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Early parenting and the reduction of educational inequality in childhood and adolescence

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ABSTRACT

Socioeconomic status (SES) differences in parenting are often implicated in widening the SES-achievement gap. Using nationally representative data ($N = 12{,}887$), the author tested for variation across SES in the types and intensity of parenting behaviors utilized and then examined SES differences in the relationship between parenting and student achievement growth from kindergarten to Grade 8. Exploratory factor analysis identifies three dimensions of early parenting: Educational engagement, stimulating parent–child interaction, and discursive discipline. Regression results indicate that all three are used most heavily by high-SES families. However, only educational engagement consistently predicts achievement growth. Surprisingly, it is positively associated with achievement for lower-, but not higher-SES students in Grades 1–8. Further, educational engagement is beneficial for low-SES children because it is particularly beneficial for low-achieving students, consistent with a compensatory hypothesis.

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The relationship between children's academic outcomes and their parents' socioeconomic status (SES) is one of the most enduring findings of social science research (Coleman et al., 1966; Duncan, Brooks-Gunn, & Klebanov, 1994; Duncan, Yeung, Brooks-Gunn, & Smith, 1998). Bourdieu (1986), Becker (1964, 1993), Coleman (1988), and many others theorized that parenting reproduces educational inequality by providing children with different levels of human, social, and cultural capital. Differences in capital contribute to SES disparities at school entry and subsequently support differential skill acquisition in school (Lareau, 2011).

Class-based differences in parenting practices are frequently linked to inequality in student achievement (Dumais, 2002; Duncan & Magnuson, 2005; Farkas, 2003; Hart & Risley, 1995; Lareau, 2011). Others identify commonalities in parenting practices and beliefs across class backgrounds (Amato & Fowler, 2002; Chin & Phillips, 2004; Roksa & Potter, 2011). Mirroring the divergent literature examining class variation in parenting behaviors, research also disagrees about whether particular parenting behaviors are more beneficial to the achievement of higher- or lower-SES children (Cooper & Crosnoe, 2007; Crosnoe, Leventhal, Wirth, Pierce, & Pianta, 2010; De Graaf, De Graaf, & Kraaykamp, 2000; DiMaggio, 1982; McNeal, 1999).

To reconcile these discrepant findings, I tested whether parenting practices uniformly support achievement growth for students of different SES backgrounds, and make three contributions to this literature. First, I investigated how parenting practices at school entry vary by SES using a wide array of teacher and self-reported kindergarten parenting behaviors from the Early Childhood Longitudinal Study–Kindergarten Cohort 1998 (ECLS-K). This analysis identified parenting dimensions that reflect the most prominent parenting practices and tests for differences in their use across family SES. Second, I evaluated whether each parenting dimension has a differential relationship with achievement by SES. Last, I extended earlier investigations of the relationship between parenting and child achievement at one later time point (Bodovski & Farkas, 2008; Fan, 2001; Roksa & Potter, 2011), by examining whether kindergarten parenting practices are related to student achievement growth throughout elementary and middle school.

Literature review

Parenting and student outcomes

A rich theoretical and empirical literature has worked to disentangle the relationship between parenting and students' academic development. Developmental theory provides numerous models to describe how parent home and school involvement impact students' academic development and performance. Some frameworks focus on the ways that parents invest resources in particular domains, including education (Grolnick & Slowiaczek, 1994; LaRocque, Kleiman, & Darling, 2011). Other frameworks identify specific types of parent home and school engagement are intended to support educational processes and experiences (Cooper & Crosnoe, 2007; Eccles & Harold, 1996; El Nokali, Bachman, & Votruba−Drzal, 2010; Jeynes, 2007; Kohl, Lengua, & McMahon, 2000; Miedel & Reynolds, 2000), and areas where schools can promote relationships with parents (Epstein, 1995). Researchers have also theorized that, in addition to the importance of parent behaviors, parent

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beliefs and expectations for their children are central to their academic development (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996; Froiland, Peterson, & Davison, 2013; Thompson, Alexander, & Entwisle, 1988). The wide variety of models, dimensions, and definitions of parenting and parental involvement demonstrate vast differences in scope, focus, overlap, and association with student outcomes.

A substantial body of empirical research highlights the associations between various forms of parenting and student academic development. Many have underscored the importance of early parent–child interaction, parental expectations, school involvement, and a variety of parenting styles and behaviors and identified their associations with early academic development and growth (Bernier, Carlson, & Whipple, 2010; Froiland et al., 2013; Pungello, Iruka, Dotterer, Mills-Koonce, & Reznick, 2009; Tamis-LeMonda, Bornstein, Baumwell, & Melstein Damast, 1996). Others have found little evidence to support the relationships between different types of parent involvement and child achievement (Barnett, Young, & Schweinhart, 1998; White, 1985; White, Taylor, & Moss, 1992). However, Tamis-LeMonda et al. (1996) found that different subtypes of parent–child interactions relate to different domains of child outcomes, suggesting that different parenting behaviors may be specialized and may not affect all types of child outcomes. Thus, although some types of parent engagement and parent–child interaction may be crucial for supporting particular aspects of child development and behavior, these behaviors may not impact child achievement in particular.

Several meta-analyses have underscored the lack of consensus on the definitions of parent involvement and their associations with student outcomes (Fan & Chen, 2001; Hill & Tyson, 2009; Jeynes, 2005, 2007; Wilder, 2014). For example, many have identified multiple dimensions of parental involvement with different impacts on school performance (Grolnick & Slowiaczek, 1994; Hill, 2001; Kohl et al., 2000). Although there is no clear consensus over what aspects of parenting are associated with which specific child outcomes, there is widespread consensus that parenting plays an important role in shaping children's academic success (Epstein, 1996; Hill & Craft, 2003; Jeynes, 2005).

SES differences in parenting practices

Central to many investigations of the relationship between parenting and student achievement is the examination of SES differences in parenting behaviors and their contribution to inequalities in achievement. A wide array of evidence suggests that class differences in parenting practices and involvement contribute to achievement gaps. For example, relative to working-class parents, affluent parents provide more stimulating home environments (Brooks-Gunn & Duncan, 1997; Brooks-Gunn, Klebanov, & Duncan, 1996; Burchinal, Roberts, Zeisel, Hennon, & Hooper, 2006), talk more regularly with their children, and engage in more verbal reasoning with their children (Farkas & Beron, 2004; Hart & Risley, 1995; Landry, Smith, Swank, & Miller Loncar, 2000; Lareau, 2011). Higher-SES parents provide more educational experiences, materials, and resources while at home and during out-of-school time (Dumais, 2002; Duncan & Magnuson, 2005; Epstein, 1987; Kornrich & Furstenberg, 2013), are more actively involved in their children's schooling (Sui-Chu & Willms, 1996) and have higher academic expectations for their children (Räty & Kasanen, 2010). Finally, affluent parents differ from lower-SES parents in their approaches to discipline, reporting lower usage of harsh disciplinary techniques, such as spanking (Duncan & Magnuson, 2005; Giles-Sims, Straus, & Sugarman, 1995; Lansford, Deater-Deckard, Dodge, Bates, & Pettit, 2004). Lareau (2011) summarizes these differences, arguing that parents from different class backgrounds use distinct logics of parenting, or guiding principles, beliefs, and actions, to promote different types of school-specific training, and that these differences contribute to diverging achievement patterns across class boundaries (for discussions of culture shaping strategies of action and logics of action, see also DiMaggio, 1997; Swidler, 1986).

In contrast, Amato and Fowler (2002) found that "a core of common parenting practices appears to be linked with positive outcomes for children across diverse family contexts" (p. 703). Likewise, Scott-Jones (1984) argued that both high-income parents and parents from disadvantaged, low-SES backgrounds are involved in their children's schooling in many important ways. These studies suggest that, although some parental behaviors differ by SES, many practices are shared across SES. Rather than divergent parenting practices, perhaps class differences in the intensity of their use lead to differences in achievement (cf. Roksa & Potter, 2011).

The differential impact of parenting by SES

In addition to the debates about whether there are SES-based differences in the type or intensity of parenting practices, it is also unclear whether parenting behaviors have a uniform relationship with student achievement when used by parents of different SES levels. Existing theoretical paradigms have contrasting explanations for how parenting impacts achievement and inequality and which types of children benefit most from parenting behaviors and involvement.

The cultural reproduction model suggests that parenting reproduces class advantages by conferring symbolic markers of class status and cultural capital. Parents convey class-specific preferences, behaviors, and institutional knowledge to their children which shape their interactions and experiences in institutional settings, suh as school, and have a stratifying effect on student achievement (Bourdieu, 1986; Bourdieu & Passeron, 1990; DiMaggio & Mohr, 1985; Lareau, 2011). This tradition suggests that higher-SES children benefit more from parenting than lower-SES children because their parents not only transmit greater amounts of cultural capital to them, but because they also receive more training from their parents about how to access and enact this capital in school settings, and are in turn treated differently by school personnel. Teachers respond by communicating more readily with students (and parents) who demonstrate fluency with higher-status, elite cultures and perceive such students as more intelligent and gifted than students who lack such cultural capital (Alexander, Entwisle, & Thompson, 1987; Bourdieu, 1977; Lareau & Horvat, 1999; Muller, 2001).[1] For example, Calarco (2011, 2014) found that parents from different class backgrounds provide different coaching to their children about appropriate classroom behavior, leading

children to adopt different problem-solving strategies and help-seeking behaviors, and resulting in unequal levels of interaction and assistance from teachers with students of different SES levels.

In contrast to a symbolic idea of parenting, a functional perspective suggests that parenting behaviors actually help to develop and create skills and abilities. Among those who note the functional role that parenting can play in promoting children's skill development, some ascribe to an accumulated advantages perspective wherein more highly skilled children benefit most from parenting because they learn new skills more quickly (cf. Miller, Farkas, Vandell, & Duncan, 2014; Stanovich, 1986). Parenting thus contributes to inequalities in school performance because it differentially promotes children's skills and capacities (Farkas & Beron, 2004; Hart & Risley, 1995; Kohn, 1989). In particular, higher-SES children are best positioned to excel in school because they can build skills that were differentially developed before kindergarten (Cunha, Heckman, Lochner, & Masterov, 2006). Much like the cultural reproduction model, this perspective argues that higher-SES students show greater achievement growth, but attributes this to skill development rather than activating the markers of elite status.

An alternative functional perspective suggests that parenting can be compensatory. In compensatory parenting, parents devote attention to providing special experiences to redress perceived deficiencies of the available schooling opportunities or the child (Miles & Holditch-Davis, 1995; Morgan, Farkas, & Wu, 2011). In this case, initially less-skilled children acquire academic skills more quickly than those who entered school at higher-skill levels because of the additional investments of the parents or schools attempting to compensate for earlier gaps. Work in the compensatory tradition suggests that lower-SES children benefit most from parenting in terms of later achievement gains, rather than higher-SES children. For example, De Graaf et al. (2000) identify that parental reading behavior is more beneficial for the schooling success of disadvantaged students than for advantaged students, supporting a compensatory, functional perspective. Similarly, Domina (2005) found that low-SES students benefit more from parental school involvement than higher-SES students.

Most of the prior empirical work examining SES variation in the effects of parenting has focused on interactions between SES and a small number of parenting behaviors, leading to a literature muddled by conflicting results, but there are some notable exceptions. For example, Roksa and Potter (2011) used national data from the Panel Study of Income Dynamics' Child Development Supplements of 1997 and 2002–2003 to examine variation in a host of self-reported parenting practices and their relationship with student academic achievement among children 6–14 years old. They examined a wider array of early parenting behaviors than many previous studies, such as whether the child visited a museum with a family member and if the parent volunteered at school, which they classified into the dimensions: educational expectations, participation in high-status cultural activities, and concerted cultivation. Perhaps not surprisingly given the conflicting results discussed previously, their results paint a mixed picture, with SES variation in the magnitude of the association between particular parenting practices and student achievement dependent on the parenting behavior examined.

In addition, using data from the Chicago Longitudinal Study, Miedel and Reynolds (2000) found that parent reports of the frequency and number of school activities in which they were involved in when their children were in kindergarten and Grade 1 were associated with higher reading achievement and decreased rates of grade retention in Grade 8 net of family background. Fan (2001) also examined multiple dimensions of parenting among parents of eighth-grade students in the National Education Longitudinal Study (ELS) of 1988, including parenting behaviors such as parents attend school events and the student talks with their parents about school activities. Fan identifies several independent dimensions of parent involvement, finding one particular dimension, parents' Educational Aspirations for their children, had consistent effects on students' academic achievement net of the effect of SES. This paper provides important evidence that some types of parenting are more strongly associated with student achievement than others, however it remains unclear whether this same pattern holds for parenting behaviors among parents of younger children, particularly given Roksa and Potter's (2011) findings.

Finally, Benner, Boyle, and Sadler (2016) examined associations between four different types of parental educational involvement (home- and school-based involvement, educational expectations, and academic advice) and students' proximal (grade point average) and distal (educational attainment) academic outcomes among 10th-grade students in the ELS 2002. They found that school-based involvement is particularly beneficial for disadvantaged youth (those from low-SES families with poorer prior achievement) whereas academic socialization promoted the academic success of advantaged youth (those from high-SES families with stronger prior achievement). These findings suggest not only that parenting practices have differential effectiveness based on SES background, but that prior achievement may also play a moderating role in this relationship. However, it is not yet known if this relationship holds among younger children.

Thus, an examination of a wide array of parenting behaviors would help to adjudicate between these competing findings and an updated version examining early rather than later parenting would help to understand whether some parenting practices at earlier ages are also more strongly related to student achievement. This study provides such a comparison, bringing the largest nationally representative data available to bear on this question, and examining the lasting relationship between these practices and achievement throughout middle-childhood and into adolescence. To help ground the logic of this study in the context of several literatures on parenting with diverse findings, I adopted the logic model shown in Figure 1.

Across the prior literature, many different parenting practices and beliefs have been identified as important to children's academic development and performance. In the present study I examined how particular dimensions or groupings of these behaviors cohere, whether the usage of these dimensions varies by family SES, and whether any or all of these dimensions predict later student achievement in childhood and adolescence.

Research questions

Research identifies a robust relationship between parenting and achievement, but two important debates remain. First, although

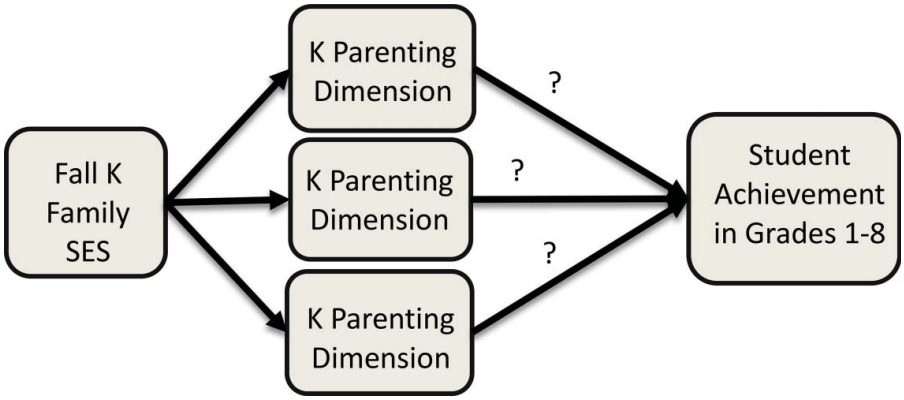

Figure 1. Logic model of analytic strategy.

some research suggests that the prevalence of parenting practices and behaviors are not uniform across class boundaries (Lareau, 2011), other studies find that many parenting behaviors permeate class boundaries (Amato & Fowler, 2002). Thus, the degree to which parenting practices are shared across SES is still uncertain. Because prior research identified class differences in a diverse array of parenting practices, behaviors, and attitudes, including developing the academic and cultural skills of the child, spending resources on educational activities and materials, engaging with the school, discipline, demonstrating warmth, and many others, in the present study I examined SES variation in a wide selection of parent- and teacher-reported parenting practices. To the extent that differences in the relationship between any of these types of parenting behaviors and achievement exist, it is also unclear whether more- or less-affluent students benefit more academically from these behaviors. Because academic benefits of parenting might manifest themselves in a variety of domains, I examined student achievement in mathematics, reading, and science. To identify SES variation in a variety of early parenting behaviors and their relationship with student achievement, the following research questions guided this study:

Research Question 1: To what degree do a variety of kindergarten parenting practices vary by SES?

Research Question 2: Does the relationship between any type of kindergarten parenting and subsequent student achievement in mathematics, reading, and science vary by SES?

Data and methods

In the present study I examined SES differences in the use of parenting behaviors and estimates the differential relationship between kindergarten parenting and students' elementary and middle school achievement growth by socioeconomic status using the 1998 Early Childhood Longitudinal Study–Kindergarten Cohort (ECLS-K). The ECLS-K offers the largest nationally representative sample with which to follow students from school entry into adolescence that includes detailed parenting behaviors, and is therefore well suited for addressing these questions.

The analyses for this study utilize data from ECLS-K respondents who have nonmissing fall kindergarten achievement and student and parent survey data. The ECLS-K employed a multistage probability sample design to select a nationally representative sample of children attending kindergarten in 1998–1999. The full ECLS-K sample includes 21,260 kindergarteners who were sampled from 1,277 schools in 100 counties across the United States. Applying the kindergarten parent panel weight for the full survey, the analysis sample includes 12,887 students. Because of attrition, the Grade 8 sample contains 6,636 students. The parent panel weights for the full sample for each wave and the corresponding primary sampling units are used to address the representativeness of the sample and attrition in the later grades (Tourangeau, Nord, Lê, Sorongon, & Najarian, 2009).

Achievement outcomes

The outcomes of interest in this paper are standardized reading and mathematics item response theory (IRT) scores from the spring of Grades 1, 3, 5, and 8. Supplementary analyses also use science IRT scores from Grades 3, 5, and 8. The mathematics, reading, and science IRT scores were collected using adaptive assessments in one-on-one assessment sessions with the child by trained assessors. Reading assessments initially focused on basic skills such as print familiarity, letter recognition, beginning and ending sounds, recognition of common words (sight vocabulary), and decoding multisyllabic words; vocabulary knowledge such as receptive vocabulary and vocabulary in context; and passage comprehension. As students aged, assessments increased emphasis on reading comprehension, including reading words in context, making literal inferences, extrapolation, developing an interpretation, extrapolation, evaluation, and making connections. In addition, students also had to evaluate nonfiction and complex syntax. The mathematics assessments evaluated students' knowledge of number sense, properties and operations; measurement; geometry and spatial sense; data analysis; statistics; and probability, patterns, algebra, and functions. In both the reading and mathematics assessments, items were chosen to extend longitudinal comparisons across grade levels, but were grade appropriate in terms of content and difficulty (Tourangeau et al., 2009).

Reliabilities for the IRT-based scores ranged from .87 to .96 depending on the grade level and subject (Tourangeau et al., 2009). To improve the validity of the cognitive assessments, test content and format were determined following reviews of

state standards, reviews of state and commercial assessments, and input from curricular specialists. Items in each of the content domains were drawn from assessments from large-scale studies of similarly aged children, including the National Assessment of Educational Progress, the National Education Longitudinal Study of 1988 (NELS:88), and ELS 2002, and the Texas Assessment of Knowledge and Skills. Items were designed to match National Assessment of Educational Progress target percentages with adjustments to avoid floor and ceiling effects, and were subsequently field tested and refined (Tourangeau et al., 2009).

Parenting practices

This study provides a broad operationalization of parenting practices thought to promote student achievement through the transmission of cultural capital. It builds on many of the parenting practices identified by Lareau (2011) as concerted cultivation, such as organizing children's leisure activities; working to actively foster children's talents, opinions, educational interests, and skills; and taking an active role in their children's schooling. It includes measures used in prior empirical work testing the relationship between parenting and student achievement (Bodovski & Farkas, 2008; Cheadle, 2008; Cheadle & Amato, 2011; Fan, 2001).

I also examined the contributions of other parenting behaviors found to be positively associated with achievement, such as positive discipline, positive home environment, early academic stimulation, and parental school involvement (Bernier et al., 2010; Bodovski & Youn, 2010; Bradley, Caldwell, & Rock, 1988; Desimone, 1999; Steinberg, Lamborn, Dornbusch, & Darling, 1992). Many of these variables are similar to those used in evaluations of the quality of the home environment, such as the Home Observation for Measurement of the Environment (Bradley, Caldwell, & Corwyn, 2003). However, where prior studies examined individual domains of parenting behavior, instead I examined 55 parent behaviors and practices from the ECLS-K to determine whether multiple dimensions underlying parenting practices that impact student achievement exist. I focused primarily on parent reports of parenting practices and behaviors collected from the parent interview during either the fall or spring of kindergarten, and also included one teacher-reported variable from the fall of kindergarten teacher questionnaire. This approach allowed for the inclusion of as much data as possible to examine these relationships, and to evaluate whether any previously overlooked parenting dimensions relate to student outcomes.

Exploratory factor analysis (EFA) was used to identify latent constructs of parenting from the kindergarten parenting practice and behavior variables within the ECLS-K.[2] EFA using a varimax rotation suggested three separate factors of parenting with eigenvalues greater than 1.0.[3] Variables with factor loadings greater than .35 are retained and used for generating predicted factor scores.[4] Variables that load onto each factor and the proportion of variance explained by each factor, as well as the variables that did not load onto any factor at loadings of .35 or greater, are presented in Appendix A.[5] Subsequently, the term *parenting dimension* is used interchangeably with *factor* to refer to the three factors identified in the factor analysis.

This study's methodology for identifying underlying parenting dimensions from a host of parenting behaviors, EFA, resembles that of Fan (2001) who performed a similar examination of parenting dimensions among adolescents in using NELS:88. Fan used a smaller list of parenting behaviors overall; however, as the students in NELS:88 were older, those data included student and parent reports of parent-involvement behavior.

Of the three factors, one of them, described subsequently as educational engagement, represented an engaged stance toward the child's education inside and outside of the home. It was comprised of 10 items relating to parental involvement in schools, such as volunteering in the child's class, having educational resources in the home, such as books and computers, and providing the child with enrichment activities outside of school time, such as sports and dance. This dimension most closely aligns with behaviors Lareau (2011) described as concerted cultivation. This factor also had the highest eigenvalue (3.17), suggesting the strongest coherence between its component variables.

The second factor measured what is subsequently termed stimulating parent–child interaction, and included eight variables about activities that parents do with their child at home, such as art projects, telling stories, and building blocks. It had an eigenvalue of 2.47. Every factor loading onto this construct was a type of stimulating parent–child interaction indicative of a stimulating dyadic relationship (Dodici, Draper, & Peterson, 2003; Estrada, Arsenio, Hess, & Holloway, 1987). These activities also involved conversation between parent and child and may contribute to vocabulary development that promotes later achievement and achievement gaps (Farkas & Beron, 2004; Hart & Risley, 1995). This factor resembled a different facet of concerted cultivation, suggesting that concerted cultivation may have multiple components that may not be utilized by parents simultaneously.

The third factor, identified as discursive discipline, included four variables about the parent's reaction to the child hitting them, such as requiring the child to apologize or giving them a warning. It had an eigenvalue of 1.17. This factor represents an approach to discipline that involves discussion, negotiation, and verbal reasoning rather than physical punishment. It connected to aspects of authoritative discipline identified by Dornbusch et al. (1987) as positively associated with achievement.

Predictor variables

All predictor variables were drawn from the fall of kindergarten.

Primary predictor of interest

The National Center for Education Statistics created the primary predictor of interest, family SES, as a composite of several items: father/male guardian's education and occupational prestige, mother/female guardian's education and occupational prestige, and household income.[6] From this continuous composite measure, I standardized the variable, and created SES quartiles, identifying those in the lowest SES quartile, the middle two quartiles, and the top SES quartile for analysis,

following other examinations of the relationship between SES, and achievement and parenting (Solorzano, 1992; Tate, 1997).

Other predictor variables

Additional control variables included a dichotomous variable indicating whether the child was a girl, a series of indicators for race/ethnicity, single-parent family or other family type (with two biological parent family omitted), age in fall of kindergarten (standardized), if the student was a first-time kindergartener, and birth weight (in pounds). Because timing of first childbirth is heavily correlated with SES (Moore et al., 1993), models controlled for whether the mom was older than 30 years old at first birth or a teen at first birth and whether the family received women, infants, and children (WIC) benefits. Finally, models included fall kindergarten reading, mathematics, and general knowledge IRT score controls to examine achievement gains occurring during school. These control variables were drawn from previous work examining parenting and achievement gaps (Bodovski & Farkas, 2008; Cheadle, 2006, 2008).

Table 1 provides descriptive statistics for the test score outcomes, fall kindergarten test score controls, and demographic control variables for the full sample and by SES quartile. The penultimate column reports *p* values from analyses that examine whether the variable in question exhibits statistically significant differences across SES groups.[7] Test scores increased with SES, amounting to differences between the highest and lowest SES quartiles of 1.0–1.3 standard deviations depending on the achievement test and grade. More affluent children are also slightly older, born to an older mother, and weighed more at birth; more of them were White, lived in married, two-parent households, and fewer of them received WIC than did less affluent children.

Analysis strategy

To examine the relationship between parenting practices and student outcomes, I used ordinary least squares (OLS) regression with fixed effects for each child's fall kindergarten classroom. Using fixed effects amounts to averaging coefficients from regressions run separately for children from the same kindergarten class and thus controls for anything, measured or not, that leads parents to choose different classrooms or schools. Importantly, classroom fixed effects also hold constant features of the larger school and neighborhood, such as race/ethnic composition, affluence, and safety, which allow for an isolation of the relationship between parenting and student outcomes, irrespective of classroom, school, and community environment.

The dependent variables in these models were the children's mathematics and reading IRT scores in the spring of Grades 1, 3, 5, and 8. In addition to the fixed effects, these models included controls for students' fall kindergarten IRT scores in reading, mathematics, and general knowledge. As a result, the regression coefficients should be interpreted as changes in mathematics or reading from kindergarten until Grade 1 (or subsequent), rather than as test score levels in the outcome grades, among children within the same classrooms.[8] To test whether the relationship between parenting and achievement varies by SES, interactions between each parenting construct and SES were included in separate models.

The final analysis examined a potential mechanism that might account for SES variation in the relationship between parenting and achievement. Drawing on the compensatory hypothesis, I considered whether educational engagement might be more effective for low-SES students because it is more effective for low-ability students (cf. Miles & Holditch-Davis, 1995; Morgan et al., 2011). Prior work examining the relationship between parenting and later achievement among 10th-grade students found evidence that parental school-involvement has a particularly strong effect for students that are from low-SES backgrounds and are lower performing (Benner et al., 2016). Thus, this analysis included an additional interaction between SES and fall kindergarten achievement in addition to the interaction between SES and parenting to test whether the SES variation in the relationship between parenting and student achievement can be attributed to the differential effects of parenting high- and low-ability students.

Although very little baseline data is missing (the variable with the highest levels of missing information is the kindergarten general knowledge IRT score, which is missing for 7% of the cases), multiple imputation was used to handle missing data in the independent variables and create 10 imputed datasets for analysis.

In addition to these primary models, the robustness of the results was tested with several supplemental versions of these models. Models without multiple imputation, using listwise deletion for missing cases, indicated a similar pattern of results.[9] Models excluding kindergarten test score controls to examine differences in the relationship between parenting behaviors and later test score levels rather than test score gains also yielded the same pattern of results as the models that included the kindergarten test score controls. Models estimated without classroom fixed effects, which no longer restrict comparisons to within-classroom differences, also returned the same pattern of results. To reduce bias due to unobserved factors relating to prior achievement and selection into schools, the version of the model presented below includes both fall kindergarten test scores and classroom fixed effects.

Some might also worry that parents are compensating for child behavior in their decisions about parenting and that this may influence both parental behavior and student outcomes. To account for this possibility, alternative models were estimated that included the parent and teacher ratings of the child's behavior from the fall of kindergarten that are described previously. Including these controls in the model does not affect the pattern of results or the magnitude of the significant coefficients, so they were excluded from the analyses presented here.

Models interacting educational engagement with each of the separate components that the ECLS-K used to create the SES composite—family income, parental educational attainment, and parental occupational prestige—were also estimated. As with the composite SES measure, each interaction between the individual SES components and educational engagement yielded significant results in the same direction, suggesting that no single component is driving this relationship. As a result,

Table 1. Sample characteristics for the full sample and by SES quartiles.

	SES lowest 25%	SES middle 50%	SES highest 25%	*p* value for differences across SES	Full sample
Achievement outcomes and fall kindergarten achievement controls (standardized)					
Reading IRT spring Grade 8	−0.629 (0.985)	0.042 (0.907)	0.621 (0.760)	< .001	0.000
Mathematics IRT spring Grade 8	−0.582 (0.995)	0.031 (0.913)	0.594 (0.790)	< .001	0.000
Reading IRT spring Grade 1	−0.507 (0.822)	0.019 (0.916)	0.540 (1.061)	< .001	0.000
Mathematics IRT spring Grade 1	−0.522 (0.840)	0.018 (0.921)	0.558 (1.017)	< .001	0.000
Reading IRT fall K	−0.491 (0.692)	−0.003 (0.873)	0.568 (1.227)	< .001	0.000
Mathematics IRT fall K	−0.557 (0.692)	0.002 (0.874)	0.630 (1.161)	< .001	0.000
General knowledge fall K	−0.640 (0.823)	0.040 (0.894)	0.646 (0.950)	< .001	0.000
Control variables from fall of kindergarten					
SES (standardized)	−1.098	−0.054	1.369	< .001	0.000
Female	0.492	0.483	0.492	.854	0.488
White	0.348	0.648	0.798	< .001	0.603
Black	0.236	0.139	0.059	< .001	0.146
Hispanic	0.341	0.140	0.066	< .001	0.177
Asian	0.019	0.023	0.041	.007	0.026
Other race	0.057	0.050	0.034	.004	0.048
Age (years)	5.693	5.715	5.707	.004	5.707
First time kindergartener	0.940	0.960	0.971	< .001	0.957
Two biological parent family	0.421	0.702	0.863	< .001	0.691
Single parent family	0.336	0.182	0.098	< .001	0.204
Other family type	0.143	0.117	0.039	< .001	0.105
Mom 30 years old or older at first birth	0.040	0.126	0.355	< .001	0.157
Mom a teen at first birth	0.499	0.235	0.041	< .001	0.260
Mom or child got WIC	0.830	0.441	0.103	< .001	0.466
Birth weight (pounds)	7.212	7.418	7.544	< .001	7.392
Observations					12,887

Note. Values are *M* (*SD*). Uses parent panel weight full sample (BYPW0).

the SES composite measure was used in the main analyses and only the results from the primary models are shown.

Results

Prevalence of parenting dimensions by SES

To address the first question—does the prevalence of the reported use of each parenting dimension vary by SES—Figure 2 plots the distributions of each mean-centered parenting practice by SES quartile using box and whiskers plots. The white line in the center of each box shows the median usage level for the given SES quartile. The top and bottom of the boxes bound the interquartile range, and the whisker lines contain the 95th percentiles. The additional dots show outliers that extend beyond the 95% range. The *y*-axis in this plot is reported in standard deviation units.

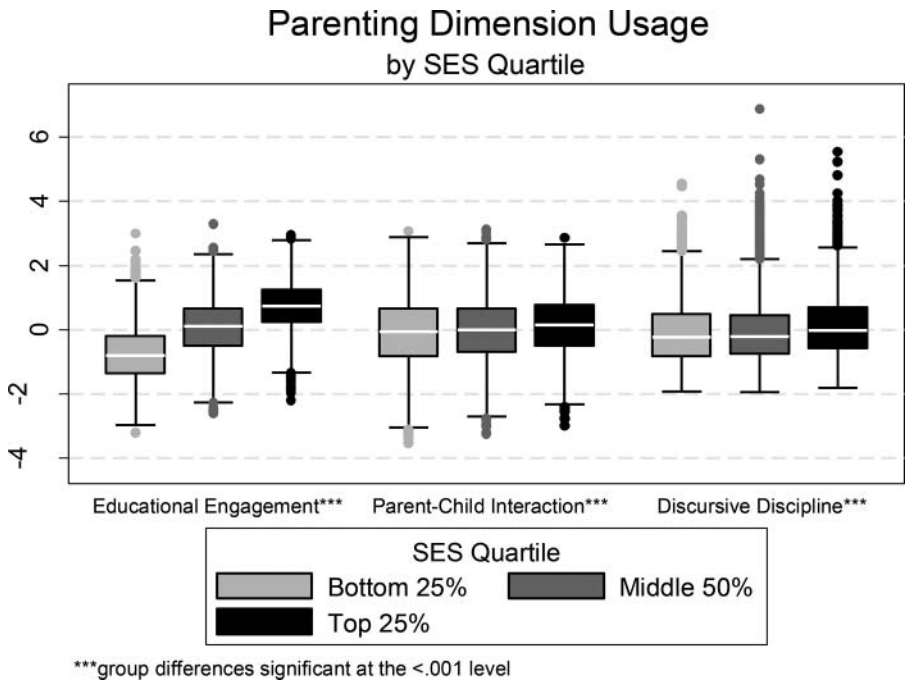

Figure 2. Parenting dimension usage by SES quartile.

F tests from regression models testing for SES differences in the prevalence of each type of parenting indicate statistically significant differences, with lower-SES parents reporting less intense usage of each of the three parenting dimensions than higher-SES parents ($p < .001$ for all comparisons). However, the SES gradient is much more pronounced for educational engagement than for the other dimensions, with differences of over one standard deviation of usage on average between parents from the bottom-SES quartile and those from the top quartile. Nevertheless, Figure 2 shows that there is considerable overlap in the parenting practices of parents across SES levels, but there are also differences in the intensity of use.

Examining the relationship between parenting and achievement by SES

The second question, examining whether the relationship between kindergarten parenting and student achievement growth varies by SES, is tested using OLS regression. The dependent variables in these models are Grades 1–8 IRT mathematics and reading scores. The independent variables of interest are the three dimensions of parenting, all of which are entered into the models simultaneously, and SES. The tables present the coefficients for the three parenting dimensions, SES, and the interaction of SES and parenting, and indicate the inclusion of other controls in each model. Results for regression models predicting Grade 1 mathematics and reading achievement are presented in Tables 2 and 3**.**

Table 2 presents the relationship between kindergarten parenting and Grade 1 mathematics. In the first model, in column 1, the three parenting measures are regressed on Grade 1 mathematics, without controlling for kindergarten test scores or demographic controls and without kindergarten classroom fixed effects. The first model considers all three dimensions simultaneously, and shows that educational engagement is the only dimension with a statistically significant relationship with Grade 1 mathematics achievement when the other parenting behaviors are held constant. As shown in column 1, an increase of one standard deviation in educational engagement is associated with a highly significant .256 standard deviation increase in Grade 1 mathematics scores. There is no significant association between stimulating parent–child interaction and Grade 1 mathematics, and the relationship between discursive discipline and Grade 1 mathematics is only marginally significant.

The second model introduces the control variables: kindergarten SES, demographic, and test score variables and kindergarten classroom fixed effects. The coefficients from these models should be interpreted as changes in mathematics test scores from kindergarten until Grade 1, among children within the same classroom. Column 2 reveals that the positive association between educational engagement and mathematics is greatly reduced, as the coefficient is much smaller and only marginally significant once SES and demographic and test score controls are added to the models. These decreases from columns 1 to 2 are not due to the inclusion of fall kindergarten fixed effects, but are instead primarily a result of the inclusion of fall kindergarten test score controls. One unexpected finding is that the relationship between stimulating parent–child interaction and achievement is negative and significant; however, supplemental models confirm that this is only because the other parenting behaviors are in the model.

The final three models include an interaction between each dimension of parenting and parental SES to examine whether the relationship between SES and each dimension varies by SES. Column 3 shows that the association between educational engagement and mathematics gains varies by SES, controlling for kindergarten demographics, achievement, classroom, and other parenting behaviors. The significant coefficient for the interaction between educational engagement and SES is –.025. Moving from one standard deviation below the mean to one

Table 2. Regression models estimating Grade 1 mathematics achievement with kindergarten parenting and SES.

	(1) Parenting measures	(2) Plus SES, test, and demographic controls	(3) Educational engagement × SES	(4) Stimulating parent–child interaction × SES	(5) Discursive discipline × SES
Educational engagement	0.256*** (0.022)	0.022† (0.012)	0.021† (0.011)	0.022† (0.012)	0.022† (0.012)
Stimulating parent–child interaction	−0.000 (0.008)	−0.018* (0.008)	−0.019* (0.008)	−0.019* (0.008)	−0.018* (0.008)
Discursive discipline	0.014† (0.007)	−0.003 (0.006)	−0.004 (0.006)	−0.003 (0.006)	−0.003 (0.006)
Fall K SES		0.040*** (0.007)	0.041*** (0.006)	0.041 (0.007)	0.040 (0.006)
Educational engagement × SES			−0.025*** (0.006)		
Stimulating parent–child interaction × SES				−0.004 (0.005)	
Discursive discipline × SES					−0.002 (0.007)
Fall K test and demographic controls		X	X	X	X
Fall K classroom fixed effects		X	X	X	X
Constant	0.007 (0.004)	0.006 (0.004)	0.005 (0.004)	0.006 (0.004)	0.006 (0.004)
Observations	12,887	12,887	12,887	12,887	12,887
R^2 (min, max)	(.048, .051)	(.480, .497)	(.480, .497)	(.480, .497)	(.480, .497)

Note. Standard errors in parentheses; R^2 (min, max) from 10 imputations. Models used parent panel weight for the full sample (C124PW0) and corresponding primary sampling units (C124PPSU). Standardized parenting dimensions and SES are measured in the fall of kindergarten. Models include fall kindergarten demographic controls and IRT scores for reading, mathematics, and general knowledge. Coefficients can thus be interpreted as the change in mathematics achievement from kindergarten to Grade 1, within classroom, net of demographic characteristics.
†$p < .10$; *$p < .05$; ***$p < .001$.

Table 3. Regression models estimating Grade 1 reading achievement with kindergarten parenting and SES.

	(1) Parenting measures	(2) Plus SES, test, and demographic controls	(3) Educational engagement × SES	(4) Stimulating parent–child interaction × SES	(5) Discursive discipline × SES
Educational engagement	0.229 *** (0.012)	−0.006 (0.013)	−0.007 (0.012)	−0.006 (0.013)	−0.006 (0.013)
Stimulating parent–child interaction	0.008 (0.006)	−0.005 (0.006)	−0.006 (0.006)	−0.005 (0.006)	−0.005 (0.006)
Discursive discipline	0.001 (0.010)	−0.003 (0.009)	−0.004 (0.009)	−0.004 (0.009)	−0.003 (0.009)
Fall K SES		0.033** (0.011)	0.033** (0.011)	0.033** (0.011)	0.032** (0.011)
Educational engagement × SES			−0.022 *** (0.007)		
Stimulating parent–child interaction × SES				−0.005 (0.009)	
Discursive discipline × SES					−0.016 (0.011)
Fall K test and demographic controls		X	X	X	X
Fall K classroom fixed effects		X	X	X	X
Constant	0.002 (0.004)	0.004 (0.004)	0.004 (0.004)	0.005 (0.004)	0.004 (0.004)
Observations	12,887	12,887	12,887	12,887	12,887
R^2 (min, max)	(.036, .043)	(.472, .484)	(.473, .485)	(.472, .484)	(.472, .485)

Note. Standard errors in parentheses; R^2 (min, max) from 10 imputations. Models use parent panel weight for the full sample (C124PW0) and corresponding primary sampling units (C124PPSU). Standardized parenting dimensions and SES are measured in the fall of kindergarten. Models include fall kindergarten demographic controls and IRT scores for reading, mathematics, and general knowledge. Coefficients can thus be interpreted as the change in reading achievement from kindergarten to Grade 1, within classroom, net of demographic characteristics.
**$p < .01$; ***$p < .001$.

standard deviation above the mean on educational engagement is associated with an increase in Grade 1 mathematics achievement gains of 0.092 standard deviations for lower-SES children, but little change for higher-SES children. These relationships are illustrated in Figure 3, which graphs the expected gains in student achievement associated with educational engagement for students from low-, average-, and high-SES families (plotted using the coefficients from Table 2, column 3, with SES and educational engagement centered on a mean of zero and a standard deviation of 1). The plots in the figure show a convergence of test score gains across SES levels as usage of educational engagement increases, which extends to the point where their respective mathematics achievement gains are less than 0.032 standard deviations apart at plus-one standard deviation levels of educational engagement. This suggests that the achievement gains associated with educational engagement are greatest for low-SES students. A nonlinear relationship was tested both through the use of an interaction between educational engagement and SES-squared and through interactions between SES and dummy variables for the top and bottom 25% of the distribution. These models (not shown) reveal that the relationship is essentially linear.[10] There are no differences in gains related to stimulating parent–child interaction or discursive discipline by SES.

Table 3 presents the analogous relationship for Grade 1 reading and the layout of the table mirrors that of Table 2. As with mathematics, educational engagement is positively associated with SES for reading. Once controls for SES, baseline test scores, and demographic characteristics are added, the positive association between educational engagement and Grade 1 reading is greatly reduced and not significant. The negative interaction between educational engagement and SES again demonstrates that educational engagement is associated with smaller SES differences in achievement changes in reading between kindergarten and Grade 1 with a coefficient of –.022. There are no significant interactions between stimulating parent–child interaction or discursive discipline and SES.

Models examining the relationship between kindergarten parenting and Grades 3, 5, and 8 reading and mathematics achievement reveal somewhat similar patterns to the relationship between parenting and Grade 1 mathematics and reading.[11] These results are shown in Table 4.

In each grade, there is a significant, negative interaction between educational engagement and SES for mathematics and reading. The associations decline somewhat in size in Grade 3, but then increase in magnitude in Grades 5 and 8 for mathematics. The associations for reading grow from Grades 1 to 5 and decline somewhat in Grade 8, but remain significant. In addition, in Grade 8 for mathematics, but in no other grade, there is a significant and negative interaction with stimulating parent–child interaction and SES as well (not shown). Kindergarten parenting, particularly educational engagement, is associated with achievement in every grade and is associated with smaller mathematics and reading SES-achievement gaps.

In supplementary models for Grades 3–8 only, identical models with science IRT scores as the dependent variable are estimated. In each of these analyses, there is a significant, negative interaction between educational engagement and SES for science. There is no significant relationship between SES and the other two parenting dimensions, with the exception of discursive discipline at Grade 5, in which the interaction is also negative. This suggests that the relationships highlighted here are not unique to reading and mathematics achievement, but hold for academic achievement more broadly.

Finally, one possible mechanism that might account for SES variation in the relationship between parenting and achievement is examined. Drawing on a compensatory hypothesis, this analysis considers whether educational engagement might be more effective for low-SES students because it is more effective for low-achieving students (Miles & Holditch-Davis, 1995; Morgan et al., 2011). To examine this potential explanation for the interaction between SES and educational engagement, Table 5 also includes an interaction between educational engagement and prior achievement in the same domain as the

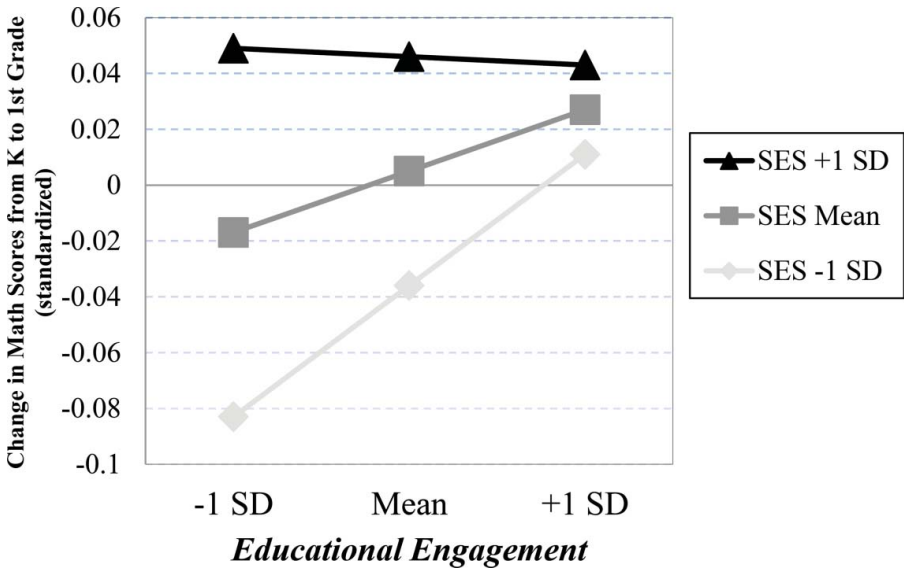

Figure 3. Relationship between educational engagement and Grade 1 mathematics, by SES. **Figure 3** plots regression coefficients from Model 3 of **Table 2**. SES and educational engagement are centered on a mean of zero with a standard deviation of one.

Table 4. Educational engagement × SES predicting later-grade achievement.

	(1) Grade 1 mathematics	(2) Grade 3 mathematics	(3) Grade 5 mathematics	(4) Grade 8 mathematics	(5) Grade 1 reading	(6) Grade 3 reading	(7) Grade 5 reading	(8) Grade 8 reading
Educational engagement	0.021† (0.012)	0.002 (0.013)	−0.003 (0.019)	−0.022 (0.020)	−0.007 (0.012)	0.001 (0.014)	0.002 (0.016)	−0.008 (0.017)
Stimulating parent–child interaction	−0.019* (0.008)	−0.022 (0.007)	−0.012 (0.015)	0.016 (0.016)	−0.006 (0.006)	−0.016†† (0.008)	−0.016 (0.018)	−0.017 (0.022)
Discursive discipline	−0.004 (0.006)	−0.018† (0.007)	−0.007 (0.015)	−0.000 (0.020)	−0.004 (0.014)	−0.016†† (0.009)	−0.016 (0.012)	−0.019†† (0.011)
Fall K SES	0.041*** (0.006)	0.060*** (0.014)	0.078*** (0.018)	0.098*** (0.022)	0.033** (0.011)	0.057*** (0.009)	0.094*** (0.017)	0.107*** (0.024)
Fall K mathematics	0.556*** (0.013)	0.523*** (0.014)	0.459*** (0.023)	0.397*** (0.021)	0.401*** (0.012)	0.136 (0.013)	0.103*** (0.019)	0.060 (0.016)
Educational engagement × SES	−0.025*** (0.006)	−0.020** (0.008)	−0.028** (0.009)	−0.040*** (0.010)	−0.022*** (0.007)	−0.026*** (0.009)	−0.040** (0.014)	−0.024*† (0.011)
Constant	0.005 (0.004)	0.007 (0.007)	0.011 (0.011)	0.029†* (0.012)	0.004 (0.004)	0.006 (0.006)	0.013 (0.012)	0.021†† (0.011)
Observations	12,887	10,603	8,091	6,636	12,887	10,603	8,091	6,636
R^2 (min, max)	(.480, .497)	(.452, .462)	(.403, .417)	(.319, .326)	(.473, .485)	(.432, .442)	(.394, .415)	(.314, .325)

Note. Standard errors in parentheses. R^2 (min, max) from 10 imputations. Includes controls for gender, age, race/ethnicity, if the child was a first time kindergartener, family type, age of mom's first childbirth, if the mom or child received WIC, the child's birth weight, and fall kindergarten test scores.

$^{\dagger}p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$.

Table 5. Educational engagement × SES and educational engagement × fall kindergarten achievement, predicting later-grade achievement.

	(1) Grade 1 mathematics	(2) Grade 3 mathematics	(3) Grade 5 mathematics	(4) Grade 8 mathematics	(5) Grade 1 reading	(6) Grade 3 reading	(7) Grade 5 reading	(8) Grade 8 reading
Educational engagement	0.023 * (0.011)	0.004 (0.011)	−0.012 (0.018)	−0.024 (0.017)	−0.007 (0.010)	0.007 (0.012)	−0.002 (0.018)	−0.001 (0.017)
Stimulating parent–child interaction	−0.020 * (0.008)	−0.025 *** (0.007)	−0.011 (0.016)	0.011 (0.013)	−0.009† (0.005)	−0.021 * (0.010)	−0.021 (0.017)	−0.026 (0.020)
Discursive discipline	−0.005 (0.006)	−0.013 (0.008)	−0.009 (0.014)	0.000 (0.019)	−0.005 (0.011)	−0.015 (0.007)	−0.019 (0.012)	−0.024 * (0.010)
Fall K SES	0.041 *** (0.007)	0.066 *** (0.010)	0.082 *** (0.016)	0.102 *** (0.019)	0.035 ** (0.012)	0.062 *** (0.011)	0.100 *** (0.017)	0.102 *** (0.025)
Fall K mathematics	0.581 *** (0.010)	0.558 *** (0.011)	0.495 *** (0.024)	0.438 *** (0.021)	0.415 *** (0.012)	0.160 *** (0.015)	0.135 *** (0.017)	0.083 *** (0.022)
Educational engagement × SES	0.002 (0.006)	0.011 (0.011)	0.005 (0.013)	−0.005 (0.011)	−0.014 (0.006)	−0.008 (0.008)	−0.017 (0.014)	0.001 (0.010)
Educational engagement × Fall K mathematics or reading	−0.069 *** (0.007)	−0.096 *** (0.012)	−0.115 *** (0.018)	−0.120 *** (0.016)	−0.026 *** (0.008)	−0.062 *** (0.010)	−0.090 *** (0.012)	−0.072 *** (0.014)
Constant	0.006 (0.004)	0.006 (0.008)	0.004 (0.012)	0.020 (0.012)	0.003 (0.004)	0.003 (0.005)	0.009 (0.012)	0.016 (0.011)
Observations	12,887	10,603	8,091	6,636	12,887	10,603	8,091	6,636
R^2 (min, max)	(.484, .504)	(.460, .472)	(.418, .432)	(.333, .342)	(.473, .486)	(.432, .446)	(.404, .423)	(.321, .332)

Note. Standard errors in parentheses. R^2 (min, max) from 10 imputations. Includes controls for gender, age, race/ethnicity, if the child is a first time kindergartener, family type, age of mom's first childbirth, if the mom or child received WIC, the child's birth weight, and fall kindergarten test scores.
†$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$.

later achievement outcome (i.e., for mathematics outcomes, educational engagement is interacted with kindergarten mathematics).

For mathematics achievement, introducing the interaction between educational engagement and prior achievement into the model completely accounts for the interaction between educational engagement and SES in every grade level. This indicates that the relationship between educational engagement and SES, which showed the largest achievement gains for low-SES students, is mediated by the compensatory relationship between educational engagement and mathematics achievement in kindergarten. For example, in Grade 1 mathematics, the negative and significant interaction between educational engagement and SES from Table 4, column 1 (also shown in Table 2, column 3), is reduced to nearly zero once the interaction between educational engagement and kindergarten mathematics achievement is added to the model (see Table 5, column 1). Instead, the interaction of mathematics and educational engagement is significant, with a coefficient of –.069.

Likewise, for reading, the pattern is mostly the same, with one exception. The significant interaction between educational engagement and SES is no longer significant after accounting for the differential relationship between educational engagement and kindergarten achievement, in all grades except Grade 1. In first-grade reading, the differential relationship between educational engagement and kindergarten achievement accounts for about a third of the interaction between educational engagement and SES, and the negative and significant interaction between educational engagement and SES of –.022 from Table 4, column 5 (also Table 3 column 3), is reduced to –.014 (see Table 5, column 5). However, the interaction of educational engagement and kindergarten reading is also significant, with a coefficient of –.026, suggesting that educational engagement is more beneficial for reading achievement growth for both low-SES and low-achieving kindergarten readers than for those who are higher SES and higher achieving.

In Grades 3–8, reading follows the same pattern as mathematics, where the interaction between educational engagement and SES is completely explained by the interaction between educational engagement and kindergarten reading achievement. This suggests that the differential payoff to educational engagement for low SES students is largely due to its impact on low-achieving students, in all grades for mathematics and in all but Grade 1 for reading.

Discussion

This study builds on previous work linking parenting and inequality by examining (a) whether there are commonalities in the types of parenting practices used by parents of different SES levels, and (b) whether there is variation in the relationship between these parenting practices and student achievement across SES. It examines a host of parenting practices and behaviors and identifies three different dimensions of parenting, noting that although there are SES differences in the degree to which each is utilized, there are substantial commonalities in parenting behaviors across SES. Results indicate that parenting behaviors are associated with the largest achievement gains among low-SES students and no gain for high-SES students.

EFA identified three dimensions of parenting: Educational engagement, stimulating parent–child interaction, and discursive discipline. The intensity of use of each parenting dimension varies significantly by SES, but each one is used by parents of all SES levels to some degree. One particular dimension, educational engagement, varies across SES levels much more than other parenting behaviors, and is associated with larger achievement gains for lower-SES students than for higher-SES children across Grades 1–8. These results temper Lareau's conclusions that "family practices cohere by social class," (Lareau, 2011, p. 263) and instead support Amato and Fowler's (2002) conclusion that a group of parenting practices pervades across SES groups and Scott-Jones's (1984) findings that even disadvantaged parents are involved in school in many important ways.

Of the three parenting dimensions, only educational engagement is associated with student achievement, net of other parenting behaviors. Further, educational engagement is associated with the largest achievement gains among low-SES students and no gain for high-SES students, net of other parenting behaviors. Unexpectedly, this differential relationship is completely attenuated by a differential relationship between prior achievement and educational engagement, suggesting that this type of parenting is especially beneficial for lower-SES children because it is especially beneficial for initially lower-achieving children. This is suggestive of a functional and compensatory role of parenting (Miles & Holditch-Davis, 1995; Morgan et al., 2011), and is consistent with other work showing that disadvantaged students benefit more from parental home and school involvement, academic stimulation, and engagement than advantaged children (Cooper & Crosnoe, 2007; Crosnoe et al., 2010; De Graaf et al., 2000; Domina, 2005). These results are consistent with research suggesting the differential effectiveness of parental involvement and educational expectations among 10th-grade students with lower-SES and poorer-prior achievement on academic performance (grade point average) and attainment (Benner et al., 2016). However, this is the first study to examine how variations in parenting, SES, and initial-achievement levels, relate to later achievement among children and early adolescents.

Likewise, the findings of this study align with some of the prior literature examining the relationship between social background, parenting, and achievement. The results confirm Roksa and Potter's (2011) findings that the differential benefits of parenting depend on the specific types of parenting behaviors, as educational engagement, and to a limited extent stimulating parent–child interaction, but not discursive discipline have a differential relationship with achievement by SES. These results also extend beyond the work of Roksa and Potter (2011) to look over time, indicating that the educational engagement is associated with larger achievement gains for lower-SES children than for higher-SES children in both in the short and long term.

There are also some ways in which these findings do not align with the prior literature. For example, the long-term persistence of the relationships between educational engagement and student achievement are at odds with Cheadle's (2009) conclusions that the effects of home environment do not persist beyond school entry. These results are also inconsistent with some of the prior literature about parent–child interactions and

parent involvement. In contrast to prior work (Pungello et al., 2009), the dimension that most closely aligns with maternal sensitivity, stimulating parent–child interaction, is not consistently associated with student achievement net of other parenting behaviors.

Likewise, discursive discipline, which is likely the opposite of the negative-intrusive parenting identified in the literature (cf. Pungello et al., 2009), is also not consistently related to student achievement. The absence of an association between discursive discipline and student achievement, contradicts prior literature indicating that supportive parenting, including calm discussion in response to child misbehavior, are positively associated with teacher reports of global Grade 6 academic performance, particularly among low-SES families (Pettit, Bates, & Dodge, 1997). However, as Tamis-LeMonda et al. (1996) found that different parenting behaviors might be specialized to promote different types of child behaviors, it is possible that these types of parenting behaviors are supportive of other aspects of child academic and social development that are not encapsulated by later reading and mathematics achievement. An important caveat in the conclusions related to discipline is that this study did not identify a dimension of parenting related to harsh discipline, nor did the parenting behaviors traditionally associated with harsh discipline load strongly and negatively on the discursive discipline factor. This is also at odds with prior research indicating that harsh discipline is negatively associated with achievement and school adjustment (Bodovski & Youn, 2010; Shumow, Vandell, & Posner, 1998).

One reason that these findings may disagree with some of the prior literature is due to the differences in the size and representativeness of their respective samples. The majority of the studies indicating the importance of parenting behaviors such as maternal sensitivity and parent–child interaction are drawn from small, geographically and ethnically homogeneous samples, whereas these findings draw from a nationally representative sample from across the country. These findings are much more consistent with the results from Fan's (2001) and Benner et al.'s (2016) studies that also employed nationally representative data, albeit among older children.

These results speak to theoretical arguments and empirical findings about the social reproduction of class through parenting. Although parenting is still implicated in the reproduction of inequality, I challenge the idea that specific parenting behaviors work best for the advantaged (Bourdieu, 1977). Instead, results suggest that some of the very parenting practices thought to play a key role in the conferral of advantage among elite and middle-class families are most effective at improving achievement among lower-SES students. They raise the possibility that some types of parenting, and especially educational engagement, may counteract some of the social reproduction of SES hierarchies. In contrast to Bourdieu's (1977) argument that parenting confers markers of class onto upper-class students but not onto lower-class students, results suggest the opposite relationship between parenting and achievement. Parenting, particularly in the form of educational engagement, buffers lower-SES children from falling as far behind their higher-SES peers. This points to the cultural mobility model (cf. DiMaggio, 1982) in which the signals of class are best utilized by lower-SES children to make gains relative to higher-SES children.

There are also some important limitations to the present study. This study took advantage of nationally representative, longitudinal data to examine how early parenting relates to later student achievement; however, it did not identify causal linkages among parenting, SES, and achievement. Although this study examined a wide variety of parenting practices, most were identified from the parent interview and might have suffered from single-reporter bias and might have missed important aspects of parenting behaviors. Likewise, because of the simple nature of the questions asked, it was not possible to determine the intensity of parenting practices or, in many cases, the quality of the reported interactions. In addition, given the structure of the questions asked, it was not possible to measure differences in parent-initiated parental involvement versus school-initiated parental involvement (e.g., as Kohl et al. [2000] described).

As with Fan's (2001) study, there were also some parenting behaviors that loaded weakly onto particular dimensions and some that did not load onto any of the identified dimensions. These included some variables such as visiting the zoo and sending the child to music lessons that had previously been theorized as associated with Lareau's (2011) notion of concerted cultivation. Thus, although several parenting behaviors have been identified as theoretically important for children's achievement, or have been identified as having predictive power in studies of isolated parenting behaviors, when included in an examination of a wide array of parenting behaviors with the intent of letting the data identify the most salient practices, not all behaviors thought to relate to one another emerged as being strongly related, despite theoretical predictions. Finally, because the ECLS-K asked different parenting questions in different waves to account for children's changing developmental stages, it is not possible to study changes in parent engagement and parent involvement over time using these data.

These limitations notwithstanding, these findings also inform the targeting of investment in parenting-focused interventions that are primarily aimed at boosting children's academic achievement. A wealth of prior literature highlights the promise of interactive parenting and supportive-emotional and disciplinary climates for improving child outcomes, as well as interventions targeting these types of practices (Bodovski & Youn, 2010; Connell & Prinz, 2002; Sheridan, Knoche, Edwards, Bovaird, & Kupzyk, 2010). The pattern of results identified by this study suggests that, in addition to supporting other beneficial parenting behaviors, parenting interventions should also focus on promoting parental engagement with schools, increasing academic resources in the home, and providing extracurricular experiences for children. Future researchers should consider incorporating these types of parenting interventions into random-assignment studies to test the efficacy of increasing the behaviors identified here for improving student performance. In doing so, it is important to remember that parenting behaviors and their relation to academic achievement do not exist in a vacuum, but are influenced by a host of other considerations including, parental expectations, time and resource constraints, and larger institutional biases (Calarco, 2014; Froiland et al., 2013; Lareau & Horvat, 1999; Lewis-McCoy, 2014).

Despite the potential for parenting behaviors to influence student performance in the long term, the magnitude of the

relationship between low-income children's achievement and these parenting practices is still relatively small. The models presented here control for the wide SES differences in achievement present at kindergarten entry which are shown in Table 1 and focus on the differences in achievement change that occur between kindergarten and Grade 8. The gaps between children in the interquartile range of SES are large, at nearly one standard deviation in reading and over one standard deviation in mathematics in the fall of kindergarten. Relative to these large gaps, the differential associations between parenting and achievement growth presented in Tables 2–5 are quite modest. These estimates represent the changes from kindergarten on after accounting for kindergarten demographic characteristics, including SES, and kindergarten classroom. In other words, educational engagement is insufficient to eliminate test score gaps overall or at school entry, but it may modestly restrain the unequal growth in achievement across SES groups during middle childhood.

Nonetheless, this work is highly suggestive of a differential association between educational engagement and achievement growth by SES over the course of development, and draws on a large body of literature supporting this conclusion. Thus, the findings of an association between parenting and achievement growth, that is beneficial for lower-SES children and minimal for higher-SES children, should be taken seriously. Further, this work reaffirms conclusions from experimental studies finding that disadvantaged students benefit more from interventions targeting the home environment (Burchinal, Campbell, Bryant, Wasik, & Ramey, 1997). Together, these results suggest that parenting, and in particular educational engagement, is not purely a vehicle for reproducing class advantage, but that it can help to reduce SES differences in achievement as well.

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Notes

1 In this study I used a definition of cultural capital that encompasses Lareau and Weininger's (2003) familiarity with highbrow aesthetic culture and Farkas et al.'s (1990) focus on the general skills, habits, and styles that teachers differentially reward. Both view parenting as the key vehicle through which cultural capital is transmitted.

2 This approach differs from Cheadle and Amato's (2011) confirmatory factor analysis in which they selected variables which they thought most closely identified with Lareau's concerted cultivation construct. The present approach includes a much wider group of parenting variables, not only those thought to comprise concerted cultivation. I used EFA to identify the underlying similarities between variables and not rely on presumed similarities between these variables and their loadings onto particular parenting dimensions.

3 The standard varimax rotation was used to generate the dimensions of parenting observed in these data to the orthogonality between factors and yield factors that limit correlations between parenting dimensions that may actually occur. However, when factors are created using promax rotation, the same three factors are identified with the same variables loading onto the same parenting dimensions. Although the variance explained by each factor is somewhat different, regression results calculated using the alternate promax factors are substantively similar.

4 Floyd and Widaman (1995) suggested that factor loadings from EFA are meaningful when they exceed .30 or .40. These analyses use the average of these two as the cutoff. This cutoff does lead to a nontrivial number of parenting variables that do not load onto any of the factors with eigenvalues greater than 1. These variables did have loadings above the recommended threshold for other factors with eigenvalues less than 1. This suggests that, although these parenting behaviors may be loosely related to one another, they cohere less strongly than the behaviors identified by the three primary factors. Following convention, these factors with lower eigenvalues were not included in the analysis.

5 To test the robustness of the loadings, EFA was performed in two ways. First, all of the variables were left in their original metrics and the second time, variables were standardized prior to conducting the factor analysis. Both methods yielded the same combinations of variables loading onto an equal number of factors, and had nearly identical loadings. Further, regression results using factors from either method follow the same pattern, with coefficients that are nearly identical. As such, the factor loadings generated by the first method, which preserves the original metrics for each variable, are used in the analyses.

6 See the ECLS-K User's Manual for more details about the coding of occupation and income.

7 The p values are from F tests from regression models in which the different predictor and outcome variables are regressed on indicator variables for the SES categories.

8 An alternative strategy would be to use growth models with either a linear or a higher-order polynomial to evaluate the underlying functional form. The present approach is more flexible in that it imposes no functional form to the relationship between the test score outcomes and the parenting behaviors and control variables. Indeed, as described subsequently, the results do not conform to a linear or quadratic pattern across grade levels.

9 The signs, magnitudes, and statistical significance of nearly all coefficients are identical with and without multiple imputation.

10 While **Figure 3** suggests a small negative effect for high-SES children, supplemental analyses restricting the sample to children from families among the top 25% of SES show that the effect of educational engagement is in fact small and nonsignificant. Given this, it is important not to over interpret the slight negative slope for the top of the distribution.

11 Although growth models could be used to examine the relationships over time, this approach is more constrained than the approach taken here. Hierarchical linear modeling would merely adjust for the lack of independence, but the fixed effects used here improve on this because they force all of the variation to be within classroom which effectively controls for factors leading to selection into school.

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Appendix A.

Results from exploratory factor analysis.

Variable label	Variable description	Proportion of variance explained by factor	Factor loading
	Factor 1: Educational engagement	0.41	
P2ATHLET	Outside of school hours, has the child participated in organized athletic activities?		0.46
P2ATTENB	Since the fall, have you or other adults in your house attended an open house or back to school night?		0.41
P2ATTENS	Since the fall, have you or other adults in your house attended a school or class event?		0.43
P1CHLAUD	How many children's records, audio tapes, and CDs do you have in the home?		0.38
P1CHLBOO	How many children's books do you have in the home?		0.54
P2PCLASS	About how many parents in your child's class do you talk with regularly?		0.38
P2DANCE	Outside of school hours, has the child taken dance lessons?		0.38
P2FUNDRS	Since the fall, have you or other adults in your house acted as a school volunteer?		0.38
P2HOMECM	Do you have a home computer that the child uses?		0.46
P2VOLUNT	Since the fall, have you or other adults in your house volunteered in your child's class or school?		0.54
	Factor 2: Stimulating parent–child interaction	0.36	
P1BUILD	How often do you build blocks with the child?		0.46
P1GAMES	How often do you play games with the child?		0.48
P1HELPAR	How often do you help the child do arts and crafts?		0.41
P1NATURE	How often do you teach the child about nature?		0.43
P1READBO	How often do you read books with the child?		0.38
P1SINGSO	How often do you sing songs with the child?		0.40
P1SPORT	How often do you play sports with the child?		0.42
P1TELLST	How often do you tell stories to the child?		0.49
	Factor 3: Discursive discipline	0.15	
P2HITAPO	If the child got so angry that s/he hit you, what would you do? Make child apologize		0.45
P2HITCHO	If the child got so angry that s/he hit you, what would you do? Make child do some chores		0.40
P2HITPRV	If the child got so angry that s/he hit you, what would you do? Take away a privilege		0.39
P2HITWAR	If the child got so angry that s/he hit you, what would you do? Give child a warning		0.47
	Variables that did not have a factor loading of .35 or above on any factor		
P1CHORES	How often is the child involved in household chores?		
P1CHLPIC	How often did the child look at picture books outside of school?		
P2DEPRES	How often during the past week have you felt depressed?		
P2SAD	How often during the past week have you felt sad?		
P2NUMTV	How many hours per day does your child watch t.v. or videos on weekdays?		
P2MUSIC	Outside of school hours, has the child taken music lessons?		
P2CLUB	Outside of school hours, has the child participated in organized clubs or recreational programs?		
P2ORGANZ	Outside of school hours, has the child participated in organized performing arts programs?		
P2ARTCRF	Outside of school hours, has the child participated in art classes or lessons?		
P2LIBRAR	In the past month, has anyone in your family visited the library with your child?		
P2MUSEUM	In the past month, has anyone in your family visited a museum with your child?		
P2ZOO	In the past month, has anyone in your family visited the zoo or aquarium with your child?		
P2CONCRT	In the past month, has anyone in your family attended a play, concert, or show with your child?		
P2RELIG	How often does someone in your family speak with your child about the family's religious practices and beliefs?		
P2ATTENP	Since the fall, have you or other adults in your house attended a PTA/PTO meeting?		
P2PARGRP	Since the fall, have you or other adults in your house attended gone to a parent-teacher conference or regularly scheduled meeting with your child's teacher?		
P2NOTWEL	Has the school not making you feel welcome make it harder for you to participate at your child's school?		
T2REGCON	During this school year, have this child's parents attended regularly scheduled conferences or meetings?		
P2EXPRES	I express affection by hugging, holding, or kissing the child		
P2WARMCL	The child and I often have warm, close times together		
P2HRDWRM	It is hard for me to be warm to my child		
P2CHLIKE	My child likes me and wants to be near me		
P2TOOBUS	I am usually too busy to play and joke with child		
P2SHOWLV	Even when I'm in a bad mood, I show the child a lot of love		
P2HITTO	If the child got so angry that s/he hit you, what would you do? Have child take time out		
P2HITDIS	If the child got so angry that s/he hit you, what would you do? Discuss what child did wrong		
P2HITSPK	If the child got so angry that s/he hit you, what would you do? Would you spank child		

(*Continued*)

P2HITBCK	If the child got so angry that s/he hit you, what would you do? Hit child back
P2HITIGN	If the child got so angry that s/he hit you, what would you do? Ignore it
P2HITFUN	If the child got so angry that s/he hit you, what would you do? Make fun of child
P2HITYEL	If the child got so angry that s/he hit you, what would you do? Yell at child
P2HITOTH	If the child got so angry that s/he hit you, what would you do? Hit something else
P2TVRULE	Are there family rules for which television programs my child can watch?
P2BKTOG	In a typical week, how many days does the family eats breakfast together?
P2EVENG2	In a typical week, how many days does the family eats an evening meal together?