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# A Mixed-Method Study of Teachers' Attitudes About Teaching in Urban and Low-Income Schools

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This multimethod study investigates the attitudes teachers in urban and low-income schools have about teaching early elementary students. The authors examine the contextual characteristics of elementary schools where such teachers are willing to take responsibility for children's learning. The quantitative analyses focus on a subsample of students and teachers in low-income schools from The Early Childhood Longitudinal Study–Kindergarten cohort. The qualitative data are drawn from a 2-year intensive study of eight kindergarten teachers and four first-grade teachers in urban public schools, with a focus on interviews with a subset of “highly responsible” teachers. The authors discuss policy implications, especially related to how to improve teachers' attitudes toward children from low-income environments.

**Keywords:** *early elementary education; teacher responsibility; student learning; urban and low-income schools; mixed methods*

Teachers' attitudes about the cognitive capacity of their students as well as teachers' commitment to the profession play a role in shaping their students' learning. Teachers' low expectations of some students and their

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reluctance to take responsibility for the learning of all their students can contribute to low achievement (Brophy, 1983; Rosenthal & Jacobson, 1968). Particularly in secondary schools in low-income settings, research has shown that teachers' dedication to teaching, including their assumption of responsibility for student learning, is associated with how much their students learn (Lee & Loeb, 2000; Lee & Smith, 1996).

This multimethod study investigates urban early elementary school teachers' attitudes about teaching in low-income settings and how such attitudes are associated with their students' learning. Our focus is on the early elementary grades. We pay particular attention to the views of teachers who believe all children are capable of learning and who expend the effort necessary to help their students succeed and to the contextual characteristics of schools where teachers with such attitudes work. We use the term *responsibility* to characterize how willing teachers are to hold themselves accountable for the learning of all their students. Our premise with this study is that schools share this responsibility, both for their students' learning and also for reducing—if not eliminating—the educational inequalities facing children from disadvantaged family backgrounds (Lee & Burkam, 2002). We provide empirical evidence supporting the importance of early elementary teachers' beliefs in their students' academic performance.

We combine two sources of data and two methodologies to explore teachers' attitudes toward teaching early elementary students in urban, public schools that enroll lower-income students. As a mixed-method study, the data sources as well as the methodologies are both quantitative and qualitative. Both data sources include information on the students and the low-income, public schools they attend. Using data from several interviews and observational field notes on six kindergarten and first-grade teachers, we explore why these teachers chose to work with this population of students, their perceptions of the impediments to their students' academic and social success, and what preparation they found most useful for this work. We compare the attitudes of the teachers in these schools to the attitudes of teachers of the same grades within a roughly matched nationally representative sample of 207 low-income, urban, public schools from the Early Childhood Longitudinal Study Kindergarten Cohort (ECLS-K). We contrast teachers with self-reported high and low levels of responsibility in terms of their professional characteristics and school characteristics. We also estimate how the teachers' willingness to take responsibility for students' learning influenced their students' achievement.

## Background

Two different theoretical frameworks ground our work: one relates to teachers and the other focuses on the organizational properties of schools. In the first framework, we review studies of teachers' self-reports of their willingness to take responsibility for their students' learning and of their attitudes toward teaching children from lower-income backgrounds. In the second framework, we examine school contexts that support teachers in developing and sustaining the teachers' positive attitudes toward their work. Our work focuses on demonstrating how these two domains—that of individual teachers and that of teachers collectively—work together and support one another. We begin by reviewing empirical research in these areas.

### Teacher Characteristics Associated with Responsibility

Our definition of responsibility was first described by Lee and Smith (1996) as the willingness of teachers to take responsibility for all their students' learning and to accept that students' success or failure is attributable to the quality of the teaching, rather than to outside determinants, including the students. This construct differs from teacher efficacy that refers to teachers' beliefs that they are capable of being effective teachers (Bandura, 1977). Responsibility focuses more on the teachers' willingness to take responsibility for helping all students learn rather than on teachers' beliefs about their professional effectiveness.

Teachers' backgrounds, combined with the characteristics of their students, account for about half of the variation in teachers' attitudes (Raudenbush, Rowan, & Cheong, 1992). The evidence about the effect of teacher preparation is equivocal: Some research shows that there is no link (Newmann, Rutter, & Smith, 1989), some shows an inverse relationship between professional preparation and efficacy (Moore & Esselman, 1992), and some shows that graduate-educated secondary teachers demonstrate greater degrees of personal efficacy (Woolfolk & Hoy, 1990). The research on experience and teacher attitudes is also inconsistent and complex. For example, Lee and Loeb (2000) showed that the relationship is not linear: Teachers' efficacy and responsibility can increase as they gain more experience, but at a certain point the trend can reverse as more experienced teachers may become apathetic. There is little extant research on the link between responsibility and other characteristics of teachers such as their propensity toward learning or

their feelings of empowerment and control at the schools. With this study, we seek to contribute to the literature that links teacher characteristics and responsibility.

## **Responsibility Among Teachers and its Effects on Student Achievement**

Since the 1968 publication of Rosenthal and Jacobson's seminal study, *Pygmalion in the Classroom*, many researchers have confirmed their findings about the "self-fulfilling prophesy" of teachers' expectations on student progress (e.g., Brophy, 1983; Cooper & Tom, 1984; Raudenbush, 1984). The process by which teachers' attitudes influence student learning tends to be attenuated by teacher behavior. In general, teachers' attitudes toward children's abilities, as well as teachers' own feelings of responsibility, tend to influence their interactions with students (Brophy, 1983; Cooper & Tom, 1984). Teachers' attitudes about their own students' abilities also influence the teachers' actions. For example, teachers who believe certain children are incapable of learning are less likely to provide them stimulating tasks that improve their learning (Wigfield & Eccles, 2000).

Research shows that teachers who are willing to take personal responsibility for their students' learning are inclined to have high academic expectations for all children as well as for students' self-regulation and independent learning (Pressley, Allington, Wharton-McDonald, Block, & Morrow, 2001). Such teachers respond to "failure as a challenge, requiring the students to redo failed work (with individualized help from the teachers as needed) rather than writing the students off or referring them to remedial classes" (Brophy, 1983, p. 642).

### **Collective Responsibility**

Although most of the extant research on teachers' attitudes focuses on individual teachers, a small but increasing body of research explores teachers' expectations at the organizational level (typically at a school level aggregate, "collective responsibility"). In secondary schools with high levels of collective responsibility, students learned more, and their learning was more equitably distributed by social class (Lee, 2002; Lee, Loeb, & Lubeck, 1997; Lee & Smith, 1996; Lee, Smith, & Croninger, 1997). Moreover, such positive attitudes were more common in smaller schools and in private (especially Catholic) schools. Findings in a study of students in inner-city,

public middle-grade Chicago elementary schools also indicate collective responsibility was more common in the smaller schools and sixth and eighth graders learned more in schools with higher levels of collective responsibility (Lee & Loeb, 2000).

## **Teachers' Attitudes About Teaching Low-Income or Minority Students**

Teachers' beliefs about learning, operationalized at either the individual or the collective level, are influenced by the context of the schools in which they teach. Schools (both elementary and secondary) that enroll more low-income and/or minority students provide evidence of lower levels of collective responsibility (Lee & Burkam, 2002; Lee & Loeb, 2000; Lee & Smith, 1996). Teachers in schools that enroll students of lower socioeconomic status (SES) and/or achievement are more likely to "write off" such students (Brookover et al., 1978). Yet, teachers in these schools in particular need to take responsibility for their students. Leland and Harste (2005) emphasize that teachers who teach children from backgrounds of poverty should see themselves as "agents of change—people who can make a difference in the lives of children. They need to be able to rise above the temptation to give in to a feeling of fatalistic helplessness" (p. 76).

Although secondary schools that enroll predominantly low-income, low-SES, and mostly minority students are often characterized as having lower levels of collective responsibility (Lee, 2001), there are some exceptions to this pattern. Some schools that educate economically disadvantaged children demonstrate favorable and positive social-psychological climates that encourage higher student achievement for all children (Brookover et al., 1978). For example, an ethnographic study of five predominantly low-income, urban elementary schools with a range of ethnic diversity showed that in general, teachers' beliefs about students were patterned on the race and SES of their students (Diamond, Randolph, & Spillane, 2004). However, in three of these schools, the study showed that teachers demonstrated "a strong sense of responsibility for student performance" (p. 86).

## **Administrative Support and Strong Principal Leadership**

Some studies explore whether school contextual characteristics contribute to teachers' positive attitudes toward their students' learning. The

nature of the leadership by school principals influences teachers' attitudes toward student learning in some schools if a common vision about instruction and collective responsibility for students' academic success is developed and sustained (Hallinger & Heck, 1996). Such leadership can also increase teachers' participation in high quality, professional development activities (Smylie, Allensworth, Greenberg, Harris, & Luppescu, 2001). Teachers' willingness to take responsibility for student learning is also associated with their perceptions of their own influence and control over the environment and policies at both the classroom and the school level, as well as with the degree of cooperation between the teaching staff and the administration (Lee & Smith, 1996).

## Our Approach

Our study contributes to the literature on teacher responsibility in three important ways. The first is psychological: We have located few studies on early elementary teachers' beliefs about their responsibility and even fewer that explore the ramifications of these perceptions on children's cognitive development. The second is methodological: We located no multimethod studies focused on teacher responsibility. The third is contextual: Research shows that although attitudes of responsibility are rare in schools enrolling many economically disadvantaged children, we concentrate our study on such schools.

Our data sources and methodologies complement one another by adding both depth and breadth to the study of how teachers' attitudes influence their students' academic development. We organize our investigation around two related research questions. For each question, we pose hypotheses about the results we expect based on previous research.

*Research Question 1.* Developing and sustaining teacher responsibility. Which teacher attitudes and teacher and school characteristics are associated with self-reported high levels of teacher responsibility? We hypothesize that teachers who are willing to take responsibility for all their students' learning also demonstrate positive attitudes toward teaching, have higher levels of professional dedication, and have more teaching experience. We hypothesize that such teachers also work in schools with strong administrative support.

*Research Question 2.* Teacher responsibility and student achievement. Do teachers' attitudes about responsibility influence student learning in kindergarten and/or first grade and does the influence from a teacher who reports high responsibility in the kindergarten year carry over to the first grade year? We hypothesize that teacher responsibility, at either the kindergarten level or the first-grade

level, or at both years, is significantly and positively associated with student learning. Having a teacher who is highly responsible at one of the two grades may have important, sustained influence on how students feel about their own skills and about school.

Although we recognize our use of teachers' self-reports of responsibility for children's learning, in contrast to demonstrated displays of teacher responsibility levels, may limit our research, we also question the practicality of obtaining such information through sources other than from surveys or interviews. We argue for the validity of our approach for the following reasons. First, our study is grounded in a body of research that has also used teacher self-reports of levels of responsibility (and not third-party observations). Second, we feel that these self-reports are valid as there is considerable variability in teachers' self-reports of their responsibility, allowing us to compare high to both medium and low levels of responsibility. Third, we also draw on qualitative data wherein we identify teachers who (a) self-report high levels of responsibility and (b) exhibit observable behavior consistent with high responsibility—that is, their self-reports match their actions.

## Method

### Research Methodology: A Mixed-Method Research Design

Our study uses both quantitative and qualitative data and methods. We use quantitative methods and longitudinal data from a nationally representative sample of children attending low-income, public schools, as well as qualitative methods with data drawn from a small number of classrooms that enroll high proportions of children from low-income backgrounds. Thus our two samples are demographically similar.

We draw on data from the first four waves of the most recent U.S. Department of Education study: The ECLS-K sponsored by the National Center for Education Statistics (NCES) (2002). These data have several strengths. They are current, nationally representative, longitudinal, and include information from children, their parents, their teachers, and their schools. ECLS-K, although advantageous in terms of its multilevel design and its national representation, is limited in terms of contextual information about classrooms, teachers, and children's experiences.

Our second source of data, which we analyze with qualitative methods, is composed of an intense ethnographic study in six low-income schools in three cities in a large Midwestern state. Researchers spent considerable time in seven kindergarten classrooms in 2001 to 2002 and in 4 first-grade

classrooms in 2002 to 2003, observing 12 teachers in total (2 teachers job-shared one classroom). Our analyses draw primarily on our interviews with the teachers in these classrooms but also refer to interviews with principals at these schools and to observations from the field visits to these schools.

Our methodological approach combines qualitative (interpretive) and quantitative (postpositivist) research paradigms. Although a traditional approach has seen the two paradigms as separate and confrontational (e.g., Guba & Lincoln, 1989; Secrest, 1992), our work is more in line with those who have described them as complementary, integrative, and conciliatory (e.g., Greene, Caracelli, & Graham, 1989; Patton, 2002; Reichart & Cook, 1979).

According to Caracelli and Green (1997), mixed-method studies fall into one of two general design categories: component or integrated. In component design, the methodological approaches remain relatively distinct in terms of data collection and analysis but are combined at the level of conclusion and interpretation. Integrated designs, on the other hand, begin by combining the different paradigms at the level of data collection, often using a spiral or iterative approach to design and analysis. We use a component mixed-method design, although we aim to be integrative at the level of analysis and conclusions. That is, we combine results from two studies with complementary designs with the express purpose of minimizing biases and weaknesses inherent in each design. Furthermore, we use Caracelli and Green's description of complementary design "in which results from one dominant method type are enhanced or clarified by results from another method type" (p. 23). We suggest that a mixed-model design compensates for the shortcomings of a monomethod approach (Brewer & Hunter, 1989), allowing us to triangulate data sources (Campbell & Fiske, 1959) and to allow a richer description of underlying constructs (Cook & Campbell, 1979).

Although our approach is quite broad, we have pushed both data sources to be complementary in that they share three sample restrictions. First, both sources focus on children as they begin their formal schooling in kindergarten and first grade. Second, both sources focus on children who attend public schools in urban or suburban settings (i.e., rural schools and private schools are excluded). Third, both sources focus on schools that enroll substantial proportions of children from low-income families.

## **Participants: Qualitative Source**

This study builds on a 3-year study in which researchers collected data in the kindergarten and first-grade classrooms in urban settings. In year one,

we selected seven kindergarten classrooms that fit several criteria: (a) local educational experts recommended “exemplary” teachers on the basis of their dedication to student learning and their local reputation as strong teachers, (b) at least 40% of the students in the schools qualified for free and reduced lunches (our proxy for SES), (c) the settings captured contextual variation (e.g., racial composition, full- or half-day kindergarten approaches to instruction), and (d) the schools were located in urban settings, within an hour’s driving distance from our university. In year two, we collected data in these kindergarten classrooms. Field researchers were doctoral students in education, and several had experience teaching kindergarten. The eight kindergarten teachers we selected for study had at least 2 years’ teaching experience and most held a master’s degree. Three teachers were African American, one was Asian American, and four were White. Two of these teachers shared one classroom, with one teaching in the morning and the other in the afternoon.

Year three involved the study of the first-grade teachers. We used a similar protocol for selecting first-grade teachers as we used for selecting the kindergarten teachers, with three exceptions. First, we did not use outside educational experts to select first-grade teachers for study but instead asked our kindergarten teacher participants to recommend first-grade teachers in their schools for possible study. Second, we selected first-grade teachers with at least five children from the kindergarten study in their classrooms so that we could track children’s development over the kindergarten and first-grade years. Third, we selected 4 first-grade classrooms to study. The first-grade teachers had at least 5 years’ teaching experience and all but one held a master’s degree. All four teachers were White. One first-grade teacher was also a kindergarten teacher in the study.

Researchers conducted a minimum of 10 visits (lasting 2 to 3 hours) to the kindergarten classrooms during the 2001 to 2002 school year and at least six visits to the first-grade classrooms during the 2002 to 2003 school year. The second author of this article, the co-Principal Investigator of a larger study, selected the schools and teachers and visited each of the 11 classrooms several times. The first author of this article was a field researcher for three classrooms (two kindergarten classrooms and one first-grade classroom). In their visits, the researchers followed semistructured observational guides that included a set of core observations (schedules, classroom activities, instruction and assessment, teacher and child relationships, language, transitions between activities) and a rotating set of observational foci (social climate, literacy assessment, literacy instruction, math instruction and assessment, and peer interaction).

The primary source of qualitative data for the research in this study came from the interviews with the teachers: three interviews for each kindergarten teacher and two interviews for each first-grade teacher.<sup>1</sup>

Our interviews focused on the teachers' instructional practices, descriptions of school climate, beliefs about low-income students, and general ideas about teaching. All researchers participated in instrument development and practiced asking questions during project meetings to ensure standardization across interviews. The researchers used semistructured protocols in the interviews to gather parallel information on selected topics, but they also diverged from the format depending on the flow of the interviews. We also drew on interviews with the schools' principals for information on contextual characteristics that support teacher responsibility. Last, we used the classroom observation data in field notes to triangulate claims about teacher responsibility, teacher attitudes, and teacher characteristics.

### **Analytic Approach: Qualitative Source**

In analyzing the interviews with the kindergarten and first-grade teachers, we followed a three-step interpretivist approach (Miles & Huberman, 1994). The first step involved reading through the entire set of interviews once and determining patterns and themes that would eventually become codes used to identify phrases or ideas that represent patterns. We allowed the codes to emerge as we read the interviews (Merriam, 1998) and kept a record of all possible codes. Sample codes included "choosing to teach in low-income schools" and "participation in committee-work." Next, we reread the interviews and marked places in the interviews that reflected our codes.

The third step was both divergent and convergent. It involved organizing the coded text into categories, some of which were expanded and others were combined (Guba & Lincoln, 1989). We revised the original frameworks to encompass the newly created categories into "meta-matrices" (one for kindergarten teachers and one for first-grade teachers) that allowed us to find contrasts, comparisons, patterns, quotes, and themes (Miles & Huberman, 1994; Strauss & Corbin, 1998). Finally, we organized our findings around questions by both descriptively and interpretively reanalyzing the data (Miles & Huberman, 1994).

Before addressing our research questions, we ranked teachers by responsibility. Unsurprisingly, given that our teachers selected for study were "exemplary" in some way, all demonstrated characteristics of medium to high responsibility. They showed dedication and passion for their profession, felt committed to the children they taught, and held high expectations for their students, despite the children's disadvantaged backgrounds.

Of the 11 teachers, we considered 6 as highly responsible, based on the interview data. We did not ask these teachers the same questions from the quantitative study that we used to characterize their responsibility levels as the two parts of our study were conducted simultaneously. However, we identified the teachers' levels of responsibility using a related set of criteria. We coded their interviews for "enjoyment of teaching," "making a difference in the lives of children," and "factors interfering with teaching." We had ample data for these three codes, which also resonated with the measures we used in the quantitative analyses to determine responsibility level. Based on our rankings of teachers on these characteristics, we classified them as having high or medium levels of responsibility (no teachers exhibited low levels). To be considered "highly responsible," teachers ranked high on "enjoyment of teaching" and "making a difference in the lives of children" and low on "factors interfering with teaching." We triangulated our selection of highly responsible teachers in project meetings with project members who had read the interviews.

Our qualitative sample consisted of five kindergarten teachers: Katie, Kendra, Carla, Linda, and Natalie (who also taught first grade) and a first-grade teacher, Sandra. These highly responsible teachers are a select group that closely matches (perhaps at the upper bounds) the highly responsible teachers in the quantitative sample. We describe each teacher individually, indicating how she demonstrates a high level of "enjoyment of teaching;" "making a difference in the lives of children"; and a low level of "factors interfering with teaching." Second, we highlight their behaviors that reflect one or more aspects of responsibility, substantiating the idea that what a teacher self-reports about responsibility reflects her actions in the classroom.

*Katie.* An Asian American, Katie had 9 years of teaching experience in urban settings. We ranked Katie as "high" on enjoyment of teaching based on the frequency of her comments about her student teaching experience such as, "I absolutely loved \_\_\_\_ (name of school where she did her student teaching)" and "It was such an awesome learning experience." She spoke similarly about her current position. She also scored high on "making a difference in the lives of children" because of her comments such as, "I feel like a really strong kindergarten teacher" and her statements indicating that she does not blame children for any learning difficulties but instead seeks ways to help them overcome such difficulties. Katie did not complain about paperwork or children's behavior as factors interfering with her teaching.

In terms of her actions, Katie was very strong in the "making a difference in lives of children" domain as demonstrated by her outreach to parents to

partner with her in helping their children succeed. She made home visits before the school year began and continued these home visits, particularly for children who were struggling or whose parents did not attend parent/teacher conferences. She told us that these visits often produced a positive effect on children's social and academic behaviors. We also noted as a mark of high responsibility her frequent comments demonstrating her responsibility for structuring activities and lessons to reach all students. She often thought about how to change and improve her lessons to reach all the students in her classroom.

*Kendra.* This kindergarten teacher, an African American with 17 years of teaching experience in public schools and even more years working in daycare settings, scored high on "enjoyment of teaching" based on her comments such as, "I truly believe you never stop learning" and her affection for her students. She also demonstrated the difference she made in children's lives with her comments about how certain diagnostic tests were helpful in indicating "what skills that child has and . . . what I need to work on" and in how she felt professional development workshops influenced and strengthened her teaching, which in turn helped children learn. Kendra did not dwell on paperwork, children's behaviors, or other "factors interfering with her teaching."

Kendra's actions in the classroom reflected these beliefs. She set extremely high expectations for her students. She had team-taught with Katie the year before our study, and they continued to plan together even while teaching at different schools. Kendra was very committed to her work and continually pursued new training, particularly in the area of literacy. This effort demonstrated that she was willing to improve her own efficacy as a teacher. In the year after we studied Kendra's class, she became a principal of a middle school serving English as a Second Language (ESL) students. A firm, no-nonsense teacher, she expected all children to behave, strive for their best, develop good work habits, and master the classroom material.

*Carla.* An African American teacher with 21 years of teaching experience, Carla expressed joy in her job: "I'm the kind of person that can sit in a workshop all day." She also spoke extremely positively about all aspects of her job, including working with children and planning activities that best supported student learning. We felt she feels she "makes a difference in the lives of children," based on the descriptors she used such as "rewarding" and "pleased" when talking about her work with children. She told us that she saw much growth and was pleased that "all of them [are] bubbling in

first grade.” Her comments demonstrated her high responsibility level, for example, “if [the children] are not getting it, it would be my fault.” Although challenged by certain aspects of her job, she did not frame them as “factors interfering with her teaching.”

In the classroom, Carla made an effort to reach each child. She was forthcoming about such challenges as the low skills of some children and the lack of parental communication. However, she actively sought to overcome these obstacles with professional development training and frequent use of the school’s crisis intervention resource when she was particularly worried about a child. Carla established a classroom environment where children were encouraged to help each other and where a strong emphasis on the importance of learning (especially reading) was emphasized.

*Linda.* A White kindergarten teacher with 6 years of teaching experience, Linda loved her job. She remarked, “I have the best job in the world. I really do. It’s a blessing. . . . I thank God every day for it. . . . I love to come to work. . . . I miss my kids over Christmas break.” She also expressed confidence in her ability to make a difference in the lives of children, explaining that it was her job to help students catch up if they are behind and to learn their strengths and weaknesses to move them forward. She acknowledged challenges in teaching, but never blamed external factors for interfering with her ability to teach.

Linda’s dynamic personality, her engaging and kind manner with children, and her reputation as a very strong teacher not only in the school but also in the district impressed us. She emphasized the importance of children learning to be socially and academically independent. Students shared her excitement for and love of learning. When she noticed students’ difficulties, she restructured activities to best meet their needs. She also used Spanish to include the Spanish-speaking parents in school activities.

*Natalie.* We studied Natalie, an 8-year veteran White teacher, in both kindergarten and first grade. During the kindergarten year, she taught half-day kindergarten in the morning and “Reading Recovery” in the afternoon. When she taught first grade, she discontinued teaching Reading Recovery. Natalie greatly enjoyed teaching, enthusiastically describing her students, curriculum planning, and teaching. She felt she made a difference in children’s lives, acknowledging her role as a school resource due to her literacy training and her leadership of several curriculum committees. She hoped all her kindergartners would be able to read by the end of the school year, taking the responsibility herself to make sure they achieved this goal and never blaming

external factors for interfering with her ability to teach. She acknowledged that the children she teaches are disadvantaged and that it was her responsibility to help them: “They have a lot of obstacles to overcome to be successful, and we’re here to make sure that they can overcome them.”

In the classroom, Natalie exhibited kindness, patience, and high expectations for her students. Her students demonstrated a wide range of academic ability and so she individualized instruction to meet the needs of each child. She expected even the lower-achieving students to be at grade-level, providing support when they struggled. She drew on her “Reading Recovery” training to help children and to regularly reach parents, encouraging them to read to their children and to engage them in other literacy-based activities at home. She talked about the challenges of her job but focused more on ways to deal with them rather than on how they interfered with her teaching.

*Sandra.* A White first-grade teacher with 5 years of teaching experience, Sandra enjoyed her work, even when colleagues questioned why she chose to work in such a “challenging” school. In fact, she told us that she would never teach in a school that did not serve low-income and disadvantaged children. Sandra believed she made a difference in children’s lives, emphasizing her high expectations: “You have to have high standards for all of your students, regardless of the situation that they come from.” Sandra never commented on children’s misbehavior or paperwork as interfering with her teaching.

Sandra’s classroom actions reflected these beliefs. She demonstrated professional commitment by involving herself in research projects, by attending professional conferences, and by taking leadership roles in school committees. She felt these experiences were very useful in improving her teaching and helping children succeed. She expressed concern for an African American student whom she claimed other teachers in the school had written off, and took action to ensure he learned. She dealt swiftly and consistently with children’s misbehavior to maximize their learning in the classroom.

Each of these six teachers demonstrated both beliefs and behaviors that distinguished them from the other teachers we studied. They spoke positively about their experiences, both in terms of their enjoyment as well as their efficacy in influencing and guiding children’s learning. Had these teachers completed the same survey of their beliefs toward their work as the teachers in the quantitative sample did, we are confident that they would have been categorized in the “highly responsible” group.

## Participants: Quantitative Source

We used quantitative data for this study from ECLS-K, a federally supported study that documents the educational status and progress of a nationally representative cohort of children in the United States from kindergarten through fifth grade (NCES, 2002). The ECLS-K base-year data collection conducted in 1998-1999 employed a multistage probability sample design. The researchers first sampled geographic areas consisting of counties or groups of counties. They then sampled 1,277 public and private schools in the selected counties, and finally, they randomly drew about 24 students from the schools. Our study, that takes advantage of the longitudinal nature of ECLS-K, focuses on these students, their kindergarten teachers, and their first-grade teachers.

ECLS-K collects data on the same children in seven waves: in the fall and spring of kindergarten (Waves 1 and 2, 1998-1999) and first grade (Waves 3 and 4, 1999-2000), and in the spring of third, fifth, and eighth grades (Waves 5, 6, and 7, 2002, 2004, and 2007). Researchers individually administered untimed cognitive tests in reading, mathematics, and general knowledge to the sampled children in each wave. These tests were equated using IRT-methods.<sup>2</sup> For two reasons we relied exclusively on the reading tests at the beginning of kindergarten and at the end of first grade to demonstrate student learning over the first 2 years of school: (a) research has shown that early reading achievement is one of the strongest predictors of later school success (Walker, Greenwood, Hart, & Carta, 1994; Werner & Smith, 1992), and (b) reading comprised the majority of instruction in the kindergarten and first-grade classrooms we studied. At the school level, however, we used the average of reading and mathematics test scores at the beginning of kindergarten for school average ability.

So that our two sources of data would focus on the same types of children in the schools, we drew a subset of ECLS-K schools and ECLS-K students (and their teachers). From the large school sample, we selected nonrural, public schools where, according to the ECLS-K database and the U.S. Department of Education's Common Core of Data (NCES, 2003), at least 40% of the students were eligible for free and reduced-price lunches. Our final sample consisted of 207 schools, 1,457 teachers, and 2,034 students. Because of the stratified sampling design of the ECLS-K, we used school and student weights for all analyses. Thus, our results may be generalized to low-income, public schools in urban and suburban areas in the U.S.<sup>3</sup>

## Measures: Quantitative Source

*Responsibility.* This measure, the components of which were drawn from survey data from ECLS-K teachers, consists of six variables, each coded on a four-level Likert scale of “agreement”: (a) teacher would choose teaching again, (b) teacher enjoys present teaching job, (c) teacher can make a difference in children’s lives, (d) children incapable of learning (reverse coded), (e) children’s misbehavior interferes with teaching (reverse coded), and (f) paperwork interferes with teaching (reverse coded). Although each survey item may appear distinct, the six components are strongly correlated and form a psychometrically coherent factor. Our choice of items drew on those previously used by Lee and Smith (1996), Lee and Burkam (2002), and LoGerfo (2004). We created one measure for the kindergarten teachers and another for the first-grade teachers. The alpha reliability of these measures was .462 for kindergarten teachers and .469 for first grade teachers. These normally distributed composites were converted to z-scores (mean  $[M] = 0$ , standard deviation  $[SD] = 1$ ).

For purposes of description, we divided the kindergarten and first-grade teachers into three groups based on their scores on these factors: teachers with high responsibility (.67 standard deviation  $[SD]$  or more above the mean), teachers with medium responsibility (within .67  $SD$  on either side of the mean), and teachers with low responsibility (.67  $SD$  or more below the mean). By definition, the medium responsibility group was the largest.

We also divided the students into groups according to their first-grade teachers’ levels of responsibility. Students were categorized as having low responsibility first-grade teachers (.67  $SD$  or more below the mean), medium (within .67  $SD$  on either side of the mean) or high (.67  $SD$  or more above the mean). Although we used these three groups in our descriptive analyses, we used the responsibility measure as a continuous z-scored variable ( $M = 0$ ,  $SD = 1$ ) for our Hierarchical Linear Modeling (HLM).

*Collective responsibility.* We aggregated the two teacher responsibility measures to the mean of the school where the teacher taught to form a construct we call “collective responsibility.” Based on aggregate scores of responsibility levels of the kindergarten and first-grade teachers, we grouped the schools into three categories: low (.67  $SD$  or more below the mean), medium (within .67  $SD$  on either side of the mean) and high (.67  $SD$  or more above the mean). This is a school-level variable.

*Teacher experience.* We created this continuous composite by summing four variables: the number of years the teacher taught kindergarten, the

number of years the teacher taught first grade, the number of years the teacher taught second through fifth grade, and the number of years the teacher taught sixth grade and above. We included all teaching experience rather than exclusively the lower elementary grades since responsibility for children's learning is appropriate for all age levels. We standardized this measure to a z-score ( $M = 0$ ,  $SD = 1$ ) and used it at the teacher level.

*Teacher preparation.* This factor consisted of seven variables, five of which were the number of college courses taken in the following areas: math education, reading education, child development, early childhood education, and elementary education. A sixth component was the highest education level achieved, and the seventh was whether the teacher had a certificate in early childhood education. We standardized this factor to a z-score ( $M = 0$ ,  $SD = 1$ ) and used it at the teacher level.<sup>4</sup>

*Early childhood conference attendance.* We used this dummy-coded measure (1 = attended; 0 = did not attend) as a proxy for teachers' professional dedication. We speculated that activities reflecting professional dedication, such as attending an early childhood conference, might be associated with high teacher responsibility. We used this variable at the teacher level.<sup>5</sup>

*Administrative support.* We captured features of the teachers' perceptions of administrative support within the school with three variables: (a) whether the teacher feels the principal communicates vision, (b) whether the teacher perceives the principal's behavior toward staff is supportive and encouraging, and (c) whether the teacher reports more than 5 hours of paid preparation time per week. We speculated the degree to which a teacher felt supported by her administration would be associated with teacher responsibility. We standardized these three variables to z-scores ( $M = 0$ ,  $SD = 1$ ). We used the "communicating vision" and the "paid preparation hours" variables at the teacher level and the "supportive behavior" measure at the school level.

*Teacher control over school policy and curriculum.* We captured this construct with two measures of a teacher's perception of her impact on (a) school policy and (b) school curriculum. We hypothesized that those teachers who state they feel responsible for student learning may also feel empowered to make decisions at the school level (Lee & Smith, 1996). We standardized these two variables as z-scores ( $M = 0$ ,  $SD = 1$ ) and used them both at the school level.

More detail on the construction of all measures used in the study, as well as descriptions of the other variables used, are provided in Appendices A through F, including the ECLS-K variable names from which they were drawn.

## **Descriptive Analyses: Quantitative Source**

To explore the associations between teacher responsibility and professional and school characteristics and student learning, we first used bivariate methods (crosstabs, chi-square tests, and one-way analysis of variance) for the analyses of schools, teachers, and students.

## **Multivariate Analyses: Quantitative Source**

The two research questions in this study are multilevel, typical of research questions posed about school effects. The data structure of ECLS-K is appropriate for such analysis because children are nested in schools and teachers are also grouped in schools. To address Question 1, we estimate the effects of teacher and school characteristics on teacher responsibility. To address Question 2, we estimate the effect of teacher responsibility and collective responsibility on student learning. To address both questions, we use a multilevel analysis method: HLM (Raudenbush & Bryk, 2002).

Three steps are involved in the use of HLM in a school effects context. First, we partition the variance into its within- and between-school components, with only the between-school variance modeled as a function of school characteristics. Next, we estimate a within-school model for each school, where the dependent measure is estimated as a function of individual teacher or student characteristics. In the last step, we estimate the effects of school factors on the proportion of variance in the outcome that is between schools, while adjusting for individual characteristics.

Our first research question focuses on teacher responsibility as the outcome. At level-1 (within schools), where we explore how teacher characteristics influence teacher responsibility, we included statistical controls for average classroom ability and average classroom SES. At level-2 (between schools), we estimate the effects of school characteristics on average teacher responsibility, controlling for urbanicity (if a school is located in city or a suburb). All variables in level 1 are included in the fully multivariate HLM model.

Our second research question explores how both teacher and collective responsibility influences student learning. At level 1, student learning is

estimated as a function of student characteristics (minority status, gender, retention in kindergarten, ability, and student SES). At level 2, we explore how school factors influence student learning, adjusting for schools' urbanicity, minority concentration, average school SES, and average student ability.

## Results

*Research Question 1:* Which teacher attitudes and teacher and school characteristics are associated with self-reported high levels of teacher responsibility?

*Descriptive findings.* We present descriptive information about teachers and schools on all variables used in this study in Panels B and C of Table 1 that display average teacher and school characteristics by levels of teacher responsibility as self-reported by the teachers. Results in Panel B indicate that compared to teachers with low or medium responsibility, teachers with high responsibility are more prepared, attend more early childhood conferences, receive more paid preparation time, and work in schools where they believe the principals communicate vision.

Teacher responsibility by school-level characteristics is presented in Panel C of Table 1. Responsibility level is positively associated with the degree to which teachers feel they affect school policy, have control over school curriculum, and see the principal as supportive and encouraging toward staff. In general, highly responsible teachers appear to work in conditions that are more supportive. However, minority enrollment and urban location are negatively related to collective responsibility—that is, minority children who live in urban areas are more likely to attend schools with less collective responsibility.

*Partitioning the variance in teacher responsibility.* In Table 2, we present the results of our fully unconditional HLM models where we partition the variance in our two dependent measures into their within-school and between-school components and estimate the reliability of the outcomes. The intraclass correlation (the proportion of variability between schools) for teacher responsibility is modest (12.4%) but sufficient for further analyses. The lambda reliability of .477 is similar to our alpha reliability. This suggests that although there may be limits on our ability to find school effects, any school effects we do find are probably underestimated effects on this psychometrically limited outcome. The ECLS-K within-school samples of teachers are small, averaging only seven teachers per school (1,451/207), which also constrains HLM reliability.

**Table 1**  
**Student, Teacher, and School Characteristics**  
**by Levels of Teacher Responsibility**

|  | Level of Teacher Responsibility             |                          |                        |
|--|---|--------------------------|------------------------|
|  | Low ( <i>n</i> = 493)                       | Medium ( <i>n</i> = 910) | High ( <i>n</i> = 631) |
| <b>A. Students</b>   |   |                          |                        |
| Reading ability <sup>b</sup>   | 21.2 (7.3)                                  | 20.7 (6.7)               | 22.1 (8.0)****         |
| Reading achievement <sup>c</sup>   | 52.1 (12.7)                                 | 53.5 (12.5)              | 55.2 (12.6)****        |
|  | Level of Teacher Responsibility             |                          |                        |
|  | Low ( <i>n</i> = 408)                       | Medium ( <i>n</i> = 629) | High ( <i>n</i> = 420) |
| <b>B. Teachers</b>   |   |                          |                        |
| Experience (in years)  | 12.30 (9.53)                                | 11.7 (9.3)               | 11.7 (9.7)             |
| Preparation <sup>a</sup>   | -0.1 (1.0)***                               | 0.0 (1.0)                | 0.2 (1.0)***           |
| % teachers attending early childhood conferences   | 28  | 28                       | 35*                    |
| % teachers receiving five or more hours paid prep time per week  | 19  | 23                       | 31****                 |
| % teachers reporting principal communicates vision   | 73  | 80                       | 91****                 |
|  | Level of School (Collective) Responsibility |                          |                        |
|  | Low ( <i>n</i> = 54)                        | Medium ( <i>n</i> = 103) | High ( <i>n</i> = 50)  |
| <b>C. Schools</b>  |   |                          |                        |
| School average SES <sup>a</sup>  | -0.61 (0.37)                                | -0.48 (0.29)             | -0.48 (0.28)           |
| School average ability <sup>ad</sup>   | -0.36 (0.29)                                | -0.35 (0.27)             | -0.24 (0.34)           |
| % minority students  | 76**  | 50                       | 55                     |
| % schools in urban areas   | 80****                                      | 50                       | 65                     |
| % schools where teachers feel they have a high impact on policy <sup>e</sup>                                   | 27  | 39                       | 83****                 |
| % schools where teachers perceive principal's behavior toward staff is supportive and encouraging <sup>f</sup> | 31  | 53                       | 77****                 |
| % schools where teachers feel they have control over curriculum <sup>g</sup>                                   | 39  | 62                       | 79****                 |

Note: SES = socioeconomic status.

a. Variable is z-score ( $M = 0, SD = 1$ ).

b. Reading ability is the reading scores on tests administered at the beginning of kindergarten.

c. Reading achievement is the reading scores on tests administered at the end of first grade.

d. School average ability is the average of the reading and mathematics scores on tests administered at the beginning of kindergarten.

e. Schools where 50% or more of the teachers feel they have an impact on school policy.

f. Schools where 80% or more of the teachers feel the school administration's behavior toward staff is supportive and encouraging.

g. Schools where 80% or more teachers feel they have control over curriculum.

\* Significant differences compared to the medium group ( $p < .1$ ). \*\* Significant differences compared to the medium group ( $p < .05$ ). \*\*\* Significant differences compared to the medium group ( $p < .01$ ).

\*\*\*\* Significant differences compared to the medium group ( $p < .001$ ).

**Table 2**  
**Fully Unconditional Hierarchical Linear Modeling (HLM) Models:**  
**Psychometric Characteristics of the Outcome Variables—Teacher**  
**Responsibility and Reading Achievement<sup>a</sup>**

|  | Teacher<br>Responsibility<br>Levels ( $n =$<br>1,457 teachers<br>in 207 schools) | Student<br>Achievement<br>( $n = 2,034$<br>students in<br>207 schools) |
|--|--|--|
| Intercept                                  | 0.003****  | -0.011****   |
| Between-school variance ( $\tau$ )         | 0.125  | 0.120  |
| Within-school variance ( $\sigma$ squared) | 0.879  | 0.899  |
| Intraclass correlation                     | 12.4   | 11.8   |
| Reliability ( $\Lambda$ )                  | 0.477  | 0.515  |

Note: Reading achievement is measured by the scores on the reading tests administered at the end of first grade. The intraclass correlation (ICC) is the percentage of total variance in the outcome that lies systematically between schools. It is computed as follows:  $ICC (\%) = (\tau/\tau + \sigma \text{ squared}) * 100$ .

\*\*\*\* $p < .001$ .

*Multilevel models of teacher responsibility.* Results of the within-school model shown in Table 3 estimate how various teacher professional characteristics are linked to responsibility. Most measures are positively and significantly related to teacher responsibility: attendance at early childhood conferences ( $ES = .10, p < .10$ ), teacher preparation ( $ES = .11, p < .01$ ), teacher paid preparation time ( $ES = .25, p < .001$ ), teacher perception of the principal as communicating vision ( $ES = .39, p < .001$ ), and average classroom SES ( $ES = .07, p < .05$ ). Teacher responsibility was negatively related to teacher experience ( $ES = -.09, p < .01$ ); that is, the more experience teachers have, the less responsibility they take for their students' learning. The average ability of children in the classroom was unrelated to teacher responsibility.

The level-2 HLM model results in Table 4 present school effects on teacher responsibility, and these include all controls for the level 1 model shown in the left column of Table 3. After controlling for school urbanicity, the characteristics of the schools' social organization in this study are all positively related to between-school variation in teacher responsibility. Teachers have more responsible attitudes in schools where most of them feel they have an impact on school policy ( $ES = .29, p < .001$ ), in schools where almost all teachers see the principal as supportive and encouraging

**Table 3**  
**Within-School HLM Model for Teacher Responsibility**  
**Levels (n = 1457 teachers in 207 schools)**

| Within School Model  | Beta Coefficient |
|--|------------------|
| Teacher-level variables  |                  |
| Teacher attended early childhood conferences                   | 0.10*            |
| Teacher preparation  | 0.11***          |
| Teacher receives more than 5 paid prep hours per week          | 0.25****         |
| Teacher perceives the school principal as communicating vision | 0.39****         |
| Teacher experience   | -0.09***         |
| Controls   |                  |
| School average ability <sup>a</sup>                            | 0.04             |
| School average socioeconomic status                            | 0.07**           |
| Between-school variance (tau)                                  | 0.05****         |
| Within-school variance (sigma squared)                         | 0.83             |

a. School average ability is the average of the reading and mathematics scores on tests administered at the beginning of kindergarten.

\* $p < .1$ . \*\* $p < .05$ . \*\*\* $p < .01$ . \*\*\*\* $p < .001$ .

**Table 4**  
**Full Between-School HLM Model for Teacher**  
**Responsibility Levels (n = 1,457 teachers in 207 schools)**

| Between school model  | Gamma coefficient |
|---|-------------------|
| Intercept   | 0.0               |
| School-level variables  |                   |
| Teacher feels s/he has a high impact on school policy                             | .29****           |
| Teacher perceives principal's behavior toward staff is supportive and encouraging | 0.14**            |
| Teacher feels s/he has control over the curriculum                                | 0.13**            |
| Controls  |                   |
| School in urban location  | -0.14*            |

\*\* $p < .05$ . \*\*\*\* $p < .001$ .

(ES = .14,  $p < .05$ ), and in schools where most teachers state they have control over the curriculum (ES = .13,  $p < .05$ ).

These quantitative findings identify characteristics of the social organization of schools that explain differences in teacher responsibility. To gain a fuller understanding of how teacher and school characteristics influence

teachers' willingness to take responsibility for their students' learning, we turn to our qualitative data that complement the quantitative data.

*Teacher preparation.* Our teacher preparation factor includes the number of teacher education courses, certification level, and highest degree of education attained. Our results in Table 3 demonstrate that more prepared teachers take more responsibility for student learning.

Our teacher informants substantiated this finding. Five of the six teachers we designated as highly responsible had a master's degree and felt they were highly prepared in terms of their university coursework. Their degrees were in curriculum and teaching, early childhood education, literacy, special education, and administration and leadership. Moreover, our teacher informants drew heavily on what they had learned in their teacher education and master's programs. For example, Kendra, whose master's degree was in program design and evaluation, felt that her knowledge about the administration of special education processes helped her in making referrals and obtaining appropriate help for her students. Katie, whose master's degree was in literacy, said that the developmental theory she had studied helped her better understand how students learn. These teachers reported that the pedagogical skills and knowledge they gained in graduate school, across a wide variety of specializations, improved their teaching.

*Teacher experience.* One teacher characteristic was negatively associated with responsibility: teacher experience. In Table 3, we saw more experience was associated with lower responsibility for student learning. This finding was consistent with other research on teacher responsibility (Lee & Loeb, 2000; Lee & Smith, 1996). Perhaps less experienced teachers are less jaded by the realities of the classroom. Our qualitative data, in contrast, revealed no pattern between experience and responsibility (experience ranged from 5 to 21 years).

*Professional growth experiences.* Our quantitative results indicated that highly responsible teachers participated in more professional learning experiences, such as early childhood conferences. We found that, in general, our highly responsible teacher informants participated actively in professional development experiences—in professional development workshops, literacy training, and literacy leadership programs—usually of their own volition. Kendra, a kindergarten teacher, described her high degree of involvement in professional development activities: “You know my husband tells me I never stop. He says I’m obsessed with it.”

*Influence of school decisions.* According to Table 1, Panel C, and Table 4, teachers who reported they were highly responsible felt they had substantial influence on school policy. Our teacher informants provided examples of how their empowerment helped them make school decisions and shape school policy.

These teachers participated frequently in school decisions and found this involvement valuable and important to their work in the classroom. All the high responsibility teacher informants served on school-wide committees with several in leadership positions. They used these positions to shape school policy. For example, Sandra, a first-grade teacher, listed at least eight school committees in which she participated and/or led. She explained the impetus for this involvement: “[I do] whatever I can do to help my students succeed. I try to seek out help from our community or do whatever I can to be a successful teacher.” Membership on these committees provided her with a broader perspective on school operations.

Katie, a kindergarten teacher, was actively involved in her School Improvement Team and took a leadership role in professional development activities after school and during lunch period. She organized school-wide “brown bag lunches” and also led her kindergarten team in planning curriculum, instruction, and assessment. She also chaired the school’s budget committee.

*Influence on curriculum.* Teachers with high levels of responsibility perceived themselves as having more influence on school curriculum than teachers with medium and low responsibility levels did (Table 1, Panel C; Table 4). The teacher interviews reflect these findings. Although much of the curriculum was dictated by the State and the school district, our teacher informants reported some influence on curriculum and instruction. Several of our informants served in leadership roles on school curriculum committees. Others were leaders in literacy training programs for the school and the district.

*Strong principal leadership.* We also found that teacher responsibility was associated with teachers’ perceptions of whether their principal communicates vision (Table 1, Panel C; Table 3). Again, our quantitative findings were supported by our qualitative results. Among the principals at the schools we studied, two—Nora (who was Kendra and Sandra’s principal) and Susan (who was Natalie’s principal)—demonstrated strong leadership skills, according to the teacher interviews.

Nora, a White female constantly visible in classrooms, in the hallway, and at school-wide events, felt she had “good contact” with about 80% of

the students. Kendra actually applied for a teaching position at the school, specifically to work with Nora, whom she described as “a dynamic kind of a leader, an involved leader” and “definitely a take-charge person.” Both Kendra and Sandra were actively involved in decision making and supportive of Nora’s lead.

Susan was relatively new as principal in her school, having been in the position for only 2 years at the beginning of our study. Shortly after she took the position, the State labeled her school “in crisis” due to its low state test scores. Yet, in her first year as principal, her school received the honor of “Most Improved and High Achieving Elementary School” in the district. Natalie, a teacher at this school, described Susan, “our principal is a real big supporter of what we’re doing here. She’s like the driving force. She will go out asking for grants for our guided reading library. She’ll find money for us.”

*Paid preparation time.* The results of Table 3 indicate that responsibility is associated with more paid preparation time. Our qualitative study was generally supportive of this finding; with one exception, the schools in the study offered “specialist classes” (art, music, physical education) that provided the classroom teachers some released time for preparation. These teachers also had released time during the lunch period.

*Teacher learning and propensity toward improving.* This construct was not a part of the ECLS-K data set, so we relied on our qualitative data for evidence. Highly responsible teachers told us that there was always more they could learn and that they could always do better. Our informants readily admitted that they still did not know enough and that they could still improve the skills they needed to provide the optimal learning environments for their students. Natalie worried about reaching a point of satisfaction: “We can’t just say okay, we’re done. We can do more. There’s always improvement in anything you do.” Linda remarked how “joyful” she was about attending workshops to learn more: “I go to just about every workshop that there is . . . there’s just so much to learn. . . . I knew that I was going to be a better teacher for having attended them.”

In describing how they would like to improve, these teachers said they would like to serve a wider range of learners, improve their discipline and management strategies, and better serve children with special needs. All informants communicated a strong desire to learn more.

In sum, highly responsible teachers, both in ECLS-K and among our informants, differed from their less responsible colleagues on a number of characteristics. The highly responsible teachers described their professional experience as follows: they were more empowered in school and curriculum

decisions, they were more involved in professional activities, they were highly supported by their administrations, and they received considerable preparation time. Such characteristics indicate possible avenues by which to foster higher levels of responsibility among teachers.

*Research Question 2:* Do teachers' attitudes about responsibility influence student learning in kindergarten and/or first grade, and does the influence from a teacher who reports high responsibility in the kindergarten year carry over to the first-grade year?

*Descriptive results.* The results in Panel A of Table 1 demonstrate that children who are exposed to teachers with different responsibility levels differ on a number of characteristics. Students with highly responsible teachers scored higher on reading achievement at the beginning of kindergarten and at the end of first grade than students with medium and low responsibility teachers.<sup>6</sup>

*Partitioning the variance in student achievement.* As children's learning, and its association with teacher responsibility, could be explained by other factors related to the children and their schools, we investigated this link with multivariate analyses. Moreover, because children's education occurs in schools, we used multilevel methods. Thus, we also pursued this research question in two-level HLM models. We began by estimating a fully unconditional HLM model where the variance in the dependent measure was partitioned into its within-school and between-school components. The model also estimates the HLM reliability of the outcome: reading achievement at the end of first grade. The right column in Table 2 reports the fully unconditional model for the student achievement outcome.

A modest proportion of the variance in low-income first graders' reading achievement lies systematically between schools (11.8%).<sup>7</sup> Furthermore, this outcome has modest lambda reliability (.515), which might limit our ability to identify school effects. As with teacher responsibility, the modest lambda may be due to modest within-school sample sizes that average 9.8 students (2,034/207). The school effects we do find on the outcome, therefore, are likely to be underestimates.

In this analysis, we ask whether teacher responsibility exerts a collective effect on student learning, as a property of the social organization of schools, or whether the effect accrues individually through children's exposure to their teachers. As the existing research has pursued this construct as an organizational property of schools, we hypothesize a collective effect. However,

**Table 5**  
**Within-School Model for Reading Achievement**  
**( $n = 2,034$  students in 207 schools)**

| Within-School Model                        | Beta Coefficient |
|--|------------------|
| Kindergarten teacher responsibility        | 0.02             |
| First grade teacher responsibility         | 0.05*            |
| Controls                                   |                  |
| Reading ability <sup>a</sup>               | 0.58****         |
| Minority                                   | -0.14***         |
| Gender (female)                            | 0.16****         |
| Retention in kindergarten                  | -0.45****        |
| Student socioeconomic status               | 0.06***          |
| Between-school variance ( $\tau$ )         | 0.07****         |
| Within-school variance ( $\sigma$ squared) | 0.54             |

Note: Reading achievement is measured by the reading scores on tests administered at the end of first grade.

a. Reading ability is the reading scores on tests administered at the beginning of kindergarten. \* $p < .1$ . \*\*\* $p < .01$ . \*\*\*\* $p < .001$ .

other research has mostly investigated the issue in secondary schools where students' exposure to individual teachers is less intense or less prolonged, suggesting that an individual-level effect might be reasonable.

*Multilevel models of student achievement.* Table 5 displays our within-school HLM model at the end of first-grade reading achievement. Here we estimate within each school how children's demographic characteristics and individual-level teacher responsibility influence this outcome. Our model controls for children's family SES, minority status, gender, kindergarten retention, and children's ability (average of mathematics and reading test scores) as they began kindergarten. Although children's kindergarten teachers' responsibility is not significantly related to the children's reading achievement at the end of first grade, the responsibility level of the first-grade teachers is ( $ES = .05, p < .10$ ). There is also evidence that males, children from lower SES backgrounds, children of minority status, and children who repeat kindergarten have lower achievement in reading at the end of first grade.

The full HLM model in Table 6 explores school effects on average reading achievement at the end of first grade. When we began this study, we considered responsibility in the collective sense, as other relevant studies have

**Table 6**  
**Full Between-School HLM Model for Reading**  
**Achievement ( $n = 2,034$  students in 207 schools)**

| Between-School Model                                | Beta Coefficient |
|---|------------------|
| Intercept   | 0.00             |
| Collective responsibility                           | 0.05*            |
| Controls  |                  |
| School in urban location                            | 0.09             |
| School has high minority population (more than 50%) | 0.03             |
| School average socioeconomic status                 | 0.10***          |
| School average ability <sup>a</sup>                 | -0.05            |

Note: Reading achievement is measured by the reading scores on tests administered at the end of first grade. The within-school HLM model shown in Table 5 is also part of this analysis. Because the within-group HLM beta coefficient did not change when the between-school gamma coefficients were estimated, we did not repeat them here. This is the same procedure we followed in Table 4.

a. School average ability is the average of the reading and mathematics scores on tests administered at the beginning of kindergarten.

\* $p < .1$ . \*\*\* $p < .01$ .

concluded that students learn more in secondary schools with high levels of collective responsibility (Lee, 2001; Lee & Loeb, 2000; Lee & Smith, 1996). Thus, the original hypothesis that drove our study was that this organizational effect would extend to the elementary grades. With our random sample of low-income, public elementary schools, we discovered that this organizational property of schools also has an effect of a similar magnitude on students' first-grade achievement that responsibility at the individual level does ( $ES = .05$ ,  $p < .10$ ). The analysis, the results of which are displayed in Table 6, includes statistical adjustment for school location, minority composition, average school SES, and average student ability.

After learning that teacher responsibility at both the individual and collective levels is positively associated with students' reading achievement at the end of first grade, we turned to the qualitative data to better understand how responsible attitudes are manifested by teachers. Three patterns emerged as to how the responsible teachers we studied approached their work and their students. First, these teachers set high expectations for all their students' learning. Second, such teachers found it helpful to focus on the knowledge and skills children brought to school, rather than what they were lacking. Third, these teachers felt their work was arduous but ultimately very rewarding.

*Setting high learning expectations for all students.* All six teachers had high expectations for all students in several dimensions such as academic capacity, independent learning, attitudes about learning, and self-confidence. These teachers encouraged their students to be independent learners, to read both for understanding and for enjoyment, to make progress in skill development, and to self-regulate their behavior. For example, Sandra recounted how a lower achieving student announced on the first day of school, "I can't read." Sandra responded, "We're going to have fun this year. We're going to learn how to do that. It's my job." The child made excellent reading progress through the school year. Natalie said that she recognized her students would encounter racial discrimination and that her job as teacher was to provide her students with the skills to overcome obstacles they might face. Thus she saw her mission as equipping her students (all of whom were Black and most were low-income) with the skills and knowledge they needed to succeed.

*Focusing on positives, not negatives.* One characteristic that united the six highly responsible teachers was that they highlighted students' assets rather than using a "deficit model" to describe working with their students, many of whom came from backgrounds that could put them at an educational disadvantage. The teachers felt that characterizing children from lower-income or disadvantaged backgrounds as "at risk" could damage them. Indeed, several of the teachers objected to the term. Kendra said that all children, no matter their background, were in some ways "at risk."

These teachers declared that setting high expectations for all students and believing they all can learn are crucial to their development. Linda explained, "I don't look at kids from impoverished backgrounds any differently than I look at kids from other backgrounds . . . kids come to me at all different spots in the spectrum, regardless of their socioeconomic levels." Katie spoke about the risk of treating children from low-income backgrounds differently from other children, "If you go in with [this attitude] that 'these kids are special' you start to treat them that way." Setting high learning expectations for all their students was important to these teachers.

*Acknowledging the difficulty of their work.* Although hopeful about their students' success, these teachers acknowledged the tremendous pressure in their jobs. They recognized that teaching low-income children was difficult, challenging, and often frustrating work. For example, Linda said, "It's a very challenging job, it's very hard work, I don't think you realize unless you've done it." Although each teacher mentioned the emotional drain and frustration

associated with her work, none focused on the students themselves as the source of such stress. Their beliefs about teaching in low-income settings spanned a range of issues, illuminating the attitudes highly responsible teachers often share. They consistently felt it was their duty or mission to help their students succeed. They recognized the challenge of their work, but that did not deter them from seeking ways to improve as teachers.

These teachers' attitudes and behaviors, in combination with our analyses of ECLS-K data, lead us to conclude that achievement is enhanced in low-income schools whose social organizations are characterized by higher levels of collective responsibility and in classrooms where teachers are more willing to take responsibility for student learning. In analytic terms, the teachers' willingness to take responsibility for their students' learning is an important predictor of learning in both the classrooms and the schools. Responsible teachers tend to set high expectations for all learners, focus on students' assets rather than their deficits, and acknowledge that their work is both challenging and rewarding. Moreover, these attitudes positively influence children's learning.

## Discussion

Our goal was to explore the association between the attitudes and beliefs of teachers and other teacher characteristics, including student learning. We conceptualized teachers' attitudes about learning as a construct we call responsibility, a measure that captured teachers' satisfaction with their careers and their willingness to hold themselves accountable for their students' learning. To better understand how responsibility is developed and sustained, we explored professional and school contextual characteristics associated with these attitudes. In addition, we used qualitative data, obtained through teacher interviews, to detail how such responsibility is cultivated in teachers and to provide particular examples of how this attitude is manifested in the classroom.

## Summary of the Findings

*Teacher and school characteristics associated with responsibility.* Early elementary teachers with high levels of responsibility demonstrate the following characteristics of professional dedication: more preparation time, more frequent attendance at early childhood conferences, and a general propensity

for improving their own learning. Responsibility is also associated with teachers feeling empowered to influence both policy and curriculum. Highly responsible teachers also report they are supported by their principals. Teachers' responsible attitudes, not only at the individual level but also at the collective level, are influenced by the context of the schools where they teach.

*Responsibility and student achievement.* Our most important finding is that at low-income, public schools, responsibility positively influences how much children progress in reading from the beginning of kindergarten to the end of first grade, both individually and collectively. These findings provide important evidence about how student learning can be improved, both in classrooms and across schools. Although increasing responsibility among teachers is difficult, we maintain that it is an aspect of education that might be improved by policy intervention.

## Methodological Advances

We located no studies that explored teacher responsibility using a mixed-method approach. In fact, mixed-method studies are uncommon on any educational topic. We suggest that research on teacher attitudes can be enriched through an approach that combines the benefits from the strong external validity of a nationally representative longitudinal sample of children and the depth and insight of field studies of a few teachers and classrooms. We have attempted to capitalize on each source and also link the two sources. In doing so, we hope to encourage future research of this kind.

## Policy Implications

Although policy recommendations based on teacher attitudes may be more prescriptive than are typical in school settings, the teacher characteristics that are positively associated with responsibility may be more amenable to policy levers. Our results lead us to recommend that schools empower teachers in school decision making. As planning time is positively associated with teacher responsibility, schools should expand such time. Our findings about the importance of teachers' positive perceptions of their principals expand existing research on principal leadership. Overall, our results suggest the need for more fine-grained research, both qualitative and quantitative, on how schools may promote teachers' willingness to take responsibility for student learning.

## Limitations

We have used multiple methods to present a complex picture of the professional attitudes of teachers who are highly responsible and the effects these attitudes have on children. However, the use of a mixed-method approach has several limitations. First, our data did not allow us to align exactly the classification of highly responsible to both the quantitative and qualitative data because our interviewed teachers did not complete the same survey as the teachers in the quantitative study. Second, we did not compare high responsibility teachers with medium or low responsibility teachers because of space limitations, although such a comparison might have helped us describe a highly responsible teacher more precisely. Third, our construct of teacher responsibility using the quantitative data is drawn from self-reports rather than from observations of teachers' behavior in the classroom. Thus, we do not know if the self-reports matched actual teacher behavior. Therefore, this article is more about teacher attitudes and beliefs than teacher actions. We were better able to align teachers' attitudes with their actions using the qualitative data because, in addition to interviewing the teachers, we also observed them in their classrooms settings.

## Final Comments

Despite these limitations, we draw several conclusions. Teachers who report high levels of responsibility, and describe themselves as more efficacious in terms of influencing school and curriculum policy, work in environments they consider more supportive. Most important, self-reporting of teacher responsibility is positively and significantly related to young children's literacy learning in their classroom and in their low-income schools. Students whose teachers indicate they are willing to take responsibility for all their students' learning learn more. Such students also learn more when such attitudes are pervasive across the schools' faculties.

This study suggests several lines of inquiry. First, further research could explore the relationship between teachers' stated beliefs about responsibility and the nature of their actions in the classroom. Here we identified such a link, but we could not conclude that this was a causal relationship. Second, more research could examine more explicitly and completely which teacher and contextual factors contribute to increased levels of teacher responsibility. Third, additional research could examine the relationship between individual components of our responsibility composite and student achievement to

understand more specifically how such beliefs translate into actions that are linked with student achievement.

## Appendix A: Measures Student Level Variables

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*Female* – Dummy coded gender variable, 1 = Female, 0 = Male [recoded from GENDER]

*Minority* – Dummy coded race variable, 1 = Minority, 0 = Nonminority [recoded from RACE5]

*Retained in Kindergarten* – Dummy coded indicator, 1 = Student is repeating kindergarten, 0 = Student is a first-time kindergartner [recoded from P1FIRKDG]

*SES* – Continuous composite measure of social class, standardized (Mean = 0,  $SD = 1$ ). Socioeconomic status is a composite of parents' education, parents' occupational prestige, and household income [from WKSESL]

*Reading Ability* – Standardized (Mean = 0,  $SD = 1$ ) IRT-scaled test of reading achievement, administered at the beginning of kindergarten [from C1RSCALE]

*Reading Achievement* – Standardized (Mean = 0,  $SD = 1$ ) IRT-scaled test of reading achievement, administered at the end of first-grade [from C4RSCALE]

## Teacher Level Variables

*Experience* – Standardized (Mean = 0,  $SD = 1$ ) measure of summed total number of teachers' years teaching preschool [from B1ELEM, TB4ELEM], kindergarten [from B1YRSKIN, TB4YRKIN], first grade [from B1YRSFST, TB4YRSFS], second through fifth grades [from B1YRS2T5, TB4YR2T5], sixth grade [from B1YRS6PL, TB4YR6PL]

*Preparation* – Standardized (Mean = 0,  $SD = 1$ ), measure (factor) of level of professional preparation teacher has, including the highest education level received [from B1HGHSTD (kindergarten) and TB4HGHST (first grade)] whether the teacher had a certificate in early childhood education [from B1EARLY (kindergarten) and TB4ERLY (first grade)] and the number of college courses taken in the following areas: math education [from B1MTHDMA (kindergarten) and TB4KMTHD (first grade)], reading education [from B1MTHDRD (kindergarten) and TB4MTHDR (first grade)], child development [from B1DEVLP (kindergarten) and TB4KDEVL (first grade)], early childhood education [from B1EARLY (kindergarten) and TB4EARLY (first grade)], and elementary education [from B1ELEMCT (kindergarten) and TB4ELEMCT (first grade)]

*(continued)*

## Appendix A (continued)

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*Attendance at Early Childhood Conferences* – Dummy coded measure, 1 = attended early childhood conferences, 0 = did not attend early childhood conferences [from A2RELTIM (kindergarten) and TB4RELTI (first grade)]

*Receipt of 5 or More Hours Paid Preparation Time per Week* – Dummy coded measure, 1 = received 5 or more hours paid preparation time per week, 0 = did not receive 5 or more hours paid preparation time per week [from B1PAIDPR (kindergarten) and TB4PAIDP (first grade)]

*Reporting of Principal Communicating Vision* – Standardized (Mean = 0,  $SD = 1$ ) measure of teachers' perception that their principal communicates vision [from B1ALLKNO (kindergarten) and TB4ALLKN (first grade)]

*Responsibility* – Standardized (Mean = 0,  $SD = 1$ ) measure of teachers' level of responsibility for all children's learning, including teacher would choose teaching again [from B1TEACH (kindergarten), TB4TEACH (first grade)]; teacher enjoys present teaching job [from B1ENJOY (kindergarten), TB4ENJOY (first grade)]; teacher can make a difference in children's lives [from B1MKDIFF (kindergarten) and TB4MKDIF (first grade)]; children incapable of learning, reverse coded [from B1NOTCAP (kindergarten) and TB4NOTCA (first grade)]; children's misbehavior interferes with teaching, reverse coded [from B1MISBHV (kindergarten), TB4MISBH (first grade)]; paperwork interferes with teaching, reverse coded [from B1PAPRWR (kindergarten), TB4PAPRW (first grade)]

## School Level Variables

*School Average SES* – Standardized (Mean = 0,  $SD = 1$ ) mean of children's socioeconomic status, aggregated to the school level [from WKSESL]

*School Average Ability* – Standardized (Mean = 0,  $SD = 1$ ) average of children's scores in reading and mathematics at the beginning of kindergarten, aggregated to the school level [from C1RRSCAL and C1RMSCAL]

*Minority Enrollment* – Dummy coded aggregate measure of enrollment, 1 = school has 50% or more minority enrollment, 0 = school has less than 50% minority enrollment [from S2KMINOR]

*Urban Location* – Dummy coded aggregate measure of school type, 1 = school is located in an urban setting; 0 = school is not located in an urban setting [from KURBAN]

*Teachers Perceive School Principal's Behavior toward Staff as Supportive and Encouraging* – Dummy coded aggregate measure of teachers' collective sense

(continued)

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## Appendix A (continued)

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that their administrator's behavior toward staff is supportive and encouraging, 1 = more than 80% of teachers perceive administrator as supportive, 0 = less than 80% of teachers perceive administrator as supportive [from B1ENCOUR (kindergarten) and TB4ENCOU (first grade)]

*Teachers Feel They Have Control Over Curriculum* – Dummy coded aggregate measure of teachers' collective sense that they have control over school curriculum, 1 = 80% or more of teachers in the school have control, 0 = less than 80% of teachers in the school have control [from B1SCHPLC (kindergarten) and TB4SCHPL (first grade)]

*Teachers Feel They Have a High Impact on Policy* – Dummy coded aggregate measure of teachers' collective sense that they have a high impact on school policy, 1 = 50% or more of teachers in the school have a high impact, 0 = less than 50% of teachers in the school have a high impact [from B1CNTRL (kindergarten) TB4CNTRL (first grade)]

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## Appendix B

### Selected Questions from Kindergarten Teacher Interview—Fall

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#### Background

**Question 1:** Tell me about your background in teaching.

#### Probes/Prompts

- How long have you been teaching and how long have you taught at this school?
- What other grades have you taught, and for how long?
- How did you come to teach kindergarten?
- Tell me about your educational background and what degree you hold.
- What kind of certification do you have?
- How did you come to teach in this school? (Is there something special about this school that made you want to teach here?)

#### Preparation

**Question 2:** Tell me about your preparation program.

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(continued)

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## Appendix B (continued)

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### Probes/Prompts

Which courses or activities were particularly meaningful to you?

How useful do you feel your preparation was for the context in which you teach?

Do you feel your own training and background match the needs of your students?

What would have been useful that was not part of your formal training?

Have you sought and acquired the learning you need to meet your students' needs? How? Do you feel that teaching children from impoverished backgrounds requires special training? Why or why not? If yes, please describe.

### Professional Development

**Question 3:** Tell me about professional development and continuing education.

### Probes/Prompts

- What kind of professional development opportunities have you had in this school? What did you think of them?
- What are the requirements for continuing education and how have you found ways to fulfill them?
- How satisfied have you been with your own professional growth and development?
- What would you like to work on or toward next in your teaching?

### Knowledge of Learners and Individualization

**Question 3:** You have told me about your education and experience. Now I would like you to tell me about your current teaching situation and the children in your classroom.

### Probes/Prompts

- Tell me about the children in your classroom and how they learn best.
  - Can you tell me more about your students?
-

## Appendix C

### Selected Questions from Kindergarten Teacher Interview—Winter

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#### Expectations for Kindergarten Readiness

**Question 2:** What do you expect children to come in with to be prepared for your program?

#### Probes/Prompts

- How would you describe your expectation for children's abilities and background across all areas of development?
- How did the children in this class compare to that expectation at the beginning of the year?

#### Parental Involvement

**Question 7:** What role do you see parents have in supporting literacy curriculum?

#### Probes/Prompts

- Are there ways in which you involve parents in the literacy curriculum implemented in your classroom?
  - How does this contribute to children's literacy development?
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## Appendix D

### Selected Questions from Kindergarten Teacher Interview—Spring

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#### School Mission and Community

**Question 1:** During the first interview, we discussed your background and education, and learners and learning. During the second interview you told me about your practices and curriculum. Today I would like you to tell me about your school and the community it serves.

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*(continued)*

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## Appendix D (continued)

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### Probes/Prompts

- Tell me about this school. What is its purpose or mission in working with these children?
- How well do you feel the school fulfills these purposes? What are the obstacles to the school's success?
- What is the school community like?
- How do you see your role within the school?
- Tell me about your relationships with your colleagues. (Ask that first. If need prompting, add: Do you plan together, team-teach, share materials and ideas, etc.?)
- Is this relationship similar to the relationships of other teachers in this building?
- How does the administration support cooperation between teachers? For example, do the kindergarten teachers have shared or coordinated planning time?
- Are there staff meetings? How often, who attends them, and what do they consist of?
- How much freedom do you have to design curriculum and plan instruction?
- Tell me about the relationship between the school and the community. How satisfied are you with the communication with the community and students' families?

**Question 6:** What have you found to be the greatest challenges and the most satisfying rewards of teaching children from poverty backgrounds?

### Probes/Prompts

- What methods have you found to be particularly effective in working with children and families in this community?
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## Appendix E Selected Questions from First-Grade Winter Teacher Interview

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### Background

**Question 1:** Tell me about your background in teaching (if information is not yet ascertained).

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*(continued)*

## Appendix E (continued)

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### Probes/Prompts

- How long have you been teaching and how long have you taught at this school?
- What other grades have you taught and for how long?
- How did you come to teach first grade?
- Tell me about your educational background and what degree you hold.
- What kind of certification do you have?
- How did you come to teach in this school? (Is there something special about this school that made you want to teach here?)

### Preparation and Professional Development

**Question 2:** Tell me about your preparation program.

### Probes/Prompts

- Have you sought and acquired the learning you need to meet your students' needs? How?
- Do you feel that teaching children from impoverished backgrounds requires special training? Why or why not? If yes, please describe.

**Question 3:** Tell me about professional development and continuing education

### Probes/Prompts

- Tell me about a professional development (PD) opportunity you have had in this school that has been useful in the last few years. In general, how often do you have PD opportunities and what are the foci?
  - Are you involved in any kind of committee work and what does that entail?
  - What are the requirements for continuing education and how have you found ways to fulfill them?
  - How satisfied have you been with your own professional growth and development?
  - Is there a mentoring program at your school? What has your involvement in it been, and has it been beneficial to you? In what ways has it been helpful or not helpful?
  - What would you like to work on or toward next in your teaching?
  - Have you participated in other research groups?
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## Appendix F

### Selected Questions from First-Grade Teacher Interview—Spring

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#### School Mission and Community

**Question 4:** During the first interview, we discussed your background and education, and learners and learning. During the second interview you told me about your practices and curriculum. Today I would like you to tell me about your relationships with colleagues.

#### Probes/Prompts

- Tell me about your relationships with your colleagues. (Ask that first. If need prompting, add: Do you plan together, team-teach, share materials and ideas, etc.? Is this within grade level, across grades in a community grouping, etc.?)
- Is this relationship similar to the relationships of other teachers in this building?
- How does the administration support cooperation between teachers? For example, do the first-grade teachers have shared or coordinated planning time? Is there time for interaction with the kindergarten teachers, the second-grade teachers?

#### Parental/Family Involvement

**Question 7:** What role do you see parents have in supporting literacy curriculum?

#### Probes/Prompts

- Are there ways in which you involve parents in the literacy curriculum implemented in your classroom?
  - How does parental involvement contribute to children's literacy development?
  - Ask the teacher to describe how parental involvement has contributed to the literacy development of the children from our kindergarten study.
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#### Notes

1. The research team developed and followed semistructured protocols, and all the interviews were transcribed verbatim. The researchers conducted these interviews after they had met the teachers and observed their classes at least three times. Thus, the interviewers had

developed a research relationship with the respondents (Weiss, 1994) that allowed them comfortably to draw information from the respondents.

2. The reading test battery included items to measure basic skills, vocabulary, and comprehension. Children who did not pass an English proficiency-screening test were exempted from taking the cognitive tests. These children comprised about 7.5% of the total sample (National Center for Educational Statistics, 2000, pp. 5-13).

3. We compared the free and reduced-price lunch variables for all the public, nonrural elementary schools in the ECLS-K data set to the free and reduced-price lunch variables for these schools in the U.S. Department of Education's Common Core of Data (CCD). For discrepancies, we used other descriptors of the school to resolve them. Based on this information, we selected 207 schools where at least 40% of children received free and reduced-price lunch in both the ECLS-K and CCD data. The average SES for these schools is about .5 standard deviation (*SD*) below the national average, and in these schools, on average, more than 64% of the children qualify for free or reduced-price lunch.

4. The factor measuring teacher preparation consists of the following variables with their factor loadings: courses in math 0.297, courses in reading 0.297, courses in child development 0.285, courses in early childhood 0.243, courses in elementary education .138, teacher attained higher education 0.149, teacher has a certificate in early childhood education 0.117. This factor has a moderate alpha reliability of .71. We standardized this variable into a z-score ( $M = 0, SD = 1$ ).

5. Our attempt to construct a factor considering other variables on the topic of attending professional development and activities beyond the school day was unsuccessful. Thus, we decided to use this single measure, even though it does not capture a variety of aspects of teacher professional dedication.

6 In addition to differing with regard to achievement, more students with high responsibility teachers were female, and they came from families of higher socioeconomic status backgrounds. Also, more students of teachers with low levels of responsibility were racial minorities compared to their counterparts with medium levels of responsibility.

7. This Intraclass Correlation (ICC) represents a somewhat lower proportion of variance between schools in young children's reading achievement than research using Early Childhood Longitudinal Study data has found (ICC here, less than half of what others have found). We suggest three possible reasons for this lower proportion: (a) our sample of students and schools does not include either private schools or schools in rural areas, (b) our lower-income sample probably constrains the full distribution of reading achievement among the United States total first-grade school population, and (c) sample restrictions have resulted in somewhat smaller within-school sample sizes. Within HLM, within-school sample sizes influence both ICCs and lambda reliability estimations (Raudenbush & Bryk, 2002). Both are lower than typical in this study.

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