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Family poverty, school-based parental involvement, and policy-focused protective factors in kindergarten

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ABSTRACT

Multilevel models of data from the Early Childhood Longitudinal Study-Kindergarten Cohort ($N = 19{,}375$) revealed that the negative association between family poverty and school-based parental involvement in education varied according to family and school factors targeted by large-scale policy interventions. Specifically, the association was weaker when parents and teachers had higher levels of educational attainment. In contrast, the association was stronger when schools had greater parent outreach. Also, the moderating role of parent education was stronger for two stably partnered biological parents than for other parents. These findings underscore the need to examine protective factors in research on the family process model and shed light on policy-amenable factors that potentially improve the early educational experiences of poor children.

Academic disparities between poor and more affluent children are evident at the very start of formal schooling. For example, poor children score significantly lower than both middle- and upper-class children on measures of math and reading achievement during kindergarten (Gershoff, Aber, Raver, & Lennon, 2007; Lee & Burkam, 2002). Given the implications of early educational outcomes for academic trajectories (Pianta, Cox, & Snow, 2007), understanding how poverty influences early achievement and identifying factors that protect against poverty effects, especially policy-amenable factors, are important goals for social science researchers.

Recent research suggests that parents' management of their children's education is a key mechanism through which poverty affects early educational outcomes (Cooper, Crosnoe, Suizzo, & Pituch, in press; Crosnoe & Cooper, in press; Gershoff et al., 2007), a pattern that affirms the role of parental involvement in No Child Left Behind (NCLB; Epstein, 2005) and Race to the Top Fund (U.S. Department of Education, 2009). Less is known, however, about the institutional and organizational factors that can be leveraged to block poverty from disrupting parents' involvement in their children's education. In this study, I address this issue by extending a core theoretical perspective of human development—the family process model (Elder, 1999; McLoyd, 1990). Specifically, I examine (1) the potential for aspects of home and school contexts to condition the association between family poverty and school-based parental involvement in kindergarten and (2) variation in the proposed moderation model by family structure during kindergarten.

I pursue these goals with data from the Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K). ECLS-K is a nationally representative sample of American kindergarteners created by the National Center for Education Statistics for research on early childhood and education aimed at informing social policy. The longitudinal nature of the data and wide range of home and school measures, which help to address omitted variable biases, as well as the representativeness of the data, which promotes generalizability, make ECLS-K ideal for examining socioeconomic disparities in school-based

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parental involvement and the reactivity of these disparities to conditions and programs in the larger ecology of early childhood.

1. Poverty, child development, and the family process model

Ample evidence demonstrates the pernicious effects of poverty on all domains of child development. For example, children raised in impoverished families are at an increased risk for physical health problems such as obesity and asthma, mental health problems such as depression and anxiety, and behavioral problems such as ADHD and antisocial disorder compared to their middle- or upper-class peers (Currie, 2005; Samaan, 2000). As discussed, family poverty also has a substantial impact on cognitive and academic outcomes. During elementary school, poor children earn lower grades and test scores, and they are more likely to be retained or placed in special education than nonpoor children (Blaire & Scott, 2002; Entwisle & Alexander, 1993; Gershoff et al., 2007; Lee & Burkam, 2002; Yeung, Linver, & Brooks-Gunn, 2002). Given evidence that the negative consequences of family poverty are more pronounced during early childhood than later on (Duncan, Yeung, Brooks-Gunn, & Smith, 1998), this period may represent a time of maximum academic risk for poor children.

Explanations for the association between poverty and child development have often centered on the lack of material resources available to poor children and their families, but a growing body of literature suggests that at least some of the developmental significance of poverty is filtered through family processes. In one of the earliest studies to describe family processes underlying the developmental risks of poverty, McLoyd (1990) proposed a model grounded in ecological and life course theories to examine how poverty and economic loss affect African American children's socioemotional development. According to this model, poverty is a highly disorienting and upsetting experience that introduces stress and discord into the family by disrupting parents' mental health, relationships among family members (e.g., partner and parent-child relationships), and positive parenting beliefs and behaviors. Given the significance of the home environment for child development, these changes are then manifested in less healthy socioemotional development.

Subsequently, family processes have been implicated in the effects of poverty on a wide range of socioemotional and behavioral outcomes in youth of all races (Conger et al., 1992; Mistry, Biesanz, Taylor, Burchinal, & Cox, 2004; Mistry, Vandewater, Huston, & McLoyd, 2002; Parke et al., 2004). The family process model has also been extended to children's educational experiences, with research pointing to parent depression, child stress, and poor parenting behaviors as potential mediators (Burchinal, Roberts, Zeisel, Hennon, & Hooper, 2006; Crosnoe & Cooper, in press; Evans & Kim, 2007; Gershoff et al., 2007; Gutman & Eccles, 1999; Noble, McCandliss, & Farah, 2007; Yeung et al., 2002). During early childhood, education-related parenting, in particular, appears to be a key family process through which poverty and economic disadvantage influence academic outcomes (Cooper et al., in press; Foster, Lambert, Abott-Shim, McCarty, & Franze, 2005; Gershoff et al., 2007; Mistry, Biesanz, Chien, Howes, & Benner, 2008).

Despite strong empirical and theoretical grounding for the family process model, important gaps in the literature have yet to be addressed. For example, although education-related parenting is a documented mechanism linking family economic status and early learning, researchers have yet to expand upon family process models of early education to examine factors that potentially block poverty from disrupting parental involvement. Identifying ways to reduce the negative impact of poverty on *school-based* parental involvement (e.g., meeting with teachers, attending school events) is a critical extension of this research given its early academic importance for low-income populations (Lee & Bowen, 2006) and its connection to education policy. For example, the parental involvement provision of No Child Left Behind (NCLB) aims to promote school-based involvement in particular and family-school connections in general as a means of reducing social and economic disparities in learning. Yet, guidelines for increasing parental involvement at school, especially the involvement of low-income families, are vague (Epstein, 2005). Consequently, identifying factors that protect against the risks to school-based involvement posed by family poverty, especially those that are amenable to policy intervention, may provide valuable information to schools. One way of doing so, the approach taken here, is to examine the protective role of factors already targeted by large-scale policy efforts focusing on low-income children, their families, and their schools.

2. The present study

The negative association between family poverty and school-based parental involvement is well established, including in analyses of ECLS-K (Cooper et al., in press; Crosnoe & Cooper, in press; Gershoff et al., 2007; McIntyre, Eckert, Fiese, DiGennaro, & Wildenger, 2007). The low involvement of poor parents during kindergarten may be especially problematic because the beginning of school represents a major life transition during early childhood. The transition from home to school requires children to adjust to a new environment, negotiate relationships with new authority figures and peers, and conform to a new set of expectations (Pianta et al., 2007). Children's experiences and performance during this transition year set the stage for future academic progress, launching children into trajectories of achievement (Barnett, 1996). Consequently, the lower involvement levels of poor parents during kindergarten may have negative consequences for their children's ability to transition into and through the early years of schooling.

Explanations for the association between poverty and low parental involvement often focus on the barriers faced by poor parents. For example, poor parents may work long hours in multiple and/or physically demanding jobs and have fewer means of transportation. For these parents, a lack of time, energy, and access may constrain attempts at school involvement (Edin & Lein, 1997; Lareau, 2003). Moreover, poor parents may be less optimistic about their children's educational chances and

less confident about intervening on behalf of their children (Crosnoe, Mistry, & Elder, 2002; Furstenberg, Cook, Eccles, Elder, & Sameroff, 1999), which likely decreases their motivation to become and stay involved. Yet, teachers and administrators may discourage the participation of poor parents if they have low behavioral and educational expectations of their children and negative perceptions about the attitudes and values of the parents themselves (Alexander, Entwisle, & Thompson, 1987; Lareau & Horvart, 1999; Muller, 2001).

The primary goal of the present study is to assess the degree to which *three* factors—each targeted by extant policy—condition the negative association between family poverty and school-based parental involvement. First, parents' education is associated with positive parenting, including parental involvement in early education (Davis-Kean & Sexton, 2009; Suizzo & Stapleton, 2007), and a variety of econometric statistical techniques (e.g., instrumental variables, quasi-experimental variations) have established that the effects of parent education on child outcomes are high in causal inference (Currie & Moretti, 2002; Gennetian, Magnuson, & Morris, 2008). Parental education may be especially important for poor young children, with research suggesting that increases in maternal education have stronger effects on parenting and child achievement in disadvantaged homes than in more affluent homes (Magnuson, 2007). Parent education may also serve as a protective factor in poor families given research demonstrating its buffering effects for other forms of family disadvantage (e.g., partnership instability; Cooper, McLanahan, Meadows, & Brooks-Gunn, 2009). Moreover, unlike many aspects of children's home environments, parent education is potentially amenable to social policy and is a target of at least three programs designed to improve parent and child well-being: New Chance (Quint, Bos, & Polit, 1997), Teen Parent Demonstration (Kisker, Rangarajan, & Boller, 1998), and National Evaluation of Welfare-to-Work Strategies (McGroder, Zaslow, Moore, & LeMenestrel, 2000).

Second, evidence from national and localized studies documents positive associations between teachers' qualifications and children's academic outcomes. During early childhood, for example, teachers' grade-level experience and level of education predict early learning (Burchinal et al., 2000; Croninger, Rice, Rathbun, & Nishio, 2007; Early et al., 2006; but see Boyd, Goldhaber, Lankford, & Wyckoff, 2007). Less is known about the extent to which teachers' qualifications impact parental involvement, but some research indicates that qualified teachers are better able to elicit the involvement of parents (Castro, Bryan, Peisner-Feinberg, & Skinner, 2004). This is not surprising given that teachers with more education and more experience report higher levels of self-efficacy, which is positively related to the encouragement of parent participation (Epstein & Becker, 1982). Moreover, qualified teachers may place more importance on parental involvement (Hoover-Dempsey, Bassler, & Brissie, 1987) and have developed more strategies for eliciting involvement, either through additional coursework, training, or first-hand experiences than less qualified teachers (Castro et al., 2004). If qualified teachers are able to increase the school-based involvement of poor parents in particular, then they may also serve as a protective factor, reducing the negative effects of poverty on parental involvement. Unfortunately, poor children are more likely to receive instruction from teachers with less education and shorter tenures than their more affluent peers (Clotfelter, Ladd, & Vigdor, 2007; Lankford, Loeb, & Wyckoff, 2002; Peske & Haycock, 2006; U.S. Department of Education, 2004a; U.S. Department of Education, 2004b), a disparity motivating the highly qualified teachers provision of NCLB (U.S. Department of Education, 2003).

Third, the connection (or lack thereof) between schools and families may also influence the extent to which poverty disrupts parents' school-based involvement. Research suggests that providing information on how schools function and how to support learning, as well as creating ample opportunities for communication with teachers, administrators, and counselors encourage parent involvement (Christenson & Sheridan, 2001; Epstein et al., 2002). Information and opportunities for participation that promote family-school communication during the transition to formal schooling may be especially important for increasing early parent involvement (Schulting, Malone, & Dodge, 2005). Strengthening connections between schools and families through parent outreach programs is a long-standing educational intervention to promote academic achievement, especially among low-income populations, and is a key component of NCLB (U.S. Department of Education, 2004b) and Race to the Top Fund (U.S. Department of Education, 2009). To the extent that such programs can increase the involvement of poor parents, they may ultimately help to improve the educational chances of their children.

If the primary goal of this study is to identify specific moderators of the association between family poverty and parents' school-based involvement, the secondary goal is to examine variation in such moderation across a key dimension of stratification that is closely linked to family poverty and its developmental significance: family structure. Recent research has underscored the need to examine family process models across diverse segments of the population (Cooper et al., in press; Raver, Gershoff, & Aber, 2007), and there are important reasons for extending this equivalence testing to the comparison of parents in different living arrangements. For example, both the structure and stability of parents' living arrangements has consequences for parenting beliefs and behaviors. Mothers of young children who undergo multiple family structure transitions are at an increased risk for parenting stress and poor parenting (Beck, Cooper, McLanahan, & Brooks-Gunn, in press). Similarly, single mothers and mothers living with non-biological (social) partners are also less likely to engage in positive parenting behaviors, including school-based parental involvement (Arnold, Zeljo, Doctoroff, & Ortiz, 2008; Nord & West, 2001).

Given that parents in non-traditional living arrangements often face the additional challenge of raising their children in poverty (McLanahan, 2004), they are likely at an even greater risk for low involvement in their children's education. Reduced socioeconomic, social, and emotional resources as a consequence of poverty and the absence of a biological partner (Cooper et al., 2009; Nord & West, 2001) may prevent them from being as involved as they or their children's schools would like. At the same time, they may be less able to respond to the efforts of teachers and schools to increase their involvement. In other words, the extent to which protective factors reduce poverty effects on school-based parental involvement may be limited for such parents.

Together, the two goals of this study allow for extension of a core theoretical perspective of child development—the family process model—during a critical period in early childhood: the start of formal schooling. In addition, from a policy perspective, this study may help to address early socioeconomic inequalities in education by identifying factors, amenable to outside intervention, that buffer against the risks to families associated with poverty. Given the cumulative nature of the educational system, understanding how to increase the achievement of poor children during early childhood may also help decrease the educational gap between more and less advantaged populations during adolescence and early adulthood.

3. Method

3.1. Data and sample

The Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K) is a nationally representative sample of American kindergarteners created by the National Center for Education Statistics (NCES) with a multi-stage sampling frame. One-hundred primary sampling units (counties or groups of counties) and 1280 schools within these units were selected for participation in ECLS-K. Approximately 70% of schools and 90% of students within participating schools took part in the ECLS-K kindergarten data collection (http://nces.ed.gov/ecls). The first wave of data was collected in the fall of 1998 and included children enrolled in part- or full-day kindergarten programs in public or private schools. The second wave of data collection occurred the following spring at the end of kindergarten. At both waves, parents were interviewed about the target child, home environment, parenting behavior, and family characteristics over the phone or at home in the language of their choice. Teachers completed assessments of target children as well as surveys about their own background, experience, teaching style, and classroom learning environment. School administrators completed surveys on the physical, organization, and fiscal characteristics of their schools, as well as the school's learning environment and programs. Finally, ECLS-K measured children's cognitive (e.g., general, literacy, and quantitative) and non-cognitive skills and knowledge (e.g., fine and gross motor coordination, social, and emotional).

The data for this study come from the fall and spring parent interviews, the fall teacher questionnaires, the spring school administrator questionnaire, and the fall direct child assessment. To maximize the use of available information and minimize bias, missing data were imputed using the MI procedure in SAS. This procedure uses full information from available data to create multiple data sets in which missing values were replaced with different sets of equally plausible values. Results from the mixed models are generated from each data set and then combined across data sets to create valid statistical inferences for the parameters of interest. Note that although multiple imputation corrects for missing data due to observed characteristics, it does not correct for unobserved characteristics. (See Appendix 1 for information on questionnaire- and item-level missingness.)

The analytic sample excluded children who changed schools (1257) or remained in the same school but changed teachers (an additional 628 children), resulting in a final sample of 19,375 children and parents. These families were excluded because characteristics of teachers and schools were hypothesized to impact the involvement of parents, and including them could distort the moderating role of these characteristics. Comparing the original ECLS-K and analytic samples suggests that, overall, the two samples were similar in terms of demographics characteristics (see Appendix 2). The largest difference was in the likelihood of living in a stable step family during kindergarten (about 11% for the analytic sample versus 8% for the full ECLS-K sample).

4. Measures

4.1. School-based parental involvement

In the spring, school-based parental involvement was measured by asking parents whether they had (1 = *yes*) attended a PTA meeting, attended an open house, attended a parent advisory group or policy council, attended a school or class event, attended a regularly scheduled parent–teacher conference, volunteered at school, participated in fundraising, or contacted teacher or school since the start of kindergarten. The sum of the eight items served as the final measure ($\alpha = .62$). (See Table 1 for descriptive statistics for school-based parental involvement and all other study variables.)

4.2. Family economic status

Family economic status was measured by combining spring household size and an ECLS-K composite variable for family income into an income to needs ratio. This was then compared to the federal poverty line to create three dummy variables for family economic status: poor (at or below 100% of the federal poverty line), low-income (101–200%), and nonpoor (above 200%).

4.3. Family structure between fall and spring of kindergarten

At both waves, parents reported the types of parents in the focal child's household (1 = two biological parents, 2 = biological mother and other father, 3 = biological father and other mother, 4 = biological mother only, 5 = biological

Table 1
Descriptive statistics for study variables (N = 19,375).

Variable	%	*M*	*SD*	Range
School-based parental involvement		4.36	1.78	0–8
Family economic status				
100% or below the federal poverty line	18.27			0–1
101–200% of the federal poverty line	23.53			0–1
Above 200% of the federal poverty line	58.20			0–1
Family structure between fall and spring				
Stable with both biological/adoptive parents	63.59			0–1
Stable with one biological parent	16.67			0–1
Stable step family	6.00			0–1
Unstable family structure	11.27			0–1
Other family structure	2.47			0–1
Selected family and school characteristics				
Parent education (some college or more)	50.45			0–1
Teacher education (graduate degree)	34.93			0–1
Teacher grade tenure		8.99	7.73	1–30
Parent outreach prior to kindergarten		2.49	.89	0–4
Parent outreach during kindergarten		3.38	.46	1–5
Family and school control variables				
Child age		5.70	.36	4.50–6.58
Child gender (female)	48.94			0–1
Asian	8.76			0–1
Black	15.22			0–1
Hispanic	17.29			0–1
White	55.61			0–1
Other race	3.12			0–1
Child immigrant status (first generation)	3.35			0–1
Child's first year in kindergarten (yes)	95.86			0–1
Child fall math achievement		19.35	7.62	6–60
Child fall reading achievement		21.86	8.88	10–70
Parental expectations		4.03	1.13	1–6
Maternal employment: full time	43.56			0–1
Maternal employment: part time	25.27			0–1
Maternal employment: not employed	31.17			0–1
Paternal employment: full time	80.26			0–1
Paternal employment: part time	15.50			0–1
Paternal employment: not employed	4.24			0–1
Class size		20.58	5.33	1–64
Type of kindergarten program (full day)	56.21			0–1
School sector (private)	22.50			0–1
School size		3.26	1.17	1–5
School socioeconomic status	18.30			0–1
School region: midwest	25.03			0–1
School region: northeast	18.86			0–1
School region: south	33.02			0–1
School region: west	23.09			0–1
School urbancity: central city	48.08			0–1
School urbanicity: fringe/large town	31.20			0–1
School urbanicity: small town/rural	20.72			0–1

Note: Unweighted estimates. *Source*: The Early Childhood Longitudinal Study-Kindergarten Cohort.

father only, 6 = two adoptive parents, 7 = one adoptive parent and one stepparent, 8 = related guardians, 9 = unrelated guardians). In the spring, ECLS-K also recorded when each individual living in the household joined the study. Based on these measures, I created dummy variables for stably living with both biological or adoptive parents, stably living with one biological parent, stably living with one biological parent and one non-biological (social) parent, unstable family structure (which included children who experienced any change in family structure between fall and spring), and other family structure (e.g., children stably living with related guardians). Note that biological and adoptive parents were collapsed because the two groups were similar on key study variables. Separating the two groups did not alter the findings.

4.4. Selected family and school characteristics

I examined five family and school characteristics that potentially protected against the negative effect of poverty on school-based parental involvement: parents' educational attainment, teachers' grade tenure, teachers'

educational attainment, parent outreach prior to kindergarten, and ongoing parent outreach during kindergarten.

Parents' educational attainment was based on ECLS-K created composite variables for highest level of education reported by mothers and fathers (1 = *less than high school*, 2 = *high school graduation*, 3 = *some post-high school education*, 4 = *college graduate*, 5 = *post-graduate degree*). I used mothers' level of education for all children except those who lived with the biological father only or the biological father and a social mother at the fall data collection (4.71%). This variable was then dichotomized such that parents with some post-high school education or more received a "1." Doing so allowed me to assess whether providing opportunities for poor, less-educated mothers to gain college experience potentially improves their education-related parenting.

Teachers' qualifications included grade tenure (number of years teacher had taught kindergarten) and educational attainment (1 = *bachelor's degree*, 2 = *one year after bachelor's degree*, 3 = *master's degree*, 4 = *education specialist*, 5 = *doctoral degree*). Teachers' education was dichotomized such that those with a master's degree or higher received a "1." Dichotomizing the variable in this way allowed me to examine the extent to which helping teachers earn higher level degrees potentially impacts the involvement of low-income parents.

Parent outreach prior to kindergarten, reported by teachers, was the sum of whether (1 = *yes*) schools provided information about kindergarten, invited preschoolers and families to the kindergarten class, visited families at home prior to start of school, and offered parent orientation prior to start of school ($\alpha = .55$). Ongoing parent outreach during kindergarten, reported by school administrators, was the mean of how often (1 = *never*, 2 = *once a year*, 3 = *two to three times a year*, 4 = *four to six times a year*, 5 = *seven or more times per year*) the school provided the following nine materials or activities during the kindergarten year: parent organization meetings, newsletters, home visits, school performances, fundraising events, parental involvement workshops for teachers, classroom events for families, report cards, parent–teacher conferences ($\alpha = .62$).

4.5. Family and school control variables

To help account for demographic variability and selection of children into classrooms and schools, and to maintain consistency with prior ECLS-K research on socioeconomic disadvantage (e.g., Cooper et al., in press; Crosnoe & Cooper, in press; Lee & Burkam, 2002), all models controlled for child age in years at the fall data collection, child gender (1 = *female*), child immigrant status (1 = *first generation immigrant*), race (dummy variables for Asian, Black, Hispanic, White, and Other, which included Native American and biracial children), parents' employment status during the spring (dummy variables for full time, part time, and no employment) class size at the fall data collection, type of kindergarten program (half vs. full day), school sector (public vs. private), school size (1 = *0–149*, 2 = *15–299*, 3 = *300–499*, 4 = *500–749*, 5 = *750 or more*), school socioeconomic status during the fall (proportion of families in a school that were at or below 100% of the federal poverty line), school region (dummy variables for Midwest, Northeast, South, and West), and school urbanicity (dummy variables for central city, city fringe or large town, and small town or rural). Given research suggesting reciprocal associations between parental involvement and child achievement (Shumow & Miller, 2001), I also controlled for children's math and reading achievement in the fall of kindergarten using children's scores on the mathematical thinking and language and literacy components of the ECLS-K cognitive assessment battery. Finally, all models included a measure of parental expectations because of its association with both family poverty and parental involvement (Crosnoe et al., 2002). During the fall of kindergarten, parents were asked how far in school they expected their child to go and responses ranged from 1 (*less than high school diploma*) to 6 (*Ph.D., MD, or other higher degree*).

5. Plan of analysis

The data analysis followed three general steps. First, school-based parental involvement was regressed on the two family poverty variables before and after adding the full set of family, teacher, and school variables to establish the focal association between family poverty and school-based involvement. Second, interactions between family poverty and the selected family and school variables were added to examine whether these variables moderated the association between family poverty and school-based involvement. Third, three-way interactions among family poverty, the selected family and school variables, and family structure were used to assess whether moderation effects varied by family structure between fall and spring.

Because two random factors—students and schools—exist in the study design, all models were estimated with the mixed procedure for multilevel modeling in SAS, with students serving as Level 1 and schools as Level 2. By incorporating the extra variance component, reflecting the additional random factor of schools, multilevel modeling measures the within-group dependency assumed to be present in clustered data (in this case, students nested in schools) and provides more accurate standard error estimates. It also allowed the analyses to be weighted, correcting for deviations from representativeness due to unequal probability of sample selection and non-random response bias. ECLS-K weight BYPW0 was appropriate because the analyses used parent interview data from fall and spring in combination with fall child assessment data, fall and spring teacher data, and spring school administrator data.

Table 2
Key study variables by level of poverty.

	Poor (n = 3540)	Low-income (n = 4558)	Nonpoor (n = 11,277)	Cohen's d
School-based parental involvement (M)	3.26[a]	3.98[b]	4.86[c]	.94
Family structure between fall and spring (%)				
Stable with both biological/adoptive parents	36.63[a]	53.36[b]	76.18[c]	.87
Stable with one biological parent	37.43[a]	20.95[b]	8.42[c]	.74
Stable step family	6.55[a]	7.63[b]	5.17[c]	.10
Unstable family structure	14.01[a]	14.81[a]	8.98[b]	.15
Parent education (% some college or more)	19.58[a]	33.55[b]	66.98[c]	1.09
Teacher education (% graduate degree)	34.10[a]	34.03[a]	35.55[a]	—
Teacher grade tenure (M)	8.35[a]	8.96[b]	9.21[b]	.11
Parent outreach prior to kindergarten (M)	2.15[a]	2.38[b]	2.64[c]	.54
Parent outreach during kindergarten (M)	3.45[a]	3.41[b]	3.34[c]	−.24

Note: Unweighted estimates. Families at or below 100% of the federal poverty line are "poor;" families between 101 and 200% of the federal poverty line are "low-income;" families above 200% of the federal poverty line are "nonpoor." School-based parental involvement ranges from 0 to 8; teacher grade tenure ranges from 1 to 30; outreach prior to kindergarten ranges from 0 to 4; outreach during kindergarten ranges from 1 to 5. Means with different superscripts within each row are significantly different at p = .05, as determined by Duncan's Multiple Range Test. Cohen's d is based on the largest significant pairwise difference. Positive coefficients indicate that the difference is in the expected direction.

6. Results

Before turning to the multilevel models that are the central focus of the study, I describe differences among poor (at or below 100% of the federal poverty line), low-income (101–200%), and nonpoor children (above 200%) on the key study variables (see Table 2). First, nonpoor parents had the highest mean score on school-based parental involvement, followed by low-income and then poor parents. Second, nonpoor children were most likely to be stably living with both biological (or adoptive) parents during kindergarten and least likely to be living in a stable single parent family, a stable step family, or an unstable family structure. Third, nonpoor parents were most likely to have some post-high school education, followed by low-income and then poor parents. Fourth, teachers of poor children had the least experience teaching kindergarten, but they were just as likely to have graduate degrees as teachers of more advantaged children. Finally, nonpoor children were most likely to attend schools with high levels of parent outreach prior to kindergarten, followed by low-income, and then poor children, but the opposite was true for outreach during kindergarten.

The first goal of the study was to examine whether parent, teacher, and school factors moderated the association between family poverty and school-based parental involvement. I began by establishing the focal association between family poverty and school-based involvement (see Table 3). In Model 1, consistent with prior research, poor (b = −1.23, p < .001) and low-income parents (b = −.63, p < .001) reported lower levels of school-based involved than nonpoor parents. The difference between poor and nonpoor children (−1.23) represents 70% of a standard deviation in school-based involvement. The full set of child, family, and school factors was added in Model 2. Including these variables reduced the coefficients for poor (b = −.62, p < .001) and low-income families (b = −.30, p < .001) by about half, but they remained highly significant. The difference between poor and nonpoor children after adding all study variables (−.62) is about 35% of a standard deviation in school-based involvement.

Also in Model 2, children who lived in stable single parent families (b = −.33, p < .001), stable step families (b = −.29, p < .001), or unstable families (b = −.25, p < .001) had less involved parents than children who stably lived with two biological/adoptive parents. With regard to the selected family and school characteristics, parents with at least some college experience reported significantly higher levels of school involvement than less-educated parents (b = .53, p < .001). The difference between these two education groups represents 30% of a standard deviation in school-based involvement. Parent outreach prior to kindergarten was significantly associated with school-based involvement (b = .06, p < .01). A one standard deviation increase in early outreach is associated with three percent of a standard deviation increase in school-based involvement (.06 × .89/1.78). Finally, the positive association between parent outreach during kindergarten and school-based involvement was statistically significant (b = .34, p < .001). A one standard deviation increase in outreach during kindergarten represents about nine percent of a standard deviation increase in school-based involvement (.34 × .46/1.78). Teachers' educational attainment and grade tenure were not significantly related to involvement at school.

To examine whether the association between family poverty and school-based parental involvement varied by parent, teacher, and school characteristics, I added interactions between the family poverty variables and each of the selected family and school characteristics. Contrary to expectations, teachers' grade tenure and parent outreach prior to kindergarten did not serve as significant moderators and were removed for the final interaction model presented in Model 3. Note that ECLS-K also measured teachers' school tenure, but consistent with grade tenure, this variable did not serve as a significant moderator. I also examined each of the items that comprise outreach prior to kindergarten and found that none significantly moderated the association between family poverty and school-based parental involvement.

Beginning with parents' educational attainment, the interaction between family poverty and parent education was statistically significant (b = .18, p < .05). To interpret this interaction, I calculated predicted levels of school-based involvement for poor and nonpoor mothers with a high school degree or less versus those with some college or more using an adjusted

Table 3
Results of multilevel models predicting school-based parental involvement in kindergarten (N = 19,375).

Variable	Model 1		Model 2		Model 3	
	B	SE	*B*	SE	*B*	SE
Family economic status						
100% or below the federal poverty line (poor)	−1.23***	.04	−.62***	.04	−.003	.26
101–200% of the federal poverty line (low-income)	−.63***	.03	−.30***	.03	.17	.24
Family structure between fall and spring						
Stable with one biological parent			−.33***	.04	−.34***	.04
Stable step family			−.29***	.05	−.29***	.05
Unstable family structure			−.25***	.06	−.26***	.06
Selected family and school characteristics						
Parent education (some college or more)			.53***	.03	.49***	.04
Teacher education (graduate degree)			.02	.03	−.03	.04
Teacher grade tenure			−.001	.002	−.001	.002
Parent outreach prior to kindergarten			.06**	.02	.06**	.02
Parent outreach during kindergarten			.34***	.04	.42***	.05
Family and school control variables						
Child age			−.07	.04	−.07	.04
Child gender (female)			−.01	.02	−.01	.02
Asian			−.85***	.07	−.84***	.07
Black			−.33***	.05	−.33***	.05
Hispanic			−.37***	.04	−.37***	.04
Other race			−.25**	.10	−.25**	.10
Child immigrant status (first generation)			−.33***	.08	−.33***	.08
Child's first year in kindergarten (yes)			.13*	.06	.13*	.06
Child fall math achievement			.01***	.003	.01***	.003
Child fall reading achievement			.01*	.002	.01*	.002
Parental expectations			.10***	.01	.10***	.01
Maternal employment: full time			−.21***	.03	−.21***	.03
Maternal employment: part time			.08*	.03	.08*	.03
Paternal employment: full time			.20***	.06	.20***	.06
Paternal employment: part time			.13	.07	.14*	.07
Class size			.01*	.003	.01*	.003
Type of kindergarten program (full day)			.09*	.04	.09	.04
School sector (private)			.06	.07	.08	.07
School size			−.06**	.02	−.07**	.02
School socioeconomic status			−.78***	.14	−.76***	.14
School region: midwest			.04	.06	.04	.06
School region: northeast			−.34***	.07	−.34***	.07
School region: west			.13*	.06	.13*	.06
School urbanicity: fringe/large town			−.04	.05	−.04	.05
School urbanicity: small town/rural			−.08	.06	−.08	.06
Significant interactions						
Poverty × parent education					.18*	.08
Low-income × parent education					.05	.06
Poverty × teacher education					.18**	.07
Low-income × teacher education					.05	.06
Poverty × outreach during kindergarten					−.21**	.08
Low-income × outreach during kindergarten					−.15*	.07

Note: Unstandardized coefficients presented. Above 200% of the federal poverty line (nonpoor) was the reference category for family economic status, stably living with two biological parents was the reference group for family structure, White was the reference group for race, unemployed was the reference group for mothers' and fathers' employment, south was the reference group for school region, and central city was the reference group for school urbanicity.

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

intercept that accounted for the full set of controls set to their sample means. As seen in Fig. 1, doing so revealed that poverty was negatively associated with school-based involvement for less-educated parents only. Indeed, poor parents with some or more college experience reported slightly *higher* levels of school-based involvement than their nonpoor counterparts.

Turning to the school context, I found that teachers' educational attainment significantly moderated the association between family poverty and school-based parental involvement ($b = .18$, $p < .01$). The negative association between poverty and school-based involvement was stronger for children with teachers holding bachelor degrees only than for children with teachers holding graduate-level degrees. Consistent with the results for parent education, these findings suggest that having a highly-educated teacher may serve as a protective factor for poor children at the start of school. Finally, the association between family poverty and school-based involvement was significantly moderated by parent outreach during kindergarten ($b = -.21$, $p < .01$). Interpreting this interaction suggested an opposite pattern than was found with parent and

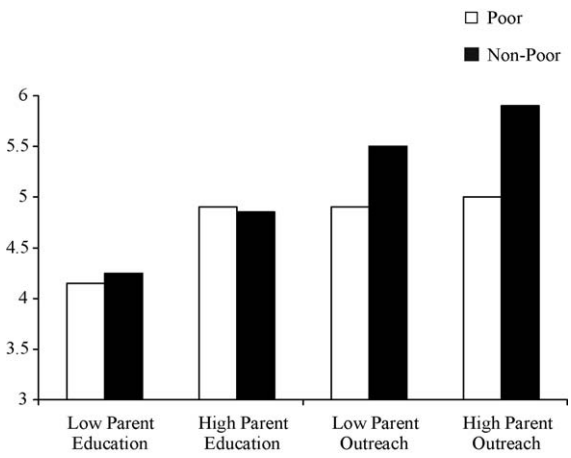

Fig. 1. School-based parental involvement by family poverty and selected family and school characteristics.

teacher education. Although poor parents reported higher levels of involvement when schools had higher levels of outreach, the difference in the involvement of poor and nonpoor parents was *greater* in schools with high levels of parent outreach (see Fig. 1). These findings suggest that nonpoor families may benefit more from ongoing parent outreach programs than less affluent families.

The second goal of the study was to examine whether the proposed moderation model varied by family structure during kindergarten. Because stable single parent families and stable step families reported similar levels of involvement as unstable families, these three groups were collapsed for the three-way interaction model. After including the main effects, corresponding two-way interactions, and the full set of control variables, a three-way interaction among poor economic status, parent education, and family structure was marginally significant ($b = .52$, $p < .10$; results from the full model available upon request). Interpreting this interaction revealed that parent education was a stronger moderator for two stably partnered biological parents than for other parents. Three-way interactions with teacher education and parent outreach were not statistically significant.

7. Discussion

This study investigated family poverty and school-based parental involvement during a critical period of early childhood: the start of formal schooling. Past research has demonstrated that poor children begin school with significantly lower cognitive skills than their more affluent peers and that academic-related parenting is a key mechanism explaining these socioeconomic gaps (Cooper et al., in press; Gershoff et al., 2007). The present study extended family process models of early education by investigating the potential of home and school factors—targeted by existing policy—to buffer against poverty effects and variation in the proposed moderation model by family structure.

Consistent with prior research, I found that poor parents were less involved in their children's school during kindergarten than more affluent parents. The lower involvement levels of poor parents and the academic consequences for their young children are well documented in the literature (Cooper et al., in press; Lee & Bowen, 2006). Building on this research, the first goal of the study examined whether three policy-amenable factors—parents' educational attainment, teacher qualifications, and parent outreach programs—helped to reduce socioeconomic disparities in school-based parental involvement.

Beginning with parents' educational attainment, I found that poverty was negatively associated with school-based involvement for less-educated parents only. Poor and nonpoor parents with relatively higher levels of education reported similar levels of involvement in their children's school. Previous research indicates that education has a strong influence on parenting behavior, including parental involvement in education (Davis-Kean & Sexton, 2009; Suizzo & Stapleton, 2007), but these findings suggest that it may be even more important among low-income populations. Less-educated mothers have less knowledge and less developed language skills than more-educated mothers, but they also have lower levels of self-efficacy (Dauber & Epstein, 1993; Hoff, 2003). Given research suggesting that school personnel hold negative beliefs about poor parents and their children (Lareau, 2003), less-educated, poor mothers may be even less likely to invest in their children's education at school if they lack information, have difficulty communicating with school staff, or believe their involvement will not make a difference. To the extent that this is true, welfare reform changes that reduce funding for parents' education may have the unexpected consequence of decreasing a key predictor of early achievement—school-based parental involvement. Although these findings are consistent with prior research and provide additional evidence for the moderating role of parent education (Cooper et al., 2009), further research is necessary to rule out the possibility of selection effects. Numerous controls were included in the analyses, but unobserved characteristics unique to higher educated, poor parents (e.g., motivation) may have contributed to the observed associations.

Turning to school characteristics, I found that the negative association between family poverty and school-based involvement was weaker for children with highly-educated teachers than for children with less-educated teachers. Like highly-educated parents, highly-educated teachers have more resources at their disposal and higher levels of self-efficacy (Castro et al., 2004; Epstein & Becker, 1982), which may increase their ability to involve low-income parents in the schooling process. More research is needed to understand the connection between teacher education and parental involvement in poor populations. Nevertheless, these findings suggest that efforts to raise the education level of teachers in low-income schools, such as the highly qualified teachers provision of NCLB (U.S. Department of Education, 2003), may boost poor children's early achievement directly and indirectly through increased levels of parental involvement.

Contrary to expectations, I found that the socioeconomic gap in school-based involvement was larger when schools provided greater ongoing parent outreach. These findings do *not* suggest that parent outreach programs are unimportant for poor families. Rather, they suggest that the programs may unintentionally target middle- and upper-class parents, which is not surprising given that school contexts, in general, are more likely to elicit the involvement of nonpoor parents (Lareau, 2003). Programs designed to promote home-school connections need to better address the obstacles that deter school-based involvement among poor families. For example, schools may need to help cover expenses associated with parental involvement activities such as transportation and child care to enable all parents to participate in school-related meetings or training sessions, as is suggested by NCLB policy (U.S. Department of Education, 2004b).

The second goal was to examine the equivalence of the proposed model for different family structure types. In general, the moderating roles of the family, teacher, and school characteristics were similar across various living arrangements, suggesting that poor families may respond to these protective factors in similar ways regardless of family structure. The sole exception was the moderating role of parent education, which was stronger for parents in stable relationships with biological partners than for other parents. These findings suggest that a lack of socioeconomic, social, and emotional resources available to poor parents in alternative living arrangements (Cooper et al., 2009) may block the otherwise protective nature of higher education. A note of caution is warranted, however, given the small number of poor parents with relatively high levels of education in unstable family structures (less than 100 parents).

This study contributed to the base of knowledge on the early education of poor children, but it is not without limitations. For example, the school-based involvement measure is based on dichotomized items that assessed whether parents participated in various activities as opposed to how often they participated. To the extent that this measure underestimated the involvement of some parents and therefore reduced variability in parental involvement, power to detect associations between the predictors and parental involvement may have been limited. Additionally, school-based parental involvement was examined at one point in time. Past research on adolescents has demonstrated the value of investigating patterns of involvement over time, which allows for a more careful consideration of causal effects (Crosnoe, 2001). Also, home-based parental involvement (e.g., book reading) and emotional and motivational forms of involvement (e.g., academic expectations), although less amenable to policy, are strong predictors of educational outcomes (Raikes et al., 2006; Suizzo & Soon, 2006). ECLS-K does not measure these forms of involvement during the spring of kindergarten, but future research should examine whether the protective factors identified in this research extend to home-based parental involvement. Furthermore, prior research indicates that other family processes (e.g., emotionally responsive parenting and marital conflict) explain socioeconomic disparities in early development. Identifying factors that help buffer against the effects of poverty on these family processes is another important avenue for future research.

This study extends research on the family process model and sheds light on how policy-amenable factors in home and school contexts can promote the education of poor children during a critical period of the early life course. The results of this study suggest that poor parents are at risk for less effective academic-related parenting. Finding ways to raise the education levels of poor children's parents and teachers and tailor parent outreach programs to low-income populations may, however, promote positive parenting and ultimately improve the educational chances of poor children.

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Appendix 1.

See Table A1.

Appendix 2.

See Table B1.

Table A1
Questionnaire- and item-level missingness for study variables.

Questionnaire/item	ECLS-K name	Percent missing
Fall Parent Interview		14.9
Family structure[a]	p1hparnt	14.9
Maternal employment	p1hmemp	15.6
Paternal employment	p1hdemp	16.0
Child's first year in kindergarten	p1firkdg	14.9
Parents' academic expectations of child	p1expect	14.9
Spring Parent Interview		10.8
School-based parental involvement	p2attenp, p2attenb, p2paradv, p2attens, p2pargrp, p2volunt, p2fundrs, p2parint	10.8
Household size[b]	p2htotal	10.8
Family structure[a]	p2hparnt	10.8
Child immigrant status	p2chplac	10.8
Fall Teacher Questionnaire A		14.7
Class size	a1boys, a1girls	18.4
Fall Teac her Questionnaire B		9.5
Teacher education level	b1hghstd	20.7
Teacher grade tenure	b1yrskin	15.9
Parent outreach prior to kindergarten	b1infoho, b1vstk, b1hmevst, b1prntor	10.7–11.2
Spring school administrator questionnaire		14.6
Parent outreach during kindergarten	s2ptamt, s2nwshme, s2hvisit, s2invite, s2fundrs, s2wrkshp, s2claspr, s2rprtcd, s2ptconf	15.8–19.6
School sector	s2kpupri	0
School size	s2kenrls	.8
Fall direct child assessment		10.0
Child fall math achievement	c1mscale	10.4
Child fall reading achievement	c1rscale	10.2
Cross round parent composite		
Household income[b]	wkincome	5.3
Maternal education	wkmomed	5.3
Paternal education	wkdaded	5.4
Race	wkamerin, wkasian, wkblack, wkhisp, wkmt1rac, wkpacisl, wkwhite	5.8
Other		
Type of kindergarten program	f2class	5.6
Child gender	gender	.1
School region	cregion	0
School urbanicity	kurban	0

[a] Used to construct family structure between fall and spring.
[b] Used to construct family economic status.

Table B1
Selected characteristics of original ECLS-K and analytic samples.

	Original ECLS-K sample (n = 21,260)	Analytic sample (n = 19,365)
Family economic status		
100% or below the federal poverty line	20.32	18.27
101–200% of the federal poverty line	22.65	23.53
Above 200% of the federal poverty line	57.03	58.20
Race		
Asian (%)	7.73	8.76
Black (%)	15.82	15.22
Hispanic (%)	17.77	17.29
White (%)	56.46	55.61
Immigrant status	3.05	3.12
Fall family structure		
Living with both biological/adoptive parents (%)	65.91	64.23
Living with one biological parent (%)	22.11	20.71
Living with one biological and one social parent (%)	8.14	11.30
Parent education (% some college or more)	49.76	50.45

Note: Unweighted estimates.

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