

## Regular Article

# Self-control and cooperation in childhood as antecedents of less moral disengagement in adolescence

Zehra Gülseven<sup>1</sup> , Mark Vincent B. Yu<sup>2</sup> , Nicole Zarrett<sup>3</sup> , Deborah Lowe Vandell<sup>1</sup>  and Sandra D. Simpkins<sup>1</sup> 

<sup>1</sup>School of Education, University of California, Irvine, CA, USA; <sup>2</sup>McREL International, Honolulu, HI, USA and <sup>3</sup>Department of Psychology, University of South Carolina, Columbia, SC, USA

### Abstract

Moral disengagement is a social cognition people use to engage in wrongdoings even when they know it is wrong. However, little is known about the antecedents that predict moral disengagement. The current study focuses on the development of self-control and cooperation during middle childhood as two antecedents of moral disengagement among 1,103 children (50% female; 77% White, 12% Black, 6% Hispanic, and 5% other). Children's self-control at age 8 and growth in self-control from age 8 to 11 were positively linked to adolescents seeing themselves as having self-control at age 15, which then predicted less moral disengagement at age 18. Children's cooperation at age 8 also was positively linked to adolescents' self-views of cooperation at age 15, which in turn, was associated with less moral disengagement at age 18. These findings demonstrate the potential of self-control and cooperation as intrapersonal and interpersonal strengths during middle childhood for mitigating moral disengagement 10 years later.

**Keywords:** cooperation, moral development, moral disengagement, self-control

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Being able to distinguish right from wrong does not always mean that people behave accordingly (Bussey, 2020). People sometimes engage in wrongdoings in everyday situations even when they know it is wrong. Bandura (1991a) labeled this social cognitive process of engaging in wrongdoings while maintaining a view of oneself as a moral person, and using various reasoning mechanisms to justify these wrongdoings, as *moral disengagement*. Although youth's moral disengagement is concerning in its own right, it is also linked to elevated problem behavior (e.g., aggression and violence; Ettekal & Ladd, 2020; Gini, Pozzoli, & Hymel, 2014; Paciello, Fida, Tramontano, Lupinetti, & Caprara, 2008; Sijtsema, Rambaran, Caravita, & Gini, 2014) and less prosocial behavior (e.g., helping and volunteering; Bandura, Caprara, Barbaranelli, Pastorelli, & Regalia, 2001; Hardy, Bean, & Olsen, 2015; Paciello, Fida, Cerniglia, Tramontano, & Cole, 2012). However, relatively few studies have examined the developmental antecedents of moral disengagement.

Social cognitive theory has argued that morality is grounded in two processes: (a) self-regulatory mechanisms such as self-control and (b) positive social interactions such as cooperation (Bandura, 1991a). The current study seeks to test these propositions in social cognitive theory by considering the development of self-control and cooperation during middle childhood as two separate

antecedents of moral disengagement. In addition, the developmental cascade framework (Dodge et al., 2009; Masten & Cicchetti, 2010) suggests that children's developing competencies (e.g., self-control or cooperation) support their adaptive functioning later in life. Guided by social cognitive theory and a developmental cascade framework, and using longitudinal data from the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development (SECCYD), we examined how children's initial levels and growth in self-control during middle childhood as reported by parents and teachers predict the extent to which youth internalize these strengths and view themselves as exhibiting self-control in middle adolescence, which then predicts less moral disengagement in late adolescence. Likewise, to identify the potential cascading effects of early positive social interactions, we examined how children's initial level and growth in cooperation during middle childhood as reported by parents and teachers predicts youth's internalized views of being cooperative in middle adolescence and is linked to less moral disengagement in late adolescence.

### Moral Disengagement and Its Antecedents

Moral disengagement involves selective deactivation of regulatory mechanisms and moral standards due to situational pressures, resulting in individuals with internalized moral values sometimes engaging in wrongdoings (Bandura, 1991a; Bandura, Barbaranelli, Caprara, & Pastorelli, 1996; Bussey, 2020). When individuals morally disengage, they detach from their moral standards but preserve a view of the self as a moral person. To preserve that positive view,

**Author for Correspondence:** Zehra Gülseven, School of Education, University of California, Irvine, 3200 Education Irvine, CA 92697-5500, USA. E-mail: [gulseven@uci.edu](mailto:gulseven@uci.edu)

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individuals use various mechanisms to justify their wrongdoings to avoid moral emotions (e.g., guilt, shame) or self-sanctions, such as moral justification (e.g., “It is alright to fight to protect your friends”), advantageous comparison (e.g., “Damaging some property is no big deal when you consider that others are beating people up”), and displacement of responsibility (e.g., “If kids are living under bad conditions they cannot be blamed for behaving aggressively”) (Bandura *et al.*, 1996, p. 374). Although there is some evidence of longitudinal relations between reports of empathy/prosociality at age 12 and less moral disengagement among 15-year-old youth (Hyde, Shaw, & Moilanen, 2010) and concurrent relations between reports of self-regulatory efficacy and less moral disengagement among 11-year-old children (Bandura *et al.*, 2001), longitudinal studies of the developmental antecedents of less moral disengagement during adolescence are scarce.

According to social cognitive theory and value internalization models more broadly, the childhood years are characterized by a transition from externally oriented to internally oriented values and behaviors (Bandura, 1991a; Grolnick, Deci, & Ryan, 1997; Hoffman, 1977). Children first comply with their parents’ or other socialization agents’ moral values and then, through a process of internalization, they gradually accept those moral values and integrate them as part of the self (Grusec & Goodnow, 1994; Kochanska, 2002a, 2002b). During this internalization process, socialization agents express beliefs about children’s self-control and cooperation abilities, expectancies, and values, and support children’s autonomy (Eccles, 1993; Grolnick *et al.*, 1997). In line with this view, it is important to understand the extent to which parents and teachers, who are central adults in children’s lives, believe children possess self-control and cooperate with others. According to theory, children should gradually internalize others’ beliefs about their self-control and cooperation abilities, expectancies, and values into their sense of self, viewing themselves as individuals who have these strengths that they can draw on in the future. By the time children reach adolescence, they have more internalized moral values and personal standards, have become more principled in their moral understanding, are more caring and sensitive to others’ needs, and have a mature moral self/identity (Eisenberg, 1986; Hardy & Carlo, 2011; Hart & Carlo, 2005). Therefore, we first consider the degree to which parents’ and teachers’ views of children’s self-control and cooperation from middle childhood are internalized during middle adolescence by examining whether parents’ and teachers’ reports of self-control and cooperation during middle childhood are linked to youth’s internalized views of self-control and cooperation in middle adolescence.

Guided by the developmental cascade framework, we then consider whether adolescents’ reports of self-control and cooperation provide a foundational set of assets or skills that support less moral disengagement later in adolescence. The developmental cascade model (Dodge *et al.*, 2009; Masten & Cicchetti, 2010) builds on social cognitive theory and value internalization models by arguing that “competence begets competence as the skills formed in one period of development become the tools for achieving success in the future” (Masten, Desjardins, McCormick, Kuo, & Long, 2010, p. 680). The competencies individuals develop in one area (e.g., self-control or cooperation) support their continued development not just in that area but more broadly (Dodge *et al.*, 2009; Masten & Cicchetti, 2010). Moreover, development of competencies is cumulative over time (Dodge *et al.*, 2009; Masten & Cicchetti, 2010) and, as a result, scholars need to examine how the development of competencies over time is associated with later adjustment.

The tenets of the developmental cascade model support Bandura’s (1991a) argument that both self-regulatory mechanisms and relational processes might predict the frequency of youth’s subsequent moral disengagement. Middle childhood is an important time for the development of self-control and cooperation that sets the stage for internalization of these strengths and moral development (Bandura, 1991a; Eisenberg, Spinrad, & Knafo-Noam, 2015; Hardy & Carlo, 2011). These strengths can help adolescents navigate new autonomous environments as they spend increasing time away from parents or other adults, which often necessitates adolescents making several moral decisions on their own (Hart & Carlo, 2005). Moreover, because adolescents’ increased willingness to engage in risky behaviors often brings new moral challenges (Gardner & Steinberg, 2005; Hart & Carlo, 2005), these strengths help adolescents stay on the moral path. Thus, this necessitates understanding the development of self-control and cooperation during middle childhood, prior to adolescence.

### *Self-control*

Bandura (1991b) argued that self-regulatory mechanisms (e.g., self-control) form the basis of purposeful behaviors. In the current study, self-control is defined as individuals’ volitional control of their behavior, emotion, attention, and impulses in social interactions. According to social cognitive theory (Bandura, 1991b), moral self-regulation works through three subfunctions: self-monitoring, judgment, and self-reactions. First, to have successful self-control, individuals need to closely monitor, evaluate, and pay attention to their behaviors, and understand motivations behind their behaviors and reactions in particular situations. Second, individuals need to judge their behaviors based on their internalized moral values and standards. The judgment subfunction plays a major role in self-control and helps to keep behaviors consistent with internalized moral values and personal standards. Third, self-reactions regulate behaviors, helping individuals to behave in ways that bring positive self-reactions and avoid behaving in ways that bring self-censure (Bandura, 1991b, pp. 249–257). Consequently, when youth have strong self-control skills, they are equipped with the necessary tools to resist social pressures to morally disengage and “behave in ways that violate their standards” (Bandura, 1991a, p. 69). Prior research has shown that self-regulation promotes prosocial behaviors and inhibits aggression and rule-breaking behaviors concurrently and longitudinally among adolescents (e.g., Hardy *et al.*, 2015; Padilla-Walker, Harper, & Jensen, 2010) and self-regulatory efficacy concurrently predicts less moral disengagement among children (Bandura *et al.*, 2001). To our knowledge, however, there is no prior work that has examined the predictive role of self-control on moral disengagement.

Self-control develops through childhood and adolescence. In previous studies utilizing the NICHD SECCYD data set, increases in self-control were found between 8 and 15 years (Holmes, Briant, Kahn, Deater-Deckard, & Kim-Spoon, 2019), between 4.5 and 15 years (Vazsonyi & Huang, 2010; Vazsonyi & Jiskrova, 2018), and between 8 and 11 years (Gülseven *et al.*, 2021). Other research using other data sets has also shown growth in children’s effortful control and decreases in impulsivity from 3rd to 5th grade (King, Lengua, & Monahan, 2013). Based on theory (e.g., Bandura, 1991a; Grolnick *et al.*, 1997; Masten & Cicchetti, 2010) and the prior work (e.g., Gülseven *et al.*, 2021; King *et al.*, 2013; Vazsonyi & Jiskrova, 2018), we hypothesized both the overall level (i.e., intercept) and the growth (i.e., slope)

of self-control as reported by parents and teachers during middle childhood would be linked to self-reports of self-control in middle adolescence and then to less moral disengagement in late adolescence.

### Cooperation

Cooperation has been defined as a type of prosocial behavior that involves coordinating and collaborating actions for the concurrent benefit of self and others (Eisenberg & Miller, 1987). Developmental scholars suggest that successful cooperation involves individuals balancing their own needs and self-interests with others' needs and interests (Killen & Smetana, 2015; Vaish & Tomasello, 2014). Because cooperation and prosocial behaviors more broadly are care-based behaviors (Carlo, 2006), these behaviors ascribe responsibility toward others and motivate individuals to consider the consequences of their acts on others (Colby & Damon, 1992). However, when individuals morally disengage in daily life, they engage in behaviors that meet their own needs and self-interest while bringing negative consequences to others (Bandura, 2002). Therefore, because cooperation involves balancing self-interest and selfish needs with others' interests and needs, we hypothesize that the development of cooperative behaviors during middle childhood can function to reduce selfish motives associated with moral disengagement. Although previous research has examined the protective roles of prosocial behaviors more broadly against aggressive and antisocial conduct (Caprara et al., 2014; Carlo et al., 2014), to our knowledge, there is no prior work that has examined the predictive role of cooperation on reducing moral disengagement.

Developmental scholars suggest that cooperation and prosocial behavior more broadly develop throughout childhood and adolescence (Eisenberg et al., 2015). This research suggests increases in children's cooperation from early childhood to early adolescence (Malti et al., 2016; Takahashi, Okada, Hoshino, & Anme, 2015; see Gülseven et al., 2021 for mean-level continuity during middle childhood with significant variability across children). Based on theory (e.g., Bandura, 1991a; Grolnick et al., 1997; Masten & Cicchetti, 2010) and the prior work (e.g., Malti et al., 2016; Takahashi et al., 2015), we ask if the overall level (i.e., intercept) and the growth (i.e., slope) of children's cooperation as reported by parents and teachers during middle childhood are linked to youth's self-views of their cooperation in middle adolescence and then to less moral disengagement in late adolescence.

### Present Study and Hypothesis

Social cognitive theory suggests that self-control and cooperation represent two separate developmental processes that help individuals to stay on the moral path, including exhibiting less moral disengagement (Bandura, 1991a). For this reason, in the current study, we examined these two processes as separate antecedents of moral disengagement. In addition, developmental cascade models suggest that development in one area supports their continued development in that area as well as more broadly (Dodge et al., 2009; Masten & Cicchetti, 2010). Guided by these tenets, the development of children's self-control and cooperation in middle childhood as viewed by parents and teachers is expected to be related to adolescents' internalization or self-views of their self-control and cooperation, which, in turn, will be related to their subsequent moral disengagement. Several developmental theories

suggest that children shift from externally oriented to internally oriented moral values and behaviors from childhood to adolescence (e.g., Bandura, 1991a; Grolnick et al., 1997; Hart & Carlo, 2005; Hoffman, 1977). Specifically, we expected that children's initial level of self-control at age 8 and growth from age 8 to age 11 would be positively related to youth's self-views of their self-control at age 15, which in turn, would be linked to less moral disengagement at age 18 (Hypothesis 1). In addition, we expected that children's initial level of cooperation at age 8 and growth from age 8 to age 11 would be positively related to youth's self-views of their cooperation at age 15, which in turn, would be linked to less moral disengagement at age 18 (Hypothesis 2).

We make use of a large, multisite prospective longitudinal study, the NICHD SECCYD, to test these hypotheses. This data set is ideal for the purpose of this study because multiple respondents (mothers, fathers, teachers) reported children's self-control and cooperation at four consecutive years during middle childhood (age 8, 9, 10, and 11) enabling us to examine how key adults in children's lives view the development of self-control and cooperation during middle childhood. Although some previous research using the NICHD SECCYD data set studied the trajectories of self-control in relation to problem behavior (Holmes et al., 2019; Vazsonyi & Huang, 2010; Vazsonyi & Jiskrova, 2018) and examined the relations between the trajectories of self-control and cooperation with relations to early parenting behaviors (Gülseven et al., 2021), the current study extends the literature by examining the relations between the trajectories of self-control and cooperation and later moral disengagement.

In addition, previous studies have typically relied on single reporters (usually mothers) or averaged mothers' and fathers' scores or mothers' and children's scores (e.g., Holmes et al., 2019; King et al., 2013; Vazsonyi & Jiskrova, 2018). Our model inclusion of multiple respondents (mothers, fathers, and teachers) during middle childhood captures a broader perspective on the development of children's self-control and cooperation in multiple contexts (i.e., home and school) using a second-order latent growth curve model (LGCM; see Gülseven et al., 2021 for inclusion of multiple respondents). One advantage of this approach is that it allows us to estimate latent constructs of self-control and cooperation and lessens bias associated with using a single reporter (Grimm, Ram, & Estabrook, 2017; Little, 2013).

## Method

### Participants

In 1991, a total of 1,364 children and their parents (48% female; 76% White, 13% Black, 6% Hispanic, and 5% other) were recruited at 10 different locations in the United States (for complete study information, see <https://www.nichd.nih.gov/research/supported/seccyd/overview>; NICHD Early Child Care Research Network, 2005). In the present analyses, we used data from birth to age 18, which was collected at the end of high school. Of the 1,364 children and parents, a total of 1,103 children were included in current analyses (50% female; 77% White, 12% Black, 6% Hispanic, and 5% other; mean income to needs ratio = 3.60,  $SD = 2.64$ ).

### Measures

Mothers, fathers, and teachers reported children's self-control and cooperation at age 8, 9, 10, and 11 (in 3rd, 4th, 5th, and 6th

grades). Adolescents self-reported their self-control and cooperation at age 15 (beginning of high school), and they self-reported moral disengagement at age 18 (end of high school). Child- and family-level covariates were collected when study children were 1 month of age through 72 months.

#### Self-control

When children were 8, 9, 10, and 11 years of age, mothers, fathers, and teachers reported children's self-control (10 items; e.g., "Control temper in conflict situation") using the social skills rating system (Gresham & Elliott, 1990). All items were rated using a 3-point scale (0 = *never*, 1 = *sometimes*, and 2 = *very often*). We calculated the mean scores of children's self-control separately for mothers, fathers, and teachers, with higher scores indicating a stronger affinity to demonstrate self-control. Cronbach's alpha reliability coefficients ranged from .81 to .83 for mothers, from .81 to .86 for fathers, and from .88 to .89 for teachers.

Adolescents self-reported their self-control (10 items; "Control temper when people are angry") at age 15 using a modified version of the social skills rating system (Gresham & Elliott, 1990) that consisted of 10 items and were rated using a 3-point scale (0 = *never*, 1 = *sometimes*, and 2 = *very often*). We calculated the mean scores of self-control (Cronbach's alpha was .73). One item from the self-control subscale was omitted from analyses due to low inter-item correlation.

#### Cooperation

When children were 8, 9, 10, and 11 years of age, mothers, fathers, and teachers reported children's cooperation (10 items; "Helps with tasks without being asked") using the social skills rating system (Gresham & Elliott, 1990) on a 3-point scale (0 = *never*, 1 = *sometimes*, and 2 = *very often*). We calculated the mean scores of children's cooperation separately for mothers, fathers, and teachers, with higher scores indicating a stronger affinity to demonstrate cooperation. Cronbach's alpha reliability coefficients ranged from .79 to .81 for mothers, from .79 to .82 for fathers, and from .90 to .92 for teachers.

Adolescents self-reported their cooperation (10 items; "Listen to adults when talking") at age 15 using a modified version of the social skills rating system (Gresham & Elliott, 1990) that consisted of 10 items and were rated using a 3-point scale (0 = *never*, 1 = *sometimes*, and 2 = *very often*). We calculated the mean scores of cooperation (Cronbach's alpha was .79). One item from the cooperation subscale was omitted from analyses owing to low inter-item correlation.

#### Moral disengagement

Adolescents reported their moral disengagement by using the Mechanisms of Moral Disengagement scale (Bandura et al., 1996) on a 3-point scale (1 = *disagree*, 2 = *neither agree nor disagree*, and 3 = *agree*) at age 18. The Mechanisms of Moral Disengagement scale consists of 32 items (e.g., "Slapping and shoving someone is just a way of joking." and "It is alright to beat someone who bad mouths your family."), with higher scores indicating greater moral disengagement (Cronbach's alpha was .91).

#### Covariates

Child gender (female is the reference group), ethnicity (White is the reference group and we tested for Black, Hispanic, and other races), location of data collection (nine dummy coded variables for data collection site in the US) and income-to-needs ratio collected during early childhood were statistical control variables.

The average score of income-to-needs ratio in early childhood (1, 6, 15, 24, 36, and 54 months, kindergarten, and 72 months) was created for each child.

#### Data analysis plan

After examining descriptive statistics (e.g., means, correlations, covariates, and missing data) in SPSS, we tested our main hypotheses with structural equation modeling in *Mplus* version 8.3. We used full information maximum likelihood with robust standard errors to include participants with missing data (see below for information on missing data) (Enders, 2010; Muthén & Muthén, 1998–2017). Model fit was assessed based on several fit indices including the root mean square error of approximation (RMSEA  $\leq$  .06) with 90% confidence interval (CI), comparative fit index (CFI  $>$  .90) and Tucker–Lewis index (TLI  $>$  .90), and standardized root mean square residual (SRMR  $\leq$  .08; Hu & Bentler, 1999).

We tested our hypotheses for self-control and cooperation in separate models. Thus, separate identical models were estimated for self-control to test Hypothesis 1 and cooperation to test Hypothesis 2. We expected that children's initial level of self-control at age 8 and growth from age 8 to age 11 would be positively related to their self-views of self-control at age 15, which in turn, would be linked to less moral disengagement at age 18 (Hypothesis 1). Similarly, children's initial level of cooperation at age 8 and growth from age 8 to age 11 would be positively related to their self-views of cooperation at age 15, which in turn, would be linked to less moral disengagement at age 18 (Hypothesis 2). Several preliminary steps were completed to build each of these two models. Below we describe all of the steps in depth for self-control under Hypothesis 1; the same steps were used to test cooperation under Hypothesis 2.

For Hypothesis 1, we estimated the changes in children's self-control from 8 to 11 years based on mothers', fathers', and teachers' reports with second-order LGCM. Second-order LGCMs allow for (a) the use of repeated measures over time reported by several respondents, (b) testing the assumption of factorial invariance over time, and (c) differentiating measurement error from reliable construct variance (Geiser, Keller, & Lockhart, 2013, p. 480; Grimm et al., 2017; Little, 2013). Specifying the optimal second-order LGCMs necessitated testing for measurement invariance and the optimal functional form of the changes over time. First, we tested for measurement invariance over time to assess whether self-control represented similar underlying latent constructs over time (at age 8, 9, 10, and 11) (Grimm et al., 2017; Little, 2013). The latent indicator at each time point was identified by the mean scores of self-control reported by mothers, fathers, and teachers. We estimated a series of sequential invariance models (i.e., configural, weak, strong, and strict invariance; Little, 2013). Then, we compared the respective model fit by calculating the change in CFI by which the suggested value should be less than 0.01 (Cheung & Rensvold, 2002; Little, 2013). We also considered other model fit indices to assess the fit of each model (see Grimm et al., 2017). These analyses are reported in detail in Table S1 (see Supplementary Material). Second, we examined the optimal functional form describing the change in children's self-control from age 8 to age 11 to assess whether there was (a) no change (i.e., intercept only), (b) linear change, or (c) quadratic change. To identify these models, we used a marker variable approach and selected mother report as a referent indicator in each time point (Grimm et al., 2017). In all models,

we set the intercept at age 8. To determine the best-fitting second-order LGCM, we compared the models in terms of the significance of change in their chi-square values and overall model fit indices (e.g., RMSEA, CFI, and TLI), and the statistical significance of the means and variances of the intercepts and slopes (Grimm et al., 2017). These analyses are reported in detail in Table S2 (see Supplementary Material).

After identifying the optimal second-order LGCMs (e.g., holding strong measurement invariance and determining the best-fitting model), we estimated a structural equation model in which children's self-control at age 8 (i.e., intercept) and their changes in self-control from age 8 to 11 years (i.e., slope) predicted self-reported self-control at age 15, which, in turn, predicted moral disengagement at age 18 (see Figure 1). We used the *Model Indirect* command in *Mplus* with bootstrap resampling to test the indirect effects with bias-corrected 95% confidence intervals (Bollen & Stine, 1990; MacKinnon, Lockwood, & Williams, 2004; Muthén & Muthén, 1998–2017) from childhood self-control to age 15 self-control and to age 18 moral disengagement. We particularly focused on indirect effects; however, we also estimated the direct effects from children's self-control at age 8 (i.e., intercept) and their changes from age 8 to 11 years (i.e., slope) to moral disengagement at age 18 (see Figure 1). We statistically controlled for the effects of gender, race/ethnicity, income-to-needs ratio, and data collection site on all of the indicators shown in Figure 1 (i.e., the intercept and slope of self-control, age 15 self-control, and age 18 moral disengagement).

As illustrated in Figure 2, the same analytic steps were completed to estimate a structural equation model in which children's cooperation at age 8 (i.e., intercept) and their changes in cooperation from age 8 to 11 years (i.e., slope) predicted self-reported cooperation at age 15, which, in turn, predicted moral disengagement at age 18. We statistically controlled for the effects of gender, race/ethnicity, income-to-needs ratio, and data collection site on all of the indicators shown in Figure 2 (i.e., the intercept and slope of cooperation, age 15 cooperation, and age 18 moral disengagement).

#### Robustness check

Lastly, we created a subset of the analytic sample to check the robustness of our findings for participants who had self-reported moral disengagement data at age 18 ( $N = 755$ ). In the robustness analyses, we re-estimated the final self-control and cooperation models on this subsample.

#### Missing data

Of the 1,364 children, 261 (19%) had no reports of self-control and cooperation from mother, father, or teacher at 8, 9, 10, or 11 years and these children were excluded from all analyses. A total of 1,103 children were included in the analytic sample as they had self-control and cooperation data for at least one time point from age 8 through 11 years reported by mother, father, or teachers. In the analytic sample, the missing data rate was around 7% for mother-reported variables, ranging from 32% to 36% for father-reported variables, and ranging from 11% to 23% for teacher-reported variables from age 8 to age 11. The missing data rate was 13% for youth self-reported variables at age 15 and 32% at age 18. We conducted further analysis within the analytic sample and compared participants with available and missing data at middle adolescence and late adolescence by the child- and family-level covariates. There were no significant differences at middle adolescence (age 15). Participants with

available data at late adolescence (age 18) were more likely to be female ( $\chi^2 [1] = 7.54, p = .006$ , Cramer's  $V = 0.08$ ), White ( $\chi^2 [1] = 19.56, p < .001$ , Cramer's  $V = 0.13$ ), and live in higher income households ( $t [1,059] = 2.94, p = .003$ , Cohen's  $d = 0.19$ ). Thus, we included these indicators in our analyses to help account for missing data (Enders, 2010).

## Results

### Preliminary analysis

Means and standard deviations for all variables are presented in Table 1. We also conducted zero-order bivariate correlations and assessed the preliminary associations among the main study variables. As presented in Table 1, we found significant positive correlations among mother, father, and teacher reports of children's self-control ( $r$  values ranged from .21 to .75) and cooperation ( $r$  values ranged from .19 to .71). In addition, mother, father, and teacher reports of children's cooperation from age 8 to 11 were positively correlated with adolescents' self-reports of cooperation at age 15 ( $r$  values ranged from .16 to .31). Correlation coefficients were similar for reports of children's self-control ( $r$  values ranged from .09 to .22). In general, higher reports of self-control and cooperation at all ages based on all reporters typically were related to lower reports of moral disengagement at age 18 ( $r$  values ranged from  $-.09$  at  $p < .05$  to  $-.28$  at  $p < .01$ ).

### Main analysis

We expected that children's initial level of self-control at age 8 (i.e., intercept) and growth from age 8 to age 11 (i.e., slope) would be positively related to self-views of self-control at age 15, which, in turn, would be linked to less moral disengagement at age 18 (Hypothesis 1). Similarly, we expected that children's initial level of cooperation at age 8 (i.e., intercept) and growth from age 8 to age 11 (i.e., slope) would be positively related to self-views of cooperation at age 15, which, in turn, would be linked to less moral disengagement at age 18 (Hypothesis 2). To test these hypotheses, we used a structural equation framework and estimated two models separately for self-control and cooperation. In both models, we statistically controlled for the effects of children's gender, race/ethnicity, income-to-needs ratio in early childhood, and data collection site on all of the indicators shown in Figures 1 and 2.

To estimate the intercepts and slopes, we estimated second-order LGCMs. We conducted preliminary analyses for the second-order LGCMs. First, we tested for measurement invariance across time for self-control and separately for cooperation. Second, we tested the three functional forms of the change (i.e., no growth, linear, and quadratic) in children's self-control and cooperation from age 8 to 11. Below we present results for self-control and cooperation separately.

### Development of self-control as an antecedent of less moral disengagement

#### Development of self-control in middle childhood

Results from measurement invariance analyses demonstrated configural, weak, strong, and strict invariance for self-control, which means that each of these latent constructs represented statistically similar underlying constructs over time (see Table S1 in the Supplementary Material). Results from the functional form

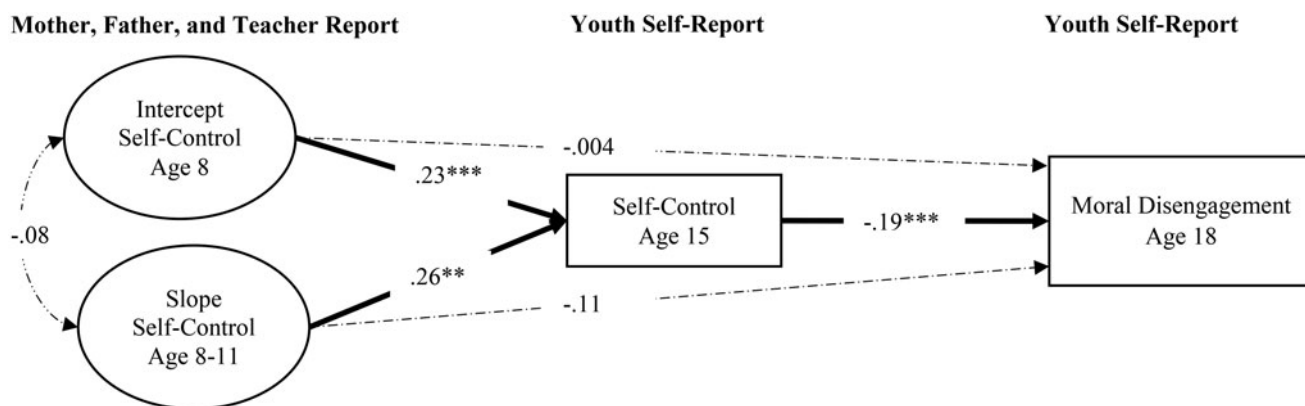
**Table 1.** Descriptives, means, standard deviations, and bivariate correlations among main study variables

Variables	Mean	SD	N	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Self-control																	
1. Self-control (M8)	1.37	0.34	1,028	–													
2. Self-control (M9)	1.39	0.35	1,021	.75**	–												
3. Self-control (M10)	1.39	0.33	1,020	.70**	.74**	–											
4. Self-control (M11)	1.39	0.34	1,023	.69**	.72**	.74**	–										
5. Self-control (F8)	1.39	0.33	752	.44**	.47**	.40**	.42**	–									
6. Self-control (F9)	1.39	0.35	701	.46**	.54**	.50**	.49**	.71**	–								
7. Self-control (F10)	1.38	0.34	752	.46**	.47**	.52**	.49**	.69**	.71**	–							
8. Self-control (F11)	1.39	0.36	724	.48**	.51**	.53**	.57**	.64**	.69**	.73**	–						
9. Self-control (T8)	1.49	0.40	982	.30**	.26**	.25**	.24**	.34**	.29**	.26**	.27**	–					
10. Self-control (T9)	1.50	0.39	912	.32**	.33**	.33**	.32**	.31**	.30**	.26**	.29**	.50**	–				
11. Self-control (T10)	1.50	0.40	922	.27**	.27**	.29**	.28**	.31**	.27**	.27**	.26**	.43**	.50**	–			
12. Self-control (T11)	1.53	0.37	851	.26**	.26**	.24**	.30**	.21**	.26**	.25**	.29**	.36**	.40**	.48**	–		
13. Self-control (S15)	1.19	0.32	956	.18**	.19**	.21**	.22**	.12**	.16**	.22**	.19**	.06	.09**	.14**	.07	–	
14. Moral disengagement (S18)	1.37	0.28	755	–.05	–.06	–.09*	–.10**	–.03	–.08	–.04	–.05	–.12**	–.11**	–.07	–.09*	–.21**	–
Cooperation																	
1. Cooperation (M8)	1.22	0.32	1,028	–													
2. Cooperation (M9)	1.22	0.35	1,021	.70**	–												
3. Cooperation (M10)	1.23	0.33	1,020	.66**	.71**	–											
4. Cooperation (M11)	1.20	0.35	1,023	.61**	.67**	.69**	–										
5. Cooperation (F8)	1.15	0.32	752	.49**	.39**	.40**	.34**	–									
6. Cooperation (F9)	1.16	0.35	701	.46**	.51**	.45**	.42**	.70**	–								
7. Cooperation (F10)	1.15	0.33	752	.39**	.40**	.50**	.41**	.64**	.71**	–							
8. Cooperation (F11)	1.16	0.34	724	.43**	.45**	.46**	.53**	.59**	.65**	.63**	–						
9. Cooperation (T8)	1.53	0.45	984	.25**	.27**	.19**	.22**	.30**	.30**	.22**	.26**	–					
10. Cooperation (T9)	1.55	0.43	915	.26**	.30**	.25**	.23**	.31**	.33**	.25**	.24**	.61**	–				
11. Cooperation (T10)	1.57	0.42	927	.27**	.31**	.27**	.27**	.26**	.26**	.24**	.27**	.53**	.58**	–			
12. Cooperation (T11)	1.58	0.44	855	.24**	.28**	.23**	.26**	.22**	.31**	.23**	.28**	.53**	.55**	.58**	–		
13. Cooperation (S15)	1.55	0.33	956	.23**	.19**	.18**	.16**	.18**	.17**	.19**	.16**	.22**	.23**	.21**	.31**	–	
14. Moral disengagement (S18)	1.37	0.28	755	–.13**	–.12**	–.13**	–.12**	–.04	–.09*	–.06	–.09*	–.15**	–.06	–.10*	–.21**	–.28**	–

Note: M: mother, F: father, T: teacher, S: self-report. 8, 9, 10, 11, 15, and 18 stand for the respective ages.

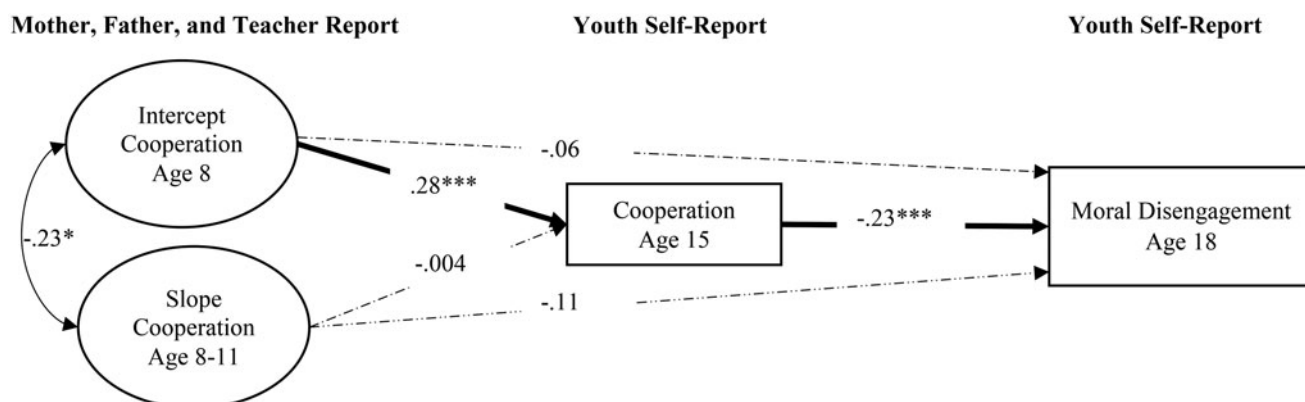
\* $p < .05$ .

\*\* $p < .01$ .



**Figure 1.** Childhood self-control in relations to subsequent self-control and moral disengagement in adolescence.

Note: Model fits the data well:  $N = 1,061$ ,  $\chi^2(210) = 382.96$ ,  $p < .001$ , root mean square error of approximation, RMSEA (90% confidence interval [CI]) = 0.03, [0.02, 0.03], comparative fit index, CFI = 0.97, Tucker–Lewis index, TLI = 0.96, standardized root mean square error, SRMR = 0.04. Only standardized estimates are shown. Bold arrows indicate significant indirect effects and dashed arrows indicate non-significant paths. Gender, race/ethnicity, the average score of income-to-needs ratio from first month to 72 months, and data collection sites were statistically controlled, but not depicted in the figure for the sake of simplicity. \*\* $p < .01$ . \*\*\* $p < .001$ .



**Figure 2.** Childhood cooperation in relation to subsequent cooperation and moral disengagement in adolescence.

Note: Model fits the data well:  $N = 1,061$ ,  $\chi^2(210) = 461.99$ ,  $p < .001$ , root mean square error of approximation, RMSEA (90% confidence interval [CI]) = 0.03, [0.03, 0.04], comparative fit index, CFI = 0.96, Tucker–Lewis index, TLI = 0.94, standardized root mean square error, SRMR = 0.04. Only standardized estimates are shown. Bold arrows indicate significant indirect effects and dashed arrows indicate non-significant paths. Gender, race/ethnicity, the average score of income-to-needs ratio from first month to 72 months, and data collection site were statistically controlled, but not depicted in the figure for the sake of simplicity. \* $p < .05$ . \*\*\* $p < .001$ .

analyses showed that changes in children's self-control were best described by linear change. As shown in Table S2 in the Supplementary Material, the linear model for self-control fits the data well according to a variety of model fit indicators ( $\chi^2(50) = 79.35$ ,  $p = .005$ , RMSEA (90% CI) = 0.02 [0.01, 0.03], CFI = 0.99, TLI = 0.99, SRMR = 0.04) and significantly improved model fit when compared to the no growth model (Satorra–Bentler scaled  $\Delta\chi^2(3) = 18.08$ ,  $p < .001$ ; Satorra & Bentler, 2010). Moreover, the more complex quadratic model did not significantly improve the fit of the model. The factor loadings of linear model can be seen in Figure S1.A in the Supplementary Material.

The mean intercept of children's self-control at age 8 was significantly different from zero ( $\text{Mean}_{\text{intercept}} = 1.37$ ,  $SE = 0.01$ ,  $p < .001$ ). As we expected, there was a small, statistically significant increase in children's self-control from age 8 to 11 ( $\text{Mean}_{\text{slope}} = 0.01$ ,  $SE = 0.002$ ,  $p = .012$ ). The variances of the intercept and slope of children's self-control were statistically significant and indicated adequate variability to estimate inferential analyses

( $\text{Variance}_{\text{intercept}} = 0.05$ ,  $SE = 0.01$ ,  $p < .001$ ;  $\text{Variance}_{\text{slope}} = 0.001$ ,  $SE = 0.00$ ,  $p = .004$ ).

#### *Self-control as an antecedent of less moral disengagement*

We tested whether children's initial level of self-control at age 8 and growth from age 8 to age 11 would be positively related to self-views of self-control at age 15, which, in turn, would be linked to less moral disengagement at age 18. The hypothesized self-control model fit the data well:  $N = 1,061$ ,  $\chi^2(210) = 382.96$ ,  $p < .001$ , RMSEA (90% CI) = 0.03, [0.02, 0.03], CFI = 0.97, TLI = 0.96, SRMR = 0.04 (see Figure 1). We found support for Hypothesis 1. In the self-control model, both the higher levels of children's initial self-control as reported by mothers, fathers, and teachers at age 8 ( $\beta = 0.23$ ,  $SE = 0.05$ ,  $p < .001$ ) and greater increases over time in these reports ( $\beta = 0.26$ ,  $SE = 0.09$ ,  $p = .007$ ) were significantly linked to higher adolescent self-views of self-control at age 15. Greater adolescent self-views of self-control at age 15 were then linked to less moral disengagement

at age 18 ( $\beta = -0.19$ ,  $SE = 0.05$ ,  $p < .001$ ). Of particular interest, the indirect effect of children's self-control at age 8 on adolescents' moral disengagement at 18 via their self-views of self-control at age 15 was statistically significant ( $\beta = -0.04$ ,  $SE = 0.03$ , 95%  $CI = -0.08, -0.01$ ). Similarly, the indirect effect of children's increases in self-control over time to adolescents' moral disengagement at 18 via their self-views of self-control at age 15 was also statistically significant ( $\beta = -0.05$ ,  $SE = 0.10$ , 95%  $CI = -0.13, -0.01$ ).

### *Development of cooperation as an antecedent of less moral disengagement*

#### *Development of cooperation in middle childhood*

Results from measurement invariance analyses demonstrated configural, weak, strong, and strict invariance for cooperation, which means that each of these latent constructs represented statistically similar underlying constructs over time (see Table S1 in the Supplementary Material). Results from the functional form analyses showed that changes in children's cooperation were best described by linear change. As shown in Table S2 in the Supplementary Material, the linear model fits the data well ( $\chi^2(50) = 92.65$ ,  $p < .001$ ,  $RMSEA(90\% CI) = 0.03 [0.02, 0.04]$ ,  $CFI = 0.99$ ,  $TLI = 0.99$ ,  $SRMR = 0.04$ ) and significantly improved model fit when compared to the no growth model (Satorra–Bentler scaled  $\Delta\chi^2(3) = 18.16$ ,  $p < .001$ ; Satorra & Bentler, 2010). Further, the more complex quadratic change model did not significantly improve the fit of the model. The factor loadings of the linear model can be seen in Figure S1.B in the Supplementary Material.

The mean intercept of children's cooperation at age 8 was significantly different from zero ( $Mean_{intercept} = 1.22$ ,  $SE = 0.01$ ,  $p < .001$ ). Contrary to our expectation, there was no average systematic change in children's cooperation from age 8 to 11 ( $Mean_{slope} = -0.001$ ,  $SE = 0.003$ ,  $p = .779$ ). The variance of the intercept and slope of children's cooperation were statistically significant and indicated adequate variability to conduct inferential analyses ( $Variance_{intercept} = 0.05$ ,  $SE = 0.01$ ,  $p < .001$ ;  $Variance_{slope} = 0.002$ ,  $SE = 0.00$ ,  $p = .001$ ). In other words, although cooperation did not change for everyone on average from age 8 to 11, there is significant variability among children where some children exhibited changes in their cooperative behaviors.

#### *Cooperation as an antecedent of less moral disengagement*

We tested whether children's initial level of cooperation at age 8 and growth from age 8 to age 11 would be positively related to self-views of cooperation at age 15, which, in turn, would be linked to less moral disengagement at age 18. The hypothesized cooperation model fit the data well:  $N = 1,061$ ,  $\chi^2(210) = 461.99$ ,  $p < .001$ ,  $RMSEA(90\% CI) = 0.03, [0.03, 0.04]$ ,  $CFI = 0.96$ ,  $TLI = 0.94$ ,  $SRMR = 0.04$  (see Figure 2). We found partial support for Hypothesis 2. In the cooperation model, higher levels of children's cooperation at age 8 ( $\beta = 0.28$ ,  $SE = 0.05$ ,  $p < .001$ ) was significantly linked to higher adolescent self-views of cooperation at age 15; however, the parallel path for the changes in children's cooperation and their self-views of cooperation at age 15 was not statistically significant ( $\beta = -0.004$ ,  $SE = 0.08$ ,  $p = .959$ ). Greater adolescent self-views of cooperation at age 15 were then linked to less moral disengagement at age 18 ( $\beta = -0.23$ ,  $SE = 0.04$ ,  $p < .001$ ). Of particular interest, the indirect effect of children's cooperation at age 8 on adolescents' moral disengagement at 18 via their self-views of cooperation at age 15 was statistically significant ( $\beta = -0.06$ ,  $SE = 0.02$ , 95%  $CI = -0.10, -0.03$ ).

### *Robustness check*

We tested the robustness of our findings by re-estimating our final hypothesized models with a subset of the analytic data ( $n = 755$ ) in which we selected participants who had self-reported moral disengagement data at age 18. Both self-control and cooperation models fit the data well and we found similar findings as those in the main analysis except for one path: the slope of self-control from age 8 to 11 to self-control at age 15 was no longer significant ( $\beta = 0.25$ ,  $SE = 0.16$ ,  $p = .119$ ) and the indirect effects tested with bootstrap resampling were no longer significant ( $\beta = -0.05$ ,  $SE = 0.06$ , 95%  $CI = -0.10, 0.01$  for intercept and  $\beta = -0.04$ ,  $SE = 0.21$ , 95%  $CI = -0.18, 0.01$  for slope) in the self-control model (see Figures S2.A and S2.B in the Supplementary Material).

### *Discussion*

Guided by social cognitive theory and the developmental cascade framework, the purpose of this study was not to consider self-control and cooperation as competing processes or to test the relative strength of these two processes in relation to later moral disengagement. Rather, we tested both the individual self-control pathway and interpersonal cooperation pathway separately, finding longitudinal evidence that both processes were linked to lower levels of moral disengagement consistent with Bandura's theory. More specifically, we found that children's self-control at age 8 and increases in self-control from age 8 to 11 as viewed by others were positively linked to higher self-views of self-control at age 15, which, in turn, were linked to less moral disengagement at age 18. Similarly, we found that children's higher cooperation at age 8 was linked to higher self-views of cooperation at age 15, which, in turn, were linked to less moral disengagement at age 18. These longitudinal findings have implications for understanding the development of childhood self-control and cooperation and demonstrate the potential roles of self-control and cooperation in reducing the frequency of moral disengagement 10 years later.

Overall, our findings yield supportive evidence for social cognitive theory (Bandura, 1991a) and suggest that self-control and cooperation are two developmental processes that help individuals act in moral ways and reduce the frequency of moral disengagement later in life. These findings are also consistent with the developmental cascade framework (Dodge et al., 2009; Masten & Cicchetti, 2010). Developmental cascades occur when adaptive functioning in an area during one developmental period supports individuals' broader adaptive functioning later in life (Masten & Cicchetti, 2010). Our findings suggest that the development of children's self-control and cooperation in middle childhood and the extent to which adolescents see themselves as having these strengths can help to extenuate moral disengagement in late adolescence. In addition, as suggested in social cognitive theory and value internalization models (Bandura, 1991a; Grolnick et al., 1997; Grusec & Goodnow, 1994; Hoffman, 1977), our results point to the importance of children's transition from externally oriented to internally oriented moral values and behaviors. Consistent with these arguments, our findings imply that the development of children's self-control and cooperation in middle childhood predicted the extent to which youth saw themselves as having these strengths in middle adolescence.

#### *Self-control during middle childhood as an antecedent of less moral disengagement*

With respect to self-control, we tested the extent to which the initial level and growth of children's self-control in middle childhood

as reported by parents and teachers were linked to youth's view of themselves as having self-control in middle adolescence, which, in turn, predicted less moral disengagement in late adolescence. Our findings indicate that children who had higher self-control skills at age 8 and exhibited increases also reported stronger self-views of self-control when they were 15 years old, which, in turn, was linked to reports of less moral disengagement later in adolescence. These findings lend support for the social cognitive theory (Bandura, 1991a), which has argued that self-regulatory mechanisms such as self-control play a central role in regulating moral behaviors. Self-control helps individuals to self-monitor their behaviors and judge their own behaviors based on their internalized moral values (Bandura, 1991b). Further, affective self-reactions, such as anticipated self-satisfaction and self-respect, motivate youth to engage in behaviors that are consistent with their internalized moral values and personal moral standards (Bandura, 1991b). As a consequence, they are less likely to morally disengage. In other words, strong self-control skills equip youth with the necessary tools to resist social pressures to engage in wrongdoings and thus, highly skilled youth are less likely to need to use moral disengagement mechanisms.

Our analyses indicated that children's self-control as reported by mothers, fathers, and teachers modestly increased during middle childhood. These findings are aligned with previous research, which has shown that the growth rate in children's self-control tends to slow down during middle childhood, especially compared to the much steeper growth observed during early childhood utilizing NICHD SECCYD data (Vazsonyi & Huang, 2010; Vazsonyi & Jiskrova, 2018). Of note, although the present data have been partially published in these previous works, our findings extend previous research, demonstrating that self-control during middle childhood can be an antecedent of less moral disengagement in late adolescence.

### *Cooperation during middle childhood as an antecedent of less moral disengagement*

We also examined the extent to which the initial level and growth of children's cooperation in middle childhood as viewed by others were linked to youth's view of themselves as cooperating with others in middle adolescence, which, in turn, predicted less moral disengagement in late adolescence. Here, our findings indicate that children who had higher cooperation at age 8 also reported higher self-views of cooperation when they were 15 years old, which, in turn, was linked to lower moral disengagement in late adolescence. These findings are consistent with social cognitive theory (Bandura, 1991a, 1991b) arguing that affective self-reactions motivate youth to cooperate with others because youth expect to have self-satisfaction and self-respect as a consequence of these prosocial acts. Further, because cooperative behaviors are care-based behaviors and involve individuals balancing their self-interests with others' interests and needs (Carlo, 2006; Vaish & Tomasello, 2014), cooperative behaviors can help to reduce selfish motives associated with moral disengagement. In addition, cooperative behaviors increase the responsibility toward others and encourage youth to act in ways consistent with their internalized moral values and consider the consequences of their acts on others (Colby & Damon, 1992). Therefore, when youth behave cooperatively and in ways consistent with their internalized values, they are less likely to morally disengage.

Contrary to previous research that suggested some changes in cooperation over childhood (Malti et al., 2016), we did not find

increases in parents' and teachers' reports of children's cooperation between 8 and 11 years. There are a few possible explanations for this difference between our findings and previous findings. First, the study by Malti et al. (2016) examined the development of children's cooperation on average over a broader age range from 6 to 12 years, whereas our data covered a shorter span from age 8 to age 11. The longer developmental span in the Malti et al. (2016) study may help to identify the developmental trajectories of cooperation if growth is modest. Second, Fabes and Eisenberg (1998) argue that the growth in children's prosocial behavior (e.g., cooperation) might be different across research due to the methodology used in the study design (e.g., different reporters). Children's cooperative behaviors have been almost exclusively reported by their primary caregivers (mostly mothers) in previous research. However, in this study, changes in children's cooperative behaviors were defined by relying on multiple reporters, namely mothers, fathers, and teachers – all of whom are likely to be familiar with children's cooperative behaviors during middle childhood in different contexts (home and school). Therefore, the stability we found in children's cooperative behavior may characterize a more comprehensive indicator of developmental changes across contexts during middle childhood.

### *Commonalities and differences in self-control and cooperation models*

Our self-control and cooperation models showed similar patterns, except the changes in cooperation over time were not linked to moral disengagement at age 18. Although cooperation, on average, did not significantly change from age 8 to 11, there was significant variability among children, with some exhibiting larger changes in their cooperative behavior compared to others. In such cases where there is little to no average change but significant variability among children, the changes in children's cooperation may still be associated with other indicators. Those associations did not emerge for cooperation, however. Even though the changes in children's cooperation from ages 8 to 11 were not predictive in our models, this might be found earlier. Both self-control and cooperation at age 8 were significantly, indirectly associated with moral disengagement, suggesting that growth prior to age 8 also may be consequential. Thus, future studies are warranted to investigate further the extent to which the developmental trajectories of self-control and cooperation starting at early ages predict adolescent moral disengagement.

In addition, although the bivariate correlations suggested that parents' and teachers' reports of children's self-control and cooperation during middle childhood were each typically associated with less moral disengagement, there were no direct effects once we accounted for adolescents' self-views of their self-control and cooperation at age 15 in the model. These findings provide support for our findings from our main analyses and point to the potential importance of internalization of self-control and cooperation.

### *Limitations and Conclusion*

There are limitations in this study that researchers should consider when interpreting our findings. First, due to the correlational nature of this study, causal connections cannot be drawn. Second, self-control and cooperation were assessed using questionnaires. Even though we used multi-informant data to account for shared method variance and social desirability concerns,

future studies using alternative reporters (e.g., peers) and methods (e.g., observations) can help complement the current insights. Third, the last wave of the NICHD SECCYD data that were used in the present study (age 18, around the end of high school) were collected between 2008 and 2010. Although the participants are only in their late 20s today, it will be important to test cohort or historical differences. Fourth and finally, although the NICHD SECCYD sample is economically and geographically diverse, Latino/a participants are under-represented relative to the US population in 2020 (NICHD Early Child Care Research Network, 2005). Future studies with more ethnically diverse samples are needed.

Despite these limitations, our findings are the first to demonstrate relations between self-control and cooperation during middle childhood and less moral disengagement in late adolescence. These results may be used to inform intervention and prevention programs during middle childhood and adolescence that share the goal of fostering moral development and decreasing moral disengagement. In particular, given the significant roles of self-control at age 8 and growth in self-control from age 8 to 11, fostering self-control might be important to ensure continued growth from early childhood through middle to late childhood. In addition, given that cooperation at age 8 was indirectly associated with moral disengagement, promoting cooperation earlier than middle childhood would be particularly beneficial to ensure its development by age 8 and growth from early childhood through middle to late childhood. Nurturing children's self-control and cooperation may help to keep youth on the moral path later in their life.

**Supplementary Material.** The supplementary material for this article can be found at <https://doi.org/10.1017/S0954579421000584>

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**Conflicts of Interest.** None.

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