

**The Chicago Program  
Evaluation Project:  
A Picture of Early  
Childhood Programs,  
Teachers, and Preschool-  
Age Children in Chicago**

*Final External Report*

*December 2008*

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## ACKNOWLEDGEMENTS

We thank the teachers in the Chicago Head Start and Preschool for All programs who generously welcomed us into their classrooms to assess children and to observe the educational setting, and who responded to our questions and completed behavior ratings on each child in the study in both fall and spring of the 2006-2007 school year. We thank the children who engaged in the assessments and enthusiastically chose stickers as rewards for their efforts, and the parents who graciously agreed to allow their children to participate.

We appreciate the leadership of the Chicago Public Schools, the Chicago Department of Children and Youth Services, and the McCormick Foundation, who jointly funded this important study. We also thank the staff of CPS and CYS, who answered numerous questions about the policy and program details, provided class lists for sampling, and worked with supervisors and teachers to encourage participation in the study. CPS fielded a parent survey to obtain the demographic data needed for Preschool for All children, entered the data and then reviewed and corrected it.

We are grateful to the staff at Mathematica Policy Research who helped in numerous ways in the data analysis and reporting, including Sarah Avellar, Patricia DelGrosso, Laura Guy, Bonnie Hart, Miriam Loewenberg, Maricar Mabutas, Kathleen Paganelli, Caterina Piscioti, and Elizabeth Seif. We are also grateful for the comments and insights of Sally Atkins-Burnett, John Deke, Cindy George, John Hall, John Love, Frank Potter, Peter Schochet, Louisa Tarullo, and Jerry West, which strengthened the analysis and reporting. We thank Jennifer Baskwell, who spent many hours making the tables and figures look legible and attractive, and who produced the entire report.

Finally, we thank Eboni Howard and Sam Meisels of the Erikson Institute, Karen Carradine, Barbara Bowman, and Paula Cottone of the Chicago Public Schools, Tony Raden, Jim Chesire, Katie Dealy, Vanessa Rich, and Mary Ellen Caron of the Department of Children and Youth Services, and their many colleagues for their careful review of drafts of the report, their enthusiastic support for this project, and their vision for what preschool programs can contribute to the lives of the children of Chicago.



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## **THE CHICAGO PROGRAM EVALUATION PROJECT: A PICTURE OF EARLY CHILDHOOD PROGRAMS, TEACHERS, AND PRESCHOOL-AGE CHILDREN IN CHICAGO**

Early childhood education programs can play a critical role in preparing educationally at-risk children for school and reducing achievement gaps that develop as early as the elementary grades (Campbell et al. 2002; Zigler and Styfco 1996). Early childhood education programs seek to enrich the learning environments of children at an early age, recognizing that development is cumulative and starts early (Bowman, Donovan, and Burns 2001; Cunha, Heckman, Lochner, and Masterov 2006; Shonkoff and Phillips 2000). More recently, the federal No Child Left Behind legislation establishes an imperative for schools to ensure that increasing proportions of children reach state-defined proficiency standards starting in third grade. This imperative has increased the focus on early childhood education programs to provide an early start at reducing the gaps in children's achievement, and has increased public support for preschool programs nationally.

Growing support for publicly funded preschool educational opportunities has led to rapid expansion of early childhood education for economically disadvantaged 3- and 4-year-olds over the past two decades. The federal Head Start program doubled its enrollment during the 1990s to 900,000 children; since 2001, enrollment has remained flat (Administration for Children and Families [ACF] 2007). State pre-kindergarten programs also expanded during the 1990s, but unlike Head Start, they continued growing through 2006. In 1991, a total of 28 states served 290,000 children in state pre-kindergarten programs; by 2006, there were 10 additional states offering pre-kindergarten programs and over 1 million children were enrolled (Barnett et al. 2007).

The quality of early childhood education programs has also been a focus of public and policy attention. The 1990s brought new efforts by the Head Start program to improve the educational content of the programs, by placing a greater focus on enhancing children's language development and early literacy skills, using periodic assessments to inform individualized teaching, and requiring 50 percent of teachers to have an associate's degree by 2003. More recently, the 2007 reauthorization of the Head Start program requires all teachers to have at least an associate's degree by 2011, and 50 percent of teachers to have at least a bachelor's degree by 2013. Reauthorization also requires the development of new early learning standards and program assessments that expand the focus to include instructional quality. As state pre-kindergarten programs have become established and grown over the past decade, they have been accompanied by standards for class sizes and child-adult ratios, teacher education levels and professional development, and early learning standards that extend and support the state's curriculum standards for kindergarten through 12<sup>th</sup> grade.

Illinois is considered to be one of the leading states in making investments in early childhood education services. In terms of quality standards for pre-kindergarten, as well as in terms of the number of preschool-age children served, it is ranked near the top of the states (Barnett et al. 2007). The Illinois state pre-kindergarten program began in 1985 as the Prekindergarten Program for At-Risk Children, offering early childhood services. Since 1998,

funding for the program has been included in the Illinois Early Childhood Block Grant and administered by the state Department of Education.

Head Start has been offered by the City of Chicago since the program's inception as a pilot summer program in 1965. Today, Chicago is one of the largest "super" grantees in the U.S., overseeing the delivery of Head Start services by 57 community-based organizations to over 16,000 children across the city. One of the largest of these organizations is the Chicago Public Schools.

Thus, the Chicago early childhood education system includes diverse center-based and school-based programs, many serving low-income or educationally at-risk children. The programs operate under both public school and private, community-based auspices and receive funding from several sources, including the Illinois State Board of Education Early Childhood Block Grant, Head Start, the Illinois Child Care Assistance Program, and the Department of Child and Family Services. Accordingly, the programs vary in eligibility rules and program priorities, hours and days of operation, and families served. The early childhood education programs enroll mainly 3- and 4-year-old children and operate for full-day or half-day double sessions. Funding sources and sponsoring agencies set different requirements for teacher education and provide different systems for support of professional development. The characteristics of children served vary depending on neighborhood characteristics, eligibility rules, and program priorities. Head Start, until the 2007 federal reauthorization, served children in families with incomes at or below the federal poverty line (although 10 percent of enrollment could be children with special needs from families at any income level). With reauthorization, the income limit was modified so that up to 35 percent of children in a Head Start program may come from families with income up to 130 percent of the federal poverty line. Parents who receive child care subsidies and whose children are in full-day programs are required to be employed, in school, or in job training. The Illinois Preschool for All program does not set an income eligibility requirement, although during the phase-in period from the at-risk to the universal program, providers had to give priority to at-risk children and lower-income families (incomes below \$60,000 per year). As a result, the families served by each program differ in the percentage of parents employed, the percentage with incomes below poverty, and other characteristics.

Chicago's early childhood education programs are operating in a state in which investment in early education is growing. The Preschool for All Children Act, passed in July 2006, expanded the existing Pre-Kindergarten for Children At-Risk of Academic Failure program to offer universal preschool and re-named the program Preschool for All. By 2011, when the program is expected to be fully implemented and funded, all 3- and 4-year-olds in the state are expected to have access to pre-kindergarten in a range of settings, including state-funded preschools, community-based child care centers, and Head Start.

In the context of this funding expansion, and in the face of a continuing need to serve more eligible children in some locations, information about the early childhood education system in Chicago, including the experiences of children in its classrooms and children's developmental progress, can help to inform initiatives that will use the available programs and resources to best meet the needs of low-income preschool children. Although nearly a decade of research offers a nationally representative picture of Head Start children and program quality (ACF 2003, 2006), research is just beginning to provide a picture of who is served by state preschool programs and



the quality of those environments (Barnett et al. 2007; Clifford, et al., 2005; Early et al. 2005; Henry et al. 2006; Phillips, Gormley, and Lowenstein 2007; Pianta et al. 2005). A large body of literature has examined children's experiences in the Head Start program nationally, and in eleven of the largest state preschool programs, yet few studies have examined the multiple program environments of a large city like Chicago and described children's early childhood education experiences in these programs. Basic descriptive information is a critical first step before the most salient policy questions can be identified and answered.

The Chicago Public Schools (CPS) and the Chicago Department of Children and Youth Services (CYS) have partnered with the McCormick Foundation and the Erikson Institute to support the Chicago Program Evaluation Project (C-PEP). The project was initiated to inform program improvement efforts and funding directions for Chicago's early childhood education programs, and to provide a baseline for future research. This study documents children's experiences in early childhood education classrooms, assesses their development, and provides information on children's readiness to succeed in kindergarten.

This report describes children representing the roughly 30,000 4-year-old children who attended Chicago's early childhood education programs in the 2006-2007 school year. They are from diverse family backgrounds in terms of ethnicity, parental education and employment, but nearly all have demographic risk factors associated with adverse outcomes. The report describes the teachers and classrooms, providing a detailed picture of the education and experience of teachers, the curriculum and educational activities, and the quality of the classroom environment in terms of instructional and emotional support. Finally, we describe the developmental progress children make over a period of 5 to 6 months during the preschool year, and examine how that progress relates to variations in children's background characteristics and characteristics of the preschool classroom environment.

The analysis is descriptive, not causal. Differences in children's developmental progress during the preschool year may vary by particular program, classroom, or family characteristics, but may reflect many other influences not measured in this study. The descriptive information in this report can, however, provide a rich picture of the children, families, and programs that make up the early childhood education landscape in Chicago, and can suggest avenues for further research.

## **KEY RESEARCH QUESTIONS**

C-PEP was designed to address research questions in three main areas:

1. What are the characteristics and developmental levels of children attending Chicago's early childhood education programs in the fall of 2006?
2. What are the characteristics of teachers and classrooms in Chicago's early childhood education programs?
3. What developmental progress do children make during the preschool year? How are family background characteristics and classroom environments related to children's developmental progress during the preschool year?

To provide a broader context for interpreting information about Chicago's children and classrooms, we compare them to Head Start children and programs nationally and to other state pre-kindergarten children and programs based on previous studies (ACF 2003, 2006; Early et al. 2005). It is important to keep in mind that, relative to children in the national studies, Chicago's early childhood education programs have particularly high proportions of children who are English Language Learners and whose parents have lower education levels. Thus, the special needs of English Language Learners will need more attention in Chicago's early childhood education programs. Moreover, since parent education is associated with the home language environment and with children's cognitive development, children in Chicago's early childhood education programs may be at greater educational risk than their peers nationally.

## **DESIGN OF THE C-PEP STUDY**

### **The Study Examined Three Types of Early Childhood Education Programs**

The study includes three types of programs that constitute a large proportion of the early childhood education slots in Chicago: Full-Day programs in community-based child care centers that operate with federal Head Start dollars and state child care subsidy funds; Half-Day Head Start, which operates with federal Head Start funding; and school-based Preschool for All, which is funded by the state of Illinois Early Childhood Block Grant.<sup>1</sup> The programs are described in greater detail in Box 1.

### **The Study Focused on 4-Year-Olds**

Within the three program types, C-PEP focuses on 4-year-old children for three reasons. First, the early childhood education programs in the study give 4-year-olds priority over younger children, so they constitute the largest subgroup served by these programs. Second, many educationally at-risk 3-year-olds cannot reach a minimum score on the cognitive assessments used in the study, making inferences about this group less certain. Finally, 4-year-olds provide a picture of the development of preschool children in the year immediately prior to kindergarten.

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<sup>1</sup> CPS full-day Head Start programs and community-based Preschool for All programs could not be included in the study, because this would have required a much larger project.

## BOX 1

### EARLY CHILDHOOD EDUCATION PROGRAMS INCLUDED IN THE C-PEP STUDY

#### ***Full-Day Programs***

Children receive care and education in community-based settings for up to 9-12 hours a day, five days a week, throughout the entire year. Children receive both Head Start preschool services and child care. Full-day programs are funded by a combination of federal Head Start program and state Child Care Assistance Program funds. To be eligible, children must meet Head Start income guidelines (income below the poverty line - \$20,000 for a family of four in 2006), and to be eligible for the Child Care Assistance Program, parents must be in school, at work, or in a training program, and families are required to make co-payments for child care services that vary with income.

#### ***Half-Day Head Start***

Children receive comprehensive Head Start services in community-based organizations and Chicago Public Schools for 3-3 ½ hours per day, four or five days per week, during the school year. Funding for half-day Head Start comes from the federal government (Head Start program funding). To be eligible, children's families must have incomes at or below the poverty line (however, 10% of enrollment must be children with special needs, who can be from families at any income level).

#### ***Preschool for All***

Children receive education services in a Chicago Public School for 2.5 hours per day, 5 days per week, during the school year. Funding for Preschool for All comes from the Illinois Early Childhood Block Grant. Preschool for All has no income or work requirement. Priority, however, is given to at-risk 4-year-olds and families with incomes below \$60,000. (Note that Illinois' Preschool for All programs exist in community-based organizations, schools, child care settings, and institutions of faith. C-PEP included 4-year-olds in Preschool for All programs only in the Chicago Public Schools.)

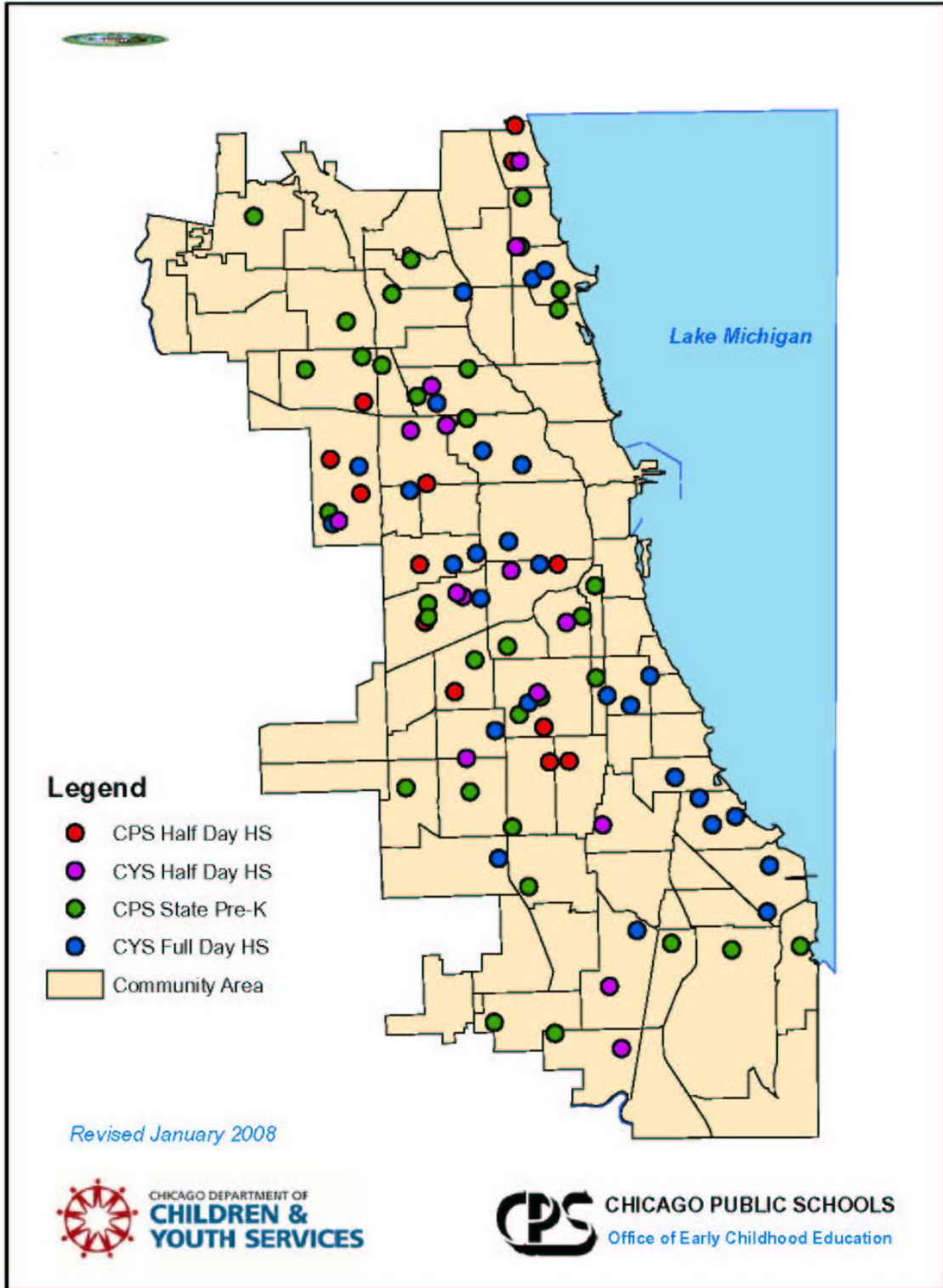
### **The Study Included a Representative Sample of Classes and Children from Each Program**

We selected classes at random within each program from a full list of classes that had eligible 4-year-old children. The probability of selecting any class was proportional to the number of 4-year-olds in that class. Prior to conducting our random selection, we sorted classes by community area to ensure that the sample of children represented Chicago's diversity. Ultimately, we selected 37 classes from each program. Some selected classes were not eligible for the study and others declined to participate, leaving a sample of 33 Full-Day, 31 Half-Day Head Start, and 31 Preschool for All classes across a broad array of neighborhoods in the city (Figure 1). After selecting classes for the study, we randomly chose 12 to 14 children ages 4 and older from each selected class and invited them to participate in the study.<sup>2</sup> Of the 943 children

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<sup>2</sup> Children who are 5 years old by September 1 can enter kindergarten; thus, children who are not yet 5 by September 1 and a small number of children whose parents preferred to keep them in preschool for an additional year could be in our sample.

Figure 1. Chicago Program Evaluation Project (C-PEP)  
Participating Sites - Fall 2006 (Revised)



sampled to participate in the study, parents of 711 gave consent for them to participate. The final sample of children was spread across the three programs, with 33 percent from Preschool for All, 31 percent from Full-Day programs, and 36 percent from Half-Day Head Start. The study sample is thus evenly balanced across programs, in order to provide a clearer description of each. However, the number of children enrolled in Preschool for All programs is, in fact, much larger than the number of children in Full Day or Half-Day Head Start programs.

### **Measures of Preschool Children’s Development Focused on Vocabulary, Early Literacy, Early Mathematics, and Social-Emotional Development**

Many aspects of children’s cognitive development are important during the preschool years. We have focused on three areas of cognitive development that predict success in school: English- and Spanish-language vocabulary development, early literacy, and early mathematics (ACF 2003; Denton and West 2003; Peisner-Feinberg, et al. 1999). Vocabulary development measures children’s knowledge of a variety of words and concepts, such as categories, actions, and objects from different environments and time periods. English-language development is important for the many English Language Learners who will be entering English-speaking kindergartens the following year. For early literacy achievement, we focused on children’s knowledge of letters, letter sounds, and words. For mathematics achievement, we focused on whether children could identify and understand certain fundamental mathematics concepts (number and operations; geometry, patterns, and measurement), given their importance for children’s later development (Clements and Sarama 2000).

Children’s social-emotional development is critical for well-being and to support learning in a school environment. For the C-PEP study, we selected three major areas of social-emotional development that both associate with learning and have suitable measures available: (1) attention/persistence, (2) social behavior, and (3) behavior problems. Attention/persistence refers to a child’s ability to do things such as settle into an activity or concentrate. Social behavior refers to cooperation and interaction (for example, empathy towards other children, leadership). Behavior problems include both internalizing behaviors (social withdrawal) and externalizing behaviors (attention problems and self-centered or overactive behavior).

### **The Study Used Child Assessments, Teacher Interviews, and Direct Observations of the Classrooms**

In fall and spring, we administered direct assessments of children’s cognitive and social-emotional development and asked teachers to report about children’s social-emotional development. During the fall interviews, teachers reported their education, experience, professional development, classroom instructional practices, curriculum used, and types of child assessments used during the year. Finally, we conducted observations of the classrooms in February 2007 to assess classroom quality across several dimensions, including materials for learning, emotional support, classroom management, and the quality of instruction.

The fall child assessments were conducted between mid-October and the end of November. This allowed children the opportunity to adjust to the preschool classroom environment before

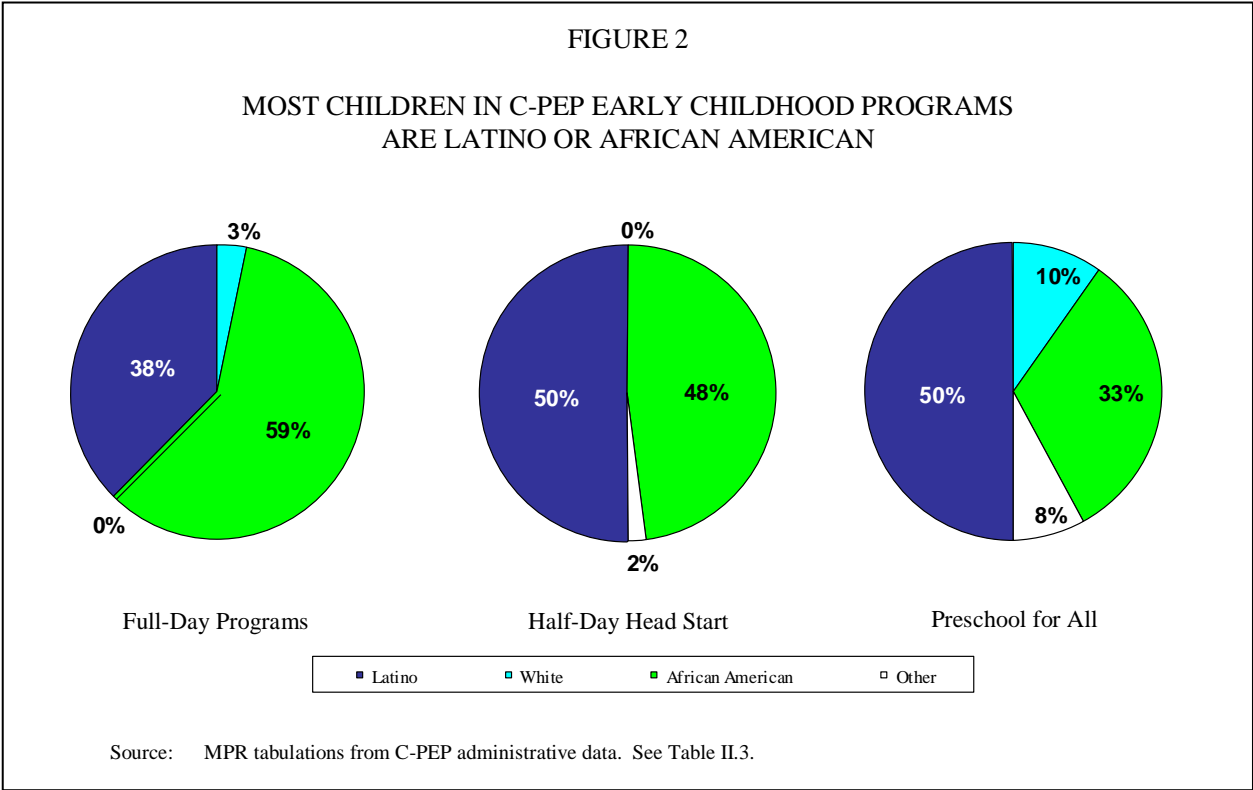
being assessed, as well as accommodating the sampling process and the time required to obtain parental consent. Spring assessments were conducted between early April and mid-May. The average (and median) interval between the fall and spring assessments for all children was 5.4 months, with 80 percent of the children assessed within a period of 4.8 to 5.9 months. Full-Day programs are open for nearly the full calendar year (50 weeks). For Half-Day Head Start and Preschool for All programs, the 2006–07 school year began just after Labor Day and ended in mid-June; a total of 9.5 months, including holidays and school vacations. Thus, our measure of children’s growth between the fall and spring assessment points – a span of 5 to 6 months – does not include the entire preschool year, and thus likely underestimates the actual growth children experienced during the entire preschool year.

**RESEARCH QUESTION 1**  
**WHAT ARE THE CHARACTERISTICS AND DEVELOPMENT OF CHILDREN ENTERING EARLY CHILDHOOD EDUCATION PROGRAMS IN THE FALL?**

*1a. What are the demographic and family background characteristics of 4-year-old children in CPS/CYS early childhood classrooms in the fall?*

***Children in the early childhood education programs are predominantly Latino or African American.***

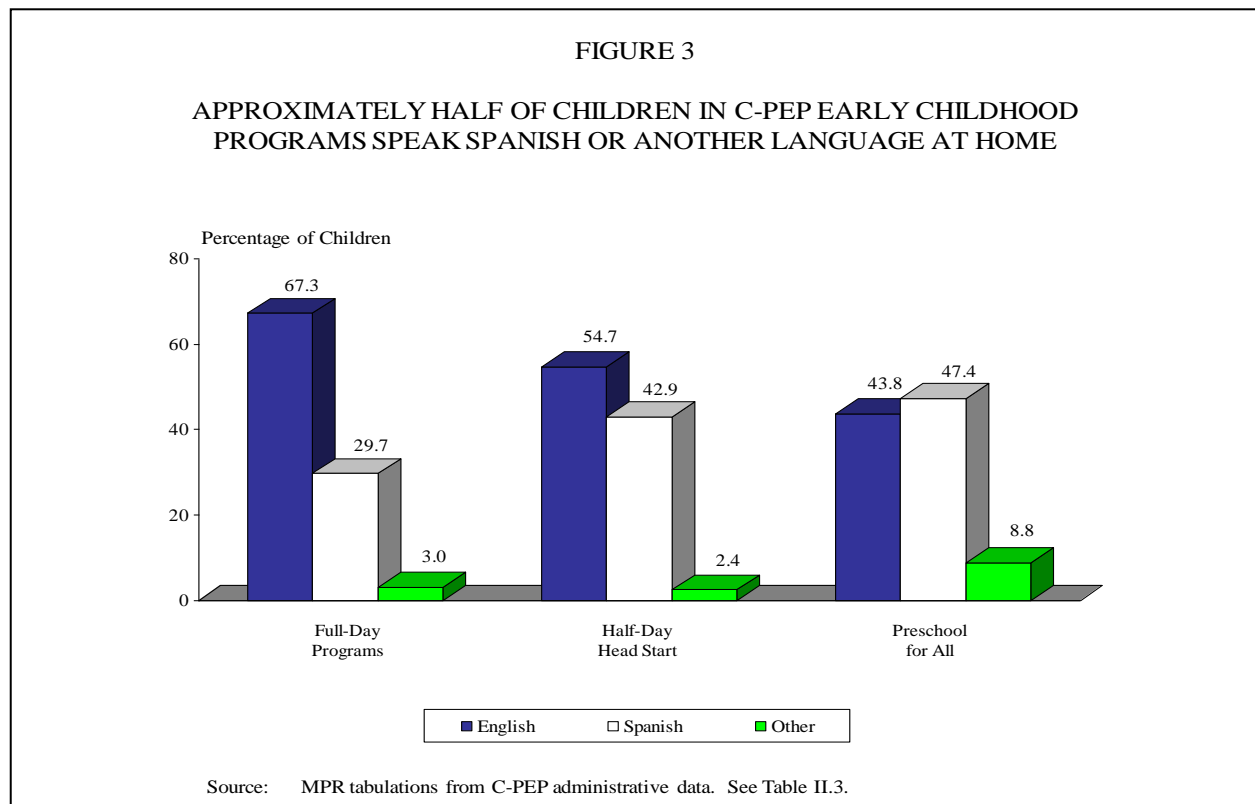
Figure 2 shows that children’s racial/ethnic backgrounds vary by program. Full-Day programs serve a majority of African American children (59 percent). In Half-Day Head Start, about half of the children are African American and half are Latino. Preschool for All programs serve a larger proportion of Latino children (50 percent) than other groups.<sup>3</sup>



<sup>3</sup> This study may have a higher proportion of Latino families than would be expected had all of Chicago’s early childhood programs been included. In particular, the study’s inclusion of more half-day than full-day programs and the focus on 4-year-old children may have increased the proportion of Latino children in the study.

***Approximately half of the children in the early childhood programs included in the C-PEP study speak Spanish or another language (other than English) in the home.***

The proportion of children from homes in which English is not the primary language varies by program, reflecting the proportions of Latino children in each program (see Figure 3). Half-Day Head Start and Preschool for All have particularly large populations of children who do not speak English at home. For many of these children, learning English will be a major task of preschool.



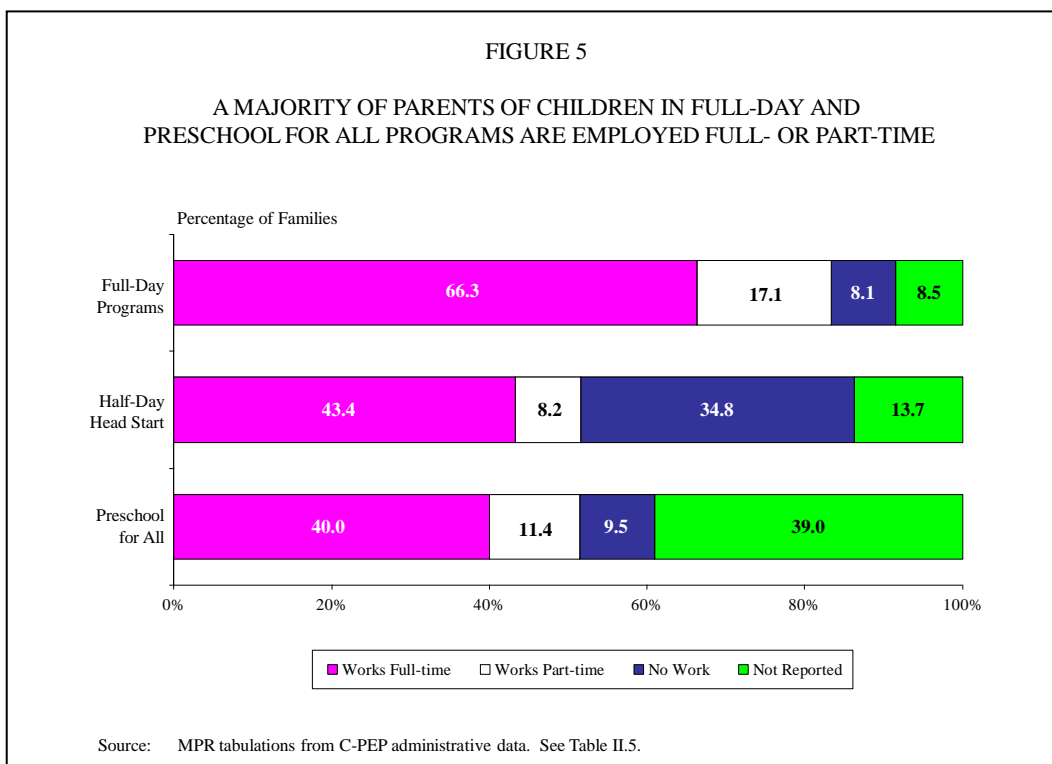
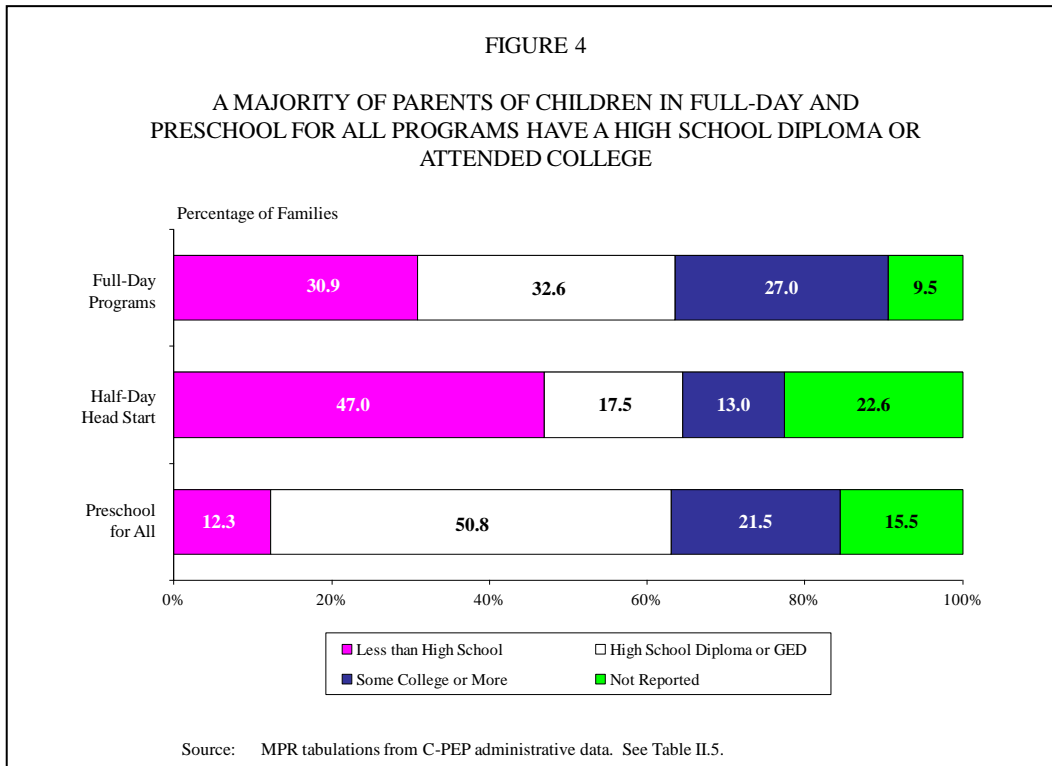
***Parent education, employment, and income levels are lowest in Half-Day Head Start programs; parent education and income levels are highest in Preschool for All programs.***

Family income and parental employment vary across programs, reflecting the different eligibility criteria and service priorities of the programs described earlier in Box 1. In Full-Day programs, nearly 60 percent of children live with single parents,<sup>4</sup> and the vast majority of parents reported that they are employed. Two-thirds of the parents of children in Full-Day programs have a high school diploma or GED, and half of these high school graduates have taken some courses at the college level. Average annual family income is \$12,100. Among the families of children in Half-Day Head Start, 47 percent of the parents have not completed high school, one-third are not working, and average annual family income is \$10,500. Children in Preschool for

<sup>4</sup> Substantial non-reporting of marital status among Full-Day and Half-Day Head Start parents (35 percent) means that the proportion of single parents could be higher.



All programs, on the other hand, come from families with higher incomes. Parents of children in these programs tend to be married (56 percent), to have higher education levels (72 percent have completed high school), and to have higher family income than the other two groups (\$25,600 annually). Although there is substantial missing data on employment, the vast majority of parents indicated that they are employed. Figure 4 shows parent education levels and Figure 5 shows parent employment levels across the three programs.



*1b. What is the developmental risk status of C-PEP children and does this vary by program?*

Research has identified the following factors that may put children at developmental risk: (1) characteristics of the child, including established diagnoses and biological vulnerabilities; (2) parent characteristics, such as harshness or poor attachment; (3) family characteristics, such as instability or violence; and (4) neighborhood or environmental characteristics, such as social networks, danger, social cohesion, mutual trust, and the extent of economic opportunity (Brooks-Gunn, Duncan, and Aber 1997; Garbarino and Ganzel 2000; Kohen, Leventhall, Dahinten, and McIntosh 2008; Meisels and Wasik 1990; Shonkoff and Marshall 2000). Neighborhood characteristics appear to be related to parents' mental health and parenting styles, and together with family characteristics and parent characteristics, can influence the degree of support and stimulation in the home environment, and the degree of stress experienced by children. Children at risk may show resilience or develop more positively than expected if there are factors that buffer stress, including their own sociable, engaging personalities, adults who develop close, guiding relationships with them, or an intervention program such as the Chicago early childhood education programs (see, for example, Garmezy 1974; Masten et al. 1990; Sameroff and Seifer 1983; Yates, Egeland and Sroufe 2003).

***Forty percent of children in Chicago's early childhood education programs have a high number of family demographic characteristics that may put them at developmental risk, but the proportion varies by program. Half-Day Head Start programs have the largest proportion of children at high risk (62 percent) and Preschool for All programs have the lowest (28 percent).***

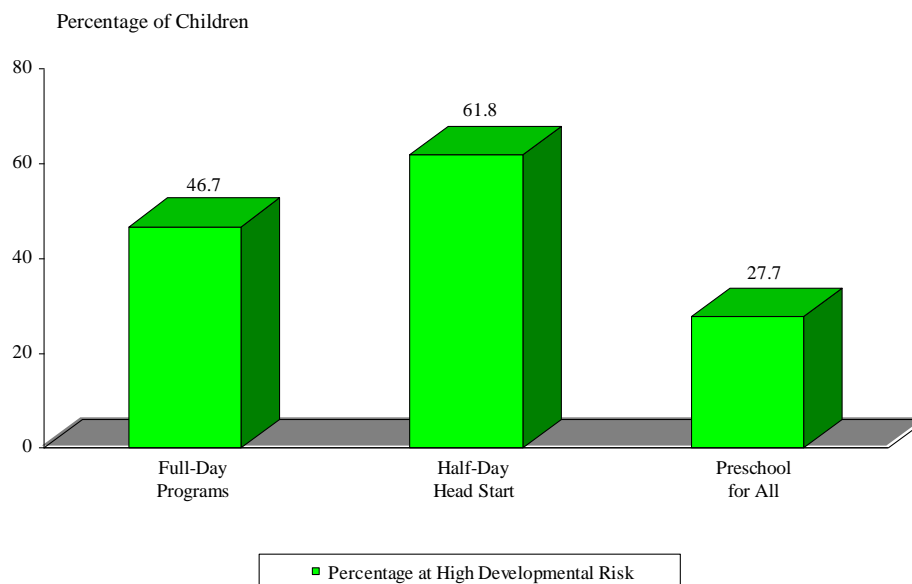
Because the C-PEP study lacks measures of children's disabilities or biological vulnerabilities, as well as parenting style, warmth, and attachment at home, we use measures of more distal factors that are considered risks because of the likelihood they will influence the home environment (Yates, Egeland, and Sroufe 2003). In this study, we have identified six characteristics of the family that may put children at developmental risk, including: a parent with less than a high school education, a parent who is unemployed, family income below the poverty threshold, a single parent, household size of five or more, and a young parent (between the ages of 17 and 24). We describe children as "high risk" when they experience three or more of these factors and "lower risk" when they experience fewer than three.<sup>5</sup> Children designated as "lower risk" include a small number who had no reported demographic risk factors, as well as many children with one or two demographic risk factors. They are at lower demographic risk relative to the "high risk" group based on the information available, but many of these children are still at developmental risk. Figure 6 shows that children's high-risk status differs by program type. Half-Day Head Start has a particularly large concentration of children in the high-risk group.

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<sup>5</sup> Since some children have missing data on more than one demographic characteristic used in the risk index, we classified children as "high risk" if 50 percent or more of the demographic information available indicates risk.

FIGURE 6

HALF-DAY HEAD START HAS THE HIGHEST PERCENTAGE OF CHILDREN AT HIGH DEVELOPMENTAL RISK

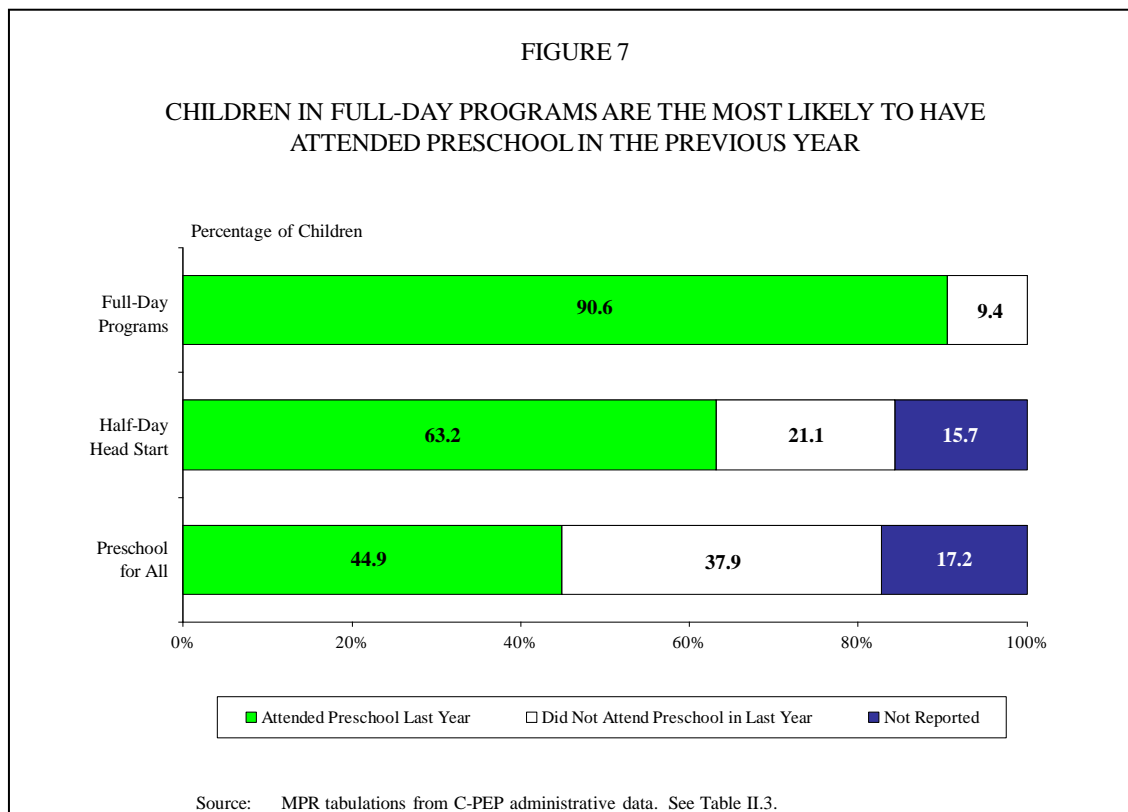


Source: MPR tabulations from C-PEP administrative data. See Table II.30.

***More than half of 4-year-old children in Chicago’s early childhood education programs attended preschool in the previous year.***

Attending preschool may be a buffer for children at risk. A large proportion of 4-year-old children in Chicago’s early childhood education programs attended preschool during the previous year (57.1 percent), although this proportion varied across programs. Figure 7 presents preschool attendance by program type and shows that children in Full-Day programs were far more likely to attend preschool during the previous year than their peers. Ninety-one percent of children in Full-Day programs attended preschool in the previous year, compared to 63 percent in Half-Day Head Start and 45 percent in Preschool for All.

There may be some imprecision in classifying children by their prior preschool attendance. The data on preschool attendance in the previous year do not indicate whether the child attended for part or all of the previous year, and the data for Full-Day program children and Half-Day Head Start program children only indicate participation in a program administered by CYS and therefore could miss some programs. Data are missing for 12 percent of the children (see Figure 7). The extent of missing data and our inability to assess what type of program children attended and for how long they attended during the previous year, or what curriculum or learning environment they were exposed to, make it difficult to draw definitive conclusions about the effects of previous preschool attendance. Further research should address this important question for the field.



*Ic. What is the developmental status of 4-year-old children in C-PEP programs in the fall with respect to language ability, early literacy, early mathematics, persistence, social competence, and problem behaviors? How does their developmental status compare with that of 4-year-olds nationally?*

***Children’s development in the fall was at the national average for early literacy but below national averages for vocabulary and early mathematics.***

We have focused on three areas of cognitive development that predict success in school: English- and Spanish-language (vocabulary) development, early literacy, and early mathematics (ACF 2003; Denton and West 2003; Peisner-Feinberg et al. 1999). Table 1 describes the measures of children’s cognitive abilities. These child assessments have strong psychometric properties, and except for the Early Mathematics Assessment (ECLS-B assessment focusing on patterns, geometry, and measurement), include standardized scores that allow us to compare children’s performance with that of a national sample of children the same age. For the standardized tests of cognitive development, a score of 100 is equivalent to the national average for children of the same age, and the standard deviation is 15. This indicates that children who score below 85 are more than one standard deviation below the national mean, or in the bottom 16 percent of children nationally. Standardized scores also adjust for the natural progress children make as they grow, so any gains in standardized scores can be attributed to factors other than age. The “W-scores” for the Early Mathematics Assessment, on the other hand, have not

TABLE 1  
ASSESSMENTS TAPPED SEVERAL DIMENSIONS OF COGNITIVE DEVELOPMENT  
AND ENGLISH LANGUAGE ABILITY

| Outcome   | Instrument   | National Average |
|---|--|------------------|
| <b>English Language Ability</b>                 | The Preschool Language Assessment Survey (Pre-LAS; Duncan and Avila 2000), Direct assessment   | NA               |
| <b>Cognitive Development</b>                    |  |                  |
| English Vocabulary                              | Peabody Picture Vocabulary Test–Fourth Edition (PPVT-4; Dunn and Dunn 2006), Direct assessment of children’s language ability in English.  | 100              |
| Spanish Vocabulary                              | Test de Vocabulario en Imagenes Peabody (TVIP; Dunn et al. 1986), Direct assessment of children’s language ability in Spanish.   | 100              |
| Literacy Achievement (English)                  | Woodcock-Johnson III Achievement Battery, Letter-Word Identification (WJ-III; Woodcock et al. 2001), Direct assessment of letter recognition, letter-sound correspondence, and sight-reading.  | 100              |
| Literacy Achievement (Spanish)                  | Bateria III Woodcok-Munõz, Letter-Word Identification (Bateria III; Woodcock et al. 2005), Direct assessment of letter recognition, letter-sound correspondence, and sight-reading.  | 100              |
| Math Achievement—Numbers (English)              | WJ-III, Applied Problems (Woodcock et al. 2001), Direct assessment of children’s knowledge of number and operations  | 100              |
| Math Achievement—Numbers (Spanish)              | Bateria III, Applied Problems (Woodcock et al. 2005), Direct assessment of children’s knowledge of number and operations   | 100              |
| Math Achievement—Patterns (English and Spanish) | Early Mathematics Assessment from the Early Childhood Longitudinal Study–Birth Cohort, (ECLS-B) Preschool Followup (some items from the Test of Early Mathematics Ability–Third Edition; TEMA-3; Ginsburg and Baroody 2003), Direct assessment of children’s knowledge of geometry, patterns and measurement | NA               |

been adjusted for age. Therefore, the scores are not benchmarked to a national sample, and changes over time (gain scores) are a combination of the natural growth we expect as children age and any progress beyond that point. These W-scores are created based on Item Response Theory that summarizes each child’s performance in relation to the difficulty of the items based on the performance of all the children in the C-PEP sample in the fall and spring. The W-score sets the mean item difficulty at 500.

**English-Language Threshold.** Among children from homes in which Spanish or another language was the primary language, approximately 44 percent met or exceeded a threshold for basic understanding of spoken English. The threshold indicates that the child responded correctly to 12 or more items out of 20 that require the child to understand simple directions and respond in English to a game of Simon Says and to questions about several pictures.

**Vocabulary.** For English vocabulary, children scored well below the national average of 100, though a small proportion of children in the early childhood education programs

(14 percent) scored at or above 100. (Table 2 shows children’s standardized scores on tests of cognitive development.) However, the overall average score (81.3) reflects all children in Chicago’s early childhood programs regardless of their status as English Language Learners, in order to establish a baseline for vocabulary development in preschool for children who would all be entering English-language kindergartens in the following year. Among children from English-primary homes, scores were slightly higher (86.6).

Spanish vocabulary was measured for children from Spanish-primary homes, and average scores were below 85 (a threshold for educational risk) for a large proportion of children. Children scored an average of 81.6, with two-thirds scoring below 85. In this study sample, many children in families that speak Spanish at home also have parents with low levels of education and low income, risk factors for delayed language development.<sup>6</sup>

**Literacy.** In the fall, children in Chicago’s early childhood education programs scored close to the national mean for 4-year-olds in early literacy (primarily letter recognition and letter-sound correspondence). Children taking the English version of this assessment scored an average of 96.3, and children from English-primary homes scored an average of 99.0. On the Spanish version of the assessment, children scored an average of 80.2.

TABLE 2  
COGNITIVE ABILITY OF CHILDREN IN CHICAGO’S EARLY CHILDHOOD EDUCATION PROGRAMS  
IN THE FALL: OVERALL AND BY HOME LANGUAGE

|                               | Overall | English-Primary<br>Homes | Spanish/Other-Primary<br>Homes |
|-------------------------------|---------|--------------------------|--------------------------------|
| Vocabulary                    |         |                          |                                |
| English (PPVT-4)              | 81.3    | 86.6                     | 75.2                           |
| Spanish (TVIP)                | --      | --                       | 81.6                           |
| Literacy                      |         |                          |                                |
| English (WJ III)              | 96.3    | 99.0                     | 92.6                           |
| Spanish (Bateria III)         | --      | --                       | 80.2                           |
| Mathematics—Numbers           |         |                          |                                |
| English (WJ III)              | 89.1    | 89.0                     | 89.1                           |
| Spanish (Bateria III)         | --      | --                       | 84.1                           |
| Mathematics—Patterns (ECLS-B) | 490.0   | 490.9                    | 489.0                          |

Source: Tables II.6, II.8, II.9, II.10, and II.15.

<sup>6</sup> An alternative explanation for low TVIP scores may be that the norms on the test, which are 20 years old, are out of date.

**Mathematics.** Children scored 89 for mathematics achievement on the WJ III (focusing on numbers and operations), which is well below the national average of 100 for 4-year-olds, but above the at-risk threshold of 85. Children taking the Spanish mathematics assessment (Bateria III) scored an average of 84. On the ECLS-B mathematics assessment that focused on patterns, measurement, and geometry, the W-score was 490.

***At the beginning of the program year, children in Full-Day programs scored consistently higher than those in Half-Day Head Start on cognitive assessments; children in Preschool for All programs also tended to score higher than those in Half-Day Head Start.***

As Table 3 shows, at the beginning of the program year, more children from Spanish or other language backgrounds in Full-Day programs than in the other two programs scored above the threshold for very basic understanding of spoken English, possibly reflecting the larger proportion of children who had attended preschool in the previous year and thus had extra exposure to classroom-based opportunities for learning.

TABLE 3

A LARGER PERCENTAGE OF CHILDREN FROM SPANISH- OR OTHER LANGUAGE-PRIMARY HOMES IN FULL-DAY PROGRAMS SCORED ABOVE THE ENGLISH LANGUAGE THRESHOLD IN THE FALL

|                            | Overall | Full-Day Programs | Half-Day Head Start | Preschool for All |
|----------------------------|---------|-------------------|---------------------|-------------------|
| Percentage above threshold | 44.3    | 60.8              | 31.5                | 46.0              |

Source: Table II.7.

At the beginning of the program year, children from Full-Day programs and Preschool for All had higher average scores on the vocabulary and both early mathematics assessments than did children in Half-Day Head Start programs (Table 4). For early literacy, children from Full-Day programs scored higher than children in Half-Day Head Start.

TABLE 4

COGNITIVE DEVELOPMENT OF CHILDREN IN CHICAGO'S EARLY CHILDHOOD EDUCATION PROGRAMS IN THE FALL: BY PROGRAM TYPE

|                                 | Full-Day Programs | Half-Day Head Start | Preschool for All |
|---------------------------------|-------------------|---------------------|-------------------|
| Vocabulary (PPVT-4)             | 82.1              | 77.0                | 82.9              |
| Literacy (WJ III)               | 100.4             | 94.2                | 95.9              |
| Mathematics - Numbers (WJ III)  | 89.3              | 85.0                | 90.7              |
| Mathematics - Patterns (ECLS-B) | 490.8             | 488.5               | 490.4             |

Sources: Tables II.6, II.9, and II.10.

*At the beginning of the program year, teachers rated children’s social-emotional development as close to national averages.*

Children’s social-emotional development is critical for well-being and to support learning in a school environment. For the C-PEP study, we selected three dimensions of social-emotional development that have been linked to classroom-based learning and have suitable measures available: (1) attention/persistence, (2) social behavior, and (3) behavior problems.

Table 5 describes the instruments used to measure social-emotional development. We rely on both teacher and assessor reports; the assessor report is based on the interactions between the assessor and child during the cognitive assessments. As was true of the measures of cognitive development, the measures of social-emotional development were normed on a population of preschool-age children and therefore can yield standardized scores that allow us to compare children’s performance with that of a national sample of children the same age. The national average and standard deviation for tests of social-emotional development are 100 and 15, respectively, except in one case; for the Attention/Persistence scale, the average relative to a large sample of preschool children is 50 and the standard deviation is 10.

TABLE 5  
MEASURES OF CHILDREN’S SOCIAL-EMOTIONAL DEVELOPMENT  
TAPPED SEVERAL DIFFERENT AREAS

| Social-Emotional Outcome   | Instrument   | National Average |
|--|--|------------------|
| <b>Attention/Persistence</b>   | Preschool Learning Behaviors Scale (PLBS; McDermott et al. 2000), Teacher Report   | 50               |
| <b>Social Behavior</b>   |  |                  |
| Social Cooperation   | Preschool and Kindergarten Behavior Scales-Second Edition (PKBS; Merrell 2002), Teacher Report   | 100              |
| Social Interaction   | PKBS   | 100              |
| <b>Behavior Problems</b>   |  |                  |
| Social Withdrawal  | PKBS   | 100              |
| Attention Problems/Overactive  | PKBS   | 100              |
| Self-Centered/Explosive  | PKBS   | 100              |
| <b>Cognitive-Social</b> (Attention, Organization/Impulse Control, Activity Level, Sociability) | Leiter-Revised Examiner Rating Scale (Roid and Miller 2002), Assessor Reports about children’s behavior during the cognitive assessments | 100              |



Teachers tended to rate children positively on social-emotional development. As shown in Table 6, children’s Attention/Persistence and social behavior scores were close to national means. In the case of Attention/Persistence, children in Chicago’s early childhood education programs scored 50.8 overall, quite close to the norm for preschool children of 50. For Social Cooperation, children in Chicago’s early education programs exceeded the national average of 100 with a score of 106.6 and fell only slightly below for Social Interaction with a score of 98.5. Children’s scores for Social Withdrawal and externalizing behavior problems (Attention Problems/Overactive and Self-Centered/Explosive) were rated quite a bit lower than the national mean, indicating a lower incidence of problem behaviors. For both types of externalizing behaviors, children in Chicago’s early education programs scored around 90.

TABLE 6  
SOCIAL-EMOTIONAL DEVELOPMENT OF CHILDREN IN CHICAGO’S EARLY CHILDHOOD  
EDUCATION PROGRAMS IN THE FALL: BY PROGRAM TYPE

|   | Overall | Full-Day Programs | Half-Day Head Start | Preschool for All |
|---|---------|-------------------|---------------------|-------------------|
| Attention/Persistence   | 50.8    | 48.9              | 51.4                | 51.1              |
| Social Behavior   |         |                   |                     |                   |
| Social Cooperation  | 106.6   | 102.5             | 108.4               | 107.0             |
| Social Interaction  | 98.5    | 100.0             | 99.4                | 97.8              |
| Behavior Problems   |         |                   |                     |                   |
| Social Withdrawal   | 94.0    | 96.0              | 91.5                | 94.5              |
| Attention Problems/Overactive   | 90.6    | 94.5              | 89.2                | 90.2              |
| Self-Centered/Explosive   | 89.9    | 94.6              | 88.4                | 89.2              |
| Cognitive-Social (Attention, Organization/<br>Impulse Control, Activity Level, Sociability) | 84.4    | 85.8              | 82.9                | 84.7              |

Source: Table II.17.

***Despite the generally positive evaluation, teachers identified a significant percentage of children as “high risk” for behavioral or emotional problems that might warrant referral for evaluation by a professional.***

Across the five behavioral and emotional areas addressed in the C-PEP study, 16 percent of children scored in high-risk ranges, a proportion consistent with the incidence of significant behavioral issues reported by teachers in other studies (University of North Carolina 2008) and the incidence of mental health problems for children and adolescents cited by the U.S. Surgeon General (U.S. Department of Health and Human Services 1999).

While teachers’ ratings were generally positive, assessors rated children’s social-emotional development during the assessment situation somewhat more negatively (Table 6). Overall, children in Chicago’s early childhood education programs scored 84.4 on the Cognitive-Social

scale, about one standard deviation lower than the national average.<sup>7</sup> However, the national standardization sample included 4- to 6-year-old children, a broad age range compared with children in this study, who at 4 years old were at the low end of this age range. The preschool-age children in this study may have seemed less sociable than a typical 5- or 6-year-old because they may have been less accustomed to interacting with an unknown adult in the school setting. Moreover, the large proportion of children in the study who had difficulty understanding English may have been more easily distracted from assessments that were conducted in English.

***Across program types, children’s social-emotional development was similar, based on teacher reports.***

Table 6 shows that scores for Attention/Persistence, Social Interaction and Social Withdrawal were close for all three groups. In only two areas, teachers’ ratings diverged. Teachers rated children in Full-Day programs lower on Social Cooperation and higher on externalizing behavior than children in the other programs, although the average ratings were still well within healthy ranges for preschool-age children. The lower behavior ratings by Full-Day program teachers may be due to increased opportunities to observe problem behaviors or to lower tolerance for misbehavior after many hours with children.

*1d. How does the developmental status of 4-year-old children in Chicago’s early childhood education programs in the fall compare with other children in Head Start or state pre-kindergarten programs?*

***At the beginning of the program year, children in Chicago’s Full-Day and Half-Day Head Start programs had lower vocabulary ability and higher early literacy achievement than children in Head Start nationally. Children in Chicago’s Preschool for All program had lower vocabulary and early mathematics achievement than children in 11 state pre-kindergarten programs in the fall. These differences in children’s development in the fall may be related to the higher percentage of English Language Learners and lower parent education levels among children in Chicago compared with their peers nationally.***

To provide a benchmark for the developmental progress of children in Chicago, we compare cognitive outcomes among children in Chicago’s early childhood education programs to outcomes among children in the following recent national studies: The Head Start Family and Child Experiences Study, 2003 cohort (Head Start FACES; ACF 2006) and the Multi-State Study of Pre-Kindergarten and the State-Wide Early Education Program (SWEEP) studies (Early et al. 2005). Unfortunately, social-emotional measures were not comparable across the studies.

Children in Chicago’s early childhood education programs were different in terms of language background, parent education, and parent employment from the children in the programs nationally. Children from the Chicago Head Start programs included in this study (full- or half-day) are more likely to speak Spanish in the home than children in Head Start

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<sup>7</sup> An average of 84.4 means that approximately half of the children in Chicago’s early childhood education programs received scores below 85, while just 16 percent of the national standardization sample scored below that level.

nationally, based on the Head Start FACES 2003 report (38 percent versus 28 percent); their parents have lower education levels (41 percent without a high school diploma in Chicago versus 28 percent in Head Start FACES); and their parents are more likely to be working full-time (53 percent of caregivers in Chicago versus 35 percent of mothers in Head Start FACES). Comparing children in Preschool for All programs with other state pre-kindergarten programs, we find more children in Chicago for whom English is not the primary language at home (56 percent in C-PEP versus 17 percent in eleven state pre-kindergarten programs).

We find that, at the beginning of the program year, children in Full-Day and Half-Day Head Start programs in Chicago scored lower than Head Start 4-year-olds on receptive vocabulary, but they exceeded Head Start children nationally in early literacy achievement and they scored similarly to Head Start children on early mathematics. Children in Preschool for All programs had average vocabulary and early mathematics achievement that was lower than scores for children in state pre-kindergarten programs nationally. Differences in vocabulary ability between children in Chicago’s early childhood education programs and the national programs may reflect the differences in parents’ education levels and differences in the proportion of children who speak English in the home, as well as other differences not measured in this study. Higher early literacy achievement among Chicago’s Full-Day and Half-Day Head Start children relative to Head Start 4-year-olds nationally may reflect the fact that children in the national study were all new Head Start participants, while many of the children in Chicago’s early childhood education programs had attended preschool for at least part of the previous year. Early literacy achievement for 4-year-olds typically involves recognizing letters of the alphabet and matching letters with their sounds. Since the number of letters to be learned is much less than the number of vocabulary words that could be learned, it may be easier for children who have had some exposure to preschool and to educational television to show achievement in early literacy compared to vocabulary. Table 7 shows scores for vocabulary, early literacy, and early mathematics.

TABLE 7

COGNITIVE DEVELOPMENT OF C-PEP CHILDREN IN THE FALL OF THE PRESCHOOL YEAR  
AND OF CHILDREN IN NATIONAL PRESCHOOL STUDIES

|                         | C-PEP Head Start Programs (Full- and Half-Day) | Head Start FACES 2003 | C-PEP Preschool for All Programs | Multi-State Pre-Kindergarten and SWEEP |
|-------------------------|--|-----------------------|----------------------------------|--|
| Vocabulary (PPVT)       | 80.5   | 85.8                  | 85.1                             | 94.0                                   |
| Early Literacy (WJ-LWI) | 96.9   | 93.1                  | 95.9                             | not rated                              |
| Mathematics (WJ-AP)     | 86.9   | 88.4                  | 90.7                             | 98.4                                   |

Source: Table II.26. In most cases, C-PEP used more recent versions of the measures than did the national studies, which were conducted three years earlier. The average PPVT score for C-PEP children is based on children who completed other English-language assessments, rather than all children, for greater comparability with the national studies.

## RESEARCH QUESTION 2

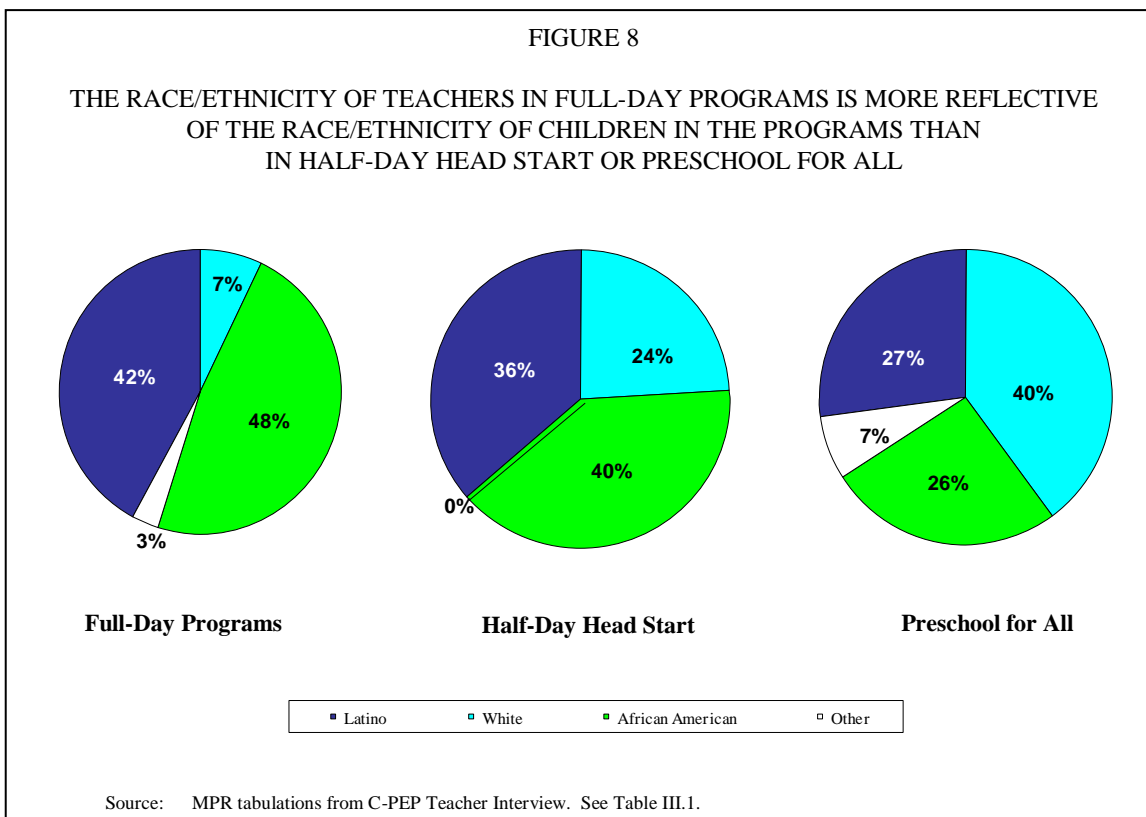
### WHAT ARE THE CHARACTERISTICS OF TEACHERS AND THE QUALITY OF CLASSROOMS IN CHICAGO'S EARLY CHILDHOOD EDUCATION PROGRAMS?

The Chicago preschool classrooms offer an early education environment to support children's development across a comprehensive range of domains, including cognitive and social-emotional development and approaches to learning, in an effort to enhance young children's well-being and success in school. The Full-Day programs, Half-Day Head Start, and Preschool for All set different educational and certification requirements for teachers, offer different professional development opportunities, and operate on different schedules. These policy differences directly influence the level of education that teachers have and the professional development teachers receive in each program.

*Teachers in Chicago's early childhood education programs are primarily women and are ethnically diverse.*

Consistent with national patterns, nearly all of the teachers in Chicago's early childhood education programs are women.

The racial-ethnic background of teachers in Full-Day programs reflects that of the children in the classrooms; 42 percent are Latino and 48 percent are African American. In contrast, Half-Day Head Start and Preschool for All programs have a larger proportion of white teachers, and correspondingly fewer Latino teachers, than is true for the population of children in these programs (Figure 8).



***Teacher education levels meet or exceed the requirements for Chicago’s early childhood education programs, which are on the high end of such requirements nationally.***

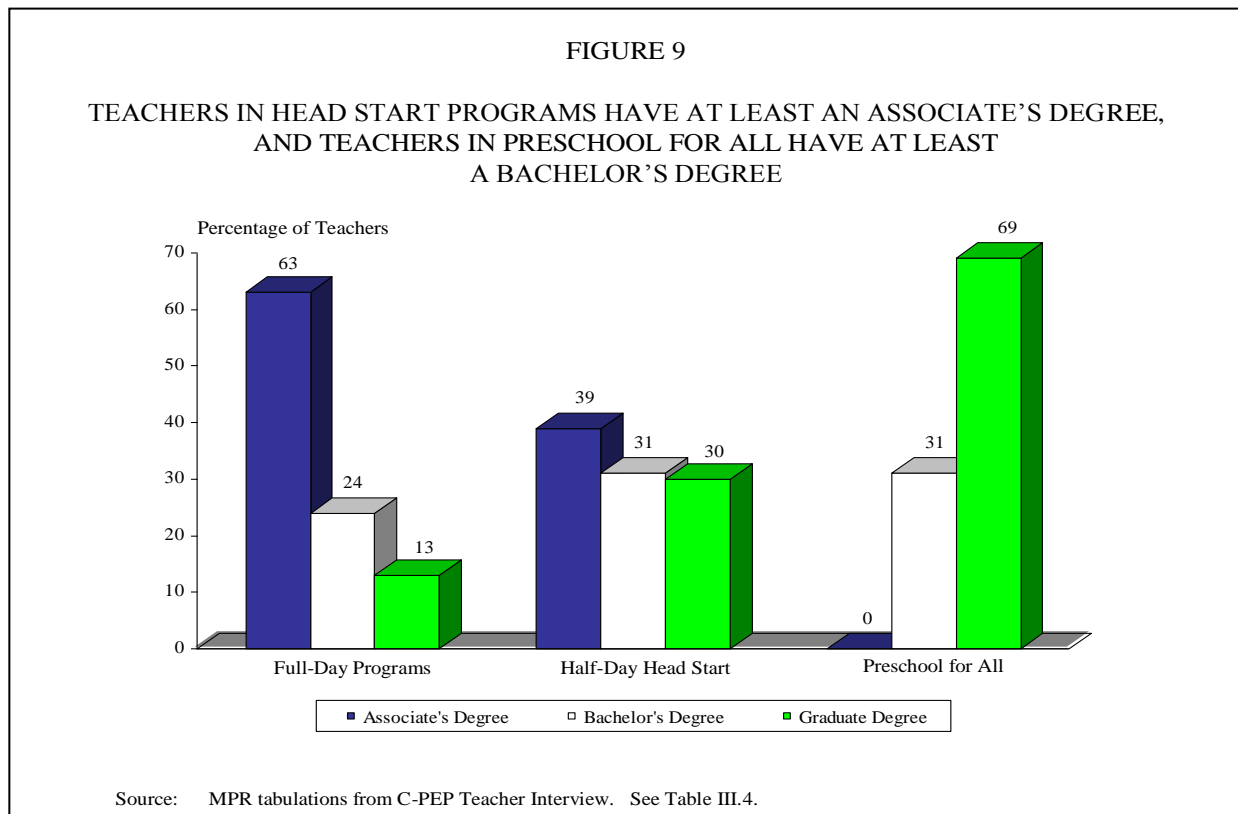
Teachers in Full-Day programs and community-based Half-Day Head Start programs must have at least an associate’s degree; teachers in Preschool for All and Chicago Public Schools Half-Day Head Start programs must have at least a bachelor’s degree. In fact, the majority of teachers in Preschool for All programs have graduate degrees (Figure 9). Additionally, about one-third of teachers were pursuing additional formal education opportunities at area colleges and universities.

***Preschool teachers in Chicago’s early childhood education programs generally have considerable experience, whether based on a measure of any classroom experience (15 years on average), preschool classroom experience (10 years on average), or years with their current employer (6 years on average).***

All of the programs have a substantial proportion of teachers with a decade or more of experience teaching preschool, from 39 percent in Full-Day programs to 48 percent in Preschool for All. However, the Preschool for All program also has a substantial proportion of teachers (31 percent) with fewer than 3 years of experience, reflecting significant recent growth in the program.

***The vast majority of teachers had received curriculum-related professional development in the previous year.***

Hours of professional development did not vary significantly across program groups. Programs offered professional development support in different ways. Teachers in Full-Day



programs reported that mentors/master teachers or supervisors/education coordinators provided professional development support. Half-Day Head Start programs relied on early childhood coaches (for CPS programs), supervisors/education coordinators, or regional office training and technical assistance staff (for CYS programs). Preschool for All programs primarily offered early childhood coaches. Numbers of professional development hours may be underestimated because the teacher survey question asked only about curriculum-focused training. Teachers may have received additional professional development unrelated to the curriculum.

*2c. What are teacher compensation levels and job benefits, and how satisfied are teachers with their work and their work environment?*

***Teachers' earnings vary considerably by program, which could reflect the various funding streams that support these programs or differing levels of teacher education in each program.***

Average annual earnings were \$30,400 for Full-Day programs, \$39,400 for Half-Day Head Start, and \$51,800 for Preschool for All. Across all programs, most teachers reported receiving benefits, such as vacation, health coverage, and retirement benefits, as part of their compensation.

***Teachers across all three programs reported high levels of satisfaction with teaching as their daily work and as a career. Teachers also tended to be positive about the level of program support.***

Nevertheless, the work of a preschool teacher can be challenging. When asked an open-ended question about the biggest challenge they faced, teachers identified several different issues, including parents with low levels of education who cannot easily extend learning at home, excessive paperwork, meeting the diverse needs of children, and the management of children's behavior (Figure 10). Many of the responses indicate concerns about how much the children need to learn during the preschool year in order to be ready for school.

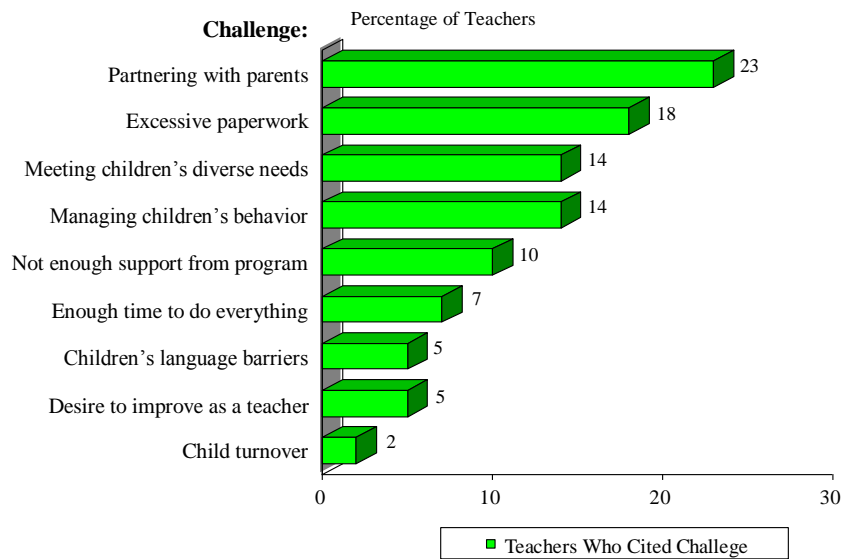
*2d. How many teachers and children are in the classroom?*

***Group sizes and child-teacher ratios in Chicago's early childhood classrooms were within professional guidelines set by the National Association for the Education of Young Children (18 or fewer children in classes with 3-year-olds and 20 or fewer children in classes with 4-year-olds).***

Full-Day program and Preschool for All classrooms were similar in size, with about 19 students on average and child-teacher ratios of 8.6 or 8.7, respectively, to 1. Half-Day Head Start classrooms had an average of 16 children and a child-teacher ratio of 7.6 to 1.

FIGURE 10

TEACHERS CITED MANY CHALLENGES IN TEACHING PRESCHOOL



Source: MPR tabulations from C-PEP Teacher Interview. See Table III.20.

*2e. What curricula are used, what learning activities take place, and what assessments do teachers use? What activity centers focusing on math, reading, computers, science, drama, and so on are available to children?*

***Most teachers use the Creative Curriculum as their primary curriculum (69 percent).***

The three early childhood education programs included in the study have basic requirements for the educational program, although they do not prescribe a specific curriculum. In addition to Creative Curriculum, many teachers use other, secondary curricula to strengthen early literacy or early mathematics activities. Among the three programs, Preschool for All teachers are least likely to use the Creative Curriculum as their primary curriculum (52 percent) and often employ Opening the World of Learning as the primary curriculum (15 percent).

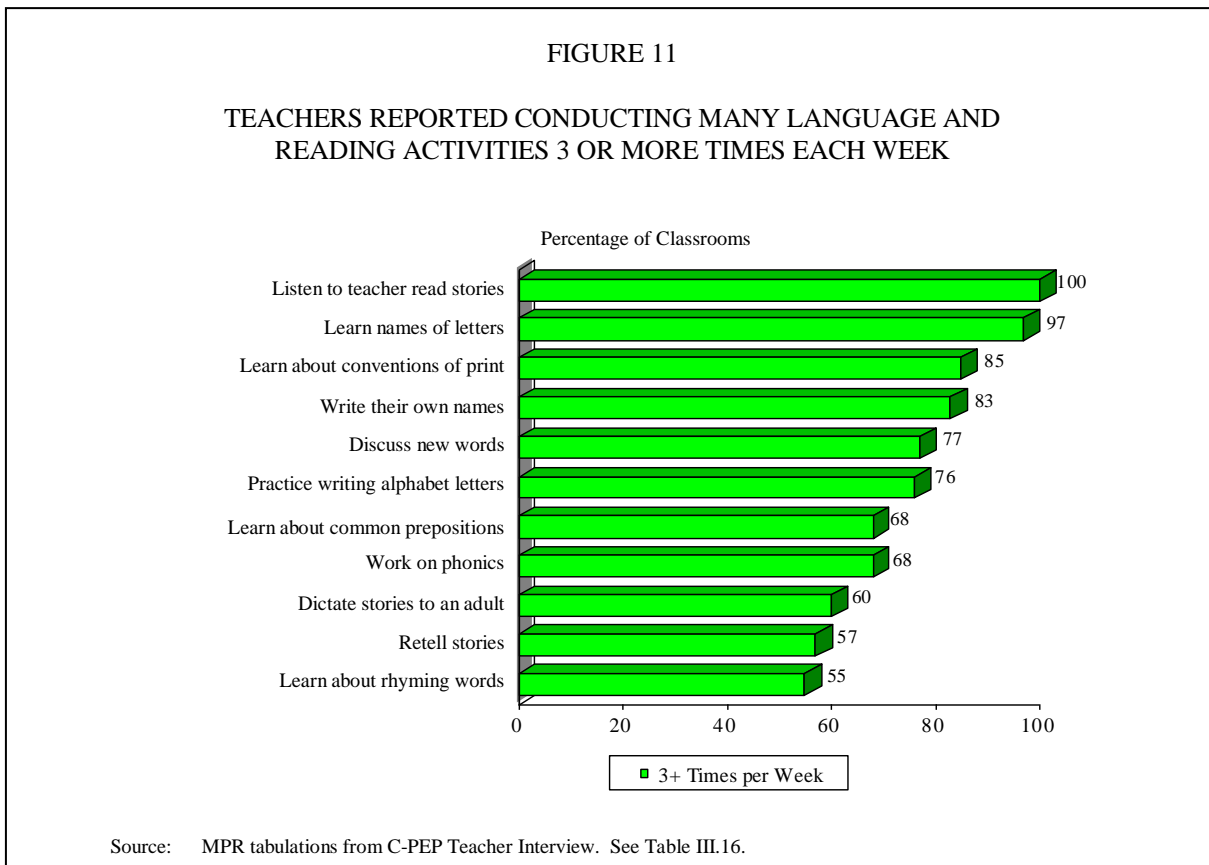
***Teachers reported using similar initial screening assessments and they assess children three times during the preschool year to inform their teaching.***

Most teachers (88 percent) reported screening children at the start of the year using the Early Screening Inventory–Revised (ESI-R; Meisels, Marsden, Wiske, and Henderson 2006). In keeping with Head Start requirements, the Full-Day and Half-Day Head Start teachers also start the year with a mental health screener. Full-Day Head Start primarily employs the Ages & Stages Questionnaire: Social Emotional (ASQ:SE; Squires, Bricker, and Twombly 2002), while Half Day Head Start teachers use that screener or the ABLE Mental Health Scales (Barbarin

2004). Head Start teachers assess children three times during the school year, using the Creative Curriculum Developmental Continuum (Dodge et al. 2002), which is accessed and recorded on the web-based CreativeCurriculum.net and can tie assessment findings back to the curriculum.<sup>8</sup>

***Chicago’s early childhood education classrooms have a full range of activity centers, and teachers engage in varied learning activities each week.***

Activity centers include areas for reading, writing, mathematics, science, computer work, art, and dramatic play and private areas in which children can be alone. Most teachers reported conducting reading, language, and mathematics activities with high frequency (three or more times per week). High-frequency reading and language activities included book reading, learning letter names and conventions of print, writing children’s names, and discussing new words (Figure 11). High-frequency mathematics activities included counting; working with geometric manipulatives, shapes, or patterns; and working with counting manipulatives (Figure 12). Observations of the classroom indicated that a high proportion of classes (90 percent) engaged in language or literacy activities. Despite teacher reports, observers

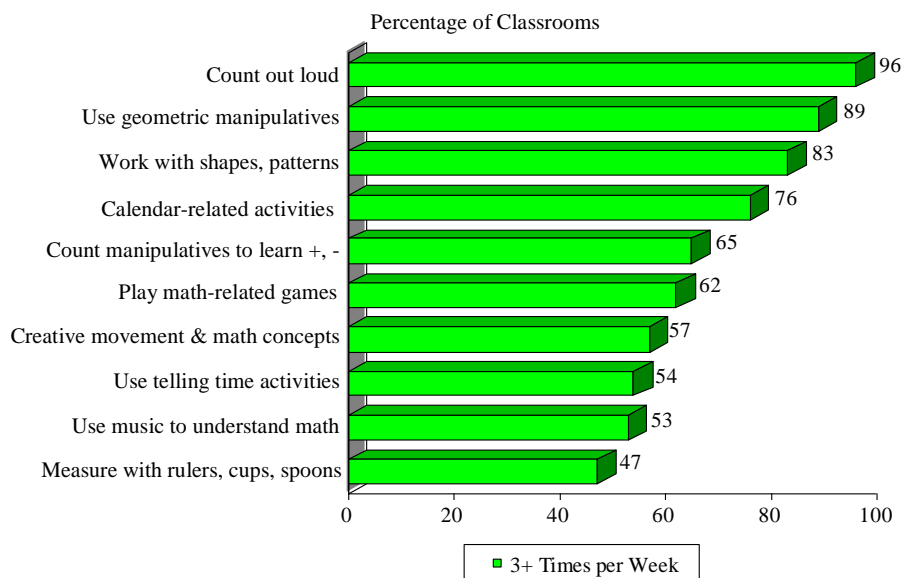


<sup>8</sup> At the time of the C-PEP study, CPS teachers were using the Child Assessment Profile, developed by CPS for its early childhood programs. However, CPS began using the Creative Curriculum assessment in 2007-08 .



FIGURE 12

TEACHERS REPORTED CONDUCTING MANY EARLY MATHEMATICS ACTIVITIES 3 OR MORE TIMES EACH WEEK



Source: MPR tabulations from C-PEP Teacher Interview. See Table III.17.

reported that few classes (22 percent) engaged in mathematics activities. However, the frequency of mathematics activities may be underestimated, because the observers did not always record the content of the learning activity. Non-instructional activities such as routines (lining up), meals, and free play were observed frequently.

*2f. What languages are used in the classroom?*

***Teachers reported using English as the language of instruction in every classroom; in about half the classrooms, they also reported using Spanish or another language.***

Nearly half (46 percent) of classrooms used English with Spanish, and 6 percent of classrooms used English with another language. Eighteen percent of programs reported providing lessons to help learn Spanish. No specific information was obtained about how other languages were used in the classroom, but Head Start requires programs to have a staff member who speaks the language of the majority of the children.

2g. *What is the level and range of emotional support, instructional support, classroom organization, and provisions for learning in CPS/CYS early childhood classrooms? How do they compare to other preschool classrooms in the United States?*

***The quality of emotional support and provisions for learning in most of Chicago’s early childhood classrooms was in the middle to high range. The quality of classroom organization was in the middle range, and the quality of instructional support was in the low to middle range. Across these dimensions of quality, Chicago’s early childhood classrooms were similar to Head Start and state pre-kindergarten classrooms nationally.***

Several dimensions of preschool classroom quality and teacher behavior have been identified as important for young children’s development (e.g. Helbern 1995). In C-PEP, we measured the following aspects of quality (see Table 8): (1) provisions and materials for learning, (2) emotional supportiveness of the interactions between teachers and students, (3) classroom organization, and (4) instructional support. These dimensions of quality were measured using the Early Childhood Environment Rating Scale–Revised (ECERS-R) and the Classroom Assessment Scoring System (CLASS). We assessed the materials available for learning with the ECERS-R *Provisions for Learning* subscale. The ECERS-R *Teaching and Interactions* subscale measures the emotional and educational quality of interactions and the encouragement of language development. The CLASS *Emotional Support* subscale measures positive and negative aspects of the emotional climate in the classroom and the teacher’s sensitivity to children and ability to encourage children to express ideas and practice autonomy. The CLASS *Classroom Organization* subscale captures factors such as the pro-active management of children’s behavior, the efficient use of classroom time for learning activities, and the use of multiple modes of instruction. Finally, the CLASS *Instructional Support* subscale measures the teacher’s modeling of rich and varied language, provision of high-quality feedback to scaffold children’s learning, and support for concept development that deepens understanding. All of these scales are scored from 1 to 7, with 7 indicating the highest quality.

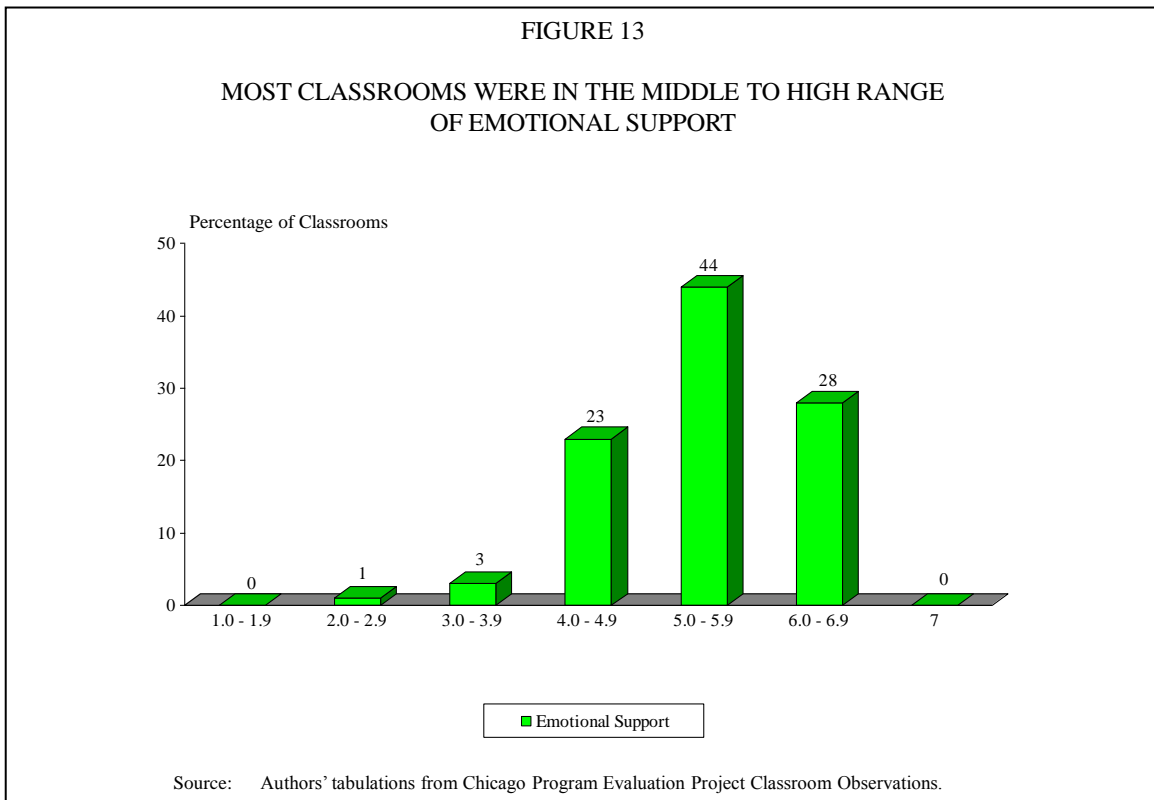
TABLE 8  
DIMENSIONS OF CLASSROOM QUALITY MEASURED IN C-PEP

| Dimension                 | Instrument  |
|---------------------------|---|
| Teaching and Interactions | Early Childhood Environment Rating Scale-Revised (ECERS-R; Harms, Clifford, and Cryer 1998; Clifford et al. 2005) |
| Provisions for Learning   | ECERS-R   |
| Emotional Support         | Classroom Assessment Scoring System (CLASS; Pianta et al. 2008)   |
| Classroom Organization    | CLASS   |
| Instructional Support     | CLASS   |

The Chicago early childhood education programs included in the C-PEP study scored in the middle to high range for materials for learning. On the ECERS-R Provisions for Learning subscale, which measures the quality of classroom furnishings and materials for learning in the preschool classrooms, the Chicago early childhood education classrooms averaged 5.1 on a scale ranging from 1 to 7, corresponding to a “good” rating. Nearly all classrooms (92 percent) scored between 4 and 7 on this subscale. Since this scale reflects program support rather than individual teacher choices, it suggests that the programs generally provide adequate materials and furnishings to support a good-quality preschool program.

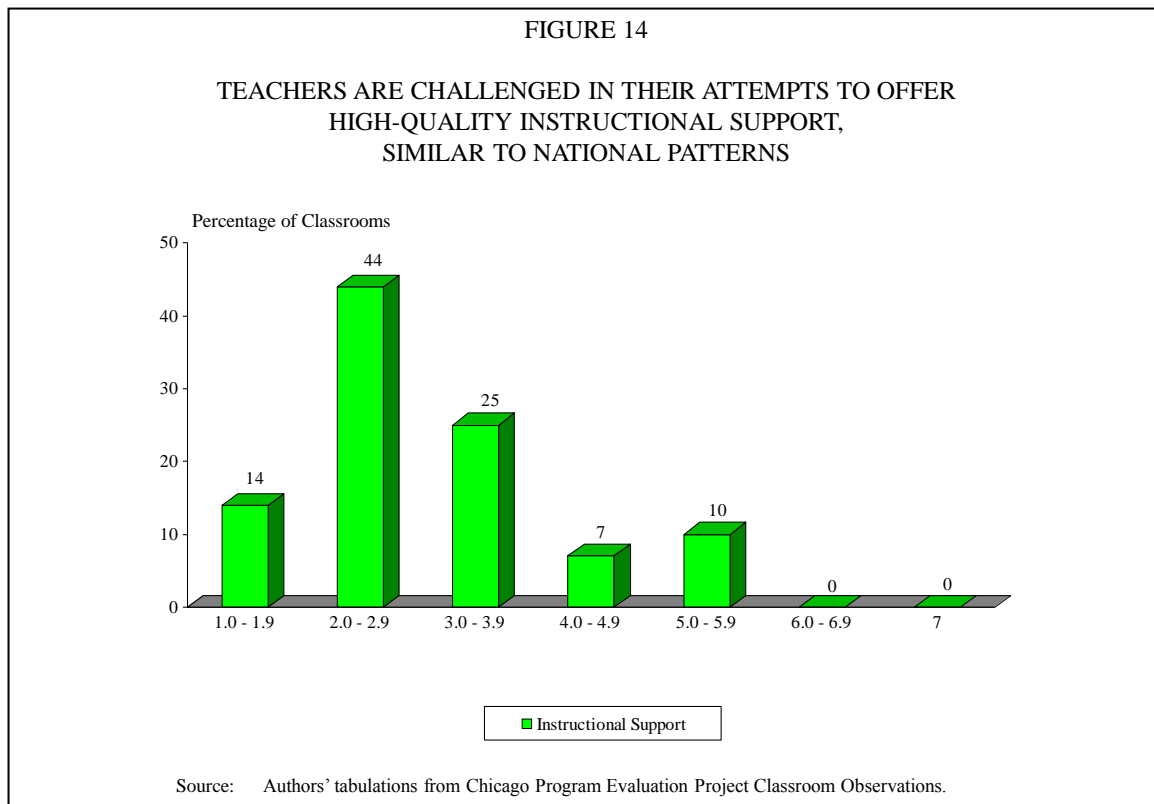
The preschool classrooms scored in the middle to high range for emotional supportiveness. Teachers’ emotional supportiveness was measured by both the ECERS-R Teaching and Interactions subscale and the CLASS Emotional Support subscale. Scores on the Teaching and Interactions subscale averaged 5.0, corresponding to a “good” rating on the ECERS-R, with the majority of classrooms (85 percent) scoring between 4 and 7. The 15 percent of classrooms that fell below that range suggest significant issues with teacher-child interactions and children’s experiences in those classrooms. Emotional Support in Chicago preschool classrooms was rated 5.4 on average, which is on the high end of the middle range for CLASS scores. (The middle range of the CLASS includes scores from 3 to 5.) Just over one-quarter of classrooms scored in the high range (6 to 7), which reflects a consistently high level of teacher responsiveness and positive affect in the classroom (Figure 13).

Classrooms in the C-PEP study scored in the middle range for classroom organization. Classrooms scored an average of 4.8 on the CLASS Classroom Organization subscale, which measures the extent to which teachers use proactive, anticipatory behavior management, get the most out of each learning day, and use multiple modes of instruction to maintain children’s interest in learning.



Both in Chicago and nationally, teachers face challenges in their attempts to offer high-quality instructional support. Average scores on the CLASS Instructional Support subscale were 3.0, with nearly 60 percent of all classrooms rated as low (1 or 2 points). Instructional support measures the extent to which teachers encourage children to solve problems and think creatively; provide individualized feedback about children’s learning that helps them better understand concepts; and encourage children to talk, model various forms of language and new vocabulary, and engage in meaningful conversations that extend their language skills. Despite generally low ratings on Instructional Support, 17 percent of classrooms were rated in the upper portion of the mid-range (4 or 5), suggesting that some teachers know how to provide the instructional support but do so less frequently than is ideal (Figure 14). Their knowledge may provide a good basis on which to build stronger teaching in early childhood education programs.

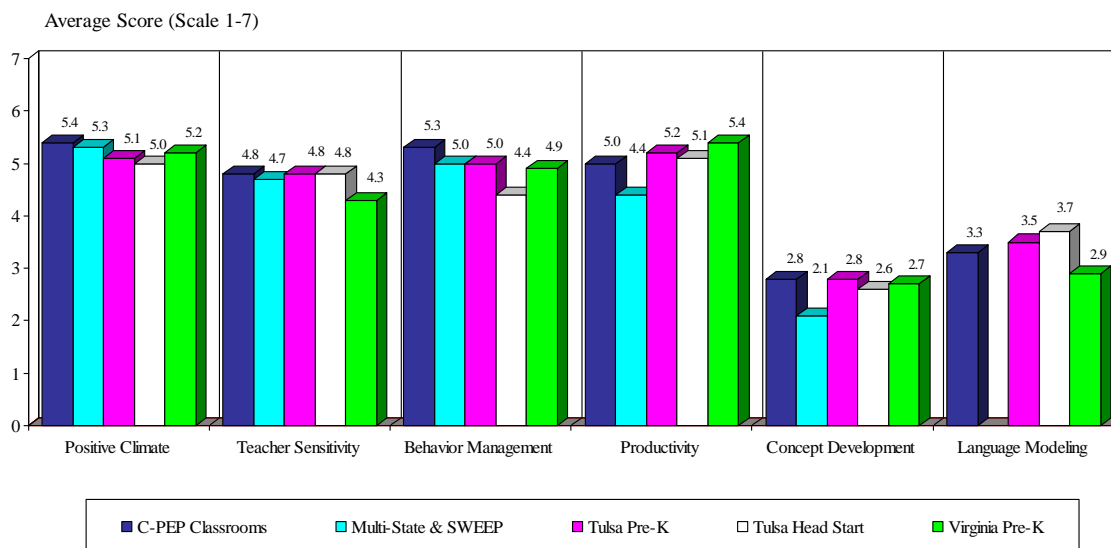
Comparisons with recent studies of the quality of state pre-kindergarten classrooms indicate that Chicago’s early childhood education programs are similar in quality to others in the United States. The Multi-State Study of Pre-Kindergarten and the State-Wide Early Education Program (SWEET) Study used both the ECERS-R subscales used in the C-PEP study and the CLASS to measure the quality of state pre-kindergarten classrooms in 11 states. Average scores in the Multi-State and SWEET studies were similar to those in the C-PEP study.<sup>9</sup> In addition, studies of the Tulsa, Oklahoma pre-kindergarten and Head Start programs and the Virginia pre-kindergarten programs used the CLASS subscales and found average levels of quality similar to those found for Chicago’s programs (see Figure 15).



<sup>9</sup> We have used several dimensions of the CLASS rather than the subscales for comparison, because some of the CLASS dimensions have been introduced over time and added to the subscales, making the subscales less comparable.

FIGURE 15

CHICAGO EARLY CHILDHOOD CLASSROOMS ARE SIMILAR IN QUALITY TO THOSE IN OTHER STATES ON SELECTED DIMENSIONS OF THE CLASS



Source: MPR compilation from C-PEP Observations and other studies. For comparison, we have selected several dimensions of the CLASS that make up the subscales because some dimensions have been introduced over time, making subscales less comparable.

*2h. What are the relationships among teacher characteristics, program characteristics, and aspects of classroom quality (including emotional support, instructional quality, and provisions for learning)?*

***Teacher education, professional development, and experience are associated with higher quality measured by the CLASS Instructional Support and Classroom Organization subscales.***

Subgroup analyses found that instructional quality was higher when teachers had graduate degrees compared with associate’s degrees. Subgroup analyses also found that instructional quality was higher when teachers had 10 or more years of preschool teaching experience. However, additional variables may be influencing these relationships between education, experience, and quality.

Multivariate analyses measured associations between classroom quality and teacher characteristics (education, experience, professional development focusing on the curriculum), classroom characteristics (child-staff ratios) and program (Full Day program, Half-Day Head Start in CYS, or Preschool for All). We separately examined each subscale of classroom quality, including CLASS Instructional Support, CLASS Classroom Organization, CLASS Emotional Support, ECERS-R Teaching and Interactions, and ECERS-R Provisions for Learning. In these analyses, any effect of program type indicates that some aspect of program-related policy or support that we were unable to measure separately has an influence on quality.

Teacher education—in particular, having a graduate degree—was related to higher ratings on both Instructional Support and Classroom Organization, controlling for other teacher and program characteristics. Higher ratings on Classroom Organization were positively related to teachers having a bachelor's or a graduate degree and 20 or more years of experience teaching preschool. Lower child-staff ratios were related to more positive quality ratings. The positive correlation between subscales that relate to the preschool classroom's educational environment and the teacher's education and experience as well as the number of children in the classroom suggest a role for standards in enhancing the educational environment of preschool classrooms that could be explored using more rigorous research designs.

These analyses also found that unmeasured program-specific characteristics were associated with the quality ratings. Policies, educational requirements, and support for professional development across the programs should be examined in more detail to identify differences that should be explored in future research. Nevertheless, many potentially important factors have not been included in these models, as in total, the teacher, classroom, and program characteristics measured here only accounted for one-quarter of the variance in the ratings of Instructional Support and Classroom Organization.

Higher ratings on CLASS Emotional Support were related to unmeasured program characteristics and (inversely) to child-staff ratios. Higher ratings on Teaching and Interactions related to preschool teaching experience beyond the novice level (three or more years) and inversely to child-staff ratios. This suggests that with fewer children, teachers can dedicate more time to enhancing the emotional as well as the instructional qualities of the classroom.

Provisions for Learning, which measures the quality and availability of equipment and materials considered to be important components of a preschool classroom, appears to be largely related to unmeasured program characteristics and not to teacher characteristics. This is consistent with the idea that programs provide resources for and establish expectations regarding the equipment and materials found in preschool classrooms. Teachers are not on their own in choosing all of the materials and equipment in their classrooms, so it is not surprising that teacher characteristics are not related to this measure of quality.

### RESEARCH QUESTION 3

#### WHAT DEVELOPMENTAL PROGRESS DO CHILDREN MAKE DURING THE PRESCHOOL YEAR?

*3a. How much progress do children in Chicago's early childhood education programs make in language development, early literacy skills, and early mathematics skills during the preschool year? How does this compare with preschoolers nationally?*

*Children in Chicago's early childhood programs made significant progress in language development, early literacy skills, and early mathematics skills during the five- to six-month period encompassed by the fall and the spring assessments; the gains were likely greater over the full preschool year.*

*Children from homes where Spanish or another language was the primary language made greater progress than children from English-primary homes.*

*By the spring assessment point, children scored on average close to the national mean in early literacy (99). Their average score was below the national average of 100—at 87 and 91 respectively—in English vocabulary and mathematical reasoning.*

Table 10 presents the gains in cognitive achievement over the five- to six-month period encompassed by the fall and spring assessments, as well as the effect sizes for those gains. Effect sizes enable us to make comparisons of the gains across the different domains of development by putting the gain scores into standard deviation units. Effect sizes can be judged using a rule of thumb laid out by Cohen (1988), which suggests that an effect size of .2 is small, .5 is medium, and .8 is large. To calculate effect sizes, we divided the gain score by the standard deviation of the assessment (for standardized measures we used 15 as the standard deviation).

**English-Language Threshold.** Seventy-nine percent of children scored above the threshold for English-language ability in the spring, an 11 percent increase over the proportion that exceeded this threshold in the fall. The effect size of .24 indicates that the rate improved by about one-quarter of a standard deviation. Nevertheless, approximately 20 percent of the children appeared to still have difficulty understanding spoken English in April or May, after seven to eight months in the preschool classroom.

**Vocabulary.** Table 10 presents English vocabulary scores for children who took the PPVT-4, regardless of the language spoken at home. Children's receptive vocabulary increased to 86.8 in the spring, an increase of 4.8 points over the fall score obtained five to six months earlier, or nearly one-third of a standard deviation gain.

TABLE 10

COGNITIVE DEVELOPMENT OF CHILDREN DURING THE PRESCHOOL YEAR FOR THOSE  
WHO HAD VALID SCORES ON COGNITIVE ASSESSMENTS IN THE FALL  
AND THE SPRING (A FIVE- TO SIX-MONTH PERIOD)<sup>a</sup>

|   | Fall <sup>a</sup> | Spring | Gain  | Effect Size |
|---|-------------------|--------|-------|-------------|
| <b>English Language Ability (Percentage above threshold)</b>              | 68.4              | 79.4   | 11.0* | .24         |
| <b>Language Development</b>   |                   |        |       |             |
| All Children: English Vocabulary (PPVT-4)                                 | 82.0              | 86.8   | 4.8*  | .32         |
| Children from English Primary Homes:<br>English Vocabulary (PPVT-4)       | 87.6              | 90.5   | 2.9*  | .19         |
| Children from Spanish/Other Primary Homes:<br>English Vocabulary (PPVT-4) | 75.7              | 82.7   | 7.0*  | .47         |
| Children from Spanish Primary Homes:<br>Spanish Vocabulary (TVIP)         | 82.1              | 85.3   | 3.2   | .21         |
| <b>Early Literacy and Mathematics Achievement</b>                         |                   |        |       |             |
| Literacy (WJ-III)   | 96.3              | 98.9   | 2.5*  | .17         |
| Mathematics—Numbers (WJ-III)  | 89.5              | 91.4   | 1.9*  | .13         |
| Mathematics—Patterns (ECLS-B)   | 490.3             | 497.0  | 6.8*  | .61         |

Source: Tables IV.2 and IV.4.

<sup>a</sup>The average fall scores presented here differ slightly from those presented in Table 2, because we exclude children who (1) did not have an assessment score available in the spring, and (2) took the Spanish version of the cognitive assessments in the fall and the English version in the spring. Most children who were excluded in the spring (12 percent of the original fall sample) had left the program after the fall assessment. Children with fall and spring assessments were somewhat more advantaged than those who left the sample after the fall assessment. Children with both fall and spring assessments had slightly higher scores on the fall English Vocabulary assessment and were slightly more likely to have parents who reported being married and having annual family incomes over \$20,000.

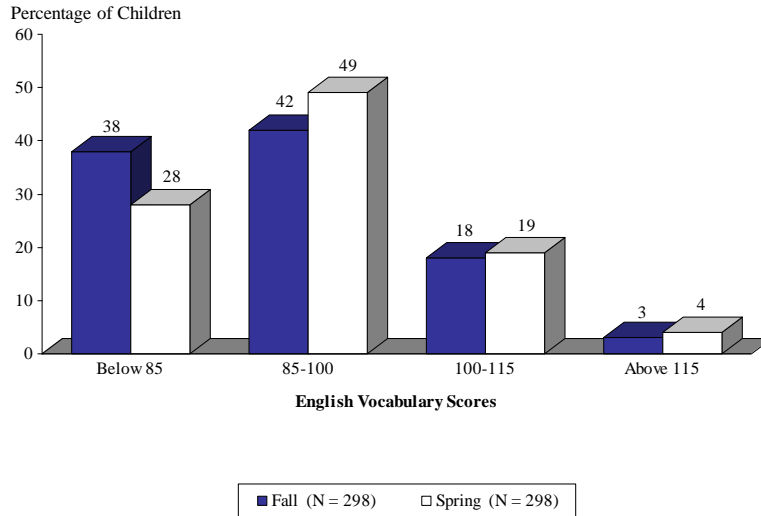
Comparing children's English vocabulary scores by home language shows that children from homes in which Spanish or another language was the primary language made much larger gains than did children from English-primary homes. Children from Spanish/other language-primary homes increased their scores by 7 points, from 75.7 in the fall to 82.7 in the spring, while children from English-primary homes increased their scores by 2.9 points, from 87.6 in the fall to 90.5 in the spring. Figures 16 and 17 display the distribution of fall and spring scores for both groups of children. Scores below 85 are substantially below the average for 4-year-old children nationally, since 16 percent of all 4-year-olds scores are in this range. For this reason, 85 is considered a threshold to indicate children who are at educational risk. In both English-primary and Spanish/other language-primary subgroups of children, significantly fewer children scored below 85 in the spring compared with the fall, and more scored between 85 and 100.

Among children from Spanish-primary homes, Spanish vocabulary also improved over the five- to six-month period encompassed by the child assessments. The increase in TVIP scores from the fall to the spring was not statistically significant; however, fewer children scored below



FIGURE 16

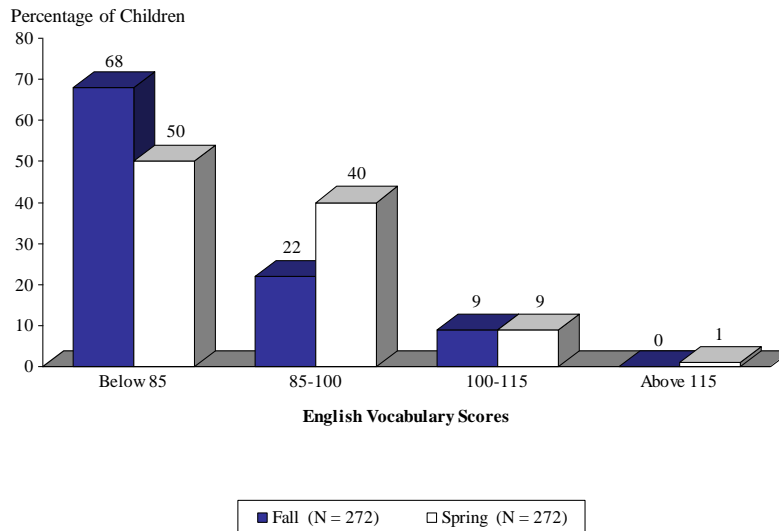
MOST CHILDREN FROM ENGLISH-SPEAKING HOMES SCORED BELOW THE NATIONAL AVERAGE FOR VOCABULARY (100 POINTS) IN THE FALL AND SPRING, BUT SCORES IMPROVED OVER TIME



Source: Authors' tabulations from Chicago Program Evaluation Project Fall and Spring Child Assessments.

FIGURE 17

FEWER CHILDREN FROM SPANISH/OTHER LANGUAGE-PRIMARY HOMES SCORED IN THE BOTTOM 16 PERCENT OF CHILDREN NATIONALLY (BELOW 85 POINTS) IN ENGLISH VOCABULARY IN THE SPRING THAN IN THE FALL



Source: Authors' tabulations from Chicago Program Evaluation Project Fall and Spring Child Assessments.

85 (a threshold for educational risk) in the spring than in the fall (21 percent in the spring compared with 34 percent in the fall).

**Literacy.** Children's early literacy achievement reached 98.9 points in the spring, a 2.5 point increase over the five- to six-month period since the fall assessment, and close to the national average of 100 for 4- to 5-year-old children. As in the case of English vocabulary, gains in early literacy from the fall to the spring assessments were larger for children whose home language was Spanish/other than for children whose home language was English. The increase of 2.5 standard points in measured early literacy achievement is fairly small, but children in Chicago's early childhood education programs performed near the averages for preschoolers nationally. Moreover, fewer children scored below 85 on the early literacy assessment in the spring than in the fall (16 percent in the spring compared with 29 percent in the fall).

**Mathematics.** Children's early mathematics achievement on the WJ-III was 91.4 in the spring, an increase of 1.9 points over their performance five to six months earlier in the fall. Gains for children were similar regardless of home language. The smaller increase in early mathematics achievement relative to language development may be attributable to less-frequent mathematics-related activities during the preschool day compared with language-related activities. On the Early Mathematics Assessment (ECLS-B), scores increased by 6.8 points from the fall to the spring.<sup>10</sup>

**National Comparisons.** A national study of children in Head Start (Head Start FACES, 2003 cohort; ACF 2006) and the eleven-state study of state pre-kindergarten programs (Howes et al. 2008) provide benchmarks for comparing the cognitive gains made by children in Chicago's early childhood education programs to children nationally. Such comparisons should be viewed cautiously, as the national studies are a few years older than C-PEP (2001-2004 compared to 2006-2007), the measures used in C-PEP are more recent, and as mentioned earlier, Chicago's children may be at greater educational risk than the national samples because of higher proportions of English Language Learners and parents with lower levels of education. Therefore, we need to judge differences across the studies carefully.

As noted earlier, children in Chicago's early childhood education programs gained 4.8 standard points on the vocabulary assessment, while nationally, children in Head Start gained 3.1 points and children in eleven state pre-kindergarten programs gained 2.9 points. The larger gain for children in Chicago could reflect the larger proportion of English Language Learners in the sample, who made greater gains in vocabulary during the preschool year than children from English-primary homes. The substantial progress on English vocabulary made by English Language Learners could reflect rapid improvement from very low initial levels, good classroom instructional practices, and other factors. Children in Chicago's early childhood education programs gained 2.5 points on the early literacy assessment while children in Head Start nationally gained 0.7 points; this assessment was not used in both of the state pre-kindergarten studies. The difference in scores may reflect demographic differences, instruction, and

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<sup>10</sup> The Early Mathematics Assessment is scored differently from the other assessments, because it does not have standardized scores that relate a child's performance to that of a larger, nationally representative population. The increase in scores from fall to spring thus does not adjust for any of the improvement that might be expected as children age by one-half year.

differences in the assessment, as C-PEP used a more recent version of the early literacy assessment, with more recent normative comparisons to a nationally-representative sample. Finally, children in Chicago's early childhood education programs gained 1.9 points on the early mathematics (numbers) assessment, while nationally, children in Head Start demonstrated a gain of 1.5 points, and children in state pre-kindergarten programs gained 1.2 points.

Thus, the gains by children in Chicago's early childhood education programs in cognitive development over the five to six months between the fall and the spring assessments represent progress for educationally at-risk children. Given the study design, we cannot be certain about how much of the improvement is attributable to the programs or to other characteristics of children's home or out-of-home experiences, but children in Chicago clearly made learning gains during the preschool year.

*3b. How does children's risk status relate to cognitive development during the preschool year?*

***Children's risk status appears to have a strong relationship with the level of cognitive development in both the fall and the spring, but it does not appear to influence the size of the cognitive gains that children make.***

Subgroup analyses comparing children in high-risk (three or more risk factors) and lower-risk families (fewer risk factors) show that the gains in cognitive development during the five- to six-month period encompassed by the fall and spring assessments were similar across risk groups. Children with high family risk who started out with lower cognitive assessment scores in the fall continued to have lower scores in the spring.

*3c. What are the relationships among measures of classroom quality, such as emotional support, instructional support, and provisions for learning, and children's cognitive development during the preschool year?*

***The size of children's cognitive gains between the fall and the spring were not related to instructional support or emotional support in the preschool classrooms. This lack of a statistical relationship may reflect insufficient variation in the measures of quality in this sample, too few classrooms to detect a relationship, or it may reflect a greater influence of home environments over preschool environments.***

In subgroup analyses, we find no difference in children's cognitive gains over the 5 to 6 month period between the fall and spring child assessments based on the level of classroom Instructional Support (CLASS) or Emotional Support (CLASS). The gains in cognitive development made by children in classrooms rated higher on Instructional Support (3.5 or above) were not significantly different from the gains made by children in classrooms rated lower on instructional support. Similarly, the gains in cognitive development made by children in classrooms rated higher on emotional support (6.0 or above) were not significantly different from the gains made by children in classrooms rated lower on emotional support.

The lack of a relationship between higher Instructional Support and the size of children’s cognitive gains may reflect the fact that the threshold for higher Instructional Support (which includes just one-third of the classrooms) is in fact not high enough. Pianta et al. (2008) define “high” scores on the Instructional Support subscale as ranging from 6 to 7, but the C-PEP study found no classrooms scoring in this range. Instead, we looked for differences in child outcomes between children in low-scoring classrooms and those in mid-range-scoring classrooms. This comparison may not have provided enough variation in instructional support to find differences in children’s cognitive gains. Additionally, the sample of classrooms may be too small to detect differences in average cognitive gains across these subgroups. Further, it is possible that the influence of children’s home environments overwhelms any possible influences of good instruction in the classrooms. Consistent with other research in the field, multiple influences on children’s development make it difficult to measure the contribution of any one of them. There is significant need for additional research on the contribution of good preschool instructional practices to children’s cognitive gains in preschool.

*3d. Do children’s levels of attention/persistence improve during the preschool year? How do children’s social skills and levels of problem behaviors change during the preschool year? How does this vary by risk status?*

***Children’s Attention/Persistence and social behavior improved during the five- to six-month period encompassed by the fall and the spring assessments, while behavior problems remained at low levels.***

Children’s ability to settle into activities, avoid distraction and concentrate, pay attention to the teacher, and cooperate with group activities—characteristics measured by the Attention/Persistence subscale—are critical abilities for success in learning in school settings. In addition, social behavior, including cooperation, empathy, the ability to compromise with peers, and social leadership, reflect social skills that will help children interact positively with peers and adults in school. Teachers reported that children’s Attention/Persistence and social behavior improved between the fall and the spring, and the incidence of behavior problems remained steady at fairly low levels between the fall and the spring (see Table 11). The assessors also rated children more favorably in the spring compared with the fall on the Cognitive-Social scale, corroborating the teachers’ positive ratings of children’s attention, self-control, and social behavior.

***Improvements in children’s social-emotional development were not related to the number of demographic risk factors.***

Improvements in children’s social-emotional development between the fall and the spring did not differ significantly by whether children had more demographic risk factors (three or more) or fewer risk factors. With only one exception (Attention/Persistence, favoring children with fewer demographic risks), teachers’ and assessors’ ratings of children’s behavior during the spring assessment did not differ significantly by family risk subgroup.

TABLE 11

SOCIAL-EMOTIONAL DEVELOPMENT OF CHILDREN DURING THE PRESCHOOL YEAR  
(CHILDREN WITH TEACHER/ASSESSOR RATINGS IN BOTH THE FALL AND SPRING<sup>a</sup>)

|   | Fall       | Spring     | Change     | Effect Size |
|---|------------|------------|------------|-------------|
| Attention/Persistence   | 50.9       | 52.7       | 1.8*       | .18         |
| Social Behavior   |            |            |            |             |
| Social Cooperation  | 106.7      | 109.5      | 2.3*       | .15         |
| Social Interaction  | 98.8       | 104.0      | 5.2*       | .35         |
| Behavior Problems   |            |            |            |             |
| Social Withdrawal   | 94.0       | 91.9       | -2.0       | -.13        |
| Attention Problems/Overactive   | 90.3       | 89.6       | -0.8       | -.05        |
| Self-Centered/Explosive   | 89.9       | 89.5       | -0.4       | -.03        |
| Cognitive-Social (Attention, Organization/Impulse Control, Activity Level, Sociability) | 84.6       | 88.9       | 4.3*       | .29         |
| <b>Number of Children</b>   | <b>611</b> | <b>611</b> | <b>611</b> | <b>611</b>  |

Source: Table IV.5.

<sup>a</sup>The average fall scores presented here differ slightly from those presented in Table 6, because we exclude children who did not have an assessment score available in the spring. Most children who were excluded in the spring (12 percent of the original fall sample) had left the program after the fall assessment. Children with fall and spring assessments were somewhat more advantaged than those who left the sample after the fall assessment. Children with both fall and spring assessments had slightly higher scores on the fall English Vocabulary assessment and were slightly more likely to have parents who reported being married and having annual family incomes over \$20,000.

*3e. What is the relationship between classroom quality and children's social-emotional development in preschool?*

***Higher levels of classroom Instructional Support were related to improvements in some aspects of children's social-emotional development (Social Withdrawal and Attention Problems/Overactive behavior). No such differences were found for children in classrooms with high levels of Emotional Support.***

Children in classrooms with higher scores on the Instructional Support subscale (3.5 or above) experienced larger reductions in Social Withdrawal and in Attention Problems/Overactive behavior as rated by their teachers over the five- to six-month period between the fall and the spring assessments compared with children in classrooms rated lower in Instructional Support. For all other aspects of social-emotional development, including Attention/Persistence, social behavior, and Self-Centered/Explosive behavior, the changes in behavior ratings from the fall to the spring were similar for children in classrooms with higher and lower Instructional Support ratings.

We found no differences in children's progress in Attention/Persistence, social behavior, and behavior problems when we compared those in classrooms with high scores on the Emotional Support subscale (6.0 or higher) and lower scores on that subscale. The lack of any difference may reflect very little variation on this subscale, as most classrooms that were not rated 6.0 or higher were rated very close to that level (see Figure 13).

*3f. How do cognitive and social-emotional development relate to family background (risk status and home language), classroom quality, and program characteristics (full-day or half-day)?*

***Classroom quality, teacher characteristics, and program characteristics are not consistently associated with children's cognitive gains; however, higher family risk status is associated with smaller gains in vocabulary and early mathematics for children from English-primary homes.***

To further explore the influence of family background, classroom quality and program characteristics on cognitive development from the fall to the spring, we conducted multivariate analyses of children's gains on tests of English vocabulary, literacy and mathematics (WJ III, Applied Problems). Because descriptive information shows that cognitive development between the fall and the spring was very different for children from homes in which English is the primary language and those in which Spanish/other languages were primary, we conducted separate analyses for these two groups. In our analyses, we controlled for additional characteristics of the children and teachers so that we could isolate the effects of key variables.

Classroom quality, teacher characteristics, and program characteristics are not consistently associated with children's cognitive gains; however, family risk status is. We find that children from English-primary homes with higher demographic risk levels (three or more risks) had smaller gains on assessments of English vocabulary and early mathematics achievement than children from families with low risk levels. For children from homes with a primary language other than English, having a higher number of family risk factors was not related to the size of cognitive gains between the fall and the spring. Finally, having a higher number of family risk factors had no relationship to changes in early literacy achievement for children, regardless of the primary language spoken at home.

None of the other family background or teacher characteristics was consistently associated with children's fall to spring progress in English vocabulary ability, early literacy achievement, or early mathematics achievement. Teacher education was positively associated with gains in early literacy for children in both home-language subgroups. Teachers' hours of professional development had an inconsistent relationship with fall to spring cognitive gains, perhaps because the professional development measure only focused on curriculum-based professional development. Previous preschool attendance was not related to the size of gains in cognitive development; however, the measure of previous preschool attendance is imprecise, and a descriptive study cannot support firm conclusions about the relationship between an additional year of preschool and children's cognitive gains. This question needs to be addressed by a study designed to specifically examine the effects of a second year of preschool on children's cognitive development.

The quality of Instructional Support was not consistently and positively associated with fall-spring gains in children's cognitive development, which is surprising because this measure focuses on the kind of teaching that theory would predict helps children to make greater cognitive gains. The lack of relationship between Instructional Support and fall-spring gains was found when teacher characteristics were included in the model and when they were not in the model. At the same time, the family, teacher, and classroom characteristics included in the regression models explained just 25 percent to 40 percent of the variation in fall-spring gains in the sample of children, so many factors responsible for children's progress remain unmeasured in this study. Moreover, many of the programs serve children for only a few hours per day (2.5 to 3.5 hours), so the effects of the programs may not be very large compared with all other influences the child encounters during the day. When alternative measures of classroom quality were substituted for Instructional Support (including CLASS Emotional Support and ECERS-R Teaching and Interactions), the results were similar.

***Improvements in children's social-emotional development between the fall and the spring were not related to either the number of demographic risk factors or the child's home language. However, some aspects of social-emotional development appear related to Instructional Support and teacher education.***

Teachers and assessors rated children's social-emotional development as positive in both the fall and the spring, and indicated that children showed significant improvements in Attention/Persistence, social behavior and Cognitive-Social domains between the fall and the spring.

Subgroup analyses found no relationship between improvements in children's social-emotional development between the fall and the spring and the number of demographic risk factors or the child's home language. However, teachers rated children from Spanish/other language-primary homes more favorably in the areas of Attention/Persistence, Social Cooperation, and behavior problems compared with children from English-primary homes. Assessors had a different view, rating children from English-primary homes higher than children from Spanish/other language-primary homes on the Cognitive-Social scale in the spring. Additionally, assessors reported larger improvements in Cognitive-Social abilities from the fall to the spring for children whose home language was English. This discrepant view of children's social-emotional development by teachers and assessors may be attributable to the different contexts in which behavior was observed. Many of the children from English-primary homes are in Full-Day programs and, as discussed above, teachers in these programs tended to rate children's behavior more negatively than did teachers in the other programs. The more negative assessor evaluations of children from Spanish/other language-primary homes may reflect that children who had more difficulty understanding English had more trouble adapting to the assessment situation.

Subgroup analyses also indicated that higher classroom Instructional Support was associated with improvements in some aspects of children's social-emotional development, including Social Withdrawal and Attention Problems/Overactive behavior, as rated by their teachers between the fall and the spring. Children's gains in social-emotional development did not appear to be related to differences in classroom Emotional Support.

Higher levels of teacher education were also associated with greater improvements in children's social-emotional development. Teachers with a graduate degree consistently related children's behavior as significantly better on every dimension in the spring compared with the fall, and the reported gains were larger than for teachers with an associate's or bachelor's degree. Assessor ratings generally corroborated the teacher reports.



## SUMMARY AND DISCUSSION OF THE STUDY FINDINGS

Major investments in early childhood education at the federal and state levels have sparked questions about how best to support preschool children’s development and whether the programs are improving the school readiness of economically-disadvantaged children. Illinois has been in the forefront of states making significant investments in early childhood education, and Chicago now offers a diverse array of early childhood education programs that serve low-income and educationally at-risk children from families in a variety of circumstances.

The Chicago Program Evaluation Project was developed to document children’s experiences in these early childhood education programs, assess their development, and provide information on their readiness to succeed in kindergarten. The information is intended to inform program improvement efforts and funding directions for Chicago’s early childhood education programs, and to provide a baseline for future research. The descriptive information in this report provides a rich picture of the children, families, and programs that make up the early childhood education landscape in Chicago, and suggests avenues for further research to inform program and policy development.

The study included a representative sample of classrooms and children from Chicago’s Full-Day, Half-Day Head Start, and Preschool for All programs. Full-Day programs are community-based Head Start programs that offer wrap-around child care funded by the state’s Child Care Assistance Program. Half-Day Head Start programs include those in community-based centers and the Chicago Public Schools. Preschool for All programs in this study include only those in the Chicago Public Schools.

To measure children’s outcomes and the preschool environments, we conducted fall and spring assessments of children’s cognitive development (a span of five to six months) and obtained teacher ratings of children’s social-emotional development. We interviewed teachers to learn about their education, experience, and teaching practices, and we conducted classroom observations to measure the quality of emotional support, instruction, equipment, and materials in the classrooms. We obtained high response rates to all components of the study.

### RESEARCH QUESTION 1

**WHAT ARE THE CHARACTERISTICS AND DEVELOPMENT OF CHILDREN ENTERING EARLY CHILDHOOD EDUCATION PROGRAMS IN THE FALL?**

#### FINDING

*Chicago’s early childhood education programs include many English Language Learners; addressing their dual need to learn English as well as to make progress in early literacy and mathematics is critical.*

Chicago’s early childhood education programs serve a high proportion of English Language Learners, although the proportions vary by program. In Full-Day programs, 33 percent of children come from homes in which English is not the primary language; for Half-Day Head Start and Preschool for All, the proportions of children from such homes are 45 percent and 56

percent, respectively. Some of these children already understand and use English, but across all of the programs, 32 percent of the children had little or no understanding of spoken English in the fall. By the spring, significantly more children had an understanding of and ability to use English, yet 20 percent still had substantial difficulties with spoken English. For children entering preschool with limited English ability, learning to understand and speak English was a major task of preschool. For some children, learning English will also be a major task of kindergarten. More in-depth research on how young English Language Learners acquire English in preschool classrooms, and how best to support early literacy and early mathematics achievement while children are learning English would be useful to inform practice. In addition, since many classrooms serve a mix of children with English and other-language backgrounds, research focusing on how best to support language, early literacy, and early mathematics development among these diverse groups of children would be useful.

## **FINDING**

***In addition to linguistic challenges, children enter Chicago's early childhood education programs with high levels of family demographic risk, including poverty, single parenthood, and low parental education, although the proportions vary across programs.***

The demographic characteristics of the children and families served by the programs differ (for example, family income and parents' employment status), reflecting differences in eligibility rules and service priorities across the programs. Half-Day Head Start programs have the largest percentage of children with high levels of demographic risk (62 percent), and Preschool for All programs have the smallest percentage of such children (28 percent). Previous preschool attendance, which can offer an educational boost to children, was highest among the 4-year-old children in Full-Day programs.

## **FINDING**

***Substantial proportions of children in Chicago's early childhood education programs were below the average for preschool-age children nationally in the fall based on vocabulary and early mathematics achievement, but were close to national averages for early literacy achievement.***

Consistent with the high levels of family demographic risk and large proportion of English Language Learners, 4-year-old children in Chicago's early childhood education programs in the fall were considerably below national averages for vocabulary and early mathematics, but close to the national average for early literacy relative to children of the same age nationally. The average PPVT-4 score was 82.0, while the average WJ-III Applied Problems score was 89.5. The WJ-III Letter-Word Identification was 96.3 on average. These are standardized scores that compare to a national average of 100.

## **FINDING**

***Most children’s social-emotional behavior in the fall was rated positively by teachers, with no differences across programs.***

Teachers in Chicago’s early childhood education programs viewed the social-emotional development of their children positively at the start of the program year, often rating their social interactions and behaviors as on par with children nationally. However, they rated some children as having low levels of social skills and/or high levels of behavior problems. Approximately 16 percent of children were rated as having behavioral issues warranting evaluation by a professional, consistent with national estimates of significant levels of behavioral problems among children.

The assessors’ ratings of children’s behavior during the cognitive assessments were well below national averages, but this might be attributable to the fact that the children included in those national averages were ages 4 to 6, while the children in this study are on the lower end of that age range.

## **RESEARCH QUESTION 2**

**WHAT ARE THE CHARACTERISTICS OF TEACHERS AND THE QUALITY OF CLASSROOMS IN CHICAGO’S EARLY CHILDHOOD EDUCATION PROGRAMS?**

## **FINDING**

***Teachers in Chicago’s early childhood education programs meet or exceed the education requirements of the programs, which are on the high end of such requirements nationally, resulting in a well-educated teaching force.***

All teachers in Full-Day and CYS Half-Day Head Start programs have at least an associate’s degree, and all teachers in Preschool for All and CPS Half-Day Head Start have at least a bachelor’s degree. Many teachers have gone beyond these requirements to acquire a graduate degree, and many others were pursuing further education at local colleges and universities.

## **FINDING**

***Teachers across all three programs reported high levels of satisfaction with teaching as their daily work and as a career.***

Most teachers viewed work with preschool children as important and fulfilling. Most also identified challenges in teaching preschool. Many of the challenges cited reflect how much children need to learn during the preschool year in order to be ready for kindergarten, excessive paperwork, and issues with children’s behavior.

## **FINDING**

***The quality of Chicago's early childhood education classrooms was in the middle to high range for emotional support and provisions for learning; in the middle range for classroom organization, and in the low to middle range for instructional support.***

Classrooms scored in the middle to high range on the ECERS-R Provisions for Learning subscale, reflecting program support for the variety of classroom furnishings and materials expected in good preschool classrooms. Classrooms scored in the middle to high range for emotional supportiveness, measured by the ECERS-R Teaching and Interactions subscale and the CLASS Emotional Support subscale, reflecting the extent to which the classroom has a positive tone, the teacher is sensitive toward children, and the teacher recognizes children's perspectives. While the vast majority of classrooms scored in the higher range of these scales (5 and above), the very small proportion scoring in the lower range (below 4) indicate the need for continuing technical assistance for teachers to help improve the learning environments for children.

Classrooms scored in the middle range for Classroom Organization, which measures proactive behavior management, the productive use of time, and use of a variety of instructional formats to maintain children's interest. Classrooms scored in the low to middle range on the Instructional Support subscale, indicating less frequent or less enriching language modeling, concept development, or quality of feedback. These subscales reflect teaching practices that may support children's learning, and lower scores on these subscales suggest such practices are not widely used. One of the reasons that Instructional Support scores are low could be the mix of activities observed during the morning period. In Head Start programs, which offer comprehensive services, observed activities could include mealtime or handwashing. Program monitors who observe the classrooms from the perspective of both program requirements and instructional opportunities might be able to find opportunities for learning that could be added to routines and transitions in these programs (e.g., singing songs or otherwise engaging children while they are waiting in line to wash their hands or brush their teeth).

## **FINDING**

***The quality of Chicago's early childhood education programs was similar to that of Head Start and state pre-kindergarten programs nationally.***

Middle- to high-level scores on the Provisions for Learning and the emotional supportiveness scales, and low- to middle-range scores on the Instructional Support scale are consistent with the findings from studies of preschool classrooms across the country. Across most studies, including those of high-quality, well-funded preschool programs, teachers are challenged to provide high levels of Instructional Support.

## **FINDING**

***Identifying ways to improve Instructional Support in preschool classrooms through professional development and education could enhance the learning opportunities in preschool.***

Only 42 percent of teachers in Chicago’s early childhood education programs offer instruction in the middle range (3 to 5 on a 7-point scale), and none offer instruction rated high (6 or 7) on Instructional Support. Multivariate analyses explored the relationships between Instructional Support, Classroom Organization, and teacher and program characteristics to identify policies that might influence these aspects of quality and be explored more systematically in future research.

Teacher education—in particular, having a graduate degree—was related to higher ratings on both Instructional Support and Classroom Organization, controlling for other teacher and program characteristics. Higher ratings on Classroom Organization were positively related to teachers having a bachelor’s or a graduate degree and 20 or more years of experience teaching preschool. Lower child-staff ratios were related to more positive quality ratings. The positive correlation between subscales that relate to the preschool classroom’s educational environment and the teacher’s education and experience as well as the number of children in the classroom suggest a role for standards in enhancing the educational environment of preschool classrooms that could be explored using more rigorous research designs.

The lack of an association between Instructional Support and hours of professional development may stem from the fact that the professional development measure in this study focused on curriculum-related training, which may not encompass all of the professional development that teachers received, particularly teachers with higher levels of education. More research on the relationship between Instructional Support and the amount, form, and content of professional development could identify ways to boost the learning content of preschool.

Program-specific characteristics that were not separately measured but that could include policies, educational requirements, and support for professional development were also associated with the ratings of Instructional Support, as well as with the other dimensions of classroom quality. These program characteristics should be examined in more detail to identify differences that should be explored in future research.

### RESEARCH QUESTION 3

#### WHAT DEVELOPMENTAL PROGRESS DO CHILDREN MAKE DURING THE PRESCHOOL YEAR?

##### FINDING

*Children in Chicago's early childhood education programs made significant progress during the five- to six-month period encompassed by the fall and spring assessments in terms of vocabulary development in English, early literacy achievement, and early mathematics achievement.*

Children's vocabulary improved by 4.8 points overall, approximately one-third of a standard deviation over their fall performance. Early literacy increased by 2.5 points overall, to within one point of the average for preschool-age children nationally by spring. Early mathematics increased by 1.9 points overall, a small increase, but still a gain relative to what would be expected through maturation over the same period. The average gains were largest for English Language Learners, whose performance on assessments improved substantially as they acquired English vocabulary during the preschool year. Since the preschool year is longer than the five- to six-month period between the fall and spring assessments, children's actual growth during the preschool year was likely greater than was measured here.

##### FINDING

*Children at highest academic risk made substantial progress during the preschool year in terms of vocabulary development, early literacy achievement, and early mathematics achievement.*

The standardized measures of children's vocabulary, early literacy, and early mathematics achievement permit the identification of children who perform below 85, which is one standard deviation below the mean for children of the same age nationally. Scores below 85 correspond to scores received by approximately 16 percent of 4-year-old children nationally, and therefore, 85 is considered to be a threshold for educational risk. Many of these children, who scored below 85 on the assessments in the fall, were able to move above the threshold score of 85 by the spring assessment five to six months later. On English vocabulary, the proportion scoring below 85 decreased from 52 percent in the fall to 39 percent in the spring. On early literacy, the proportion scoring below 85 declined from 29 percent in the fall to 16 percent in the spring. On early mathematics, the percentage scoring below 85 declined from 33 percent in the fall to 29 percent in the spring. Many of the children moving out of the category of significant academic risk were English Language Learners who were improving their English vocabulary ability during the preschool year.

## **FINDING**

***Despite the substantial gains by children at educational risk, continued support may be necessary to close gaps in the early years of school.***

Despite the important gains children made in English vocabulary ability between the fall and the spring, the average score in April/May of the preschool year was 86.8 overall (90.5 among children from English-primary homes, and 82.7 among children from Spanish- or other-primary homes). These scores are significantly below the population average for preschool-age children, which could cause difficulties later as children encounter unfamiliar words in reading and in various subjects in school. The findings regarding the level of vocabulary achievement among children in Chicago's early childhood education programs, however, are consistent with those of other studies of low-income and educationally at-risk children in preschool. Although children's early literacy skills were on par for age by spring (based on national norms for preschool-age children), the norms for the early literacy assessment appear to expect children to recognize letters and letter-sound correspondence, but not to sight read at this point. Making the transition from recognizing letters and sounds to reading words on a page could be a challenge for children if vocabulary is lagging. While it may be unrealistic to expect a half-day preschool program to close a vocabulary gap that has grown during the first four years of life, strong support for language development that continues into the early grades of school would be realistic. Such support, extending through the beginning reading period of the early grades, would be helpful to maintain the high performance children have shown in early literacy through the preschool year.

Moreover, stronger support for vocabulary development during the preschool year might also be feasible. The scores for Language Modeling (one dimension of the CLASS) among teachers in the Chicago preschool programs averaged 3.3, offering some room for improvement of an activity that could help children's vocabulary development.

The relatively modest progress made in early mathematics may reflect a lack of focused activity on this area during preschool. Early mathematics is just beginning to receive attention by the preschool community, and more attention to this area would provide an important boost to children who have had little exposure to mathematical concepts before preschool.

## **FINDING**

***Children's Attention/Persistence and social behavior improved during the preschool year, according to teacher ratings, and the incidence of behavior problems was below expected levels for age. These findings bode well for children's adjustment to school.***

Children's ability to settle into activities, avoid distraction and concentrate, pay attention to the teacher, and cooperate with group activities—characteristics measured by the Attention/Persistence subscale—are critical abilities for success in learning in school settings. In addition, social behavior, including cooperation, empathy, social leadership, and the ability to compromise with peers, reflect social skills that will help children interact positively with peers and adults in school. Children's Attention/Persistence and social behavior improved between the fall and the spring, and the incidence of behavior problems remained steady at fairly low levels between the fall and the spring (see Table 11). The assessors also rated children more favorably in the spring compared with the fall on the Cognitive-Social scale, corroborating the teachers' positive ratings of children's attention, self-control, and social behavior. The improvement in

children's attention and social behavior and the fact that scores are within age norms suggest that most children are prepared for the behavioral demands of school.

## **FINDING**

*The extent of children's growth in language, early literacy, and early mathematics during the preschool year does not seem to be related to the quality of classroom instructional support or emotional support, controlling for other teacher and program characteristics. More research is needed to understand the extent to which improvements in Instructional Support or other aspects of quality can support children's growth in preschool.*

The quality of Instructional Support was not consistently and positively associated with fall-spring gains in children's cognitive development, which is surprising because this measure focuses on the kind of teaching that theory would predict helps children to make greater cognitive gains. The lack of relationship between Instructional Support and fall-spring gains was found when teacher characteristics were included in the model and when they were not in the model. At the same time, the family, teacher, and classroom characteristics included in the regression models explained just 25 percent to 40 percent of the variation in fall-spring gains in the sample of children, so many factors responsible for children's progress remain unmeasured in this study. Moreover, many of the programs serve children for only a few hours per day (2.5 to 3.5 hours), so the effects of the programs may not be very large compared with all other influences the child encounters during the day. In alternative specifications using different measures of quality (including Emotional Support, Teaching and Interactions, and Classroom Organization), the findings are the same.

A recent study examining this question with a much larger sample of classrooms and children found a positive relationship between Instructional Support and cognitive outcomes, but the effect is small: a 1-point increase in instructional quality increases spring cognitive scores by 0.7 to 1.1 standardized points, which is at best a .07 effect size difference attributable to quality (Mashburn et al. 2008). This finding is consistent with a large body of education literature on the importance of family background relative to schools. In addition, researchers have identified numerous school characteristics, teacher behaviors, and other factors that might affect children's progress. Differences in the family backgrounds of the children served, school leadership, resources, teacher background and professional development, and many other factors complicate the task of estimating the relationship between particular aspects of quality (for example, emotional support or instructional support) and child outcomes. Clearly, some variations in teacher behavior and classroom processes make a difference for children, but more research is needed to identify changes that would be both feasible to implement and substantially beneficial to children in early childhood education programs on a broader scale.

## **CONCLUSION**

Chicago's early childhood education programs serve substantial proportions of children with high levels of family demographic risk and children who are English language learners. In the fall, children's English vocabulary ability and early mathematics achievement were well below national averages for preschool-age children, although early literacy was near national norms.



Children's behavior – attention/persistence, social behavior, and behavior problems – were rated by teachers as within norms for preschool-age children in the fall.

The early childhood education classrooms are of good quality, with child-staff ratios within professional guidelines, and teachers with relatively high education levels, significant experience teaching preschool, and high levels of satisfaction with teaching preschool. Classrooms are well-stocked with furnishings and materials characteristic of good early childhood programs. The emotional tone and quality of teacher-child interactions is good. Instructional Support is in the low to middle range of quality, similar to most other preschool classrooms nationally.

During the preschool year, children in Chicago's early childhood education programs made significant progress in terms of English vocabulary development, early literacy achievement, and early mathematics achievement. Children at highest academic risk (those scoring below 85, considered an indicator of educational risk) and English Language Learners made substantial progress. Yet, children's vocabulary and early mathematics achievement remain below that of preschool-age children nationally. Continued support for vocabulary development, early literacy, and early mathematics may be necessary to preserve the gains made and to further reduce achievement gaps during the early years of school.

Children's Attention/Persistence and social behavior improved during the preschool year, and behavior problems remained at low levels, according to teacher ratings, and corroborated by assessors. These developments suggest that children will be ready for the behavioral demands of school.

In-depth, qualitative research to focus on challenging aspects of teaching and learning in preschool would be helpful in improving programs. Key topics might include identifying promising strategies for (1) supporting the acquisition of English in the classroom, (2) supporting the cognitive development of both English-speaking children and English Language Learners in the same classroom, and (3) increasing the opportunities for programs to include interesting instructional content during routine activities and mealtimes. In addition, initiatives that would continue to provide strong support for children's vocabulary development, early literacy, and early mathematics skills during the transition to reading in the early grades of school may be important in preserving the gains made in preschool and further closing achievement gaps.

Rigorous research that can measure the effects of alternative policies could help in identifying the best investments for early childhood education programs. Research could (1) examine alternative approaches to professional development that could enhance Instructional Support, (2) consider the impact of a greater intensity of preschool services (full-day or an additional year), and (3) measure the value of introducing an early mathematics curriculum. These research projects could help identify the most promising investments in early childhood education services to benefit educationally at-risk preschool children in Chicago.



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