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# The Development of Cooperation and Self-Control in Middle Childhood: Associations With Earlier Maternal and Paternal Parenting

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Developmental theories and previous research have emphasized the significance of cooperation and self-control in middle childhood. The present study extends previous research by examining (a) the growth of cooperation and self-control as well as the relations between them in middle childhood (third to sixth grade) and (b) the extent to which mothers' and fathers' parenting during early childhood (54 months and first grade) was associated with children's cooperation and self-control. The sample included 705 children (51% female, 86% White) and their mothers, fathers, and teachers in the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development (SECCYD). Children, on average, exhibited increases in self-control but not cooperation from third to sixth grade though the increases were smaller for children who had higher self-control or cooperation at third grade. Children who exhibited higher self-control at third grade tended to exhibit higher cooperation at third grade; similar positive associations emerged for the changes in self-control and cooperation over time. In addition, if a child exhibited higher self-control at one time point relative to their typical average level, they tended to also exhibit higher cooperation at the same time point relative to their typical average level. However, these relative deviations within person were not associated over time. Lastly, maternal and paternal sensitive and stimulating parenting in early childhood was positively associated with children's cooperation and self-control in middle childhood. Overall, our findings shed light on the growth of and the relations between cooperation and self-control in middle childhood and highlight the role of maternal and paternal parenting in early childhood.

**Keywords:** cooperation, self-control, parenting, socioemotional development, childhood

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Developmental theories and previous research have emphasized the significance of cooperation and self-control (see Eisenberg et al., 2015; Lickona & Davidson, 2005; McClelland et al., 2015). Cooperation and self-control become increasingly critical in middle childhood as children interact with peers and adults outside the family and they help set the stage for social-emotional development, moral development, positive youth development, and academic achievement into adolescence (see Eisenberg et al., 2015; Lickona & Davidson, 2005; McClelland et al., 2015). Though cooperation and self-control are important during middle child-

hood, we know little about how they develop and mutually influence one another during this developmental period, as well as how children's earlier experiences with their parents are linked to later cooperation and self-control.

Developmental theories highlight the important roles of mothers and fathers in the socialization of cooperation and self-control during early childhood, yet research has predominantly examined mothers (Cabrera et al., 2018; Eisenberg et al., 2015). Utilizing data from the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth

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Development (SECCYD), the present study extends previous research by examining (a) the developmental trajectories of and bidirectional relations between cooperation and self-control (reported by mothers, fathers, and teachers) during middle childhood (from third to sixth grade) and (b) the extent to which observed maternal and paternal sensitive and stimulating parenting in early childhood (at 54 months and first grade) are linked to children's cooperation and self-control during middle childhood.

### Interrelations in the Development of Cooperation and Self-Control

Cooperation and self-control represent interpersonal and intrapersonal skills that are important indicators of social-emotional development, positive development, and moral development (Bandura, 1991; Eisenberg et al., 2015; Vaish & Tomasello, 2014; Weissberg et al., 2015). Cooperation is a type of prosocial behavior that is defined as coordinating and collaborating actions aimed to increase one's own and other's benefits concurrently (Eisenberg & Miller, 1987). Self-control refers to voluntary attempts to control attentional, emotional, and behavioral impulses in social interactions (Gresham & Elliott, 1990). Cooperation and self-control develop from early childhood to early adolescence (Malti et al., 2016; Takahashi et al., 2015; Vazsonyi & Huang, 2010; see King et al., 2013 for effortful control as a related construct). For example, several studies based on the NICHD SECCYD data have shown that children's self-control increases from prekindergarten to 10th grade (Holmes et al., 2019; Vazsonyi & Huang, 2010; Vazsonyi & Jiskrova, 2018). However, few studies on the development of cooperation exist (e.g., Malti et al., 2016; Takahashi et al., 2015).

Developmental scholars have argued that cooperation and self-control are related and can influence each other over time (Eisenberg et al., 2015; Lickona & Davidson, 2005; Weissberg et al., 2015). Self-control is an intrapersonal skill theorized to facilitate cooperation (Eisenberg et al., 2015), because cooperation, which requires two or more individuals to share goals and intentions and work together to achieve a mutual goal (Tomasello et al., 2005), requires more coordination and collaboration than other prosocial behaviors, such as helping or sharing. At the same time, cooperation affords opportunities to model and practice self-control skills that can deter instances of personal distress (i.e., an aversive, self-focused emotional reaction to the needs of others; Eisenberg, 2000; Hoffman, 2000). Existing research using data from the NICHD SECCYD suggests that self-control or self-regulation measured at a single time point in early or middle childhood is positively associated with their concurrent and later cooperation (Carlo et al., 2012; Laible et al., 2014). Scholars have yet to test the bidirectional relations between self-control and cooperation as posited by developmental scholars (Lickona & Davidson, 2005; Weissberg et al., 2015).

The current study builds on prior research by simultaneously examining the growth and bidirectional relations between cooperation and self-control. Theories on cooperation and self-control suggest there should be both between-person and within-person effects (Eisenberg et al., 2015; McClelland et al., 2015). First, according to prior work, there should be variability or between-person differences in children's cooperation and self-control at any one time and also in their changes or mean-level continuity over

time (Caspi et al., 2005; also see Bornstein et al., 2017). Second, theories assert that children who are higher on cooperation tend to be higher on self-control, and that children who experience larger changes in cooperation tend to experience larger changes in self-control, which are both between-person effects (Eisenberg et al., 2015; Lickona & Davidson, 2005; Weissberg et al., 2015). In contrast, within-person effects focus on fluctuations within a person. In this case, within-person effects address if a child's cooperation and self-control at a particular time point deviate from their typical levels (Curran et al., 2014). A child who exhibits higher cooperation at one time point relative to their typical levels might exhibit higher self-control at the same time point. Additionally, that child's elevated cooperation at one time point might cause them to display more cooperation or self-control 1 year later. Though theories distinguish these between- and within-person effects, they are confounded in many models. In the current study, we use bivariate latent curve models with structured residuals to disentangle these unique effects (Curran & Bauer, 2011; Curran et al., 2014). Moreover, measurement of children's cooperation and self-control is based on independent reports by three adults who are most familiar with children's cooperation and self-control during middle childhood in the home and school contexts, namely their mother, father, and school teacher.

### Early Maternal and Paternal Parenting

The second goal of this study is to test the extent to which early parenting by mothers and fathers is linked to children's cooperation and self-control in middle childhood. Specifically, we focus on two aspects of early parenting: sensitivity and stimulation. Sensitivity reflects parents being attuned to and responsive to their children's needs and social signals. Stimulation reflects parents' efforts to provide cognitive stimulation and appropriate assistance during parent-child interactions. Sensitive and stimulating parents support their children's cooperation and self-control by being warm, responsive, and supportive, respecting children's autonomy in parent-child interactions, encouraging and helping their children to complete tasks, and providing constructive feedback (Grolnick et al., 2019; Hirsh-Pasek & Burchinal, 2006; Spinrad et al., 2019). Sensitive and stimulating parents also directly guide and teach self-control strategies to their children, model other-oriented tendencies, and socialize their children to be sensitive and responsive to others' needs to be able to cooperate with them (Grolnick et al., 2019; Hastings et al., 2007; Spinrad et al., 2019). Grolnick et al. (2019) argued that children then internalize parents' values and become intrinsically motivated, which fosters volitional self-control and cooperation. A robust body of empirical research suggests that sensitive parenting is linked to children's self-control and cooperation (e.g., Laible et al., 2016; Newton et al., 2014). However, research on parental stimulation has mostly focused on cognitive outcomes (e.g., Hirsh-Pasek & Burchinal, 2006; NICHD Early Child Care Research Network, 2005b) and much less on social outcomes (e.g., NICHD Early Child Care Research Network, 2009). Although parental sensitivity and cognitive stimulation are distinct parenting behaviors, they are closely related and complementary to each other and, thus, scholars often combine them into a single parenting construct (see Hirsh-Pasek & Burchinal, 2006; NICHD Early Child Care Research Network, 2009). We

followed the same logic and created a composite sensitive and stimulating parenting score for each parent.

Parenting research has identified both similarities and differences between maternal and paternal parenting (see [Cabrera et al., 2014](#) for review). Although both mothers and fathers have responsive, sensitive, and affectionate relationships with their children, mothers more commonly take a primary caregiver role that involves more nurturing and caregiving activities than fathers (see [Cabrera et al., 2014](#)). Nurturance (e.g., warmth, supportiveness) promote children's cooperation and self-control through fostering positive parent-child relationship, children's openness to parental socialization messages, and modeling ([Grolnick et al., 2019](#); [Spinrad et al., 2019](#)). Similarly, although both mothers and fathers teach and play with their children, fathers more commonly engage in physical play, mentor their children, and encourage their children to meet challenges than mothers ([Cabrera et al., 2014, 2018](#); [Parke & Cookstone, 2019](#)). In general, fathers tend to encourage their children to take risks, challenge, and tease their children during stimulating rough and tumble play ([Cabrera et al., 2018](#)). Father-child interactions may provide unique opportunities for children to practice self-control skills by experiencing and regulating various emotions and to learn cooperation by sharing resources and taking turns ([Parke & Cookstone, 2019](#)). For these reasons, scholars argue that paternal parenting is particularly important for socializing children's social skills and regulatory behaviors (see [Cabrera, 2016](#)).

Despite empirical evidence about the importance of fathers in the development of children's social skills (see [Cabrera, 2016](#); [NICHD Early Child Care Research Network, 2004, 2008](#); [Parke & Cookstone, 2019](#)), only a few studies have simultaneously examined the maternal and paternal correlates of children's social skills. These few studies have either focused on only sensitive parenting ([NICHD Early Child Care Research Network, 2004, 2008](#)) or exclusively on the preschool years (e.g., [Hastings et al., 2007](#)), or have measured a different set of developmental outcomes altogether ([NICHD Early Child Care Research Network, 2008](#)). One exception is a study focused on fathers and children's social skills employing NICHD SECCYD data ([Webster et al., 2013](#)). In that study, paternal sensitivity and cognitive stimulation at 54 months predicted paternal warmth at first grade, which in turn, predicted children's social skills at third grade, including cooperation and self-control. This study did not include indicators of mothers' behaviors to assess their relative or joint associations (i.e., maternal parenting was a statistical control), nor insight into whether either parent's behaviors are associated with the mean-level changes in children's cooperation or self-control. Thus, to extend previous literature, we examined the roles of mothers and fathers on children's development of cooperation and self-control.

Family systems theory suggests that the influence of one parent cannot be fully understood without taking into account the behavior of the other parent ([Cox & Paley, 1997](#)). Because fathers' and mothers' behaviors are complementary to each other, scholars have proposed that the unique roles of fathers and mothers can be best understood through interactive models ([Cabrera, 2016](#)). [Cabrera and colleagues \(2014\)](#) further argue that the correlates of fathers' behaviors depend on several factors, one of which is mothers' behaviors. In other words, this argument suggests that associations between fathers' behaviors and children's social skills varies based on mothers' behaviors. However, studies have mostly

focused on the unique direct effects of mothers or fathers on children's social skills (e.g., [Davidov & Grusec, 2006](#); [Hastings et al., 2007](#); [Webster et al., 2013](#); [NICHD Early Child Care Research Network, 2004](#)) and not on more complex moderation analyses as posited by theory (e.g., [Cabrera, 2016](#); [Martin et al., 2010](#)). Because fathers' social interactions with their children are theorized to be particularly important in children's social skills and regulatory behaviors ([Cabrera, 2016](#)), we focus on the associations between fathers' parenting and children's socioemotional development and tested the extent to which mothers' parenting might moderate those central associations. For example, the deleterious effects of fathers' lower quality parenting on children's socioemotional development might be exacerbated if mothers also engage in lower quality parenting or might be offset if mothers engage in high quality parenting. Thus, to extend previous literature, we examined the extent to which mothers' parenting moderated the relations between fathers' parenting and children's cooperation and self-control.

### Present Study and Hypotheses

To summarize, the present study extends previous research through two primary research goals. The first goal is to examine the growth in and bidirectional relations between children's cooperation and self-control in middle childhood. We expected that children's cooperation and self-control would increase from third grade to sixth grade and their intercepts and slopes would be positively related to each other. For instance, we expect children who have higher cooperation at third grade will have higher self-control at third grade (that is a between-person effect). Additionally, we expected that cooperation and self-control would mutually influence each other over time; for instance, a child who exhibits higher cooperation than their typical level at third grade is likely to exhibit higher self-control than their typical level at fourth grade (that is a within-person effect). This would be the same for later grades.

The second goal of this study is to examine how maternal and paternal sensitive and stimulating parenting in early childhood (i.e., assessed via observations of parent-child dyadic interactions at 54 months and first grade) are associated with children's cooperation and self-control at third grade (i.e., intercepts) and their trajectory or growth from third grade to sixth grade (i.e., slopes). Here, we expected positive relations between mothers' and fathers' sensitive and stimulating parenting and the intercepts and slopes of children's cooperation and self-control. Given prior suggestions that paternal parenting is central to children's social development and that maternal parenting might moderate those associations ([Cabrera, 2016](#); [Cabrera et al., 2014](#)), we expected that the strength of the relation between fathers' sensitivity and stimulation and children's cooperation and self-control would differ based on different levels of maternal sensitivity and stimulation. For instance, mothers' high level of sensitive and stimulating parenting may buffer the adverse effects of fathers' low levels of sensitive and stimulating parenting on children's cooperation and self-control. Several important control variables (e.g., child gender, ethnicity, income-to-needs ratio in early childhood, and data collection site) that are associated with parenting and children's socioemotional development were included in all analyses ([NICHD Early Child Care Research Network, 2005a](#)).

## Method

### Participants

Data were from the NICHD SECCYD. A total of 1,364 children (48% female; 76% White, 13% Black, 6% Hispanic, and 5% other) and their families were recruited across 10 locations in the United States (see <https://www.nichd.nih.gov/research/supported/seccyd/> for details; NICHD Early Child Care Research Network, 2005a). In the current study, the analysis sample ( $N = 705$ ) consisted of children who (a) attended at least one father-child interaction session with their father (or mother's partner) at 54 months or first grade, and (b) had at least one report from mother, father (or mother's partner), and teacher of children's self-control and cooperation during third, fourth, fifth, or sixth grade. In total, 705 children and parents (52% of the original recruitment sample) were included in the current analytic sample (51% female; 86% White, 5% Black, 6% Hispanic, and 4% other). As shown in Table 1, the average income-to-needs ratio for the analytic sample was 4.00 ( $SD = 2.59$ , Min = 0.35, Max = 21.90). Compared with the original recruitment samples ( $N = 1,364$ ), the analytic sample was more likely to be White ( $\chi^2 [1] = 71.84$ ,  $p < .001$ , Cramer's  $V = 0.23$ ) and were from families of high incomes during early childhood,  $t(1,183) = 6.90$ ,  $p < .001$ , Cohen's  $d = 0.41$ . We also compared children and parents in the analytic sample with the original recruitment sample regarding main study variables (see Table 1). Compared with the recruitment sample, the analytic sample had higher scores on maternal and paternal parenting, as well as cooperation and self-control variables. However, the mean scores on these variables were very close across the two samples. The Institutional Review Board (IRB) approval was obtained from the University of California,

Irvine under the Study of Early Child Care & Youth Development (IRB HS#2006-5347).

### Measures

#### Maternal and Paternal Parenting

When children were 54 months old and in first grade, they were observed during a semistructured 15-min videotaped interaction with their mother in the lab and with their father during a home visit. Parent-child dyads worked together on various interaction tasks that were designed for the NICHD SECCYD study (see for detailed descriptions of the task procedures NICHD Early Child Care Research Network, 2005a). The descriptions of the task procedures can be found at: <https://www.nichd.nih.gov/research/supported/seccyd/>.

Trained observers coded five aspects of parenting behavior (i.e., supportive presence, respect for autonomy, and hostility [reverse coded], cognitive stimulation, and quality of assistance) using 7-point rating scales (1 = very low, 7 = very high). Sensitivity included supportive presence, respect for autonomy, and hostility (reverse coded); stimulation included cognitive stimulation and quality of assistance. Interrater reliability across two observers was computed across all of the items for sensitivity and separately for stimulation on a subsample of mothers and fathers at each time point ( $Ns = 155$  to 242). The interrater reliability was acceptable for mothers' ( $r = .78$  and  $.83$  at 54 months and first grade) and fathers' sensitivity ( $r = .77$  and  $.77$ , respectively) at each time point. The interrater reliability was also acceptable mothers' ( $r = .76$  and  $.81$ , respectively) and fathers' stimulation ( $r = .78$  and  $.72$ , respectively) at each time point. Of note, interrater reliability scores of fathers' sensitivity and stimulation across observers was provided for all nonmaternal caregivers (e.g., father, mother's

**Table 1**  
Descriptives for Analytic Sample and Recruitment Sample

Variables	Analytic sample $N = 705$		Recruitment sample $N = 1,364$		$p$	Cramer's $V^a$ / Cohen's $d^b$
	$M$ or %	$SD$	$M$ or %	$SD$		
Female	51%		48%		.076	.05 <sup>a</sup>
Ethnicity						
White	86%		76%		.000	.23 <sup>a</sup>
Black	5%		13%		.000	-.24 <sup>a</sup>
Hispanic	6%		6%		.377	-.02 <sup>a</sup>
Other	4%		5%		.041	-.06 <sup>a</sup>
Income-to-needs ratio	4.00	2.59	3.57	2.64	.000	.41 <sup>b</sup>
Maternal parenting 54 months	5.35	0.88	5.19	1.00	.000	.46 <sup>b</sup>
Paternal parenting 54 months	5.44	0.88	5.38	0.89	.000	.32 <sup>b</sup>
Maternal parenting first grade	5.34	0.95	5.18	1.05	.000	.45 <sup>b</sup>
Paternal parenting first grade	5.26	0.87	5.19	0.91	.000	.37 <sup>b</sup>
Cooperation third grade <sup>c</sup>	1.33	0.26	1.31	0.28	.001	.22 <sup>b</sup>
Cooperation fourth grade <sup>c</sup>	1.34	0.28	1.31	0.30	.000	.24 <sup>b</sup>
Cooperation fifth grade <sup>c</sup>	1.34	0.26	1.32	0.28	.010	.17 <sup>b</sup>
Cooperation sixth grade <sup>c</sup>	1.34	0.29	1.31	0.30	.001	.23 <sup>b</sup>
Self-control third grade <sup>c</sup>	1.44	0.25	1.41	0.28	.000	.35 <sup>b</sup>
Self-control fourth grade <sup>c</sup>	1.46	0.27	1.42	0.29	.000	.41 <sup>b</sup>
Self-control fifth grade <sup>c</sup>	1.45	0.26	1.42	0.28	.000	.35 <sup>b</sup>
Self-control sixth grade <sup>c</sup>	1.47	0.26	1.43	0.28	.000	.39 <sup>b</sup>

<sup>a</sup> Cramer's  $V$ : .10 small effect size, .30 moderate effect size, and .50 large effect size. <sup>b</sup> Cohen's  $d$ : .20 small effect size, .50 moderate effect size, and .80 large effect size. <sup>c</sup> Mean across mother, father, and teacher reports.



partner, or grandparent; see for details, <https://www.nichd.nih.gov/research/supported/seccyd/>).

Following standard scoring procedures, all five aspects of sensitivity and stimulation were averaged to create an overall sensitive and stimulating parenting score for mothers and separately for fathers at each time point ( $\alpha$ s ranged from .83 to .89 for mothers and fathers; NICHD Early Child Care Research Network, 2005b, 2009). We created a latent variable of parenting based on the two time points for several reasons. First, prior work based on the NICHD SECCYD has included indicators of parenting aggregated across multiple time points to create more robust indicators of parenting over a developmental period, which was our goal here (e.g., see Duncan et al., 2019; Hirsh-Pasek & Burchinal, 2006 for similar procedures). Second, several prior studies using the NICHD SECCYD data suggest continuity in these maternal behaviors across these years (e.g., Belsky et al., 2007; Hirsh-Pasek & Burchinal, 2006; NICHD Early Child Care Research Network, 2008). Third, the bivariate correlations among 54 months and first grade sensitive and stimulating parenting were strong ( $r = .46, p < .001$  for mothers and  $r = .50, p < .001$  for fathers; i.e.,  $r > .30$  is a medium and  $r > .50$  is a large effect size; Cohen, 1992).

### Children's Cooperation and Self-Control

In third, fourth, fifth, and sixth grades, mothers, fathers, and classroom teachers reported children's cooperation and self-control using the Social Skills Rating System (SSRS; Gresham & Elliott, 1990) using a 3-point scale (0 = *never*, 1 = *sometimes*, 2 = *very often*). Cooperation included behaviors such as helping with household tasks in the family and paying attention to the teacher's instruction in the classroom (10 items;  $\alpha$ s = .78 to .81 for mothers;  $\alpha$ s = .78 to .81 for fathers;  $\alpha$ s = .91 to .92 for teachers). Self-control included behaviors such as controlling one's temper in time of conflict with peers and appropriately handling interpersonal conflict (10 items;  $\alpha$ s = .81 to .82, for mothers;  $\alpha$ s = .81 to .85, for father figures;  $\alpha$ s = .85 to .87 for teachers). The Social Skills Rating System has been widely used in previous research and demonstrated good validity and reliability (Fagan & Fantuzzo, 1999). Composite scores were created for cooperation and for self-control by calculating the mean for each respondent at each grade level, and then by calculating the average scores across mother, father, and teacher reports at each grade level ( $r$ s = .24 to .57  $p$ s < .001 in third, fourth, fifth, and sixth grades).

### Covariates

Child and family background characteristics were taken into account to reduce the omitted variable and selection bias. Specifically, we statistically controlled for child gender (female is the reference group), ethnicity (White, Hispanic, Black, and Other with White as the reference group), location of data collection (nine dummy coded variables created), and average family income-to-needs ratio in early childhood. To create this variable, income-to-needs ratio in 1, 6, 15, 24, 36, and 54 months, kindergarten, and first grade were averaged to create average income-to-needs ratio in early childhood ( $M = 4.00, SD = 2.59, \text{Min} = 0.35, \text{Max} = 21.90$ ).

### Data Analysis Plan

We conducted preliminary descriptive analyses to assess the distribution of the study variables, examine missing data patterns, and to assess correlations among main study variables. All descriptive statistics for the recruitment sample and analytic sample are presented in Table 1. Under the first goal of this study, which is to examine the growth in and bidirectional relations between children's cooperation and self-control in middle childhood, we expected that children's cooperation and self-control would increase from third grade to sixth grade. To test this, we estimated an unconditional univariate latent curve model with structured residuals (LCM-SR; Curran et al., 2014) in *Mplus* v8.3 (Muthén & Muthén, 1998–2017) separately for cooperation and for self-control. First, we conducted factorial invariance tests for cooperation and self-control separately to examine whether each construct was invariant over time (i.e., configural, weak, strong, and strict invariance; Little, 2013). We calculated the change in comparative fit index (CFI; Little, 2013, pp. 154–155) and considered the absolute model fit to evaluate invariance constraints (Grimm et al., 2017). Second, we estimated and compared three functional forms of the change in children's cooperation and separately in self-control: (a) a no-change model (i.e., intercept only), (b) a linear change model, and (c) a quadratic change model. To identify the best fitting LCM, we compared the models in terms of change in their  $\chi^2$  values and overall model fit indices, and the statistical significance of the means and variances of the intercepts and slopes (Grimm et al., 2017). Third, following steps outlined by Curran et al. (2014), we estimated univariate LCM-SR including structured residuals and autoregressive paths. LCM-SR has several strengths including (a) the ability to simultaneously estimate between-person and within-person changes, and (b) that "the inclusion of the time-specific regressions will not influence the fixed-effect characteristics (e.g., the mean structure) of the underlying latent curve factors" (Curran et al., 2014, p. 885). In all models, we set the intercept at third grade. The goodness of model fit was assessed by using multiple fit indices (e.g., root mean square error of approximation [RMSEA] with 90% confidence interval [CI], CFI, Tucker-Lewis index [TLI], and standardized root mean square residual [SRMR]; Hu & Bentler, 1999).

Under the first goal of this study, we also examined both between-person and within-person effects in cooperation and self-control. We expected positive relations between the intercepts and slopes of children's cooperation and self-control, which are between-person effects. To test these expectations, we estimated the intercorrelations among the intercepts and slopes of cooperation and self-control in an unconditional bivariate LCM-SR (Curran et al., 2014). In addition, we expected positive relations between cooperation and self-control within each time point and positive bidirectional relations over time, which are the within-person effects. To test these expectations, we estimated the autoregressive paths within each construct, and cross-lagged paths between the residuals of cooperation and self-control in an unconditional bivariate LCM-SR (Curran et al., 2014). We set three equality constraints over time on the autoregressive paths, cross-lagged paths, and within wave correlations starting from fourth grade (Curran et al., 2014).

The second goal of this study was to examine the extent to which maternal and paternal sensitive and stimulating parenting in

early childhood were positively associated with children's cooperation and self-control. To test these expectations, we estimated a conditional bivariate LCM-SR by adding latent parenting variables to our prior unconditional bivariate LCM-SR. We created a latent variable from the observed scores of parenting in 54 months and first grade separately for each parent and tested direct paths from maternal and paternal parenting to the intercepts and slopes of cooperation and self-control. We also included gender, ethnicity, data collection site, and the average score of income-to-needs-ratio from age of first month to first grade as statistical control variables and controlled their effects on intercepts and slopes.

Under the second goal of this study, we expected that the strength of the relation between fathers' sensitivity and stimulation and children's cooperation and self-control would vary based on maternal sensitivity and stimulation. To test the moderating effects of mothers' parenting on the relations between fathers' parenting and children's development, we examined the interaction effects between mothers' and fathers' sensitive and stimulating parenting on the intercepts and slopes. We used the Xwith command in Mplus 8.3 with Random type and Integration algorithm (Muthén & Muthén, 2017).

### Missing Data Analyses

Approximately 99% of the analytic sample had observed mother- or father-child interaction data available at 54 months ( $N = 696$  of 705) and first grade ( $N = 695$ ). Across middle childhood, participants had cooperation or self-control data reported from mother, father, or teacher ( $N$ s ranged from 682 [97%] to 698 [99%]). Lastly, according to missing data analyses in the analytic sample (as shown in Table S1 in online supplemental materials), there were some differences on parenting, cooperation, and self-control variables between participants with complete data and those with missing data at each time point from 54 month to sixth grade. Although some of the effect sizes were moderate to large, these differences were not statistically significant. The moderate to large effect size might be because of the fact that less than 3% of the analytic sample had missing data at each wave. We handled missing data by using full information maximum likelihood robust standard error (MLR) estimation method (Enders, 2010; Muthén & Muthén, 1998-2017).

**Table 2**

*Bivariate Correlations Among Main Study Variables*

No.	Variables	1	2	3	4	5	6	7	8	9	10	11	12
1	Maternal parenting 54 months	—											
2	Paternal parenting 54 months	.22	—										
3	Maternal parenting first grade	.47	.27	—									
4	Paternal parenting first grade	.24	.43	.30	—								
5	Cooperation third grade <sup>a</sup>	.17	.11	.07	.16	—							
6	Cooperation fourth grade <sup>a</sup>	.16	.13	.15	.16	.72	—						
7	Cooperation fifth grade <sup>a</sup>	.15	.12	.12	.15	.65	.70	—					
8	Cooperation sixth grade <sup>a</sup>	.18	.14	.17	.14	.60	.70	.71	—				
9	Self-control third grade <sup>a</sup>	.22	.18	.20	.22	.60	.50	.39	.40	—			
10	Self-control fourth grade <sup>a</sup>	.20	.19	.24	.19	.49	.64	.46	.49	.72	—		
11	Self-control fifth grade <sup>a</sup>	.19	.18	.23	.22	.42	.46	.55	.42	.67	.71	—	
12	Self-control sixth grade <sup>a</sup>	.19	.19	.25	.22	.42	.49	.47	.60	.63	.69	.71	—

<sup>a</sup> Mean across mother, father, and teacher reports.  $.12 \leq r \leq .13$  at  $p < .01$ ,  $.13 < r$  at  $p < .001$ .

## Results

### Preliminary Analyses

Bivariate correlations among the main variables are presented in Table 2.

### Trajectories of Children's Cooperation and Self-Control in Middle Childhood

To examine the growth of cooperation and self-control, we first tested for invariance across time and the functional form of the change over time. Results revealed that cooperation and self-control evidenced strict invariance from third to sixth grade (see Table 3). As shown in Table 4, results also indicated that mean-level changes in children's cooperation and self-control were best characterized by linear growth (i.e., with intercepts and slopes).

The linear growth model showed that the mean intercept of children's cooperation in third grade fell close to the middle of the measurement scale and was significantly different from zero ( $M_{\text{intercept}} = 1.33$ ,  $SE = 0.01$ ,  $p < .001$ ;  $V_{\text{intercept}} = 0.05$ ,  $SE = 0.004$ ,  $p < .001$ ). Contrary to our expectation, children's cooperation did not significantly increase from third to sixth grade ( $M_{\text{slope}} = 0.002$ ,  $SE = 0.003$ ,  $p = .597$ ) though there was significant variability across children ( $V_{\text{slope}} = 0.002$ ,  $SE = 0.00$ ,  $p < .001$ ). Similarly, children's self-control in third grade fell near the middle of the measurement scale and was significantly different from zero ( $M_{\text{intercept}} = 1.45$ ,  $SE = 0.01$ ,  $p < .001$ ;  $V_{\text{intercept}} = 0.05$ ,  $SE = 0.003$ ,  $p < .001$ ). Consistent with our prediction, children's self-control evidenced a small, but statistically significant increases from third to sixth grade ( $M_{\text{slope}} = 0.01$ ,  $SE = 0.003$ ,  $p = .033$ ;  $V_{\text{slope}} = 0.001$ ,  $SE = 0.00$ ,  $p < .001$ ). Following steps outlined by Curran et al. (2014), we then included structured residuals and autoregressive paths into the linear LCMs.

To examine relation between cooperation and self-control, we estimated an unconditional bivariate LCM-SR. As shown in Figure 1, this model fit the data well:  $N = 705$ ,  $\chi^2(16) = 33.19$ ,  $p = .007$ , RMSEA (90% CI) = 0.039 (0.020, 0.058), CFI = 0.995, TLI = 0.991, SRMR = 0.054. One advantage of these models is that they separately test between-person and within-person effects. First, we start by explaining the between-person effects.

**Table 3**  
*Factorial Invariance Tests of Mother, Father, and Teacher-Reported Cooperation and Self-Control From Third to Sixth Grade*

Fit statistics	Configural invariance	Weak invariance	Strong invariance	Strict invariance
<b>Cooperation</b>				
$\chi^2(df)$	26.73 (30)	32.48 (36)	53.15 (42)	68.12 (51)
RMSEA	0.000	0.000	0.019	0.022
CFI	1.000	1.000	0.997	0.995
TLI	1.002	1.002	0.995	0.994
SRMR	0.019	0.023	0.026	0.048
$\Delta CFI$		0.000	0.003	0.002
<b>Self-control</b>				
$\chi^2(df)$	31.95 (30)	41.14 (36)	48.08 (42)	56.61 (51)
RMSEA	0.010	0.014	0.014	0.012
CFI	0.999	0.999	0.998	0.998
TLI	0.999	0.997	0.997	0.998
SRMR	0.015	0.029	0.033	0.048
$\Delta CFI$		0.000	0.001	0.000

*Note.* RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis index; SRMR = standardized root mean square residual.

The between-person effects include the relations between intercepts and slopes of children’s cooperation and self-control, which we expected would be positively related. In other words, we expected that children who had higher third grade cooperation, for example, would have higher self-control at third grade and larger increases in cooperation and in self-control from third to sixth grade compared with their peers. We found several significant relations between the intercepts and slopes. Contrary to our expectation, the intercept at third grade was negatively correlated with the slope from third to sixth grade within each construct; meaning that highly cooperative children

at third grade, for example, tended to show smaller growth in their cooperation skills from third to sixth grade ( $r = -.24, SE = 0.06, p < .001$ ). The same pattern emerged for children’s self-control ( $r = -.25, SE = 0.09, p = .003$ ). There were also several significant relations across constructs. Aligned with our expectation, children’s cooperation and self-control at third grade were positively correlated with each other suggesting that highly cooperative children tended to exhibit self-control as well ( $r = .70, SE = 0.03, p < .001$ ). The slopes for children’s cooperation and self-control were positively related ( $r = .79, SE = 0.16, p < .001$ ) suggesting that children who exhibited more growth in cooperation tended to exhibit more growth in self-control. Finally, children’s standing at third grade on one construct was negatively related to growth in the other construct over time ( $r_s = -.23$  and  $-.22$ ).

These models simultaneously estimate relations within individuals, or what are known as within-person effects. These effects address the extent to which an individual’s behavior at any one time point deviates from their typical average and the extent to which those deviations are related within an individual. For example, these within-person relations address if a child exhibited relatively high levels of cooperation at one grade level compared with their typical average, are they also likely to exhibit relatively high levels of self-control at the same grade level. We expected positive associations between cooperation and self-control within each time point and across time. Contrary to our expectations, the only relations that were statistically significant were the within wave correlations at each time point (see Figure 1) suggesting that when a child had high levels of cooperation at third grade compared with their typical average, they tended to have relatively high levels of self-control at third grade as well. The relations within each construct over time (i.e., the autoregressive paths) were not statistically significant (for self-control:  $\beta_s = 0.05$  to

**Table 4**  
*Model Fits: Functional Forms of the Change in Children’s Cooperation and Self-Control From Third to Sixth Grade*

Model	$\chi^2$	<i>df</i>	<i>p</i>	Scaling correction factor for MLR	Satorra-Bentler Scaled $\Delta\chi^2$	$\Delta df$	<i>p</i>	RMSEA	95% CI	CFI	TLI	SRMR
<b>Cooperation</b>												
No growth	59.121	11	.000	1.080	—	—	—	0.079	[0.060, 0.099]	0.961	0.979	0.111
Linear <sup>a</sup>	15.006	8	.059	1.074	43.553	3	.000	0.035	[0.000, 0.062]	0.994	0.996	0.085
Quadratic <sup>b</sup>	12.356	4	.015	0.998	3.291	4	.510	0.054	[0.022, 0.090]	0.993	0.990	0.076
<b>Self-control</b>												
No growth	39.173	11	.000	1.117	—	—	—	0.060	[0.041, 0.081]	0.976	0.987	0.059
Linear <sup>a</sup>	12.566	8	.128	1.124	26.979	3	.000	0.028	[0.000, 0.057]	0.996	0.997	0.080
Quadratic <sup>b</sup>	6.513	4	.164	1.123	6.044	4	.109	0.030	[0.000, 0.070]	0.998	0.997	0.021
<b>Linear models</b>												
	<i>M</i>	<i>SE</i>			Variance	<i>SE</i>						
<b>Cooperation</b>												
Intercept	1.33	(0.01)	.000		0.05	(0.004)	.000					
Linear slope	0.002	(0.003)	.597		0.002	(0.00)	.000					
<b>Self-control</b>												
Intercept	1.45	(0.01)	.000		0.05	(0.003)	.000					
Linear slope	0.01	(0.003)	.033		0.001	(0.00)	.000					

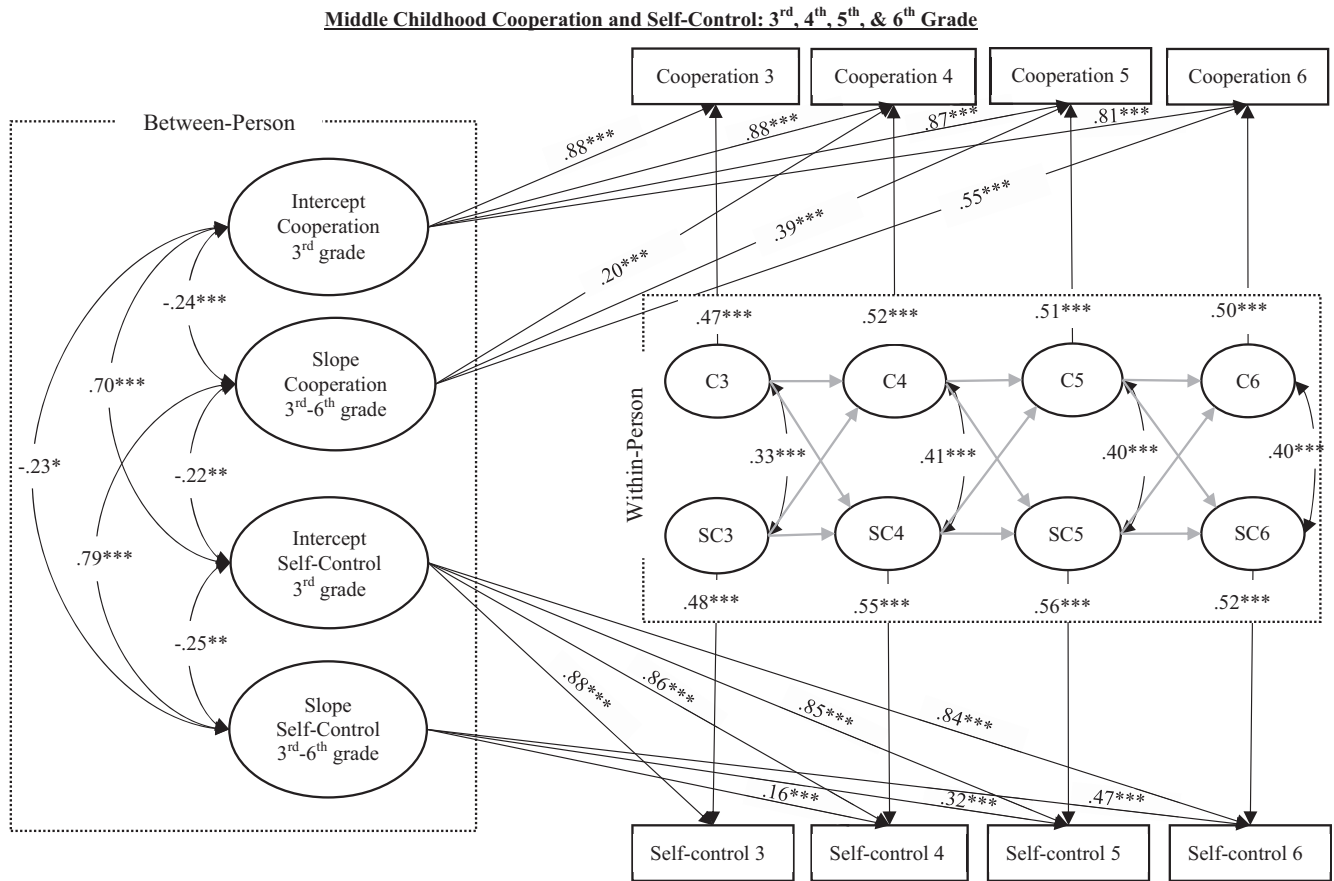
*Note.* *N* = 705. MLR = maximum likelihood robust standard error; CI = confidence interval; RMSEA = root mean square error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis index; SRMR = standardized root mean square residual.

<sup>a</sup> Linear model was selected based on Satorra-Bentler Scaled  $\chi^2$  difference test (Satorra & Bentler, 2010), overall model fit indices (Hu & Bentler, 1999), and the statistical significance of the means and variances of the intercepts and slopes (Grimm et al., 2017). <sup>b</sup> When we tested quadratic functions, *Mplus* created a warning message related to slopes indicated “a negative variance/residual variance for a latent variable, a correlation greater or equal to one between two latent variables, or a linear dependency among more than two latent variables”.



**Figure 1**

Unconditional Bivariate Latent Curve Model of Cooperation and Self-Control With Structured Residuals in Middle Childhood



Note. Model fit the data well:  $N = 705$ ,  $\chi^2(16) = 33.19$ ,  $p = .007$ , root mean square error of approximation (RMSEA; 90% confidence interval: CI = 0.039 [0.020, 0.058]), comparative fit index (CFI) = 0.995, Tucker-Lewis index (TLI) = 0.991, standardized root mean square residual (SRMR) = 0.054. We set intercepts at third grade. Only significant standardized estimates are shown. Faded paths were not significant. \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

0.06,  $SEs = 0.07$  to  $0.08$ ,  $ps = .455$  to  $.464$ ; for cooperation:  $\beta_s = -0.07$ ,  $SEs = 0.06$  to  $0.07$ ,  $ps = .277$  to  $.288$ ) suggesting that a child's high level of self-control at one grade level was not linked to their relatively higher level of self-control at the next grade level. The interpretation is similar for cooperation. In addition, the relations between cooperation and self-control over time (i.e., the bidirectional cross-lagged paths) were not statistically significant either (i.e., the relations from cooperation to self-control:  $\beta_s = -0.05$ ,  $SEs = 0.05$ ,  $ps = .320$  to  $.331$ ; from self-control to cooperation:  $\beta_s = -0.01$ ,  $SEs = 0.05$  to  $0.06$ ,  $ps = .875$ ) suggesting that a child's level of cooperation at one grade relative to their underlying level of cooperation was not related to levels of self-control at a subsequent grade relative to underlying levels of self-control (or vice versa).

### Relations Between Parenting and Children's Developmental Trajectories

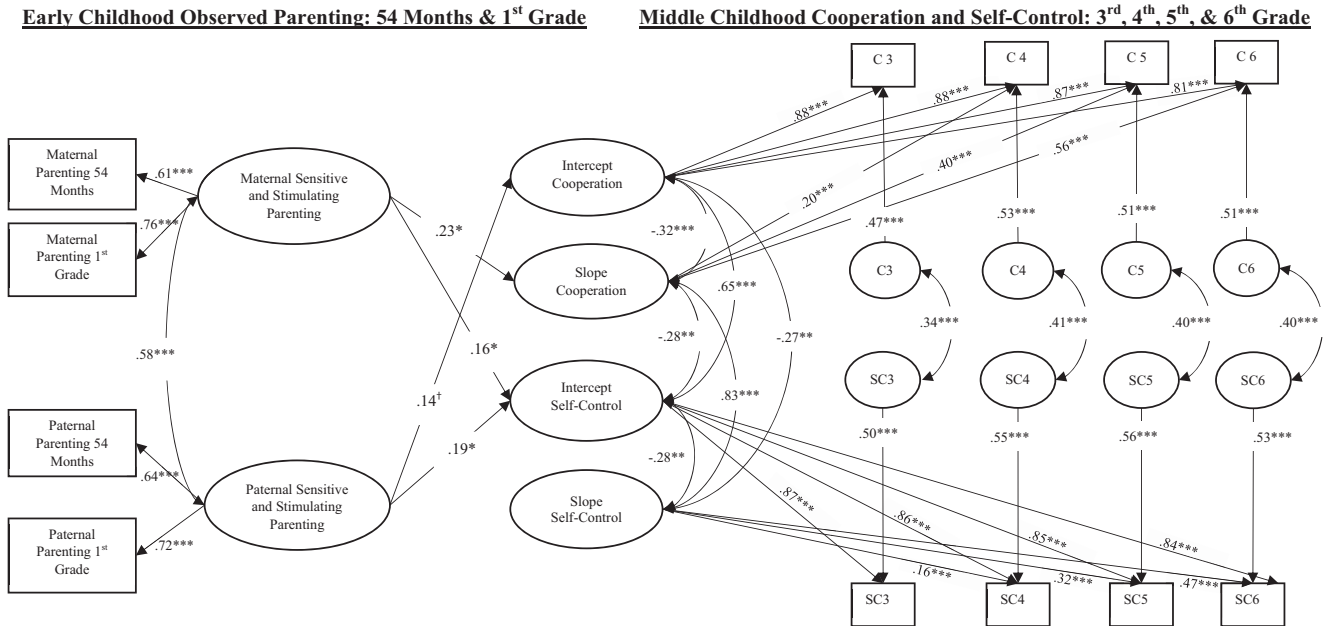
We expected positive relations between mothers' and fathers' sensitive and stimulating parenting and their children's coopera-

tion and self-control during middle childhood. To test this expectation, we estimated the conditional LCM-SR shown in Figure 2 (see Table S2). The model fit the data well:  $N = 702$ ,  $\chi^2(153) = 337.76$ ,  $p < .001$ , RMSEA (90% CI) = 0.041 (0.036, 0.047), CFI = 0.958, TLI = 0.936, SRMR = 0.058. Maternal and paternal parenting were positively related to each other ( $r = .58$ ,  $SE = 0.05$ ,  $p < .001$ ). Maternal parenting was positively related to the intercept of self-control at third grade ( $\beta = 0.16$ ,  $SE = 0.07$ ,  $p = .036$ ) and the slope of cooperation from third to sixth grade ( $\beta = 0.23$ ,  $SE = 0.12$ ,  $p = .049$ ). In addition, paternal parenting was positively related to the intercept of children's self-control ( $\beta = 0.19$ ,  $SE = 0.07$ ,  $p = .010$ ) and cooperation ( $\beta = 0.14$ ,  $SE = 0.08$ ,  $p = .072$ , at trend level). Maternal and paternal parenting during early childhood were not related to the slope of self-control.

We also expected that mothers' parenting would moderate the associations between fathers' parenting and children's cooperation and self-control. To test this expectation, we estimated the interaction effects between mothers' and fathers' parenting on the intercepts and slopes. The interaction between mothers' and fa-

**Figure 2**

*Bivariate Latent Growth Curve Model of Cooperation and Self-Control With Structured Residuals in Middle Childhood and the Role of Maternal and Paternal Parenting in Early Childhood*



*Note.* Model fit the data well:  $N = 702$ ,  $\chi^2(153) = 337.76$ ,  $p < .001$ , root mean square error of approximation (RMSEA; 90% confidence interval: CI = 0.041 [0.036, 0.047]), comparative fit index (CFI) = 0.958, Tucker-Lewis index (TLI) = 0.936, standardized root mean square residual (SRMR) = 0.058. We set intercepts at third grade. Children's gender (female is the reference group), ethnicity (White, Hispanic, Black, and Other with White as the reference group), the average score of income-to-needs ratio from first-month to first-grade, and data collection site (nine dummy coded variables created) were controlled on intercepts and slopes, but not depicted in the figure for simplicity reason. Only significant standardized estimates are shown from the model not including the interaction. C = cooperation; SC = self-control.

†  $p = .07$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

thers' parenting was not statistically significantly linked to the intercept or the slope of children's cooperation ( $\beta = 0.07$ ,  $SE = 0.05$ ,  $p = .137$ ;  $\beta = 0.07$ ,  $SE = 0.08$ ,  $p = .406$ , respectively) or self-control ( $\beta = -0.01$ ,  $SE = 0.04$ ,  $p = .849$ ;  $\beta = 0.07$ ,  $SE = 0.17$ ,  $p = .657$ , respectively) during middle childhood suggesting that the associations between fathers' parenting and children's cooperation and self-control did not vary by mothers' parenting.

## Discussion

The two primary goals of this study were to examine (a) the developmental trajectories of and bidirectional relations between cooperation and self-control during middle childhood and (b) the extent to which maternal and paternal sensitive and stimulating parenting in early childhood was associated with children's cooperation and self-control during middle childhood. We found that children's self-control evidenced mean-level increases from third to sixth grade, but that children's cooperation evidenced mean-level continuity during this period though there was significant variability across children. In addition, cooperation and self-control in third grade, as well as growth from third to sixth grade, were related to each other and indicated that the development of cooperation and self-control unfold together over time. We also found that maternal and paternal parenting in early childhood were positively linked in an additive way, but not in an interactive way,

to children's cooperation and self-control during middle childhood. Specifically, maternal and paternal parenting in early childhood were positively linked to children's initial levels of self-control at third grade, and paternal parenting was also related to children's cooperation in third grade. In addition, maternal parenting was positively associated with the growth (or linear slope) of cooperation from third to sixth grade. These findings shed light on the developmental processes of and the relations between cooperation and self-control in middle childhood and emphasize the importance of sensitive and stimulating maternal and paternal parenting in early childhood for fostering cooperation and self-control through middle childhood.

## Developmental Trajectories of Self-Control and Cooperation

Children's self-control in this study increased during middle childhood. These small mean-level changes are consistent with prior research showing that relatively small yet steady increases may be observed for children's self-control during middle childhood to early adolescence (Holmes et al., 2019), as opposed to the much more rapid growth observed from early- to middle-childhood (Vazsonyi & Jiskrova, 2018). This finding highlights the importance of continuing to foster the development of self-control during middle childhood.

In contrast, children's cooperation in this study evidenced developmental mean-level continuity during middle childhood. Our finding is somewhat inconsistent with prior findings showing linear growth or mean-level changes from childhood to early adolescence (e.g., Malti et al., 2016), possibly because previous studies examined the development of children's cooperation during a larger developmental window, namely from kindergarten (age 6) to seventh grade (age 12). Moreover, the few previous studies that have examined children's developmental trajectories of cooperation were conducted in cultures different than the United States (see Malti et al., 2016 for Swiss children; Takahashi et al., 2015 for young Japanese children). Given the significant cultural group differences in children's cooperation (Knight & Carlo, 2012), development of children's cooperation may partially reflect the dominant values in one's culture where they place strong emphasis on cooperation versus competition (Triandis, 1995). Thus, the differences in findings between our study and prior studies may indicate a differential growth phenomenon of cooperation across cultures. Future studies are warranted to further investigate potential cultural influences on the developmental trajectories of cooperation during middle childhood.

Another reason that others have found growth in cooperation during middle childhood and we did not may be because of the different reporters used. As Fabes and Eisenberg (1998) noted in their meta-analytic review, growth in children's prosocial behavior, which includes cooperation, over time may differ depending on the methodology used. Previous longitudinal studies of cooperation have mostly relied on maternal reports. Perhaps, increases in mothers' reports of children's cooperation over time may reflect mothers' tendency to give socially desirable responses (Bornstein et al., 2015). The lack of mean-level changes in cooperation with our multi-informant measure may represent a broader, more comprehensive developmental picture of children's cooperation.

One of the notable contributions of this study is the detailed findings on the relations between cooperation and self-control. In general, children who had stronger third grade cooperation were also likely to have stronger third grade self-control. Further, children who had higher increases in cooperation from third to sixth grade were also likely to have higher increases in their self-control over time. These relations focus on the associations between individual differences in children's cooperation and self-control (that are between-person effects). These positive associations are consistent with theories which posit that cooperation and self-control are two interrelated dimensions of social emotional development and learning (Lickona & Davidson, 2005; Weissberg et al., 2015). Grounded in theory (e.g., Eisenberg et al., 2015; Weissberg et al., 2015) and prior empirical evidence (e.g., Carlo et al., 2012; Laible et al., 2014), our findings portray the developmental interrelations of cooperation and self-control in middle childhood.

However, contrary to our expectation, children who had higher levels of self-control or cooperation at third grade typically experienced smaller increases in those behaviors from third to sixth grade. In addition to these within-construct relations, we also observed negative relations between intercepts and slopes across the constructs; for example, children with high initial self-control had slower growth in cooperation compared with children with low initial self-control. Prior research using mother reports of self-control (from age 4.5 to

10.5 years) in the same data set (Vazsonyi & Huang, 2010) and other research using the average score of mother and child self-report of effortful control (from third to fifth grade) in different data sets (King et al., 2013) reported nonsignificant correlations between the initial status and growth rate. However, consistent with our findings, prior research using mother reports of Swiss children's cooperation reported negative correlations between the initial status and growth rate (see Malti et al., 2016). One possibility is that there is a ceiling effect in which children who are thriving in their self-control or cooperation during this period are less likely to show changes. However, it is important to note that there was ample variance in the sample, indicating that there are some youth who still had room for growth and would benefit from the nurturance of these skills during middle childhood. Thus, examining mean-level changes across a sample of children that is largely thriving in cooperation and self-control may limit our abilities to detect the growth of those who have more room to enhance their social skills during this period. Future research is needed to look at children below a certain cooperation and self-control threshold at third grade separately from those who are above this threshold to further examine these relations in a larger sample. The other possibility is that this may be because of the measurement strategies we used. Although measurement of children's cooperation and self-control were drawn on three independent reports, parents and teachers reported children's cooperation and self-control using the same instrument but different subscales. Future research using different measurement strategies (e.g., observations) or multimethod approaches will be helpful.

Contrary to our expectation, we did not find significant relations from 1 year to the next within cooperation, within self-control, or between cooperation and self-control. The only within-person relations between cooperation and self-control that were significant were the within wave correlations between cooperation and self-control. The significant within-wave relations between cooperation and self-control suggest that if a child exhibited relatively high levels of cooperation at one grade level compared with their typical average, they were also likely to exhibit relatively high levels of self-control at the same grade level. The nonsignificant autoregressive paths within self-control and within cooperation over time suggest that a child's level of self-control at one grade level was not linked to their relatively higher level of self-control at the next grade level. Further, no significant bidirectional relations between cooperation and self-control were found within-person suggesting that deviations from a child's typical level of cooperation at one grade was not related to deviations from their typical level self-control at a subsequent grade (or vice versa). These within-person findings suggest that children's cooperation may not be heavily driven by self-control from 1 year prior, but rather it might be related to the current manifestations of these social skills. This might be true for self-control as well; that is, children's self-control might be related to the current manifestations of cooperation rather than cooperation 1 year prior. Consistent with previous research, within-person effects may not always be present even when there are between-person effects (see Berry & Willoughby, 2017). Thus, our findings suggest that cooperation and self-control are related and develop together during middle childhood when assessed between-person; however, their growth within-person may be driven by another common underlying factor but, not each other, such as parenting behaviors.

## Maternal and Paternal Parenting and Trajectories of Cooperation and Self-Control

Building on previous research (NICHD Early Child Care Research Network, 2004, 2008; Webster et al., 2013), the second goal of this study was to examine the extent to which maternal and paternal sensitivity and stimulation in early childhood was associated with children's development of cooperation and self-control during middle childhood. As two important parenting processes (e.g., Belsky et al., 2007; Hirsh-Pasek & Burchinal, 2006; NICHD Early Child Care Research Network, 2005a, 2005b), maternal and paternal sensitive and stimulating parenting were related to children's cooperation and self-control at third grade in three out of the four associations. More specifically, we found that higher maternal and paternal parenting in early childhood was linked to higher initial levels of self-control at third grade, and paternal parenting was also related to children's cooperation at third grade. One potential reason is that mothers and fathers with higher levels of sensitivity and stimulation in early childhood are likely to be warm and supportive, respect children's autonomy, encourage and help their children to complete tasks, and provide constructive feedback (Grolnick et al., 2019; Hirsh-Pasek & Burchinal, 2006). These positive qualities of parenting facilitate children's intrinsic motivation and foster more volitional self-control and cooperation (Grolnick et al., 2019).

Only higher maternal sensitivity and stimulation was linked to greater increases in children's cooperation from third to sixth grade. Together, our findings suggest that mothers' parenting in early childhood may promote the continued development of their children's cooperation during middle childhood. This result may be because mothers, who are typically the primary caregiver, have greater overall involvement in their children's lives than fathers, and greater nurturance and caregiving roles (Cabrera et al., 2014; Parke & Cookstone, 2019), which, consequently, provide more opportunities to model and support children's development of cooperative behaviors. Paternal parenting, on the other hand, was positively related to children's cooperation and self-control at third grade, but not changes from third to sixth grade. This finding may be because of fathers' less involvement in children's life compared with mothers' overall involvement (Cabrera et al., 2014; Parke & Cookstone, 2019), which may reduce fathers' opportunities for supporting the continued development of their children's cooperation and self-control during middle childhood. Another potential reason is that the frequency of fathers' physical play with their children declines over time (Parke & Cookstone, 2019); perhaps because of this decline, paternal parenting was linked to children's cooperation and self-control at third grade, but not the development over time.

Although we found that maternal and paternal parenting were each associated with children's cooperation and self-control, the interaction between maternal and paternal parenting was not significant. These findings suggest that maternal and paternal sensitive and stimulating parenting work in an additive way and that they are not contingent upon each other in associations with third grade cooperation and self-control and the growth through sixth grade. These findings did not provide support for the assertion that associations between fathers' behaviors and children's adjustment varies based on mothers' behaviors (Cabrera et al., 2014). Overall, these findings highlight the contributions of both fathers and mothers in fostering children's cooperation and self-control.

## Limitations and Conclusion

This study has several limitations. First, the study sample is primarily White from middle income households. Future studies will be needed with diverse (e.g., race and ethnicity, family income) samples. Second, although we were able to draw on multiple informants to establish a more comprehensive indicator of cooperation and self-control, only the SSRS was administered to assess cooperation and self-control. Future research will be needed to use different measurement strategies (e.g., observations). Third, although we statistically controlled for the effects of several key variables in our analyses, there might be some other unidentified factors that should be considered in future studies to reduce omitted variable bias. Fourth, given the availability of measures in the dataset, we used 54 month and first grade observed sensitivity and stimulation as an indicator of early childhood parenting, and tested the trajectories of cooperation and self-control in middle childhood from third to sixth grade. Future studies will be needed to incorporate more time points of parenting, cooperation, and self-control in both early and middle childhood. Fifth, data collection took place in the mid to late 1990s and early 2000s. Though the child participants now are only in their late 20s, cohort effects could influence the results as in any long-term longitudinal study. There also has been substantial research spanning decades that support the importance of these parenting factors for promoting healthy development.

Despite these limitations, these findings shed light on the developmental processes of cooperation and self-control during middle childhood and highlight the additive role of mothers and fathers on children's development of cooperation and self-control. Notably, our findings emphasize the importance of sensitive and stimulating maternal and paternal parenting in early childhood for nurturing cooperation and self-control through middle childhood, as it is an important period of development to master these social skills and there was substantial variability in the current sample. Our findings can inform prevention and intervention programs that aim to promote sensitive and stimulating parenting in early childhood and ultimately foster children's cooperation and self-control during middle childhood, particularly for children who are lagging behind their peers. Further, prevention and intervention programs that aim to foster self-control will be helpful in concurrently fostering cooperation and vice versa.

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