# Parental discipline, child inhibitory control and prosocial behaviors: The indirect relations via child sympathy

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Compliance with Ethical Standards

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**Abstract**

Parents' discipline and children's inhibitory control are important predictors of children's prosocial behaviors. Yet few studies have examined how these factors are related across early and middle childhood. In the current study, we examined the relations between parental disciplinary techniques (i.e., power assertion, love withdrawal, other-oriented induction, and disappointment) and child inhibitory control with child prosocial behaviors. We also examined the indirect role of child sympathy in these associations and investigated these associations in early and middle childhood years to assess the moderating role of age. We collected data from the caregivers of 4-, 6- and 8-year-old children (N = 301; $M_{age}$ = 6.46, SD = 1.54; 54% males) in Canada. Results revealed that other-oriented induction (i.e., reasoning aiming to make the child understand the association between their actions and another's distress) and disappointment (i.e., showing displeasure with the child's behavior) were indirectly related to prosocial behaviors via higher child sympathy. Children's inhibitory control was positively associated with their prosocial behaviors, directly and, for 6- and 8-year-olds, indirectly via sympathy. Parental disappointment was related to children's sympathy for 6- and 8-year-olds, but not for 4-year-olds, while children's inhibitory control was more strongly associated with sympathy for 4- and 6-year-olds as compared to 8-year-olds. Overall, the results show that parental discipline practices and child temperament differentially influence child prosocial outcomes at different ages.

*Keywords*: parental discipline, prosocial behaviors, sympathy, inhibitory control

**Highlights**

-We examined the links between parental disciplinary techniques and child inhibitory control with child prosocial behaviors.

- Parental discipline practices (induction and disappointment) were indirectly related to children's prosocial behaviors via children's sympathy.

-Children's inhibitory control was related to their prosocial behaviors directly and indirectly via sympathy.

-Children's age was a significant moderator in the associations between disappointment and sympathy as well as inhibitory control and sympathy.

**Parental discipline, child inhibitory control and prosocial behaviors:**

**The indirect relations via child sympathy**

Parents play an important role in socializing their children's prosocial behaviors (Grusec & Goodnow, 1994; Malti & Dys, 2018). To date, research has investigated the role of parental discipline practices on children's kind emotions—such as sympathy—and their prosocial behavior (Carlo et al., 2007; Carlo et al., 2011a; 2011b; Hoffman, 2000; Hughes et al. 2000; Krevans & Gibbs, 1996; Malti & Dys, 2018). Related work has examined how children's temperamental characteristics—such as inhibitory control—are associated with children's sympathy and prosocial behavior (Eisenberg et al., 1996). Less research has examined the role of parent's disciplinary techniques in conjunction with children's temperament in relation to children's prosocial behaviors, especially in early and middle childhood—an important time for children's development of kindness. Furthermore, to our knowledge, no single study has examined whether these relations vary across age groups in early and middle childhood. For these reasons, we aimed to examine the differential roles of parental discipline practices (i.e., power assertion, love withdrawal, other-oriented induction, and disappointment) and a child temperamental characteristic (i.e., inhibitory control) in relation to children's prosocial behaviors in early and middle childhood years. We also investigated indirect links from discipline and inhibitory control to prosocial behaviors via sympathy because of the theoretical and empirical significance of sympathy in the association between parental discipline and child prosocial outcomes (e.g., Hoffman, 2000).

**Parental Discipline, Child Inhibitory Control, and Prosocial Behaviors**

Prosocial behaviors include actions like helping, sharing, comforting, and cooperating that are voluntary and intended to benefit another person (Eisenberg et al., 2010). Parental discipline refers to parental socialization behaviors that aim to control children's inappropriate behaviors and promote appropriate ones (Locke & Prinz, 2002). Hence, parental discipline has long been considered an important predictor of prosocial outcomes, independent of broader parenting styles (e.g., authoritarian, authoritative parenting). According to Hoffman (2000), applications of discipline are the only parenting practices that allow parents to draw a connection between a child's behavior and its harmful impact on others and explicitly communicate parental expectations. As such, these behaviors have the power to evoke internalization of parental messages as well as kind emotions like sympathy and ethical guilt in children (Hoffman, 2000), all of which have been shown to be related to prosocial behaviors (e.g., Malti et al., 2016). Originally, Hoffman and Saltzstein (1967) identified three parental discipline practices: other-oriented induction, power assertion, and love withdrawal. Later, others

suggested that parental disappointment may reflect a distinctive factor of parental discipline (e.g., Krevans & Gibbs, 1996).

Other-oriented induction is considered a constructive and effective disciplinary behavior (Hoffman, 2000; Locke & Prinz, 2002). It involves drawing a connection between child's behavior and another's distress or hardship using reasoning and explanation (Eisenberg et al., 2015a; Hoffman, 2000). Other-oriented induction elicits an awareness and recognition of other's distress, feelings of sympathy for the other, and allows the child to understand the connection between their action and the other's distress, which typically arouses feelings of personal responsibility over wrongdoing (Eisenberg et al., 2015a). Other-oriented inductions ought to be moderately arousing for the child, motivating them to attend to parental messages, but not so high as to produce anxiety or anger in the child (Hoffman, 2000). Still, generally speaking, the use of other-oriented induction is theoretically presumed to increase prosocial behaviors (Hoffman, 2000). In line with this notion, studies have found that parental use of induction is related to higher prosocial behaviors in children, with sympathy acting as a full or partial mediator in this association (e.g., Carlo et al., 2007; Carlo et al., 2011a; Guevara et al., 2015; Krevans & Gibbs, 1996).

On the other hand, power assertive discipline includes practices like physical/verbal punishment and taking away privileges which, if used excessively, is related to negative developmental outcomes (Eisenberg & Valiente, 2002). High levels of power assertion may over-arouse child's feelings and orient emotions towards self (e.g., fear of punishment) or the caregiver (e.g., anger and hostility), reducing child's likelihood of understanding, accepting, and internalizing parental messages (Eisenberg & Valiente, 2002; Hoffman, 2000). Hence, even though power assertive actions tend to elicit immediate compliance, they are believed to reduce internalization of ethical standards (and acting in accordance with them based on internal motivation, Kochanska, 1991). Empirically, power assertive discipline has been negatively associated with prosocial behaviors in childhood years (e.g., Cornell & Frick, 2007; Dekovic & Janssens, 1992; Gershoff et al., 2010; Knafo & Plomin, 2006; Krevans & Gibbs, 1996).

Love withdrawal is another disciplinary technique in which parents induce the feeling that the child's reception of love and acceptance depends on their appropriate behavior according to parental standards (Barber, 1996; Rudy & Halgunseth, 2005). Conceptually, love withdrawal might elicit a concern and anxiety over losing the love of the parent and may evoke a state of concern for the self as opposed to another. As such, love withdrawal is not expected to predict prosocial behaviors, since it is not expected to elicit sympathy (Eisenberg & Valiente, 2002). Love withdrawal is also associated with a lower likelihood of the child's acceptance of blame

(Brody & Shaffer, 1982), which may relate to lower prosocial tendencies. Empirical studies, on the other hand, have rarely examined love withdrawal with prosocial outcomes and have generally found love withdrawal to be unrelated to prosocial behaviors or moral outcomes (e.g., Krevans & Gibbs, 1996; Patrick & Gibbs, 2012).

Finally, parental disappointment is a parental discipline technique in which parents convey their displeasure with the child's failure to meet expectations for ethical behavior. Importantly, disappointment is defined as displeasure about the child's behavior rather than with the child themself, which allows the room for growth and improvement of behavior (Patrick & Gibbs, 2012). While Hoffman (2000) conceptualized disappointment as part of either other-oriented induction or love withdrawal depending on the context in which the behavior is executed, some researchers argued for disappointment as being a separate factor of parental discipline (e.g., Krevans & Gibbs, 1996; Patrick & Gibbs, 2012). For instance, Krevans and Gibbs (1996) examined parental disappointment as a separate factor and found that it was positively associated with child sympathy and prosocial behaviors. Their results even showed that disappointment was more strongly associated with child prosocial behaviors than other-oriented induction. Hence, their study suggested that disappointment was an important parental disciplinary technique that was related to higher sympathy and prosocial behaviors in children. Their results, however, were limited to late childhood years (11.5–14.5-year-olds; $M_{age}$ = 12.3 years) and did not take developmental influences into account. Moreover, empirical findings on the role of disappointment are mixed. For example, Gershoff et al. (2010) found that parental use of disappointment as a disciplinary technique was related to higher aggression and anxiety in 8- to 12-year-old children across different cultures. These inconsistencies and the restricted developmental range in previous studies warrant further investigation of disappointment's impact on prosocial outcomes.

Another important predictor of child social-emotional and behavioral functioning is children's temperamental characteristics. Child temperament refers to relatively stable individual differences that are believed to be largely rooted in genetics (Sanson et al., 2011). Temperamental characteristics are early-emerging and believed to relate to moral emotions and prosocial actions (see Eisenberg et al., 2015a for a review). Inhibitory control—the capacity to suppress a dominant response in favor of a non-dominant one (Diamond, 2013; Rothbart & Bates, 2006)—is a temperamental characteristic that is closely related to prosocial behaviors (e.g., Rhoades et al., 2009). Conceptually, children with better inhibitory control are expected to better manage over-arousal and personal distress in situations that might induce negative emotions. Relatedly, behaving prosocially requires children to inhibit dominant, self-oriented concerns and desires while activating the non-dominant perspective to comprehend the needs of others (Eisenberg et al., 2010; Zhang & Wang, 2020). For

these reasons, better inhibitory control has been presumed to enable children to display more prosocial behaviors. There is a large body of empirical research showing links between inhibitory control (or other regulatory aspects of temperament) and prosocial behaviors (e.g., Acar et al., 2015; Diener & Kim, 2004; Hao, 2017). For instance, Rhoades et al. (2009) revealed that inhibitory control was the most important predictor for social skills among preschool children, even after controlling for other factors like child gender, vocabulary, and emotional knowledge. Moreover, effortful control is a term that is sometimes used interchangeably with inhibitory control and refers to the regulatory aspect of child temperament, which is generally defined as encompassing inhibitory control, attentional allocation, and emotion regulation (Rothbart et al., 1994). Previous empirical studies have further shown an association between effortful control and prosocial behaviors in early and middle childhood years (e.g., Eisenberg et al., 1996; Thompson et al., 2013; Valiente et al., 2004).

**The Indirect Role of Sympathy**

Sympathy is an other-oriented feeling of concern or sorrow for another who is in need or distress, stemming from an apprehension of the state of the other (Eisenberg et al., 2015a; Malti et al., 2016). Sympathy requires feelings of concern for the other without necessarily feeling the same way as the other and in this way differs from empathy, which is defined as feeling a similar emotion as the distressed other (Eisenberg et al., 2010; also see Eisenberg et al., 2015a for a review). Therefore, sympathy is predicted to promote positive interpersonal relationships and prosocial behaviors (Kienbaum, 2014; Malti et al., 2016). Supporting this notion, abundant research has shown that children who experience more sympathy are inclined to display more prosocial behaviors both concurrently and longitudinally (e.g., Davis & Carlo, 2018; Eisenberg et al., 2015b; Malti et al., 2016; also see Eisenberg et al., 2015a; Eisenberg et al., 2010; and Malti & Dys, 2018 for reviews).

Although some direct effects of parental discipline on prosocial outcomes have been found (e.g., Carlo et al., 2007; Knafo & Plomin, 2006), most studies that have examined this association have identified sympathy as a mediator between parental discipline practices and child prosocial outcomes (e.g., Carlo et al, 2007; Carlo et al., 2011a; Krevans & Gibbs, 1996; Mesurado & Richaud, 2016). Moreover, Hoffman's (2000) theorizing also suggested that sympathy would play a mediational role in the association between parental discipline and prosocial behavior. Specifically, other-oriented induction is believed to be related to increases and power assertion is presumed to be related to decreases in sympathy, which in turn are believed to relate to prosocial behaviors. Studies have rarely examined the mediating role of sympathy in the association between love withdrawal and prosocial behaviors, but have generally found love withdrawal to be unrelated to prosocial

behaviors or sympathy (Krevans & Gibbs, 1996; Patrick & Gibbs, 2012). Therefore, in the current study both the direct effects of parental discipline and the indirect effects via sympathy were examined.

Empirical studies that link inhibitory control to sympathy are rather scarce. However in one study, Colasante and colleagues (2014) found that higher inhibitory control among 4- and 8-year-old children was related to higher sympathy. Moreover, additional studies have investigated the links between sympathy and effortful control. For instance, Eisenberg and colleagues have found that effortful control was related to higher sympathy, both concurrently and longitudinally in preschool years throughout adolescence (Eisenberg et al., 1996; Eisenberg et al., 2007). Relatedly, several studies have reported a link between inhibitory control and empathy, guilt, or conscience (e.g., Colasante et al., 2014; Kochanska et al., 2009; Kochanska et al., 1997), which are closely related to sympathy. Thus, there is good reason to expect a link between inhibitory control and sympathy, and inhibitory control might be an important dimension of temperament associated with higher sympathy as well as higher prosocial behaviors via sympathy. Still, most of the previous studies were conducted with a single age group or within a narrower developmental window, despite findings that most children show an increase in sympathy between early to middle childhood (e.g., Kienbaum, 2014; Malti et al., 2013). Therefore, it is important to examine if these associations are similar across different age groups.

**Developmental Effects**

Prosocial behaviors, sympathy, and inhibitory control emerge early in life, yet they also show rapid development in early and middle childhood years (Eisenberg & Fabes, 1998; Eisenberg et al., 2015a; Malti et al., 2013; Williams et al., 1999). Several theorists have argued that socio-cognitive development, especially the development of perspective taking, enables the development of social-emotional skills (Eisenberg et al., 2015a). The development of these and related developing abilities may warrant different parental disciplinary practices across development. For instance, Hoffman (2000) argued that children should be at a certain level of cognitive development to be able to comprehend the inductive messages of parents. With age, children might become more capable of taking the perspective of the other and might benefit from inductive messages more (Grusec & Goodnow, 1994). Moreover, with development, peers exert more influence over social behaviors (Berndt, 1979), which might cause differences in how much parenting influences social outcomes as children grow. However, most related studies have focused on middle childhood and early adolescence (e.g., Carlo et al., 2011a; 2011b; Krevans & Gibbs, 1996), with surprisingly little research examining age effects in how parenting might influence child outcomes (Grusec & Goodnow, 1994). In the current study, we aimed to test whether the

associations between parental discipline, child inhibitory control and prosocial behaviors were uniform across different age groups throughout early and middle childhood years.

### The Present Study

The present study aimed to investigate the roles of different parental discipline techniques and child inhibitory control in relation to the prosocial behaviors of 4-, 6-, and 8-year-old children. The data was collected as a part of a larger study examining the roles of emotional and socio-cognitive factors in relation to prosocial and aggressive behaviors across early and middle childhood. Previous publications from the larger study (e.g., Dys et al., 2019) had not examined the role of parental discipline, therefore, the current study provides a unique contribution to the literature from that dataset. Given theorizing and empirical findings, we also examined whether the role of parental discipline and children's inhibitory control in children's prosocial behaviors were direct or indirect via sympathy. Based on the previous studies, we hypothesized that children whose parents used more other-oriented induction would be more prosocial. On the other hand, children whose parents used more power assertive discipline were expected to engage in less prosocial behavior. We investigated the role of love withdrawal and disappointment in prosocial behaviors without a specific hypothesis since the previous literature suggested mixed effects. Moreover, we expected an indirect role of parental discipline practices in children's prosociality via child sympathy. We also expected positive associations between inhibitory control, and sympathy, and prosocial behaviors and tested whether or not inhibitory control had an indirect association via sympathy. Finally, since several studies have found that females tend to score higher on sympathy and prosociality than males (Chaplin & Aldao, 2012; Eisenberg & Fabes, 1998; Eisenberg et al., 2006), we included child gender as a control variable.

## Method

### Participants

We collected data from the caregivers of 4- ($n$ = 104; $M_{age}$ = 4.64, $SD$ = 0.27, 50% girls), 6- ($n$ = 110; $M_{age}$ = 6.60, $SD$ = 0.28, 41% girls), and 8- ($n$ = 87; $M_{age}$ = 8.45, $SD$ = 0.27, 48% girls) year-old children (whole sample: $N$ = 301; $M_{age}$ = 6.46, $SD$ = 1.54, 46% girls). The sample was recruited from community centres and various community events (e.g., summer camps) within a major, ethnically diverse Canadian city. The exclusion criteria were the diagnosis of an autism spectrum disorder for the child and the caregiver not being fluent in English. As a proxy for socioeconomic status, we assessed parent's highest level of education. Nearly half of the caregivers completed bachelor's degrees (44.2%), followed by 22.3% with MA degrees, 20.3% with college degrees, 6.3% with high school diplomas, 2.7% with apprenticeship/trades diplomas, and 2.3% with Ph.D.

degrees (2% choose not to answer). In terms of ethnicity, participants were quite diverse: as the most identified ethnicity was European (37.6%), followed by South, East, or Southeast Asian (30.5%), Central or South American (5.7%), and other (15.8%; 10.6% did not report their ethnicity). The sample characteristics were consistent with the region from which the sample was drawn (Statistics Canada, 2020).

## Procedure

Ethics approval for the current study was received from the Research Ethics Board of the researchers' institution. The families visited the laboratory for a 1-hour session as a part of a larger study. Caregivers provided written and oral consent to participate in the study. They completed questionnaires about their parenting practices, their child's prosociality and temperament, and their family demographics. At the end of the study, caregivers were debriefed, and their children received an age-appropriate book and certificate as compensation for their participation.

## Measures

### *Prosocial Behaviors*

Caregivers completed the prosocial behavior subscale of the Strengths and Difficulties Questionnaire (Goodman, 1997), which has been widely used (e.g., Ensor et al., 2011). The subscale is composed of 5 items (e.g., Shares readily with other children e.g., treats, toys, pencils, etc.) rated on a 7-point Likert scale (0 = never and 6 = almost always). The items were averaged to calculate the total score and higher scores reflected higher prosocial behaviors. In the current study, the internal consistency was good ($\alpha$ = .79).

### *Sympathy*

Caregivers rated their children's sympathy using 5 items from Zhou et al. (2003) (e.g., My child feels sorry for others who are less fortunate) using a 7-point Likert scale (0 = never and 6 = almost always). Total sympathy scores were computed by averaging the item scores, with higher scores indicating higher sympathy. The scale has shown high reliability in studies with similar age ranges (e.g., Kienbaum, 2014) and the Cronbach's alpha was also high in the current study ($\alpha$ = .92).

### *Parental Discipline Practices*

Caregivers reported their use of discipline practices via questions from the Parental Discipline Questionnaire (Patrick & Gibbs, 2012). Parents were asked to report how likely they would be to employ each of several disciplinary behaviors using a 7-point Likert scale (0 = never and 6 = almost always) in response to child's antisocial behavior. Although the original scale included several vignettes, the current study employed two vignettes that were appropriate to the age range of our sample (i.e., child getting angry with a friend and

damaging a valued possession of the friend or saying something mean about the friend; and child taking something that belongs to someone else without asking). Each disciplinary behavior fell into a broader disciplinary strategy category, including power assertion, other-oriented induction, love withdrawal, and disappointment in the child's behavior. The power assertion subscale was composed of 6 items (e.g., "I would slap or spank him, or have some other adult in the family slap or spank him") and the other-oriented induction subscale was composed of 6 items (e.g., "I would ask him how he'd like it if someone did something mean like that to him"). Initially, the disappointment subscale was composed of 3 items (e.g., "I would tell him I'm disappointed in him") and the love withdrawal subscale was composed of 7 items (e.g., "Tell him that I am embarrassed and ashamed to be his parent"), but one item was dropped from each scale to increase reliability. The final subscales had acceptable levels of reliability (Cronbach's $\alpha$s are .70 for power assertion, .81 for other-oriented induction, and .78 for love withdrawal). Eisinga et al. (2013) suggested using the Spearman-Brown coefficient for calculating the reliability of scales with 2 items (i.e., disappointment scale in the current study). The Spearman-Brown reliability coefficient for the disappointment scale was .59. Total subscale scores were computed by averaging the subscale items.

***Inhibitory Control***

Caregivers assessed children's inhibitory control using subscales from the Children's Behavior Questionnaire (for 4- and 6-year-olds; Rothbart et al., 2001) or the Temperament in Middle Childhood Questionnaire (for 8-year-olds; Simonds & Rothbart, 2004). We used different scales with different age groups because of the developmental appropriateness of the scale for the respective age group. To be able to make more appropriate developmental inferences, we chose 4 comparable items from each scale that represented the same subcomponent of inhibitory control (e.g., planning, waiting before acting; for example, "My child prepares for trips and outings by planning things he will need" and "My child likes to plan carefully before doing something"). The items were rated on a 7-point Likert scale (0 = never and 6 = almost always). For the 8-year-old group, one item was dropped to produce more reasonable reliability scores ($\alpha$ = .63 for 4- and 6-year-olds and .76 for 8-year-olds).

***Data Analysis Plan***

Preliminary analyses were conducted using SPSS 21.0 and path analyses were conducted using MPlus 8.1 (Muthén & Muthén, 1998–2017). All variables had less than 5% missing data, so we used the maximum likelihood parameter estimation (Kline, 2010). The indirect effects of parental disciplinary practices and child inhibitory control on prosocial behaviors via sympathy were assessed with MPlus 8.1 using bootstrapping (on

5,000 random samples) and the associated 95% confidence intervals. After the initial model examining the direct and indirect effects of parenting and inhibitory control on prosocial behaviors, we ran multi-group modeling to test whether the associations differed across different age groups. First, we ran the multi-group model without any constrains. Then, we compared the results of this model with the model where we constrained individual paths to be equal across age groups using a chi-square difference test. If the freely estimated model did not significantly improve fit, we constrained the path in question to be equal across age groups. For all path analyses, we z-standardized all continuous variables in the model.

## Results

### Preliminary Analyses and Correlations

All variables were normally distributed (i.e., skewness > 2 and kurtosis > 7; Curran et al., 1996). Independent samples t-test showed that gender was only related to sympathy, with females ($M$ = 4.68, $SD$ = 1.13) showing higher sympathy than males ($M$ = 4.37; $SD$ = 1.20), $t(299) = 2.26$, $p = .024$, $\eta_p^2 = .02$. Therefore, we controlled for the effect of gender on sympathy. ANOVA results further revealed that 4-year-olds ($M$ = 4.41; $SD$ = 0.96) displayed less prosocial behavior as compared to 8-year-olds ($M$ = 4.74; $SD$ = .84), but not 6-year-olds ($M$ = 4.61; $SD$ = .93), $F(2, 298) = 3.02$, $p = .05$, $\eta_p^2 = .02$. Moreover, 4-year-old children ($M$ = 4.17; $SD$ = 1.28) reported less sympathy than 6- ($M$ = 4.57; $SD$ = 1.12) and 8-year-olds ($M$ = 4.83; $SD$ = 1.19), $F(2, 298) = 7.78$, $p < .001$, $\eta_p^2 = .05$, while 6- and 8-year-olds had similar levels of sympathy. Caregivers of 6-year-old children ($M$ = 5.27; $SD$ = .90) reported more use of other-oriented induction compared to the caregivers of 4-year-old ($M$ = 4.73; $SD$ = .91) and 8-year-old ($M$ = 4.93; $SD$ = .10) children, $F(2,292) = 8.98$, $p < .001$, $\eta_p^2 = .06$. Also, caregivers of 4-year-olds ($M$ = 3.33; $SD$ = 1.77) reported expressing less disappointment towards their children compared to caregivers of 6- ($M$ = 4.13; $SD$ = 1.50) and 8-year-olds ($M$ = 4.01; $SD$ = 1.74), $F(2,295) = 6.78$, $p = .001$. Power assertion ($F(2,294) = .462$, $p = .630$) and love withdrawal ($F(2,294) = 2.13$, $p = .121$) were not related to children's age group. Six-year-old children ($M$ = 3.97; $SD$ = 1.10) were reported to have higher inhibitory control compared to 4- ($M$ = 3.66; $SD$ = 1.13) and 8-year-old ($M$ = 3.57; $SD$ = 1.19) children, $F(2,297) = 3.52$, $p = .031$. Because of these age differences, the path analyses were conducted with the whole sample and separated by age groups. Correlational analyses showed that all study variables were significantly correlated, except for power assertion, which was unrelated to all study variables, and love withdrawal, which was only correlated with disappointment and power assertion (see Table 1).

### Path Analyses

Path analyses were conducted to examine the direct and indirect effects of parenting variables and child inhibitory control on prosocial behaviors. Since child gender was found to be related to sympathy, the effect of gender on sympathy was controlled for in the model. Moreover, child age was related to nearly all study variables (except for power assertion and love withdrawal). Therefore, we first ran our model with the whole sample controlling for child age on sympathy and prosocial behaviors. Then, we ran the same model with different age groups using a multi-group analysis to test which, if any, paths varied by age group.

Analyses with the whole sample demonstrated that the model fit to the data well, $\chi^2(11) = 16.64$, $p = .12$, $CFI = .98$, $RMSEA = .04$, (90% CI [.00, .08]), $SRMR = .04$. As shown in the Figure, other-oriented induction, disappointment, and inhibitory control were related to sympathy. Moreover, children's sympathy and inhibitory control were directly related to their prosocial behaviors. Child age group was significantly related to sympathy ($\phi 3 = .18$, $p = .000$). The indirect effects of other-oriented induction ($\phi 3 = .11$, $SE = .04$ [95% CI = .04, .19], $p = .006$), disappointment ($\phi 3 = .12$, $SE = .04$ [95% CI = .04, .20], $p = .004$), and inhibitory control ($\phi 3 = .22$, $SE = .03$ [95% CI = .16, .28], $p = .000$) on prosocial behaviour via sympathy were all significant. Power assertive parenting and love withdrawal were unrelated to prosocial behaviors, directly ($\phi 3_{power\ assertion} = .00$, $SE = .05$ [95% CI = -.09, .10], $p = .955$; $\phi 3_{love\ withdrawal} = -.06$, $SE = .05$ [95% CI = -.17, .03], $p = .224$) and indirectly ($\phi 3_{power\ assertion} = .01$, $SE = .04$ [95% CI = -.05, .08], $p = .669$; $\phi 3_{love\ withdrawal} = .01$, $SE = .04$ [95% CI = -.06, .09], $p = .698$).

**Testing Developmental Relations**

As a next step, we tested the moderating effect of child age group (ages 4, 6, and 8) on the model. We first ran a multi-group analysis with child age group as the grouping variable and with all paths freely estimated. Then, as suggested by Kelloway (2015) we ran a series of multi-group models constraining each path to equality, one at a time, across three age groups. We compared each of these models, where one path was constrained to be equal across age groups, with the model where all paths were freely estimated. Next, we ran the $\chi^2$ difference test between the constrained and the unconstrained models to examine the moderating role of age on different paths. When the $\chi^2$ difference test suggested a moderating role of age group on a path, we ran three different pairwise comparison tests to examine the difference amongst different age groups (i.e., comparing 4-year-olds vs 6-year-olds; 6-year-olds vs 8-year-olds; and 4-year-olds vs 8-year-olds). To test whether the path differed between two age groups, we constrained the path to be equal on these two age groups and allowed the path to be free on the third age group. We then assessed the $\chi^2$ difference test between the constrained model and the model where all paths were freely estimated to examine whether the path significantly differed between the two age groups.

The results of the multi-group analysis in which all paths were freely estimated showed appropriate fit to the data $\chi^2(15) = 12.11$; $p = .67$; *RMSEA* = .00 [90% CI = .00, .08]; *CFI* = 1.00; *SRMR* = .04. The results showed that parental use of disappointment was related to sympathy for 6- ($\beta = .34$, $p < .001$) and 8-year-olds ($\beta = .30$, $p < .001$), but not for 4-year-olds ($\beta = -.01$, $p = .896$). Follow up analyses revealed that the association between parental disappointment and sympathy differed among 4-year-olds compared to 6- ($\Delta\chi2$ (1) = 6.22, $p$ = 0.013) and 8- ($\Delta\chi2$ (1) = 4.655, $p$ = .031) year-olds, but was not different among 6-year-olds compared to 8-year-olds ($\Delta\chi2$ (1) =.001, $p$ = *ns*). The results also showed that the inhibitory control and sympathy association was moderated by age (age 4: $\beta = .51$, $p < .001$; age 6: $\beta = .43$, $p < .001$; age 8: $\beta = .17$, $p < .05$). Follow up analyses showed that this link was weaker among 8-year-olds compared to 4- ($\Delta\chi2$ (1) = 6.709, $p$ = .01) and 6- ($\Delta\chi2$ (1) = 4.474, $p$ = .034) year-olds. There were no significant differences among 4 and 6-year-olds ($\Delta\chi2$ (1) = .325, $p$ = *ns*). No other paths were moderated by child age group.

The final multi-group model was run with constraining all paths to equality across age groups except paths that were moderated by age group (i.e., the path from disappointment to sympathy and the path from inhibitory control to sympathy). The parameter estimates for the final multi-group model are shown in Table 2. We tested the indirect effects in this model as well. Significant indirect effects from the full model were retained in the final multi-group model. Like the model with the full sample, the final multi-group model showed indirect effects from other-oriented induction to prosocial behaviors via sympathy for all age groups (age 4: $\beta = .10$, *SE* = .04 [95% CI = .03, .21], $p$ = .007; age 6: $\beta = .11$, *SE* = .04 [95% CI = .04, .20], $p$ = .006; and age 8: $\beta = .11$, *SE* = .04 [95% CI = .03, .19], $p$ = .007). Moreover, inhibitory control was indirectly related to prosocial behaviors via sympathy for all age groups (age 4: $\beta = .31$, *SE* = .05 [95% CI = .20, .41], $p$ = .000; age 6: $\beta = .24$, *SE* = .05 [95% CI = .14, .35], $p$ = .000; and age 8: $\beta = .12$, *SE* = .06 [95% CI = .01, .22], $p$ = .04). Disappointment had an indirect effect on prosocial behaviors via sympathy only in 6- ($\beta = .20$, *SE* = .06 [95% CI = .08, .32], $p$ = .001) and 8- ($\beta = .20$, *SE* = .06 [95% CI = .08, .32], $p$ = .001) year-old children.

## Discussion

Parental disciplinary practices and child temperamental characteristics have long been theorized to be related to children's prosocial behaviors. Yet, the very few studies examining the role of specific disciplinary behaviors have shown mixed results. This study investigated the differential roles of parental discipline practices and child temperamental characteristics (inhibitory control) in prosocial behaviors, and the indirect role of child sympathy. To examine the possible developmental patterns across different age groups, we investigated the role of parental discipline practices and child sympathy in prosocial behaviors of 4-, 6-, and 8-year-old children. The

results partially supported our hypotheses. There were indirect links between other-oriented induction and disappointment with prosocial behaviors via sympathy. Children with higher inhibitory control were found to display more prosocial behaviors, but the role of inhibitory control was also indirect via sympathy. In addition, the associations between disappointment and sympathy as well as between inhibitory control and sympathy were qualified by significant interactions by age group: disappointment was associated with sympathy for 6- and 8-year-olds, but not 4-year-olds. Moreover, inhibitory control was more strongly associated with sympathy for 4- and 6-year-olds compared to 8-year-olds.

**Parental Discipline, Sympathy, and Prosocial Behaviors**

Hoffman (2000) considered other-oriented induction an effective disciplinary technique that increases prosocial outcomes, mainly via evoking sympathy in the child. Likewise, Krevans and Gibbs (1996) showed that other-oriented induction and disappointment were related to prosocial behaviors, even though they did not examine the specific mediational role of sympathy in the association between disappointment and prosocial behaviors. In line with these conceptualization and previous empirical studies (e.g., Brajša-Žganec & Hanzec, 2014; Xiao et al., 2018), our results showed that parents' other-oriented induction was associated with prosocial behaviors in children, and this effect was indirect via child sympathy. The same pattern was also shown for parental disappointment for 6- and 8-year-olds but not 4-year-olds. For the two older age groups, parents who used more other-oriented induction and disappointment had children with higher sympathy, which in turn was related to higher prosocial behaviors. For 4-year-olds, the indirect association between induction (but not disappointment) and prosocial behaviors via sympathy was replicated.

It has been posited that when parents use other-oriented induction and explain the impact of the child's behavior on the outcomes and emotions of the others, the child would be more inclined to feel sympathy for the other and in turn would display more prosocial behaviors (Hoffman, 2000). Our results supported this notion. However, previous studies that examined the association between other-oriented induction and prosocial outcomes and sympathy have focused on late childhood or adolescence (e.g., Carlo et al., 2007; Krevans & Gibbs, 1996). The current study extended previous work by showing that this association was present in early to middle childhood. The results suggest that other-oriented induction is effective in eliciting sympathy among 4-, 6- and 8-year-old children, which in turn promotes their prosocial behaviors. These results were partially supported with parental disappointment. Disappointment was related to prosocial behaviors via sympathy for older age groups (i.e., 6- and 8-year-olds) but not for the youngest age group (i.e., 4-year-olds).

Power assertive discipline and love withdrawal, on the other hand, were unrelated to sympathy and prosocial behaviors in the current study. While most previous research with older children has found that high power assertion (or strict discipline) was related to lower sympathy and indirectly to prosocial behaviors (e.g., Carlo et al., 2011a; Krevans & Gibbs, 1996), some studies have also reported no effects between power assertive discipline and prosocial behaviour (e.g., Tompkins & Villaruel, 2020). The literature on love withdrawal, however, is scarce and far more equivocal. Hoffman (2000) theorized that power assertion and love withdrawal would be related to less sympathy among children. Although, our results did not support this assertion, we also did not detect high variability in caregiver reports of power assertion and love withdrawal, with most parents reporting very low levels of these discipline behaviors. It is plausible that participants in the current study either did not use or did not report high levels of such discipline practices towards their children. Future studies might benefit from including caregivers who are at risk of displaying negative discipline practices and using observational methods or other informants instead of self-reports to measure such negative discipline behaviors.

**Inhibitory Control, Sympathy, and Prosocial Behavior**

Another main aim of the current study was to examine the role of child temperamental inhibitory control in prosocial behavior. Previous empirical studies have been fairly consistent in showing that temperamental inhibitory control was related to positive child social behaviors, including prosocial behaviors (e.g., Hao, 2017; Rhoades et al., 2009; Thompson et al., 2013). In line with these results, we found that children with better inhibitory control displayed more prosocial behaviors—a link that was present across age groups. Since children with higher inhibitory control are more capable of suppressing dominant, self-oriented goals, this capacity might increase prosocial behaviors (Eisenberg et al., 2010). Therefore, the current results provided support for the previous conceptualizations and literature.

In addition, our results showed that the association between inhibitory control and prosocial behaviors was both direct and also indirect via sympathy. The findings revealed that inhibitory control was related to higher sympathy in all age groups. The few studies that have examined associations between inhibitory control and sympathy have found that higher inhibitory control was related to more sympathy (e.g., Colasante et al., 2014). The broader, though related, construct of effortful control has also been found to be related to more sympathy feelings (Eisenberg et al., 2007). Our results aligned with these previous findings for all age groups, yet the effect was weaker (although still significant) for 8-year-olds. To the best of our knowledge, previous studies have not examined the indirect effects of sympathy in the association between inhibitory control and prosocial outcomes. Our results suggested that children's temperamental characteristics are related to their kind

behaviors and emotions (sympathy). Further, we found evidence supporting the notion that sympathy is a mechanism through which child temperament is associated with prosocial outcomes.

**The Role of Development**

One of the aims of the current study was to examine whether the tested associations were significant across different age groups in early and middle childhood years. The results revealed some age differences for the roles of parental disappointment and child inhibitory control in child prosocial behaviors. Our results showed that parental disappointment was related to more prosocial behaviors via sympathy in the whole sample. However, child age group was a moderator of this association. Parental disappointment was directly related to higher sympathy and indirectly related to higher prosocial behaviors via sympathy in 6- and 8-year old children but not in 4-year old children. The results for older children aligned with those from Krevans and Gibbs (1996), which showed that parental disappointment was a significant and separate factor in predicting sympathy and prosocial behaviors in early adolescent years (11.5–14.5-year-olds). In a similar vein, Patrick and Gibbs (2012) showed that adolescents (10–16-year-olds) reported disappointment as an appropriate discipline strategy and reported feeling ethical guilt upon receiving disappointment. Krevans and Gibbs (1996) argued that disappointment would allow the parents to share their own emotional state with the child, which was presumed to increase sympathy and, in turn, prosocial reactions in children. Patrick and Gibbs (2012) further argued that parents' disappointed expressions relate to children's self-concept, which elicits disappointment in themselves, thereby increasing feelings of ethical guilt and prosocial behaviors. Our results somewhat supported these ideas as disappointment was related to higher sympathy and indirectly related to prosocial behaviors among older age groups (i.e., 6- and 8-year-olds) but not the youngest group (i.e., 4-year-olds). Therefore, the current results suggest that disappointment is an effective strategy for older children but not younger children. It is plausible that 4-year-olds have not yet developed the cognitive capacities to understand the message parents try to convey with disappointment. Unlike other-oriented induction, disappointment is a more subtle and implicit way of communicating the perspective or feelings of the other. In other-oriented induction, the association of the child's behavior with the distress of the other is explicitly articulated by, for instance, pointing out how the other would feel when the child displays a negative behavior towards the other. On the other hand, disappointment is a more indirect way of conveying the message, and for younger children, understanding the association between their behavior and how that behavior would be conflicting with parental expectations might be harder.

Furthermore, our results showed that the association between inhibitory control and sympathy was stronger for 4- and 6-year-old children compared to 8-year-olds (although significant for all ages). As a broader

construct, effortful control was suggested to develop rapidly in the early childhood years, between the ages 2 of 7 (Rothbart et al., 2001). As such, it can be expected that most of the development of inhibitory control might be completed by age 8. Therefore, it is plausible that having better inhibitory control skills in early years might be even more important to be able to display sympathy, while in later years — when inhibitory control is rather developed for most of the children— it's influence might be less strong, although still present. In general, the current results suggest that there are age-related differences in the mechanisms through which parental discipline and child temperamental characteristics are related to prosocial behaviors in early and middle childhood years and indicated the need for further examination of the role of child age via longitudinal studies.

**Limitations and Future Directions**

The current results should be interpreted in the context of some limitations. First, all variables were assessed using caregiver reports which might have inflated the associations among variables due to shared reporter variance. Although some statistical remedies were suggested for detecting and partially overcoming the shared method variance, these remedies have serious limitations that would limit concrete conclusions (see, Podsakoff et al., 2003; Podsakoff et al., 2012). Moreover, in our study, parental power assertion and love withdrawal variables were not related to the other parent-reported variables, including sympathy and prosocial behaviors (except for the correlations between power assertion and love withdrawal and love withdrawal and disappointment). These non-significant results suggest that shared method variance alone does not explain our significant effects (see Brannick et al., 2010). In addition, our results were mostly in line with other studies that have used different methods or reporters to examine the independent and dependent variables (e.g., Guevara et al., 2015; Pastorelli et al., 2016) and are in line with previous conceptualizations (e.g., Hoffman, 2000). Still, future studies would benefit from replicating these results with multi-method, multi-informant measurement techniques and from using some procedural and design-related remedies, such as including a social desirability measure in their study (see Brannick et al., 2010; Padsakoff et al., 2012).

Another limitation was the cross-sectional nature of the study. Although we have studied the role of parenting in child prosocial behaviors, various research has shown that the association between parenting and child prosocial behaviors are bidirectional (e.g., Carlo et al., 2011b)—children are not mere recipients of parenting as they generally assume an active role (see Recchia & Wainrby, 2014). Yet, the current design did not allow for the examination of the directionality of the effects, hence we were unable to control for the role of child prosociality on parental discipline and the bidirectional associations between these variables. Future longitudinal studies may benefit from examining the co-development of parental discipline techniques and

children's emotions and behaviors (see Zuffianò et al., 2018). Also, it is not ideal to examine mediational effects with cross-sectional data since it might increase the risk of bias in the results (Maxwell & Cole, 2007). However, results of such analyses are still informative, especially when the expected direction of the association is retained (Shrout, 2011). Our results were in line with the results of the previous longitudinal designs and had the same direction as empirical and theoretical models previously suggested (e.g., Carlo et al., 2011b; Gulseven, 2015; Knafo & Plomin, 2006), indicating that even if a bias is present, it does not undermine the validity of our results. Therefore, although the current results should be interpreted with caution (as in all other published studies that reported indirect results with cross-sectional data; e.g., Carlo et al., 2011a), they provide preliminary evidence for the role of parental discipline and child temperamental inhibitory control in relation to child prosocial behaviors and the mediating and moderating roles of child sympathy and age, respectively. These results would be informative in designing future longitudinal studies which might benefit from testing these associations across different age groups in early and middle childhood years.

Moreover, although we examined parents' reports of their discipline, examining how children perceive this discipline and how accurately they interpret the parental message is also important (Grusec & Goodnow, 1994). Future studies examining parental discipline and children's reactions in a nuanced manner are warranted. Finally, the current study was conducted in a small region of Canada with parents who have rather high levels of education. Since parental levels of education and culture are important predictors of parenting practices, multi-site, cross-cultural studies with variance in parental education might be helpful in uncovering the role of these demographic factors in the mechanisms examined in the current study.

Despite these limitations, to the best of our knowledge, this was the first study that examined the associations of parental discipline practices, child temperament, and sympathy in prosocial behaviors in early and middle childhood years. Our results showed that parental other-oriented induction and disappointment, as well as child inhibitory control, were related to prosocial behaviors via sympathy, with age group being a significant moderator. Parental disappointment was related to child sympathy only in 6- and 8-year-olds, but not 4-year-olds, and inhibitory control was more strongly associated with sympathy in 4- and 6-year-old children as compared to 8-year-olds. The results suggest that children might benefit from other-oriented induction starting from early years (i.e., age 4), and intervention studies aiming to increase sympathy or prosocial behaviors in early and middle childhood would benefit from promoting the use of other-oriented induction among parents. Disappointment, however, might be a useful but more nuanced disciplinary practice appropriate for children with more advanced cognitive development. The current results further imply that interventions aiming to increase

inhibitory control might be useful for increasing sympathy and positive social outcomes, especially in younger children. Furthermore, these results show that child characteristics (i.e., inhibitory control and sympathy) are important in predicting prosocial outcomes across early and middle childhood. Therefore, policy makers may benefit from targeting children's capacities for inhibitory control and feelings of sympathy for others. According to our results, one way to promote child sympathy and prosociality would be through increasing parental positive discipline practices. More specifically, programs promoting parental inductive discipline may be effective in promoting prosocial behaviors in early and middle childhood and probably beyond. Furthermore, parental disappointment may be used as an effective disciplinary strategy. However, children's developmental level should be considered and disappointment should be promoted only after children develop the capacities to understand the underlying message the parents aim to provide with disappointment reactions. Our results imply that this capacity might develop during middle childhood. In sum, the current results suggest that both parental discipline and child temperament were important for sympathy and prosocial outcomes across early and middle childhood. However, the type of parental discipline is important and age of the child also mattered in terms of how they strongly impact children's prosocial behaviors. Therefore, the policies targeting child prosocial behaviors would benefit from implementing strategies based on child age in early and middle childhood years.

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**Table 1**

*Descriptive Statistics and Zero-Order Correlations Between Main Study Variables (N = 301)*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| 1. Prosocial Behaviors | | - | | | | | | |
| 2. Sympathy | | .71*** | - | | | | | |
| 3. Other-oriented induction | | .27*** | .33*** | - | | | | |
| 4. Power Assertion | | -.01 | .04 | .09 | - | | | |
| 5. Disappointment | | .25*** | .34*** | .48*** | .10† | - | | |
| 6. Love withdrawal | | -.06 | .02 | -.03 | .47*** | .14* | - | |
| 7. Inhibitory Control | | .42*** | .38*** | .17** | -.05 | .12* | -.10† | - |
| | *Mean* | 4.58 | 4.51 | 4.98 | .97 | 3.82 | .73 | 3.75 |
| | *SD* | .92 | 1.19 | .95 | .79 | 1.70 | .88 | 1.14 |
| | *Min* | 2.20 | 1.40 | 1.33 | .00 | .00 | .00 | .33 |
| | *Max* | 6.00 | 6.00 | 6.00 | 3.67 | 6.00 | 4.17 | 6.00 |

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

**Table 2**

*Parameter Estimates for the Final Multi-group Model*

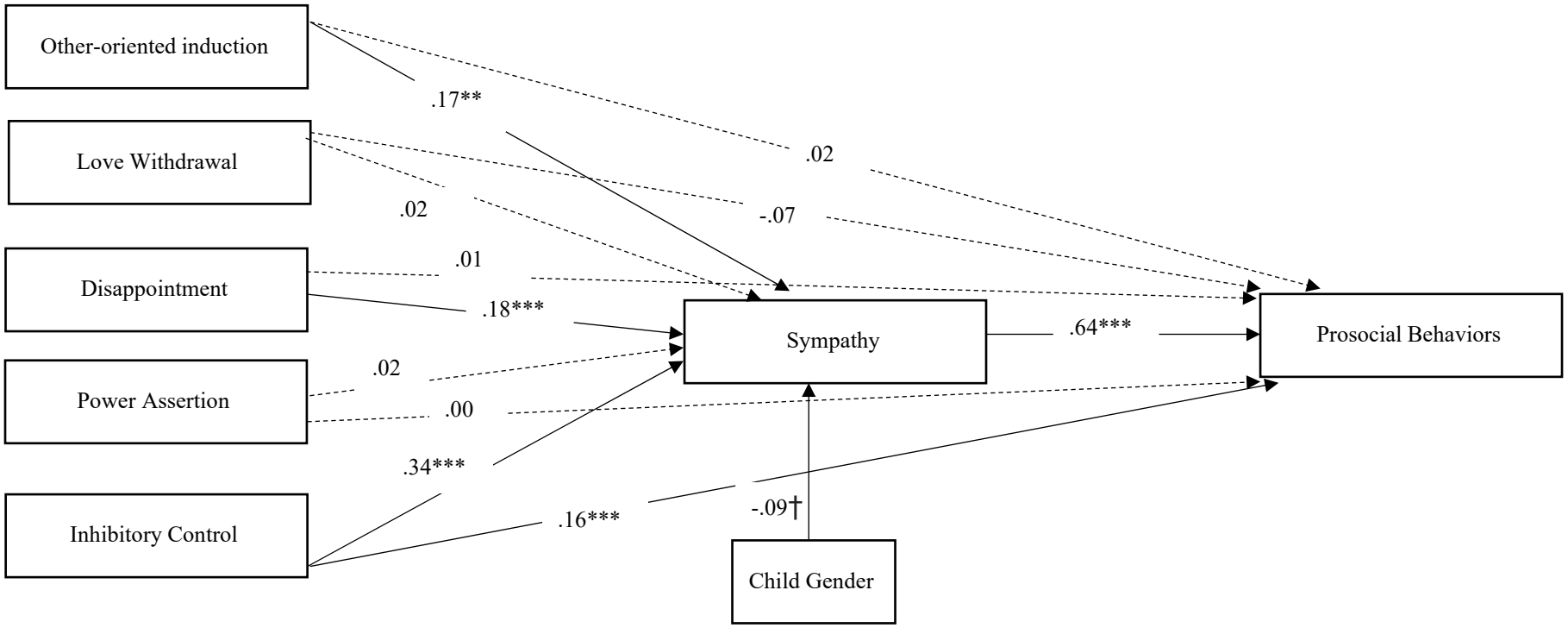
| Path[a] | *(Standardized)* | SE | 95% CI |
|---|---|---|---|
| Sympathy <= Other-oriented induction | .17** | .06 | [.06, .29] |
| Sympathy <= Love withdrawal | .02 | .06 | [-.10, .15] |
| Sympathy <= Disappointment (age 4) | -.02 | .09 | [-.20, .16] |
| Sympathy <= Disappointment (age 6) | .31** | .09 | [.11, .47] |
| Sympathy <= Disappointment (age 8) | .31** | .09 | [.13, .52] |
| Sympathy <= Power assertion | .02 | .06 | [-.10, .14] |
| Sympathy <= Inhibitory control (age 4) | .50*** | .09 | [.33, .66] |
| Sympathy <= Inhibitory control (age 6) | .37*** | .08 | [.23, .52] |
| Sympathy <= Inhibitory control (age 8) | .17* | .05 | [.01, .34] |
| Prosocial behaviors <= Other-oriented induction | .02 | .05 | [-.07, .12] |
| Prosocial behaviors <= Love Withdrawal | -.07 | .05 | [-.17, .04] |
| Prosocial behaviors <= Disappointment | .01 | .05 | [-.08, .11] |
| Prosocial behaviors <= Power assertion | .00 | .05 | [-.09, .10] |
| Prosocial behaviors <= Inhibitory control | .16*** | .05 | [.07, .25] |
| Prosocial behaviors <= Sympathy | .64*** | .05 | [.53, .69] |
| Sympathy <= Child gender | -.07 | .05 | [-.18, .03] |

[a] Parameters that were not attributed to an age group in parentheses refer to the estimated effects for the full sample.

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

**Figure**

*The Hypothesized Model for the Whole Sample (N = 301)*




*Notes*. Dashed lines represent hypothesized but non-significant paths and the solid lines represent significant paths. Child age group was controlled on sympathy and prosocial behaviors in the model. Age group was significantly related to sympathy only. All predictor variables were allowed to correlate with each other in the model.

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