Children's Sympathy, Guilt, and Moral Reasoning in Helping, Cooperation, and Sharing: A Six-Year Longitudinal Study

Tina Malti, Antonio Zuffianò Lixian Cui, Sophia F. Ongley, Joanna Peplak, Maria P. Chaparro, and Marlis Buchmann

Correspondence concerning this article should be addressed to Tina Malti, Department of Psychology, University of Toronto, Deerfield Hall, 3359 Mississauga Road North, Mississauga, ON, L5L 1C6, Canada. Electronic mail may be sent to tina.malti@utoronto.ca

This is the accepted version of an article published in *Child Development*

http://onlinelibrary.wiley.com/doi/10.1111/cdev.12632/full

Abstract

We examined the role of sympathy, guilt, and moral reasoning in helping, cooperation, and sharing, in a six-year, three wave longitudinal study involving 175 children (M_{ages} of 6.10, 9.18, and 12.18 years). Primary caregivers reported on children's helping and cooperation; sharing was assessed behaviorally. Child sympathy was assessed by self- and teacher-reports, and self-attributed feelings of guilt/sadness and moral reasoning were assessed by children's responses to transgression vignettes. Sympathy predicted helping, cooperation, and sharing. Guilt/sadness and moral reasoning interacted with sympathy in predicting helping and cooperation; both sympathy and guilt/sadness were associated with the development of sharing. The findings are discussed in relation to the emergence of differential motivational pathways to helping, cooperation, and sharing.

Keywords: Helping, cooperation, sharing, sympathy, guilt, moral reasoning, longitudinal study

Children's Sympathy, Guilt, and Moral Reasoning in Helping, Cooperation, and Sharing: A Six-Year Longitudinal Study

Over the past several decades, much research in developmental psychology has focused on gaining a deeper understanding of the factors that motivate children to engage in prosocial actions (Eisenberg, Spinrad, & Knafo-Noam, 2015). Developmental theorists have argued that both other-oriented moral emotions, such as sympathy, self-evaluative moral emotions, such as guilt, and moral reasoning can serve as motives for moral and prosocial behaviors (Hoffman, 2000; Malti, 2015). While recent studies have shown that even young children exhibit spontaneous prosocial behavior (e.g., Dunfield, Kuhlmeier, O'Connell, & Kelley, 2011), it has been argued that these early other-oriented tendencies are likely caused by various, and not necessarily inherently moral, motives (Paulus, 2014). Emotions and thoughts about the self and others in everyday moral interactions, however, increase in frequency and complexity in early and middle childhood, and they may serve as important motives for truly other-oriented tendencies in these encounters. Here we focus on three central motives that have been theorized to underlie other-oriented tendencies across middle childhood: Children's other-oriented feelings of sympathy for others in distress, children's self-evaluative feelings of guilt about omitting prosocial duties, and children's moral reasoning following moral judgment, as it reflects an internalized understanding about norms of justice, fairness, and care (Malti & Ongley, 2014).

It is important to investigate various types of moral emotions in relation to behavior as they are not all equal: The orientation of these emotions (i.e., other- vs. self-orientation) may contribute to their differential motivating roles. For instance, when the other-oriented emotion is weak, the self-evaluative emotion may compensate (as might moral reasoning) in motivating prosocial behavior. Furthermore, increasing social-cognitive skills may also increase the

multifaceted associations between these emotions and reasoning across middle childhood (Hoffman, 2000), as children increasingly coordinate their affective reactions with their justifications about moral transgressions (Aksan & Kochanska, 2005). Thus, various moral emotions and moral reasoning can highlight the moral norms involved in a transgression and thus serve to motivate other-oriented behavior. Most existing research, however, has focused on the role of either sympathy or guilt and moral reasoning on global indices of dispositional prosocial behavior. Relatively little is known about their independent and interdependent roles in predicting distinct subtypes of prosocial responding. Moreover, longitudinal work in this area that focuses on middle childhood is even sparser.

The present study aimed to address these research gaps, in part, by testing the role of other-oriented (i.e., sympathy) and self-evaluative moral emotions (i.e., guilt), and moral reasoning as motivational antecedents of distinct subtypes of prosocial behavior (i.e., helping, cooperation, and sharing) in a six-year, three-wave sample using a multi-method, multi-informant approach.

The Development of Helping, Cooperation, and Sharing

In the present study, we investigated the development of three subtypes of prosocial behavior (i.e., helping, cooperating, and sharing). These three behaviors were selected because together they represent a broad range of prosocial responding and yet they differ along three key dimensions: Goal achievement, cost, and anonymity (Eisenberg et al., 2015). Cooperation (i.e., coordinating one's actions to reach a shared goal with another) differs from helping (i.e., aiding individuals who have suffered negative consequences) because the goal of cooperation is mutual. Helping, on the other hand, requires the helper to work towards the achievement of another individual's goal, and to temporarily put aside the achievement of his or her own goals. Like

helping, sharing, which is operationalized in the current study as the costly and non-reciprocated allocation of personal resources, benefits the recipient and, when conducted in private, does not further the goals of the sharer. On the dimension of cost, cooperation is the least costly as it has mutually beneficial outcomes, followed by helping, which could potentially incur a high cost but most often costs the helper little effort (e.g., helping to pick up dropped items). As with helping and cooperation, acts of sharing take many forms, which can influence its cost. In some contexts, sharing can be a low cost prosocial behavior. For example, during public acts of sharing when the value of the shared item is low or the cost of the shared item is offset with a positive evaluation of the sharer. In some contexts, it may also be the case that the shared item is returned or, if one knows the recipient, the act of sharing may be reciprocated in future interactions. The current study, however, examined a particularly high-cost context for sharing; that is, resource sharing in which the shared items are a) perceived as valuable, b) are not returned, and c) are shared with anonymous strangers, which eliminates the possibility for future reciprocity (Gummerum, Hanoch, Keller, Parsons, & Hummel, 2010). Helping, cooperation, and sharing also diverge in their degree of anonymity. While all three can be public (and cooperation, by definition, must be), sharing in the current study is done anonymously with no opportunity for public recognition or reciprocity.

Developmentally, children are able to engage in instrumental helping from early on (i.e., 18 months). Cooperative behaviors are displayed early on in development, and appear to increase between the first and second year of life along with the development of communicative abilities. While children can exhibit sharing from as early as 8 months of age, sharing in equal amounts has been shown to emerge later in early childhood (Eisenberg et al., 2015). However, few studies have examined the development of these behaviors from middle childhood to early adolescence,

a time when peer relations become increasingly important and children may become more selective toward whom they behave prosocially (Berndt, 1985; Smetana, Killen, & Turiel, 1991; Weller & Lagatutta, 2012).

Helping in general is likely to increase from early childhood to early adolescence, although researchers have argued that while simple forms of helping may remain stable, more sophisticated forms of helping increase with age (Eisenberg et al., 2015). Although few longitudinal studies have examined the development of cooperation, it has been shown that social competence increases from childhood to adolescence, which is likely explained by children's increased tendency to engage in peer interactions (Rubin, Bukowski, & Laursen, 2011). Given that cooperation is a core component of social competence, it is reasonable to assume its increase (Laible, Carlo, Murphy, Augustine, & Roesch, 2014). The cross-sectional literature on sharing indicates an increase from early to middle childhood (Benenson, Pascoe, & Radmore, 2007). It is less clear whether sharing continues to increase from late-childhood to early adolescence; however, it is possible that during this period, children may be less likely to give their own possessions away due to their increased awareness of "ownership" (Hay, Caplan, Castle, & Stimson, 1991; see Nancekivell, Van de Vondervoort, & Friedman, 2013).

Sympathy, Guilt, and the Development of Helping, Cooperation, and Sharing

Developmental researchers have identified the other-oriented emotion of sympathy (i.e., affective concern for another's well-being) and the self-evaluative emotion of guilt (i.e., sadness and negative feeling of regret over wrongdoing) as central motives in the development of prosocial behavior (Eisenberg et al., 2015; Malti & Ongley, 2014); however these moral emotions may motivate other-oriented, prosocial behavior for different reasons. Sympathy highlights the negative affective consequences for the victim, which likely facilitates the need to

help the distressed other. Guilt, on the other hand, entails negative feelings of regret and sadness about the self because it assumes that one has caused harm and has violated one's own moral standards, which is likely to enhance reparation (Hoffman, 2000). In line with previous research in the happy-victimizer paradigm (see Arsenio, 2014; Malti & Ongley, 2014), we defined guilt feelings as the verbal attribution of guilt and sadness to the self as victimizer in the context of moral transgression. The verbal attribution of sadness to the self has been interpreted as an empirical indicator for the more complex emotion of guilt, because it reflects an internalized understanding of the norm's validity, as well as one's willingness to assume responsibility. This conceptualization is also in line with related literature on the development of complex social emotions, which has revealed that the attribution of basic emotions (e.g., sadness) can serve as a developmental precursor to the anticipation of complex social emotions (e.g., guilt) in vignette tasks (Malti et al., 2009; see Colonnesi, Engelhard, & Boegels, 2010).

There is some evidence supporting an association between sympathy and helping in preschool and school-aged children, determined by facial reactions (Miller, Eisenberg, Fabes, & Shell, 1996) and physiological measures of sympathy (Eisenberg, Fabes, Miller, Shell, Shea, & May-Plumee, 1990); however, only a small body of existing work has documented a positive relation between guilt and helping behavior (Chapman, Zahn-Waxler, Cooperman, & Iannotti, 1987). Regarding cooperation and sympathy, while Marcus, Tellen, and Roke (1979) found that preschoolers demonstrating high levels of cooperation also had higher levels of sympathy, Levine and Hoffman (1975) did not document relations between sympathy and cooperation among 4-year-olds. However, the related literature on social competence has shown positive longitudinal relations between sympathy and social competence (Sallquist, Eisenberg, Spinrad, Eggum & Gaertner, 2009). Furthermore, little is known about the relation between cooperation

and guilt; however, recent research has demonstrated a positive relation between sharing, guilt, and sympathy. For example, Gummerum and colleagues (2010) showed that 3- to 5-year-olds' guilt significantly predicted sharing. Ongley and Malti (2014) found that for children with low sympathy, guilt predicted higher levels of sharing, suggesting that children with low levels of other-oriented concern (i.e., sympathy) may be motivated to share by negative self-evaluative moral emotions. Taken together, relatively little is known about how sympathy and guilt relate differentially to various prosocial behaviors, and longitudinal evidence is needed to paint a more complete picture of these associations.

Moral Reasoning and the Development of Helping, Cooperation, and Sharing

Moral reasoning describes the process in which individuals, using logic and self-reflection, determine why a specific act is right or wrong from a moral perspective (Malti & Ongley, 2014). This self-reflective process involves the capacity to distinguish self-oriented desires and needs from internalized norms of fairness, justice, and care. As such, moral reasoning includes fairness-related and other-oriented considerations as to why it is important to behave morally. In line with this notion, previous research has considered arguments that indicate both self-reflective morality, such as fairness, and other-oriented concerns of care, such as altruism and empathy, as part of overt moral reasoning (e.g., Malti, Gummerum, Keller, & Buchmann, 2009). Cognitive-developmental approaches to moral development have claimed a positive relation between moral reasoning and morally relevant, prosocial behaviors (Kohlberg, 1984). Yet, findings from empirical studies have yielded an inconsistent picture, with small to modest positive relations at best (Eisenberg et al., 2015). Theoretically, it is likely that the internalization of moral norms and knowledge about why it is wrong from a moral perspective to not fulfill prosocial duties is related to the performance of prosocial behaviors themselves. Yet, the body of

research examining the role of moral reasoning in the motivation of specific subtypes of prosocial behavior has revealed mixed findings (Eisenberg-Berg & Hand, 1979; Gummerum, Keller, Takezawa, & Mata, 2008). To the best of our knowledge, only one study has documented a positive association between children's moral reasoning and their cooperation with their mothers (Hinnant, Nelson, O'Brien, Keane, & Calkins, 2013). In addition, Miller and colleagues (1996) provided evidence that higher levels of other-oriented moral reasoning and sympathy predicted increased helping in early childhood. However, in light of the often small and inconsistent findings in this area, researchers have highlighted the need for work that explores the interplay between moral reasoning, sympathy, and guilt in prosocial behavior (Malti & Ongley, 2014).

The Present Study

In sum, the purpose of the present study was twofold: (1) To study the developmental trajectories of helping, cooperation, and sharing from 6 to 12 years of age; and (2) to test the independent and combined role of sympathy, guilt, and moral reasoning in these behaviors. We expected increases in helping and cooperation (Eisenberg et al., 2015), whereas no change in sharing was expected (Almås, Cappelen, Sørensen, & Tungodden, 2010). In line with prior research (Eisenberg et al., 2015), we hypothesized that sympathy would predict the development of helping, cooperation, and sharing. In addition, we explored the possibility that guilt and moral reasoning would compensate for low levels of sympathy in predicting helping, cooperation, and sharing (Ongley & Malti, 2014), and that the strength of these relationships would vary across behaviors as they differ in terms of cost and orientation towards others (Eisenberg & Miller, 1987). Specifically, sharing, being the most high-cost and other-oriented (i.e., with the least

potential self-gains) of the three measured prosocial behaviors, may yield the strongest associations with sympathy, guilt and moral reasoning.

Method

Participants

A random sample of children and their primary caregivers was drawn in Switzerland. Interviews were conducted at T1 with 175 children (M_{age} = 6.10, SD = 0.19, 51% male) and 175 caregivers. One hundred and sixty-three of the primary caregivers (93%) and 133 of the teachers (76%) filled out a supplementary questionnaire. At the second assessment (T2, 3 years after T1), 141 interviews and 139 interviews were carried out with children (M_{age} = 9.18, SD = 0.61) and primary caregivers, respectively (81% and 85%). One hundred and thirty four (96%) of the primary caregivers and one hundred and thirty (93%) of teachers filled out a questionnaire. At the third assessment (T3, 3 years after T2), 136 children (M_{age} = 12.18, SD = 0.21) and 135 primary caregivers were interviewed (96% and 97%); 121 primary caregivers (90%) and 124 teachers (95%) filled out a questionnaire. Overt retention rates were 81% and 79% at T2 and T3, respectively (for further information and missing data analyses, see online Appendices S1 & S2).

Procedure

There were two sessions for each child at T1, each lasting approximately 60 minutes: One at home and one at school. The primary caregiver and teacher filled out a questionnaire on the child's social-emotional development. The second and third assessments were completed 3 and 6 years later, respectively, using the same procedure as in T1. The interviewers were trained undergraduate psychology students. Written informed consent was obtained from the primary caregivers and teachers at all assessment points (for further information, see online Appendix S2).

Measures

Helping. Primary caregivers rated children's helping on a 6-point scale using 3 items taken from the Strengths and Difficulties Questionnaire (Goodman, 1997) and the Social Behavior Questionnaire (Tremblay et al., 1991), e.g., "My child is helpful if someone is hurt, upset or feeling ill". Cronbach's α were .65 (T1), .83 (T2), and .71 (T3).

Cooperation. Primary caregivers rated children's cooperation on a 6-point scale using 3 revised items taken from German versions of the Social Competence and Behavior Evaluation Scale (LaFreniere & Dumas, 1995) and the Social Skills Rating System (Gresham & Elliot, 1990), e.g., "My child cooperates with peers in group activities". Cronbach's αs were .71 (T1), .65 (T2), and .64 (T3).

Sharing. At T1-T3, sharing was assessed using the dictator game (Gummerum et al., 2008). This prosocial sharing task was developed for experimental economics. One person, the dictator, can unilaterally allocate resources to another anonymous person, the receiver. The receiver cannot reject an allocation offer and cannot punish or reciprocate any action by the dictator. Therefore, if dictators are interested in maximizing their self-gain, they would not offer any resources to the receivers. In line with previous work, (Benenson et al., 2007; Ongley & Malti, 2014), 6- and 9-year-olds received 12 stickers, whereas 12-year-olds received 10 one-Swiss Franc coins. The decision to use money instead of stickers when participants were 12 years of age was made in consultation with other researchers in the field and in line with previous studies as it takes into account the fact that adolescents generally do not find stickers as attractive as do children (and vice versa) (Ongley & Malti, 2014). In line with previous studies (e.g., Gummerum et al., 2008), we used this script to explain the dictator game to the participants: " I would like to play a game with you now. This game is called the stickers (or money) game. In this game, you can give

stickers (or money) to yourself and to another child. This child is also a boy/girl and the same age as you. You won't see the other child and you won't know who this other child is."

Proportional scores were created by computing the number of shared resources (e.g., stickers, coins) divided by the total number of resources received during the interview. Higher scores indicated more sharing.

Sympathy. At T1 and T2, child's sympathy was assessed by teacher ratings on a 6-point scale and child ratings on a 3-point scale using 5 items (Zhou, Valiente, & Eisenberg, 2003). Children heard the statements read aloud (e.g., "I often feel sorry for other children who are sad or in trouble") and after each statement were asked whether the sentence describes him/her or not, and if so, how strongly. Children were asked to answer spontaneously and not think too long about their answers. Cronbach's αs were .67 (T1) and .74 (T2) for child reports, and .92 (T1) and .97 (T2) for teacher reports.

Guilt. At T1-T2, children's guilt was assessed using two validated hypothetical vignettes on prosocial duty omission (i.e., not sharing, not helping; see online supplemental Appendix S1). We chose to focus on the omission of prosocial moral duties because we expected emotions to be closely related to behavior in this domain. Previous research indicates stronger relations between emotions with behavior within the same moral subdomain than across moral subdomains, such as intentional harm (Malti et al., 2009; see Colasante, Zuffianò, & Malti, 2015). After listening to the two stories, the children were asked to report their feelings (i.e., emotion attributed to the self-as-victimizer; "How would you feel afterwards if you had done what [victimizer] did?").

Coding of guilt. The emotions attributed to the self-as-victimizer were categorized as "happiness", "sadness", "fear", "anger", and "guilt". In line with previous work and because the majority of children attributed "sadness" to the self-as-victimizer, guilt and sadness were

combined into one category labelled "guilt/sadness" (Malti et al., 2009; Ongley & Malti, 2014). The categories of guilt and sadness were combined because the attribution of sadness has been interpreted as a precursor of guilt in the context of moral transgressions, when children are not yet able to verbally label it (Malti et al., 2009; see Appendix S1). Like children's moral reasoning, the reported emotions were binary coded for analysis purposes ("1" indicating the presence and "0" indicating the absence of guilt/sadness). The scores were then aggregated across the two stories. Similar to previous findings, the majority of the children attributed sad feelings, and only a minority of children verbally attributed "guilt" at T1 and T2 (T1: 65% attributed sadness and 4% guilt; T2: 67% attributed sadness and 13% guilt; see Malti & Ongley, 2014).

Moral reasoning. At T1-T2, children's moral reasoning was assessed using the same two validated hypothetical vignettes on prosocial duty omission that were used to assess guilt. After listening to the two stories, the children were asked for their moral reasoning (i.e., justification of rule validity, "Is it right or not right what the protagonist did? Why/why not?").

Coding of moral reasoning. In line with previous work, the vast majority of the children evaluated the two transgressions as morally wrong at T1 and T2 (T1: 90%; T2: 96%). Because we were interested in children's reasoning for moral judgment, reasoning was scored as a 0 in the few instances when children responded that the transgression was "right". Next, a validated coding system (Malti et al., 2009) was used to code justification of rule validity: (1) Moral-fairness reasons (e.g., "It is not fair to not share"), (2) moral-empathic reasons (e.g., "The other child will be sad"), (3) sanction-oriented, external reasons (e.g., "The teacher may punish the child"), (4) hedonistic, self-interested reasons (e.g., "He just likes pencils so much"), and (5) unelaborated reasons (e.g., "Because he just did it").

Two trained testers coded answers at each assessment point: 12% and 23% of the transcripts were first double-coded by the testers, with κ_S = .96, and .92 respectively (see appendix S1). All disagreements were discussed, resolved, and consensus was coded. In line with previous work and our conceptualization of morality as pertaining to norms of fairness, justice, and care (e.g., Malti et al., 2009, 2012), moral-fairness and moral-empathic reasons were combined into one overt category labeled "moral reasoning" (for more detail, see online Appendix S1). As such, the "moral reasoning" score reflects an individual's internalized moral norms and values, and justifications pertaining to fairness and empathic concern reflect an individual's awareness of the validity of such norms in the context of everyday moral conflict. The responses were then binary coded for analysis purposes, with "1" indicating the presence of moral reasoning and "0" indicating the absence of such reasoning. With few exceptions, the reasoning scores were significantly interrelated across stories at all assessment points, and mean scores were computed.

Socioeconomic status. Socioeconomic status (SES) was based on coding the caregiver's current profession and was then transformed into an International Socioeconomic Index of occupational status (ISEI) score. The final SES score was based on the caregiver with the highest ISEI score and was standardized for further analyses.

Plan of Analyses

Unconditional Latent Growth Curve Modeling (LGCM) was used to identify developmental trajectories of helping and cooperation (see online Appendix S3) in M*plus* version 7.31 (Muthén & Muthén, 2012). Since helping and cooperation showed some moderate degree of shared variance (see online Appendix S4), we captured their unique, idysioncratic facets by employing an indicator-specific LGCM approach (Bishop, Geiser, & Cole, 2015). This

method allowed us to simultaneously model the development of both helping and cooperation while their shared variance was controlled for (see online Appendix S3, for a graphical representation). Next, eight conditional LGC models were implemented with moral emotions, moral reasoning, and the interaction terms (i.e., sympathy × guilt/sadness, sympathy × moral reasoning) at T1 and T2 predicting the initial levels (i.e., intercepts) and rates of change (i.e., slopes) of helping and cooperation (see online Appendix S3 for indices used to evaluate model fit). Sex and SES were covariates. In addition, we controlled for the effect of intercept on slope (i.e., the effects of initial levels of helping and cooperation on the change rates of helping and cooperation). Sharing was not correlated across time (see online Appendix S4), so that LGCM was not appropriate and multiple regression analyses were conducted instead.

Results

Descriptive Statistics

Means, standard deviations, and correlations between the study variables are presented in Table 1 (for a more detailed description, see online Appendix S4).

The Development of Helping, Cooperation, and Sharing

Results showed that the unconditional *linear model* fit the data well for helping χ^2 (6) = 11.57, p = .07; CFI = .96, RMSEA = .07, SRMR = .06, and cooperation, χ^2 (1) = 2.00, p = .16; CFI = .98, RMSEA = .08, SRMR = .02 (see online Appendix S3). While helping decreased over time, cooperation increased (Table 2). The variance of the latent slope of cooperation was significant, indicating inter-individual variability in the development of cooperation over time. Latent mean-level changes in sharing were not modeled, however repeated measures ANOVA indicated that children at age 12 shared less than children at age 9, but similarly to children at age 6 $F(2, 242)= 5.26$, $p < .05$, $\eta^2_p = .04$.

Sympathy, Guilt, and Moral Reasoning in Helping, Cooperation, and Sharing

The eight conditional LGC models showed a reasonable fit to the data (see online Appendix S5) and results indicated that, overall, a substantial amount of variances of the intercepts and slopes was explained by the predictors for most of the models (Table 2).

Helping. Teacher-reported sympathy at T1 predicted both the intercept and slope of helping above and beyond the effect of sex (girls declined slower than boys in helping): Higher levels of sympathy at 6 years of age were related to higher initial levels of helping and lower decreases in helping over time (Table 2). At T2, we found child-reported sympathy at T2 was positively associated with the intercept (Table 2).

Cooperation. At T1, the intercept of cooperation was negatively related to the slope, indicating that children at age 6 starting with lower levels tended to increase more in cooperation. The interaction of teacher-reported sympathy and guilt/sadness significantly predicted the slope of cooperation (Table 2). Simple slope analysis revealed that, for children who were low in guilt/sadness, higher sympathy was associated with steeper increase in cooperation over time, whereas children who were high in guilt/sadness showed high level of cooperation over time, independent of their sympathy (Figure 1). At T1, child-reported sympathy interacted with guilt/sadness and moral reasoning in predicting the intercept (Table 2). Only for children who were low in guilt/sadness or moral reasoning, higher sympathy was associated with higher cooperation, whereas higher guilt/sadness or moral reasoning was related to higher cooperation regardless of their sympathy (Figure 2). At T2, child-reported sympathy predicted the intercept positively whereas guilt/sadness was negatively associated with the slope, indicating that children who were already high in guilt/sadness showed less steep increases in cooperation from T2 to T3 (Table 2).

Sharing. The results showed no significant effects of sympathy, guilt/sadness, and moral reasoning on sharing at T1 concurrently or in predicting sharing at T2. However, teacher-reported sympathy and guilt/sadness at T2 predicted sharing at T2, $\beta = 0.22$, $p = .01$ and $\beta = 0.25$, $p = .005$, respectively ($R^2 = 0.11$). In addition, self-reported sympathy and guilt/sadness at T2 predicted sharing at T3, $\beta = 0.19$, $p = .02$ and $\beta = 0.21$, $p = .045$, respectively ($R^2 = 0.09$). These results suggest that higher sympathy and guilt/sadness at 9 years of age were associated with more sharing at both 9 and 12 years of age.

Discussion

This study is among the first to investigate the role of sympathy, guilt, and moral reasoning in the development of three distinct subtypes of prosocial behavior: Helping, cooperation, and sharing. We tested these relations comprehensively over a period of six years from early childhood to early adolescence, utilizing a multi-informant, mixed-method approach. Despite longstanding theorizing on the role of sympathy, guilt, and moral reasoning in overt prosocial behavior, longitudinal studies on various subtypes of prosocial behavior are sparse, and few, if any, have tested the role of moral-affective and moral-cognitive factors in the development of subtypes of prosocial behavior. The current study was thus well suited to add novel knowledge on the moral foundations of these types of prosocial behaviors.

One central finding was that sympathy was an important antecedent of all three prosocial behaviors from early childhood to early adolescence. We found that sympathy predicted higher levels of helping, cooperation, and sharing, as well as mean-level change rates of helping (from 6 to 12 years of age). Interestingly, teacher-reported sympathy, compared to self-reported sympathy, showed a more consistent pattern of associations across time with helping and cooperation. This result might be interpreted in light of the shared focus of adult reporters (i.e.,

teachers and parents) on dispositional components when evaluating children's emotional and behavioral functioning, such as their sympathy or prosocial behavioral tendencies (De Los Reyes & Kazdin, 2005). In contrast, children may tend to include more contextual or situational information (e.g., specific reactions to peer provocations, etc.) when reporting their own feelings and behaviors.

Taken together, these findings resonate with the premise that sympathy (or affective concern for others) is a strong motivating factor behind other-oriented behaviors and their development (Davidov, Zahn-Waxler, Roth-Hanania, & Knafo, 2013). In moral development theory, it has been emphasized that affective concern for others serves as an important motivator for early prosocial behavior, and much longitudinal work has confirmed the role of sympathy in the development of overt prosocial behavior. Our findings extend these lines of work by documenting the significance of sympathy in the development of specific prosocial behaviors.

A second important finding was that self-attributed feelings of guilt/sadness predicted higher levels of sharing from mid-childhood to early adolescence. This is particularly interesting because sharing, of the three prosocial behaviors, is the most costly. Unlike helping or cooperation, sharing involves the loss of the shared items (Gummerum et al., 2008). The role of self-attributed feelings of guilt/sadness in the development of sharing shows that sympathy is not the only motivator of costly prosocial actions, especially from mid-childhood to early adolescence. Sympathy may be particularly relevant in early childhood, given that young children have not yet developed the self-reflective skills that are necessary for the anticipation of guilt and sadness (Davidov et al., 2013). Thus, since the complex self-conscious emotion of guilt emerges later in development, self-attributed feelings of guilt/sadness may serve as a motivational foundation for sharing in mid-childhood and subsequent development by pointing

to the negative affective consequences of omitting fair resource allocation (Kochanska, Gross, Lin, & Nichols, 2002).

A third main finding was that both moral reasoning and feelings of guilt/sadness interacted with sympathy in predicting cooperation. Specifically, there was an interaction between teacher-reported sympathy and guilt/sadness (at T1) in predicting changes in cooperation (see Figure 1). Children with low guilt/sadness showed more increases in cooperation if they were high in sympathy. This finding supports a *compensatory mechanism* between sympathy with guilt/sadness in predicting the development of cooperation (Malti et al., 2009). We also found a similar compensatory effect between (a) child-reported sympathy and guilt/sadness at T1, and (b) child-reported sympathy and moral reasoning at T1 on initial mean levels of cooperation: Whereas children with high guilt/sadness (Figure 2a) or moral reasoning (Figure 2b) were high in cooperation at T1 independent of their sympathy, high levels of sympathy increased the cooperative behavior of 6-year-old children with low level of guilt/sadness or moral reasoning. Sympathy also increased the cooperative behavior of 9-year-old children. In contrast, high guilt/sadness at T2 was associated with less steep increases in cooperation from T2 to T3. This finding may be due to the fact that both feelings of guilt/sadness and cooperation were already at high mean levels at T2, and high guilt/sadness may therefore not stimulate increases in cooperation from T2 to T3; rather, other factors may be necessary to enact steep increases in an already high willingness to cooperate.

As expected, children shared less at 12-years of age compared to 9-years of age. Though the limited number of existing studies that have examined change in sharing from middle childhood to early adolescence have yielded conflicting findings (Leman, Keller, Takezawa, & Gummerum, 2009), this age-related decrease is consistent with previous findings for boys

between the ages of 8 and 12 and research showing a decrease between middle childhood and adolescence in sharing with non-friends (Berndt, 1985; Ongley & Malti, 2014).

We found developmental changes in children's helping and cooperation. For helping, we found a somewhat unexpected decrease over time. Although our results also indicated that children with high initial levels of teacher-reported sympathy showed less decline in helping than their counterparts, the decrease may be a function of the *type* of helping behaviors that were measured in this study. Our measure captured rudimentary, instrumental forms of helping. Such behaviors are often enacted through contingent external rewards and may therefore decline with increasingly sophisticated socio-cognitive and socio-emotional skills. With age, children may increasingly engage in other, more complex forms of helping behaviors that are associated with, and motivated by, sympathy and altruistic concern (Eisenberg et al., 2015; see Svetlova, Nichols, & Brownell, 2010). Future longitudinal research can further clarify how different motives, such as external rewards or altruistic concern, predict the development of different types of helping. For cooperation, we found an increase over time, which is in line with previous work (Laible et al., 2014). Although rudimentary cooperative skills begin to emerge in early childhood (Warneken & Tomasello, 2007), cooperation requires complex understanding of interdependence among courses of actions (in order to reach a common desired goal) that likely develop later (Dunfield et al., 2011).

In line with theorizing on the associations between sympathy, guilt/sadness and moral reasoning (Akzan & Kochanska, 2005), our correlational findings also showed associations between feelings of guilt/sadness and moral reasoning, suggesting that children's internalized feelings about norms of caring are related to how they reason about these issues. Importantly, however, a consistent pattern of associations between sympathy and feelings of guilt/sadness did

not emerge, indicating that the development of self-evaluative emotions and other-oriented emotions of empathy/sympathy may follow distinct pathways (Malti & Ongley, 2014). Future research is needed to validate the distinct developmental trajectories of sympathy and guilt.

Despite its novel focus and the longitudinal, multi-informant, multi-method design, this study had several limitations. First, our dependent measures did not systematically assess various targets of helping, cooperation and sharing. Existing evidence suggests that children's helping and sharing vary depending on their relationship with the target (Paulus & Moore, 2014). Second, the strength of the relation between moral development and prosocial behaviors may depend on the cost. While our behaviors varied by cost, systematic variation of cost within each behavior domain may reveal important similarities and differences in relation to moral cognition and moral affect. Third, our sharing measure was limited, as we had to change the object that was shared from T2 to T3 to keep the task age-appropriate. Nevertheless, the sharing patterns were in line with previous studies, reducing the risk of systematic bias. Fourth, our assessment of guilt and moral reasoning was limited to the prosocial omission domain, and future research is warranted to explore if and how emotions and reasoning in other moral domains (e.g., fairness) relate to prosocial behaviors. Additionally, although our guilt and moral reasoning measures were derived from separate questions, they were not completely independent since they were obtained from the same vignettes. Fifth, some of our effects were small, indicating that various other unexplored factors may underlie children's motivation to behave prosocially. Sixth, although our study examined children's sympathy, guilt/sadness, moral reasoning, and prosocial behaviors using various methods and informants, it would have been beneficial to apply an even more comprehensive multi-method, multi-informant approach to examine each variable. For example, sharing was measured with a behavioral task while helping and cooperation were not.

This behavioral task for sharing was utilized specifically so that the current study could capture high-cost, private sharing with anonymous recipients, a context that more closely reflects the individual's altruistic intentions than public acts of sharing (Ongley & Malti, 2014). As such, private acts of sharing may not easily be adequately captured with parent- and teacher-reports, and so the contextual constraints of this type of sharing necessitated different methods than the measurement of helping and cooperation. We acknowledge that this is a limitation of the current study, however. Future studies would benefit from employing multiple measurements for each type of examined prosocial behavior since one method is likely to only capture a fragment of the complexity inherent in such actions. Lastly, children's sympathy was rated by different teachers at T1 and T2. Although we did not model the mean-level development of sympathy over time (which would have been more sensitive to the effects of this undesirable variability), we recognize that this issue may have introduced additional sources of variability.

In summary, the current findings extend prior research on moral emotions and moral reasoning in the development of children's various subtypes of prosocial behaviors across middle childhood. The implications of this study are that it is not only important to study how sympathy relates to overt prosocial behavior over time but to understand how other emotional experiences and justifications in the context of prosocial moral conflict may similarly or uniquely motivate children to help, cooperate, and share. These findings point to the need of incorporating strategies that target both other-oriented and self-oriented moral emotions and differentiated reasoning about moral conflicts into existing efforts to promote varied and multiple prosocial behaviors in children.

References

Aksan, N., & Kochanska, G. (2005). Conscience in childhood: Old questions, news answers. *Developmental Psychology, 41*(3), 506-516. doi:10.1037/0012-1649.41.3.506

Almås, I., Cappelen, A. W., Sørensen, E. Ø., & Tungodden, B. (2010). Fairness and the development of inequality acceptance. *Science, 328*, 1176-1178. doi:10.1126/science.1187300

Arsenio, W. (2014). Moral emotion attributions and aggression. In M. Killen & J. Smetana (Eds.), *Handbook of moral development* (2nd Ed.) (pp. 235-255). NY: Psychology Press.

Benenson, J. F., Pascoe, J., & Radmore, N. (2007). Children's altruistic behavior in the dictator game. *Evolution and Human Behavior, 28,* 168-175. doi:10.1016/j.evolhumbehav.2006.10.003

Berndt, T. J. (1985). Prosocial behavior between friends in middle childhood and early adolescence. *The Journal of Early Adolescence, 5,* 307-317. doi:10.1177/0272431685053005

Bishop, J., Geiser, C., & Cole, D.A. (2015). Modeling latent growth with multiple indicators: a comparison of three approaches. *Psychological Methods, 20*, 43-62. doi:10.1037/met0000018

Chapman, M., Zahn-Waxler, C., Cooperman, G., & Iannotti, R. (1987). Empathy and responsibility in the motivation of children's helping. *Developmental Psychology, 23*, 140-145. doi:10.1037/0012-1649.23.1.140

Colasante, T., Zuffianò, A., & Malti, T. (2015). Do moral emotions buffer the anger-aggression link in children and adolescents? *Manuscript submitted for publication.*

Colonnesi, C., Engelhard, I.M., & Boegels, S.M. (2010). Development in children's attribution of embarrassement and the relationship with theory of mind and shyness. *Cognition and Emotion, 24*(3), 514-521. doi:10.1080/02699930902847151

Davidov, M., Zahn-Waxler, C., Roth-Hanania, R., & Knafo, A. (2013). Concern for others in the first year of life: Theory, evidence, and avenues for future research. *Child Development Perspectives, 7,* 126-131. doi:10.1111/cdep.12028

De Los Reyes, A., & Kazdin, A. E. (2005). Informant discrepancies in the assessment of childhood psychopathology: A critical review, theoretical framework, and recommendations for further study. *Psychological Bulletin, 131*, 483-509. doi:10.1037/0033-2909.131.4.483

Dunfield, K. A., Kuhlmeier, V. A., O'Connell, L. J., & Kelley, E. A. (2011). Examining the diversity of prosocial behavior: Helping, sharing, and comforting in infancy. *Infancy, 16*, 227-247. doi:10.1111/j.1532-7078.2010.00041.x

Eisenberg, N., Fabes, R. A., Miller, P. A., Shell, C., Shea, R., May-Plumee, T. (1990). Preschoolers' vicarious emotional responding and their situational and dispositional prosocial behavior. *Merill-Palmer Quarterly, 36*, 507-529.

Eisenberg, N., & Miller, P. A. (1987). The relation of empathy to prosocial and related behaviors. *Psychological Bulletin, 101,* 91-119. doi:10.1037/0033-2909.101.1.91

Eisenberg, N., Spinrad, T. L., & Knafo-Noam, A. (2015). Prosocial development. In M. E. Lamb & C.G. Coll (Eds.), *Handbook of child psychology and developmental science, Vol. 3: Socioemotional processes* (pp. 610-656). New York: Wiley.

Eisenberg-Berg, N., & Hand, M. (1979). The relationship of preschoolers' reasoning about prosocial moral conflicts to prosocial behavior. *Child Development 50,* 356-363. doi:10.2307/1129410

Goodman, R. (1997). The strengths and difficulties questionnaire: A research note. *Journal of Child Psychology and Psychiatry, 38,* 581-586. doi:10.1111/j.1469-7610.1997.tb01545.x

Gresham, F. M., & Elliot, S. N. (1990). *Social skills rating system*. Circle Pines, MN: American Guidance Service.

Gummerum, M., Hanoch, Y., Keller, M., Parsons, K., & Hummel, A. (2010). Preschoolers' allocations in the dictator game. The role of moral emotions. *Journal of Economic Psychology, 31,* 25-34. doi:10.1016/j.joep.2009.09.002

Gummerum, M., Keller, M., Takezawa, M., & Mata, J. (2008). To give or not to give: Children's and adolescents' sharing and moral negotiations in economic decision situations. *Child Development, 79,* 562-576. doi:10.1111/j.1467-8624.2008.01143.x

Hay, D. F., Caplan, M., Castle, J., & Stimson, C. A. (1991). Does sharing become increasingly ''rational'' in the second year of life? *Developmental Psychology, 27,* 987-993. doi:10.1037//0012-1649.27.6.987

Hinnant, J. B., Nelson, J. A., O'Brien, M., Keane, S. P., & Calkins, S. D. (2013). The interactive roles of parenting, emotion regulation and executive functioning in moral reasoning during middle childhood. *Cognition and Emotion, 27,* 1460-1468. doi:10.1080/02699931.2013.789792

Hoffman, M. L. (2000). *Empathy and moral development. Implications for caring and justice.* New York: Cambridge University Press.

Kochanska, G., Gross, J.N., Lin, M.-H., & Nichols, K.E. (2002). Guilt in young children:

Development, determinants, and relations with a broader system of standards. *Child Development, 73,* 461-482. doi:10.1111/1467-8624.00418

Kohlberg, L. (1984). *Essays in moral development: Vol. 2. The psychology of moral development.* New York: Harper & Row.

LaFreniere, P. J., & Dumas. J. E. (1995). *Social competence and behavior evaluation* (preschool ed.). Los Angeles: Western Psychological Services.

Laible, D., Carlo, G., Murphy, T., Augustine, M. and Roesch, S. (2014). Predicting children's prosocial and co-operative behavior from their temperamental profiles: A person-centered approach. *Social Development*. doi:10.1111/sode.12072

Leman, P. J., Keller, M., Takezawa, M., & Gummerum, M. (2009). Children's and adolescents' decisions about sharing money with others. *Social Development, 18,* 711-727. doi:10.1111/j.1467-9507.2008 .00486.x

Levine, L. E., & Hoffman, M. L. (1975). Empathy and cooperation in 4-year-olds. *Developmental Psychology, 11,* 533-534. doi:10.1037/h0076680.

Malti, T. (2015). Toward an integrated clinical-developmental model of guilt. *Manuscript under revision.*

Malti, T., Gummerum, M., Keller, M., & Buchmann, M. (2009). Children's moral motivation, sympathy, and prosocial behavior. *Child Development, 80,* 442-460. doi:10.1111/j.1467-8624.2009.01271.x.

Malti, T., Gummerum, M., Keller, M., Chaparro, M.P., & Buchmann, M. (2012). Early sympathy and social acceptance predict the development of sharing in children. *PLoS ONE, 7*(12), e52017. doi:10.1371/journal.pone.0052017

Malti, T., & Ongley, S. (2014). The development of moral emotions and moral reasoning. In M. Killen & J. Smetana (Eds.), *Handbook of moral development* (2nd ed., pp. 163-183). NY: Psychology Press.

Marcus, R. F., Tellen, S., & Roke, E. J. (1979). Relationship between cooperation and empathy in children. *Developmental Psychology, 15*, 346-347.

Miller, P. A., Eisenberg, N., Fabes, R. A., & Shell, R. (1996). Relations of moral reasoning and vicarious emotion to young children's prosocial behavior toward peers and adults. *Developmental Psychology, 32*, 210-219. doi:10.1037/0012-1649.32.2.210

Muthén, L., & Muthén, B. (2012). *Mplus user's guide*. Los Angeles, CA: Muthén & Muthén.

Nancekivell, S. E., Van de Vondervoort, J. W., & Friedman, O. (2013). Young children's understanding of ownership. *Child Development Perspectives, 7*(4), 243-247. doi:10.1111/cdep.12049

Ongley, S.F., & Malti, T. (2014). The role of moral emotions in the development of children's sharing behavior. *Developmental Psychology, 50,* 1148-1159. doi:10.1037/a0035191

Paulus, M. (2014). The emergence of prosocial behavior: Why do infants and toddlers help, comfort, and share? *Child Development Perspectives, 8,* 77-81. doi:10.1111/cdep.12066

Paulus, M., & Moore, C. (2014). The development of recipient-dependent sharing behavior and sharing expectations in preschool children. *Developmental Psychology, 50*, 914-921. doi:10.1037/a0034169

Rubin, K. H., Bukowski, W. M., & Laursen, B. (Eds.). (2011). *Handbook of peer interactions, relationships, and groups.* New York: Guilford.

Sallquist, J., Eisenberg, N., Spinrad, T. L., Gaertner, B. M., Eggum, N. D., & Zhou, N. (2010). Mothers' and children's positive emotions: Relations and trajectories across four years. *Social Development, 19,* 799-821. doi:10.1111/j.1467-9507.2009.00565.x

Smetana, J. G., Killen, M., & Turiel, E. (1991). Children's reasoning about interpersonal and moral conflicts. *Child Development, 62*(3), 629-644. doi:10.2307/1131136

Svetlova, M., Nichols, S. R., & Brownell, C. A. (2010). Toddlers' prosocial behavior: From instrumental to empathic to altruistic helping. *Child Development, 81*, 1814-1827. doi:10.1111/j.1467-8624.2010.01512.x

Tremblay, R. E., Loeber, R., Gagnon, C., Charlebois, P., Larivée, S., & LeBlanc, M. (1991). Disruptive boys with stable and unstable high fighting behavior patterns during junior elementary school. *Journal of Abnormal Child Psychology, 19*, 285-300. doi: 10.1007/BF00911232

Warneken, F., & Tomasello, M. (2007). Helping and cooperation at 14 months of age. *Infancy, 11*, 271-294. doi:10.1111/j.1532-7078.2007.tb00227.x

Weller, D., & Lagattuta, K. H. (2012). Helping the in-group feels better: Children's judgments and emotion attributions in response to prosocial dilemmas. *Child Development, 84*, 253-268. doi:10.1111/j.1467-8624.2012.01837.x

Zhou, Q., Valiente, C., & Eisenberg, N. (2003). Empathy and its measurement. In S. J. Lopez & C. R. Snyder (Eds.), *Positive psychological assessment: A handbook of models and measures* (pp. 269-284). Washington, DC: American Psychological Association. doi:10.1037/10612-01

Table 1

Means, Standard Deviations, and Bivariate Correlations of Sympathy, Guilt/Sadness, and Moral Reasoning with Prosocial Behaviors

			Helping			Cooperation			Sharing		
	Mean	(*SD*)	T1	T2	T3	T1	T2	T3	T1	T2	T3
Sex	--	--	.05	.19*	.30***	.11	.30***	.13	.18*	.14	.09
SES	54.77	(15.90)	-.11	.07	.14	.20*	.22*	.19*	.002	.11	-.08
Sym (T) T1	4.55	(1.10)	.19	.21*	.39***	.37**	.26*	.32**	- .11	- .13	.24*
Sym (T) T2	4.50	(1.19)	.08	.12	.24**	.09	.34***	.27**	.19*	.19*	.10
Sym (C) T1	0.78	(0.54)	.10	.14	.13	.16	.05	.14	.04	- .01	.05
Sym (C) T2	1.56	(0.43)	.21*	.30**	.18*	.26**	.25**	.35***	.003	.25**	.22*
Guilt/Sadness T1	0.69	(0.42)	.004	.18*	.10	.06	.08	.15	- .09	.03	.08
Guilt/Sadness T2	0.80	(0.36)	.09	.20*	.09	.26**	.08	.01	- .14	.22*	.18*
MR T1	0.28	(0.21)	.04	.01	.08	.15	- .07	- .08	- .11	- .13	-.04
MR T2	0.33	(0.17)	- .02	- .02	.08	.11	.03	- .04	.003	.001	.08
Mean			4.96	4.91	4.71	4.99	5.05	5.26	0.44	0.48	0.44
(*SD*)			(0.78)	(0.88)	(0.88)	(0.75)	(0.74)	(0.56)	(0.17)	(0.08)	(0.14)

Note. Sym = Sympathy; T = Teacher report; C = Child report; MR = Moral reasoning; T1 = Time 1; T2 = Time 2; T3 = Time 3. Sex was coded as 1 = male and 2 = female.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2

Latent Curve Modeling Predicting Initial Levels and Change in Helping and Cooperation by Sympathy, Guilt/Sadness, and Moral Reasoning

	Helping		Cooperation	
	Intercept	*Slope*	*Intercept*	*Slope*
Unconditional	*Mean* = 4.96**	*Mean* = -0.11**	*Mean* = 4.97**	*Mean* = 0.14**
	Variance = 0.38**	*Variance* = 0.08	*Variance* = 0.40**	*Variance* = 0.07*
Conditional	Helping		Cooperation	
	T1 predictors	*T2 predictors*	*T1 predictors*	*T2 predictors*

Model Series 1	*Intercept*	*Slope*	*Intercept*	*Slope*	*Intercept*	*Slope*	*Intercept*	*Slope*
Intercept	—	- .32	—	.23	—	- .74***	—	- .28
Sex	.02	.38*	.29**	.47	.05	.09	.16	.16
SES	- .13	.20	.02	.23	.18*	.01	.19*	.06
Sym (T)	.26*	.25*	.11	- .16	.36**	.19	.14	.13
Guilt/Sadness	.13	.09	.13	- .15	.14	.11	.16	- .31*
Sym (T) × Guilt/Sadness	—	—	—	—	.04	- .23**	—	—
R^2	.08	.39	.15	.34	.22	.53	.16	.22

Model Series 2	*Intercept*	*Slope*	*Intercept*	*Slope*	*Intercept*	*Slope*	*Intercept*	*Slope*
Intercept	—	- .27	—	.30	—	- .74**	—	- .35
Sex	- .01	.36	.32**	.42	.06	.09	.19	.11
SES	- .13	.22	.04	.22	.19*	.04	.23*	.01
Sym (T)	.26*	.25*	.09	- .09	.34*	.12	.15	.14
MR	.07	.02	- .01	.07	.17	- .12	.01	- .10
Sym (T) × MR	—	—	—	—	—	—	—	—

	R^2	.07	.36	.14	.42	.23	.52	.16	.13

Table 2 (Cont'd)

Model Series 3	*Intercept*	*Slope*	*Intercept*	*Slope*	*Intercept*	*Slope*	*Intercept*	*Slope*
Intercept	—	- .41**	—	.15	—	- .64**	—	-.29
Sex	.06	.38**	.25**	.49	.09	.12	.14	.18
SES	- .07	.15	.03	.31	.29**	.08	.21*	.10
Sym (C)	.09	.01	.25*	- .04	.09	.02	.32**	.29
Guilt/Sadness	.01	.15	.12	- .13	- .01	.14	.16	-.35**
Sym (C) × Guilt/Sadness	—	—	—	—	- .21*	.01	—	—
R^2	.02	.37	.17	.42	.15	.39	.23	.24

Model Series 4	*Intercept*	*Slope*	*Intercept*	*Slope*	*Intercept*	*Slope*	*Intercept*	*Slope*
Intercept	—	- .37	—	.21	—	- .59**	—	- .34
Sex	.04	.37*	.25**	.46	.08	.10	.17	.15
SES	- .10	.13	.05	.28	.24*	.04	.23*	.08
Sym (C)	.10	.03	.28**	- .07	.11	.03	.35**	.21
MR	.06	.03	- .10	.12	.09	- .10	- .08	-.15
Sym (C) × MR	—	—	—	—	-.17*	.11	—	—
R^2	.02	.30	.16	.44	.13	.40	.23	.12

Note. Sym = Sympathy; T = Teacher report; C = Child report; MR = Moral reasoning; T1 = Time 1; T2 = Time 2. All estimates were standardized coefficients for the conditional LGC models. Non-significant interaction terms were removed from the final models.
* $p < .05$. ** $p < .01$.

Figure Captions.

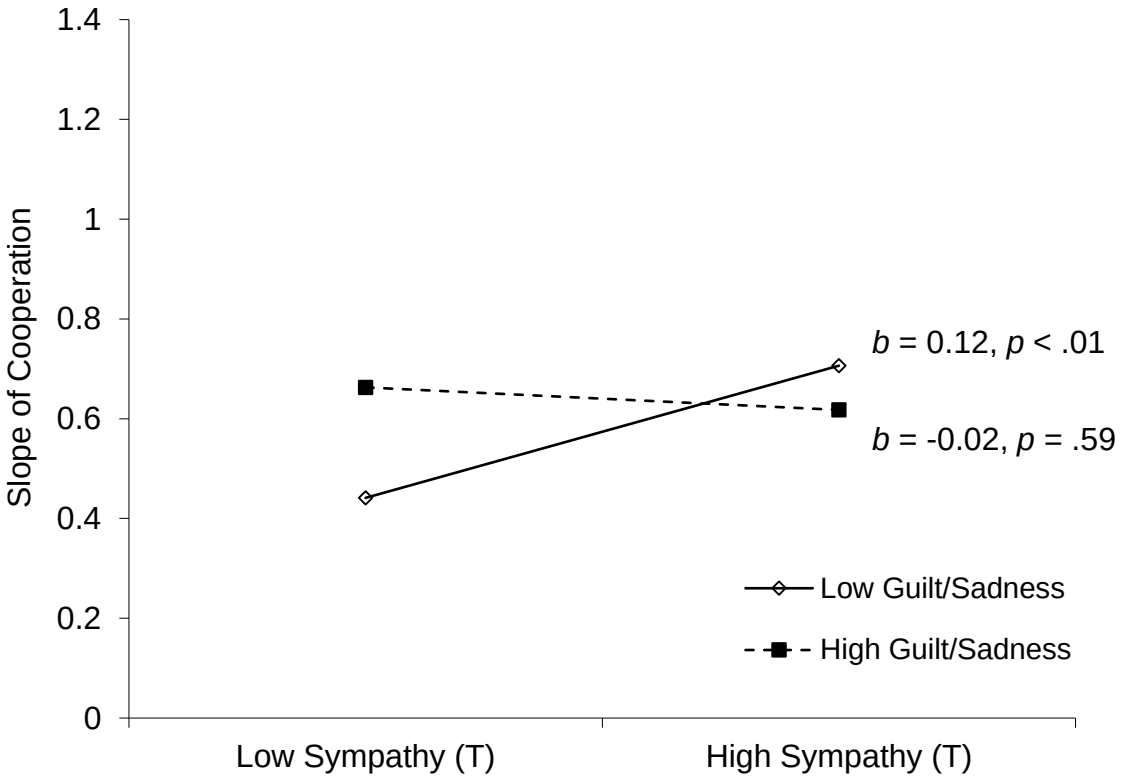

Figure 1. The interaction of sympathy and guilt/sadness at T1 predicting the slope of cooperation. Dotted lines represent non-significant effects (p >.05).
Note. T = Teacher report.

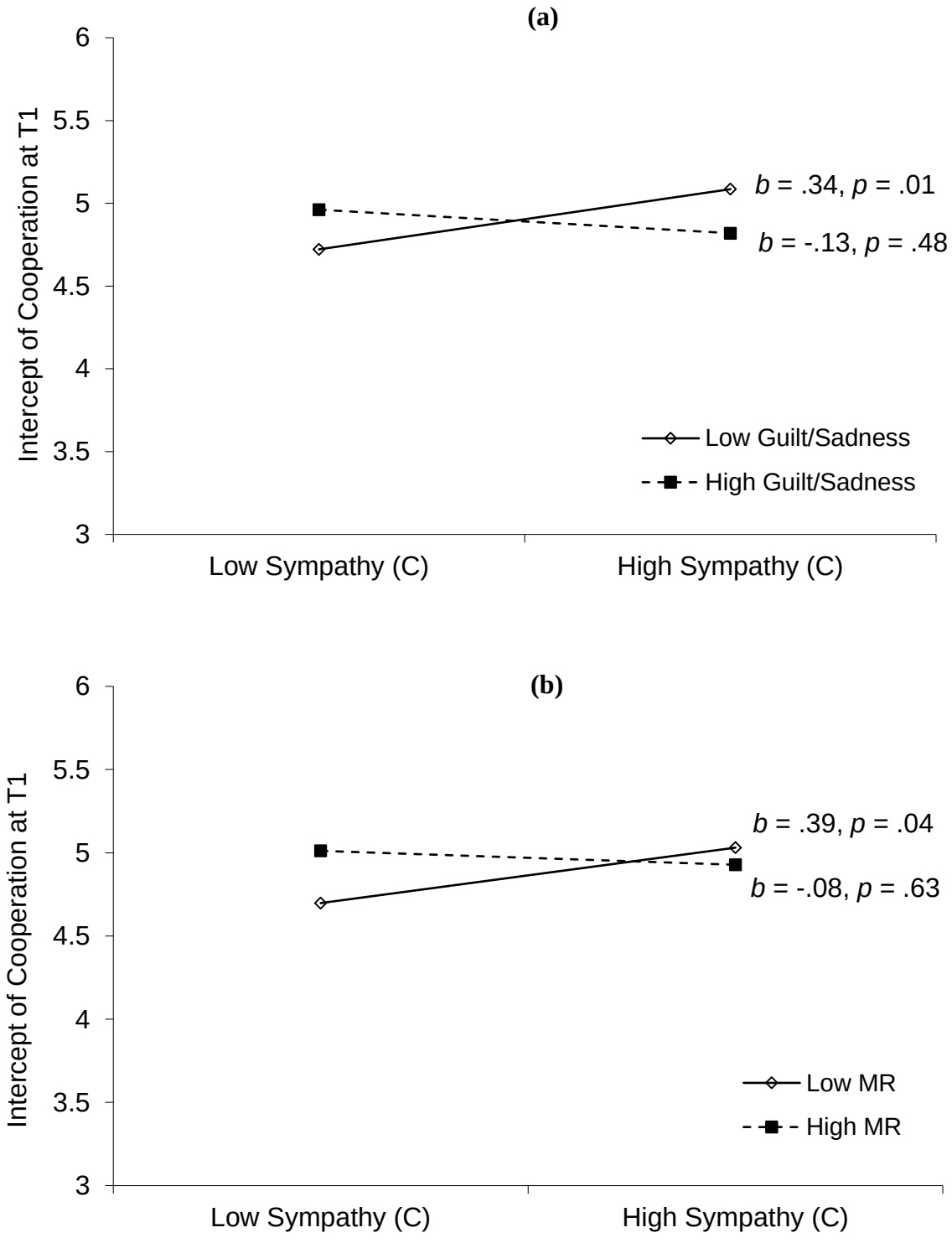

Figure 2. The interaction of (a) sympathy and guilt/sadness and (b) sympathy and moral reasoning in predicting the intercept of cooperation at T1. Dotted lines represent non-significant effects ($p > .05$).
Note. C = Child report. MR = Moral reasoning.