrast, moral reasoning did not predict subsequent levels of mother- and child-reported sympathy. Thus, moral reasoning skills appear to entail taking into account the reactions of others and the self, including emotional reactions. Sympathy for the other's distress may make this distress salient, and promote children's ability to take it into account when reasoning about moral issues.

The role of sympathy in the development of MEA and moral reasoning attests to increasing integration between these important components of morality during childhood (Malti & Ongley, 2014). This implies that children may increasingly “use” their ability to sympathize with others to understand the moral significance of transgressions. This process of increasing coordination between sympathy and moral reasoning may also form the basis for the integration of morality into one’s self concept, which is foundational to the formation of one’s moral identity during adolescence (Krettenauer, 2012).

Our third aim was to investigate the relations between sympathy, MEA, and moral reasoning and subsequent social justice values. Although moral emotions and cognitions become increasingly integrated into one’s identity during adolescence, and definitions of the self increasingly begin to include morally relevant values (Bergman, 2002; Johnston & Krettenauer, 2011), no studies have tested these links from middle childhood to early adolescence. Our results showed that mother- and child-reported sympathy at 6 and 9 years of age were associated with the importance of social justice values at 12 years of age. These results indicate that children’s expression of care for the distress of needy others may be associated with increased awareness of social justice values in early adolescence. Perhaps children learn to generalize the concern for known others to concern for unknown others when they have been hurt by socially unjust treatment. For example, the care for the feelings of an excluded child may be generalized to care for the feelings of individuals who are excluded due to their group identity.

Unexpectedly, MEA was not associated with social justice values. Social justice values often refer to an appreciation of a fairness orientation in the context of group relations (e.g., equal distribution of resources to members of in- and out-groups). Individual MEA, as measured in this study, refers to negative feelings experienced in response to one’s own transgressions. Perhaps

collective guilt, i.e., negative feelings experienced in response to transgressions of one's group (Tangney et al., 2007), may be more closely related to social justice values than individual guilt.

As expected, the moral reasoning of 6- and 9-year-olds was associated with social justice values at 12 years of age. This finding may indicate that moral reasoning regarding fairness and justice may facilitate the development of abstract ideas regarding right or wrong. Children may come to understand rules regarding justice within the context of equal and reciprocal peer interactions; in adolescence, they may generalize these principles to apply to all individuals, and not only known peers, forming social justice values. These newly formed principles can later be applied across situations, in interaction with the requirements of the particular situation (Lapsley, & Narvaez, 2004).

The current study uncovers moral developmental processes that are likely to facilitate the formation of moral identity from middle childhood to early adolescence. Specifically, researchers have hypothesized that moral emotions and moral cognitions are integrated during middle childhood (Arsenio, 2014). Our study supported this argument by providing evidence that the moral emotion of sympathy promotes the subsequent development of MEA and moral reasoning. Moreover, there was evidence that middle childhood sympathy and moral reasoning are associated with social justice values in early adolescence. Thus, moral emotions and moral cognitions are jointly associated with the development of values that are an important aspect of the emerging moral identity in adolescence (Lapsley, & Narvaez, 2004; Turiel, 2006).

In the current study, social justice values were measured at Time 3 only, i.e., when the children were 12 years of age, but not when they were 6 and 9 years of age, respectively. The reason for this choice was a conceptual one; previous theory and research indicate that abstract values, that transcend interpersonal relations, develop during early adolescence (Helwig &

Jasiobedzka, 2001; Nucci, 2001). However, recent research suggests that value-related motivations may develop during middle childhood and may be reliably measurable using concrete, interpersonal situations (Bilsky et al., 2013). Future longitudinal studies that utilize these new measures as precursors of values are therefore warranted.

Our findings also contributed to the understanding of developmental stability and change in moral emotions and moral reasoning. Specifically, our results indicated that mother- and child-reported sympathy showed rank order stability ( $\beta$ 's ranging between .20 and .52) across all time points. This stability is in line with the argument that the qualitative development of sympathy in middle childhood is likely to be less rapid than the changes observed in early childhood (Eisenberg et al., 2014). Similarly, moral reasoning showed rank order stability between 6 and 12 years of age, but to a lesser extent ( $\beta$ 's ranging between .08 and .09). In contrast, MEA was related between 9 and 12 years of age only. These results support past findings (Eisenberg et al., 1987; Krettenauer, Asendorpf, & Nunner-Winkler, 2013; Malti et al., 2013) indicating that both MEA and moral reasoning are still substantially developing from middle childhood to early adolescence.

These results should be considered within the context of development in the meaning of constructs across times. This study could not test the equivalence in meaning of MEA and moral reasoning, and established partial equivalence in the meaning of sympathy across time. At the same time, the similar relations between the constructs across time, and stability found in constructs across time, strengthen the assumption of equivalence in the meaning of constructs at different time points. Changes in the understanding and expression of moral emotions and cognitions between middle childhood and adolescence may result from cognitive developments (Nucci, 2001). Moreover, during middle childhood, moral concepts shift from being externally to

internally motivated, as they become increasingly integrated in the moral identity (Krettenauer, 2011). The partial equivalence in sympathy across time may provide evidence to this process.

The correlations between self-reported and mother-reported sympathy were moderate, ranging between  $r = .10$  and  $r = .25$ . These relations are similar in magnitude to the relations found in many previous studies (for a review, see Eisenberg et al., 2014). At the same time, the relatively low convergence in perceived sympathy may point to “real” differences between the perceptions of mothers and children. This argument is supported by the fact that mother-reported sympathy was considerably more stable across time than self-reported sympathy. Mothers may perceived children’s level of sympathy as a (more or less stable) trait, while children may have perceived their own level of sympathy as a dynamic ability that changes with situational cues and normative cognitive development, which is why it also changed (i.e., increased) across time (Malti, et al., 2013).

In line with previous literature (e.g., Eisenberg et al., 2014; Malti & Buchmann, 2010; Nunner-Winkler et al., 2007), we found gender differences in moral emotions and cognitions. Specifically, girls showed higher levels of mother- and self-reported sympathy, MEA, moral reasoning, and social justice values, than boys at most time points. These differences may result from different social expectations, directing girls to express more caring feelings and behaviors than boys (Hastings, McShane, Parker, & Ladha, 2007). At the same time, we did not find gender differences in our multivariate analyses. This finding resonates with past research. Similar results were found in previous studies. For example, a one-year longitudinal study by Malti, Gummerum and Buchmann (2007) showed that gender was associated with mean level differences in sympathy, moral motivation and prosocial behavior at six years of age, but it did not moderate their inter-relations across time. These findings may point to the fact that developmental relations

between different components of morality may follow similar pathways for girls and boys. Future research is warranted to confirm this speculation.

Socioeconomic status (SES) did not predict sympathy, MEA, or moral reasoning at 6 years of age. As our study is among the very few to utilize a representative sample in the study of moral development, this finding may indicate that overall, SES is not a strong predictor of moral development. Alternatively, SES differences in moral development may be more pronounced in societies with greater socioeconomic stratification than Switzerland. In addition, cognitive ability was related to moral reasoning. This resonates with previous research and indicates that moral reasoning presupposes cognitive skills, as it requires understanding of complex social situations (Malti et al., 2013). Surprisingly, there was no relation between cognitive ability and MEA. As our test of cognitive ability was a culture-free intelligence test, it did not assess any verbal skills. Possibly, tests of verbal intelligence relate more strongly with MEA (Malti et al., 2010).

This study had several limitations. First, due to the large-scale nature of the study, our assessment of MEA and moral reasoning was limited to two vignettes. The reliability of this methodology can be restricted by the context dependence of moral development (Smetana, 2006). However, previous studies have provided strong evidence for the reliability and validity of the two scenarios (for a review, see Arsenio, 2014). Second, the present study was confined to a single cohort from a Western society. Since studies suggest that moral development is culturally dependent (Neff & Helwig, 2002), it is important to validate these findings in different cultural contexts. Third, most of our measures relied on self- and other-reports, which can be subject to social desirability bias. However, self-report measures are an invaluable tool for the study of values and moral development, as these constructs are very difficult to observe or be reliably reported by others. Moreover, social desirability has been shown not to bias self-reports of values

(Schwartz, Verkasalo, Antonovsky, & Sagiv, 1997).

Despite these limitations, this study provides evidence for the process of moral identity development, specifically for the relations between moral emotions, moral reasoning, and social justice values between middle childhood and early adolescence. In addition, the study also extends the existing moral development literature methodologically by using a large representative longitudinal sample from Switzerland. These findings are not only important for the advancement of moral development theory, but also hold important implications for educational programs that target moral development and social justice values. Developing and implementing programs that can effectively stimulate children's moral emotions, cognitions, and values, as well as their integration, is an important future task.

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Table 1

*Means and Standard Deviations of the Main Study Variables by Sex*

Variable	Girls ( <i>n</i> = 627)		Boys ( <i>n</i> = 646)		<i>t</i>	<i>p</i> <	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
<b>Sympathy</b>							
Mother report T1 <sup>a</sup>	5.23	0.74	4.99	0.79	5.63	.001	0.32
Mother report T2 <sup>a</sup>	5.15	0.78	4.86	0.86	6.20	.001	0.35
Mother report T3 <sup>a</sup>	5.02	0.77	4.67	0.85	7.68	.001	0.43
Child report T1 <sup>b</sup>	1.11	0.61	1.02	0.58	2.82	.001	0.16
Child report T2 <sup>b</sup>	1.38	0.45	1.24	0.51	5.45	.001	0.31
Child report T3 <sup>a</sup>	4.89	0.63	4.54	0.68	9.69	.001	0.54
<b>Moral Emotion Attributions</b>							
T1 <sup>c</sup>	3.59	0.69	3.54	0.72	1.39	ns	0.08
T2 <sup>c</sup>	3.82	0.42	3.75	0.47	2.94	.001	0.16
T3 <sup>c</sup>	3.71	0.47	3.60	0.53	3.99	.001	0.22
<b>Moral Reasoning</b>							
T1 <sup>d</sup>	0.99	0.72	0.85	0.71	3.45	.001	0.19
T2 <sup>d</sup>	1.27	0.73	1.15	0.74	2.93	.001	0.16
T3 <sup>d</sup>	1.12	0.71	0.95	0.72	4.25	.001	0.24
Social Justice Values T3 <sup>e</sup>	8.77	1.08	8.35	1.25	6.40	.001	0.36

*Notes.* T1 = Time 1. T2 = Time 2. T3 = Time 3. <sup>a</sup>Possible range = 1-6. <sup>b</sup>Possible range = 0-2. <sup>c</sup>Possible range = 2-4. <sup>d</sup>Possible range = 0-2.

<sup>e</sup>Possible range = 1-10. ns = not significant.

Table 2

*Correlations Matrix of the Study Variables*

Variables	1	2	3	4	5	6	7	8	9	10	11	12
Sympathy												
1. Mother T1	-											
2. Mother T2	.46**	-										
3. Mother T3	.44**	.56**	-									
4. Child T1	.10**	.09**	.11**	-								
5. Child T2	.15**	.23**	.19**	.21**	-							
6. Child T3	.17**	.24**	.25**	.17**	.29**	-						
Moral Emotion Attributions												
7. T1	.06*	.04	.05	.15**	.04	.07*	-					
8. T2	.08**	.09**	.06*	.10**	.22**	.11**	-.01	-				
9. T3	.09**	.16**	.12**	.08**	.14**	.25**	.03	.16**	-			
Moral Reasoning												
10. T1	.11**	.04	.08**	.06*	.02	.06*	.36**	-.02	.00	-		
11. T2	.06*	.05	.04	.05	.03	.09**	.00	.01	.09**	.09**	-	
12. T3	.07*	.09**	.07*	.03	.08**	.13**	.06*	.03	.20**	.00	.10**	-
13. Val T3	.12**	.16**	.20**	.14**	.19**	.48**	.06*	.04	.14**	.06*	.09**	.09**

Notes. Val = Social justice values. \*  $p < .05$ . \*\*  $p < .01$ . T1 = Time 1. T2 = Time 2. T3 = Time 3.

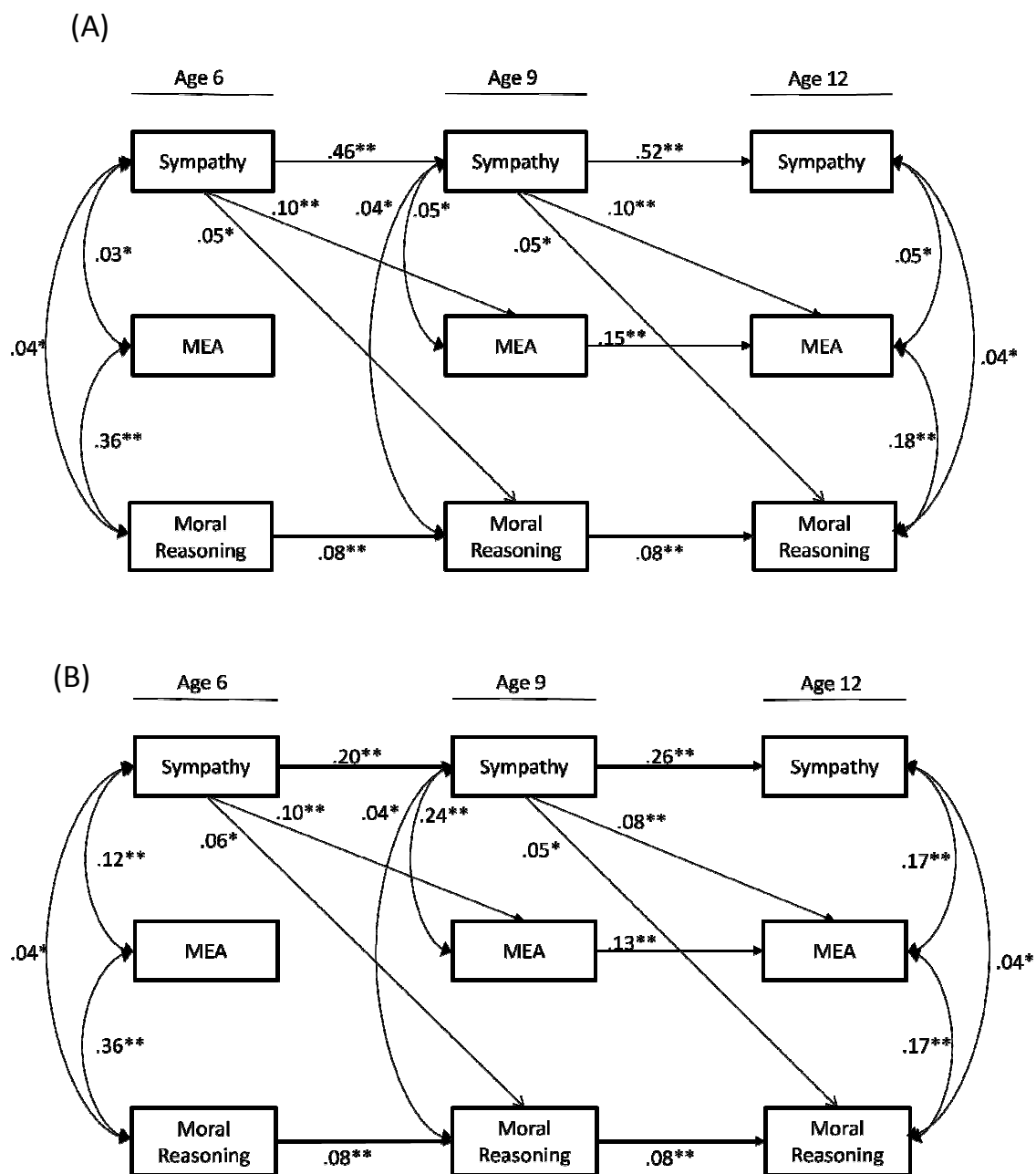


Figure 1. Model results linking (A) mother-reported sympathy to MEA and moral reasoning and (B) child-reported sympathy to MEA and moral reasoning across Times 1, 2, and 3. The models are controlled for sex, cognitive ability, and socioeconomic status. Paths that vary freely across times are bolded. MEA = Moral emotion attributions. Panel a:  $CFI = .94$ ,  $RMSEA = .03$ ,  $SRMR = .03$ ; Panel b:  $CFI = .97$ ,  $RMSEA = .02$ ,  $SRMR = .03$ . \*  $p < .05$ . \*\*  $p < .01$ .

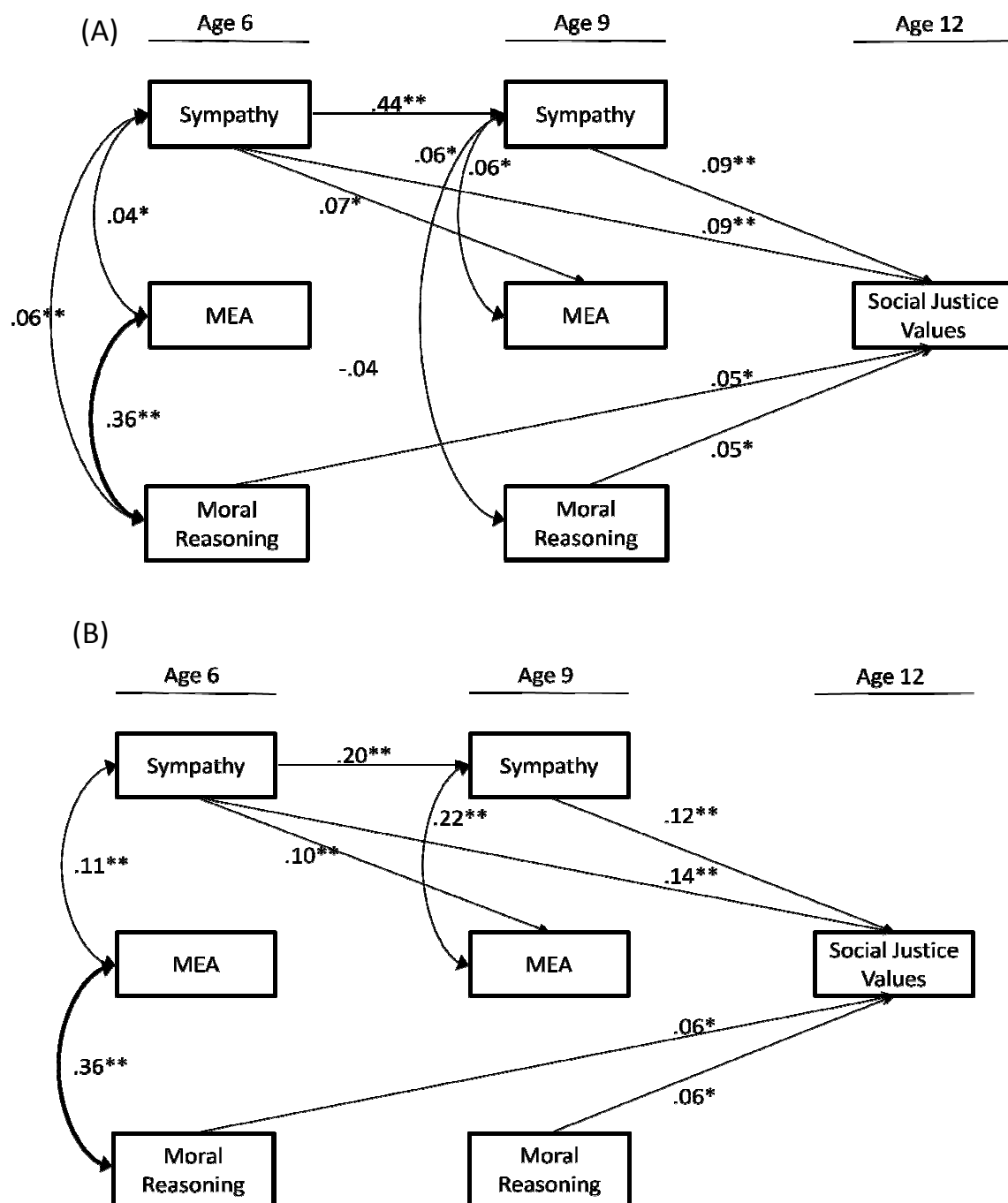


Figure 2. Model results linking (A) mother-reported sympathy, MEA and moral reasoning with social justice values at T3, and (B) child-reported sympathy, MEA and moral reasoning at T1 and T2 with social justice values at T3. The models are controlled for sex, cognitive ability, and socioeconomic status. Paths that vary freely across times are bolded. MEA = Moral emotion attributions. Panel a:  $CFI = .95$ ,  $RMSEA = .03$ ,  $SRMR = .03$ ; Panel b:  $CFI = .93$ ,  $RMSEA = .03$ ,  $SRMR = .03$ . \*  $p < .05$ . \*\*  $p < .01$ .