

**Evaluation of the North Carolina  
More at Four Pre-kindergarten Program  
YEAR 8 REPORT (JULY 1, 2008–JUNE 30, 2009)**

**A Look across Time at  
Children's Outcomes and Classroom Quality  
from Pre-k through Kindergarten**



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For more information about the Evaluation of the North Carolina More at Four Pre-kindergarten Program, visit the web site at [www.fpg.unc.edu/~mafeval](http://www.fpg.unc.edu/~mafeval).

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## Overview of the More at Four Program

The North Carolina More at Four Pre-kindergarten Program is a state-funded initiative for at-risk 4-year-olds, designed to help them be more successful when they enter elementary school. The More at Four Program is based on the premise that all children can learn if given the opportunity, but at-risk children have not been given the same level of opportunity. The purpose of More at Four is to provide a high quality, classroom-based educational program for at-risk children during the year prior to kindergarten entry. The program targets at-risk children who are not being served in a preschool program, or those who are in lower quality settings or not receiving child care subsidies. The More at Four Program was initiated in the 2001-2002 school year and has included programs in all 100 counties since the 2003-2004 school year. More at Four served 33,798 children in the 2008-2009 school year, and has served over 133,000 children during the first eight program years (2002-2009).

More at Four provides funding for serving eligible children in classroom-based educational programs at a variety of sites designated by the local administration within each county or region (typically, either the local public school system or the local Smart Start partnership<sup>a</sup>). The programs are administered at the county or region (multi-county grouping) level with oversight by the NC Office of Early Learning, and must include collaboration among the local school system(s), the local Smart Start partnership, and other interested members of the early childhood community (e.g., Head Start, child care providers, resource and referral agencies). Children are eligible for More at Four based on family income (at or below 75% of state median income or above 75% state median income with one or more other risk factors) and other risk factors (limited English proficiency, identified disability, chronic health condition, and developmental/educational need). Children who have a parent actively serving in the military are also eligible for More at Four. Priority for service is given first to at-risk children who are unserved (those not currently being served in a preschool program) and second, to children who are underserved at enrollment (those in a program but not receiving child care subsidies and/or those in lower quality settings). More at Four classrooms operate in several different settings, including public schools, Head Start, and community child care centers (both for-profit and nonprofit). Children may be enrolled in classrooms serving More at Four children exclusively or in blended classrooms also serving children funded through other sources such as Head Start or parent fees. The programs operate on a school day and school calendar basis for 6 to 6-1/2 hours/day and 180 days/year. Local sites are expected to meet a variety of program guidelines and standards concerning curriculum, training and education levels for teachers and administrators, class size and student-teacher ratios, North Carolina child care licensing levels, and provision of other program services. (See the More at Four Program Guidelines and Requirements for further information about guidelines for eligibility and operations.<sup>1</sup>)

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<sup>a</sup>Smart Start is a comprehensive early childhood initiative created in 1993 to ensure that all North Carolina children enter school healthy and ready to succeed. The program focuses on improving the quality of child care and providing health and family support services to children from birth to age five and their families. Program funds are distributed to 77 community partnerships serving all 100 North Carolina counties. For more information about Smart Start, visit the North Carolina Partnership for Children's website at <http://www.ncsmartstart.org/>.

## Overview of the More at Four Evaluation

Since its inception in 2002, the statewide evaluation of the North Carolina More at Four Pre-kindergarten Program has been conducted by the FPG Child Development Institute at the University of North Carolina at Chapel Hill. The current report describes findings on the characteristics of the program statewide in the 2008-2009 program year and the quality and outcomes for children during pre-k and kindergarten over a 6-year period from 2003-2009. This report includes longitudinal data from three separate cohorts of children. Cohort 1 was recruited at the beginning of the More at Four pre-k year in 2003-2004 and followed through kindergarten in 2004-2005. Cohort 2 was recruited at the beginning of the More at Four year in 2005-2006 and followed through kindergarten in 2006-2007. Cohort 3 was recruited at the beginning of the More at Four year in 2007-2008 and followed through kindergarten in 2008-2009. Previous reports are available with detailed results from all prior years (2002-2007), including longitudinal studies of Cohort 1 and Cohort 2.<sup>2, 3, 4, 5, 6, 7, 8</sup>

The primary research questions addressed by this evaluation included:

- What were the key characteristics of the local More at Four programs and to what extent have they changed over time?
- What was the quality of the More at Four pre-k and kindergarten classrooms attended by children over this 6-year period?
- What were the outcomes for children who attended the More at Four Program over this 6-year period?
- What factors were associated with better outcomes for children?

To address these questions, we gathered information from multiple sources: monthly service reports, observations of classroom quality, teacher surveys, and individual child assessments. The monthly service report data from each local contractor provided information about program size and operation days, setting and classroom characteristics, teacher and administrator qualifications, and children's demographic characteristics and attendance information. Observations were conducted in randomly-selected samples of More at Four and kindergarten classrooms attended by the study participants using multiple measures to provide information about classroom quality, including: global classroom practices, language/literacy practices, instructional practices, and teacher-child interactions. Information was gathered about the activities and materials provided in classrooms, the interactions among teachers and children, the nature of instruction, the physical environment, and the daily organization and structure of the classroom. Individual assessments of children's skills were conducted near the beginning and end of the school year to provide information about child outcomes during pre-k and kindergarten. These measures included assessments of children's language and literacy skills, math skills, and general knowledge, and teacher ratings of children's behavioral skills, to provide information about their school readiness and growth across a broad range of developmental skills.



## CHILD AND PROGRAM CHARACTERISTICS METHODS

### Methods

Local More at Four contractors submitted monthly reports of child and program characteristics using an online system for gathering these data. Each local More at Four contract, representing a county or a multi-county region, was responsible for submitting monthly reports. The current report includes data entered in the most recent program year, from July 1, 2008 to June 30, 2009. For comparison, data from the previous five years (program years 2003-2004 through 2007-2008) also are included in this report.

### Measures

Data gathered in MAFPlan include hierarchically-linked information about the contracts, sites, classrooms, and teachers. Information at the contract level includes agency information and slots allocated. Information about the sites includes site type, number of classes, site program service dates, and administrator licensing and credentials. Information about More at Four classrooms includes curriculum, daily hours of operation, class size, children served, and year class began More at Four operation. Information on teachers includes teacher education and licensure/credentials.

Data entered in MAFKids include hierarchically-linked information about the site, classroom, and individual children being served. Information about sites includes operation days and teacher workdays. Classroom information includes total monthly enrollment and classroom composition (number of More at Four and non-More at Four children). Information about the individual children served includes household composition, risk factors (poverty status, limited English proficiency, developmental/educational need, identified disability, chronic health condition), service priority status, race/ethnicity, gender, birth date, primary caregiver's employment, child of military parent, and attendance.

### Procedure

Information about all More at Four services is collected on two web-based reporting systems specifically designed for the program, MAFPlan and MAFKids. Local contractors enter basic information in MAFPlan about the contract, sites, and classrooms, and enter information in MAFKids about the children being served, along with related site and classroom operation information. MAFPlan data are updated by contractors as information changes, and MAFKids data are reported monthly. The FPG Evaluation project downloads, verifies and corrects, and archives data from both systems monthly.

## CLASSROOM QUALITY OBSERVATION METHODS

Classroom quality was examined in both the pre-k and kindergarten years for three cohorts, yielding three samples of pre-k classes and three samples of kindergarten classes. The Cohort 1 sample included pre-k classes in 2003-2004 and kindergarten classes in 2004-2005. The Cohort 2 sample included pre-k classes in 2005-2006 and kindergarten classes in 2006-2007. The Cohort 3 sample included pre-k classes in 2007-2008 and kindergarten classes in 2008-2009. In the kindergarten years classes were selected randomly from those attended by children in the pre-k

sample the previous year. Classroom observations were conducted to gather information about the quality of global classroom practices, instructional practices, language/literacy environment, teacher-child interactions, and classroom activities.

### **Participants**

Pre-k classroom observations in the pre-k years were conducted in a sample of More at Four classrooms randomly selected from those that had begun serving children by the beginning of September of the study year to ensure that children had the opportunity for a full program year. In Cohort 1, pre-k (2003-2004), 99 More at Four classrooms were randomly selected from 599 eligible classrooms. The selected classrooms included 57 of the 58 classrooms from which the child sample was drawn (one of the 58 classrooms was no longer part of the More at Four program at the time of the classroom observations). The classroom year of operation was not available for the 2003-2004 sample although this was the third year (and second full year) of the program. In Cohort 2, pre-k (2005-2006), 57 classrooms were observed. Of these, 53 were randomly selected from 952 eligible classrooms and 4 additional classrooms participating in the North Carolina Department of Public Instruction Model Literacy Program were added to the sample. Selected classrooms included 2 first-year classrooms, 8 second-year classrooms, 15 third-year classrooms, 18 fourth-year classrooms, and 14 fifth-year classrooms. In Cohort 3, pre-k (2007-2008), observations were conducted in 50 More at Four classrooms randomly selected from 1,687 eligible classrooms. The sample included 7 first-year classrooms, 12 second-year classrooms, 7 third-year classrooms, 4 fourth-year classrooms, 9 fifth-year classrooms, 8 sixth-year classrooms, and 3 seventh-year classrooms.

The kindergarten classes were randomly selected for observation from all those classes attended by participants in the child outcomes longitudinal samples. In Cohort 1 (2004-2005), observations were conducted in a sample of 97 of the 249 kindergarten classes attended by children who had been in the 2003-2004 pre-k sample. In Cohort 2 (2006-2007), observations were conducted in 96 of the 292 kindergarten classes attended by children who had been in the 2005-2006 pre-k sample. In Cohort 3 (2008-2009), observations were conducted in 75 of the 249 kindergarten classes attended by children who had been in the 2007-2008 pre-k sample.

### **Measures**

An overview of the measures used for assessing classroom quality is contained in Table 1. As can be seen in Table 1, ECERS data were available for all cohorts, ELLCO and CIS were available for Cohorts 2 and 3, and the CLASS was available for Cohort 3 only.

Global classroom quality was assessed using the Early Childhood Environment Rating Scale-Revised (ECERS-R)<sup>9</sup>, an observational rating scale that measures the developmental appropriateness of classroom practices including the activities and materials provided, the interactions among teachers and children, the physical environment, and the daily organization of the program. The scale contains 43 items arranged into 7 subscales: Space and furnishings, Personal care routines, Language-reasoning, Activities, Interaction, Program Structure, and Parents and Staff. Each

subscale item is rated on a 7-point scale<sup>a</sup> from low to high, where 1 = "inadequate," 3 = "minimal," 5 = "good," and 7 = "excellent". In the current study, the total and subscale scores were computed as mean item scores ranging from 1.0 to 7.0, with higher scores indicating better classroom quality. The ECERS-R and its predecessor, the ECERS, have been used in a wide range of early education research studies. The scales have been demonstrated to have good interrater reliability (total scale  $r = .92$ ) and predictive validity.<sup>9, 10</sup>

The Classroom Assessment Scoring System (CLASS)<sup>11</sup> measures classroom quality based on interactions between children and adults. It includes ratings on 10 dimensions, scored on a 1-7 scale from low to high, which combine into scores on three overarching domains of classroom quality. The first domain, Emotional Support, encompasses four dimensions: Positive climate (the emotional connection among children and teachers); Negative climate (expressed negativity such as anger and hostility); Teacher sensitivity (responsiveness to children's concerns); and Regard for student perspectives (accommodations for children's points of view). The second domain, Classroom Organization, includes three dimensions: Behavior Management (how effectively behavior is monitored or redirected); Productivity (how well time is organized to maximize learning activities); and Instructional Learning Formats (how well teachers facilitate children's engagement to maximize learning opportunities). The third domain, Instructional Support, incorporates three dimensions: Concept Development (how teachers foster higher-order thinking skills); Quality of Feedback (how well teachers extend learning in their responses to children); and Language Modeling (facilitation of language). The scale has demonstrated good interrater reliability ranging from 78.8 % to 96.9% agreement within one point with an average across all items of 87.1% agreement within one point<sup>11</sup>.

The Early Language and Literacy Classroom Observation (ELLCO)<sup>12</sup> toolkit measures the extent to which classrooms provide optimal support for language and literacy development. This observational measure includes three scales: Classroom Observation Scale, Literacy Environment Checklist, and Literacy Activities Rating Scale, each scored on a different metric. The Classroom Observation Scale consists of 14 items across 2 subscales: General classroom environment and Language, literacy, and curriculum. Each item is scored on a 1-5 scale, where 1 = "deficient", 3 = "basic", and 5 = "exemplary". Mean item scores, ranging from 1.0-5.0, were used in the present study. The Literacy Environment Checklist has a total score ranging from 0-41, based on 5 subscales: Book area (0-3), Book selection (0-8), Book use (0-9), Writing materials (0-8), and Writing around the room (0-13). The Literacy Activities Rating Scale has a total score ranging from 0-13 and contains two subscales: Reading (0-8) and Writing (0-5). These scales have demonstrated good interrater reliability (Classroom Observation Scale=90%, Literacy Environment Checklist=88% within 1 point, and Literacy Activities Rating Scale=81%) and moderate to good internal consistency (Cronbach's alpha: Classroom Observation Scale=.90, Literacy Environment Checklist=.84, Literacy Activities Rating Scale=.66).<sup>12</sup>

The Caregiver Interaction Scale (CIS)<sup>13</sup> measures the sensitivity of teachers' interactions with children. It includes 26 items divided into 4 subscales: Sensitivity, Harshness, Detachment, and Permissiveness. Each item is scored on a 1-4 scale from "not at all" to "very much". Mean item

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<sup>a</sup> Current program guidelines for More at Four state that participating classrooms should score at least 5.0 on the ECERS-R. Classrooms scoring below the minimum standard are required to develop an Enhancement Plan and/or Intervention Plan.

scores ranging from 1.0 to 4.0 were calculated for each subscale. For the total score, scores on the three negative subscales (Harshness, Detachment, and Permissiveness) were reversed and a total mean item score was calculated whereby higher scores indicated more positive teacher-child interactions. The scale has demonstrated good interrater reliability of 80%.<sup>13</sup>

### **Procedures**

Observations of classroom quality were conducted each of the six school years. Data were collected in Cohort 1 pre-k (3/19/04-6/3/04), Cohort 1 kindergarten (3/2/05-5/11/05), Cohort 2 pre-k (3/9/06-5/2/06), Cohort 2 kindergarten (2/27/07-5/23/07), Cohort 3 pre-k (11/09/2007-5/14/2008), and Cohort 3 kindergarten (12/10/08-5/28/09). Across cohorts, observations took place on one to three separate days in each classroom, and typically lasted 4 to 5 hours per visit. In Cohort 3, the ELLCO and the ECERS were completed during one visit, and the CLASS and CIS were completed during a separate visit.

Data collectors were trained to an acceptable criterion of reliability prior to gathering data using each measure. Interrater reliability data were collected in the field for 20% of the observations for each measure. Reliability data for the ECERS-R yielded a kappa of .85 in Cohort 1 pre-k, .85 in Cohort 1 kindergarten, .74 in Cohort 2 pre-k, .69 in Cohort 2 kindergarten, .82 in Cohort 3 pre-k, and .69 in Cohort 3 kindergarten. For the ELLCO (available for Cohorts 2 and 3), reliability data from Cohort 2 pre-k yielded a kappa of .53 for the Classroom Observation Scale, and exact agreement scores of 84% on the Literacy Environment Checklist and 86% on the Literacy Activities Rating Scale. In Cohort 2 kindergarten, the reliability data for the ELLCO yielded a kappa of .48 for the Classroom Observation Scale, and exact agreement scores of 90% on the Literacy Environment Checklist and 85% on the Literacy Activities Rating Scale. In Cohort 3 pre-k, the ELLCO yielded a kappa of .41 for the Classroom Observation Scale, and exact agreement scores of 87% on the Literacy Environment Checklist and 86% on the Literacy Activities Rating Scale. In Cohort 3 kindergarten the ELLCO yielded a kappa of .45 for the Classroom Observation Scale, and exact agreement scores of 86% on the Literacy Environment Checklist and 81% on the Literacy Activities Rating Scale. Reliability data for the CIS (available for Cohorts 2 and 3) yielded a kappa of .77 in Cohort 2 pre-k, .76 in Cohort 2 kindergarten, .78 in Cohort 3 pre-k and .76 in Cohort 3 kindergarten. Finally, interrater reliability data from the CLASS measure (available for Cohort 3 only) resulted in a kappa of .61 in Cohort 3 pre-k and .67 in Cohort 3 kindergarten.

**Table 1. Classroom Observation Measures for More at Four Evaluation**

| Aspect of Classroom Quality   | Measure  | Cohort  | Scoring Range |
|-------------------------------|--|---------|---------------|
| Global classroom practices    | Early Childhood Environment Rating Scale-Revised (ECERS-R) | 1, 2, 3 | 1.0–7.0       |
| Instructional practices       | Classroom Assessment Scoring System (CLASS)                | 3       |               |
|                               | Emotional Support Domain                                   |         | 1.0–7.0       |
|                               | Classroom Organization Domain                              |         | 1.0–7.0       |
|                               | Instructional Support Domain                               |         | 1.0–7.0       |
| Language/literacy environment | Early Language and Literacy Classroom Environment (ELLCO)  | 2, 3    |               |
|                               | Classroom Observation Scale                                |         | 1–5           |
|                               | Literacy Environment Checklist                             |         | 0–41          |
|                               | Literacy Activities Rating Scale                           |         | 0–13          |
| Teacher-child interactions    | Caregiver Interaction Scale (CIS)                          | 2, 3    | 1.0–4.0       |

## CHILD OUTCOMES ASSESSMENTS METHODS

Three cohorts of children were included in the present report. Each cohort was followed for two years, during their pre-k year in the More at Four program and then into kindergarten. Cohort 1 participated in 2003-2004 (pre-k) and 2004-2005 (kindergarten). Cohort 2 participated in 2005-2006 (pre-k) and 2006-2007 (kindergarten). Cohort 3 participated in 2007-2008 (pre-k) and 2008-2009 (kindergarten). Individual assessments of children's language and literacy skills, math skills, general knowledge, and behavioral skills were conducted near the beginning and end of each school year to provide information about children's growth.

### Participants

Children were recruited from randomly selected More at Four classrooms across North Carolina and were assessed twice yearly in their pre-k and kindergarten years. For Cohort 1, the pre-k (2003-2004) sample included 514 children in the fall and 434 of the same children in spring, and the kindergarten (2004-2005) sample included 348 of these children in the fall and 328 in the spring. For Cohort 2, the pre-k (2005-2006) sample included 478 children in the fall and 445 in the spring, and the kindergarten (2006-2007) sample included 401 of these children in the fall and 394 in the spring. For Cohort 3, the pre-k (2007-2008) sample included 321 children in the fall and 302 in the spring, and the kindergarten (2008-2009) sample included 281 children in the fall and 277 children in the spring.

### Sample Selection

In the pre-k years, a random sample of classrooms was selected from those that began serving children by the beginning of September of the study year to insure that children had the opportunity for a full program year. In the kindergarten years, we attempted to locate and assess all child participants from the previous year in their kindergarten classrooms. Comparisons of children's characteristics in pre-k for those included in pre-k and kindergarten samples to all other children who attended More at Four at the same time can be found in Table 2 and Table 3.

Cohort 1. In the pre-k year of Cohort 1 (2003-2004), 58 More at Four classrooms were randomly selected. We attempted to recruit all More at Four children enrolled in the selected classrooms and obtained an overall consent rate of 85% (573/675). Children with parental consent who were absent or had withdrawn from the program at the time of data collection were not assessed, resulting in a sample of 514 children. In the kindergarten year of Cohort 1 (2004-2005), we re-assessed as many of the previous year's participants as we could find in all schools in North Carolina.

As seen in Table 2, comparisons of children in the pre-k sample to all other children in More at Four that year indicated that the two groups were similar in terms of the distributions on most demographic characteristics, including age, gender, poverty status, risk factor total, limited English proficiency, identified disability, chronic health condition, and family size. There were some differences in terms of race/ethnicity, service priority status, and attendance. The group of children in the pre-k sample had fewer African-American and Asian children, a slightly higher average service priority, and more days of attendance than those who were not assessed in pre-k.

As seen in Table 3, comparisons of pre-k characteristics of children in the kindergarten sample to all other children who attended More at Four in the same year indicated that the two groups were

similar in terms of the distributions on most demographic characteristics, including age, gender, poverty status, risk factor total, and individual risk factors. There were some differences between the two groups in terms of race/ethnicity, service priority status, attendance, and family size. The group of children who were assessed in kindergarten had fewer African-American children, more white and other/multiracial children, a slightly higher service priority, more days of attendance, and a larger family size than those who were not assessed in kindergarten.

Cohort 2. In the pre-k year of Cohort 2 (2005-2006), 57 classrooms were included. Of these, 53 were randomly selected and 4 additional classrooms participating in the North Carolina Department of Public Instruction Model Literacy Program were added to the sample. We attempted to recruit all More at Four children from each classroom up to a maximum of 10. In cases where more than 10 More at Four children had parental consent, 10 children were randomly selected to participate. The overall consent rate was 81% (687/846), with a final sample of 478 children. In the kindergarten year of Cohort 2 (2006-2007), we located as many of the previous year's participants as we could find in any school in North Carolina and re-assessed them in their kindergarten classrooms.

As seen in Table 2, comparisons of pre-k characteristics of children in the pre-k sample to all other children in More at Four that year indicated that the two groups were similar in terms of the distribution on most demographic characteristics, including age, gender, poverty status, risk factor total, identified disability, chronic health condition, and family size. There were some differences in terms of race/ethnicity, limited English proficiency, service priority status, and attendance. The group of children in the pre-k sample had fewer African-American and more Latino children, a higher proportion of children with limited English proficiency, a higher average service priority, and more days of attendance than those who were not included in the sample.

As seen in Table 3, comparisons of pre-k characteristics of children included in the kindergarten sample to those of all other children who attended More at Four in the same year indicated that the two groups were similar in terms of the distributions on most demographic characteristics, including age, gender, poverty status, risk factor total, identified disability, chronic health condition, and family size. There were some differences between the two groups in terms of race/ethnicity, limited English proficiency, developmental/educational need, service priority status, and attendance. The group of children in the kindergarten sample had fewer African-American children, more Hispanic/Latino children, more children with limited English proficiency and developmental/educational needs, a higher service priority, and more days of attendance than those who were not included in the kindergarten sample.

Cohort 3. In the pre-k year of Cohort 3 (2007-2008), 50 classrooms were randomly selected. We attempted to recruit all More at Four children from each classroom and obtained an overall consent rate of 91% (432/476). Data collectors generally spent one day in each class and assessed all children with parental consent who were present on that day, as time allowed. This resulted in a sample of 321 participating children. In the kindergarten year of Cohort 3 (2008-2009), we located as many of the previous year's participants as we could find in any school in North Carolina and re-assessed them in their kindergarten classrooms.

As seen in Table 2, comparisons of pre-k characteristics of children included in the pre-k sample to all other children in More at Four that year indicated that the two groups were similar on most demographic characteristics, including age, gender, race/ethnicity, poverty status, risk factor total, limited English proficiency, chronic health condition, and family size. There were some differences in terms of identified disability, developmental/ educational need, service priority status, and attendance. The group included in the sample had fewer children with an identified disability or developmental/educational need, a slightly higher average service priority, and more days of attendance than those who were not included in the sample.

As seen in Table 3, comparisons of pre-k characteristics of children in the kindergarten sample to all other children who had attended More at Four in the same year indicated that the two groups were similar in terms of the distributions on most demographic characteristics, including age, gender, race/ethnicity, eligibility for reduced price lunch, risk factor total, limited English proficiency, chronic health condition, developmental/educational need, service priority status, and family size. There were some differences between the two groups in terms of free lunch eligibility, identified disability and attendance. The group of children in the kindergarten sample had fewer children who were eligible for free lunch, fewer children with identified disabilities, and more days of attendance than those who were not in the sample.

### **Child Characteristics**

Cohort 1. In the pre-k year (2003-2004), the average child age was 4.5 years (range=4.0-5.0 years) at the time of the fall assessments and 5.1 years (range=4.6-5.6 years) at the time of the spring assessments. In the kindergarten year (2004-2005), the average child age was 5.6 years (range=5.0-6.1 years) at the time of the fall 2004 assessments and 6.0 years (range=5.5-6.5) at the spring 2005 assessments. At the time of study enrollment, half (50%) of the children were female and half were male; 37% were African-American, 36% Caucasian, 17% Latino, and 10% were from other ethnic/racial or multiracial groups.

Cohort 2. In the pre-k year (2005-2006), the average age of children was 4.5 years (range=4.0-5.1) at the time of the fall assessments and 5.1 years (range=4.5-5.6) at the time of the spring assessments. In the kindergarten year (2006-2007), the average child age was 5.6 years (range=5.0-6.1 years) at the time of the fall 2006 assessments and 6.1 years (range=5.5-6.6) at the spring 2007 assessments. At the time of study enrollment, half (50%) of the children were female and half were male; 30% were African-American, 33% Caucasian, 28% Latino, and 9% were from other ethnic/racial or multiracial groups.

Cohort 3. In the pre-k year (2007-2008), the average child age was 4.6 years (range=4.0-5.1 years) at the time of fall assessments and 5.1 years (range=4.6-5.6 years) at the time of spring assessments. In the kindergarten year, 2008-2009, the average child age was 5.5 years (range=4.9-6.0 years) at the time of fall assessments and 6.1 (range=5.5-6.6 years) at the time of spring assessments. At the time of study enrollment, slightly less than half (46%) of the children were female and slightly more than half (54%) were male; 36% were African-American, 29% Caucasian, 25% Latino, and 10% were from other ethnic/racial or multiracial groups.



## Procedures

Two sources of child outcomes data were gathered: Individual assessments of children's language and cognitive skills and teacher ratings of children's behavioral skills. Individual assessments of children were conducted in the fall and spring of each study year (pre-k and kindergarten). Child assessments were conducted on-site at each school or child care center by trained data collectors, and lead teachers were asked to complete rating scales following the assessments. In Cohort 2 and Cohort 3, children were administered the child assessment measures in English and children who spoke Spanish (n=120 in Cohort 2 pre-k; n=92 in Cohort 2 kindergarten; n=81 in Cohort 3 pre-k; n=68 in Cohort 3 kindergarten) were also administered the same measures in Spanish (if available) at a later date during the same assessment period. In Cohort 1, only English assessments were given.

For Cohort 1, assessment data from the pre-k year were collected in fall 2003 (9/20/03–11/7/03) and again in spring 2004 (4/28/04–6/10/04). Data from the kindergarten year were collected in fall 2004 (10/13/04–12/16/04) and in spring 2005 (4/1/05–5/31/05). For Cohort 2, assessment data from the pre-k year were collected in fall 2005 (9/22/05–11/22/05) and spring 2006 (4/26/06–6/8/06). Data from the kindergarten year were collected in fall 2006 (9/28/06–12/1/06) and in spring 2007 (4/19/07–6/5/07). For Cohort 3, assessment data from the pre-k year were collected in fall 2007 (10/15/2007–12/14/2007) and spring 2008 (4/28/2008–6/5/2008). Data from the kindergarten year were collected in fall 2008 (09/22/2008–11/25/2008) and spring 2009 (04/23/2009–06/09/2009).

## Measures

The child assessment battery consisted of seven measures appropriate for pre-k and kindergarten age children and focused on language and literacy skills, math skills, and general knowledge. Lead teachers also rated each child's behavioral skills in the classroom. See Table 4 for an overview of these measures. Note that the measurement battery used with Cohort 3 contained some measures that were different from those used in Cohorts 1 and 2. All measures used in Cohort 3 are presented in this report, and measures in common with Cohorts 1 and 2 are indicated. Some skill areas were assessed with different measures in earlier cohorts. (For a list of measures used in Cohorts 1 and 2, please refer to the Year 6 report.<sup>7</sup>) All children received the full English battery of measures, and children who also spoke Spanish were administered a second battery of the same measures in Spanish.

The Spanish assessment battery replicated the English assessment battery wherever possible, as noted in Table 4. It is important to note that for the standardized measures (receptive language, letter-word identification, applied problems), the English and Spanish versions differed somewhat in content, while for the remaining measures, the items on the English and Spanish versions were direct translations of one another. In addition, to adjust for children's language proficiency, all cohorts were administered three subscales of the English version of the PreLAS 2000<sup>14</sup> (Simon Says, Art Show, and The Human Body), an individual assessment designed to measure young children's oral language proficiency, including both receptive and expressive language ability. Fluency scores ranging from 1-5 were calculated, where 1=Non-English speaker, 2-3=Limited English speaker, and 4-5=Fluent English speaker. In addition, for Cohort 3, the Spanish version of the same scales of the PreLAS 2000<sup>15</sup> was used to measure Spanish-speaking children's language proficiency in Spanish. Fluency scores on this measure are analogous to scores on the English PreLAS (1=Non-Spanish speaker, 2-3=Limited Spanish speaker, and 4-5=Fluent Spanish speaker).

**Table 2. Pre-k Characteristics of More at Four Children in the Pre-k Sample and Non-sample Children**

| Factor <sup>a</sup>                                  | Cohort 1 Pre-k<br>2003-2004 (N=10,891) |                              | Cohort 2 Pre-k<br>2005-2006 (N=17,251) |                              | Cohort 3 Pre-k<br>2007-2008 (N=29,978) |                              |
|--|--|------------------------------|--|------------------------------|--|------------------------------|
|  | Sample<br>(n=514)                      | Non-<br>Sample<br>(n=10,377) | Sample<br>(n=478)                      | Non-<br>Sample<br>(n=16,773) | Sample<br>(n=321)                      | Non-<br>Sample<br>(n=29,657) |
| Child age on 10/16 of pre-k year <sup>b</sup> (Mean) | 4.5                                    | 4.5                          | 4.5                                    | 4.5                          | 4.5                                    | 4.5                          |
| Gender <sup>c</sup> (% female)                       | 50.4%                                  | 48.4%                        | 49.8%                                  | 49.0%                        | 46.1%                                  | 48.7%                        |
| Race/Ethnicity (%)                                   |  |                              |  |                              |  |                              |
| Black/African-American                               | 36.8%                                  | 43.1%*                       | 30.1%                                  | 36.6%*                       | 35.8%                                  | 36.1%                        |
| White/European-American                              | 36.4%                                  | 31.0%                        | 32.6%                                  | 34.2%                        | 29.3%                                  | 32.8%                        |
| Hispanic/Latino                                      | 16.9%                                  | 17.8%                        | 28.0%                                  | 21.7%*                       | 24.9%                                  | 22.1%                        |
| Other/Multiracial                                    | 9.1%                                   | 6.5%                         | 8.0%                                   | 6.1%                         | 8.4%                                   | 7.3%                         |
| Asian  | 0.8%                                   | 1.7%*                        | 1.3%                                   | 1.5%                         | 1.6%                                   | 1.7%                         |
| Poverty Status (%)                                   |  |                              |  |                              |  |                              |
| Free Lunch Eligible                                  | 75.1%                                  | 74.7%                        | 74.9%                                  | 73.6%                        | 70.1%                                  | 74.5%                        |
| Reduced-price Lunch Eligible                         | 15.6%                                  | 14.9%                        | 17.2%                                  | 16.3%                        | 18.7%                                  | 15.4%                        |
| Risk Total <sup>d</sup> (Mean)                       | 1.9                                    | 1.9                          | 2.0                                    | 1.9                          | 1.9                                    | 1.9                          |
| Individual Risk Factors <sup>e</sup> (%)             |  |                              |  |                              |  |                              |
| Limited English Proficiency                          | 17.3%                                  | 18.0%                        | 24.3%                                  | 18.4%*                       | 20.6%                                  | 18.2%                        |
| Identified Disability                                | 6.2%                                   | 7.1%                         | 4.0%                                   | 4.8%                         | 2.8%                                   | 5.6%*                        |
| Chronic Health Condition                             | 2.3%                                   | 3.4%                         | 4.8%                                   | 3.8%                         | 5.0%                                   | 4.9%                         |
| Developmental/Educational Need <sup>f</sup>          | --                                     | --                           | --                                     | --                           | 15.0%                                  | 21.2%**                      |
| Service Priority Status <sup>g</sup> (Mean)          | 1.8                                    | 2.0**                        | 2.2                                    | 2.7***                       | 2.8                                    | 3.1*                         |
| Total Days of Attendance (Mean)                      | 149.1                                  | 123.5***                     | 155.5                                  | 135.2***                     | 151.2                                  | 132.1***                     |
| Family Size <sup>h</sup> (Mean)                      | 4.1                                    | 4.0                          | 4.0                                    | 4.1                          | 3.9                                    | 4.0                          |

<sup>a</sup> Significant comparisons reported represent differences between the two groups based on t-tests or chi-square tests. Significance levels are \*p< .05, \*\*p< .01, \*\*\*p< .001.

<sup>b</sup> In 2003-2004, age was not reported for 1 child.

<sup>c</sup> In 2003-2004, gender was not reported for 49 children.

<sup>d</sup> In 2003-2004, risk total was not available for 58 children.

<sup>e</sup> In 2003-2004, individual risk factor information was not available for 58 children.

<sup>f</sup> This data was not available until 2007-2008.

<sup>g</sup> The categories for service priority status levels changed from 2003-2004 to 2005-2006, from 5 levels to 8 levels. Note that lower values represent higher service priority.

<sup>h</sup> In 2003-2004, family size was not reported for 15 children.

**Table 3. Pre-k Characteristics of More at Four Children in the Kindergarten Sample and Non-sample Children**

| Factor <sup>a</sup>                                  | Cohort 1 K<br>2004-2005 (n=10,891) |                              | Cohort 2 K<br>2006-2007 (n=17,251) |                              | Cohort 3 K<br>2008-2009 (n=29,978) |                              |
|--|------------------------------------|------------------------------|------------------------------------|------------------------------|------------------------------------|------------------------------|
|  | Sample<br>(n=348)                  | Non-<br>Sample<br>(n=10,543) | Sample<br>(n=403)                  | Non-<br>Sample<br>(n=16,848) | Sample<br>(n=281)                  | Non-<br>Sample<br>(n=29,697) |
| Child age on 10/16 of pre-k year <sup>b</sup> (Mean) | 4.5                                | 4.5                          | 4.5                                | 4.5                          | 4.5                                | 4.5                          |
| Gender <sup>c</sup> (% female)                       | 52.6%                              | 48.3%                        | 51.6%                              | 48.9%                        | 44.8%                              | 48.8%                        |
| Race/Ethnicity (%)                                   |                                    |                              |                                    |                              |                                    |                              |
| Black/African-American                               | 34.2%                              | 43.1%**                      | 29.0%                              | 36.6%**                      | 37.0%                              | 36.1%                        |
| White/European-American                              | 37.9%                              | 31.0%**                      | 35.2%                              | 34.1%                        | 29.2%                              | 32.8%                        |
| Hispanic/Latino                                      | 17.0%                              | 17.8%                        | 27.1%                              | 21.7%*                       | 24.2%                              | 22.1%                        |
| Other/Multiracial                                    | 9.8%                               | 6.5%*                        | 7.4%                               | 6.1%                         | 8.5%                               | 7.3%                         |
| Asian  | 1.2%                               | 1.6%                         | 1.2%                               | 1.5%                         | 1.1%                               | 1.7%                         |
| Poverty Status (%)                                   |                                    |                              |                                    |                              |                                    |                              |
| Free Lunch Eligible                                  | 73.9%                              | 74.7%                        | 74.9%                              | 73.6%                        | 68.7%                              | 74.5%*                       |
| Reduced-price Lunch Eligible                         | 15.5%                              | 14.9%                        | 16.6%                              | 16.3%                        | 19.6%                              | 15.4%                        |
| Risk Total <sup>d</sup> (Mean)                       | 1.9                                | 1.9                          | 2.0                                | 1.9                          | 1.9                                | 1.9                          |
| Individual Risk Factors <sup>e</sup> (%)             |                                    |                              |                                    |                              |                                    |                              |
| Limited English Proficiency                          | 18.1%                              | 18.0%                        | 22.6%                              | 18.5%*                       | 20.3%                              | 18.2%                        |
| Identified Disability                                | 5.8%                               | 7.1%                         | 4.0%                               | 4.8%                         | 2.9%                               | 5.6%*                        |
| Chronic Health Condition                             | 3.2%                               | 3.3%                         | 4.0%                               | 4.8%                         | 5.3%                               | 4.9%                         |
| Developmental/Educational Need <sup>f</sup>          | --                                 | --                           | 22.3%                              | 15.5%***                     | 16.7%                              | 21.2%                        |
| Service Priority Status <sup>g</sup> (Mean)          | 1.8                                | 2.0***                       | 2.1                                | 2.7***                       | 2.8                                | 3.1                          |
| Total Days of Attendance (Mean)                      | 159.1                              | 124.6***                     | 159.7                              | 135.2***                     | 156.3                              | 132.1***                     |
| Family Size <sup>h</sup> (Mean)                      | 4.3                                | 4.0*                         | 4.0                                | 4.1                          | 3.9                                | 4.0                          |

<sup>a</sup>Significant comparisons reported represent differences between the two groups based on t-tests or chi-square tests. Significance levels are \*p< .05, \*\*p< .01, \*\*\*p< .001.

<sup>b</sup> In Cohort 1, age was not reported for 1 child.

<sup>c</sup> In Cohort 1, gender not reported for 49 children.

<sup>d</sup> In Cohort 1, risk total was not available for 58 children.

<sup>e</sup> In Cohort 1, individual risk factor information was not available for 58 children.

<sup>f</sup> In Cohort 1, information on this risk factor was unavailable for most children.

<sup>g</sup> The categories for service priority status levels changed from 2003-2004 to 2005-2006, from 5 levels to 8 levels. Note that lower values represent higher service priority.

<sup>h</sup> In Cohort 1, family size was not reported for 15 children.

**Table 4. Child Outcome Measures for More at Four Evaluation**

| Measure   | Scoring                                  | Cohort  |
|---|--|---------|
| <b>Language and literacy</b>  |  |         |
| Receptive vocabulary  |  |         |
| English: Peabody Picture Vocabulary Test (PPVT) <sup>16,17</sup>  | Standardized measure,<br>Mean=100, SD=15 | 1, 2, 3 |
| Spanish: Test de Vocabulario en Imagenes Peabody (TVIP) <sup>18</sup>   | Standardized measure,<br>Mean=100, SD=15 | 2, 3    |
| Letters and Word Identification <sup>a</sup>  |  |         |
| English: Woodcock Johnson-III Tests of Achievement (WJ-III) <sup>20</sup><br>Letter Word Identification (Subtest 1) | Standardized measure,<br>Mean=100, SD=15 | 3       |
| Spanish: Bateria III Pruebas de Aprovechamiento <sup>21</sup><br>Identificación de Letras y Palabras (Prueba 1)     | Standardized measure,<br>Mean=100, SD=15 | 3       |
| Print Awareness <sup>b</sup>  |  |         |
| English: Test of Preschool Early Literacy <sup>23</sup> (TOPEL)<br>Print Knowledge (Subtest 1)                      | Standardized measure,<br>Mean=100, SD=15 | 3       |
| Phonological Awareness <sup>c</sup>   |  |         |
| English: Test of Preschool Early Literacy <sup>23</sup> (TOPEL)<br>Phonological Awareness (Subtest 3)               | Standardized measure,<br>Mean=100, SD=15 | 3       |
| <b>Math</b>   |  |         |
| Ability to solve practical math problems including counting, simple addition, and subtraction                       |  |         |
| English: Woodcock Johnson-III Tests of Achievement <sup>20</sup><br>Applied Problems Test (Test 10)                 | Standardized measure,<br>Mean=100, SD=15 | 1, 2, 3 |
| Spanish: Bateria III Pruebas de Aprovechamiento <sup>21</sup><br>Problemas Aplicados (Prueba 10)                    | Standardized measure,<br>Mean=100, SD=15 | 2, 3    |
| Ability to count in one-to-one correspondence   |  |         |
| English: Counting Bears Task <sup>24</sup>  | Range=0–40                               | 1, 2, 3 |
| Spanish: Counting Bears Task <sup>24</sup>  | Range=0–40                               | 2, 3    |
| <b>General knowledge</b>  |  |         |
| Knowledge of child's full name, age and birth date  |  |         |
| English: Social Awareness Task <sup>25</sup>  | Range=0–6                                | 1, 2, 3 |
| Spanish: Social Awareness Task <sup>25</sup>  | Range=0–6                                | 2, 3    |
| <b>Classroom behavior</b>   |  |         |
| Social skills (e.g., "follows your directions")   |  |         |
| English: Social Skills Rating System (SSRS) <sup>26</sup><br>Social Skills subscale                                 | Standardized measure,<br>Mean=100, SD=15 | 1, 2, 3 |
| Problem behaviors (e.g., "argues with others")  |  |         |
| English: Social Skills Rating System (SSRS) <sup>26</sup><br>Problem Behaviors subscale                             | Standardized measure,<br>Mean=100, SD=15 | 1, 2, 3 |

<sup>a</sup> These skills were measured by the Naming Letters Task<sup>19</sup> in Cohorts 1 and 2, but those data are not included in the present report.

<sup>b</sup> These skills were measured by the Story and Print Concepts Task<sup>22</sup> in Cohorts 1 and 2, but those data are not included in the present report.

<sup>c</sup> These skills were measured by the WJ III<sup>20</sup> Rhyming Subtest 21A in Cohorts 1 and 2, but those data are not included in the present report.

## Program Characteristics

The characteristics of the More at Four Program, including information about the local sites, the classrooms, and the children served in 2008-2009, along with comparisons to previous years, are described below.

Table 5 describes various program characteristics for the six most recent years of operation from 2003-2004 to 2008-2009. The More at Four Program has grown substantially each year since its inception in the 2001-2002 school year when it served 1,244 children, to 33,798 children served most recently in Year 8 (2008-2009). The number of sites, classrooms, and children served has increased considerably each year, yet the average class size, number of More at Four children per class, and proportion of More at Four children have remained similar. The program targets *unserved* children (both those never served and those currently unserved in a pre-k program at the time of enrollment), with 70% or more of the children entering the program each year being unserved at the time of their enrollment. The mean class size has been around 16 and the median class size each year has been below 18, the maximum class size allowable under the More at Four program guidelines. The majority of children enrolled in these classrooms have been served through More at Four, with slight increases over time, from nearly 70% in 2003-2004 to over 80% in 2008-2009.

The distribution of children by setting type is shown in Table 6. This distribution has remained similar over the past six years of program operations, with approximately half the children being served in public preschool sites and half in private sites (48%-52%). The majority of children served in private sites have been in for-profit child care settings, with smaller proportions served each year in nonprofit child care settings. The proportion in Head Start sites has increased over time, representing 20% of the children served in 2008-2009.

The characteristics of the More at Four classrooms have remained fairly similar over time. More at Four program guidelines recommend that classrooms use a research-based curriculum. As seen in Table 7, the majority of classrooms report using the Creative Curriculum<sup>27</sup> as their primary curriculum with smaller numbers reporting using OWL<sup>28</sup> or Bright Beginnings<sup>29</sup>, High/Scope<sup>30</sup>, Montessori<sup>31</sup>, or other approved curricula (including Bank Street<sup>32</sup>).

Teacher education levels have remained fairly constant over the life of the program. As seen in Table 8, nearly all teachers in public school settings have continued to have Bachelor's degrees or higher compared to approximately 50-60% of teachers in community settings. This percentage has shown some decline in community settings over time, although there was a slight increase in 2008-2009 from the previous year.

One area of the More at Four Program that has evidenced some change over the past six years is teacher licensure and credentials. Program guidelines require that the lead teacher have a B-K license (or the equivalent) within four years. As shown in Table 9, the percentage of teachers with a B-K license (or equivalent) has generally increased over the past six years in all settings, with higher rates of licensure in public school settings (from 68% to 87%) and lower rates in community school settings (from 17% to 23%). In conjunction with this pattern, the percentage of teachers with no

credential has declined over the past six years, especially in community settings (from 53% to 28%) as well as in public school settings (from 13% to 4%).

The demographic characteristics of the children served in the More at Four Program have remained fairly constant over time despite increases in the overall size of the program each year (see Table 10). Approximately half the children served are boys and half girls. The distributions by race/ethnicity have remained fairly constant over the past four years, with slightly more Latino and slightly fewer African-American children than in earlier years. Median household size has remained at 4, and the vast majority of the children's primary caregivers were employed. Having a parent in active military service became a qualifying characteristic in 2007-2008, and the percentage of children in that category has remained at 6%-7%.

The population of children participating in More at Four has continued to be at-risk and of high service priority status, as intended. As shown in Table 11, the children served are from low-income families, with about three-quarters eligible for free lunch, and most of the rest eligible for reduced-price lunch. The percentage of children with limited English proficiency has remained fairly constant at around 17%-19%, while the percentage with an indicated developmental/educational need has been increasing, reaching a high of 30% in the most recent year. Smaller percentages of children have been served each year with an identified disability (5%-7%) or a chronic health condition (3%-6%).

The service priority status of children who participated in More at Four is shown in Table 12. Unserved children are the highest priority group, and about 70%-80% of children participating in More at Four each year have been unserved at the time of enrollment. More than half of all children were in the highest priority category of never having been served previously. The percentage of children never served has shown a slight decline over the past six years, although the total number has increased significantly.

**Table 5. *More at Four Program Characteristics for Years 3–8***

| Program Characteristic  | Year 3<br>2003-2004 | Year 4<br>2004-2005 | Year 5<br>2005-2006 | Year 6<br>2006-2007 | Year 7<br>2007-2008 | Year 8<br>2008-2009 |
|---|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Total More at Four Sites<br>(Centers/Schools)                         | 628                 | 689                 | 790                 | 909                 | 1,178               | 1,285               |
| Total More at Four Classrooms   | 883                 | 1,027               | 1,218               | 1,439               | 2,148               | 2,322               |
| Total Children Served   | 10,891              | 13,515              | 17,251              | 20,468              | 29,978              | 33,798              |
| Total Children Not Served at<br>Time of Enrollment <sup>a</sup>       | 9,070<br>(83%)      | 10,583<br>(78%)     | 13,617<br>(79%)     | 15,558<br>(76%)     | 21,452<br>(72%)     | 24,450<br>(72%)     |
| Total Children Never<br>Previously Served <sup>a</sup>                | 6,788<br>(62%)      | 8,165<br>(60%)      | 10,325<br>(60%)     | 12,033<br>(59%)     | 16,353<br>(55%)     | 18,237<br>(54%)     |
| Average Class Size <sup>b</sup>                                       |                     |                     |                     |                     |                     |                     |
| Mean (SD)   | 16.3 (2.6)          | 16.1 (3.0)          | 16.2 (2.7)          | 16.0 (3.0)          | 15.8 (3.4)          | 15.7 (3.4)          |
| Median  | 17.6                | 17.7                | 17.6                | 17.6                | 17.2                | 17.0                |
| Average Number of More at<br>Four Children per Class <sup>c</sup>     |                     |                     |                     |                     |                     |                     |
| Mean (SD)   | 10.7 (5.8)          | 11.5 (5.5)          | 12.3 (4.9)          | 12.6 (4.7)          | 12.8 (4.4)          | 12.9 (4.4)          |
| Median  | 10.6                | 11.7                | 13.6                | 13.7                | 14.0                | 14.2                |
| Average Proportion of More at<br>Four Children per Class <sup>d</sup> |                     |                     |                     |                     |                     |                     |
| Mean (SD)   | 0.67 (0.3)          | 0.71 (0.3)          | 0.76 (0.2)          | 0.79 (0.3)          | 0.82 (0.2)          | 0.83 (0.2)          |
| Median  | 0.78                | 0.89                | 0.91                | 0.93                | 0.93                | 0.93                |

<sup>a</sup> These data are based on reported service priority status. The *not served* category includes the *never served* category as well as those previously served but unserved at the time of enrollment.

<sup>b</sup> These data are based on the monthly reported total class size, including both More at Four and non-More at Four children. The More at Four program guidelines indicate a maximum class size of 18. Classes are occasionally granted exceptions to exceed this class size.

<sup>c</sup> These data are based on the monthly reported number of More at Four children for each classroom.

<sup>d</sup> These data are based on the proportion of the monthly reported number of More at Four children and class size for each classroom.

**Table 6. Distribution of Children by Setting Type for Years 3-8**

| Setting Type <sup>a</sup>                | Year 3<br>2003-2004<br>n=10,712 <sup>b</sup> | Year 4<br>2004-2005<br>n=13,515 | Year 5<br>2005-2006<br>n=17,251 | Year 6<br>2006-2007<br>n=20,468 | Year 7<br>2007-2008<br>n=29,978 | Year 8<br>2008-2009<br>n=33,798 |
|--|--|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Public Preschool                         | 45.3%<br>(4,855)                             | 48.0%<br>(6,489)                | 46.9%<br>(8,098)                | 50.3%<br>(10,302)               | 49.5%<br>(14,847)               | 48.4%<br>(16,353)               |
| Private For-Profit Child Care            | 33.0%<br>(3,535)                             | 31.0%<br>(4,190)                | 29.4%<br>(5,064)                | 25.8%<br>(5,277)                | 22.6%<br>(6,780)                | 23.2%<br>(7,843)                |
| Private Non-Profit Child Care            | 11.5%<br>(1,236)                             | 11.0%<br>(1,487)                | 11.9%<br>(2,053)                | 11.1%<br>(2,274)                | 9.1%<br>(2,738)                 | 8.5%<br>(2,877)                 |
| Head Start                               | 6.7%<br>(721)                                | 8.0%<br>(1,081)                 | 9.6%<br>(1,657)                 | 10.1%<br>(2,075)                | 15.9%<br>(4,763)                | 16.7%<br>(5,636)                |
| Head Start Administered by Public School | 3.4%<br>(365)                                | 2.0%<br>(270)                   | 2.2%<br>(379)                   | 2.6%<br>(540)                   | 2.8%<br>(850)                   | 3.2%<br>(1,089)                 |

<sup>a</sup> Children who attended more than one More at Four site are represented by the setting type in which they were enrolled longest.

<sup>b</sup> In Year 3, 179 additional children were listed in setting type *Other*.



**Table 7. Primary Curriculum Type of More at Four Classrooms for Years 3–8**

| Curriculum Type                    | Year 3<br>2003-2004<br>n=871 <sup>a</sup> | Year 4<br>2004-2005<br>n=1,027 <sup>b</sup> | Year 5<br>2005-2006<br>n=1,218 | Year 6<br>2006-2007<br>n=1,439 | Year 7<br>2007-2008<br>n=2,148 | Year 8<br>2008-2009<br>n=2,322 |
|------------------------------------|---|---|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Creative Curriculum                | 76.5%<br>(666)                            | 79.0%<br>(811)                              | 77.9%<br>(949)                 | 79.7%<br>(1,147)               | 84.2%<br>(1,809)               | 86.7%<br>(2,014)               |
| OWL/Bright Beginnings <sup>c</sup> | 13.9%<br>(121)                            | 14.0%<br>(144)                              | 14.7%<br>(179)                 | 13.5%<br>(194)                 | 10.3%<br>(221)                 | 8.1%<br>(189)                  |
| High/Scope                         | 7.7%<br>(67)                              | 6.8%<br>(70)                                | 6.7%<br>(82)                   | 6.3%<br>(90)                   | 4.7%<br>(101)                  | 4.7%<br>(110)                  |
| Montessori                         | 0.5%<br>(4)                               | 0.4%<br>(4)                                 | 0.3%<br>(4)                    | 0.1%<br>(2)                    | 0.1%<br>(2)                    | 0.1%<br>(2)                    |
| Other <sup>d</sup>                 | 1.5%<br>(13)                              | --  | 0.3%<br>(4)                    | 0.4%<br>(5)                    | 0.7%<br>(15)                   | 0.3%<br>(7)                    |

<sup>a</sup> In Year 3, curriculum was not reported for 12 classrooms.

<sup>b</sup> In Year 4, 2 classes reported using two primary curricula, with 1 using Bright Beginnings and Creative Curriculum, and 1 using High/Scope and Creative Curriculum.

<sup>c</sup> The Bright Beginnings curriculum was changed to the OWL curriculum (Opening the World of Learning) in the 2004 edition.

<sup>d</sup> Allowable curricula in the *Other* category include Bank Street Curriculum.

**Table 8. Education Levels of More at Four Lead Teachers for Years 3–8**

| Teachers in<br>Pre-K Settings | Total n <sup>a</sup> | Education Level          |                |                 |                         |
|-------------------------------|----------------------|--------------------------|----------------|-----------------|-------------------------|
|                               |                      | MA/MS or higher<br>% (n) | BA/BS<br>% (n) | AA/AAS<br>% (n) | HS diploma/GED<br>% (n) |
| Year 3 2003-2004 <sup>b</sup> |                      |                          |                |                 |                         |
| Public School                 | 450                  | 17.1% (77)               | 77.1% (347)    | 2.4% (11)       | 3.3% (15)               |
| Community                     | 534                  | 4.1% (22)                | 62.5% (334)    | 25.3% (135)     | 8.1% (43)               |
| All                           | 984                  | 10.1% (99)               | 69.2% (681)    | 14.8% (146)     | 5.9% (58)               |
| Year 4 2004-2005              |                      |                          |                |                 |                         |
| Public School                 | 615                  | 15.1% (93)               | 83.6% (514)    | 1.0% (6)        | 0.3% (2)                |
| Community                     | 519                  | 4.2% (22)                | 61.3% (318)    | 29.5% (153)     | 5.0% (26)               |
| All                           | 1,133                | 10.2% (115)              | 73.3% (831)    | 14.0% (159)     | 2.5% (28)               |
| Year 5 2005-2006              |                      |                          |                |                 |                         |
| Public School                 | 725                  | 13.8% (100)              | 84.6% (613)    | 1.4% (10)       | 0.3% (2)                |
| Community                     | 620                  | 3.4% (21)                | 61.0% (378)    | 31.8% (197)     | 3.9% (24)               |
| All                           | 1,342                | 9.0% (121)               | 73.7% (989)    | 15.4% (206)     | 1.9% (26)               |
| Year 6 2006-2007              |                      |                          |                |                 |                         |
| Public School                 | 875                  | 15.1% (132)              | 84.0% (735)    | 0.8% (7)        | 0.1% (1)                |
| Community                     | 684                  | 4.4% (30)                | 57.9% (396)    | 34.2% (234)     | 3.5% (24)               |
| All                           | 1,555                | 10.4% (162)              | 72.5% (1128)   | 15.4% (240)     | 1.6% (25)               |
| Year 7 2007-2008              |                      |                          |                |                 |                         |
| Public School                 | 1,197                | 13.8% (165)              | 84.5% (1,012)  | 1.5% (18)       | 0.2% (2)                |
| Community                     | 990                  | 3.8% (38)                | 50.0% (495)    | 41.8% (414)     | 4.3% (43)               |
| All                           | 2,183                | 9.3% (203)               | 68.9% (1,503)  | 19.8% (432)     | 2.1% (45)               |
| Year 8 2008-2009              |                      |                          |                |                 |                         |
| Public School                 | 1,305                | 14.9% (195)              | 83.5% (1,090)  | 1.4% (18)       | 0.2% (2)                |
| Community                     | 1,109                | 4.2% (47)                | 52.4% (581)    | 41.3% (458)     | 2.1% (23)               |
| All                           | 2,409                | 10.0% (241)              | 69.2% (1,667)  | 19.8% (476)     | 1.0% (25)               |

<sup>a</sup> In some cases, the *n* for All is less than the sum of the *n*'s for Public School and Community because some teachers worked in both public and community settings (n= 1 in Year 4; n=3 in Year 5; n=4 in Years 6 and 7, and n=5 in Year 8).

<sup>b</sup> These data were not reported for 5 teachers.

**Table 9. Licensure/Credential Levels of More at Four Lead Teachers for Years 3–8**

|                               |                      | Highest Licensure/Credential <sup>b</sup>       |                                     |  |                            |                |               |
|-------------------------------|----------------------|---|-------------------------------------|--|----------------------------|----------------|---------------|
| Teachers in<br>Pre-K Settings | Total n <sup>a</sup> | B-K or<br>Preschool add-<br>on License<br>% (n) | Provisional<br>B-K License<br>% (n) | Other<br>Teacher's<br>License<br>% (n) | CDA<br>Credential<br>% (n) | NCECC<br>% (n) | None<br>% (n) |
| Year 3 2003-2004              |                      |   |                                     |  |                            |                |               |
| Public School                 | 454                  | 66.3% (301)                                     | 1.8% (8)                            | 18.3% (83)                             | 0.0% (0)                   | 1.1% (5)       | 12.6% (57)    |
| Community                     | 535                  | 15.7% (84)                                      | 0.7% (4)                            | 10.4% (56)                             | 3.9% (21)                  | 16.3% (87)     | 52.9% (283)   |
| All                           | 989                  | 38.9% (385)                                     | 1.2% (12)                           | 14.1% (139)                            | 2.1% (21)                  | 9.3% (92)      | 34.4% (340)   |
| Year 4 2004-2005              |                      |   |                                     |  |                            |                |               |
| Public School                 | 615                  | 75.3% (463)                                     | 0.2% (1)                            | 13.5% (83)                             | 0.7% (4)                   | 1.1% (7)       | 9.3% (57)     |
| Community                     | 519                  | 14.6% (76)                                      | 0.6% (3)                            | 9.1% (47)                              | 9.6% (50)                  | 28.9% (150)    | 37.2% (193)   |
| All                           | 1,133                | 47.5% (538)                                     | 0.4% (4)                            | 11.5% (130)                            | 4.8% (54)                  | 13.9% (157)    | 22.1% (250)   |
| Year 5 2005-2006              |                      |   |                                     |  |                            |                |               |
| Public School                 | 725                  | 77.8% (564)                                     | 5.1% (37)                           | 9.8% (71)                              | 0.6% (4)                   | 1.1% (8)       | 5.7% (41)     |
| Community                     | 620                  | 15.5% (96)                                      | 1.1% (7)                            | 8.5% (53)                              | 6.5% (40)                  | 31.5% (195)    | 36.9% (229)   |
| All                           | 1,342                | 49.1% (659)                                     | 3.3% (44)                           | 9.2% (124)                             | 3.3% (44)                  | 15.1% (202)    | 20.0% (269)   |
| Year 6 2006-2007              |                      |   |                                     |  |                            |                |               |
| Public School                 | 875                  | 79.8% (698)                                     | 6.3% (55)                           | 8.0% (70)                              | 0.6% (5)                   | 1.3% (11)      | 4.1% (36)     |
| Community                     | 684                  | 18.6% (127)                                     | 2.2% (15)                           | 7.5% (51)                              | 5.6% (38)                  | 32.3% (221)    | 33.9% (232)   |
| All                           | 1,555                | 52.9% (823)                                     | 4.5% (70)                           | 7.7% (120)                             | 2.8% (43)                  | 14.9% (231)    | 17.2% (268)   |
| Year 7 2007-2008              |                      |   |                                     |  |                            |                |               |
| Public School                 | 1,197                | 79.1% (947)                                     | 6.5% (78)                           | 7.2% (86)                              | 0.9% (11)                  | 1.1% (13)      | 5.2% (62)     |
| Community                     | 990                  | 15.5% (153)                                     | 1.9% (19)                           | 5.7% (56)                              | 6.5% (64)                  | 37.9% (375)    | 32.6% (323)   |
| All                           | 2,183                | 50.3% (1,098)                                   | 4.4% (96)                           | 6.5% (142)                             | 3.4% (75)                  | 17.7% (387)    | 17.6% (385)   |
| Year 8 2008-2009              |                      |   |                                     |  |                            |                |               |
| Public School                 | 1,305                | 80.5% (1,051)                                   | 6.4% (83)                           | 7.5% (98)                              | 0.6% (8)                   | 1.2% (16)      | 3.8% (49)     |
| Community                     | 1,109                | 19.7% (219)                                     | 3.3% (37)                           | 5.8% (64)                              | 4.4% (49)                  | 39.2% (435)    | 27.5% (305)   |
| All                           | 2,409                | 52.5% (1,265)                                   | 5.0% (120)                          | 6.7% (162)                             | 2.4% (57)                  | 18.7% (451)    | 14.7% (354)   |

<sup>a</sup> In some cases, the *n* for All is less than the sum of the *n*'s for Public School and Community because some teachers worked in both public and community settings (*n*= 1 in Year 4; *n*=3 in Year 5; *n*=4 in Years 6 and 7; and *n*=5 in Year 8).

<sup>b</sup> Note: B-K = Birth-Kindergarten, CDA = Child Development Associate, NCECC = North Carolina Early Childhood Credential. Other teacher's license includes non-early childhood licenses and licenses from other states.

**Table 10. Characteristics of All More at Four Children for Years 3–8**

| Characteristic                          | Year 3<br>2003-2004<br>n=10,891 | Year 4<br>2004-2005<br>n=13,515 | Year 5<br>2005-2006<br>n=17,251 | Year 6<br>2006-2007<br>n=20,468 | Year 7<br>2007-2008<br>n=29,978 | Year 8<br>2008-2009<br>n=33,798 |
|---|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Gender <sup>a</sup>                     |                                 |                                 |                                 |                                 |                                 |                                 |
| Male                                    | 51.5%<br>(5,588)                | 51.1%<br>(6,904)                | 51.0%<br>(8,803)                | 50.9%<br>(10,425)               | 51.3%<br>(15,374)               | 51.5%<br>(17,417)               |
| Female                                  | 48.5%<br>(5,254)                | 48.9%<br>(6,611)                | 49.0%<br>(8,448)                | 49.1%<br>(10,043)               | 48.7%<br>(14,604)               | 48.5%<br>(16,381)               |
| Race/Ethnicity                          |                                 |                                 |                                 |                                 |                                 |                                 |
| Black/African American                  | 42.8%<br>(4,658)                | 40.0%<br>(5,403)                | 36.4%<br>(6,277)                | 34.6%<br>(7,085)                | 36.1%<br>(10,818)               | 35.7%<br>(12,074)               |
| White/European American                 | 31.3%<br>(3,404)                | 33.2%<br>(4,480)                | 34.1%<br>(5,890)                | 35.0%<br>(7,166)                | 32.8%<br>(9,826)                | 33.9%<br>(11,447)               |
| Hispanic/Latino                         | 17.8%<br>(1,934)                | 18.9%<br>(2,543)                | 21.8%<br>(3,765)                | 22.7%<br>(4,652)                | 22.2%<br>(6,641)                | 21.3%<br>(7,200)                |
| Multiracial                             | 3.4%<br>(369)                   | 3.6%<br>(488)                   | 3.5%<br>(604)                   | 3.9%<br>(800)                   | 4.5%<br>(1,355)                 | 5.2%<br>(1,763)                 |
| Native American/Alaskan Native          | 3.0%<br>(328)                   | 2.8%<br>(375)                   | 2.4%<br>(407)                   | 2.0%<br>(406)                   | 2.6%<br>(764)                   | 2.2%<br>(745)                   |
| Asian                                   | 1.6%<br>(176)                   | 1.4%<br>(195)                   | 1.5%<br>(263)                   | 1.6%<br>(318)                   | 1.7%<br>(498)                   | 1.5%<br>(513)                   |
| Native Hawaiian/Pacific Islander        | 0.2%<br>(22)                    | 0.2%<br>(31)                    | 0.3%<br>(45)                    | 0.2%<br>(41)                    | 0.3%<br>(76)                    | 0.2%<br>(56)                    |
| Median Total Household Size             | 4                               | 4                               | 4                               | 4                               | 4                               | 4                               |
| Primary Caregiver Employed <sup>b</sup> | 69.3%<br>(7,535)                | 76.4%<br>(10,101)               | 79.3%<br>(13,385)               | 81.5%<br>(16,366)               | 81.9%<br>(23,338)               | 81.3%<br>(25,939)               |
| Military Parent <sup>c</sup>            | --                              | --                              | --                              | --                              | 6.4%<br>(1,916)                 | 6.8%<br>(2,284)                 |

<sup>a</sup> In Year 3, gender was not reported for 49 children, and household size was not reported for 105 families.

<sup>b</sup> Primary caregiver's employment was not reported for 14 families in Year 3; 294 families in Year 4; 369 families in Year 5; 378 families in Year 6; 1,485 families in Year 7; and 1,909 families in Year 8.

<sup>c</sup> Parent/guardian on active military duty was included as an option for More at Four eligibility beginning in Year 7.

**Table 11. Risk Factor Status of All More at Four Children for Years 3–8**

| Type of Risk Factor <sup>a</sup>  | Year 3<br>2003-2004<br>n=10,833 <sup>b</sup> | Year 4<br>2004-2005<br>n=13,515 | Year 5<br>2005-2006<br>n=17,251 | Year 6<br>2006-2007<br>n=20,468 | Year 7<br>2007-2008<br>n=29,978 | Year 8<br>2008-2009<br>n=33,798 |
|---|--|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Risk Factor Description   |  |                                 |                                 |                                 |                                 |                                 |
| Family Income   |  |                                 |                                 |                                 |                                 |                                 |
| 130% of poverty and below<br>(eligible for free lunch)                                  | 74.3%<br>(8,051)                             | 74.4%<br>(10,052)               | 73.6%<br>(12,694)               | 75.4%<br>(15,439)               | 74.5%<br>(22,323)               | 74.0%<br>(25,023)               |
| 131-185% of poverty<br>(eligible for reduced-price lunch)                               | 15.3%<br>(1,653)                             | 16.4%<br>(2,215)                | 16.4%<br>(2,820)                | 15.4%<br>(3,157)                | 15.4%<br>(4,626)                | 14.0%<br>(4,745)                |
| 186-200% of poverty   |  | 3.2%<br>(435)                   | 3.6%<br>(615)                   | 3.1%<br>(639)                   | 3.0%<br>(900)                   | 2.7%<br>(899)                   |
| 201-250% of poverty   | 10.4%<br>(1,129) <sup>c</sup>                | 4.8%<br>(642)                   | 4.8%<br>(827)                   | 4.0%<br>(812)                   | 4.5%<br>(1,346)                 | 4.0%<br>(1,359)                 |
| >251% of poverty  |  | 1.1%<br>(150)                   | 1.7%<br>(295)                   | 2.1%<br>(421)                   | 2.6%<br>(783)                   | 5.2%<br>(1,772)                 |
| Limited English Proficiency   |  |                                 |                                 |                                 |                                 |                                 |
| Family and/or child speak limited or no<br>English in the home                          | 18.1%<br>(1,958)                             | 17.1%<br>(2,317)                | 18.6%<br>(3,209)                | 17.5%<br>(3,573)                | 18.2%<br>(5,461)                | 19.1%<br>(6,467)                |
| Developmental/Educational Need <sup>d</sup>   |  |                                 |                                 |                                 |                                 |                                 |
| Developmental/educational need<br>indicated by performance on a<br>developmental screen | ---  | 10.8%<br>(1,459)                | 15.6%<br>(2,694)                | 16.6%<br>(3,395)                | 21.2%<br>(6,339)                | 30.2%<br>(10,216)               |
| Identified Disability   |  |                                 |                                 |                                 |                                 |                                 |
| Child has an IEP  | 7.0%<br>(762)                                | 5.7%<br>(765)                   | 4.8%<br>(831)                   | 4.5%<br>(914)                   | 5.6%<br>(1,674)                 | 6.0%<br>(2,042)                 |
| Chronic Health Condition(s)   |  |                                 |                                 |                                 |                                 |                                 |
| Child is chronically ill/medically fragile  | 3.3%<br>(361)                                | 5.5%<br>(746)                   | 4.7%<br>(818)                   | 4.2%<br>(867)                   | 4.9%<br>(1,460)                 | 5.2%<br>(1,759)                 |

<sup>a</sup> In Year 3, 75% of sites chose to use Model I guidelines and 25% chose to use Model II guidelines for determining risk levels. Only Model I was available in previous years and only Model II was available in subsequent years. See Year 3 evaluation report for further information.

<sup>b</sup> In Year 3, risk factor data were not reported for 58 children.

<sup>c</sup> In Year 3, only one category for family income level above 185% of poverty was distinguished under Model I.

<sup>d</sup> Developmental/educational need was included as a risk factor for children in all income categories beginning in Year 4. In Year 3, developmental/educational need was an additional risk factor using Model II guidelines, only for children whose family incomes were above 250% of poverty (6 children were identified in this category).

**Table 12. Service Priority Status at Time of Enrollment for All More at Four Children for Years 3–8**

|   | Year 3<br>2003-2004<br>n=10,891 | Year 4<br>2004-2005<br>n=13,515 | Year 5<br>2005-2006<br>n=17,251 | Year 6<br>2006-2007<br>n=20,468 | Year 7<br>2007-2008<br>n=29,978 | Year 8<br>2008-2009<br>n=33,798 |
|---|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| <b>Service Priority Status<sup>a</sup></b>  |                                 |                                 |                                 |                                 |                                 |                                 |
| <b>Unserved</b>   |                                 |                                 |                                 |                                 |                                 |                                 |
| Children who have never been served in any preschool or child care setting.   | 62.3%<br>(6,788)                | 60.4%<br>(8,165)                | 59.9%<br>(10,325)               | 58.8%<br>(12,033)               | 54.6%<br>(16,353)               | 54.0%<br>(18,237)               |
| Children who are currently unserved (previously in preschool or child care setting). <sup>b</sup>                                     | 20.9%<br>(2,282)                | 17.9%<br>(2,418)                | 13.2%<br>(2,270)                | 13.1%<br>(2,676)                | 13.1%<br>(3,938)                | 16.1%<br>(5,433)                |
| Children served for 5 months or less in the year prior to service in the More at Four program in any preschool or child care setting. | -- <sup>c</sup>                 | 3.2%<br>(436)                   | 5.9%<br>(1,022)                 | 4.1%<br>(849)                   | 3.9%<br>(1,161)                 | 2.3%<br>(780)                   |
| <b>Underserved</b>  |                                 |                                 |                                 |                                 |                                 |                                 |
| Children who are in unregulated child care that does not meet the More at Four Pre-K standards.                                       | -- <sup>c</sup>                 | 4.5%<br>(608)                   | 4.2%<br>(716)                   | 4.0%<br>(814)                   | 5.3%<br>(1,592)                 | 5.9%<br>(1,981)                 |
| Children who are in a regulated preschool or child care setting, but are not receiving subsidy.                                       | 5.6%<br>(606)                   | 3.4%<br>(463)                   | 2.1%<br>(364)                   | 2.4%<br>(497)                   | 3.6%<br>(1,072)                 | 4.5%<br>(1,510)                 |
| Other children, including those in pre-kindergartens or child care settings that do not meet More at Four program standards.          | 11.2%<br>(1,215)                | 10.5%<br>(1,425)                | 7.2%<br>(1,236)                 | 7.2%<br>(1,474)                 | 8.5%<br>(2,556)                 | 4.6%<br>(1,570)                 |
| <b>Exception</b>  |                                 |                                 |                                 |                                 |                                 |                                 |
| Children served by this site as 3-year-olds.  | -- <sup>c</sup>                 | -- <sup>c</sup>                 | 7.6%<br>(1,318)                 | 10.4%<br>(2,125)                | 11.0%<br>(3,306)                | 12.7%<br>(4,287)                |

<sup>a</sup> These categories are defined according to the Year 8 program requirements. Note that all children served must first meet the eligibility requirements as defined in the More at Four Program Guidelines.

<sup>b</sup> This category included two separate categories indicating whether or not children were eligible for subsidy prior to Year 7.

<sup>c</sup> The program guidelines for service priority status did not distinguish this category in this year.

## Results

### CLASSROOM QUALITY

The quality of educational practices in pre-k and kindergarten classrooms was examined in a sample of classrooms in each of the three cohorts. Data were gathered about multiple dimensions of educational practices in each classroom. The developmental appropriateness of classroom practices was measured using the ECERS-R 9 (Cohorts 1, 2, and 3), the quality of instructional practices was measured using the CLASS<sup>11</sup> (Cohort 3), the quality of the literacy environment was measured using the ELLCO<sup>12</sup> (Cohorts 2 and 3), and the sensitivity of teacher-child interactions was measured using the CIS<sup>13</sup> (Cohorts 2 and 3). See Methods Section for more information about the classroom quality data collection.

### Classroom Practices

Information on the global quality of classroom practices as measured by the ECERS-R was gathered in both pre-k and kindergarten for all three cohorts. The ECERS-R is scored on a 1-7 scale from inadequate to excellent, with scores from 1.0-2.9 considered low quality, 3.0-4.9 considered medium quality, and 5.0-7.0 considered in the high quality range. The average ECERS-R total, subscale, and item scores for all three cohorts are presented in Table 13, and comparisons by grade (pre-k vs. kindergarten) and cohort are shown in Table 14.

Comparisons by grade indicated that the quality of classroom practices was significantly higher in the pre-k than in the kindergarten classrooms for the total and subscale scores in all three cohorts. (See Table 27 in the appendix for complete regression results.) The distribution of pre-k and kindergarten total scores combined across all three cohorts can be seen in Figure 1. Scores tended to be higher in the pre-k classes than in the kindergarten classes. Out of the 206 pre-k classrooms observed, only 3% (6) had scores in the low range, 52% (107) had scores in the medium range, and 45% (93) had scores in the high range. Conversely, out of the 268 kindergarten classrooms observed, 53% (141) scored in the low range, 47% (127) in the medium range, and none in the high range.

Figure 2 shows the average subscale scores for pre-k and kindergarten classrooms across all cohorts. Similarly to the total child item scores, the average subscale scores were higher in pre-k than they were in kindergarten in all areas. Pre-k and kindergarten differences were especially large for the Activities and Program Structure subscales. In general, the scores in both pre-k and kindergarten tended to be relatively higher for aspects of quality related to Language-Reasoning and Interaction, and lowest for aspects of the classroom environment related to Personal Care Routines. Scores were also high for Program Structure in pre-k, but not in kindergarten.

In addition, the quality of practices was higher in both pre-k and kindergarten for Cohort 1 than the more recent cohorts. In Cohort 1, pre-k scores were in the high range, and kindergarten scores were in the medium range. In Cohorts 2 and 3, the average pre-k scores were in the medium range and the kindergarten scores were in the low range. However, pre-k classroom quality was higher on several subscales in Cohort 3 than in Cohort 2 and kindergarten classroom quality was higher on one subscale in Cohort 2 than in Cohort 3.

## Instructional Practices

Information was gathered about the quality of instructional practices for Cohort 3 only using the CLASS, an observational measure of the instructional interactions among teachers and children. The CLASS, which is scored on a 7-point scale from low (1-2) to middle (3-5) to high (6-7), includes three domains—Emotional Support (teachers' abilities to support social and emotional functioning in the classroom), Classroom Organization (classroom processes related to organizing and managing children's behavior, time, and attention), and Instructional Support (ways in which curriculum is implemented to support cognitive and language development).

As seen in Table 15, there were higher scores in pre-k than in kindergarten for the domains of Emotional Support and Instructional Support. There was no effect of grade for the domain of Classroom Organization. (See Table 28 in the appendix for regression results.) Similarly, individual dimension scores in the Emotional Support and Instructional Support domains tended to be higher in pre-k than in kindergarten, with the exception of the negative climate dimension, which was approximately equal in kindergarten and in pre-k. In addition, scores on Emotional Support and Classroom Organization were higher than those for Instructional Support in both pre-k and kindergarten.

Most of the pre-k classes (82%) and almost half of the kindergarten classes (48%) scored in the high range on Emotional Support, with the remainder scoring in the middle range and none in the low range (see Figure 3). For Classroom Organization, half of the pre-k classes (50%) and more than one-third of the kindergarten classes (36%) scored in the high range, with the remainder scoring in the middle range and none in the low range (see Figure 4). In contrast, for Instructional Support, about three-quarters of the pre-k classes (74%) and just over half of the kindergarten classes (56%) scored in the middle range, with the remainder scoring in the low range and none in the high range (see Figure 5).

## Literacy Environment

Observations of the quality of the literacy environment were conducted for Cohorts 2 and 3 using the ELLCO. The ELLCO consists of three major parts: the Classroom Observation Scale, the Literacy Environment Checklist, and the Literacy Activities Rating Scale. The Classroom Observation Scale is the primary quality indicator on the ELLCO and includes two subscales: General Classroom Environment and Language, Literacy and Curriculum. Items on this scale are scored from 1 to 5, representing quality levels from deficient (1) to basic (3) to exemplary (5).

As seen in Table 16, ELLCO scores remained fairly stable over time across the two cohorts, although there were some differences in scores for pre-k and kindergarten classes. (See Table 29 in the appendix for regression results.) Classroom Observation Scale scores were higher in the pre-k classes (3.7 and 3.6) than in the kindergarten classes (3.4 and 3.3). As seen in Figure 6, most of the pre-k and kindergarten classes scored in the middle range on the Classroom Observation Scale, with a higher proportion of pre-k classes scoring within the upper point of the scale. The Literacy Environment Checklist scores were also higher in pre-k (29.2 and 28.4) than in kindergarten (23.5 and 24.8). As seen in Figure 7, more of the pre-k classes scored in the upper range of the scale, while more of the kindergarten classes scored in the middle range of the scale. Conversely, Literacy



Activities Rating Scale scores were higher for kindergarten (8.4 and 9.4) than for pre-k (8.2 and 7.1). As seen in Figure 8, a higher proportion of kindergarten classes scored in the upper range of the scale, while a higher proportion of pre-k classes scored in the middle range.

There were no differences in the Classroom Observation Scale or the Literacy Environment Checklist between Cohorts 2 and 3. There were differences in the Literacy Activities Rating Scale, however, with pre-k classes scoring higher in Cohort 2 compared to Cohort 3, while the reverse was true for kindergarten classes with Cohort 2 scoring higher than Cohort 3.

## **Teacher-Child Interactions**

Observations of the quality of teacher-child interactions were conducted in the pre-k and kindergarten classrooms for Cohorts 2 and 3 using the CIS. The CIS rates positive interactions with children (Sensitivity subscale) as well as negative interactions with children (Harshness, Detachment, and Permissiveness subscales). Scores can range from 1.0-4.0, with higher scores indicating more positive interactions in the case of the total score and Sensitivity subscale, and higher scores indicating more negative interactions in the case of the Harshness, Detachment and Permissiveness subscales.

As seen in Table 17, average total scores on the CIS indicate that teachers were fairly sensitive in their interactions with children, with means at or above 3.1 in pre-k for both cohorts. However, there were some differences between pre-k and kindergarten with both cohorts scoring higher in pre-k than in kindergarten. Overall, the majority of classes received scores of 3.0 or above in both pre-k (86%) and kindergarten (68%), as seen in Figure 9. (For regression results, see Table 30 in the appendix.)

A similar pattern of more positive interactions in pre-k than in kindergarten classrooms was also found for CIS subscale scores as seen in Table 17 and Figure 10. Scores on the Sensitivity subscale (representing positive interactions) were higher in pre-k than in k and scores on Harshness and Detachment (both representing negative interactions) were lower in pre-k than in kindergarten. Scores on the Permissiveness subscale were not different in pre-k and in kindergarten. In addition, some differences between cohorts were found for kindergarten, but not for pre-k, although no clear pattern emerged, with higher scores on Sensitivity and Detachment and lower scores on Permissiveness for Cohort 3 compared to Cohort 2.

## **Factors Predicting Classroom Quality**

Associations with classroom quality were examined across cohorts for two factors which could be measured in common across pre-k and kindergarten, total class size and teacher qualifications in early childhood education (whether or not the teacher had a B-K license or the equivalent). As expected, the average class size was smaller in pre-k (Cohort 1=14.1, Cohort 2=14.9, Cohort 3= 14.7) than in kindergarten (Cohort 1=18.5, Cohort 2=18.3, and Cohort 3=18.8). The proportion of teachers reporting having a B-K license or the equivalent was higher in pre-k (Cohort 1=46%, Cohort 2=61%, Cohort 3=60%) than in kindergarten (Cohort 1=18%, Cohort 2=10%, and Cohort 3=9%).

We examined whether these factors were associated with the different measures of classroom quality, controlling for any differences by cohort. Four dimensions of classroom quality were examined in separate analyses: 1) Classroom practices as measured by the total child items score on the ECERS-R (all cohorts pre-k and kindergarten); 2) Sensitivity of teacher-child interactions as measured by the CIS total score (Cohorts 2 and 3 pre-k and kindergarten); 3) Literacy environment as measured by the ELLCO Classroom Observation Score (Cohorts 2 and 3 pre-k and kindergarten); and 4) Quality of instructional practices were measured by the CLASS Emotional Support, Classroom Organization, and Instructional Support domains (Cohort 3 only).

Classrooms serving fewer children in kindergarten had higher quality classroom practices (ECERS-R child items score) [ $F(1, 4,259)=8.38, p<.0001$ ]. Teacher qualifications were not related to ECERS-R child item scores in pre-k or kindergarten. Classrooms where teachers had a B-K license or the equivalent in pre-k had higher quality literacy environments [ $F(1, 3,101)=2.80, p<.04$ ]. Class size was not related to the quality of the literacy environment in either pre-k or kindergarten. Neither factor (class size or teacher qualifications) was related to sensitivity of teacher-child interactions (CIS) or quality of instructional practices (CLASS) in pre-k or kindergarten.

## Analysis Strategies

### Grade and Cohort Differences

Analyses of variance were conducted to test whether there were differences in pre-k vs. kindergarten classrooms for scores on each of the classroom quality measures (ECERS-R, ELLCO, CIS), and whether these differences varied by cohort (for measures gathered across multiple cohorts). A separate linear model was estimated for each quality summary score. Predictors included grade (pre-k, kindergarten), cohort (1, 2, 3) when applicable, and the interaction of grade and cohort. Separate analyses were conducted for each aspect of classroom quality: 1) classroom practices, as measured by the total child items score on the ECERS-R (cohorts 1, 2, and 3); 2) literacy environment, as measured by the Classroom Observation Scale score on the ELLCO (cohorts 2 and 3); 3) sensitivity of teacher-child interactions, as measured by the total score on the CIS (cohorts 2 and 3), and 4) classroom instructional practices, as measured by the Emotional Support, Classroom Organization, and Instructional Support domains on the CLASS (Cohort 3). Omnibus tests of cohort effects were followed by pairwise comparisons of mean differences by cohort when significant.

### Factors Predicting Classroom Quality

We examined whether two factors, teacher early childhood qualifications and class size, predicted classroom quality. We conducted a separate series of regression models for pre-k and kindergarten quality measures using a general linear models approach. Predictors included teacher early childhood education qualifications (a 2-level categorical variable measuring whether or not the teacher had a B-K license or the equivalent) and total class size (including both More at Four and non-More at Four children). These analyses adjusted for cohort (1, 2, 3) when applicable. Separate analyses were conducted for each aspect of classroom quality: 1) classroom practices, as measured by the total child items score on the ECERS-R; 2) literacy environment, as measured by the Classroom Observation Scale score on the ELLCO; 3) sensitivity of teacher-child interactions, as measured by the total score on the CIS, and 4) classroom instructional practices, as measured by the Emotional Support, Classroom Organization, and Instructional Support domains on the CLASS.

**Table 13. Quality of Classroom Practices (ECERS-R) in More at Four and Kindergarten**

| Item Description <sup>a</sup>                  | Cohort 1             |                      | Cohort 2             |                      | Cohort 3             |                      |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|  | Pre-k                | K                    | Pre-k                | K                    | Pre-k                | K                    |
|  | 2003-2004            | 2004-2005            | 2005-2006            | 2006-2007            | 2007-2008            | 2008-2009            |
|  | n=99                 | n=97                 | n=57                 | n=96                 | n=50                 | n=75                 |
|  | Mean (SD)            | Mean (SD)            | Mean (SD)            | Mean (SD)            | Mean (SD)            | Mean (SD)            |
|  | Range                | Range                | Range                | Range                | Range                | Range                |
| Total Child Items Score <sup>b</sup>           | 5.3 (0.7)<br>3.0-6.6 | 3.2 (0.8)<br>1.5-4.7 | 4.2 (0.7)<br>2.7-5.8 | 2.8 (0.6)<br>1.6-4.6 | 4.4 (1.0)<br>2.5-6.4 | 2.7 (0.6)<br>1.4-3.8 |
| Space and Furnishings Subscale                 | 5.0 (0.9)<br>3.0-6.8 | 3.5 (0.7)<br>1.4-6.4 | 3.9 (0.7)<br>2.6-5.8 | 3.1 (0.5)<br>1.8-4.5 | 4.5 (1.1)<br>2.4-6.4 | 3.0 (0.7)<br>1.1-4.6 |
| Indoor space                                   | 5.0 (1.9)<br>1-7     | 4.6 (2.2)<br>1-7     | 4.6 (1.6)<br>2-7     | 4.6 (1.9)<br>1-7     | 4.5 (1.8)<br>1-7     | 4.5 (2.2)<br>1-7     |
| Furniture for routine care, play, and learning | 6.4 (1.2)<br>2-7     | 6.1 (1.5)<br>1-7     | 5.1 (1.5)<br>2-7     | 5.2 (1.4)<br>2-7     | 5.9 (1.7)<br>2-7     | 5.7 (1.8)<br>1-7     |
| Furnishings for relaxation and comfort         | 5.5 (1.6)<br>3-7     | 2.8 (1.3)<br>1-7     | 5.0 (1.8)<br>1-7     | 2.6 (1.2)<br>1-4     | 5.3 (1.7)<br>1-7     | 2.7 (1.2)<br>1-6     |
| Room arrangement for play                      | 5.6 (1.7)<br>1-7     | 4.3 (1.7)<br>1-7     | 3.3 (1.7)<br>2-7     | 3.3 (1.4)<br>1-7     | 5.3 (2.1)<br>2-7     | 2.9 (1.8)<br>1-7     |
| Space for privacy                              | 5.2 (1.9)<br>2-7     | 3.5 (1.0)<br>1-7     | 3.5 (1.9)<br>2-7     | 3.0 (1.1)<br>1-7     | 5.0 (2.0)<br>2-7     | 2.4 (1.1)<br>1-4     |
| Child-related display                          | 4.9 (1.5)<br>3-7     | 3.1 (0.9)<br>2-6     | 4.6 (1.5)<br>2-7     | 3.1 (0.8)<br>2-5     | 5.1 (1.5)<br>1-7     | 3.1 (0.9)<br>1-5     |
| Space for gross motor play <sup>c</sup>        | 3.5 (2.0)<br>1-7     | 1.8 (1.1)<br>1-6     | 1.8 (1.3)<br>1-7     | 1.2 (0.5)<br>1-3     | 2.0 (1.3)<br>1-7     | 1.5 (1.1)<br>1-5     |
| Gross motor equipment                          | 3.9 (2.3)<br>1-7     | 1.8 (0.7)<br>1-7     | 3.2 (2.0)<br>1-7     | 1.9 (0.6)<br>1-5     | 3.0 (2.0)<br>1-7     | 1.6 (0.6)<br>1-5     |
| Personal Care Routines Subscale                | 4.9 (1.1)<br>2.3-7.0 | 2.4 (1.0)<br>1.0-5.0 | 2.8 (0.9)<br>1.3-5.7 | 2.1 (0.6)<br>1.0-4.2 | 3.1 (1.2)<br>1.5-6.2 | 1.8 (0.5)<br>1.0-3.0 |
| Greeting/departing <sup>d</sup>                | 6.6 (0.9)<br>4-7     | 4.0 (2.3)<br>1-7     | 5.5 (1.9)<br>1-7     | 3.9 (1.7)<br>1-7     | 5.9 (1.6)<br>1-7     | 4.5 (2.2)<br>1-7     |

<sup>a</sup> Total and subscale scores could range from 1.0-7.0; item scores could range from 1-7.

<sup>b</sup> The Total Child Items Score includes items from all subscales on the ECERS-R except the Parents and Staff subscale (items 1-37).

<sup>c</sup> For this item in 2006-2007, n=95.

<sup>d</sup> For this item in 2004-2005, n=96 and in 2006-2007, n=95.

**Table 13. Quality of Classroom Practices (ECERS-R) in More at Four and Kindergarten**

| Item Description <sup>a</sup>              | Cohort 1             |                      | Cohort 2             |                      | Cohort 3             |                      |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|  | Pre-k                | K                    | Pre-k                | K                    | Pre-k                | K                    |
|  | 2003-2004            | 2004-2005            | 2005-2006            | 2006-2007            | 2007-2008            | 2008-2009            |
|  | n=99                 | n=97                 | n=57                 | n=96                 | n=50                 | n=75                 |
|  | Mean (SD)            | Mean (SD)            | Mean (SD)            | Mean (SD)            | Mean (SD)            | Mean (SD)            |
|  | Range                | Range                | Range                | Range                | Range                | Range                |
| Meals/snacks <sup>b</sup>                  | 4.0 (2.1)<br>1-7     | 1.3 (1.0)<br>1-7     | 1.8 (1.1)<br>1-6     | 1.0 (0.2)<br>1-2     | 1.9 (1.8)<br>1-7     | 1.0 (0.0)<br>1-1     |
| Nap/rest <sup>c</sup>                      | 5.0 (2.0)<br>2-7     | 1.5 (1.1)<br>1-4     | 2.8 (2.0)<br>1-7     | 2.1 (1.5)<br>1-6     | 3.7 (2.3)<br>1-7     | 1.1 (0.3)<br>1-2     |
| Toileting/diapering <sup>d</sup>           | 5.1 (2.5)<br>1-7     | 3.2 (2.7)<br>1-7     | 2.4 (1.6)<br>1-7     | 2.3 (1.9)<br>1-7     | 2.1 (1.9)<br>1-7     | 1.2 (0.8)<br>1-7     |
| Health practices                           | 5.2 (2.0)<br>1-7     | 2.1 (1.2)<br>1-6     | 2.7 (1.7)<br>1-7     | 2.1 (0.7)<br>1-7     | 2.6 (1.6)<br>1-7     | 1.5 (0.5)<br>1-2     |
| Safety practices <sup>e</sup>              | 3.9 (2.5)<br>1-7     | 2.0 (1.7)<br>1-7     | 1.4 (0.6)<br>1-4     | 1.3 (0.5)<br>1-2     | 2.1 (1.8)<br>1-7     | 1.1 (0.6)<br>1-5     |
| Language-Reasoning Subscale                | 5.8 (0.9)<br>3.3-7.0 | 4.1(1.3)<br>1.5-6.3  | 4.8 (0.8)<br>3.3-7.0 | 3.5 (1.0)<br>1.8-6.3 | 5.2 (1.3)<br>1.8-7.0 | 3.3 (1.1)<br>1.0-5.8 |
| Books and pictures                         | 5.5 (1.6)<br>2-7     | 3.0 (1.3)<br>1-7     | 4.3 (1.3)<br>1-7     | 3.0 (0.9)<br>1-4     | 4.6 (1.5)<br>1-7     | 2.3 (1.0)<br>1-4     |
| Encouraging children to communicate        | 6.6 (0.8)<br>4-7     | 4.3 (2.4)<br>1-7     | 6.3 (1.0)<br>4-7     | 4.0 (2.0)<br>1-7     | 6.1 (1.5)<br>1-7     | 3.4 (2.0)<br>1-7     |
| Using language to develop reasoning skills | 4.9 (1.5)<br>2-7     | 4.5 (1.4)<br>1-7     | 4.1 (1.2)<br>2-7     | 3.5 (1.0)<br>1-7     | 4.8 (1.7)<br>1-7     | 3.8 (1.3)<br>1-7     |
| Informal use of language                   | 5.9 (1.4)<br>2-7     | 4.5 (2.1)<br>1-7     | 4.4 (1.1)<br>3-7     | 3.5 (1.6)<br>1-7     | 5.5 (1.5)<br>2-7     | 3.8 (1.8)<br>1-7     |
| Activities Subscale                        | 4.9 (0.8)<br>2.8-6.6 | 2.4 (0.7)<br>1.1-4.4 | 4.5 (0.9)<br>2.2-6.9 | 2.2 (0.5)<br>1.4-4.2 | 4.6 (1.1)<br>2.3-7.0 | 2.2 (0.4)<br>1.2-3.2 |
| Fine motor                                 | 5.6 (1.5)<br>3-7     | 3.1 (1.6)<br>1-7     | 5.2 (1.4)<br>2-7     | 2.6 (1.0)<br>1-6     | 5.3 (1.6)<br>2-7     | 2.3 (0.8)<br>1-4     |

<sup>a</sup> Total and subscale scores could range from 1.0-7.0; item scores could range from 1-7.

<sup>b</sup> For this item in 2005-2006, n=56.

<sup>c</sup> For this item in 2003-2004, n=91; in 2004-2005, n=61; in 2005-2006, n=56; in 2006-2007, n=45; and in 2008-2009, n=23.

<sup>d</sup> For this item in 2006-2007, n=95.

<sup>e</sup> For this item in 2006-2007, n=95.

**Table 13. *Quality of Classroom Practices (ECERS-R) in More at Four and Kindergarten***

| Item Description <sup>a</sup>                      | Cohort 1             |                      | Cohort 2             |                      | Cohort 3             |                      |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|  | Pre-k                | K                    | Pre-k                | K                    | Pre-k                | K                    |
|  | 2003-2004            | 2004-2005            | 2005-2006            | 2006-2007            | 2007-2008            | 2008-2009            |
|  | n=99                 | n=97                 | n=57                 | n=96                 | n=50                 | n=75                 |
|  | Mean (SD)            | Mean (SD)            | Mean (SD)            | Mean (SD)            | Mean (SD)            | Mean (SD)            |
|  | Range                | Range                | Range                | Range                | Range                | Range                |
| Art  | 5.0 (1.7)<br>1-7     | 2.8 (1.0)<br>1-7     | 4.4 (1.5)<br>2-7     | 2.8 (0.7)<br>2-4     | 4.8 (1.7)<br>2-7     | 2.5 (0.8)<br>1-4     |
| Music/movement                                     | 4.3 (1.6)<br>2-7     | 2.1 (1.0)<br>1-7     | 4.7 (1.5)<br>2-7     | 1.9 (0.6)<br>1-4     | 4.0 (1.6)<br>1-7     | 1.9 (0.5)<br>1-4     |
| Blocks   | 4.5 (1.1)<br>3-7     | 1.8 (1.0)<br>1-4     | 4.3 (1.2)<br>1-7     | 1.7 (0.9)<br>1-4     | 4.7 (1.5)<br>1-7     | 1.8 (0.8)<br>1-4     |
| Sand/water <sup>b</sup>                            | 4.8 (1.4)<br>1-7     | 2.1 (1.3)<br>1-6     | 5.4 (1.6)<br>1-7     | 1.8 (1.2)<br>1-6     | 5.2 (1.5)<br>1-7     | 1.8 (1.0)<br>1-4     |
| Dramatic play                                      | 5.0 (1.4)<br>2-7     | 2.0 (1.0)<br>1-4     | 4.6 (1.1)<br>2-7     | 2.0 (0.8)<br>1-4     | 4.5 (1.2)<br>2-7     | 1.8 (0.6)<br>1-4     |
| Nature/science                                     | 4.5 (1.7)<br>2-7     | 1.7 (1.0)<br>1-4     | 4.3 (1.4)<br>2-7     | 1.6 (0.9)<br>1-4     | 4.3 (1.6)<br>2-7     | 1.6 (0.7)<br>1-4     |
| Math/number <sup>c</sup>                           | 4.9 (1.5)<br>1-7     | 3.0 (1.2)<br>1-4     | 4.5 (1.4)<br>1-7     | 2.9 (1.3)<br>1-7     | 4.9 (1.7)<br>1-7     | 2.4 (1.0)<br>1-4     |
| Use of TV, video, and/or computers <sup>d</sup>    | 5.2 (2.0)<br>1-7     | 2.7 (2.3)<br>1-7     | 3.7 (2.0)<br>1-7     | 2.4 (2.1)<br>1-7     | 4.0 (2.5)<br>1-7     | 3.0 (2.0)<br>1-7     |
| Promoting acceptance of diversity                  | 5.1 (1.4)<br>2-7     | 3.0 (0.7)<br>1-5     | 4.2 (1.8)<br>2-7     | 2.6 (0.8)<br>1-4     | 4.2 (1.4)<br>2-7     | 2.9 (0.7)<br>1-4     |
| Interaction Subscale                               | 6.2 (1.0)<br>1.4-7.0 | 4.7 (1.8)<br>1.0-7.0 | 4.8 (1.2)<br>2.0-7.0 | 3.8 (1.5)<br>1.0-6.8 | 4.7 (1.7)<br>1.6-7.0 | 4.0 (1.7)<br>1.0-6.8 |
| Supervision of gross motor activities <sup>e</sup> | 5.1 (1.7)<br>1-7     | 3.3 (1.9)<br>1-7     | 4.2 (1.4)<br>2-7     | 3.0 (1.4)<br>1-6     | 4.2 (2.0)<br>1-7     | 2.9 (1.9)<br>1-7     |
| General supervision of children <sup>f</sup>       | 6.3 (1.4)<br>1-7     | 5.2 (2.1)<br>1-7     | 4.6 (2.0)<br>1-7     | 4.1 (1.7)<br>1-7     | 4.2 (2.5)<br>1-7     | 3.8 (2.1)<br>1-7     |

<sup>a</sup> Total and subscale scores could range from 1.0-7.0; item scores could range from 1-7.

<sup>b</sup> For this item in 2006-2007, n=95.

<sup>c</sup> For this item in 2006-2007, n=95.

<sup>d</sup> For this item in 2003-2004, n=90 and in 2005-2006, n=55; in 2007-2008, n=43; and in 2008-2009, n=74.

<sup>e</sup> For this item in 2003-2004, n=98; in 2004-2005, n=87; in 2006-2007, n=83; and in 2008-2009, n=70.

<sup>f</sup> For this item: 2006-2007, n=95.

**Table 13. Quality of Classroom Practices (ECERS-R) in More at Four and Kindergarten**

| Item Description <sup>a</sup>                          | Cohort 1             |                      | Cohort 2             |                      | Cohort 3             |                      |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|  | Pre-k                | K                    | Pre-k                | K                    | Pre-k                | K                    |
|  | 2003-2004            | 2004-2005            | 2005-2006            | 2006-2007            | 2007-2008            | 2008-2009            |
|  | n=99                 | n=97                 | n=57                 | n=96                 | n=50                 | n=75                 |
|  | Mean (SD)            | Mean (SD)            | Mean (SD)            | Mean (SD)            | Mean (SD)            | Mean (SD)            |
|  | Range                | Range                | Range                | Range                | Range                | Range                |
| Discipline <sup>b</sup>                                | 6.2 (1.2)<br>1-7     | 4.6 (2.5)<br>1-7     | 4.6 (1.6)<br>1-7     | 3.8 (1.9)<br>1-7     | 4.6 (2.1)<br>1-7     | 4.3 (2.1)<br>1-7     |
| Staff-child interactions                               | 6.6 (1.2)<br>1-7     | 5.1 (2.5)<br>1-7     | 5.3 (2.0)<br>1-7     | 4.2 (2.3)<br>1-7     | 5.2 (2.4)<br>1-7     | 4.8 (2.4)<br>1-7     |
| Interactions among children <sup>c</sup>               | 6.6 (1.0)<br>1-7     | 5.2 (2.5)<br>1-7     | 5.4 (1.7)<br>2-7     | 3.8 (2.2)<br>1-7     | 5.5 (1.9)<br>1-7     | 4.0 (2.4)<br>1-7     |
| Program Structure Subscale                             | 6.2 (0.9)<br>3.8-7.0 | 3.1 (0.9)<br>1.0-4.8 | 4.4 (1.4)<br>1.7-7.0 | 2.6 (0.9)<br>1.3-6.8 | 4.9 (1.2)<br>2.3-7.0 | 2.5 (1.0)<br>1.0-5.5 |
| Schedule   | 6.0 (1.6)<br>2-7     | 1.7 (0.6)<br>1-4     | 2.9 (1.5)<br>2-7     | 1.9 (0.9)<br>1-7     | 3.7 (1.7)<br>1-7     | 1.7 (0.7)<br>1-4     |
| Free play  | 6.3 (1.3)<br>1-7     | 2.2 (1.3)<br>1-4     | 4.8 (2.3)<br>2-7     | 2.2 (1.1)<br>1-7     | 4.9 (2.1)<br>2-7     | 1.8 (1.1)<br>1-7     |
| Group time   | 6.3 (1.2)<br>3-7     | 3.2 (2.0)<br>1-7     | 4.9 (1.9)<br>1-7     | 2.5 (1.6)<br>1-7     | 5.9 (1.4)<br>3-7     | 2.6 (1.8)<br>1-6     |
| Provisions for children with disabilities <sup>d</sup> | 6.1 (1.2)<br>1-7     | 5.6 (1.2)<br>1-7     | 5.8 (1.5)<br>2-7     | 3.9 (1.7)<br>1-7     | 5.3 (1.8)<br>1-7     | 5.3 (1.7)<br>2-7     |
| Parents and Staff Subscale <sup>e</sup>                |                      |                      |                      |                      |                      |                      |
| Staff interaction <sup>f</sup>                         | 6.6 (1.1)<br>1-7     | 6.0 (1.7)<br>1-7     | 6.4 (1.1)<br>2-7     | 5.6 (1.5)<br>1-7     | 5.9 (1.5)<br>2-7     | 5.5 (2.0)<br>1-7     |

<sup>a</sup> Total and subscale scores could range from 1.0-7.0; item scores could range from 1-7.

<sup>b</sup> For this item: 2006-2007, n=95.

<sup>c</sup> For this item in 2004-2005, n=96.

<sup>d</sup> For this item in 2003-2004, n=70; in 2004-2005, n=80; in 2005-2006, n=40; in 2006-2007, n=79; in 2007-2008, n=35; and in 2008-2009, n=47.

<sup>e</sup> Only one item from this subscale was gathered in kindergarten classrooms.

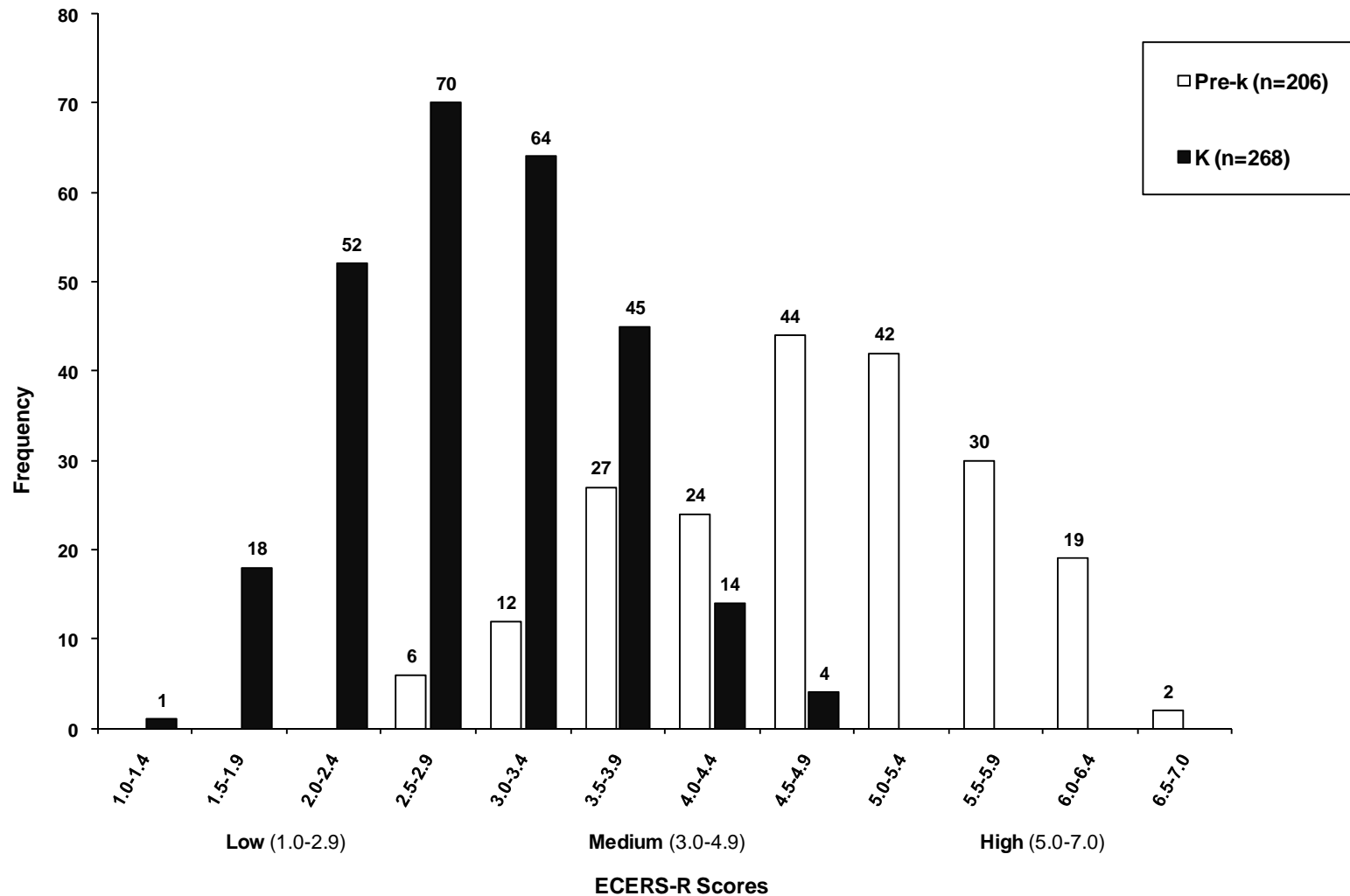
<sup>f</sup> For this item in 2004-2005, n=91; in 2006-2007, n=83; in 2007-2008, n=49; and in 2008-2009, n=71.

**Table 14. Grade and Cohort Effects for More at Four and Kindergarten Classroom Practices (ECERS-R)<sup>a</sup>**

| ECERS-R Item Description | Cohort 1<br>Means |                 | Cohort 2<br>Means |                 | Cohort 3<br>Means |                 | Grade<br>Effect | Pre-k<br>Cohort<br>Effect | K<br>Cohort<br>Effect |
|--------------------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-----------------|---------------------------|-----------------------|
|                          | Pre-K             | K               | Pre-K             | K               | Pre-K             | K               |                 |                           |                       |
|                          | 2003-04<br>n=99   | 2004-05<br>n=97 | 2005-06<br>n=57   | 2006-07<br>n=96 | 2007-08<br>n=50   | 2008-09<br>n=75 |                 |                           |                       |
| Total Child Items Score  | 5.3               | 3.2             | 4.2               | 2.8             | 4.4               | 2.7             | P>K             | C1>C3>C2                  | C1>C2, C3             |
| Subscales                |                   |                 |                   |                 |                   |                 |                 |                           |                       |
| Space and Furnishings    | 5.0               | 3.5             | 3.9               | 3.1             | 4.5               | 3.0             | P>K             | C1>C3>C2                  | C1>C2, C3             |
| Personal Care Routines   | 4.9               | 2.4             | 2.8               | 2.1             | 3.1               | 1.8             | P>K             | C1>C2, C3                 | C1>C2>C3              |
| Language-Reasoning       | 5.8               | 4.1             | 4.8               | 3.5             | 5.2               | 3.3             | P>K             | C1>C3>C2                  | C1>C2, C3             |
| Activities               | 4.9               | 2.4             | 4.5               | 2.2             | 4.6               | 2.2             | P>K             | C1>C2, C3                 | NS                    |
| Interaction              | 6.2               | 4.7             | 4.8               | 3.8             | 4.7               | 4.0             | P>K             | C1>C2, C3                 | C1>C2, C3             |
| Program Structure        | 6.2               | 3.1             | 4.4               | 2.6             | 4.9               | 2.5             | P>K             | C1>C3>C2                  | C1>C2, C3             |

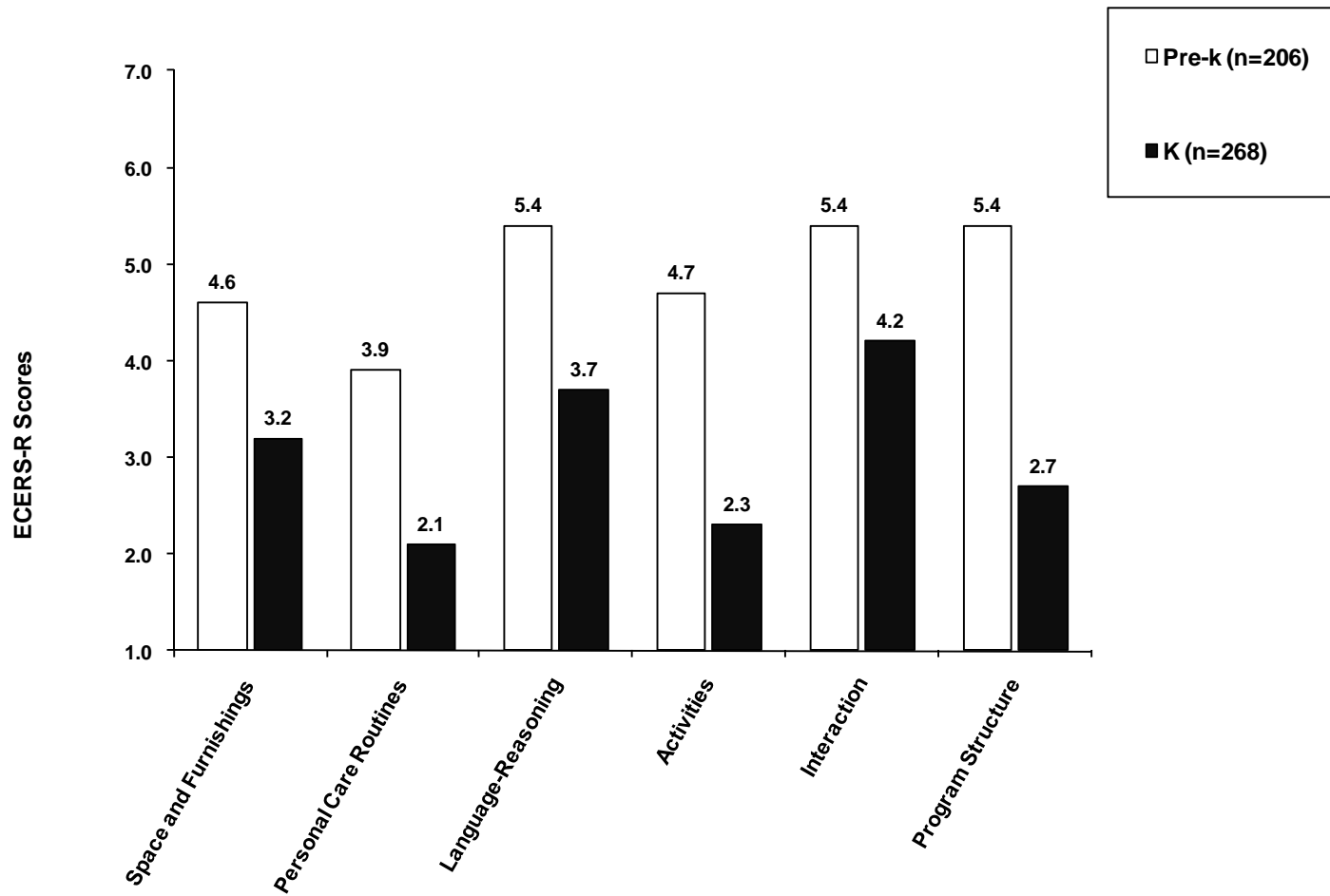
<sup>a</sup> Significance levels are based on analyses of variance testing for effects by grade (pre-k vs. kindergarten), and cohort (pre-k or kindergarten; 1 vs. 2 vs. 3).

**Figure 1. Classroom Practices Scores in More at Four and Kindergarten (Combined Cohorts)**  
(ECERS-R Total Child Items)





**Figure 2. Classroom Practices Mean Subscale Scores in More at Four and Kindergarten (Combined Cohorts)**



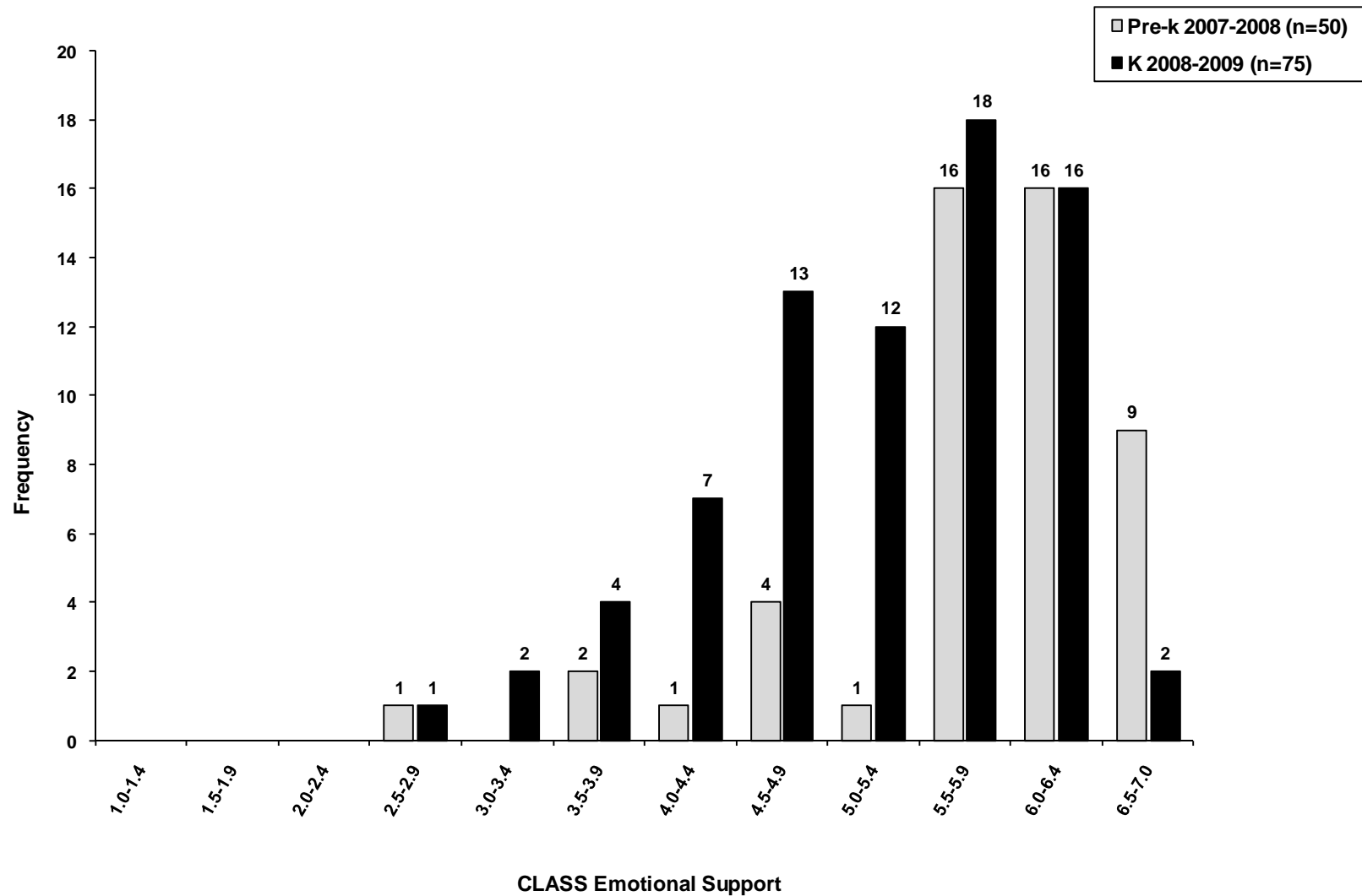
**Table 15. Quality of Instructional Practices (CLASS) in More at Four and Kindergarten**

| Item Description <sup>a</sup>         | Cohort 3  |           | Grade Effect |
|---------------------------------------|-----------|-----------|--------------|
|                                       | Pre-k     | K         |              |
|                                       | 2007-2008 | 2008-2009 |              |
|                                       | n=50      | n=75      |              |
|                                       | Mean (SD) | Mean (SD) |              |
|                                       | Range     | Range     |              |
| Emotional Support Domain <sup>b</sup> | 5.8 (0.9) | 5.2 (0.9) | P>K          |
|                                       | 2.8-7.0   | 2.6-6.7   |              |
| Positive climate                      | 5.7 (1.1) | 5.4 (1.2) |              |
|                                       | 2.5-7.0   | 2.0-7.0   |              |
| Negative climate                      | 1.5 (0.7) | 1.6 (0.6) |              |
|                                       | 1.0-4.8   | 1.0-4.0   |              |
| Teacher sensitivity                   | 5.5 (1.0) | 5.0 (1.2) |              |
|                                       | 2.4-7.0   | 1.8-7.0   |              |
| Regard for student perspectives       | 5.3 (0.9) | 4.1 (1.1) |              |
|                                       | 2.5-7.0   | 1.8-6.0   |              |
| Classroom Organization Domain         | 5.3 (0.8) | 5.2 (0.8) | NS           |
|                                       | 2.9-6.7   | 3.2-6.7   |              |
| Behavior management                   | 5.4 (1.0) | 5.4 (1.0) |              |
|                                       | 2.5-6.8   | 3.0-7.0   |              |
| Productivity                          | 5.6 (0.8) | 5.4 (0.8) |              |
|                                       | 3.2-7.0   | 3.2-6.8   |              |
| Instructional learning formats        | 4.9 (0.8) | 4.7 (0.9) |              |
|                                       | 2.6-6.4   | 2.5-7.0   |              |
| Instructional Support Domain          | 3.0 (0.9) | 2.7 (0.9) | P>K          |
|                                       | 1.4-5.3   | 1.3-4.7   |              |
| Concept development                   | 2.8 (1.0) | 2.6 (0.7) |              |
|                                       | 1.2-5.0   | 1.4-4.0   |              |
| Quality of feedback                   | 3.3 (1.1) | 2.9 (1.0) |              |
|                                       | 1.2-6.3   | 1.2-5.3   |              |
| Language modeling                     | 3.0 (0.9) | 2.6 (1.0) |              |
|                                       | 1.2-5.5   | 1.2-5.0   |              |

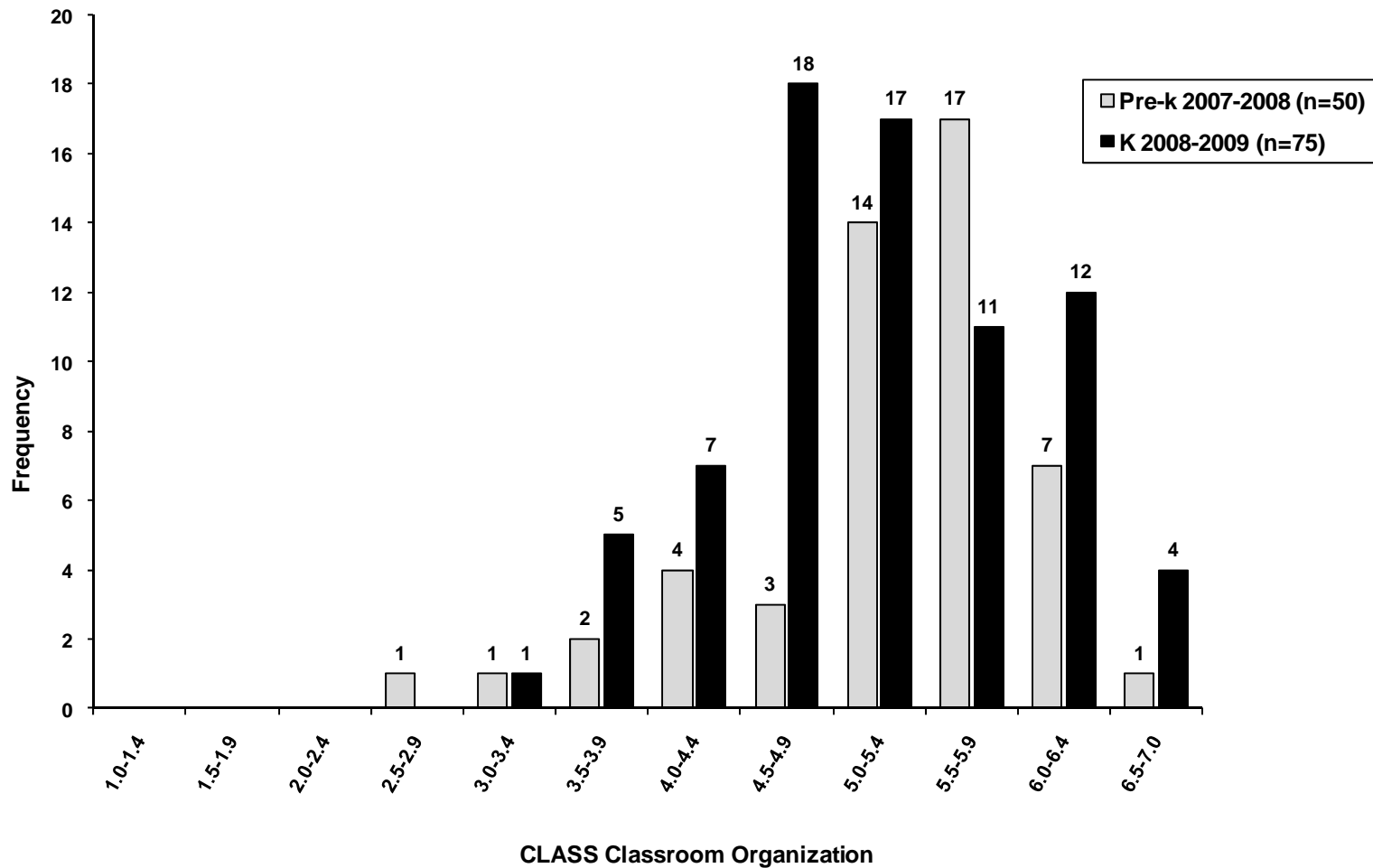
<sup>a</sup> Domain and dimension mean scores could range from 1.0-7.0.

<sup>b</sup> Scoring is reversed for the Negative Climate Dimension before it is averaged into the Emotional Support Domain.

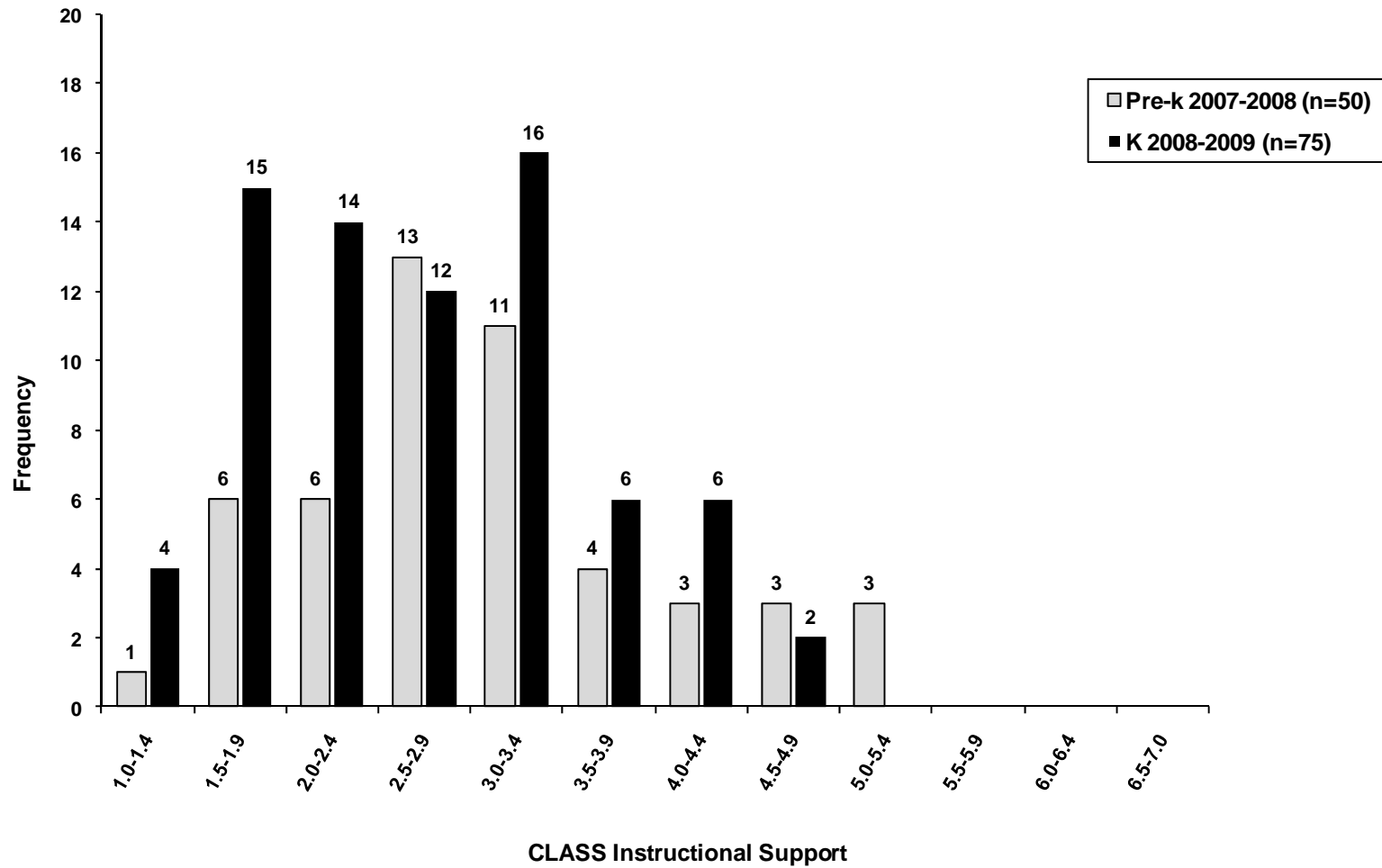
**Figure 3. Instructional Practices Scores (CLASS) Emotional Support Domain (Cohort 3)**



**Figure 4. Instructional Practices Scores (CLASS) Classroom Organization Domain (Cohort 3)**



**Figure 5. Instructional Practices Scores (CLASS) Instructional Support Domain (Cohort 3)**



**Table 16. Quality of the Literacy Environment (ELLCO) in More at Four and Kindergarten**

| Item Description (Total Possible Range)                             | Cohort 2          |                   | Cohort 3          |                   | Grade Effect | Pre-K Cohort Effect | K Cohort Effect |
|---|-------------------|-------------------|-------------------|-------------------|--------------|---------------------|-----------------|
|   | Pre-K             | K                 | Pre-K             | K                 |              |                     |                 |
|   | 2005-2006<br>n=57 | 2006-2007<br>n=96 | 2007-2008<br>n=50 | 2008-2009<br>n=75 |              |                     |                 |
|   | Mean (SD)         | Mean (SD)         | Mean (SD)         | Mean (SD)         |              |                     |                 |
| Classroom Observation Scale<br>(Mean Item Score) (1-5)              | 3.7 (0.6)         | 3.4 (0.5)         | 3.6 (0.5)         | 3.3 (0.6)         | P>K          | NS                  | NS              |
| General Classroom Environment<br>(1-5)                              | 4.0 (0.7)         | 3.2 (0.7)         | 3.9 (0.6)         | 3.2 (0.8)         |              |                     |                 |
| Language, Literacy and<br>Curriculum <sup>a</sup> (1-5)             | 3.6 (0.7)         | 3.5 (0.5)         | 3.5 (0.5)         | 3.4 (0.5)         |              |                     |                 |
| Literacy Environment Checklist<br>(Total Score) <sup>b</sup> (0-41) | 29.2 (5.8)        | 23.5 (4.4)        | 28.4 (6.3)        | 24.8 (4.0)        | P>K          | NS                  | NS              |
| Book Area (0-3)   | 2.3 (0.7)         | 1.8 (1.1)         | 2.4 (0.8)         | 1.7 (1.2)         |              |                     |                 |
| Book Selection <sup>c</sup> (0-8)                                   | 7.5 (0.7)         | 7.4 (1.0)         | 7.5 (0.9)         | 7.6 (0.9)         |              |                     |                 |
| Book Use <sup>d</sup> (0-9)   | 5.2 (2.7)         | 2.7 (2.0)         | 5.2 (2.5)         | 3.3 (1.9)         |              |                     |                 |
| Writing Materials (0-8)   | 6.2 (1.1)         | 5.9 (1.1)         | 6.3 (1.5)         | 6.1 (1.2)         |              |                     |                 |
| Writing Around the Room (0-13)                                      | 8.0 (2.9)         | 5.6 (2.1)         | 7.0 (2.8)         | 6.1 (1.9)         |              |                     |                 |
| Literacy Activities Rating Scale<br>(Total Score) (0-13)            | 8.2 (2.3)         | 8.4 (2.4)         | 7.1 (2.2)         | 9.4 (2.1)         | K>P          | C2>C3               | C3>C2           |
| Book Reading (0-8)  | 5.3 (1.8)         | 4.9 (2.1)         | 3.9 (1.7)         | 5.8 (1.8)         |              |                     |                 |
| Writing (0-5)   | 2.9 (1.6)         | 3.5 (1.1)         | 3.2 (1.3)         | 3.5 (1.1)         |              |                     |                 |

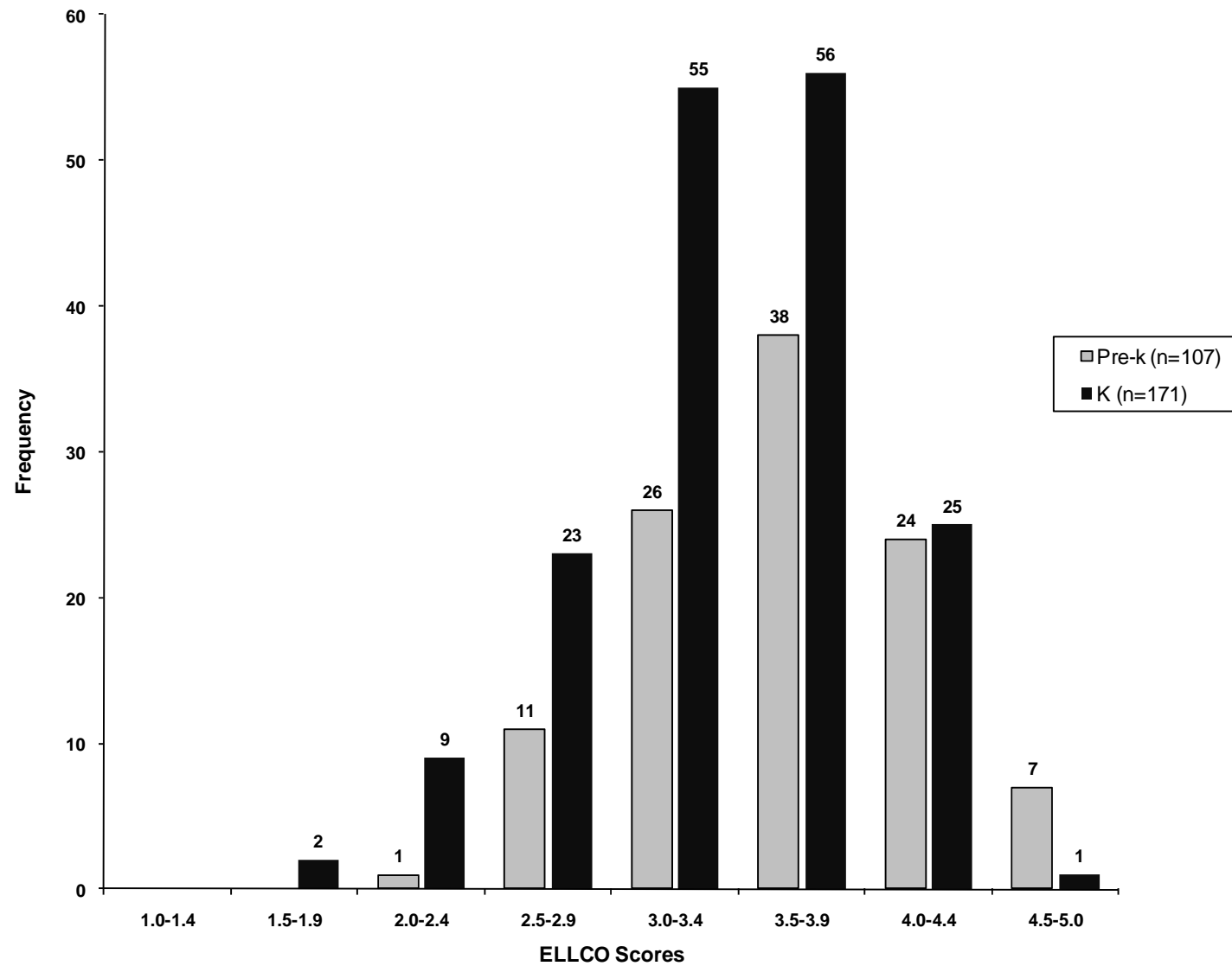
<sup>a</sup> For this item in 2006-2007, n=95.

<sup>b</sup> For this score in 2006-2007, n=95; in 2008-2009, n=74.

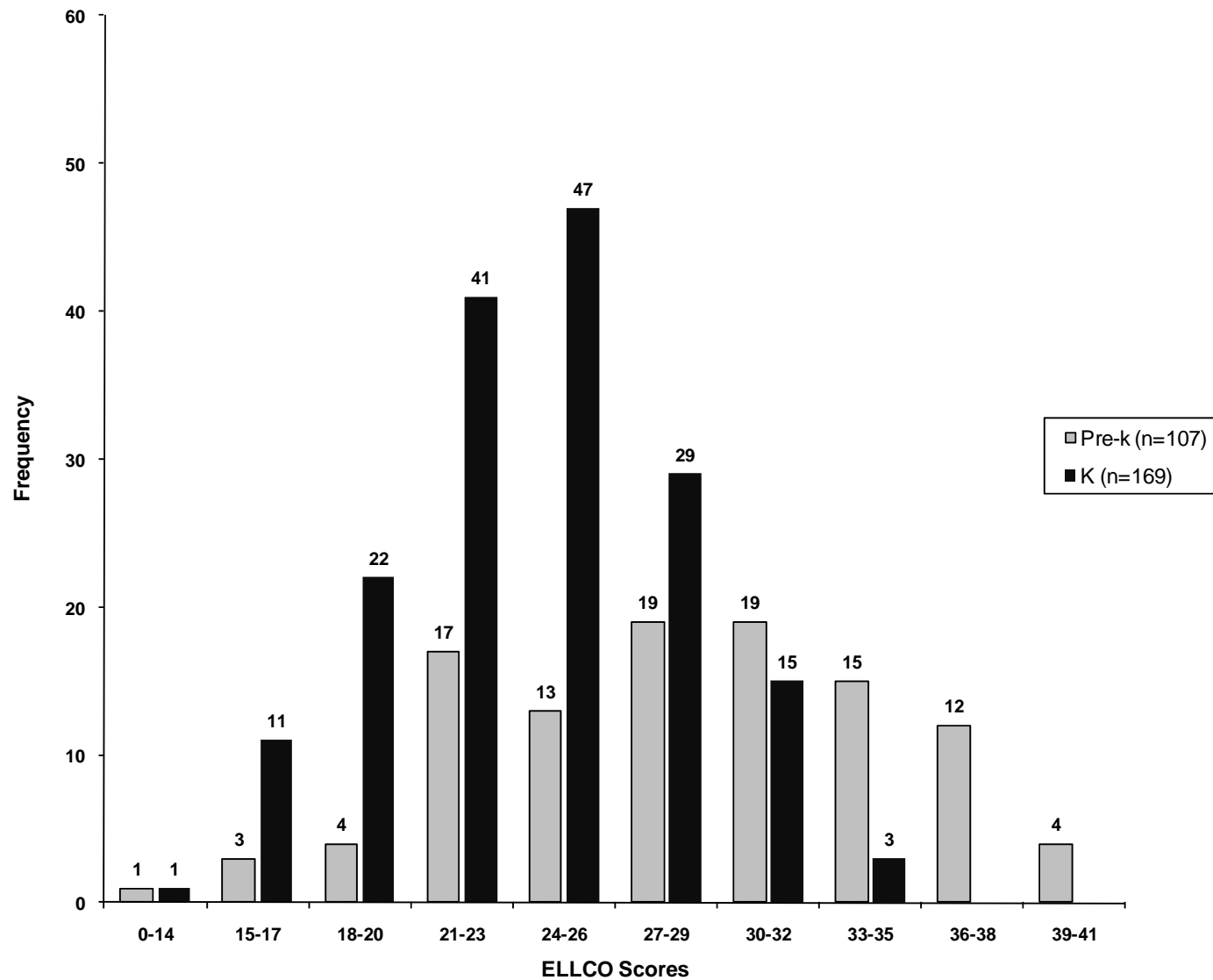
<sup>c</sup> For this item in 2006-2007, n=95.

<sup>d</sup> For this item in 2008-2009, n=74.

**Figure 6. Classroom Observation Scale Scores (ELLCO) in More at Four and Kindergarten (Combined Cohorts)**

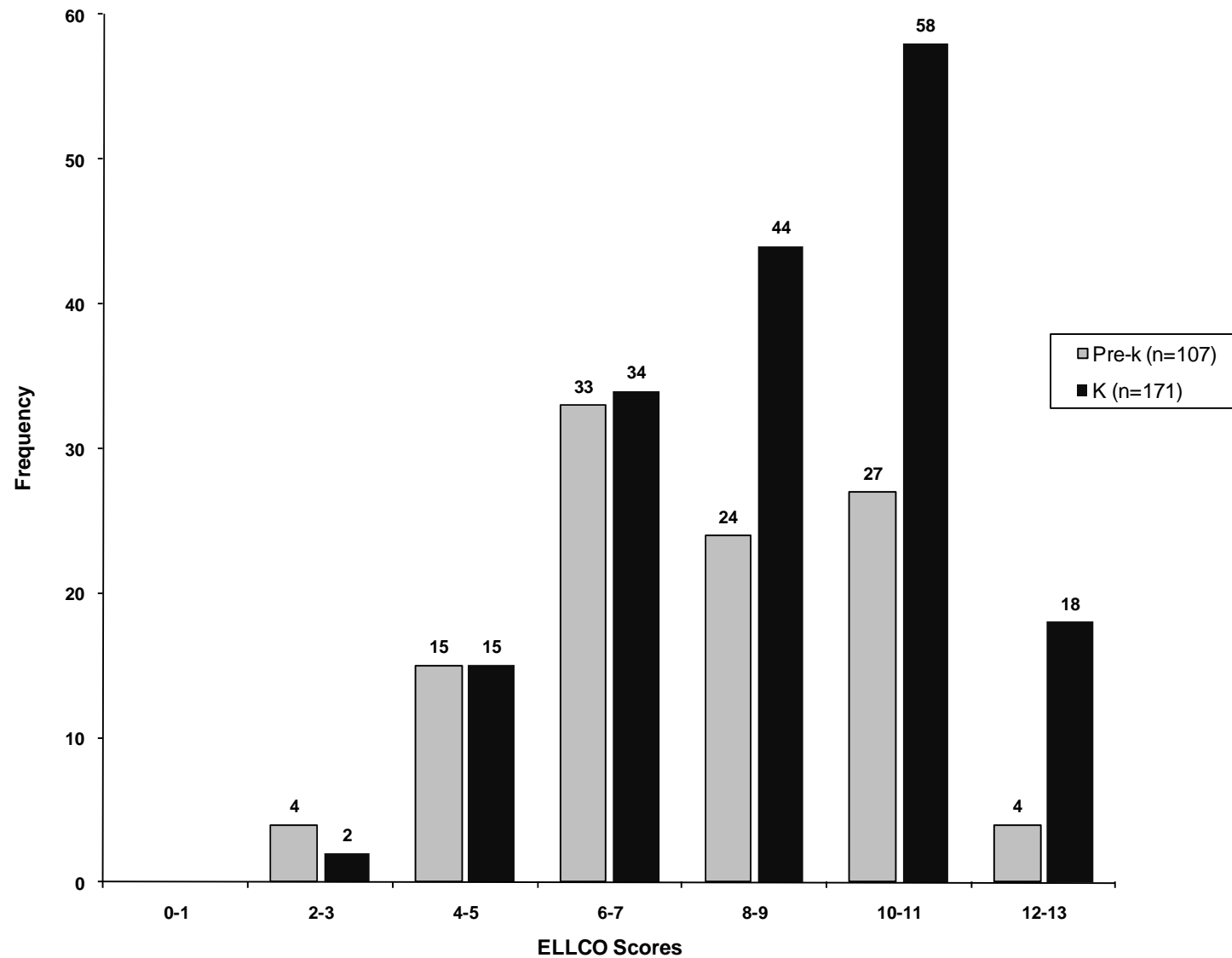


**Figure 7. Literacy Environment Checklist Scores (ELLCO) in More at Four and Kindergarten (Combined Cohorts)**





**Figure 8. Literacy Activities Rating Scale Scores (ELLCO) in More at Four and Kindergarten (Combined Cohorts)**



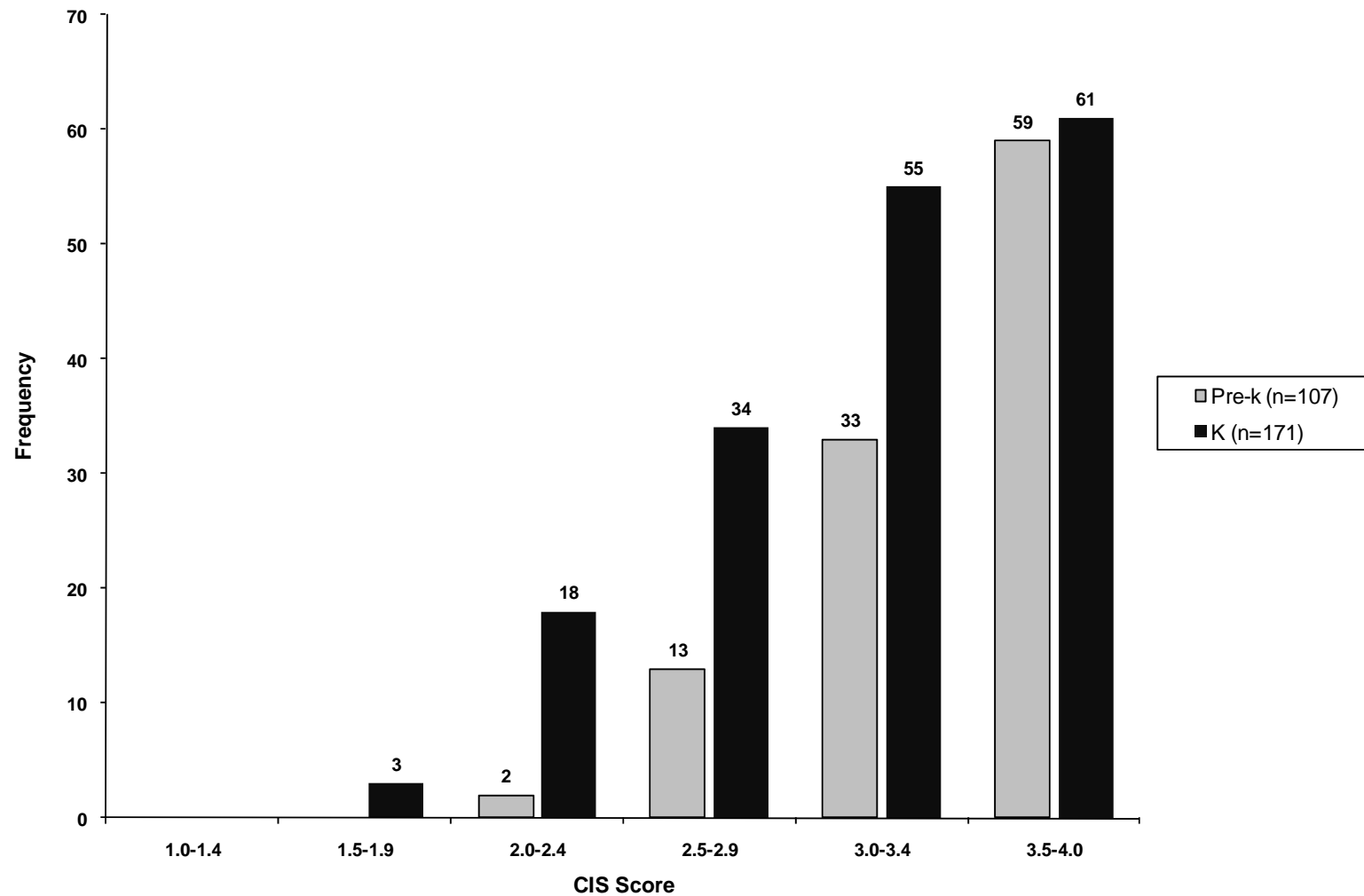
**Table 17. Quality of Teacher-Child Interactions (CIS) in More at Four and Kindergarten**

| Item Description <sup>a</sup> | Cohort 2                |                         | Cohort 3                |                         | Grade Effect | Pre-k Cohort Effect | K Cohort Effect |
|-------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------|---------------------|-----------------|
|                               | Pre-k                   | K                       | Pre-k                   | K                       |              |                     |                 |
|                               | 2005-2006               | 2006-2007               | 2007-2008               | 2008-2009               |              |                     |                 |
|                               | n=57                    | n=96                    | n=50                    | n=75                    |              |                     |                 |
|                               | Mean                    | Mean                    | Mean                    | Mean                    |              |                     |                 |
|                               | (SD)                    | (SD)                    | (SD)                    | (SD)                    |              |                     |                 |
|                               | Range <sup>b</sup>      | Range <sup>b</sup>      | Range <sup>b</sup>      | Range <sup>b</sup>      |              |                     |                 |
| Total Items Score             | 3.4<br>(0.4)<br>2.4-3.9 | 3.1<br>(0.5)<br>1.6-4.0 | 3.5<br>(0.4)<br>2.4-4.0 | 3.2<br>(0.6)<br>2.0-4.0 | P>K          | NS                  | NS              |
| Sensitivity Subscale          | 3.1<br>(0.4)<br>2.2-3.8 | 2.6<br>(0.6)<br>1.2-3.9 | 3.2<br>(0.6)<br>1.9-4.0 | 2.9<br>(0.7)<br>1.4-3.9 | P>K          | NS                  | C3>C2           |
| Harshness Subscale            | 1.5<br>(0.5)<br>1.0-3.3 | 1.9<br>(0.8)<br>1.0-3.9 | 1.5<br>(0.6)<br>1.0-3.3 | 1.7<br>(0.8)<br>1.0-3.8 | K>P          | NS                  | NS              |
| Detachment Subscale           | 1.2<br>(0.3)<br>1.0-2.3 | 1.3<br>(0.4)<br>1.0-3.0 | 1.3<br>(0.4)<br>1.0-2.5 | 1.5<br>(0.6)<br>1.0-3.3 | K>P          | NS                  | C3>C2           |
| Permissiveness Subscale       | 1.4<br>(0.4)<br>1.0-2.3 | 1.2<br>(0.3)<br>1.0-2.3 | 1.2<br>(0.3)<br>1.0-2.0 | 1.1<br>(0.4)<br>1.0-3.0 | NS           | NS                  | C2>C3           |

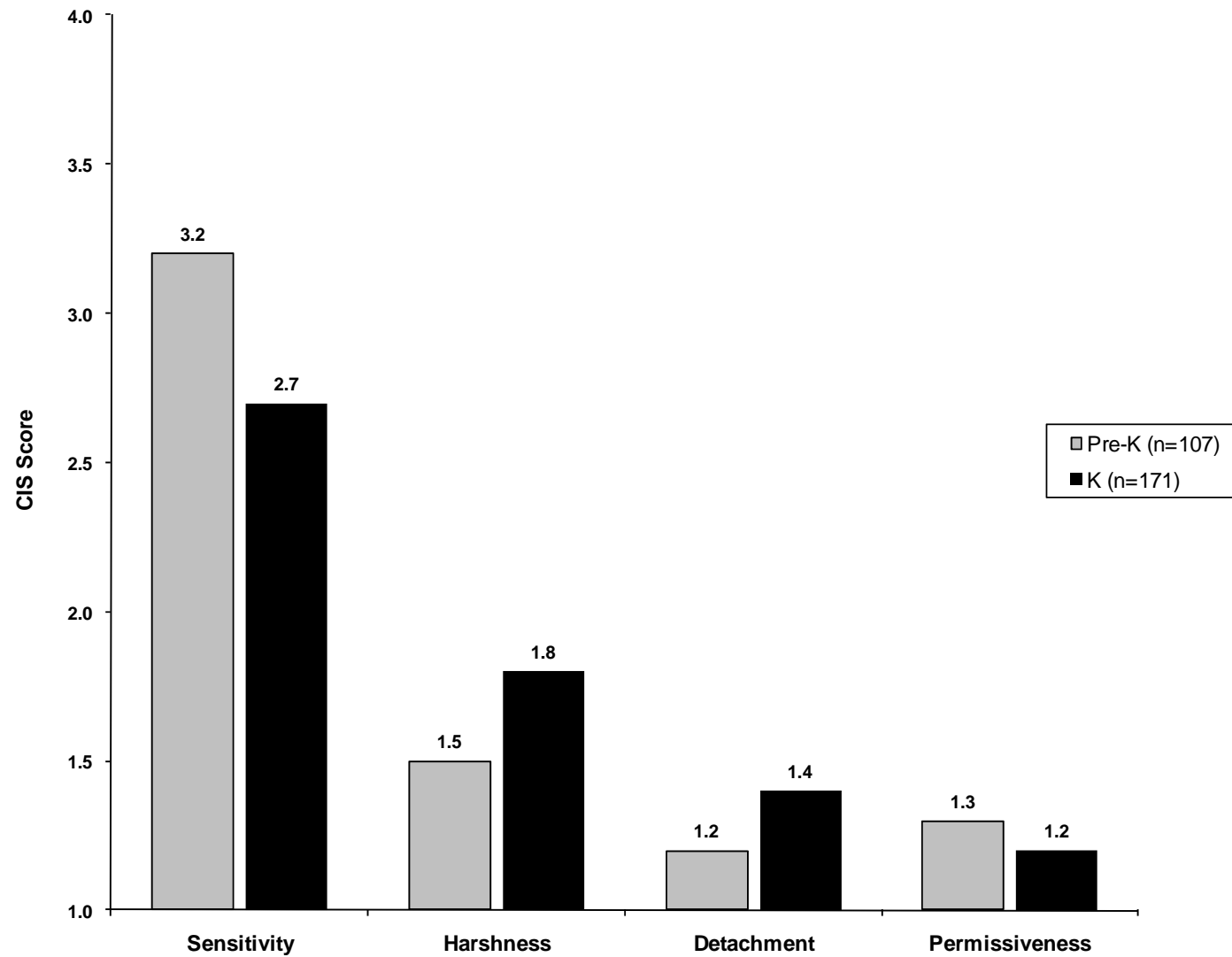
<sup>a</sup> For the total score calculation, scoring is reversed on the Harshness, Detachment, and Permissiveness subscales so that higher total scores represent more positive interactions. For the individual scores on these three subscales, lower scores represent more positive interactions, while for the Sensitivity subscale, higher scores represent more positive interactions.

<sup>b</sup> Possible range=1.0-4.0.

**Figure 9. Teacher-Child Interaction Scores (CIS Total) in More at Four and Kindergarten (Combined Cohorts)**



**Figure 10. Teacher-Child Interaction Mean Subscale Scores (CIS) in More at Four and Kindergarten (Combined Cohorts)**



## CHILD OUTCOMES

Children's longitudinal growth in key areas for school readiness from pre-k through kindergarten, including language/literacy, math, general knowledge, and behavioral skills, as well as factors associated with greater growth, were examined for a sample of children who participated in the More at Four Program during their pre-k year. Individual child assessments were conducted near the beginning and end of the school year during pre-k and kindergarten in each of these domains to provide information about children's skills at entry into the More at Four Program and their growth in pre-k and kindergarten. The full sample was comprised of three cohorts of children, with the first cohort including children who attended the More at Four Program in 2003-2004 and then were followed into kindergarten in 2004-2005, the second cohort including children who attended the More at Four Program in 2005-2006 and then were followed into kindergarten in 2006-2007, and the third cohort including children who attended the More at Four Program in 2007-2008 and then were followed into kindergarten in 2008-2009. Results are presented for the most recent cohort of children (Cohort 3, 2007-2009), with information about the findings for all three cohorts combined where possible (some measures were not available for earlier cohorts).

The child assessments included measures of children's language and literacy skills (receptive language, letter/word knowledge, print knowledge, phonological awareness), math skills (applied problems, counting), general knowledge (social awareness), and behavioral skills (social skills, problem behaviors). Trained assessors administered individual measures of children's language/literacy skills, math skills, and general knowledge; teachers completed ratings of children's behavioral skills. For Spanish-speaking children, most of these assessments were administered in both English and Spanish (the measures of print knowledge and phonological awareness were not available in Spanish). (See Methods section for further information about the sample and measures.)

We conducted longitudinal analyses to examine children's developmental growth from entry into the More at Four pre-k program through the end of kindergarten. These analyses adjusted for other child characteristics that could potentially affect outcomes (age, amount of More at Four attendance, gender) and controlled for other variables as well (time elapsed between assessments, classroom, cohort). In addition, we examined the influence of factors that might be associated with differences in children's outcomes, including pre-k program characteristics of the quality classroom practices and setting type, and individual child characteristics of cumulative risk level and English proficiency level.

A similar set of analyses examined growth on the same child outcome measures in Spanish as well as English for Spanish-speaking children. A further set of analyses examined the extent to which children's language proficiency or level of specific skills in their home language was associated with their school readiness or academic skills for this subsample of children. (Spanish assessments were only gathered for cohorts 2 and 3.)

## Changes in Child Outcomes over Time

We conducted a set of longitudinal analyses to examine children's growth over time on the various outcome measures from the beginning of the More at Four pre-k program year through the end of kindergarten, after adjusting for child characteristics and other variables (see analysis strategies section for further details). These results indicated that children in the most recent cohort exhibited significant growth throughout this time period across all of the domains (language and literacy skills, math skills, general knowledge, and behavioral skills). (See Table 18.) Children showed substantial growth in language and literacy skills in the areas of receptive language (understanding of language/receptive vocabulary), letter/word knowledge (ability to identify letters and words), phonological awareness (ability to blend and delete sounds to make words), and print knowledge (knowledge of written language conventions and alphabet knowledge). Children also made substantial gains in math skills, including applied problems (ability to solve simple practical math problems) and counting (ability to count in one-to-one correspondence); general knowledge, measured in terms of social awareness (knowledge of name, age, birth date); and behavioral skills, in the area of social skills (positive social interaction skills). The one area that showed no changes was problem behaviors, which remained just below the average expected score for children in these age ranges. (See Table 31 in the appendix for Cohort 3 regression results.)

In most areas (receptive language, phonological awareness, print knowledge, letter/word knowledge, applied math problems, social skills, problem behaviors), children's skills were assessed using standardized measures that adjust for expected growth due to children's increasing age over the school year. No change in scores on these measures would indicate that children are gaining skills at the expected rate over time. The results showing increases in scores on these measures indicate that children who participated in the More at Four Program were gaining language, math and social skills at a faster than expected rate during pre-k and kindergarten.

This pattern of growth was consistent when the results were examined across all three cohorts. Over time, children demonstrated significant growth across all domains of learning—language skills, math skills, general knowledge, and social skills—and showed no change in problem behaviors (which remained at the expected level). (See Table 32 in the appendix for combined cohort regression results.)

Children made significant gains each year during both pre-k and kindergarten. For many skills measured in Cohort 3 (receptive language, applied problems, social awareness, social skills, problem behaviors), children maintained the same level of growth during the pre-k and kindergarten years. For other skills (letter/word knowledge, phonological awareness, print knowledge, counting), while children made significant progress in both pre-k and kindergarten, their rate of growth accelerated in kindergarten. The same pattern of results was found for the combined cohorts for skills that were measured across cohorts.

## Factors Associated with Differences in Child Outcomes

Both child-level and program-level factors were examined to see whether differences in child characteristics or More at Four program experiences resulted in differences in the amount of growth children demonstrated in language, math, general knowledge, and behavioral skills during pre-k and kindergarten, after adjusting for all other variables in the model (see analysis strategies section for further details). Child-level factors were based on children's characteristics at entry into More at Four, and included English proficiency level (based on child assessments) and cumulative risk level (based on family income and the risk factors specified in the More at Four Program eligibility guidelines). Program-level factors included the quality of classroom practices in pre-k (based on observational measures of classroom practices) and More at Four setting type (public school or community child care).

### English Proficiency

We examined whether there were significant differences in skill development for children entering the program at different levels of English proficiency, based on individual assessments of oral language proficiency. Children were categorized according to five proficiency levels ranging from Non-English speaker (1) to Limited English speaker (2-3) to Fluent English speaker (4-5). Results from the most recent cohort indicated that children at the lowest English proficiency level generally scored lower in pre-k and kindergarten than children at higher proficiency levels (see Table 19). However, children at lower proficiency levels made gains in skills at a faster rate than children who were more proficient. This pattern of results was found across domains of learning—Language (receptive language, phonological awareness, print knowledge, letter/word knowledge), Math (applied problems, counting), and General knowledge (social awareness). There were no differences in children's behavioral skills on the basis of English proficiency levels. See Figure 11 through Figure 19. The same pattern of results was found across all three cohorts, with children at lower levels of English proficiency exhibiting lower scores but greater gains in language, math, and general knowledge skills. (See Table 31 in the appendix for Cohort 3 regression results and Table 32 in the appendix for combined cohort regression results.)

### Cumulative Risk Level

Children were categorized according to four levels of cumulative risk (0-3 from low risk to high risk) based on poverty level (eligibility for free lunch, reduced-price lunch, or full-price lunch) and presence or absence of risk factors (an identified special need, limited English proficiency, and chronic health condition).<sup>a</sup> Results for Cohort 3 indicate that for some skills, children at greater risk, especially those at highest risk, tended to score lower than other children during pre-k and kindergarten (see Table 20). For other skills, there were no differences in scores during pre-k and kindergarten on the basis of cumulative risk levels. However, children at all cumulative risk levels made gains at the same rate. This pattern of lower scores, but similar rates of gain, was found for

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<sup>a</sup> A total risk factor score was constructed based on More at Four eligibility guidelines, using income (eligibility for free lunch=2 points, reduced-price lunch=1 point, and full-price lunch=0 points) and additional risk factors (1 point each for limited English proficiency, identified disability, and chronic health condition). A four-level categorical variable was constructed, representing risk factor scores of 0, 1, 2, and 3-5. Because presence or absence of developmental/educational need was not considered until the 2005-2006 program guidelines, it was not included in the calculation of risk factor total.

both language skills (receptive language, phonological awareness) and math skills (applied problems) for the most recent cohort of children. See Figure 20 through Figure 28. When these data were examined across all three cohorts, differences were also found in counting and general knowledge skills. (See Table 31 in the appendix for Cohort 3 regression results and Table 32 in the appendix for combined cohort regression results.)

### **Program Factors**

The influence of program factors on children's rate of skill development from pre-k through kindergarten was examined to see if there were any differences on the basis of classroom quality or setting type (public school versus community child care) of the More at Four program attended. (See Table 31 in the appendix for Cohort 3 regression results and Table 32 in the appendix for combined cohort regression results.) Little difference was found in the rate of learning during pre-k and kindergarten based on the quality of the More at Four classrooms children attended in pre-k for Cohort 3. The only effect was found for letter-word knowledge, where children in higher quality pre-k classrooms exhibited greater growth in pre-k, but lower rates of growth in kindergarten, with no overall differences in growth. Similar results were found when all three cohorts were examined, with little association between pre-k classroom quality and children's scores across domains. There were no differences in the effects of quality during pre-k. There was one slightly negative effect in kindergarten, where scores for the counting task were slightly lower for children who attended higher quality pre-k classrooms; however, this result may reflect ceiling differences, where children were scoring at or near the maximum on this measure by the end of kindergarten.

Children who attended public-school versus community child care settings for the More at Four Program generally experienced the same amount of growth in skills from pre-k through kindergarten. The two exceptions were in the domain of language and literacy skills (letter/word knowledge and print knowledge), where children in public school settings made greater gains during pre-k than children in community settings. (These measures were not gathered for previous cohorts.) When the measures that were available for all three cohorts were examined, the findings remained similar, with no differences in the rates of growth for public school and community settings. There was one difference related to receptive vocabulary, where children in public school settings had higher scores in both the fall and spring of pre-k than children in community settings, but the rates of growth were similar across both types of settings.

### **Growth in Developmental Skills for Spanish-Speaking Subsample**

Children's skills were assessed in Spanish as well as English for the subsample of Spanish-speaking children, in order to examine their patterns of skill growth across the two languages. This subsample included 81 children from Cohort 3; in addition, Spanish assessments were also available for a subsample of 120 children from cohort 2. (These children are also included in the results for English outcomes reported above.) Language skills (receptive language, letter/word knowledge), math skills (applied problems, counting), and general knowledge (social awareness) were assessed in both languages (assessments were not available in Spanish for phonological awareness and print knowledge). Note that for the standardized measures (receptive language, letter/word knowledge, applied problems), the English and Spanish versions differed somewhat in content, so the absolute



scores may not be directly comparable. For the remaining measures, the items on the English and Spanish versions were direct translations of one another.

## **Growth over Time for Spanish-Speaking Children**

Children's growth during pre-k and kindergarten in skills assessed in both English and Spanish was examined for the subsample of Spanish-speaking children. Although the language of instruction in the More at Four and kindergarten classrooms was primarily English, Spanish-speaking children in Cohort 3 made gains in some skills in Spanish as well as English during pre-k and kindergarten. Similarly to the full sample, Spanish-speaking children made gains in all skill areas in English during pre-k and kindergarten: language skills (receptive language, letter/word knowledge); math skills (applied problems, counting); and general knowledge (social awareness). (See Table 21.) For skills assessed in Spanish, Spanish-speaking children made gains in math skills and general knowledge, but did not make gains in language and literacy skills during pre-k and kindergarten (see Table 22). These results were similar when both cohorts were included.

## **Factors Associated with Differences in Outcomes for Spanish-Speaking Children**

We examined whether Spanish-speaking children's general level of language proficiency or level of specific skills in their home language were associated with their school readiness/academic skills for measures available in both English and Spanish (receptive vocabulary, letter-word knowledge (Cohort 3 only), applied math, counting, and social awareness). For Cohort 3, we examined the effects of English language proficiency on skills in English, and the effects of Spanish language proficiency on skills in Spanish. For the combined cohorts, only English language proficiency information was available (Spanish language proficiency was not assessed prior to Cohort 3). Similarly to the findings on the effects of language proficiency for all children, for Cohort 3, Spanish-speaking children with lower language proficiency levels scored lower on many skills than Spanish-speaking children with higher proficiency levels (see Table 23). This pattern of results was found for both pre-k and kindergarten, and for skills assessed in both English and Spanish. Spanish-speaking children with lower English proficiency levels scored lower at most time points on almost all skills measured in English, including receptive vocabulary, applied math, counting, and social awareness. The same pattern of results was found when both cohorts were combined (Table 24). Similarly, for skills assessed in Spanish, children with lower Spanish proficiency levels scored lower at most time points for several measures, including receptive vocabulary, applied math, and social awareness (see Table 23). When examined by English proficiency levels across both cohorts, the only difference found was for applied math skills in Spanish (Table 24). Children at lower proficiency levels also made greater gains in many skills in English, including receptive vocabulary, applied math, and social awareness (the latter was found only for Cohort 3). In contrast, there were no differences in children's rates of growth in Spanish skills on the basis of language proficiency levels, both for Cohort 3 and for the combined cohorts. (See Table 33 and Table 34 in the appendix for Cohort 3 regression results, and Table 35 and Table 36 in the appendix for combined cohort regression results.)

There was some evidence that children's initial skills in their home language were associated with their school readiness and academic skills in English (see Table 25 and Table 26). The results from

Cohort 3 indicate that, at entry into pre-k, children's initial skills in Spanish in a particular area were associated with their initial skills in English in that same area across all domains: language skills (receptive language, letter/word knowledge), math skills (applied problems, counting), and general knowledge (social awareness). In other words, children who entered pre-k with higher skills in Spanish also had higher skills in English, while children who entered pre-k with lower skills in Spanish also had lower skills in English. However, these associations generally were not found in kindergarten, where children's initial skills in Spanish did not predict their skills in English. When these associations were examined across both cohorts, the pre-k effects remained consistent for applied math, counting, and social awareness, but not for receptive vocabulary (letter-word knowledge was only measured for Cohort 3). In addition, the association between Spanish and English applied math skills remained into kindergarten.

There were fewer associations between children's Spanish skills and their growth in English skills from pre-k through kindergarten. For Cohort 3, associations were found for only one measure, counting skills; children who entered pre-k with higher Spanish skills or who made greater growth in Spanish skills from pre-k through kindergarten showed greater growth in English counting skills as well. The same effect on counting skills was found for both cohorts combined; in addition, children who made greater growth in Spanish social awareness skills also made greater growth in these same skills in English.

## **Analysis Strategies**

### **Changes over Time**

To investigate the growth trajectories from pre-k through kindergarten for children who attended the More at Four Program, we estimated a series of longitudinal growth models for the child outcomes assessed in English across all three cohorts, and similar analyses for Cohort 3 excluding the terms associated with cohort. We included children's scores at each of four time points (fall pre-k, spring pre-k, fall kindergarten, spring kindergarten) as the dependent variables. Separate analyses were conducted for each outcome measure using a three-level mixed models approach to account for repeated measures across each child and multiple children clustered within each classroom<sup>33,34</sup>. A series of estimate statements following the overall growth model allowed for the calculation of adjusted performance and gains by time point and sample characteristics. Covariates included: cohort (1, 2, 3) for the combined cohorts analyses; time (1, 2, 3, 4); grade (pre-k, kindergarten); assessment variations (age, time between assessments/enrollment); More at Four dosage (days of attendance); cumulative risk factor score at entry into pre-k (four levels scored 0-3 from less to more at-risk), English proficiency level (five levels scored 1-5 from less to more proficient); child gender; pre-k classroom quality (ECERS-R total child items score), and pre-k setting type (public school vs community child care). Additionally, the interactions of grade and time with the other covariates were included to provide estimates of performance at specific time points and growth by grade level. As a precaution against Type I error, all analyses included adjustments to the p-values using the Benjamini-Hochberg correction for multiple comparisons<sup>35</sup>.

### **Factors Affecting Children's Growth**

To examine whether program factors (classroom quality and setting type) or child factors (cumulative risk and English proficiency) had moderating effects on children's rate of growth from

pre-k through kindergarten, interaction effects between each of these variables and time were estimated based on the longitudinal growth models described above, adjusting for all other variables in the model. The moderating factors examined included the quality of pre-k classroom practices (ECERS-R total child item scores), pre-k setting type (public school vs community), children's cumulative risk factor score at entry into pre-k (four levels scored 0-3 from less to more at-risk), and children's English proficiency level (five levels scored 1-5 from less to more proficient).

### **Spanish Subsample Growth and Moderating Factors**

To investigate the growth trajectories for the Spanish-speaking subsample, we used the same approach described above for Cohort 3 and the combined cohorts to estimate a series of longitudinal growth models for children's outcomes assessed in both English and Spanish. (These data were available only for Cohorts 2 and 3.) These analyses examined the amount of growth this subsample of children exhibited during the More at Four pre-k year and during kindergarten. Children's scores at each of four time points (fall pre-k, spring pre-k, fall kindergarten, spring kindergarten) were included as the dependent variables. Separate analyses were conducted for each outcome measure in each language using a three-level mixed models approach to account for repeated measures across each child and multiple children clustered within each classroom<sup>33, 34</sup>. A series of estimate statements following the overall growth model allowed for the calculation of adjusted performance and gains by time point and sample characteristics. Covariates included: cohort (2, 3) for the combined cohorts analyses; time (1, 2, 3, 4); grade (pre-k, kindergarten); assessment variations (age, time between assessments/enrollment); More at Four dosage (days of attendance); cumulative risk factor score at entry into pre-k (four levels scored 0-3 from less to more at-risk), language proficiency level (five levels scored 1-5 from less to more proficient); child gender; pre-k classroom quality (ECERS-R total child items score); and setting type (public school vs community). The interactions of grade and time with the other covariates were included to provide estimates of performance at specific time points and growth by grade level. In addition, language proficiency was examined as a moderating variable of children's outcomes. Spanish language proficiency was available only for Cohort 3 and was used in Cohort 3 analyses of Spanish outcomes; English language proficiency was used for all other analyses, including English outcomes for Cohort 3 and English and Spanish outcomes for the combined cohorts. As a precaution against Type I error, all analyses included adjustments to the p-values using the Benjamini-Hochberg correction for multiple comparisons<sup>35</sup>.

### **Associations between English and Spanish Growth**

A separate series of longitudinal growth models were calculated to test whether growth on the English measures from pre-k through kindergarten was related to children's initial scores in Spanish at entry into pre-k (fall pre-k scores) and/or gains on the Spanish measures from pre-k through kindergarten for the same outcomes (e.g., receptive language as measured by the PPVT-III and the TVIP). These models accounted for repeated measures across each child and multiple children within each classroom, and included time (1, 2, 3, 4) and grade (pre-k vs. kindergarten) as covariates. The individual intercepts and slopes from the above growth models for the Spanish-speaking subsample were used to predict growth in English outcomes.

**Table 18. Child Outcome Scores by Year**

|  | Cohort 3               |                        |                       |                        | Cohorts 1, 2, and 3 Combined |                         |                        |                        |
|--|------------------------|------------------------|-----------------------|------------------------|------------------------------|-------------------------|------------------------|------------------------|
|  | Fall<br>n=287-320      | Spring<br>n=287-295    | Fall<br>n=226-280     | Spring<br>n=232-276    | Fall<br>n=1,257-1,308        | Spring<br>n=1,128-1,169 | Fall<br>n=851-1,027    | Spring<br>n=873-996    |
|  | Mean (SD)<br>Range     | Mean (SD)<br>Range     | Mean (SD)<br>Range    | Mean (SD)<br>Range     | Mean (SD)<br>Range           | Mean (SD)<br>Range      | Mean (SD)<br>Range     | Mean (SD)<br>Range     |
| <b>Language and Literacy</b>                                     |                        |                        |                       |                        |                              |                         |                        |                        |
| Receptive Language<br>(PPVT-III <sup>a</sup> /4 <sup>a,b</sup> ) | 88.1 (17.9)<br>33-131  | 91.0 (17.2)<br>23-129  | 93.2 (15.9)<br>42-130 | 97.1 (13.3)<br>65-134  | 84.5 (19.7)<br>21-131        | 89.1 (18.2)<br>23-129   | 92.7 (16.6)<br>32-132  | 95.4 (14.6)<br>25-135  |
| Letter-Word Identification<br>(WJ-III <sup>a,c</sup> )           | 93.4 (12.2)<br>62-136  | 96.5 (12.3)<br>61-151  | 97.1 (11.8)<br>51-145 | 107.2 (12.8)<br>58-147 | --                           | --                      | --                     | --                     |
| Print Knowledge<br>(TOPEL <sup>a</sup> )                         | 89.9 (11.8)<br>71-131  | 95.8 (14.0)<br>66-124  | 99.3 (15.2)<br>60-118 | 110.5 (8.6)<br>61-116  | --                           | --                      | --                     | --                     |
| Phonological Awareness<br>(TOPEL <sup>a</sup> )                  | 82.9 (14.5)<br>54-120  | 85.3 (15.2)<br>54-124  | 87.9 (16.7)<br>54-121 | 102.8 (16.1)<br>54-119 | --                           | --                      | --                     | --                     |
| <b>Math</b>  |                        |                        |                       |                        |                              |                         |                        |                        |
| Applied Problems<br>(WJ-III <sup>a,c</sup> )                     | 93.6 (14.7)<br>58-129  | 98.2 (12.2)<br>53-140  | 97.7 (12.2)<br>34-131 | 101.8 (11.5)<br>65-132 | 94.1 (14.4)<br>58-135        | 98.0 (12.0)<br>53-140   | 99.0 (11.6)<br>34-132  | 101.6 (11.5)<br>47-141 |
| Counting Task <sup>d</sup>                                       | 11.6 (8.1)<br>0-40     | 18.0 (11.0)<br>0-40    | 25.0 (12.5)<br>2-40   | 35.5 (8.6)<br>3-40     | 11.3 (8.1)<br>0-40           | 18.6 (11.1)<br>0-40     | 25.8 (12.2)<br>1-40    | 34.6 (9.1)<br>1-40     |
| <b>General Knowledge</b>   |                        |                        |                       |                        |                              |                         |                        |                        |
| Social Awareness <sup>e</sup>                                    | 3.5 (1.8)<br>0-6       | 4.2 (1.6)<br>0-6       | 4.5 (1.4)<br>0-6      | 5.3 (1.1)<br>2-6       | 3.5 (1.8)<br>0-6             | 4.3 (1.5)<br>0-6        | 4.7 (1.3)<br>0-6       | 5.3 (1.0)<br>1-6       |
| <b>Classroom Behavior</b>  |                        |                        |                       |                        |                              |                         |                        |                        |
| Social Skills<br>(SSRS <sup>a</sup> )                            | 101.0 (16.1)<br>54-130 | 109.4 (14.6)<br>57-130 | 99.2 (14.4)<br>64-130 | 105.4 (14.3)<br>64-130 | 100.7 (15.6)<br>53-130       | 108.8 (14.9)<br>57-130  | 101.0 (14.7)<br>49-130 | 98.4 (13.1)<br>85-141  |
| Problem Behaviors<br>(SSRS <sup>a</sup> )                        | 99.8 (13.1)<br>85-140  | 99.5 (13.2)<br>85-145  | 99.1 (12.7)<br>85-134 | 98.3 (12.8)<br>85-138  | 98.7 (12.7)<br>85-142        | 98.6 (12.7)<br>85-145   | 98.3 (12.8)<br>85-137  | 98.4 (13.1)<br>85-141  |

<sup>a</sup> Indicates standardized, norm-referenced measure with mean=100, SD=15.

<sup>b</sup> PPVT-III was used for Cohorts 1 and 2 and PPVT-4 was used for Cohort 3.

<sup>c</sup> Scores reflect use of updated normative tables published 2007.<sup>36</sup>

<sup>d</sup> Possible range=0-40.

<sup>e</sup> Possible range=0-6.

**Table 19. Child Outcome Scores by English Proficiency Level**

| Cohort 3 (2007-2009)   |                        |                        |                        |                        | Cohorts 1, 2, and 3 Combined                   |                       |                        |                        |                        |
|--|------------------------|------------------------|------------------------|------------------------|--|-----------------------|------------------------|------------------------|------------------------|
| Initial English Proficiency Level <sup>a</sup>                                       | Pre-kindergarten       |                        | Kindergarten           |                        | Initial English Proficiency Level <sup>a</sup> | Pre-Kindergarten      |                        | Kindergarten           |                        |
|  | Fall                   | Spring                 | Fall                   | Spring                 |  | Fall                  | Spring                 | Fall                   | Spring                 |
|  | Mean (SD)<br>Range     | Mean (SD)<br>Range     | Mean (SD)<br>Range     | Mean (SD)<br>Range     |  | Mean (SD)<br>Range    | Mean (SD)<br>Range     | Mean (SD)<br>Range     | Mean (SD)<br>Range     |
| Language and Literacy: Receptive Language (PPVT-III <sup>b</sup> /4 <sup>b,c</sup> ) |                        |                        |                        |                        |  |                       |                        |                        |                        |
| 1<br>n=61-71   | 67.4 (16.3)<br>33-108  | 70.9 (14.6)<br>23-100  | 74.8 (13.9)<br>42-102  | 82.8 (9.7)<br>65-107   | 1<br>n=224-274                                 | 59.9 (16.4)<br>23-108 | 67.5 (16.3)<br>23-105  | 73.8 (14.5)<br>32-105  | 79.6 (12.7)<br>36-109  |
| 2<br>n=16-20   | 83.0 (9.5)<br>69-100   | 88.6 (10.2)<br>70-108  | 90.9 (8.5)<br>75-107   | 95.5 (9.1)<br>82-110   | 2<br>n=55-73                                   | 78.1 (10.5)<br>48-100 | 82.9 (13.8)<br>46-108  | 87.6 (11.7)<br>42-108  | 91.1 (11.3)<br>64-110  |
| 3<br>n=54-57   | 86.3 (10.6)<br>66-123  | 90.1 (10.9)<br>64-120  | 92.4 (10.0)<br>73-116  | 95.0 (8.8)<br>77-117   | 3<br>n=158-202                                 | 83.2 (12.4)<br>40-123 | 89.3 (11.0)<br>54-120  | 92.9 (11.1)<br>40-116  | 95.6 (10.6)<br>62-126  |
| 4<br>n=78-84   | 95.3 (11.8)<br>68-118  | 98.4 (12.2)<br>71-120  | 98.4 (11.6)<br>68-123  | 102.1 (11.6)<br>77-134 | 4<br>n=258-340                                 | 91.2 (12.6)<br>21-121 | 95.5 (11.7)<br>33-120  | 97.9 (11.3)<br>40-127  | 99.5 (11.0)<br>25-134  |
| 5<br>n=66-77   | 102.1 (11.5)<br>80-131 | 103.7 (10.4)<br>77-129 | 105.4 (11.0)<br>77-130 | 106.7 (10.1)<br>84-128 | 5<br>n=287-372                                 | 99.0 (12.1)<br>66-131 | 101.7 (11.0)<br>70-129 | 104.1 (11.2)<br>40-132 | 105.0 (10.0)<br>72-135 |
| Significant group differences <sup>d</sup>   | 1<2,3<4<5              | 1<2,3<4<5              | 1<2,3<4<5              | 1<2,3<4<5              | Significant group differences <sup>d</sup>     | 1<2<3<4<5             | 1<2<3<4<5              | 1<2<3<4<5              | 1<2<3<4<5              |

<sup>a</sup> These categories represent fluency scores on the PreLAS 2000, an individual assessment of English language oral proficiency. Fluency level 1=non-English speaker, 2 & 3=limited English speaker, 4 & 5=fluent English speaker.

<sup>b</sup> Indicates standardized, norm-referenced measure with mean=100, SD=15.

<sup>c</sup> PPVT-III was used for Cohorts 1 and 2 and PPVT-4 was used for Cohort 3.

<sup>d</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each English proficiency level based on longitudinal growth model estimations that corrected for classroom quality as measured by the ECERS-R.

**Table 19. Child Outcome Scores by English Proficiency Level**

| Cohort 3 (2007-2009)   |                       |                       |                       |                        | Cohorts 1, 2, and 3 Combined                   |                  |                 |                 |                 |
|--|-----------------------|-----------------------|-----------------------|------------------------|--|------------------|-----------------|-----------------|-----------------|
| Initial English Proficiency Level <sup>a</sup>                           | Pre-kindergarten      |                       | Kindergarten          |                        | Initial English Proficiency Level <sup>a</sup> | Pre-Kindergarten |                 | Kindergarten    |                 |
|  | Fall                  | Spring                | Fall                  | Spring                 |  | Fall             | Spring          | Fall            | Spring          |
|  | Mean (SD) Range       | Mean (SD) Range       | Mean (SD) Range       | Mean (SD) Range        |  | Mean (SD) Range  | Mean (SD) Range | Mean (SD) Range | Mean (SD) Range |
| Language and Literacy: Letter-Word Identification (WJ-III <sup>b</sup> ) |                       |                       |                       |                        |  |                  |                 |                 |                 |
| 1<br>n=61-82   | 85.3 (12.5)<br>62-114 | 90.4 (13.7)<br>61-112 | 92.0 (12.9)<br>64-115 | 103.5 (13.6)<br>58-126 | 1  | --               | --              | --              | --              |
| 2<br>n=16-20   | 91.2 (10.9)<br>66-107 | 94.1 (11.3)<br>66-108 | 95.7 (11.1)<br>71-109 | 102.5 (13.9)<br>69-130 | 2  | --               | --              | --              | --              |
| 3<br>n=53-57   | 93.2 (10.3)<br>62-112 | 97.0 (11.5)<br>69-121 | 97.0 (12.0)<br>51-125 | 106.6 (12.5)<br>78-136 | 3  | --               | --              | --              | --              |
| 4<br>n=78-84   | 96.1 (11.3)<br>68-136 | 97.0 (12.0)<br>70-151 | 97.4 (11.5)<br>66-145 | 107.1 (11.8)<br>82-145 | 4  | --               | --              | --              | --              |
| 5<br>n=66-77   | 99.8 (9.2)<br>73-119  | 102.0 (9.1)<br>70-125 | 101.8 (9.0)<br>69-125 | 112.4 (11.9)<br>87-147 | 5  | --               | --              | --              | --              |
| Significant group differences <sup>c</sup>                               | 1<3,4,5<br>2,3,4<5    | 1<3,4,5<br>2,3,4<5    | 1,2,3,4<5<br>1<4      | 1,2,3,4<5              | Significant group differences <sup>c</sup>     | --               | --              | --              | --              |

<sup>a</sup> These categories represent fluency scores on the PreLAS 2000, an individual assessment of English language oral proficiency. Fluency level 1=non-English speaker, 2 & 3=limited English speaker, 4 & 5=fluent English speaker.

<sup>b</sup> Standardized, norm-referenced measure with mean=100, SD=15.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each English proficiency level based on longitudinal growth model estimations that corrected for classroom quality as measured by the ECERS-R.

**Table 19. Child Outcome Scores by English Proficiency Level**

| Cohort 3 (2007-2009)   |                       |                       |                        |                        | Cohorts 1, 2, and 3 Combined                   |                  |                 |                 |                 |
|--|-----------------------|-----------------------|------------------------|------------------------|--|------------------|-----------------|-----------------|-----------------|
| Initial English Proficiency Level <sup>a</sup>               | Pre-kindergarten      |                       | Kindergarten           |                        | Initial English Proficiency Level <sup>a</sup> | Pre-Kindergarten |                 | Kindergarten    |                 |
|  | Fall                  | Spring                | Fall                   | Spring                 |  | Fall             | Spring          | Fall            | Spring          |
|  | Mean (SD) Range       | Mean (SD) Range       | Mean (SD) Range        | Mean (SD) Range        |  | Mean (SD) Range  | Mean (SD) Range | Mean (SD) Range | Mean (SD) Range |
| Language and Literacy: Print Knowledge (TOPEL <sup>b</sup> ) |                       |                       |                        |                        |  |                  |                 |                 |                 |
| 1<br>n=61-82   | 82.9 (7.9)<br>71-116  | 87.3 (13.7)<br>66-120 | 91.5 (17.1)<br>60-117  | 107.1 (11.8)<br>61-116 | 1  | --               | --              | --              | --              |
| 2<br>n=16-20   | 90.4 (10.9)<br>75-110 | 94.3 (15.0)<br>69-116 | 99.3 (14.8)<br>72-115  | 107.3 (11.8)<br>79-115 | 2  | --               | --              | --              | --              |
| 3<br>n=54-57   | 86.5 (9.8)<br>75-117  | 95.7 (13.1)<br>73-123 | 97.1 (15.4)<br>61-118  | 110.1 (8.9)<br>74-116  | 3  | --               | --              | --              | --              |
| 4<br>n=78-84   | 92.0 (10.8)<br>76-128 | 96.9 (13.1)<br>75-119 | 100.2 (14.1)<br>60-117 | 111.5 (6.6)<br>79-116  | 4  | --               | --              | --              | --              |
| 5<br>n=66-77   | 97.3 (12.8)<br>75-131 | 97.4 (11.5)<br>71-124 | 107.3 (10.2)<br>72-118 | 113.6 (2.8)<br>103-116 | 5  | --               | --              | --              | --              |
| Significant group differences <sup>c</sup>                   | 1<2,3,4<5<br>3<4      | 1<2,3,4<5<br>3<4      | 1<2,3,4<5              | 1<4,5<br>3<5           | Significant group differences <sup>c</sup>     | --               | --              | --              | --              |

<sup>a</sup> These categories represent fluency scores on the PreLAS 2000, an individual assessment of English language oral proficiency. Fluency level 1=non-English speaker, 2 & 3=limited English speaker, 4 & 5=fluent English speaker.

<sup>b</sup> Standardized, norm-referenced measure with mean=100, SD=15.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each English proficiency level based on longitudinal growth model estimations that corrected for classroom quality, as measured by the ECERS-R.

**Table 19. Child Outcome Scores by English Proficiency Level**

| Cohort 3 (2007-2009)  |                       |                       |                       |                        | Cohorts 1, 2, and 3 Combined                   |                  |                 |                 |                 |
|---|-----------------------|-----------------------|-----------------------|------------------------|--|------------------|-----------------|-----------------|-----------------|
| Initial English Proficiency Level <sup>a</sup>                      | Pre-kindergarten      |                       | Kindergarten          |                        | Initial English Proficiency Level <sup>a</sup> | Pre-Kindergarten |                 | Kindergarten    |                 |
|   | Fall                  | Spring                | Fall                  | Spring                 |  | Fall             | Spring          | Fall            | Spring          |
|   | Mean (SD) Range       | Mean (SD) Range       | Mean (SD) Range       | Mean (SD) Range        |  | Mean (SD) Range  | Mean (SD) Range | Mean (SD) Range | Mean (SD) Range |
| Language and Literacy: Phonological Awareness (TOPEL <sup>b</sup> ) |                       |                       |                       |                        |  |                  |                 |                 |                 |
| 1<br>n=61-82  | 68.5 (10.8)<br>54-98  | 71.8 (12.5)<br>54-104 | 74.1 (12.8)<br>54-102 | 91.4 (20.6)<br>54-117  | 1  | --               | --              | --              | --              |
| 2<br>n=16-20  | 78.8 (12.7)<br>57-101 | 85.4 (15.0)<br>59-110 | 86.6 (19.2)<br>54-113 | 99.1 (18.7)<br>54-117  | 2  | --               | --              | --              | --              |
| 3<br>n=54-57  | 81.7 (9.9)<br>62-101  | 84.0 (12.8)<br>54-113 | 86.0 (15.8)<br>54-119 | 101.0 (14.8)<br>69-119 | 3  | --               | --              | --              | --              |
| 4<br>n=78-84  | 86.9 (10.8)<br>60-112 | 88.6 (11.2)<br>54-113 | 90.5 (14.7)<br>54-119 | 106.1 (11.7)<br>60-119 | 4  | --               | --              | --              | --              |
| 5<br>n=66-77  | 95.9 (9.9)<br>76-120  | 95.6 (13.6)<br>65-124 | 99.5 (12.2)<br>69-121 | 111.8 (7.9)<br>79-119  | 5  | --               | --              | --              | --              |
| Significant group differences <sup>c</sup>                          | 1<2,3<4<5             | 1<2,3<4<5<br>2<4      | 1<2,3<4<5             | 1<2,3<4<5              | Significant group differences <sup>c</sup>     | --               | --              | --              | --              |

<sup>a</sup> These categories represent fluency scores on the PreLAS 2000, an individual assessment of English language oral proficiency. Fluency level 1=non-English speaker, 2 & 3=limited English speaker, 4 & 5=fluent English speaker.

<sup>b</sup> Standardized, norm-referenced measure with mean=100, SD=15.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each English proficiency level based on longitudinal growth model estimations that corrected for classroom quality, as measured by the ECERS-R.



**Table 19. Child Outcome Scores by English Proficiency Level**

| Cohort 3 (2007-2009)                           |                        |                       |                       |                        | Cohorts 1, 2, and 3 Combined                   |                        |                       |                       |                        |
|--|------------------------|-----------------------|-----------------------|------------------------|--|------------------------|-----------------------|-----------------------|------------------------|
| Initial English Proficiency Level <sup>a</sup> | Pre-kindergarten       |                       | Kindergarten          |                        | Initial English Proficiency Level <sup>a</sup> | Pre-Kindergarten       |                       | Kindergarten          |                        |
|  | Fall                   | Spring                | Fall                  | Spring                 |  | Fall                   | Spring                | Fall                  | Spring                 |
|  | Mean (SD)<br>Range     | Mean (SD)<br>Range    | Mean (SD)<br>Range    | Mean (SD)<br>Range     |  | Mean (SD)<br>Range     | Mean (SD)<br>Range    | Mean (SD)<br>Range    | Mean (SD)<br>Range     |
| Math: Applied Problems (WJ-III <sup>b</sup> )  |                        |                       |                       |                        |  |                        |                       |                       |                        |
| 1<br>n=60-82                                   | 77.6 (13.0)<br>58-101  | 87.6 (13.7)<br>53-115 | 87.9 (12.4)<br>49-111 | 95.7 (10.4)<br>65-127  | 1<br>n=222-280                                 | 78.2 (12.9)<br>58-111  | 89.0 (12.4)<br>53-115 | 91.9 (11.3)<br>49-119 | 97.1 (11.1)<br>65-127  |
| 2<br>n=16-20                                   | 92.5 (8.9)<br>77-109   | 97.5 (10.3)<br>80-114 | 95.0 (9.8)<br>71-110  | 98.9 (13.3)<br>72-118  | 2<br>n=55-71                                   | 90.0 (10.6)<br>60-109  | 93.6 (10.1)<br>63-115 | 93.0 (12.9)<br>39-116 | 96.0 (13.1)<br>47-120  |
| 3<br>n=54-56                                   | 93.9 (7.6)<br>71-107   | 98.0 (7.8)<br>80-121  | 96.7 (12.3)<br>34-119 | 100.0 (11.0)<br>77-121 | 3<br>n=158-199                                 | 92.7 (10.5)<br>58-124  | 96.4 (10.1)<br>67-125 | 97.4 (11.9)<br>34-126 | 99.1 (11.9)<br>63-132  |
| 4<br>n=78-84                                   | 98.7 (10.7)<br>59-125  | 100.6 (9.3)<br>66-124 | 99.8 (9.1)<br>81-122  | 102.7 (10.5)<br>74-126 | 4<br>n=257-337                                 | 98.7 (9.6)<br>59-125   | 99.8 (9.6)<br>58-124  | 100.5 (8.9)<br>77-130 | 102.5 (10.0)<br>73-126 |
| 5<br>n=66-77                                   | 105.3 (10.0)<br>82-129 | 106.2 (9.1)<br>90-140 | 105.8 (8.5)<br>91-131 | 108.3 (10.1)<br>84-132 | 5<br>n=284-370                                 | 103.8 (10.0)<br>76-135 | 105.3 (9.3)<br>81-140 | 105.5 (9.3)<br>80-132 | 106.7 (10.2)<br>67-141 |
| Significant group differences <sup>c</sup>     | 1<2,3,4<5<br>3<4       | 1<2,3,4<5<br>3<4      | 1<2,3,4<5<br>3<4      | 1,2,3,4<5<br>1<4       | Significant group differences <sup>c</sup>     | 1<2,3<4<5              | 1<2<3<4<5             | 1,2<3<4<5             | 1,2,3<4<5              |

<sup>a</sup> These categories represent fluency scores on the PreLAS 2000, an individual assessment of English language oral proficiency. Fluency level 1=non-English speaker, 2 & 3=limited English speaker, 4 & 5=fluent English speaker.

<sup>b</sup> Indicates standardized, norm-referenced measure with mean=100, SD=15.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each English proficiency level based on longitudinal growth model estimations that corrected for classroom quality, as measured by the ECERS-R.

**Table 19. Child Outcome Scores by English Proficiency Level**

| Cohort 3 (2007-2009)                           |                    |                     |                     |                     | Cohorts 1, 2, and 3 Combined                   |                    |                     |                     |                     |
|--|--------------------|---------------------|---------------------|---------------------|--|--------------------|---------------------|---------------------|---------------------|
| Initial English Proficiency Level <sup>a</sup> | Pre-kindergarten   |                     | Kindergarten        |                     | Initial English Proficiency Level <sup>a</sup> | Pre-Kindergarten   |                     | Kindergarten        |                     |
|  | Fall               | Spring              | Fall                | Spring              |  | Fall               | Spring              | Fall                | Spring              |
|  | Mean (SD)<br>Range | Mean (SD)<br>Range  | Mean (SD)<br>Range  | Mean (SD)<br>Range  |  | Mean (SD)<br>Range | Mean (SD)<br>Range  | Mean (SD)<br>Range  | Mean (SD)<br>Range  |
| Math: Counting Task <sup>b</sup>               |                    |                     |                     |                     |  |                    |                     |                     |                     |
| 1<br>n=61-82                                   | 6.7 (5.0)<br>0-19  | 11.0 (6.9)<br>0-39  | 17.5 (11.0)<br>2-40 | 33.5 (10.7)<br>6-40 | 1<br>n=225-302                                 | 6.7 (5.3)<br>0-39  | 13.0 (8.6)<br>0-40  | 19.5 (11.5)<br>1-40 | 32.4 (10.6)<br>1-40 |
| 2<br>n=16-20                                   | 11.9 (9.9)<br>0-39 | 17.7 (8.9)<br>1-31  | 23.3 (13.2)<br>5-40 | 35.4 (7.2)<br>15-40 | 2<br>n=55-72                                   | 8.9 (8.2)<br>0-40  | 14.2 (8.0)<br>0-40  | 20.7 (12.1)<br>3-40 | 30.0 (10.7)<br>4-40 |
| 3<br>n=54-57                                   | 10.7 (6.9)<br>2-40 | 16.2 (10.0)<br>0-40 | 23.7 (12.0)<br>2-40 | 36.4 (6.7)<br>10-40 | 3<br>n=158-201                                 | 10.2 (7.1)<br>0-40 | 17.8 (10.8)<br>0-40 | 25.4 (12.0)<br>2-40 | 35.0 (8.3)<br>9-40  |
| 4<br>n=78-84                                   | 12.7 (8.0)<br>0-40 | 20.5 (11.4)<br>4-40 | 25.4 (12.2)<br>2-40 | 34.6 (9.4)<br>8-40  | 4<br>n=260-339                                 | 12.2 (7.5)<br>0-40 | 19.5 (10.7)<br>1-40 | 26.3 (11.8)<br>2-40 | 34.7 (8.9)<br>7-40  |
| 5<br>n=66-77                                   | 16.0 (8.5)<br>6-40 | 23.5 (11.4)<br>3-40 | 32.7 (10.1)<br>7-40 | 37.5 (6.7)<br>3-40  | 5<br>n=288-372                                 | 15.4 (8.9)<br>1-40 | 23.8 (11.3)<br>3-40 | 31.5 (10.2)<br>5-40 | 36.8 (7.4)<br>3-40  |
| Significant group differences <sup>c</sup>     | 1<2,3<4<5          | 1<2,3,4<5           | 1<2,3,4<5           | 1<3<5<br>4<5        | Significant group differences <sup>c</sup>     | 1<2,3<4<5          | 1,2<3,4<5           | 1,2<3,4<5           | 1,2<3,4<5           |

<sup>a</sup> These categories represent fluency scores on the PreLAS 2000, an individual assessment of English language oral proficiency. Fluency level 1=non-English speaker, 2 & 3=limited English speaker, 4 & 5=fluent English speaker.

<sup>b</sup> Possible range=0-40.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each English proficiency level based on longitudinal growth model estimations that corrected for classroom quality, as measured by the ECERS-R.

**Table 19. Child Outcome Scores by English Proficiency Level**

| Cohort 3 (2007-2009)                             |                    |                    |                    |                    | Cohorts 1, 2, and 3 Combined                   |                    |                    |                    |                    |
|--|--------------------|--------------------|--------------------|--------------------|--|--------------------|--------------------|--------------------|--------------------|
| Initial English Proficiency Level <sup>a</sup>   | Pre-kindergarten   |                    | Kindergarten       |                    | Initial English Proficiency Level <sup>a</sup> | Pre-Kindergarten   |                    | Kindergarten       |                    |
|  | Fall               | Spring             | Fall               | Spring             |  | Fall               | Spring             | Fall               | Spring             |
|  | Mean (SD)<br>Range | Mean (SD)<br>Range | Mean (SD)<br>Range | Mean (SD)<br>Range |  | Mean (SD)<br>Range | Mean (SD)<br>Range | Mean (SD)<br>Range | Mean (SD)<br>Range |
| General Knowledge: Social Awareness <sup>b</sup> |                    |                    |                    |                    |  |                    |                    |                    |                    |
| 1<br>n=61-82                                     | 1.6 (1.4)<br>0-6   | 2.5 (1.4)<br>0-6   | 3.2 (1.5)<br>0-6   | 4.5 (1.3)<br>2-6   | 1<br>n=225-307                                 | 1.4 (1.2)<br>0-6   | 2.8 (1.5)<br>0-6   | 3.5 (1.4)<br>0-6   | 4.6 (1.2)<br>1-6   |
| 2<br>n=16-20                                     | 3.6 (1.7)<br>1-6   | 4.2 (1.4)<br>1-6   | 4.6 (1.3)<br>2-6   | 5.6 (0.8)<br>4-6   | 2<br>n=55-72                                   | 3.3 (1.6)<br>1-6   | 4.1 (1.4)<br>0-6   | 4.3 (1.4)<br>0-6   | 5.1 (1.1)<br>2-6   |
| 3<br>n=54-55                                     | 3.8 (1.6)<br>1-6   | 4.6 (1.2)<br>1-6   | 4.8 (1.3)<br>2-6   | 5.2 (1.2)<br>2-6   | 3<br>n=158-200                                 | 3.7 (1.6)<br>0-6   | 4.6 (1.3)<br>1-6   | 4.8 (1.3)<br>0-6   | 5.4 (1.0)<br>2-6   |
| 4<br>n=78-84                                     | 4.3 (1.3)<br>1-6   | 4.7 (1.3)<br>2-6   | 4.9 (1.2)<br>2-6   | 5.4 (0.9)<br>2-6   | 4<br>n=260-343                                 | 4.1 (1.4)<br>1-6   | 4.7 (1.2)<br>1-6   | 5.0 (1.1)<br>2-6   | 5.4 (0.9)<br>1-6   |
| 5<br>n=66-77                                     | 4.5 (1.3)<br>1-6   | 5.1 (1.1)<br>2-6   | 5.2 (1.0)<br>2-6   | 5.8 (0.5)<br>4-6   | 5<br>n=288-374                                 | 4.7 (1.2)<br>1-6   | 5.0 (1.1)<br>2-6   | 5.3 (1.0)<br>2-6   | 5.7 (0.7)<br>3-6   |
| Significant group differences <sup>c</sup>       | 1<2,3,4,5<br>2,3<5 | 1<2,3,4,5<br>2,3<5 | 1<2,3,4,5<br>3<5   | 1<2,3,4,5<br>3<5   | Significant group differences <sup>c</sup>     | 1<2,3,4<5<br>2,3<4 | 1<2<3<4<5          | 1<2<3,4<5          | 1<2,3,4<5          |

<sup>a</sup> These categories represent fluency scores on the PreLAS 2000, an individual assessment of English language oral proficiency. Fluency level 1=non-English speaker, 2 & 3=limited English speaker, 4 & 5=fluent English speaker.

<sup>b</sup> Possible range=0-6.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each English proficiency level based on longitudinal growth model estimations that corrected for classroom quality, as measured by the ECERS-R.

**Table 19. Child Outcome Scores by English Proficiency Level**

| Cohort 3 (2007-2009)                                   |                        |                        |                        |                        | Cohorts 1, 2, and 3 Combined                   |                        |                        |                        |                        |
|--|------------------------|------------------------|------------------------|------------------------|--|------------------------|------------------------|------------------------|------------------------|
| Initial English Proficiency Level <sup>a</sup>         | Pre-kindergarten       |                        | Kindergarten           |                        | Initial English Proficiency Level <sup>a</sup> | Pre-Kindergarten       |                        | Kindergarten           |                        |
|  | Fall                   | Spring                 | Fall                   | Spring                 |  | Fall                   | Spring                 | Fall                   | Spring                 |
|  | Mean (SD)<br>Range     | Mean (SD)<br>Range     | Mean (SD)<br>Range     | Mean (SD)<br>Range     |  | Mean (SD)<br>Range     | Mean (SD)<br>Range     | Mean (SD)<br>Range     | Mean (SD)<br>Range     |
| Classroom Behavior: Social Skills (SSRS <sup>b</sup> ) |                        |                        |                        |                        |  |                        |                        |                        |                        |
| 1<br>n=52-79   | 97.0 (16.6)<br>57-130  | 108.5 (15.2)<br>71-130 | 95.7 (12.4)<br>64-130  | 104.2 (14.5)<br>68-130 | 1<br>n=193-293                                 | 95.9 (16.4)<br>53-130  | 108.9 (16.0)<br>70-130 | 98.9 (13.7)<br>49-130  | 106.2 (14.5)<br>54-130 |
| 2<br>n=15-20   | 100.9 (15.7)<br>75-128 | 110.8 (16.1)<br>84-130 | 96.6 (16.3)<br>68-128) | 108.4 (15.4)<br>82-130 | 2<br>n=47-71                                   | 95.0 (16.3)<br>62-130  | 104.1 (16.9)<br>66-130 | 98.7 (15.2)<br>62-130  | 103.2 (14.2)<br>76-130 |
| 3<br>n=40-56   | 98.2 (17.2)<br>54-129  | 107.1 (16.1)<br>57-130 | 96.6 (15.6)<br>66-128  | 103.9 (14.8)<br>64-130 | 3<br>n=132-198                                 | 99.1 (13.9)<br>54-130  | 106.8 (14.3)<br>57-130 | 96.9 (15.0)<br>53-130  | 103.0 (14.7)<br>64-130 |
| 4<br>n=61-79   | 101.7 (15.2)<br>66-130 | 108.4 (13.9)<br>71-130 | 99.2 (14.6)<br>72-130  | 105.3 (14.4)<br>78-130 | 4<br>n=220-327                                 | 101.1 (15.0)<br>60-130 | 107.7 (14.4)<br>60-130 | 100.0 (14.6)<br>53-130 | 105.8 (14.9)<br>67-130 |
| 5<br>n=58-71   | 107.1 (14.2)<br>80-130 | 113.1 (12.6)<br>85-130 | 104.8 (13.3)<br>77-130 | 106.9 (13.6)<br>76-130 | 5<br>n=250-356                                 | 106.3 (14.4)<br>62-130 | 112.0 (13.6)<br>66-130 | 106.1 (13.8)<br>68-130 | 110.2 (14.3)<br>61-130 |
| Significant group differences <sup>c</sup>             | 1,3,4<5                | 1,3,4<5<br>1<4         | 1,3<5                  | NS                     | Significant group differences <sup>c</sup>     | 1<3,4<5<br>2<4,5       | 1<3<4<5<br>2<4,5       | 1,2,3,4<5<br>1,3<4     | 1,3,4<5                |

<sup>a</sup> These categories represent fluency scores on the PreLAS 2000, an individual assessment of English language oral proficiency. Fluency level 1=non-English speaker, 2 & 3=limited English speaker, 4 & 5=fluent English speaker.

<sup>b</sup> Indicates standardized, norm-referenced measure with mean=100, SD=15.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each English proficiency level based on longitudinal growth model estimations that corrected for classroom quality, as measured by the ECERS-R.

**Table 19. Child Outcome Scores by English Proficiency Level**

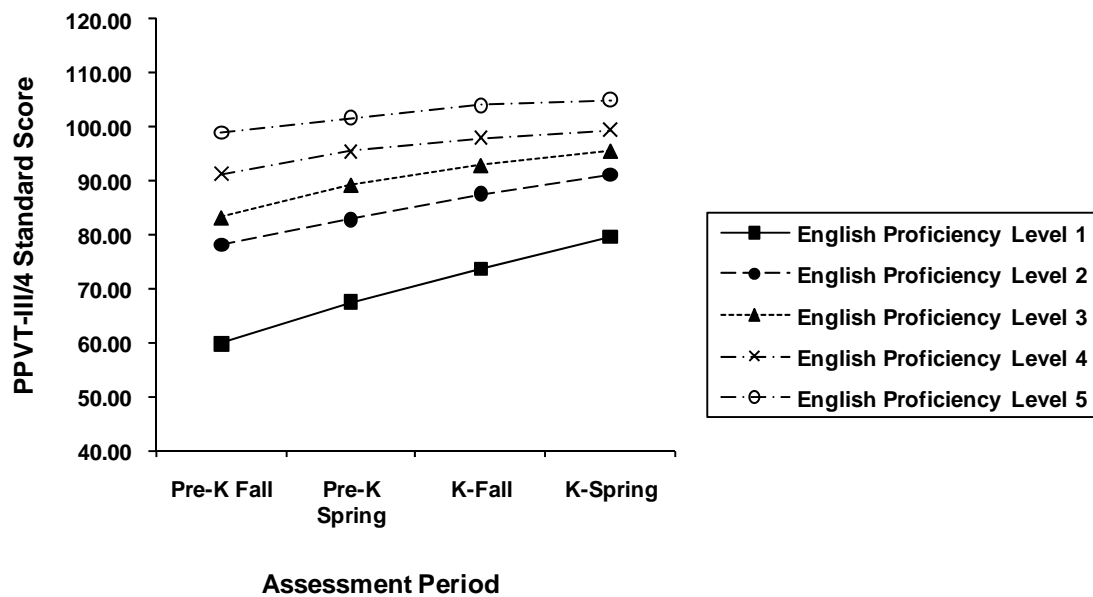
| Cohort 3 (2007-2009)                                       |                        |                        |                        |                        | Cohorts 1, 2, and 3 Combined                   |                        |                       |                        |                        |
|--|------------------------|------------------------|------------------------|------------------------|--|------------------------|-----------------------|------------------------|------------------------|
| Initial English Proficiency Level <sup>a</sup>             | Pre-kindergarten       |                        | Kindergarten           |                        | Initial English Proficiency Level <sup>a</sup> | Pre-Kindergarten       |                       | Kindergarten           |                        |
|  | Fall                   | Spring                 | Fall                   | Spring                 |  | Fall                   | Spring                | Fall                   | Spring                 |
|  | Mean (SD)<br>Range     | Mean (SD)<br>Range     | Mean (SD)<br>Range     | Mean (SD)<br>Range     |  | Mean (SD)<br>Range     | Mean (SD)<br>Range    | Mean (SD)<br>Range     | Mean (SD)<br>Range     |
| Classroom Behavior: Problem Behaviors (SSRS <sup>b</sup> ) |                        |                        |                        |                        |  |                        |                       |                        |                        |
| 1<br>n=52-81   | 97.7 (11.5)<br>85-130  | 96.8 (12.2)<br>85-139  | 99.2 (12.3)<br>85-127  | 96.8 (13.2)<br>85-138  | 1<br>n=193-300                                 | 98.2 (12.1)<br>85-132  | 96.5 (12.0)<br>85-145 | 96.9 (11.6)<br>85-135  | 95.2 (11.5)<br>85-138  |
| 2<br>n=15-20   | 98.6 (12.7)<br>85-124  | 93.8 (10.3)<br>85-115  | 99.5 (15.3)<br>85-127  | 95.5 (13.8)<br>85-122  | 2<br>n=47-72                                   | 100.5 (13.2)<br>85-135 | 99.3 (13.0)<br>85-135 | 98.0 (13.1)<br>85-127  | 99.6 (12.3)<br>85-123  |
| 3<br>n=39-56   | 103.0 (15.2)<br>85-137 | 102.2 (14.3)<br>85-135 | 101.3 (14.2)<br>85-131 | 98.2 (12.6)<br>85-125  | 3<br>n=132-200                                 | 100.0 (13.1)<br>85-138 | 99.7 (13.0)<br>85-139 | 101.6 (14.6)<br>85-137 | 101.4 (14.0)<br>85-141 |
| 4<br>n=61-80   | 101.4 (13.6)<br>85-133 | 101.4 (13.7)<br>85-145 | 101.3 (12.2)<br>85-134 | 100.9 (13.1)<br>85-127 | 4<br>n=221-330                                 | 99.8 (13.2)<br>85-140  | 99.9 (12.8)<br>85-145 | 100.4 (12.8)<br>85-135 | 100.3 (13.8)<br>85-137 |
| 5<br>n=59-72   | 98.1 (12.3)<br>85-140  | 99.3 (12.5)<br>85-137  | 95.3 (11.2)<br>85-128  | 97.7 (12.0)<br>85-133  | 5<br>n=251-360                                 | 97.3 (12.3)<br>85-142  | 98.3 (12.7)<br>85-139 | 95.9 (11.9)<br>85-135  | 97.6 (12.8)<br>85-135  |
| Significant group differences <sup>c</sup>                 | NS                     | NS                     | NS                     | NS                     | Significant group differences <sup>c</sup>     | NS                     | NS                    | NS                     | NS                     |

<sup>a</sup> These categories represent fluency scores on the PreLAS 2000, an individual assessment of English language oral proficiency. Fluency level 1=non-English speaker, 2 & 3=limited English speaker, 4 & 5=fluent English speaker.

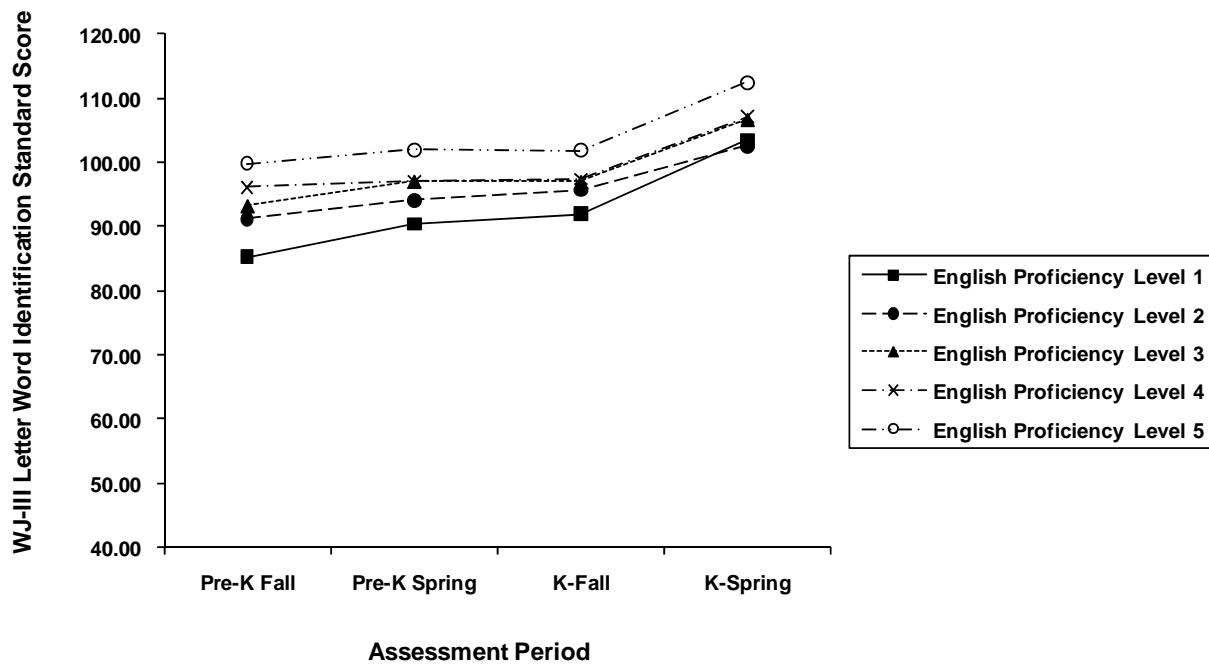
<sup>b</sup> Indicates standardized, norm-referenced measure with mean=100, SD=15.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each English proficiency level based on longitudinal growth model estimations that corrected for classroom quality, as measured by the ECERS-R.

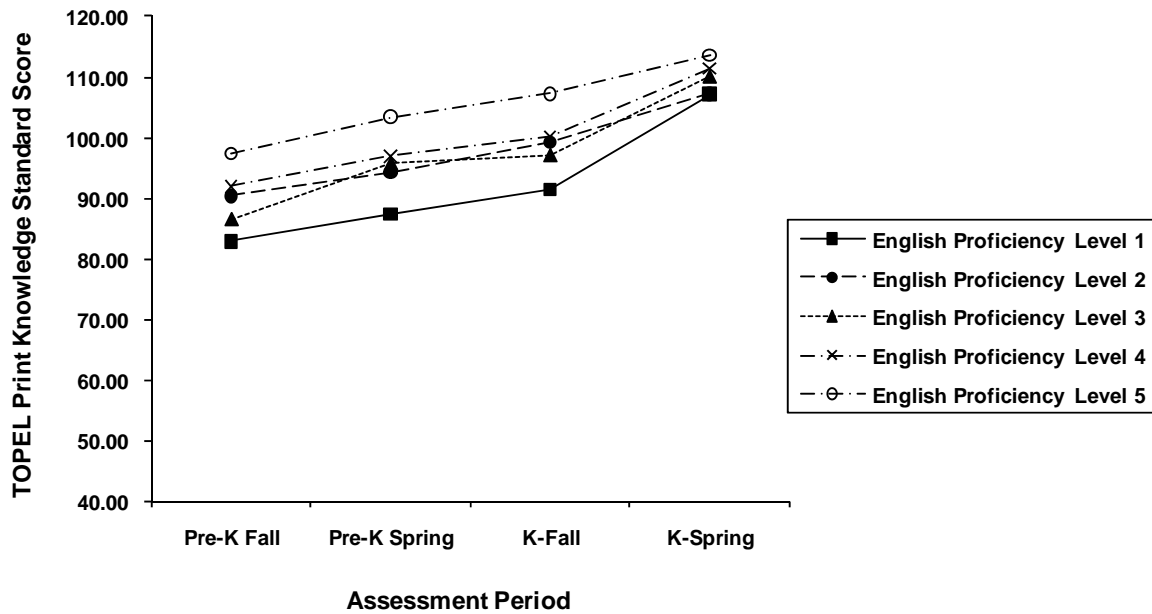
**Figure 11. Growth in Receptive Language Skills (PPVT-III/4) by English Proficiency (Cohorts 1, 2, and 3)**



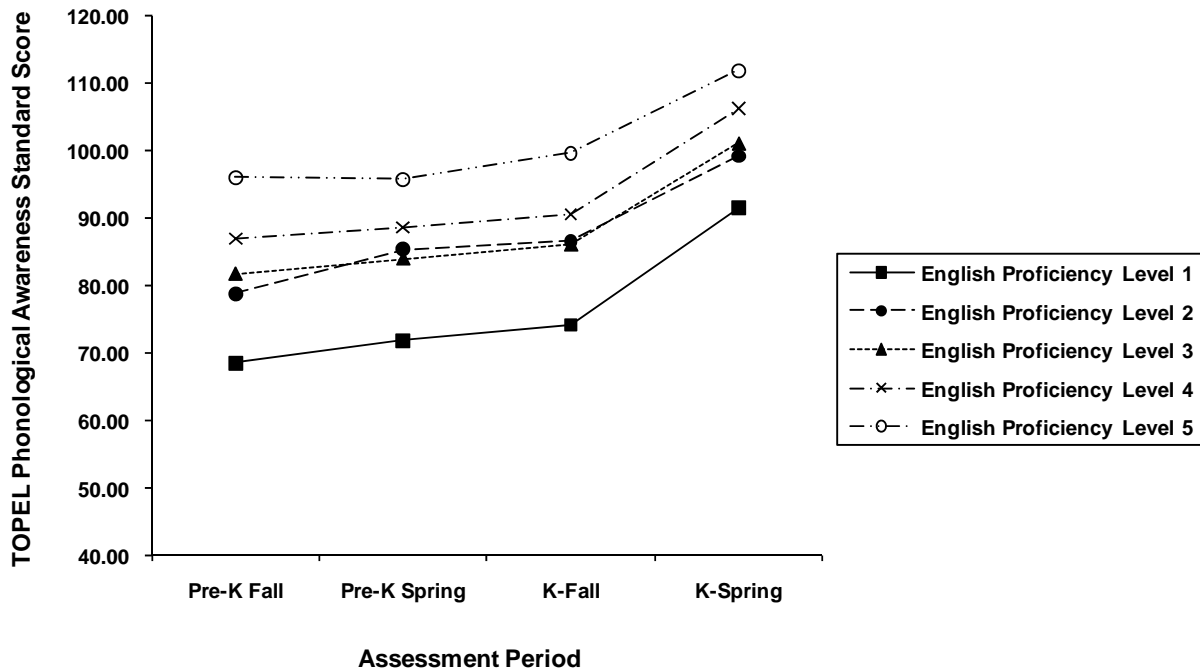
**Figure 12. Growth in Letter-Word Knowledge (WJ-III Letter Word Identification) by English Proficiency (Cohort 3)**



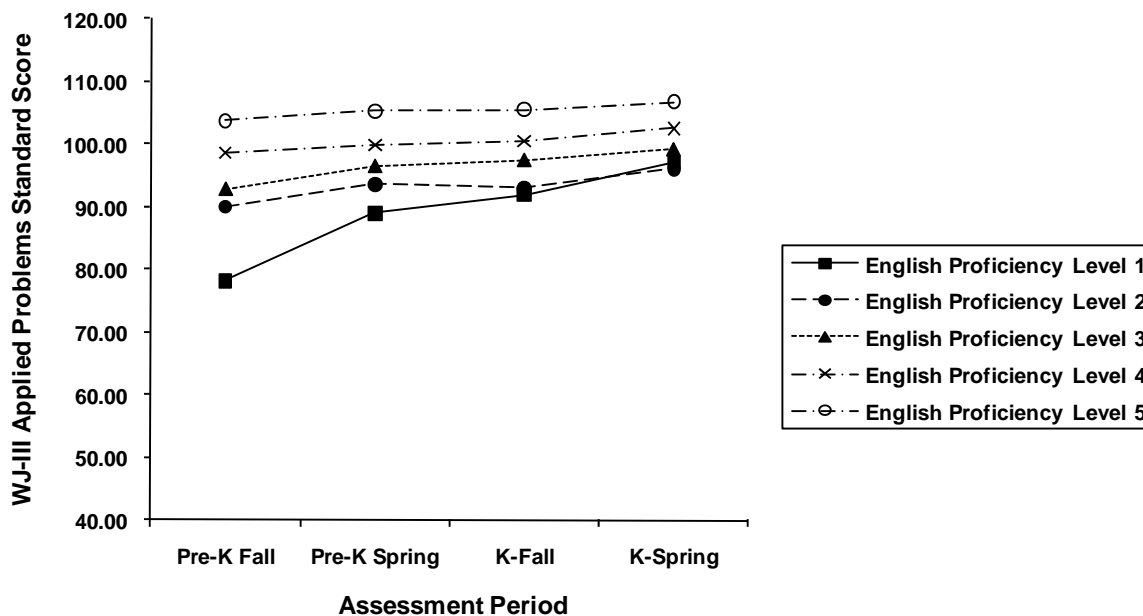
**Figure 13. Growth in Print Knowledge (TOPEL) by English Proficiency (Cohort 3)**



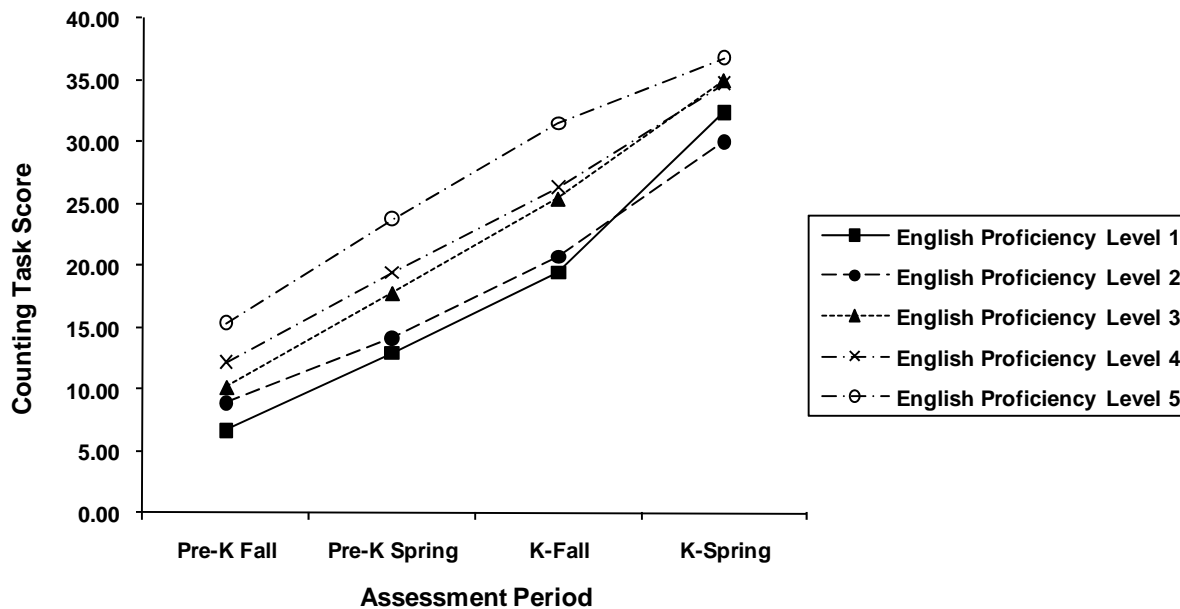
**Figure 14. Growth in Phonological Awareness (TOPEL) by English Proficiency (Cohort 3)**



**Figure 15. Growth in Math Skills (WJ-III Applied Problems) by English Proficiency**  
(Cohorts 1, 2, and 3)

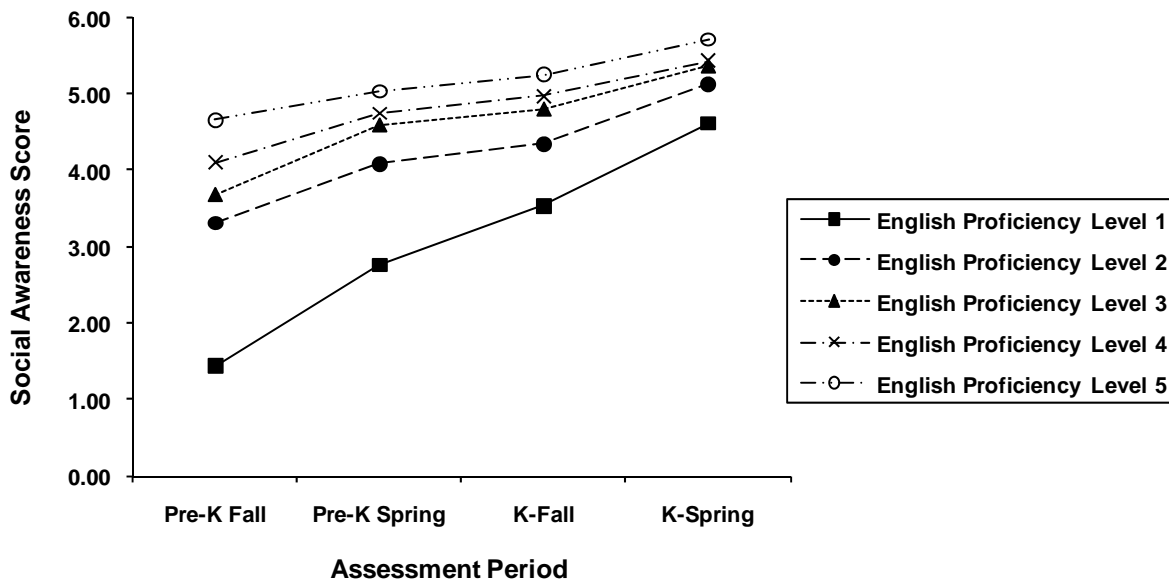


**Figure 16. Growth in Counting Skills (Counting Task) by English Proficiency**  
(Cohorts 1, 2, and 3)

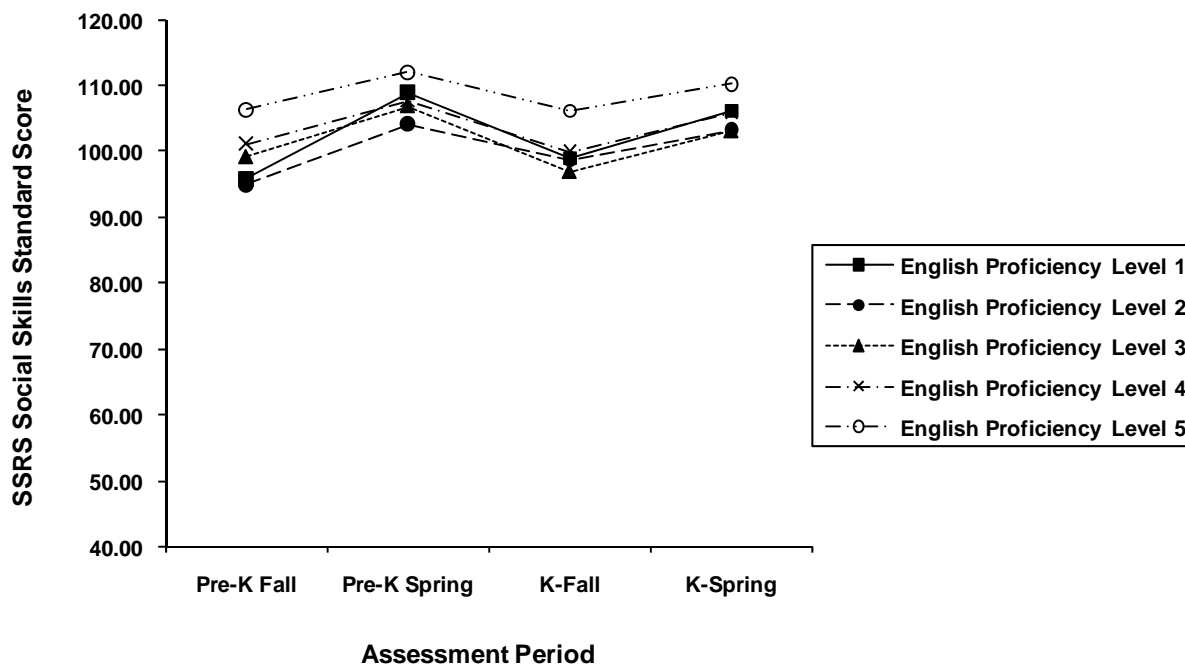




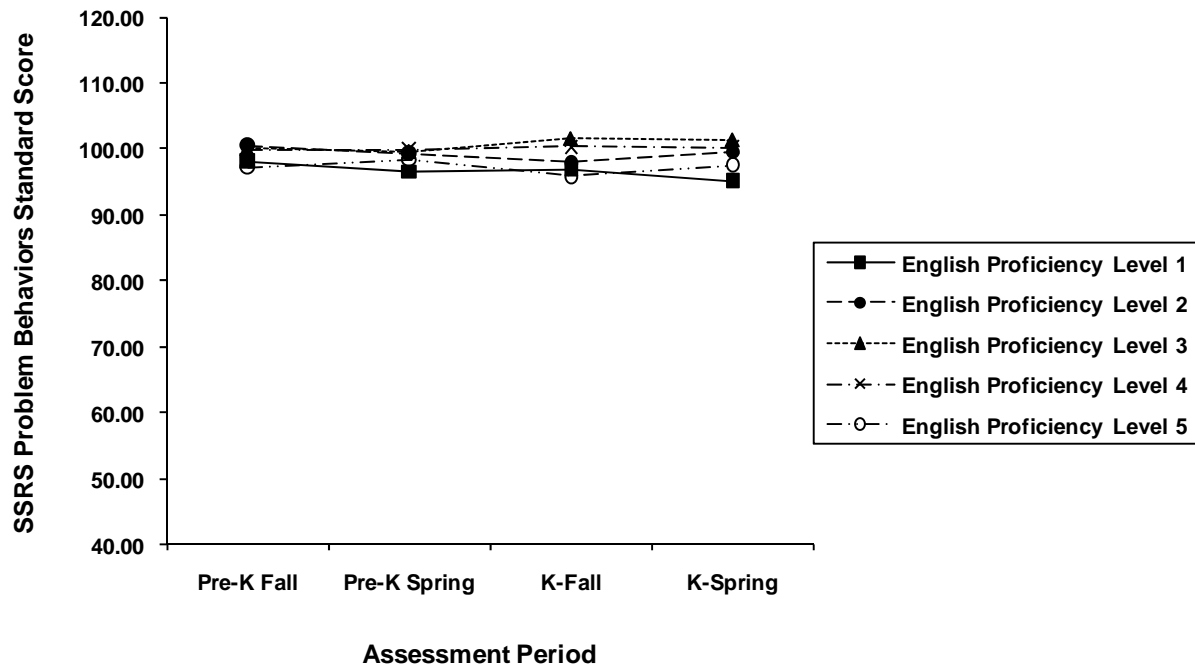
**Figure 17. Growth in General Knowledge (Social Awareness Task) by English Proficiency**  
(Cohorts 1, 2, and 3)



**Figure 18. Growth in Social Skills (SSRS) by English Proficiency**  
(Cohorts 1, 2, and 3)



**Figure 19. Growth in Problem Behaviors (SSRS) by English Proficiency**  
(Cohorts 1, 2, and 3)



**Table 20. Child Outcome Scores by Risk**

| Cohort 3 (2007-2009)   |                        |                        |                        |                        | Cohorts 1, 2, and 3 Combined               |                       |                       |                        |                        |
|--|------------------------|------------------------|------------------------|------------------------|--|-----------------------|-----------------------|------------------------|------------------------|
| Risk Total <sup>a</sup>  | Pre-kindergarten       |                        | Kindergarten           |                        | Risk Total <sup>a</sup>                    | Pre-Kindergarten      |                       | Kindergarten           |                        |
|  | Fall                   | Spring                 | Fall                   | Spring                 |  | Fall                  | Spring                | Fall                   | Spring                 |
|  | Mean (SD)              | Mean (SD)              | Mean (SD)              | Mean (SD)              |  | Mean (SD)             | Mean (SD)             | Mean (SD)              | Mean (SD)              |
|  | Range                  | Range                  | Range                  | Range                  |  | Range                 | Range                 | Range                  | Range                  |
| Language and Literacy: Receptive Language (PPVT-III <sup>b</sup> /4 <sup>b,c</sup> ) |                        |                        |                        |                        |  |                       |                       |                        |                        |
| 0<br>n=21-23   | 102.7 (14.1)<br>72-127 | 103.5 (13.5)<br>64-120 | 104.6 (12.9)<br>82-130 | 107.5 (13.4)<br>82-134 | 0<br>n=74-88                               | 98.3 (14.0)<br>68-127 | 99.6 (12.3)<br>64-121 | 102.8 (11.7)<br>71-130 | 104.2 (10.3)<br>82-134 |
| 1<br>n=52-57   | 92.4 (16.4)<br>54-131  | 93.0 (16.7)<br>43-129  | 97.1 (15.3)<br>42-126  | 99.8 (11.8)<br>67-128  | 1<br>n=152-193                             | 91.1 (15.7)<br>39-131 | 93.9 (16.2)<br>33-129 | 97.8 (14.6)<br>40-126  | 100.8 (10.8)<br>63-128 |
| 2<br>n=153-179   | 88.8 (15.9)<br>33-124  | 93.4 (13.7)<br>49-128  | 94.7 (13.2)<br>51-129  | 97.7 (12.1)<br>67-126  | 2<br>n=564-737                             | 87.4 (16.9)<br>21-125 | 92.0 (15.7)<br>40-129 | 95.0 (14.7)<br>35-132  | 97.2 (13.1)<br>36-135  |
| 3+<br>n=50-52  | 75.1 (19.8)<br>39-116  | 76.1 (20.0)<br>23-114  | 79.9 (17.2)<br>52-113  | 88.1 (13.5)<br>65-118  | 3+<br>n=201-253                            | 66.2 (20.2)<br>23-116 | 73.2 (19.2)<br>23-114 | 79.2 (16.9)<br>32-117  | 83.1 (15.0)<br>25-118  |
| Significant group differences <sup>d</sup>   | 3<0,1,2<br>2<0         | 3<0,1,2<br>2<0         | 3<0,1,2<br>2<0         | 3<0,1,2                | Significant group differences <sup>d</sup> | 3,2<1<0               | 3,2<1<0               | 3<2<1,0                | 3<2<1,0                |

<sup>a</sup> A total risk factor score was constructed based on More at Four eligibility guidelines, using income (eligibility for free lunch=2 points, reduced-price lunch=1 point, and full-price lunch=0 points) and additional risk factors (1 point each for limited English proficiency, identified disability, and chronic health condition). A four-level categorical variable was constructed, representing risk factor scores of 0, 1, 2, and 3-5.

<sup>b</sup> Standardized, norm-referenced measure with mean=100, SD=15.

<sup>c</sup> PPVT-III was used for Cohorts 1 and 2 and PPVT-4 was used for Cohort 3.

<sup>d</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each risk category based on longitudinal growth model estimations that corrected for classroom quality as measured by the ECERS-R.

**Table 20. Child Outcome Scores by Risk**

| Cohort 3 (2007-2009)   |                       |                       |                       |                        | Cohorts 1, 2, and 3 Combined               |                  |           |              |           |
|--|-----------------------|-----------------------|-----------------------|------------------------|--|------------------|-----------|--------------|-----------|
| Risk Total <sup>a</sup>  | Pre-kindergarten      |                       | Kindergarten          |                        | Risk Total <sup>a</sup>                    | Pre-Kindergarten |           | Kindergarten |           |
|  | Fall                  | Spring                | Fall                  | Spring                 |  | Fall             | Spring    | Fall         | Spring    |
|  | Mean (SD)             | Mean (SD)             | Mean (SD)             | Mean (SD)              |  | Mean (SD)        | Mean (SD) | Mean (SD)    | Mean (SD) |
|  | Range                 | Range                 | Range                 | Range                  |  | Range            | Range     | Range        | Range     |
| Language and Literacy: Letter-Word Identification (WJ-III <sup>b</sup> ) |                       |                       |                       |                        |  |                  |           |              |           |
| 0<br>n=21-23   | 96.0 (11.1)<br>75-115 | 101.1 (7.4)<br>85-116 | 98.7 (8.9)<br>69-112  | 108.6 (9.7)<br>87-127  | 0  | --               | --        | --           | --        |
| 1<br>n=52-58   | 93.6 (13.1)<br>62-118 | 97.1 (11.5)<br>69-115 | 96.8 (12.3)<br>64-122 | 107.1 (12.2)<br>82-140 | 1  | --               | --        | --           | --        |
| 2<br>n=153-179   | 95.0 (11.1)<br>62-136 | 97.3 (12.4)<br>61-151 | 98.1 (12.1)<br>51-145 | 107.8 (13.6)<br>69-147 | 2  | --               | --        | --           | --        |
| 3+<br>n=50-61  | 87.5 (13.0)<br>66-114 | 91.3 (13.0)<br>62-110 | 93.9 (11.2)<br>66-112 | 105.0 (12.2)<br>58-125 | 3+   | --               | --        | --           | --        |
| Significant group differences <sup>c</sup>                               | NS                    | NS                    | NS                    | NS                     | Significant group differences <sup>c</sup> | --               | --        | --           | --        |

<sup>a</sup> A total risk factor score was constructed based on More at Four eligibility guidelines, using income (eligibility for free lunch=2 points, reduced-price lunch=1 point, and full-price lunch=0 points) and additional risk factors (1 point each for limited English proficiency, identified disability, and chronic health condition). A four-level categorical variable was constructed, representing risk factor scores of 0, 1, 2, and 3-5.

<sup>b</sup> Standardized, norm-referenced measure with mean=100, SD=15.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each risk category based on longitudinal growth model estimations that corrected for classroom quality as measured by the ECERS-R.

**Table 20. Child Outcome Scores by Risk**

| Cohort 3 (2007-2009)   |                       |                       |                        |                        | Cohorts 1, 2, and 3 Combined               |                  |           |              |           |
|--|-----------------------|-----------------------|------------------------|------------------------|--|------------------|-----------|--------------|-----------|
| Risk Total <sup>a</sup>                                      | Pre-kindergarten      |                       | Kindergarten           |                        | Risk Total <sup>a</sup>                    | Pre-Kindergarten |           | Kindergarten |           |
|  | Fall                  | Spring                | Fall                   | Spring                 |  | Fall             | Spring    | Fall         | Spring    |
|  | Mean (SD)             | Mean (SD)             | Mean (SD)              | Mean (SD)              |  | Mean (SD)        | Mean (SD) | Mean (SD)    | Mean (SD) |
|  | Range                 | Range                 | Range                  | Range                  |  | Range            | Range     | Range        | Range     |
| Language and Literacy: Print Knowledge (TOPEL <sup>b</sup> ) |                       |                       |                        |                        |  |                  |           |              |           |
| 0<br>n=21-23   | 93.4 (12.8)<br>78-120 | 99.0 (10.1)<br>80-118 | 102.1 (11.8)<br>72-114 | 113.6 (3.0)<br>103-116 | 0  | --               | --        | --           | --        |
| 1<br>n=52-58   | 90.3 (12.6)<br>73-124 | 97.0 (14.8)<br>66-119 | 100.9 (16.0)<br>60-118 | 111.5 (5.5)<br>86-116  | 1  | --               | --        | --           | --        |
| 2<br>n=153-179   | 90.7 (11.6)<br>75-131 | 97.0 (13.9)<br>67-124 | 100.7 (14.6)<br>60-117 | 110.4 (9.2)<br>67-116  | 2  | --               | --        | --           | --        |
| 3+<br>n=50-61  | 85.8 (10.1)<br>71-116 | 89.4 (13.6)<br>67-115 | 92.5 (16.0)<br>65-117  | 108.6 (10.4)<br>61-116 | 3+   | --               | --        | --           | --        |
| Significant group differences <sup>c</sup>                   | NS                    | NS                    | NS                     | NS                     | Significant group differences <sup>c</sup> | --               | --        | --           | --        |

<sup>a</sup> A total risk factor score was constructed based on More at Four eligibility guidelines, using income (eligibility for free lunch=2 points, reduced-price lunch=1 point, and full-price lunch=0 points) and additional risk factors (1 point each for limited English proficiency, identified disability, and chronic health condition). A four-level categorical variable was constructed, representing risk factor scores of 0, 1, 2, and 3-5.

<sup>b</sup> Standardized, norm-referenced measure with mean=100, SD=15.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each risk category based on longitudinal growth model estimations that corrected for classroom quality as measured by the ECERS-R.

**Table 20. Child Outcome Scores by Risk**

| Cohort 3 (2007-2009)  |                       |                       |                       |                        | Cohorts 1, 2, and 3 Combined               |                  |           |              |           |
|---|-----------------------|-----------------------|-----------------------|------------------------|--|------------------|-----------|--------------|-----------|
| Risk Total <sup>a</sup>   | Pre-kindergarten      |                       | Kindergarten          |                        | Risk Total <sup>a</sup>                    | Pre-Kindergarten |           | Kindergarten |           |
|   | Fall                  | Spring                | Fall                  | Spring                 |  | Fall             | Spring    | Fall         | Spring    |
|   | Mean (SD)             | Mean (SD)             | Mean (SD)             | Mean (SD)              |  | Mean (SD)        | Mean (SD) | Mean (SD)    | Mean (SD) |
|   | Range                 | Range                 | Range                 | Range                  |  | Range            | Range     | Range        | Range     |
| Language and Literacy: Phonological Awareness (TOPEL <sup>b</sup> ) |                       |                       |                       |                        |  |                  |           |              |           |
| 0<br>n=21-23  | 89.5 (12.2)<br>65-109 | 95.3 (9.5)<br>79-115  | 97.7 (14.6)<br>72-121 | 106.7 (13.3)<br>69-119 | 0  | --               | --        | --           | --        |
| 1<br>n=52-58  | 83.9 (14.3)<br>54-113 | 87.6 (16.0)<br>54-124 | 92.3 (15.4)<br>54-119 | 104.2 (13.7)<br>57-117 | 1  | --               | --        | --           | --        |
| 2<br>n=153-179  | 85.6 (13.6)<br>55-120 | 86.7 (14.2)<br>54-124 | 88.4 (16.9)<br>54-121 | 104.0 (15.3)<br>54-119 | 2  | --               | --        | --           | --        |
| 3+<br>n=50-61   | 71.6 (12.6)<br>54-99  | 74.3 (13.8)<br>54-110 | 78.3 (13.7)<br>54-110 | 96.3 (20.2)<br>54-119  | 3+   | --               | --        | --           | --        |
| Significant group differences <sup>c</sup>                          | 3<0,1,2               | 3<0,1,2               | NS                    | NS                     | Significant group differences <sup>c</sup> | --               | --        | --           | --        |

<sup>a</sup> A total risk factor score was constructed based on More at Four eligibility guidelines, using income (eligibility for free lunch=2 points, reduced-price lunch=1 point, and full-price lunch=0 points) and additional risk factors (1 point each for limited English proficiency, identified disability, and chronic health condition). A four-level categorical variable was constructed, representing risk factor scores of 0, 1, 2, and 3-5.

<sup>b</sup> Standardized, norm-referenced measure with mean=100, SD=15.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each risk category based on longitudinal growth model estimations that corrected for classroom quality as measured by the ECERS-R.

**Table 20. Child Outcome Scores by Risk**

| Cohort 3 (2007-2009)                          |                        |                        |                        |                        | Cohorts 1, 2, and 3 Combined               |                        |                        |                        |                        |
|---|------------------------|------------------------|------------------------|------------------------|--|------------------------|------------------------|------------------------|------------------------|
| Risk Total <sup>a</sup>                       | Pre-kindergarten       |                        | Kindergarten           |                        | Risk Total <sup>a</sup>                    | Pre-Kindergarten       |                        | Kindergarten           |                        |
|   | Fall                   | Spring                 | Fall                   | Spring                 |  | Fall                   | Spring                 | Fall                   | Spring                 |
|   | Mean (SD)<br>Range     | Mean (SD)<br>Range     | Mean (SD)<br>Range     | Mean (SD)<br>Range     |  | Mean (SD)<br>Range     | Mean (SD)<br>Range     | Mean (SD)<br>Range     | Mean (SD)<br>Range     |
| Math: Applied Problems (WJ-III <sup>b</sup> ) |                        |                        |                        |                        |  |                        |                        |                        |                        |
| 0<br>n=21-23                                  | 101.9 (12.3)<br>71-123 | 103.5 (11.5)<br>80-127 | 102.1 (11.3)<br>78-117 | 106.5 (9.0)<br>92-120  | 0<br>n=74-87                               | 102.4 (11.9)<br>67-128 | 103.3 (10.0)<br>80-127 | 103.4 (10.5)<br>78-126 | 104.6 (10.4)<br>67-127 |
| 1<br>n=52-58                                  | 95.9 (15.2)<br>59-129  | 99.0 (12.3)<br>65-124  | 99.6 (10.9)<br>68-131  | 103.1 (11.2)<br>80-128 | 1<br>n=151-193                             | 98.2 (14.0)<br>58-135  | 100.6 (11.6)<br>63-126 | 102.1 (10.3)<br>68-131 | 104.1 (10.6)<br>79-141 |
| 2<br>n=152-178                                | 95.7 (12.8)<br>59-127  | 100.0 (9.7)<br>76-140  | 99.0 (11.4)<br>34-128  | 102.2 (11.3)<br>72-132 | 2<br>n=558-735                             | 95.8 (12.5)<br>59-128  | 99.0 (11.0)<br>58-140  | 99.7 (10.8)<br>34-132  | 102.0 (10.7)<br>69-132 |
| 3+<br>n=50-61                                 | 82.4 (15.0)<br>58-109  | 89.6 (15.2)<br>53-118  | 90.4 (13.5)<br>49-111  | 97.1 (12.0)<br>65-122  | 3+<br>n=202-249                            | 82.9 (14.7)<br>58-125  | 91.2 (13.1)<br>53-118  | 93.6 (13.2)<br>39-124  | 97.5 (13.3)<br>47-132  |
| Significant group differences <sup>c</sup>    | 3<0,1,2                | 3<0,1,2                | 3<1                    | NS                     | Significant group differences <sup>c</sup> | 3,2<0                  | 3,2<0<br>3<1           | 3<0,1                  | 3<1                    |

<sup>a</sup> A total risk factor score was constructed based on More at Four eligibility guidelines, using income (eligibility for free lunch=2 points, reduced-price lunch=1 point, and full-price lunch=0 points) and additional risk factors (1 point each for limited English proficiency, identified disability, and chronic health condition). A four-level categorical variable was constructed, representing risk factor scores of 0, 1, 2, and 3-5.

<sup>b</sup> Standardized, norm-referenced measure with mean=100, SD=15.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each risk category based on longitudinal growth model estimations that corrected for classroom quality as measured by the ECERS-R.

**Table 20. Child Outcome Scores by Risk**

| Cohort 3 (2007-2009)                       |                    |                     |                     |                     | Cohorts 1, 2, and 3 Combined               |                    |                     |                     |                     |
|--|--------------------|---------------------|---------------------|---------------------|--|--------------------|---------------------|---------------------|---------------------|
| Risk Total <sup>a</sup>                    | Pre-kindergarten   |                     | Kindergarten        |                     | Risk Total <sup>a</sup>                    | Pre-Kindergarten   |                     | Kindergarten        |                     |
|  | Fall               | Spring              | Fall                | Spring              |  | Fall               | Spring              | Fall                | Spring              |
|  | Mean (SD)<br>Range | Mean (SD)<br>Range  | Mean (SD)<br>Range  | Mean (SD)<br>Range  |  | Mean (SD)<br>Range | Mean (SD)<br>Range  | Mean (SD)<br>Range  | Mean (SD)<br>Range  |
| Math: Counting Task <sup>b</sup>           |                    |                     |                     |                     |  |                    |                     |                     |                     |
| 0<br>n=21-23                               | 15.3 (8.7)<br>5-39 | 20.3 (10.1)<br>6-40 | 30.7 (11.8)<br>8-40 | 38.2 (4.3)<br>26-40 | 0<br>n=74-87                               | 14.8 (9.1)<br>0-40 | 22.2 (11.3)<br>4-40 | 30.6 (11.0)<br>7-40 | 36.9 (7.1)<br>13-40 |
| 1<br>n=52-58                               | 11.8 (8.3)<br>0-40 | 18.6 (11.5)<br>0-40 | 26.1 (13.0)<br>2-40 | 36.5 (6.9)<br>11-40 | 1<br>n=153-195                             | 12.7 (8.0)<br>0-40 | 20.0 (11.7)<br>0-40 | 27.6 (12.3)<br>2-40 | 36.3 (7.3)<br>11-40 |
| 2<br>n=153-179                             | 12.3 (8.2)<br>0-40 | 19.1 (11.0)<br>0-40 | 26.2 (11.8)<br>2-40 | 34.9 (9.1)<br>3-40  | 2<br>n=565-746                             | 11.8 (8.4)<br>0-40 | 19.3 (11.2)<br>0-40 | 26.6 (11.9)<br>2-40 | 34.2 (9.3)<br>3-40  |
| 3+<br>n=50-61                              | 7.9 (6.1)<br>0-29  | 13.1 (9.7)<br>0-40  | 17.9 (12.0)<br>2-40 | 35.1 (9.9)<br>6-40  | 3+<br>n=203-268                            | 7.7 (5.8)<br>0-40  | 14.6 (9.1)<br>0-40  | 20.8 (11.6)<br>1-40 | 33.5 (10.2)<br>1-40 |
| Significant group differences <sup>c</sup> | NS                 | NS                  | NS                  | NS                  | Significant group differences <sup>c</sup> | 3<2,1<0            | 3<2,1<0             | 3,2<0<br>3<1        | NS                  |

<sup>a</sup> A total risk factor score was constructed based on More at Four eligibility guidelines, using income (eligibility for free lunch=2 points, reduced-price lunch=1 point, and full-price lunch=0 points) and additional risk factors (1 point each for limited English proficiency, identified disability, and chronic health condition). A four-level categorical variable was constructed, representing risk factor scores of 0, 1, 2, and 3-5.

<sup>b</sup> Possible range=0-40.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each risk category based on longitudinal growth model estimations that corrected for classroom quality as measured by the ECERS-R.



**Table 20. Child Outcome Scores by Risk**

| Cohort 3 (2007-2009)                             |                    |                    |                    |                    | Cohorts 1, 2, and 3 Combined               |                    |                    |                    |                    |
|--|--------------------|--------------------|--------------------|--------------------|--|--------------------|--------------------|--------------------|--------------------|
| Risk Total <sup>a</sup>                          | Pre-kindergarten   |                    | Kindergarten       |                    | Risk Total <sup>a</sup>                    | Pre-Kindergarten   |                    | Kindergarten       |                    |
|  | Fall               | Spring             | Fall               | Spring             |  | Fall               | Spring             | Fall               | Spring             |
|  | Mean (SD)<br>Range | Mean (SD)<br>Range | Mean (SD)<br>Range | Mean (SD)<br>Range |  | Mean (SD)<br>Range | Mean (SD)<br>Range | Mean (SD)<br>Range | Mean (SD)<br>Range |
| General Knowledge: Social Awareness <sup>b</sup> |                    |                    |                    |                    |  |                    |                    |                    |                    |
| 0<br>n=21-23                                     | 4.0 (1.3)<br>2-6   | 5.0 (1.1)<br>2-6   | 5.5 (0.8)<br>4-6   | 5.6 (0.7)<br>4-6   | 0<br>n=74-89                               | 4.3 (1.5)<br>1-6   | 5.0 (1.0)<br>2-6   | 5.2 (1.0)<br>3-6   | 5.6 (0.7)<br>3-6   |
| 1<br>n=52-58                                     | 3.8 (1.8)<br>0-6   | 4.4 (1.5)<br>1-6   | 4.4 (1.5)<br>1-6   | 5.5 (0.9)<br>3-6   | 1<br>n=153-196                             | 3.9 (1.6)<br>0-6   | 4.7 (1.3)<br>1-6   | 4.8 (1.3)<br>1-6   | 5.5 (0.8)<br>2-6   |
| 2<br>n=153-178                                   | 3.9 (1.7)<br>0-6   | 4.5 (1.4)<br>1-6   | 4.7 (1.3)<br>2-6   | 5.3 (1.1)<br>2-6   | 2<br>n=565-747                             | 3.9 (1.7)<br>0-6   | 4.5 (1.4)<br>0-6   | 4.8 (1.2)<br>1-6   | 5.4 (1.0)<br>1-6   |
| 3+<br>n=50-61                                    | 2.0 (1.7)<br>0-6   | 2.7 (1.6)<br>0-6   | 3.7 (1.6)<br>0-6   | 4.7 (1.3)<br>2-6   | 3+<br>n=203-274                            | 1.9 (1.5)<br>0-6   | 3.1 (1.6)<br>0-6   | 3.9 (1.4)<br>0-6   | 4.8 (1.2)<br>2-6   |
| Significant group differences <sup>c</sup>       | 3<1,2              | 3<1,2              | 3<2                | NS                 | Significant group differences <sup>c</sup> | 3<2,1,0            | 3<2,1,0<br>2<0     | 3<2,1,0<br>2<0     | 3,2<0              |

<sup>a</sup> A total risk factor score was constructed based on More at Four eligibility guidelines, using income (eligibility for free lunch=2 points, reduced-price lunch=1 point, and full-price lunch=0 points) and additional risk factors (1 point each for limited English proficiency, identified disability, and chronic health condition). A four-level categorical variable was constructed, representing risk factor scores of 0, 1, 2, and 3-5.

<sup>b</sup> Possible range=0-6.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each risk category based on longitudinal growth model estimations that corrected for classroom quality as measured by the ECERS-R.

**Table 20. Child Outcome Scores by Risk**

| Cohort 3 (2007-2009)                                   |                        |                        |                        |                        | Cohorts 1, 2, and 3 Combined               |                        |                        |                        |                        |
|--|------------------------|------------------------|------------------------|------------------------|--|------------------------|------------------------|------------------------|------------------------|
| Risk Total <sup>a</sup>                                | Pre-kindergarten       |                        | Kindergarten           |                        | Risk Total <sup>a</sup>                    | Pre-Kindergarten       |                        | Kindergarten           |                        |
|  | Fall                   | Spring                 | Fall                   | Spring                 |  | Fall                   | Spring                 | Fall                   | Spring                 |
|  | Mean (SD)              | Mean (SD)              | Mean (SD)              | Mean (SD)              |  | Mean (SD)              | Mean (SD)              | Mean (SD)              | Mean (SD)              |
|  | Range                  | Range                  | Range                  | Range                  |  | Range                  | Range                  | Range                  | Range                  |
| Classroom Behavior: Social Skills (SSRS <sup>b</sup> ) |                        |                        |                        |                        |  |                        |                        |                        |                        |
| 0<br>n=18-22   | 107.4 (14.8)<br>85-130 | 111.8 (15.0)<br>80-130 | 97.7 (11.8)<br>72-123  | 105.6 (13.0)<br>86-130 | 0<br>n=62-80                               | 105.4 (13.9)<br>68-130 | 110.9 (14.8)<br>76-130 | 101.6 (16.2)<br>53-130 | 108.2 (16.5)<br>72-130 |
| 1<br>n=45-54   | 102.2 (16.2)<br>66-128 | 111.4 (13.5)<br>71-130 | 100.4 (16.0)<br>73-130 | 105.5 (13.8)<br>78-130 | 1<br>n=127-190                             | 101.2 (16.1)<br>60-130 | 108.7 (14.2)<br>71-130 | 100.2 (15.5)<br>49-130 | 106.6 (16.1)<br>54-130 |
| 2<br>n=115-169   | 101.1 (16.3)<br>54-130 | 108.0 (15.0)<br>57-130 | 99.8 (14.5)<br>66-130  | 105.1 (14.4)<br>64-130 | 2<br>n=479-723                             | 100.3 (15.6)<br>53-130 | 108.2 (14.8)<br>57-130 | 101.1 (14.2)<br>53-130 | 106.0 (14.5)<br>64-130 |
| 3+<br>n=47-58  | 97.8 (15.4)<br>58-128  | 110.7 (14.1)<br>77-130 | 97.0 (13.8)<br>64-128  | 106.0 (15.4)<br>68-130 | 3+<br>n=182-262                            | 99.9 (15.7)<br>58-130  | 110.2 (15.7)<br>62-130 | 101.2 (14.7)<br>64-130 | 107.8 (14.2)<br>68-130 |
| Significant group differences <sup>c</sup>             | NS                     | NS                     | NS                     | NS                     | Significant group differences <sup>c</sup> | NS                     | NS                     | NS                     | NS                     |

<sup>a</sup> A total risk factor score was constructed based on More at Four eligibility guidelines, using income (eligibility for free lunch=2 points, reduced-price lunch=1 point, and full-price lunch=0 points) and additional risk factors (1 point each for limited English proficiency, identified disability, and chronic health condition). A four-level categorical variable was constructed, representing risk factor scores of 0, 1, 2, and 3-5.

<sup>b</sup> Indicates standardized, norm-referenced measure with mean=100, SD=15.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each risk category based on longitudinal growth model estimations that corrected for classroom quality as measured by the ECERS-R.

**Table 20. Child Outcome Scores by Risk**

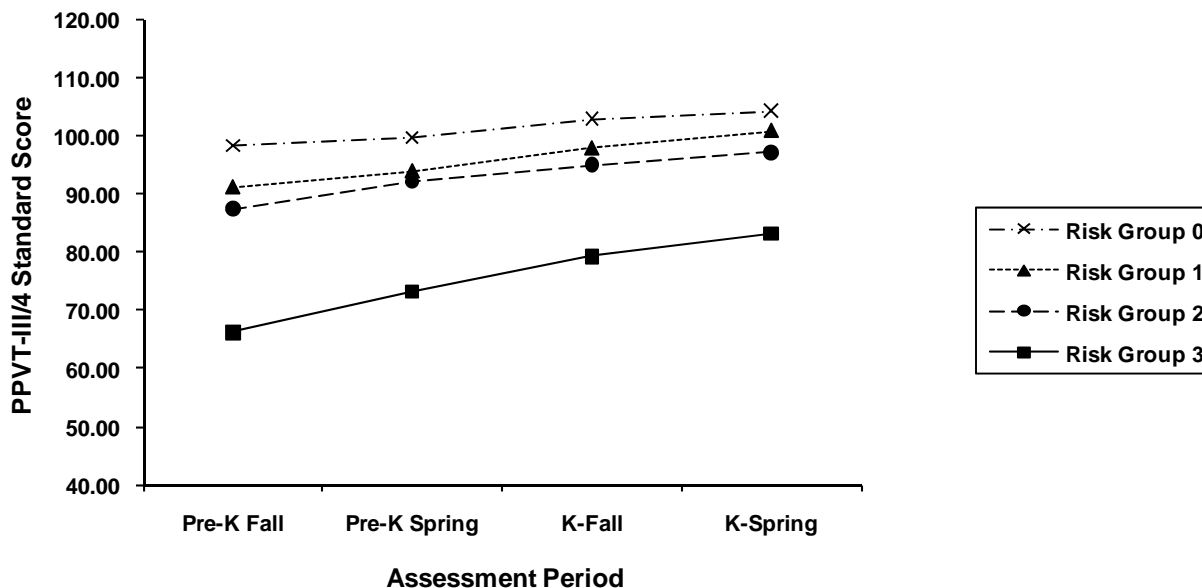
| Cohort 3 (2007-2009)                                       |                        |                        |                       |                       | Cohorts 1, 2, and 3 Combined               |                       |                       |                       |                       |
|--|------------------------|------------------------|-----------------------|-----------------------|--|-----------------------|-----------------------|-----------------------|-----------------------|
| Risk Total <sup>a</sup>                                    | Pre-kindergarten       |                        | Kindergarten          |                       | Risk Total <sup>a</sup>                    | Pre-Kindergarten      |                       | Kindergarten          |                       |
|  | Fall                   | Spring                 | Fall                  | Spring                |  | Fall                  | Spring                | Fall                  | Spring                |
|  | Mean (SD)              | Mean (SD)              | Mean (SD)             | Mean (SD)             |  | Mean (SD)             | Mean (SD)             | Mean (SD)             | Mean (SD)             |
|  | Range                  | Range                  | Range                 | Range                 |  | Range                 | Range                 | Range                 | Range                 |
| Classroom Behavior: Problem Behaviors (SSRS <sup>b</sup> ) |                        |                        |                       |                       |  |                       |                       |                       |                       |
| 0<br>n=18-22   | 96.1 (12.1)<br>85-118  | 96.3 (10.6)<br>85-118  | 96.5 (8.8)<br>85-112  | 96.6 (8.9)<br>85-112  | 0<br>n=62-82                               | 98.2 (11.9)<br>85-132 | 97.1 (11.8)<br>85-137 | 97.2 (12.7)<br>85-135 | 97.9 (13.2)<br>85-135 |
| 1<br>n=45-55   | 98.9 (12.9)<br>85-124  | 98.3 (13.7)<br>85-137  | 99.8 (13.7)<br>85-131 | 98.8 (13.0)<br>85-127 | 1<br>n=128-191                             | 98.3 (12.7)<br>85-133 | 99.3 (13.0)<br>85-137 | 99.4 (12.9)<br>85-133 | 99.4 (13.6)<br>85-134 |
| 2<br>n=117-170   | 100.7 (13.9)<br>85-140 | 101.4 (13.6)<br>85-145 | 99.5 (13.3)<br>85-134 | 99.0 (13.8)<br>85-138 | 2<br>n=481-730                             | 99.3 (13.1)<br>85-140 | 99.3 (12.9)<br>85-145 | 98.6 (12.8)<br>85-135 | 99.3 (13.2)<br>85-138 |
| 3+<br>n=47-61  | 98.9 (11.3)<br>85-130  | 96.1 (11.3)<br>85-126  | 98.8 (11.5)<br>85-127 | 96.7 (11.4)<br>85-130 | 3+<br>n=181-269                            | 97.7 (11.6)<br>85-142 | 96.5 (11.6)<br>85-139 | 97.0 (12.6)<br>85-137 | 95.7 (12.1)<br>85-141 |
| Significant group differences <sup>c</sup>                 | NS                     | NS                     | NS                    | NS                    | Significant group differences <sup>c</sup> | NS                    | NS                    | NS                    | NS                    |

<sup>a</sup> A total risk factor score was constructed based on More at Four eligibility guidelines, using income (eligibility for free lunch=2 points, reduced-price lunch=1 point, and full-price lunch=0 points) and additional risk factors (1 point each for limited English proficiency, identified disability, and chronic health condition). A four-level categorical variable was constructed, representing risk factor scores of 0, 1, 2, and 3-5.

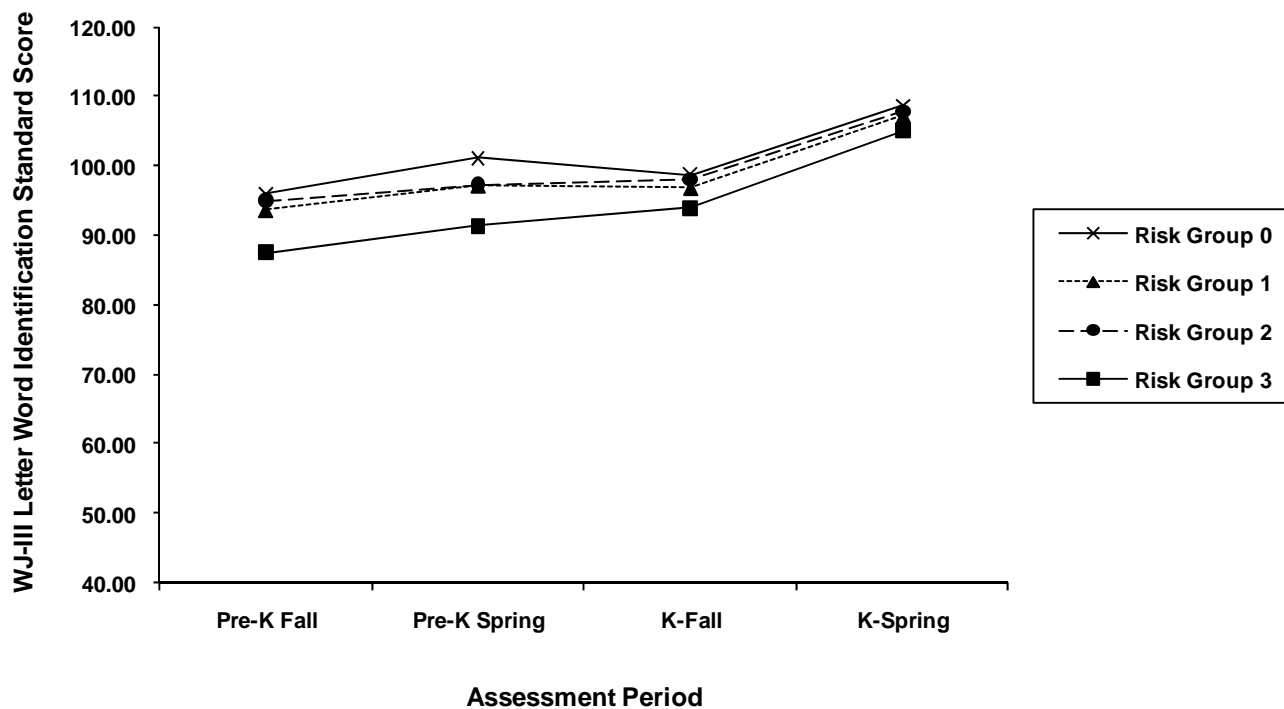
<sup>b</sup> Indicates standardized, norm-referenced measure with mean=100, SD=15.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each risk category based on longitudinal growth model estimations that corrected for classroom quality as measured by the ECERS-R.

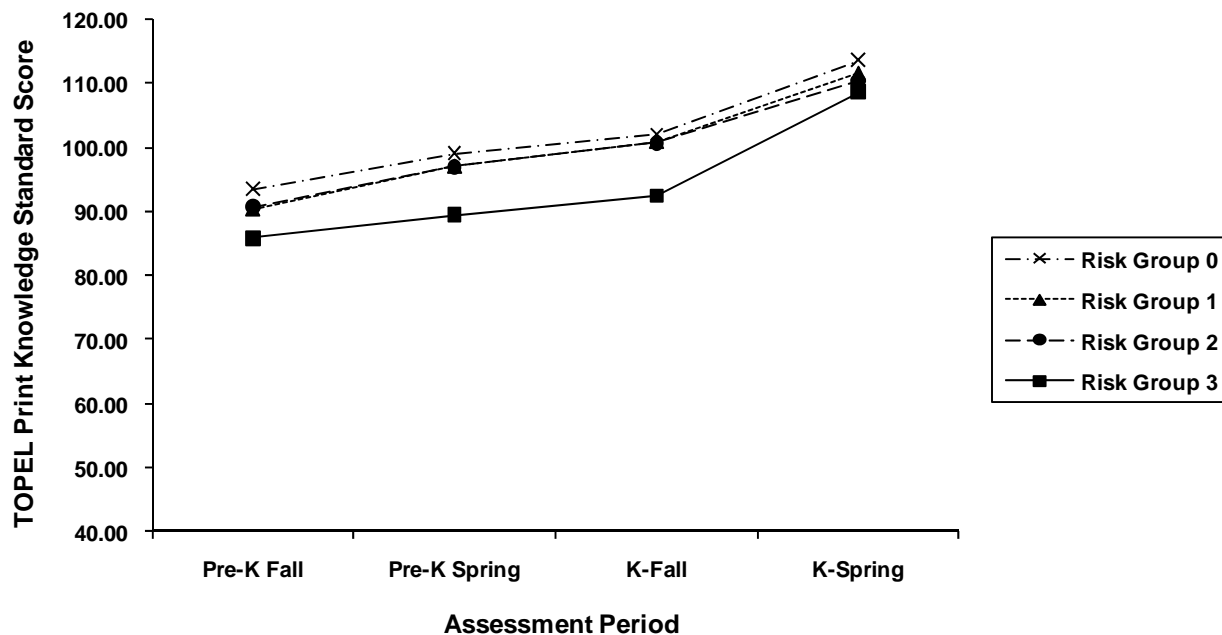
**Figure 20. Growth in Receptive Language Skills (PPVT-III/4) by Cumulative Risk (Cohorts 1, 2, and 3)**



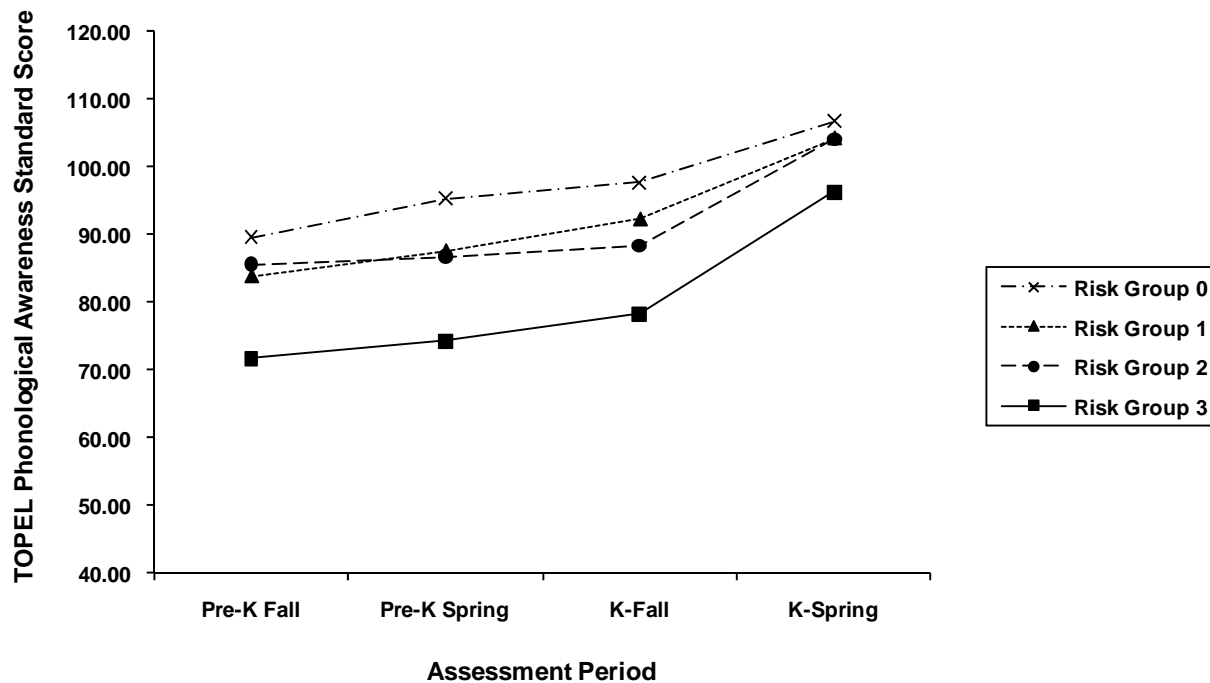
**Figure 21. Growth in Letter-Word Knowledge (WJ-III Letter Word Identification) by Cumulative Risk (Cohort 3)**



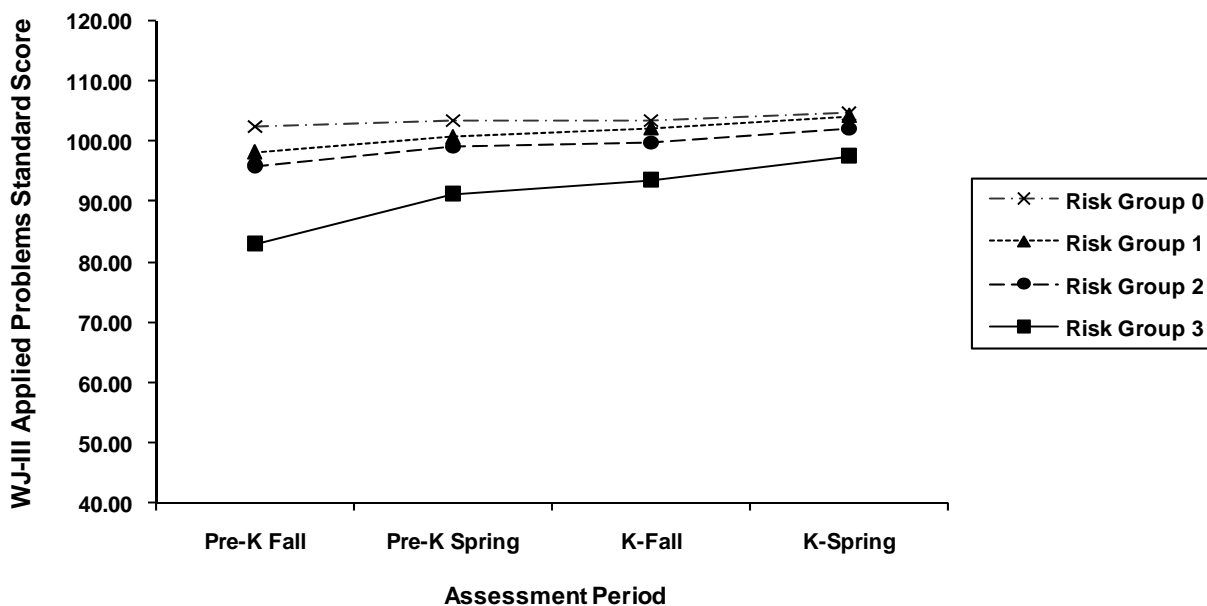
**Figure 22. Growth in Print Knowledge (TOPEL) by Cumulative Risk (Cohort 3)**



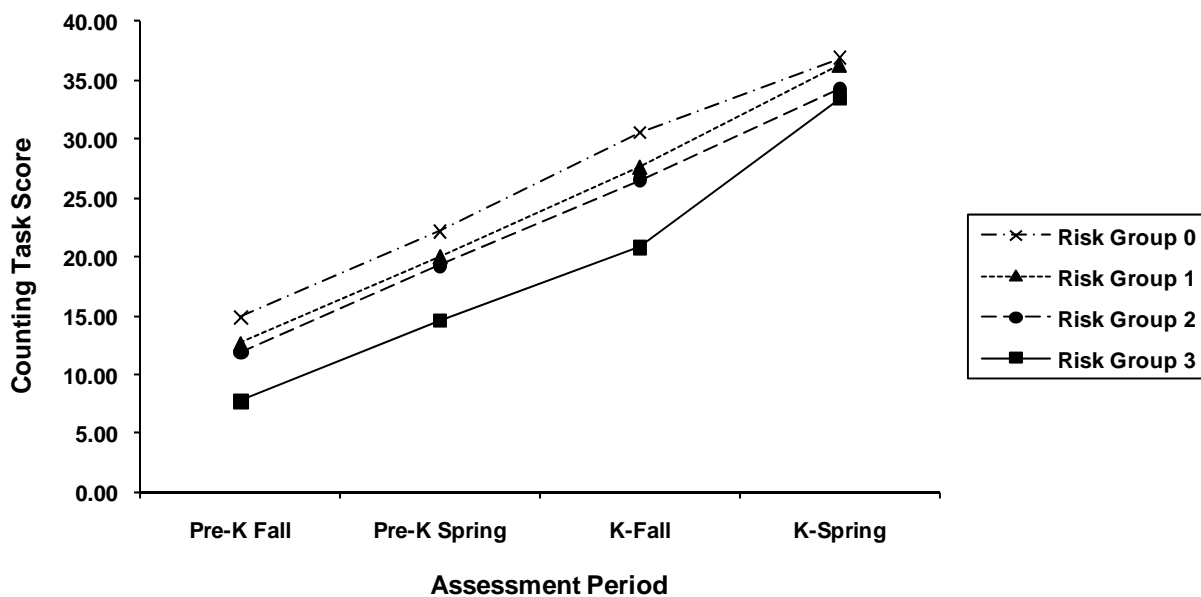
**Figure 23. Growth in Phonological Awareness (TOPEL) by Cumulative Risk (Cohort 3)**



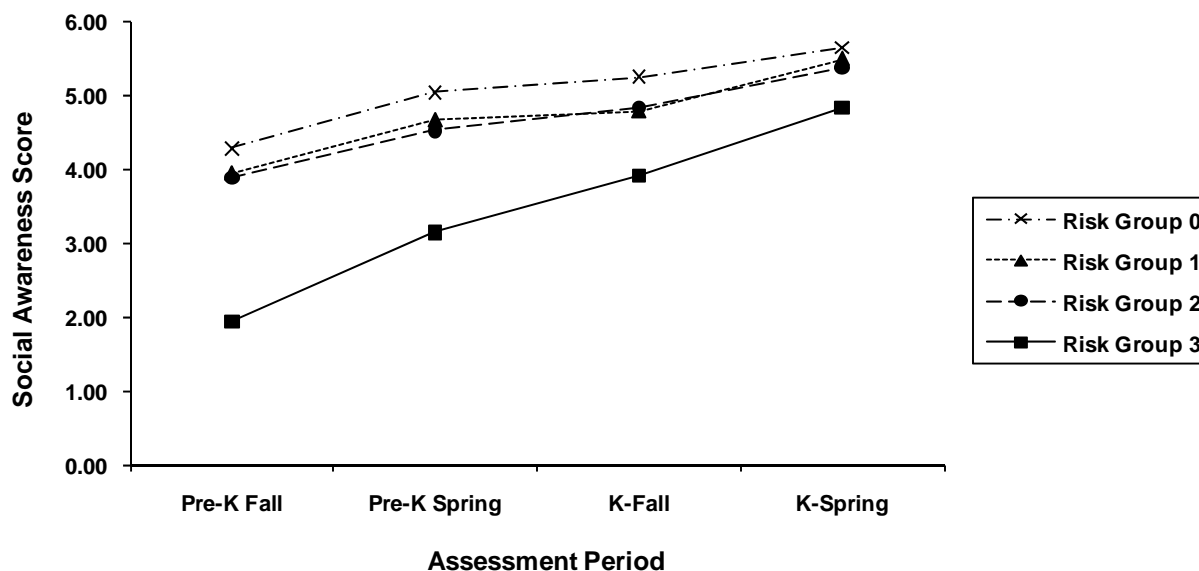
**Figure 24. Growth in Math Skills (WJ-III Applied Problems) by Cumulative Risk**  
(Cohorts 1, 2, and 3)



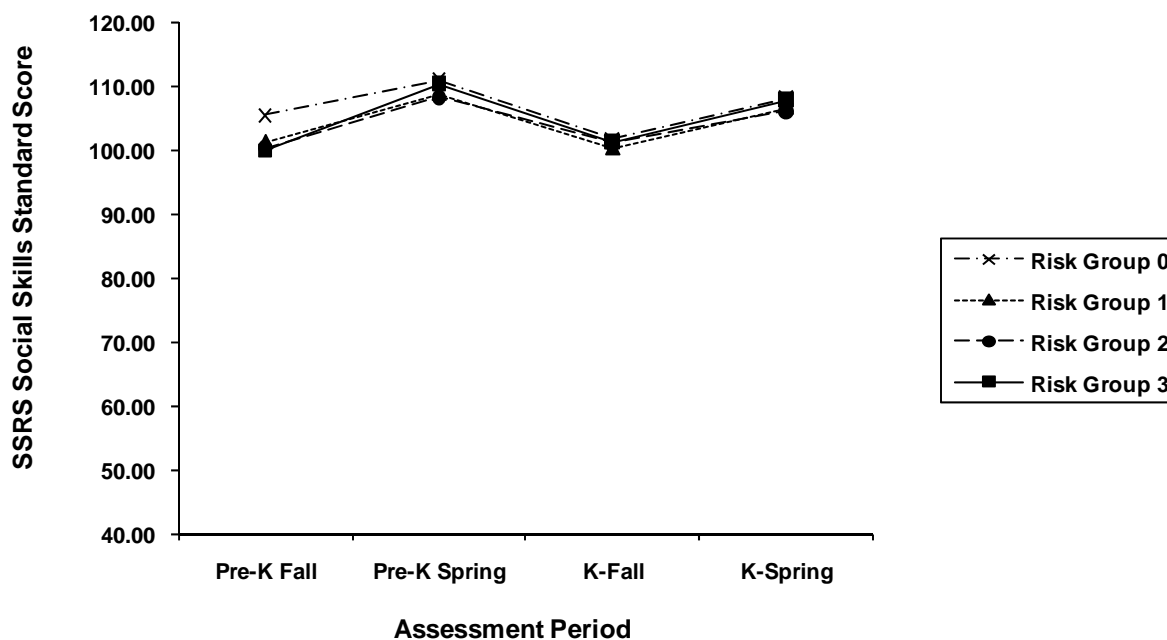
**Figure 25. Growth in Counting Skills (Counting Task) by Cumulative Risk**  
(Cohorts 1, 2, and 3)



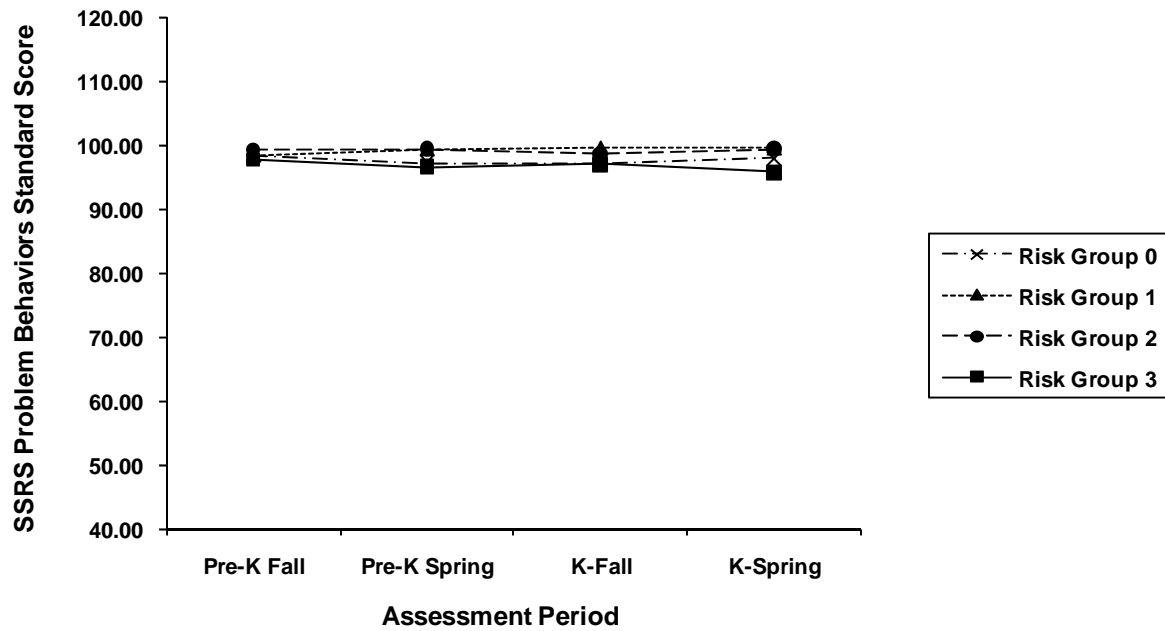
**Figure 26. Growth in General Knowledge (Social Awareness Task) by Cumulative Risk (Cohorts 1, 2, and 3)**



**Figure 27. Growth in Social Skills (SSRS) by Cumulative Risk (Cohorts 1, 2, and 3)**



**Figure 28. Growth in Problem Behaviors (SSRS) by Cumulative Risk  
(Cohorts 1, 2, and 3)**





**Table 21. English Child Outcome Scores for Spanish Subsamples**

| Outcome  | Cohort 3              |                       |                       |                        | Cohorts 1, 2, and 3 Combined |                       |                       |                       |
|--|-----------------------|-----------------------|-----------------------|------------------------|------------------------------|-----------------------|-----------------------|-----------------------|
|  | Fall<br>n=70-80       | Spring<br>n=73        | Fall<br>n=68          | Spring<br>n=63-64      | Fall<br>n=174-200            | Spring<br>n=177-178   | Fall<br>n=159         | Spring<br>n=152-155   |
|  | Mean (SD)<br>Range    | Mean (SD)<br>Range    | Mean (SD)<br>Range    | Mean (SD)<br>Range     | Mean (SD)<br>Range           | Mean (SD)<br>Range    | Mean (SD)<br>Range    | Mean (SD)<br>Range    |
| <b>Language and Literacy</b>                                     |                       |                       |                       |                        |                              |                       |                       |                       |
| Receptive Language<br>(PPVT-III <sup>a</sup> /4 <sup>a,b</sup> ) | 68.9 (16.7)<br>33-110 | 74.8 (17.9)<br>23-117 | 78.1 (15.5)<br>42-117 | 85.8 (12.2)<br>65-121  | 60.8 (16.8)<br>23-110        | 69.8 (17.6)<br>23-117 | 74.5 (15.4)<br>32-117 | 81.1 (13.5)<br>36-121 |
| Letter-Word Identification<br>(WJ-III <sup>a,c</sup> )           | 88.4 (13.0)<br>62-114 | 93.3 (13.5)<br>61-112 | 94.7 (11.1)<br>64-112 | 105.4 (12.8)<br>58-130 | --                           | --                    | --                    | --                    |
| <b>Math</b>  |                       |                       |                       |                        |                              |                       |                       |                       |
| Applied Problems<br>(WJ-III <sup>a,c</sup> )                     | 81.5 (14.8)<br>58-109 | 92.6 (15.2)<br>53-118 | 92.4 (13.7)<br>49-114 | 99.3 (11.7)<br>65-127  | 79.6 (14.3)<br>58-117        | 91.7 (13.8)<br>53-118 | 93.7 (11.9)<br>49-124 | 99.2 (11.8)<br>65-132 |
| Counting Task <sup>d</sup>                                       | 8.8 (7.1)<br>0-39     | 14.2 (8.9)<br>0-40    | 20.1 (11.8)<br>2-40   | 35.9 (9.1)<br>6-40     | 7.6 (5.8)<br>0-39            | 14.2 (8.5)<br>0-40    | 20.1 (11.5)<br>2-40   | 34.9 (9.4)<br>6-40    |
| <b>General Knowledge</b>   |                       |                       |                       |                        |                              |                       |                       |                       |
| Social Awareness <sup>e</sup>                                    | 1.6 (1.3)<br>0-5      | 2.7 (1.5)<br>0-6      | 3.5 (1.5)<br>0-6      | 4.7 (1.3)<br>2-6       | 1.5 (1.1)<br>0-5             | 2.8 (1.4)<br>0-6      | 3.6 (1.5)<br>0-6      | 4.7 (1.2)<br>2-6      |

<sup>a</sup> Indicates standardized, norm-referenced measure with mean=100, SD=15.

<sup>b</sup> PPVT-III was used for Cohorts 1 and 2 and PPVT-4 was used for Cohort 3.

<sup>c</sup> Scores reflect use of updated normative tables published 2007.<sup>36</sup>

<sup>d</sup> Possible range=0-40.

<sup>e</sup> Possible range=0-6.

**Table 22. Spanish Child Outcome Scores for Spanish Subsamples**

| Outcome   | Cohort 3              |                       |                       |                       | Cohorts 2 and 3 Combined |                       |                       |                       |
|---|-----------------------|-----------------------|-----------------------|-----------------------|--------------------------|-----------------------|-----------------------|-----------------------|
|   | Fall<br>n=77-81       | Spring<br>n=74        | Fall<br>n=68          | Spring<br>n=64        | Fall<br>n=196-199        | Spring<br>n=175-180   | Fall<br>n=160         | Spring<br>n=155       |
|   | Mean (SD)<br>Range    | Mean (SD)<br>Range    | Mean (SD)<br>Range    | Mean (SD)<br>Range    | Mean (SD)<br>Range       | Mean (SD)<br>Range    | Mean (SD)<br>Range    | Mean (SD)<br>Range    |
| <b>Language and Literacy</b>                            |                       |                       |                       |                       |                          |                       |                       |                       |
| Receptive Language<br>(TVIP <sup>a</sup> )              | 81.1 (16.1)<br>59-119 | 80.2 (17.6)<br>55-120 | 84.9 (20.2)<br>55-119 | 84.9 (19.0)<br>55-122 | 80.3 (15.3)<br>58-129    | 79.9 (16.7)<br>55-122 | 82.9 (19.3)<br>55-119 | 84.8 (18.8)<br>55-125 |
| Letter Word Identification<br>(Batería <sup>a,b</sup> ) | 90.1 (9.2)<br>74-113  | 89.3 (9.7)<br>68-111  | 87.7 (9.3)<br>67-111  | 88.5 (12.1)<br>60-124 | --                       | --                    | --                    | --                    |
| <b>Math</b>   |                       |                       |                       |                       |                          |                       |                       |                       |
| Applied Problems<br>(Batería <sup>a,b</sup> )           | 85.4 (13.7)<br>56-111 | 89.1 (14.4)<br>49-116 | 92.1 (11.3)<br>52-113 | 92.7 (14.7)<br>43-120 | 86.5 (12.6)<br>56-111    | 89.7 (13.4)<br>49-117 | 90.9 (11.3)<br>52-114 | 92.1 (13.3)<br>43-120 |
| Counting Task <sup>c</sup>                              | 6.4 (4.6)<br>0-29     | 8.8 (4.9)<br>2-39     | 10.0 (5.5)<br>3-39    | 14.9 (9.9)<br>3-40    | 5.1 (4.3)<br>0-29        | 8.1 (5.2)<br>0-39     | 10.2 (6.3)<br>0-39    | 14.7 (9.7)<br>3-40    |
| <b>General Knowledge</b>                                |                       |                       |                       |                       |                          |                       |                       |                       |
| Social Awareness <sup>d</sup>                           | 2.4 (1.3)<br>0-6      | 3.0 (1.2)<br>0-5      | 3.5 (1.0)<br>1-6      | 4.1 (1.2)<br>0-6      | 2.5 (1.3)<br>0-6         | 3.0 (1.4)<br>0-6      | 3.5 (1.1)<br>1-6      | 3.9 (1.2)<br>0-6      |

<sup>a</sup> Indicates standardized, norm-referenced measure with mean=100, SD=15.

<sup>b</sup> Scores reflect use of updated normative tables published 2007.<sup>36</sup>

<sup>c</sup> Possible range=0-40.

<sup>d</sup> Possible range=0-6.

**Table 23. Child Outcome Scores of Cohort 3 Spanish Subsample by Language Proficiency Level**

| English Outcomes  |                      |                        |                       |                        | Spanish Outcomes                               |                       |                       |                       |                       |
|---|----------------------|------------------------|-----------------------|------------------------|--|-----------------------|-----------------------|-----------------------|-----------------------|
| Initial English Proficiency Level <sup>a</sup>                        | Pre-K                |                        | Kindergarten          |                        | Initial Spanish Proficiency Level <sup>a</sup> | Pre-K                 |                       | Kindergarten          |                       |
|   | Fall                 | Spring                 | Fall                  | Spring                 |  | Fall                  | Spring                | Fall                  | Spring                |
|   | Mean (SD)<br>Range   | Mean (SD)<br>Range     | Mean (SD)<br>Range    | Mean (SD)<br>Range     |  | Mean (SD)<br>Range    | Mean (SD)<br>Range    | Mean (SD)<br>Range    | Mean (SD)<br>Range    |
| Language and Literacy: Receptive Language (PPVT-4/TVIP <sup>b</sup> ) |                      |                        |                       |                        |  |                       |                       |                       |                       |
| 1<br>n=43-50  | 61.1 (13.5)<br>33-84 | 66.6 (14.0)<br>23-93   | 71.9 (13.1)<br>42-102 | 80.5 (9.6)<br>65-107   | 1<br>n=19-25                                   | 72.4 (11.4)<br>59-104 | 67.8 (12.2)<br>55-101 | 69.2 (17.6)<br>55-104 | 67.3 (13.7)<br>55-95  |
| 2<br>n=6-8  | 78.4 (7.6)<br>69-90  | 90.7 (9.9)<br>78-108   | 90.0 (8.5)<br>84-107  | 95.5 (9.4)<br>86-110   | 2<br>n=5-6                                     | 72.7 (6.7)<br>62-83   | 69.2 (13.1)<br>55-93  | 80.8 (17.3)<br>59-104 | 86.8 (12.1)<br>76-104 |
| 3<br>n=8-9  | 84.7 (5.2)<br>77-95  | 87.8 (9.6)<br>73-103   | 89.0 (6.1)<br>82-99   | 94.4 (7.2)<br>84-103   | 3<br>n=11-14                                   | 80.1 (13.7)<br>61-105 | 84.7 (15.0)<br>67-111 | 88.3 (19.1)<br>56-113 | 86.3 (18.7)<br>55-111 |
| 4<br>n=6  | 94.3 (9.4)<br>81-110 | 103.0 (10.9)<br>89-117 | 99.5 (14.7)<br>82-117 | 101.8 (13.2)<br>86-121 | 4<br>n=12-14                                   | 74.4 (10.2)<br>61-93  | 76.2 (9.5)<br>59-94   | 82.1 (14.5)<br>64-108 | 85.4 (15.8)<br>55-112 |
| 5<br>n=0  | --                   | --                     | --                    | --                     | 5<br>n=16-20                                   | 99.0 (13.8)<br>65-119 | 101.6 (9.4)<br>83-120 | 105.4 (6.5)<br>94-119 | 103.7 (6.9)<br>92-122 |
| Significant group differences <sup>c</sup>                            | 1<2,3,4              | 1<2,3,4<br>3<4         | 1<2,3,4               | 1<2,3,4                | Significant group differences <sup>c</sup>     | 1,2<3,5<br>3,4<5      | 1<3,4,5<br>2,3,4<5    | 1<3,4,5<br>2,3,4<5    | 1<3,4,5<br>2,3,4<5    |

<sup>a</sup> These categories represent fluency scores at entry into the evaluation study as measured by the PreLAS 2000, an individual assessment of English and Spanish language oral proficiency. Fluency level 1=non-English/Spanish speaker, 2 & 3=limited English/Spanish speaker, 4 & 5=fluent English/Spanish speaker. No children in this subsample received an English fluency score of 5.

<sup>b</sup> Standardized, norm-referenced measure with mean=100, SD=15.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each English proficiency level based on longitudinal growth model estimations that corrected for classroom quality as measured by the ECERS-R.

**Table 23. Child Outcome Scores of Cohort 3 Spanish Subsample by Language Proficiency Level**

| English Outcomes   |                        |                       |                       |                        | Spanish Outcomes                               |                       |                       |                       |                       |
|--|------------------------|-----------------------|-----------------------|------------------------|--|-----------------------|-----------------------|-----------------------|-----------------------|
| Initial English Proficiency Level <sup>a</sup>                                   | Pre-K                  |                       | Kindergarten          |                        | Initial Spanish Proficiency Level <sup>a</sup> | Pre-K                 |                       | Kindergarten          |                       |
|  | Fall                   | Spring                | Fall                  | Spring                 |  | Fall                  | Spring                | Fall                  | Spring                |
|  | Mean (SD)<br>Range     | Mean (SD)<br>Range    | Mean (SD)<br>Range    | Mean (SD)<br>Range     |  | Mean (SD)<br>Range    | Mean (SD)<br>Range    | Mean (SD)<br>Range    | Mean (SD)<br>Range    |
| Language and Literacy: Letter-Word Identification (WJ-III/Batería <sup>b</sup> ) |                        |                       |                       |                        |  |                       |                       |                       |                       |
| 1<br>n=43-57   | 85.5 (13.0)<br>62-114  | 90.7 (14.2)<br>61-112 | 92.3 (12.2)<br>64-112 | 103.4 (14.0)<br>58-125 | 1<br>n=19-26                                   | 90.0 (8.9)<br>76-107  | 87.0 (7.7)<br>73-99   | 84.2 (8.3)<br>67-100  | 85.0 (12.7)<br>60-104 |
| 2<br>n=6-8   | 92.5 (11.8)<br>69-105  | 96.4 (14.3)<br>66-108 | 98.3 (5.6)<br>89-105  | 107.5 (11.7)<br>97-130 | 2<br>n=5-6                                     | 88.2 (8.0)<br>79-99   | 91.5 (15.3)<br>72-110 | 92.8 (10.2)<br>83-110 | 88.6 (12.7)<br>73-100 |
| 3<br>n=8-9   | 95.3 (8.1)<br>86-109   | 101.4 (6.3)<br>91-111 | 101.4 (5.1)<br>95-110 | 110.3 (9.8)<br>102-130 | 3<br>n=11-13                                   | 89.2 (8.4)<br>77-107  | 91.6 (12.7)<br>71-111 | 88.9 (11.2)<br>72-111 | 91.8 (11.3)<br>79-113 |
| 4<br>n=6   | 100.2 (10.0)<br>82-111 | 99.2 (10.1)<br>85-111 | 99.3 (5.6)<br>91-107  | 110.5 (6.8)<br>102-121 | 4<br>n=12-14                                   | 87.1 (10.1)<br>74-106 | 86.7 (9.5)<br>68-100  | 84.8 (7.6)<br>71-94   | 87.3 (10.2)<br>68-101 |
| 5<br>n=0   | --                     | --                    | --                    | --                     | 5<br>n=16-20                                   | 94.1 (9.6)<br>77-113  | 92.5 (7.6)<br>77-108  | 91.5 (8.5)<br>81-109  | 91.0 (13.2)<br>67-124 |
| Significant group differences <sup>c</sup>                                       | sig <sup>d</sup>       | sig <sup>d</sup>      | NS                    | NS                     | Significant group differences <sup>c</sup>     | NS                    | NS                    | NS                    | NS                    |

<sup>a</sup> These categories represent fluency scores at entry into the evaluation study as measured by the PreLAS 2000, an individual assessment of English and Spanish language oral proficiency. Fluency level 1=non-English/Spanish speaker, 2 & 3=limited English/Spanish speaker, 4 & 5=fluent English/Spanish speaker. No children in this subsample received an English fluency score of 5.

<sup>b</sup> Standardized, norm-referenced measure with mean=100, SD=15.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each English proficiency level based on longitudinal growth model estimations that corrected for classroom quality as measured by the ECERS-R.

<sup>d</sup> There was a significant positive association between higher proficiency levels and higher outcome scores, but none of the pairwise comparisons were significant.

**Table 23. Child Outcome Scores of Cohort 3 Spanish Subsample by Language Proficiency Level**

| English Outcomes                                      |                      |                       |                       |                        | Spanish Outcomes                               |                       |                       |                       |                       |
|---|----------------------|-----------------------|-----------------------|------------------------|--|-----------------------|-----------------------|-----------------------|-----------------------|
| Initial English Proficiency Level <sup>a</sup>        | Pre-K                |                       | Kindergarten          |                        | Initial Spanish Proficiency Level <sup>a</sup> | Pre-K                 |                       | Kindergarten          |                       |
|   | Fall                 | Spring                | Fall                  | Spring                 |  | Fall                  | Spring                | Fall                  | Spring                |
|   | Mean (SD)<br>Range   | Mean (SD)<br>Range    | Mean (SD)<br>Range    | Mean (SD)<br>Range     |  | Mean (SD)<br>Range    | Mean (SD)<br>Range    | Mean (SD)<br>Range    | Mean (SD)<br>Range    |
| Math: Applied Problems (WJ-III/Batería <sup>b</sup> ) |                      |                       |                       |                        |  |                       |                       |                       |                       |
| 1<br>n=42-57  | 75.1 (12.1)<br>58-98 | 87.1 (14.7)<br>53-115 | 87.7 (13.3)<br>49-111 | 95.2 (11.2)<br>65-127  | 1<br>n=19-26                                   | 76.0 (13.9)<br>56-109 | 80.6 (14.9)<br>49-109 | 83.8 (10.7)<br>52-102 | 82.5 (17.0)<br>43-107 |
| 2<br>n=6-8  | 97.0 (8.4)<br>79-109 | 106.0 (7.2)<br>94-114 | 102.2 (5.7)<br>98-110 | 111.7 (5.6)<br>102-118 | 2<br>n=5-6                                     | 83.3 (8.9)<br>72-96   | 86.2 (12.1)<br>73-100 | 90.0 (5.5)<br>83-98   | 93.6 (5.8)<br>84-99   |
| 3<br>n=8-9  | 97.0 (5.7)<br>90-105 | 102.2 (9.7)<br>85-115 | 99.8 (7.2)<br>90-109  | 104.5 (5.6)<br>97-114  | 3<br>n=11-14                                   | 87.4 (10.3)<br>65-103 | 91.4 (17.1)<br>59-116 | 97.7 (12.8)<br>70-113 | 96.9 (13.3)<br>75-119 |
| 4<br>n=6  | 98.8 (4.8)<br>94-105 | 106.8 (7.9)<br>99-118 | 106.2 (6.3)<br>97-114 | 107.7 (12.1)<br>92-122 | 4<br>n=12-14                                   | 84.6 (10.0)<br>69-99  | 90.3 (11.6)<br>70-112 | 91.3 (8.5)<br>76-109  | 90.8 (10.9)<br>76-110 |
| 5<br>n=0  | --                   | --                    | --                    | --                     | 5<br>n=16-20                                   | 97.4 (9.2)<br>73-111  | 99.6 (5.3)<br>89-107  | 99.8 (6.3)<br>87-110  | 102.7 (8.8)<br>82-120 |
| Significant group differences <sup>c</sup>            | 1<2,3,4              | 1<2,3,4               | 1<2,4                 | 1<2                    | Significant group differences <sup>c</sup>     | 1,2,3,4<5<br>1<4      | 1<3,4,5<br>2,3,4<5    | 1<3,4,5<br>2<5        | 1<3,4,5               |

<sup>a</sup> These categories represent fluency scores at entry into the evaluation study as measured by the PreLAS 2000, an individual assessment of English and Spanish language oral proficiency. Fluency level 1=non-English/Spanish speaker, 2 & 3=limited English/Spanish speaker, 4 & 5=fluent English/Spanish speaker. No children in this subsample received an English fluency score of 5.

<sup>b</sup> Indicates standardized, norm-referenced measure with mean=100, SD=15.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each English proficiency level based on longitudinal growth model estimations that corrected for classroom quality, as measured by the ECERS-R.

**Table 23. Child Outcome Scores of Cohort 3 Spanish Subsample by Language Proficiency Level**

| English Outcomes                               |                     |                     |                      |                     | Spanish Outcomes                               |                    |                    |                    |                     |
|--|---------------------|---------------------|----------------------|---------------------|--|--------------------|--------------------|--------------------|---------------------|
| Initial English Proficiency Level <sup>a</sup> | Pre-K               |                     | Kindergarten         |                     | Initial Spanish Proficiency Level <sup>a</sup> | Pre-K              |                    | Kindergarten       |                     |
|  | Fall                | Spring              | Fall                 | Spring              |  | Fall               | Spring             | Fall               | Spring              |
|  | Mean (SD)<br>Range  | Mean (SD)<br>Range  | Mean (SD)<br>Range   | Mean (SD)<br>Range  |  | Mean (SD)<br>Range | Mean (SD)<br>Range | Mean (SD)<br>Range | Mean (SD)<br>Range  |
| Math: Counting Task <sup>b</sup>               |                     |                     |                      |                     |  |                    |                    |                    |                     |
| 1<br>n=43-57                                   | 6.6 (4.8)<br>0-16   | 10.7 (5.8)<br>0-29  | 17.4 (10.7)<br>2-40  | 34.5 (10.4)<br>6-40 | 1<br>n=19-26                                   | 5.0 (3.8)<br>0-13  | 7.0 (2.8)<br>3-12  | 8.1 (5.2)<br>3-28  | 10.8 (7.3)<br>3-39  |
| 2<br>n=6-8                                     | 18.3 (12.4)<br>6-39 | 19.4 (5.9)<br>14-29 | 27.0 (13.9)<br>13-40 | 39.8 (0.4)<br>39-40 | 2<br>n=5-6                                     | 4.3 (3.6)<br>0-10  | 7.8 (2.1)<br>6-11  | 8.3 (3.0)<br>5-12  | 14.6 (9.7)<br>10-32 |
| 3<br>n=8-9                                     | 11.2 (3.8)<br>4-17  | 19.6 (8.7)<br>12-39 | 25.0 (11.3)<br>11-39 | 39.9 (0.4)<br>39-40 | 3<br>n=11-14                                   | 6.6 (3.4)<br>1-11  | 8.8 (2.4)<br>5-12  | 9.6 (2.8)<br>3-15  | 17.3 (9.9)<br>9-40  |
| 4<br>n=6                                       | 13.5 (8.0)<br>7-29  | 26.8 (13.8)<br>6-40 | 23.8 (14.0)<br>7-39  | 36.5 (8.6)<br>19-40 | 4<br>n=12-14                                   | 5.9 (3.3)<br>0-13  | 7.6 (2.9)<br>2-12  | 9.3 (2.0)<br>5-12  | 10.8 (2.0)<br>7-15  |
| 5<br>n=0                                       | --                  | --                  | --                   | --                  | 5<br>n=16-20                                   | 8.9 (6.4)<br>1-29  | 12.6 (7.8)<br>6-39 | 13.5 (7.9)<br>6-39 | 21.1 (13.0)<br>6-40 |
| Significant group differences <sup>c</sup>     | 1<2,4               | 1<2,4               | NS                   | NS                  | Significant group differences <sup>c</sup>     | NS                 | NS                 | NS                 | NS                  |

<sup>a</sup> These categories represent fluency scores at entry into the evaluation study as measured by the PreLAS 2000, an individual assessment of English and Spanish language oral proficiency. Fluency level 1=non-English/Spanish speaker, 2 & 3=limited English/Spanish speaker, 4 & 5=fluent English/Spanish speaker. No children in this subsample received an English fluency score of 5.

<sup>b</sup> Possible range=0-40.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each English proficiency level based on longitudinal growth model estimations that corrected for classroom quality, as measured by the ECERS-R.

**Table 23. Child Outcome Scores of Cohort 3 Spanish Subsample by Language Proficiency Level**

| English Outcomes                                 |                    |                    |                    |                    | Spanish Outcomes                               |                    |                    |                    |                    |
|--|--------------------|--------------------|--------------------|--------------------|--|--------------------|--------------------|--------------------|--------------------|
| Initial English Proficiency Level <sup>a</sup>   | Pre-K              |                    | Kindergarten       |                    | Initial Spanish Proficiency Level <sup>a</sup> | Pre-K              |                    | Kindergarten       |                    |
|  | Fall               | Spring             | Fall               | Spring             |  | Fall               | Spring             | Fall               | Spring             |
|  | Mean (SD)<br>Range | Mean (SD)<br>Range | Mean (SD)<br>Range | Mean (SD)<br>Range |  | Mean (SD)<br>Range | Mean (SD)<br>Range | Mean (SD)<br>Range | Mean (SD)<br>Range |
| General Knowledge: Social Awareness <sup>b</sup> |                    |                    |                    |                    |  |                    |                    |                    |                    |
| 1<br>n=43-57                                     | 1.0 (0.8)<br>0-3   | 2.2 (1.2)<br>0-5   | 3.0 (1.4)<br>0-6   | 4.4 (1.3)<br>2-6   | 1<br>n=19-27                                   | 1.7 (0.9)<br>0-3   | 2.4 (1.4)<br>0-4   | 2.9 (1.0)<br>1-4   | 3.4 (1.4)<br>0-6   |
| 2<br>n=6-8                                       | 2.6 (1.4)<br>1-5   | 3.1 (1.2)<br>1-4   | 4.2 (1.3)<br>2-6   | 6.0 (0.0)<br>6-6   | 2<br>n=5-6                                     | 2.0 (0.6)<br>1-3   | 3.5 (1.4)<br>2-5   | 3.5 (0.8)<br>2-4   | 4.2 (0.5)<br>4-5   |
| 3<br>n=8-9                                       | 3.2 (1.1)<br>2-5   | 4.1 (1.6)<br>1-6   | 4.6 (1.3)<br>2-6   | 5.4 (1.4)<br>2-6   | 3<br>n=11-14                                   | 2.5 (1.2)<br>1-4   | 2.9 (1.2)<br>1-4   | 3.8 (1.0)<br>2-5   | 4.5 (1.2)<br>2-6   |
| 4<br>n=6   | 3.2 (0.8)<br>2-4   | 3.8 (0.4)<br>3-4   | 4.7 (0.5)<br>4-5   | 5.0 (0.9)<br>4-6   | 4<br>n=12-14                                   | 2.4 (1.0)<br>1-4   | 2.9 (1.0)<br>1-4   | 3.7 (0.7)<br>2-4   | 4.3 (1.0)<br>2-6   |
| 5<br>n=0   | --                 | --                 | --                 | --                 | 5<br>n=16-20                                   | 3.3 (1.6)<br>1-6   | 3.6 (0.9)<br>2-5   | 4.2 (1.0)<br>2-6   | 4.6 (0.9)<br>4-6   |
| Significant group differences <sup>c</sup>       | 1<2,3,4            | 1<2,3,4            | 1<2,3              | NS                 | Significant group differences <sup>c</sup>     | 1<5                | 1<3,4,5            | 1<3,4,5            | 1<3,5              |

<sup>a</sup> These categories represent fluency scores at entry into the evaluation study as measured by the PreLAS 2000, an individual assessment of English and Spanish language oral proficiency. Fluency level 1=non-English/Spanish speaker, 2 & 3=limited English/Spanish speaker, 4 & 5=fluent English/Spanish speaker. No children in this subsample received an English fluency score of 5.

<sup>b</sup> Possible range=0-6.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each English proficiency level based on longitudinal growth model estimations that corrected for classroom quality, as measured by the ECERS-R.

**Table 24. Child Outcome Scores of Combined Cohorts Spanish Subsamples by English Proficiency Level**

| English Outcomes  |                      |                        |                       |                        | Spanish Outcomes                               |                       |                       |                       |                       |
|---|----------------------|------------------------|-----------------------|------------------------|--|-----------------------|-----------------------|-----------------------|-----------------------|
| Initial English Proficiency Level <sup>a</sup>                        | Pre-K                |                        | Kindergarten          |                        | Initial English Proficiency Level <sup>a</sup> | Pre-K                 |                       | Kindergarten          |                       |
|   | Fall                 | Spring                 | Fall                  | Spring                 |  | Fall                  | Spring                | Fall                  | Spring                |
|   | Mean (SD)<br>Range   | Mean (SD)<br>Range     | Mean (SD)<br>Range    | Mean (SD)<br>Range     |  | Mean (SD)<br>Range    | Mean (SD)<br>Range    | Mean (SD)<br>Range    | Mean (SD)<br>Range    |
| Language and Literacy: Receptive Language (PPVT-4/TVIP <sup>b</sup> ) |                      |                        |                       |                        |  |                       |                       |                       |                       |
| 1<br>n=124-143  | 55.5 (13.5)<br>23-85 | 65.0 (15.1)<br>23-95   | 70.6 (13.8)<br>32-105 | 78.2 (12.3)<br>36-108  | 1<br>n=125-159                                 | 79.2 (14.9)<br>59-129 | 78.4 (15.8)<br>55-122 | 81.9 (18.7)<br>55-113 | 83.9 (18.5)<br>55-125 |
| 2<br>n=10-14  | 78.0 (7.7)<br>66-90  | 86.6 (12.1)<br>60-108  | 88.6 (11.1)<br>65-107 | 91.2 (11.5)<br>66-110  | 2<br>n=10-13                                   | 89.5 (19.4)<br>58-119 | 86.0 (21.0)<br>55-115 | 88.4 (26.2)<br>55-119 | 84.6 (24.3)<br>55-122 |
| 3<br>n=12-15  | 78.8 (12.9)<br>43-95 | 86.9 (10.2)<br>73-107  | 89.9 (5.6)<br>82-99   | 92.6 (8.1)<br>81-103   | 3<br>n=12-15                                   | 80.9 (14.7)<br>63-105 | 80.2 (20.0)<br>55-114 | 82.9 (20.7)<br>55-111 | 86.8 (18.9)<br>55-107 |
| 4<br>n=6-7  | 93.3 (9.1)<br>81-110 | 103.4 (10.1)<br>89-117 | 99.5 (14.7)<br>82-117 | 101.8 (13.2)<br>86-121 | 4<br>n=6-7                                     | 89.1 (11.5)<br>75-106 | 91.9 (13.4)<br>70-111 | 90.7 (18.5)<br>56-108 | 93.0 (19.0)<br>55-106 |
| Significant group differences <sup>c</sup>                            | 1<2,3,4              | 1<2,3,4                | 1<2,3,4               | 1<2,3,4                | Significant group differences <sup>c</sup>     | NS                    | NS                    | NS                    | NS                    |

<sup>a</sup> These categories represent fluency scores at entry into the evaluation study as measured by the PreLAS 2000, an individual assessment of English and Spanish language oral proficiency. Fluency level 1=non-English/Spanish speaker, 2 & 3=limited English/Spanish speaker, 4 & 5=fluent English/Spanish speaker. No children in this subsample received an English fluency score of 5.

<sup>b</sup> Standardized, norm-referenced measure with mean=100, SD=15.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each English proficiency level based on longitudinal growth model estimations that corrected for classroom quality as measured by the ECERS-R.



**Table 24. Child Outcome Scores of Combined Cohorts Spanish Subsamples by English Proficiency Level**

| English Outcomes                                      |                       |                        |                       |                        | Spanish Outcomes                               |                       |                       |                       |                       |
|---|-----------------------|------------------------|-----------------------|------------------------|--|-----------------------|-----------------------|-----------------------|-----------------------|
| Initial English Proficiency Level <sup>a</sup>        | Pre-K                 |                        | Kindergarten          |                        | Initial English Proficiency Level <sup>a</sup> | Pre-K                 |                       | Kindergarten          |                       |
|   | Fall                  | Spring                 | Fall                  | Spring                 |  | Fall                  | Spring                | Fall                  | Spring                |
|   | Mean (SD)<br>Range    | Mean (SD)<br>Range     | Mean (SD)<br>Range    | Mean (SD)<br>Range     |  | Mean (SD)<br>Range    | Mean (SD)<br>Range    | Mean (SD)<br>Range    | Mean (SD)<br>Range    |
| Math: Applied Problems (WJ-III/Batería <sup>b</sup> ) |                       |                        |                       |                        |  |                       |                       |                       |                       |
| 1<br>n=122-162  | 75.6 (12.4)<br>58-107 | 89.0 (13.3)<br>53-115  | 91.5 (11.4)<br>49-119 | 97.5 (11.5)<br>65-127  | 1<br>n=125-162                                 | 84.6 (12.0)<br>56-109 | 88.1 (12.7)<br>49-116 | 89.6 (10.7)<br>52-112 | 91.2 (12.3)<br>45-120 |
| 2<br>n=10-14  | 95.6 (7.3)<br>79-109  | 102.9 (11.5)<br>76-115 | 99.3 (11.9)<br>71-115 | 105.2 (12.0)<br>78-118 | 2<br>n=10-13                                   | 99.9 (13.2)<br>60-111 | 97.2 (14.8)<br>72-115 | 95.4 (17.9)<br>56-114 | 91.1 (24.7)<br>43-119 |
| 3<br>n=12-15  | 96.6 (6.2)<br>86-105  | 102.1 (8.8)<br>85-115  | 102.9 (8.9)<br>90-124 | 105.3 (10.1)<br>94-132 | 3<br>n=12-14                                   | 88.2 (11.6)<br>56-103 | 92.5 (15.0)<br>49-116 | 93.2 (8.6)<br>76-107  | 95.0 (8.6)<br>78-108  |
| 4<br>n=6-7  | 101.4 (8.1)<br>94-117 | 108.4 (8.3)<br>99-118  | 106.2 (6.3)<br>97-114 | 107.7 (12.1)<br>92-122 | 4<br>n=6-7                                     | 98.3 (6.8)<br>85-108  | 101.4 (8.8)<br>91-117 | 100.7 (6.7)<br>92-109 | 100.8 (9.4)<br>89-117 |
| Significant group differences <sup>c</sup>            | 1<2,3,4               | 1<2,3,4                | 1<2,3,4               | 1<3                    | Significant group differences <sup>c</sup>     | 1<2,3,4               | 1<2,3,4               | 1<4                   | NS                    |

<sup>a</sup> These categories represent fluency scores at entry into the evaluation study as measured by the PreLAS 2000, an individual assessment of English language oral proficiency. Fluency level 1=non-English speaker, 2 & 3=limited English speaker, 4 & 5=fluent English speaker. No children in this subsample received an English fluency score of 5.

<sup>b</sup> Indicates standardized, norm-referenced measure with mean=100, SD=15.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each English proficiency level based on longitudinal growth model estimations that corrected for classroom quality, as measured by the ECERS-R.

**Table 24. Child Outcome Scores of Combined Cohorts Spanish Subsamples by English Proficiency Level**

| English Outcomes                               |                     |                     |                      |                     | Spanish Outcomes                               |                    |                     |                     |                     |
|--|---------------------|---------------------|----------------------|---------------------|--|--------------------|---------------------|---------------------|---------------------|
| Initial English Proficiency Level <sup>a</sup> | Pre-K               |                     | Kindergarten         |                     | Initial English Proficiency Level <sup>a</sup> | Pre-K              |                     | Kindergarten        |                     |
|  | Fall                | Spring              | Fall                 | Spring              |  | Fall               | Spring              | Fall                | Spring              |
|  | Mean (SD)<br>Range  | Mean (SD)<br>Range  | Mean (SD)<br>Range   | Mean (SD)<br>Range  |  | Mean (SD)<br>Range | Mean (SD)<br>Range  | Mean (SD)<br>Range  | Mean (SD)<br>Range  |
| Math: Counting Task <sup>b</sup>               |                     |                     |                      |                     |  |                    |                     |                     |                     |
| 1<br>n=125-163                                 | 6.7 (4.6)<br>0-22   | 12.9 (7.5)<br>0-40  | 18.9 (11.0)<br>2-40  | 34.6 (9.6)<br>6-40  | 1<br>n=125-163                                 | 4.7 (3.9)<br>0-19  | 7.9 (4.9)<br>0-29   | 10.0 (5.8)<br>0-39  | 14.7 (9.5)<br>3-40  |
| 2<br>n=10-14                                   | 14.1 (10.7)<br>2-39 | 16.1 (7.2)<br>2-29  | 25.4 (13.2)<br>11-40 | 36.0 (9.1)<br>12-40 | 2<br>n=10-12                                   | 9.3 (7.8)<br>0-29  | 11.6 (10.0)<br>1-39 | 12.9 (10.2)<br>5-39 | 18.6 (13.1)<br>6-40 |
| 3<br>n=12-15                                   | 8.7 (5.4)<br>1-17   | 18.7 (9.9)<br>10-40 | 23.5 (11.1)<br>11-40 | 35.7 (9.9)<br>14-40 | 3<br>n=12-15                                   | 4.3 (3.2)<br>0-11  | 7.6 (3.8)<br>1-14   | 8.3 (3.5)<br>3-14   | 9.3 (4.4)<br>3-19   |
| 4<br>n=6-7                                     | 13.3 (7.3)<br>7-29  | 26.9 (12.6)<br>6-40 | 23.8 (14.0)<br>7-39  | 36.5 (8.6)<br>19-40 | 4<br>n=6-7                                     | 7.6 (3.0)<br>3-11  | 9.0 (2.2)<br>6-11   | 10.2 (0.8)<br>9-11  | 15.2 (7.2)<br>10-29 |
| Significant group differences <sup>c</sup>     | 1<2,4               | 1<4                 | NS                   | NS                  | Significant group differences <sup>c</sup>     | NS                 | NS                  | NS                  | NS                  |

<sup>a</sup> These categories represent fluency scores at entry into the evaluation study as measured by the PreLAS 2000, an individual assessment of English and Spanish language oral proficiency. Fluency level 1=non-English/Spanish speaker, 2 & 3=limited English/Spanish speaker, 4 & 5=fluent English/Spanish speaker. No children in this subsample received an English fluency score of 5.

<sup>b</sup> Possible range=0-40.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each English proficiency level based on longitudinal growth model estimations that corrected for classroom quality, as measured by the ECERS-R.

**Table 24. Child Outcome Scores of Combined Cohorts Spanish Subsamples by English Proficiency Level**

| English Outcomes                                 |                    |                    |                    |                    | Spanish Outcomes                               |                    |                    |                    |                    |
|--|--------------------|--------------------|--------------------|--------------------|--|--------------------|--------------------|--------------------|--------------------|
| Initial English Proficiency Level <sup>a</sup>   | Pre-K              |                    | Kindergarten       |                    | Initial English Proficiency Level <sup>a</sup> | Pre-K              |                    | Kindergarten       |                    |
|  | Fall               | Spring             | Fall               | Spring             |  | Fall               | Spring             | Fall               | Spring             |
|  | Mean (SD)<br>Range | Mean (SD)<br>Range | Mean (SD)<br>Range | Mean (SD)<br>Range |  | Mean (SD)<br>Range | Mean (SD)<br>Range | Mean (SD)<br>Range | Mean (SD)<br>Range |
| General Knowledge: Social Awareness <sup>b</sup> |                    |                    |                    |                    |  |                    |                    |                    |                    |
| 1<br>n=125-162                                   | 1.2 (0.9)<br>0-4   | 2.5 (1.3)<br>0-6   | 3.3 (1.4)<br>0-6   | 4.5 (1.2)<br>2-6   | 1<br>n=125-160                                 | 2.5 (1.3)<br>0-6   | 2.9 (1.3)<br>0-6   | 3.4 (1.1)<br>1-6   | 3.9 (1.2)<br>1-6   |
| 2<br>n=10-14                                     | 2.2 (1.4)<br>1-5   | 3.0 (1.2)<br>1-4   | 3.7 (1.9)<br>0-6   | 5.3 (1.3)<br>2-6   | 2<br>n=10-14                                   | 3.0 (1.9)<br>1-6   | 2.5 (1.6)<br>0-4   | 3.3 (1.2)<br>1-5   | 3.2 (1.4)<br>0-4   |
| 3<br>n=12-15                                     | 2.9 (1.4)<br>0-5   | 4.4 (1.4)<br>1-6   | 4.9 (1.2)<br>2-6   | 5.6 (1.2)<br>2-6   | 3<br>n=12-15                                   | 2.5 (1.6)<br>0-5   | 3.6 (1.7)<br>0-6   | 3.4 (1.3)<br>1-6   | 4.0 (1.2)<br>2-6   |
| 4<br>n=6-7                                       | 3.1 (0.7)<br>2-4   | 3.9 (0.4)<br>3-4   | 4.7 (0.5)<br>4-5   | 5.0 (0.9)<br>4-6   | 4<br>n=6-7                                     | 3.0 (0.6)<br>2-4   | 3.4 (1.0)<br>2-4   | 3.8 (0.4)<br>3-4   | 4.5 (0.8)<br>4-6   |
| Significant group differences <sup>c</sup>       | 1<2,3,4            | 1<2,3,4<br>2<3     | 1<2,3,4            | 1<3<br>2<3         | Significant group differences <sup>c</sup>     | NS                 | NS                 | NS                 | NS                 |

<sup>a</sup> These categories represent fluency scores at entry into the evaluation study as measured by the PreLAS 2000, an individual assessment of English and Spanish language oral proficiency. Fluency level 1=non-English/Spanish speaker, 2 & 3=limited English/Spanish speaker, 4 & 5=fluent English/Spanish speaker. No children in this subsample received an English fluency score of 5.

<sup>b</sup> Possible range=0-6.

<sup>c</sup> Significant differences indicate results of post-hoc pairwise comparisons of the parameter estimates for each English proficiency level based on longitudinal growth model estimations that corrected for classroom quality, as measured by the ECERS-R.

**Table 25. Associations of Growth on English Assessments with Initial Skills and Growth on Spanish Assessments for Cohort 3**

|  |              | Association with Initial<br>English Skill Level <sup>a</sup> | Association with English<br>Growth <sup>a</sup> |                                |
|--|--------------|--|---|--------------------------------|
| Assessment                                     | Grade        | Initial Spanish Skill<br>Level <sup>b</sup>                  | Initial Spanish<br>Skill Level <sup>c</sup>     | Spanish<br>Growth <sup>d</sup> |
| Language and Literacy                          |              |  |   |                                |
| Receptive Language<br>(PPVT-4/TVIP)            | Pre-K        | **   | NS  | NS                             |
|  | Kindergarten | NS   | NS  | NS                             |
| Letter Word Identification<br>(WJ-III/Batería) | Pre-K        | ***  | NS  | NS                             |
|  | Kindergarten | NS   | NS  | NS                             |
| Math   |              |  |   |                                |
| Applied Problems<br>(WJ-III/Batería)           | Pre-K        | ***  | NS  | NS                             |
|  | Kindergarten | NS   | NS  | NS                             |
| Counting Task                                  | Pre-K        | ***  | **  | **                             |
|  | Kindergarten | NS   | NS  | NS                             |
| General Knowledge                              |              |  |   |                                |
| Social Awareness                               | Pre-K        | **   | NS  | NS                             |
|  | Kindergarten | NS   | NS  | NS                             |

<sup>a</sup> \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ , NS=nonsignificant.

<sup>b</sup> Represents fall pre-k scores on Spanish assessments. Significance levels indicate results of t-tests of the parameter estimates for English fall pre-k scores based on linear model estimations.

<sup>c</sup> Represents fall pre-k scores on Spanish assessments. Significance levels indicate results of t-tests of parameter estimates for the slope of English growth based on linear model estimations.

<sup>d</sup> Represents growth during pre-k and kindergarten on Spanish assessments. Significance levels indicate results of t-tests of the parameter estimates for slope of English growth based on linear model estimations.

**Table 26. Associations of Growth on English Assessments with Initial Skills and Growth on Spanish Assessments for Combined Cohorts**

|                                      |              | Association with Initial<br>English Skill Level <sup>a</sup> | Association with English<br>Growth <sup>a</sup> |                                |
|--------------------------------------|--------------|--|---|--------------------------------|
| Assessment                           | Grade        | Initial Spanish Skill<br>Level <sup>b</sup>                  | Initial Spanish<br>Skill Level <sup>c</sup>     | Spanish<br>Growth <sup>d</sup> |
| Language and Literacy                |              |  |   |                                |
| Receptive Language<br>(PPVT-4/TVIP)  | Pre-K        | NS   | NS  | NS                             |
|                                      | Kindergarten | NS   | NS  | NS                             |
| Math                                 |              |  |   |                                |
| Applied Problems<br>(WJ-III/Batería) | Pre-K        | ***  | *   | NS                             |
|                                      | Kindergarten | **   | NS  | NS                             |
| Counting Task                        | Pre-K        | ***  | *   | *                              |
|                                      | Kindergarten | NS   | *   | *                              |
| General Knowledge                    |              |  |   |                                |
| Social Awareness                     | Pre-K        | **   | NS  | *                              |
|                                      | Kindergarten | NS   | NS  | NS                             |

<sup>a</sup> \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ , NS=nonsignificant.

<sup>b</sup> Represents fall pre-k scores on Spanish assessments. Significance levels indicate results of t-tests of the parameter estimates for English fall pre-k scores based on linear model estimations.

<sup>c</sup> Represents fall pre-k scores on Spanish assessments. Significance levels indicate results of t-tests of parameter estimates for the slope of English growth based on linear model estimations.

<sup>d</sup> Represents growth during pre-k and kindergarten on Spanish assessments. Significance levels indicate results of t-tests of the parameter estimates for slope of English growth based on linear model estimations.

## Summary and Discussion

### Program Characteristics

The More at Four Program has grown substantially each year since its inception in 2001-2002, when just over 1,200 children were served, to over 33,000 children being served in the eighth year (2008-2009). Although the number of sites, classrooms, and children participating in More at Four has increased considerably each year, many of the program characteristics related to the program guidelines and educational quality have remained consistent through year 8. Children have been served in a variety of early childhood settings, about half public school and half private, including about 20% in Head Start. The average class size remained at approximately 16, and most of the children (83%) enrolled in each class were funded through More at Four. The majority of children (over 70%) participating have been in the target group of those unserved at the time of enrollment, and more than half of the children had never been served in a pre-k program at the time of enrollment. The program has continued to serve a similar population of at-risk children each year; in 2008-2009, 88% were eligible for free or reduced-price lunch, and a substantial proportion demonstrated other risk factors, including limited English proficiency (19%) and developmental/educational need (30%), and smaller proportions had an identified disability (6%) or a chronic health condition (5%). With regard to teacher qualifications, as expected, nearly all teachers in public school settings had a bachelor's degree or higher, compared to just over half in community settings, a distribution which has remained fairly constant over time. Nearly all teachers in public school settings also are licensed; again, a consistent pattern over time. In 2008-2009, teacher licensure in community settings evidenced the highest rate (29%) since the program began, with this increase attributable to higher rates of those with B-K licenses; concomitantly, the lowest rate of teachers in community settings with no credential (28%) was also found. This improvement in the number of teachers with B-K licenses is consistent with an early childhood teacher licensing initiative undertaken by the NC Office of Early Learning, which also oversees the NC More at Four Program.

### Classroom Quality

The quality of educational practices in the pre-k classrooms and the subsequent kindergarten classrooms attended by More at Four children was examined across three cohorts. Quality was generally higher in the pre-k than the kindergarten classrooms for most aspects that were measured, including global classroom practices (space and furnishings, personal care routines, language-reasoning, activities, interactions, and program structure), instructional practices (emotional support and instructional support), the literacy environment (language, literacy, and curriculum practices and literacy materials), and teacher-child interactions (higher sensitivity, lower harshness and detachment). There were no differences between pre-k and kindergarten classrooms in aspects of instructional practices related to classroom organization. With regard to literacy practices, pre-k classrooms did a better job of providing a range of appropriate materials for children to use, but kindergarten classrooms did a better job of providing more frequent literacy activities. Two factors that could be measured in common between pre-k and kindergarten classrooms, class size and teacher qualifications (having a B-K license or the equivalent), were found to have different associations with the quality of educational practices in pre-k and kindergarten. For the pre-k classrooms, higher quality literacy environments were found when teachers had better qualifications, and for the kindergarten classrooms, higher quality global classroom practices were

found when class size was smaller. Neither factor was related to the sensitivity of teacher-child interactions nor the quality of instructional practices.

## Child Outcomes

Children's longitudinal growth in key domains of learning (language/literacy, math, general knowledge, and behavioral skills) was examined from the beginning of their pre-k year through the end of kindergarten for three cohorts of children who attended the More at Four Program. These results indicate that children made substantial gains over this time period across all areas, and based on age-standardized scores, were gaining language, math and social skills at a faster than expected rate during pre-k and kindergarten. Children made significant gains in both pre-k and kindergarten, with similar rates of growth both years for many basic skills (receptive language, applied problems, social awareness, social skills, problem behaviors). For other more academic skills (letter/word knowledge, phonological awareness, print knowledge, counting), children exhibited even greater growth in kindergarten. This pattern may suggest that during pre-k children gained a foundational level of pre-reading and math knowledge, as well as general knowledge and behavioral skills, which prepared them to develop more advanced reading and math skills in elementary school. Such results suggest that the benefits of participating in the More at Four Pre-k Program were maintained through kindergarten.

Moreover, participation in the program was beneficial for all children's learning and development, but had even greater benefits for some children who entered pre-k with greater needs. Across all three cohorts, children at lower levels of English proficiency scored lower than other children throughout pre-k and kindergarten, but made gains at a faster rate than children who were more proficient. This pattern was found across domains of learning, including language, math, and general knowledge, with no differences in behavioral skills. For children with greater cumulative risk levels, a somewhat different pattern was found. For some skills, they scored similarly to children at lower risk, while for other skills they scored lower. However, the rate of growth throughout pre-k and kindergarten was similar for all children, regardless of risk level. Furthermore, there was little difference in children's rate of learning from pre-k through kindergarten on the basis of the quality of the More at Four classroom. Given the relatively high quality of these classrooms, it is not surprising that there was little variation in children's outcomes in this regard. Similarly, there were few differences in children's gains by More at Four setting type (public school vs. community). For some language and literacy skills that were only measured for the most recent cohort, children in public school settings did make greater gains during pre-k than children in community settings. However, for all other skills, there were no differences by setting type across the three cohorts.

For the subsamples of Spanish-speaking children in the two most recent cohorts, their skills were assessed in both English and Spanish to examine their patterns of growth across both languages. Although the language of instruction in the More at Four and kindergarten classrooms was primarily or even exclusively English, children made gains in skills in both languages. They made gains in all areas in English, language/literacy skills, math skills, general knowledge; in Spanish, they made gains in math and general knowledge, but not in language/literacy skills. Similarly to the findings for the full sample, Spanish-speaking children with lower levels of language proficiency scored lower in pre-k and kindergarten on most outcomes in both English and Spanish. However, they made gains at a faster rate than children with higher levels of language proficiency for English

skills, but gained at the same rate for Spanish skills. Moreover, there was some evidence that children who entered pre-k with higher skills in Spanish in a particular area also had higher skills in English, while those with lower Spanish skills also had lower English skills. However, these associations generally were not found in kindergarten, nor did Spanish skills tend to predict rates of growth in school readiness and academic skills in English (except for counting), suggesting that perhaps the pre-k program was helping children with lower initial skills catch up.

## Conclusions

In sum, these results indicate that as the More at Four Program has scaled up over the first 8 years of operation, it has continued to meet its goals and maintain services in accord with program guidelines. The program consistently has provided good quality pre-k classrooms in a variety of setting types. It has made progress in achieving the goal of increasing the number of B-K licensed teachers in community early childhood settings. The children served in the program have continued to represent the highest priority population, children who are at risk and unserved, and who are likely to benefit from this type of pre-k intervention. The present results suggest that the More at Four Program was equally beneficial for eligible children, regardless of the level of additional risk factors at entry into the program. As found in past evaluations, children who participated in More at Four made greater than expected growth in all key domains of learning (language/literacy, math, general knowledge, and behavioral skills) from the beginning of pre-k through the end of kindergarten. Moreover, those who entered with greater learning needs, particularly children with low levels of English proficiency, derived even greater gains. Further, there was some evidence that for children who are dual language learners, there may be important associations between knowledge and growth in academic skills in English (the primary language of instruction) and these same skills in their home language. Overall, these results offer evidence that the More at Four Program provides children with opportunities to gain foundational skills during pre-k that prepare them to develop even more advanced academic skills in elementary school. Given that the majority of these children likely would not otherwise have participated in such a school readiness program, the provision of such experiences is of critical importance. The findings from the current evaluation, in addition to many other research studies, support the need for high quality early childhood education programs such as More at Four, especially for children who are at risk even before they enter school. <sup>37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49</sup>



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## Appendix

**Table 27. *Quality of Classroom Practices (ECERS-R) Regression Results***

| Effect                         | ECERS-R Subscale               |                       |                       |                       |                       |                        |                       |
|--------------------------------|--------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|-----------------------|
|                                | Child Item Totals <sup>a</sup> | Space and Furnishings | Language-Reasoning    | Activities            | Program Structure     | Personal Care Routines | Interaction           |
|                                | Est <sup>b</sup> (SE)          | Est <sup>b</sup> (SE) | Est <sup>b</sup> (SE) | Est <sup>b</sup> (SE) | Est <sup>b</sup> (SE) | Est <sup>b</sup> (SE)  | Est <sup>b</sup> (SE) |
| Intercept                      | 4.4*** (0.1)                   | 4.5*** (0.1)          | 5.2*** (0.2)          | 4.6*** (0.1)          | 4.9*** (0.1)          | 3.1*** (0.1)           | 4.7*** (0.2)          |
| Cohort 1                       | 0.9*** (0.1)                   | 0.5*** (0.1)          | 0.5** (0.2)           | 0.3* (0.1)            | 1.3*** (0.2)          | 1.9*** (0.2)           | 1.4*** (0.3)          |
| Cohort 2                       | -0.3* (0.1)                    | -0.6*** (0.2)         | -0.5* (0.2)           | -0.1 (0.2)            | -0.4* (0.2)           | -0.3 (0.2)             | 0.1 (0.3)             |
| Cohort 3 <sup>c</sup>          | --                             | --                    | --                    | --                    | --                    | --                     | --                    |
| Grade <sup>c</sup>             | -1.7*** (0.1)                  | -1.5*** (0.1)         | -1.9*** (0.2)         | -2.4*** (0.1)         | -2.4*** (0.2)         | -1.2*** (0.2)          | -0.8** (0.3)          |
| Grade by Cohort 1              | -0.4* (0.2)                    | -0.0 (0.2)            | 0.2 (0.3)             | -0.1 (0.2)            | -0.8** (0.2)          | -1.3*** (0.2)          | -0.7* (0.4)           |
| Grade by Cohort 2              | 0.4* (0.2)                     | 0.7*** (0.2)          | 0.6* (0.3)            | 0.1 (0.2)             | 0.5 (0.3)             | 0.6** (0.2)            | -0.2 (0.4)            |
| Grade by Cohort 3 <sup>c</sup> | --                             | --                    | --                    | --                    | --                    | --                     | --                    |

**Table 28. *Quality of Instructional Practices (CLASS) Regression Results***

| Effect             | CLASS Domain          |                        |                       |
|--------------------|-----------------------|------------------------|-----------------------|
|                    | Emotional Support     | Classroom Organization | Instructional Support |
|                    | Est <sup>b</sup> (SE) | Est <sup>b</sup> (SE)  | Est <sup>b</sup> (SE) |
| Intercept          | 5.8*** (0.1)          | 5.3*** (0.1)           | 3.1*** (0.1)          |
| Grade <sup>d</sup> | -0.6*** (0.2)         | -0.1 (0.1)             | -0.3* (0.2)           |

<sup>a</sup> The Total Child Items Score includes items from all subscales on the ECERS-R but the Parents and Staff subscale (items 1-37).

<sup>b</sup> Significance levels are \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

<sup>c</sup> A reference cell coding was used, with pre-k classrooms in Cohort 3 serving as the reference cell. The parameter estimates for grade represent the effects of kindergarten.

<sup>d</sup> The parameter estimates for grade represent the effects of kindergarten.

**Table 29. *Quality of the Literacy Environment (ELLCO) Regression Results***

| Effect                         | ELLCO Scales          |                       |                       |
|--------------------------------|-----------------------|-----------------------|-----------------------|
|                                | Classroom Observation | Literacy Environment  | Literacy Activities   |
|                                | Mean                  | Checklist             | Rating Scale          |
|                                | Est <sup>a</sup> (SE) | Est <sup>a</sup> (SE) | Est <sup>a</sup> (SE) |
| Intercept                      | 3.6*** (0.1)          | 28.4*** (0.7)         | 7.1*** (0.3)          |
| Cohort 2                       | 0.1 (0.1)             | 0.8 (1.0)             | 1.1* (0.4)            |
| Cohort 3 <sup>b</sup>          | --                    | --                    | --                    |
| Grade <sup>b</sup>             | -0.3* (0.1)           | -3.6*** (0.9)         | 2.3*** (0.4)          |
| Grade by Cohort 2              | -0.1 (0.1)            | -2.1 (1.2)            | -2.1*** (0.6)         |
| Grade by Cohort 3 <sup>b</sup> | --                    | --                    | --                    |

**Table 30. *Quality of Teacher-Child Interactions (CIS) Regression Results***

| Effect                         | Total Mean<br>Score   | CIS Subscale          |                       |                       |                       |
|--------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|                                |                       | Sensitivity           | Harshness             | Detachment            | Permissiveness        |
|                                | Est <sup>a</sup> (SE) | Est <sup>a</sup> (SE) | Est <sup>a</sup> (SE) | Est <sup>a</sup> (SE) | Est <sup>a</sup> (SE) |
| Intercept                      | 3.5*** (0.1)          | 3.2*** (0.1)          | 1.5*** (0.1)          | 1.3*** (0.1)          | 1.2*** (0.1)          |
| Cohort 2                       | -0.1 (0.1)            | -0.2 (0.1)            | 0.0 (0.1)             | -0.1 (0.1)            | 0.1* (0.1)            |
| Cohort 3 <sup>b</sup>          | --                    | --                    | --                    | --                    | --                    |
| Grade <sup>b</sup>             | -0.2** (0.1)          | -0.4** (0.1)          | 0.3* (0.1)            | 0.2* (0.1)            | -0.1 (0.1)            |
| Grade by Cohort 2              | -0.1 (0.1)            | -0.1 (0.1)            | 0.1 (0.2)             | -0.0 (0.1)            | -0.0 (0.1)            |
| Grade by Cohort 3 <sup>b</sup> | --                    | --                    | --                    | --                    | --                    |

<sup>a</sup> Significance levels are \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

<sup>b</sup> A reference cell coding was used, with pre-k classrooms in Cohort 3 serving as the reference cell. The parameter estimates for grade represent the effects of kindergarten.

**Table 31. Cohort 3 Child Outcomes Regression Results**

| Effect                | Language and Literacy       |                                     |                         |                                | Math                      |                       | General Knowledge     | Classroom Behavior    |                          |
|-----------------------|-----------------------------|-------------------------------------|-------------------------|--------------------------------|---------------------------|-----------------------|-----------------------|-----------------------|--------------------------|
|                       | Receptive Language (PPVT-4) | Letter-Word Identification (WJ-III) | Print Knowledge (TOPEL) | Phonological Awareness (TOPEL) | Applied Problems (WJ-III) | Counting Task         | Social Awareness      | Social Skills (SSRS)  | Problem Behaviors (SSRS) |
|                       | Est <sup>a</sup> (SE)       | Est <sup>a</sup> (SE)               | Est <sup>a</sup> (SE)   | Est <sup>a</sup> (SE)          | Est <sup>a</sup> (SE)     | Est <sup>a</sup> (SE) | Est <sup>a</sup> (SE) | Est <sup>a</sup> (SE) | Est <sup>a</sup> (SE)    |
| Intercept             | 87.19*** (0.80)             | 93.18*** (0.87)                     | 89.73*** (0.84)         | 82.93*** (0.80)                | 93.56*** (0.64)           | 11.60*** (0.62)       | 3.51*** (0.09)        | 100.95*** (1.13)      | 99.62*** (0.95)          |
| Age                   | -4.99** (1.91)              | -9.68*** (1.69)                     | -1.84 (1.75)            | -5.46** (1.89)                 | -7.61*** (1.61)           | 3.66** (1.32)         | 0.28 (0.18)           | 3.89 (2.05)           | -0.82 (2.01)             |
| Days bet. assessment  | 0.01 (0.01)                 | 0.03** (0.01)                       | 0.02 (0.01)             | 0.02 (0.02)                    | 0.00 (0.01)               | 0.01 (0.01)           | 0.00 (0.00)           | 0.02 (0.02)           | 0.00 (0.01)              |
| Time                  | 2.75 (1.37)                 | -0.87 (1.42)                        | 3.73 (1.82)             | -0.43 (2.15)                   | 4.13** (1.55)             | 4.67** (1.67)         | 0.27 (0.19)           | 5.52 (2.37)           | 0.04 (1.85)              |
| Grade-kindergarten    | -1.79 (1.38)                | -15.98*** (1.40)                    | -12.66*** (1.89)        | -24.33*** (2.24)               | -4.27** (1.56)            | -7.48*** (1.75)       | -0.38 (0.20)          | -15.29*** (2.42)      | 1.41 (1.89)              |
| Gender-male           | 2.02 (1.15)                 | -1.75 (1.02)                        | -1.93 (1.06)            | -0.26 (1.14)                   | 1.01 (0.97)               | -1.62 (0.80)          | -0.17 (0.11)          | 2.57 (1.25)           | -3.10 (1.22)             |
| Setting-public school | 0.93 (1.62)                 | -1.23 (1.74)                        | -2.20 (1.68)            | 0.21 (1.61)                    | 0.22 (1.30)               | -0.22 (1.25)          | 0.15 (0.18)           | -1.86 (2.26)          | 1.99 (1.91)              |
| Class quality         | -0.06 (0.88)                | 0.33 (0.93)                         | 1.09 (0.90)             | 0.25 (0.87)                    | -0.15 (0.70)              | 0.68 (0.67)           | -0.02 (0.10)          | -0.80 (1.22)          | 0.52 (1.03)              |
| MAF attendance        | -0.01 (0.03)                | 0.05 (0.02)                         | 0.03 (0.02)             | 0.01 (0.02)                    | -0.01 (0.02)              | 0.02 (0.02)           | 0.00 (0.00)           | 0.03 (0.03)           | -0.02 (0.03)             |
| English proficiency   | 8.55*** (0.50)              | 3.50*** (0.41)                      | 4.07*** (0.43)          | 6.15*** (0.47)                 | 6.15*** (0.39)            | 2.73*** (0.34)        | 0.68*** (0.06)        | 2.28*** (0.56)        | 0.28 (0.51)              |
| Risk                  | -3.71*** (0.94)             | -1.03 (0.80)                        | -0.30 (0.83)            | -2.11* (0.90)                  | -1.93* (0.75)             | -0.39 (0.65)          | -0.23 (0.10)          | -0.44 (1.08)          | 0.43 (0.98)              |

<sup>a</sup> Significance levels are \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

**Table 31. Cohort 3 Child Outcomes Regression Results**

| Effect                 | Language and Literacy       |                                     |                         |                                | Math                      |                       | General Knowledge     | Classroom Behavior    |                          |
|------------------------|-----------------------------|-------------------------------------|-------------------------|--------------------------------|---------------------------|-----------------------|-----------------------|-----------------------|--------------------------|
|                        | Receptive Language (PPVT-4) | Letter-Word Identification (WJ-III) | Print Knowledge (TOPEL) | Phonological Awareness (TOPEL) | Applied Problems (WJ-III) | Counting Task         | Social Awareness      | Social Skills (SSRS)  | Problem Behaviors (SSRS) |
|                        | Est <sup>a</sup> (SE)       | Est <sup>a</sup> (SE)               | Est <sup>a</sup> (SE)   | Est <sup>a</sup> (SE)          | Est <sup>a</sup> (SE)     | Est <sup>a</sup> (SE) | Est <sup>a</sup> (SE) | Est <sup>a</sup> (SE) | Est <sup>a</sup> (SE)    |
| Interactions           |                             |                                     |                         |                                |                           |                       |                       |                       |                          |
| Grade x Time           | 0.75 (0.98)                 | 9.31*** (1.01)                      | 6.54*** (1.32)          | 14.22*** (1.56)                | -0.13 (1.11)              | 5.12*** (1.22)        | 0.27 (0.14)           | -0.14 (1.66)          | -0.88 (1.30)             |
| Setting x Time         | -0.19 (1.01)                | 3.36** (1.04)                       | 3.97** (1.34)           | -0.66 (1.59)                   | -0.56 (1.13)              | 2.05 (1.23)           | 0.26 (0.14)           | -1.87 (1.69)          | 0.43 (1.31)              |
| Setting x Grade        | 2.49 (2.71)                 | 0.32 (2.74)                         | 5.23 (3.71)             | 1.74 (4.39)                    | 0.12 (3.06)               | 5.67 (3.42)           | 0.65 (0.38)           | 6.55 (4.72)           | -5.62 (3.68)             |
| Setting x Time x Grade | -1.23 (1.43)                | -2.39 (1.44)                        | -4.92* (1.95)           | -0.65 (2.30)                   | 0.10 (1.61)               | -3.95 (1.79)          | -0.52** (0.20)        | -0.42 (2.40)          | 0.80 (1.87)              |
| Quality x Time         | -0.54 (0.54)                | 0.60 (0.55)                         | -0.44 (0.71)            | 0.87 (0.84)                    | -0.43 (0.60)              | 0.08 (0.66)           | 0.16 (0.08)           | 2.06 (0.91)           | -1.03 (0.71)             |
| Quality x Grade        | -0.29 (1.43)                | 3.45* (1.44)                        | -0.25 (1.96)            | 4.39 (2.31)                    | 0.71 (1.61)               | 0.63 (1.80)           | 0.06 (0.20)           | 2.22 (2.41)           | -2.10 (1.88)             |
| Quality x Time x Grade | 0.66 (0.76)                 | -2.11** (0.76)                      | -0.03 (1.03)            | -2.25 (1.22)                   | -0.03 (0.85)              | -0.60 (0.95)          | -0.14 (0.11)          | -2.22 (1.25)          | 1.27 (0.97)              |
| Proficiency x Time     | -0.98*** (0.13)             | -0.49** (0.17)                      | -0.61*** (0.16)         | -0.52** (0.19)                 | -1.11*** (0.16)           | -0.39** (0.14)        | -0.13*** (0.02)       | -0.28 (0.31)          | -0.12 (0.24)             |
| Risk x Time            | 0.27 (0.25)                 | 0.23 (0.31)                         | -0.27 (0.29)            | 0.23 (0.34)                    | 0.14 (0.29)               | -0.17 (0.26)          | 0.05 (0.04)           | 0.51 (0.57)           | -0.27 (0.44)             |

<sup>a</sup> Significance levels are \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .



**Table 32. Combined Cohorts Child Outcomes Regression Results**

| Effect                | Language and<br>Literacy                         | Math                         |                       | General Knowledge     | Classroom<br>Behavior   |                             |
|-----------------------|--|------------------------------|-----------------------|-----------------------|-------------------------|-----------------------------|
|                       | Receptive Language<br>(PPVT-III/4 <sup>a</sup> ) | Applied Problems<br>(WJ-III) | Counting<br>Task      | Social<br>Awareness   | Social Skills<br>(SSRS) | Problem Behaviors<br>(SSRS) |
|                       | Est <sup>b</sup> (SE)                            | Est <sup>b</sup> (SE)        | Est <sup>b</sup> (SE) | Est <sup>b</sup> (SE) | Est <sup>b</sup> (SE)   | Est <sup>b</sup> (SE)       |
| Intercept             | 88.96*** (0.84)                                  | 94.97*** (0.64)              | 11.53*** (0.57)       | 3.60*** (0.08)        | 101.99*** (1.16)        | 99.83*** (0.94)             |
| Age                   | -6.05*** (1.01)                                  | -7.59*** (0.83)              | 3.86*** (0.69)        | 0.12 (0.09)           | 5.66*** (1.04)          | -1.91 (1.00)                |
| Days bet. assessment  | 0.02** (0.01)                                    | 0.01 (0.01)                  | 0.04*** (0.01)        | 0.00** (0.00)         | 0.01 (0.01)             | 0.00 (0.01)                 |
| Time                  | 1.63 (0.89)                                      | 2.79** (0.86)                | 1.42 (0.95)           | 0.44*** (0.11)        | 4.96*** (1.36)          | -0.22 (1.08)                |
| Grade-kindergarten    | 2.25* (0.90)                                     | -0.52 (0.85)                 | -5.13*** (0.98)       | -0.26* (0.11)         | -13.23*** (1.35)        | 0.55 (1.06)                 |
| Gender-male           | 0.92 (0.57)                                      | -1.03 (0.47)                 | -1.90*** (0.39)       | -0.17** (0.05)        | 1.73** (0.59)           | -1.30 (0.57)                |
| Setting-public school | 2.10* (0.89)                                     | 0.46 (0.68)                  | -0.37 (0.62)          | -0.04 (0.09)          | 2.08 (1.30)             | -0.25 (1.04)                |
| Class quality         | -0.16 (0.59)                                     | 0.19 (0.45)                  | 0.41 (0.40)           | -0.06 (0.06)          | 0.94 (0.82)             | 0.22 (0.67)                 |
| MAF attendance        | 0.02 (0.01)                                      | 0.00 (0.01)                  | 0.02** (0.01)         | 0.00 (0.00)           | 0.05*** (0.01)          | -0.03 (0.01)                |
| Cohort 1              | -4.32*** (1.20)                                  | -1.12 (0.91)                 | -0.91 (0.80)          | 0.06 (0.11)           | -1.62 (1.69)            | -2.02 (1.37)                |
| Cohort 2              | -6.11*** (1.09)                                  | -0.90 (0.83)                 | 0.41 (0.72)           | -0.11 (0.10)          | -2.09 (1.46)            | -1.06 (1.21)                |
| English proficiency   | 8.95*** (0.26)                                   | 5.82*** (0.22)               | 2.23*** (0.18)        | 0.66*** (0.03)        | 2.60*** (0.28)          | -0.11 (0.25)                |
| Risk                  | -3.18*** (0.48)                                  | -1.73*** (0.39)              | -0.81* (0.33)         | -0.24*** (0.05)       | 0.86 (0.51)             | -0.37 (0.47)                |

<sup>a</sup> PPVT-III was used for Cohorts 1 and 2 and PPVT-4 was used for Cohort 3.

<sup>b</sup> Significance levels are \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

**Table 32. Combined Cohorts Child Outcomes Regression Results**

| Effect                    | Language and<br>Literacy                         | Math                         |                       | General Knowledge     | Classroom<br>Behavior   |                             |
|---------------------------|--|------------------------------|-----------------------|-----------------------|-------------------------|-----------------------------|
|                           | Receptive Language<br>(PPVT-III/4 <sup>a</sup> ) | Applied Problems<br>(WJ-III) | Counting<br>Task      | Social<br>Awareness   | Social Skills<br>(SSRS) | Problem Behaviors<br>(SSRS) |
|                           | Est <sup>b</sup> (SE)                            | Est <sup>b</sup> (SE)        | Est <sup>b</sup> (SE) | Est <sup>b</sup> (SE) | Est <sup>b</sup> (SE)   | Est <sup>b</sup> (SE)       |
| Interactions              |  |                              |                       |                       |                         |                             |
| Proficiency x Risk        | 1.55*** (0.30)                                   | 0.26 (0.25)                  | 0.10 (0.21)           | 0.14*** (0.03)        | -0.23 (0.32)            | 0.31 (0.29)                 |
| Grade x Time              | -0.31 (0.80)                                     | -0.74 (0.77)                 | 6.16*** (0.86)        | 0.10 (0.10)           | -0.32 (1.20)            | -0.30 (0.95)                |
| Cohort 1 x Time           | 1.22*** (0.31)                                   | 0.48 (0.34)                  | 0.58 (0.30)           | 0.02 (0.04)           | 0.60 (0.58)             | 1.25 (0.47)                 |
| Cohort 2 x Time           | 1.20*** (0.28)                                   | 0.18 (0.31)                  | -0.21 (0.27)          | 0.09** (0.04)         | 1.51** (0.54)           | 0.19 (0.43)                 |
| Setting x Time            | -0.13 (0.58)                                     | -0.01 (0.57)                 | 0.37 (0.62)           | 0.09 (0.07)           | -0.49 (0.86)            | 0.32 (0.68)                 |
| Setting x Grade           | 0.30 (1.66)                                      | 1.52 (1.58)                  | -0.96 (1.81)          | 0.20 (0.21)           | 0.14 (2.51)             | -3.10 (1.98)                |
| Setting x Time x Grade    | -0.54 (0.86)                                     | -0.75 (0.82)                 | -0.35 (0.93)          | -0.18 (0.11)          | -0.33 (1.26)            | 0.78 (1.00)                 |
| Quality x Time            | -0.51 (0.34)                                     | -0.72 (0.33)                 | -0.39 (0.36)          | 0.09 (0.04)           | 1.02 (0.51)             | -0.68 (0.40)                |
| Quality x Grade           | 0.13 (0.93)                                      | -0.19 (0.89)                 | 2.68** (1.01)         | 0.05 (0.12)           | 0.27 (1.42)             | 0.21 (1.12)                 |
| Quality x Time x Grade    | 0.36 (0.48)                                      | 0.51 (0.46)                  | -0.87 (0.52)          | -0.05 (0.06)          | -0.97 (0.71)            | 0.18 (0.56)                 |
| Proficiency x Time        | -1.18*** (0.08)                                  | -1.12*** (0.09)              | -0.23** (0.08)        | -0.14*** (0.01)       | -0.35* (0.15)           | 0.04 (0.12)                 |
| Risk x Time               | 0.21 (0.15)                                      | 0.35 (0.16)                  | 0.02 (0.14)           | 0.06** (0.02)         | 0.03 (0.28)             | -0.15 (0.22)                |
| Risk x Proficiency x Time | -0.15 (0.10)                                     | -0.34** (0.10)               | -0.08 (0.09)          | -0.04*** (0.01)       | -0.12 (0.18)            | 0.24 (0.14)                 |

<sup>a</sup> PPVT-III was used for Cohorts 1 and 2 and PPVT-4 was used for Cohort 3.

<sup>b</sup> Significance levels are \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

**Table 33. Cohort 3 Spanish Subsample Regression Results for English Outcomes**

| Effect                | Language and Literacy             |   | Math                         |                       | General Knowledge     | Classroom Behavior      |                             |
|-----------------------|-----------------------------------|---|------------------------------|-----------------------|-----------------------|-------------------------|-----------------------------|
|                       | Receptive<br>Language<br>(PPVT-4) | Letter-Word<br>Identification<br>(WJ-III) | Applied Problems<br>(WJ-III) | Counting<br>Task      | Social<br>Awareness   | Social Skills<br>(SSRS) | Problem Behaviors<br>(SSRS) |
|                       | Est <sup>a</sup> (SE)             | Est <sup>a</sup> (SE)                     | Est <sup>a</sup> (SE)        | Est <sup>a</sup> (SE) | Est <sup>a</sup> (SE) | Est <sup>a</sup> (SE)   | Est <sup>a</sup> (SE)       |
| Intercept             | 66.38*** (1.77)                   | 88.28*** (1.61)                           | 81.41*** (1.45)              | 8.59*** (1.15)        | 1.59*** (0.12)        | 99.83*** (1.76)         | 96.10*** (1.37)             |
| Age                   | 1.06 (4.65)                       | -7.78 (4.13)                              | -3.66 (4.31)                 | 2.24 (2.55)           | 0.68 (0.34)           | 10.27 (4.53)            | -4.38 (3.88)                |
| Days bet. Assessment  | 0.01 (0.02)                       | 0.04 (0.03)                               | 0.01 (0.03)                  | 0.02 (0.02)           | 0.01 (0.00)           | -0.01 (0.04)            | -0.02 (0.02)                |
| Time                  | 6.56* (2.74)                      | -0.69 (3.41)                              | 9.41** (3.33)                | 2.27 (3.14)           | 0.16 (0.43)           | 13.50** (4.68)          | 0.55 (3.11)                 |
| Grade-kindergarten    | -2.51 (2.81)                      | -14.48*** (3.55)                          | -3.19 (3.51)                 | -19.86*** (3.40)      | -0.17 (0.47)          | -16.33** (4.98)         | -0.34 (3.26)                |
| Gender-male           | 0.44 (2.58)                       | -0.68 (2.33)                              | -1.49 (2.41)                 | 0.91 (1.45)           | -0.33 (0.19)          | 4.63 (2.56)             | -4.12 (2.15)                |
| Setting-public school | -0.43 (3.78)                      | 2.02 (3.41)                               | 1.77 (3.13)                  | 1.56 (2.40)           | -0.01 (0.26)          | -7.25 (3.78)            | -4.22 (2.99)                |
| Class quality         | -0.91 (2.14)                      | 2.10 (1.88)                               | -0.59 (1.74)                 | 0.06 (1.32)           | 0.01 (0.15)           | -1.19 (2.23)            | -0.43 (1.75)                |
| MAF attendance        | 0.17 (0.09)                       | 0.15 (0.06)                               | 0.07 (0.07)                  | 0.07 (0.04)           | 0.01 (0.01)           | 0.07 (0.08)             | -0.01 (0.06)                |
| English proficiency   | 11.82*** (1.64)                   | 3.69* (1.40)                              | 8.26*** (1.39)               | 0.38 (0.51)           | 0.83*** (0.11)        | 3.88 (1.76)             | -1.51 (1.45)                |
| Risk                  | 0.48 (2.25)                       | -2.19 (1.93)                              | -2.41 (1.89)                 | -2.05 (1.17)          | -0.28 (0.15)          | -0.94 (2.31)            | -0.20 (1.91)                |

<sup>a</sup> Significance levels are \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

**Table 33. Cohort 3 Spanish Subsample Regression Results for English Outcomes**

| Effect                 | Language and Literacy       |                                     | Math                      |                       | General Knowledge     | Classroom Behavior    |                          |
|------------------------|-----------------------------|-------------------------------------|---------------------------|-----------------------|-----------------------|-----------------------|--------------------------|
|                        | Receptive Language (PPVT-4) | Letter-Word Identification (WJ-III) | Applied Problems (WJ-III) | Counting Task         | Social Awareness      | Social Skills (SSRS)  | Problem Behaviors (SSRS) |
|                        | Est <sup>a</sup> (SE)       | Est <sup>a</sup> (SE)               | Est <sup>a</sup> (SE)     | Est <sup>a</sup> (SE) | Est <sup>a</sup> (SE) | Est <sup>a</sup> (SE) | Est <sup>a</sup> (SE)    |
| Interactions           |                             |                                     |                           |                       |                       |                       |                          |
| Grade x Time           | 0.15 (2.04)                 | 9.32*** (2.52)                      | -2.88 (2.47)              | 12.29*** (2.36)       | 0.60 (0.32)           | -5.12 (3.41)          | -0.36 (2.25)             |
| Setting x Time         | 1.19 (2.21)                 | 4.19 (2.68)                         | 2.28 (2.61)               | 3.10 (2.48)           | 0.11 (0.34)           | 7.63 (3.63)           | -0.68 (2.41)             |
| Setting x Grade        | 7.19 (5.90)                 | -0.44 (7.43)                        | 5.92 (7.37)               | 11.28 (7.10)          | 0.83 (0.97)           | 27.51* (10.55)        | -7.39 (6.91)             |
| Setting x Time x Grade | -3.97 (3.14)                | -3.71 (3.87)                        | -4.83 (3.84)              | -7.63 (3.69)          | -0.50 (0.50)          | -12.94 (5.37)         | 2.01 (3.51)              |
| Quality x Time         | -1.38 (1.34)                | -1.68 (1.54)                        | -2.18 (1.49)              | 0.49 (1.43)           | 0.12 (0.20)           | -1.89 (2.21)          | 2.43 (1.48)              |
| Quality x Grade        | -7.17 (3.29)                | 2.59 (4.10)                         | -1.45 (4.04)              | -6.61 (3.93)          | -0.13 (0.54)          | -4.80 (5.55)          | 0.01 (3.65)              |
| Quality x Time x Grade | 4.16 (1.80)                 | -0.23 (2.15)                        | 2.74 (2.12)               | 2.54 (2.05)           | 0.03 (0.28)           | 3.60 (2.98)           | -2.24 (1.96)             |
| Proficiency x Time     | -1.82*** (0.40)             | -0.88 (0.55)                        | -1.60** (0.49)            | -0.22 (0.25)          | -0.13* (0.06)         | 0.27 (0.90)           | 0.08 (0.64)              |
| Risk x Time            | -0.74 (0.58)                | -0.07 (0.78)                        | -0.83 (0.70)              | -0.30 (0.58)          | -0.01 (0.08)          | -0.01 (1.19)          | 0.41 (0.86)              |

<sup>a</sup> Significance levels are \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

**Table 34. Cohort 3 Spanish Subsample Regression Results for Spanish Outcomes**

| Effect                | Language and Literacy           |  | Math                              |                       | General Knowledge     |
|-----------------------|---------------------------------|--|-----------------------------------|-----------------------|-----------------------|
|                       | Receptive<br>Language<br>(TVIP) | Letter-Word<br>Identification<br>(Batería III) | Applied Problems<br>(Batería III) | Counting<br>Task      | Social<br>Awareness   |
|                       | Est <sup>a</sup> (SE)           | Est <sup>a</sup> (SE)                          | Est <sup>a</sup> (SE)             | Est <sup>a</sup> (SE) | Est <sup>a</sup> (SE) |
| Intercept             | 80.54*** (1.59)                 | 89.65*** (1.15)                                | 85.05*** (1.54)                   | 6.17*** (0.79)        | 2.36*** (0.12)        |
| Age                   | -0.71 (4.86)                    | -7.44 (3.08)                                   | -10.32 (4.13)                     | 1.35 (1.67)           | 0.82* (0.32)          |
| Days bet. assessment  | 0.00 (0.03)                     | -0.02 (0.02)                                   | 0.01 (0.02)                       | 0.00 (0.01)           | 0.00 (0.00)           |
| Time                  | -0.87 (3.40)                    | 0.94 (2.70)                                    | 2.74 (2.78)                       | 2.80 (1.27)           | 0.23 (0.36)           |
| Grade-kindergarten    | 4.99 (4.03)                     | -4.61 (3.23)                                   | 6.45 (3.33)                       | -5.89*** (1.48)       | 0.13 (0.44)           |
| Gender-male           | 2.49 (2.72)                     | -0.30 (1.72)                                   | 1.21 (2.33)                       | -0.20 (0.95)          | -0.26 (0.17)          |
| Setting-public school | 5.57 (3.38)                     | 1.59 (2.45)                                    | 4.54 (3.24)                       | 0.62 (1.62)           | 0.05 (0.26)           |
| Class quality         | 0.59 (1.89)                     | -0.66 (1.36)                                   | -1.86 (1.78)                      | -0.12 (0.88)          | 0.26 (0.15)           |
| MAF attendance        | 0.20** (0.07)                   | 0.12 (0.05)                                    | 0.04 (0.06)                       | 0.00 (0.02)           | 0.01 (0.01)           |
| Spanish proficiency   | 6.71*** (0.95)                  | 1.08 (0.63)                                    | 5.16*** (0.80)                    | 0.70 (0.32)           | 0.28*** (0.07)        |
| Risk                  | -2.51 (2.06)                    | -1.10 (1.40)                                   | -2.92 (1.81)                      | -0.74 (0.75)          | -0.04 (0.16)          |

<sup>a</sup> Significance levels are \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

**Table 34. Cohort 3 Spanish Subsample Regression Results for Spanish Outcomes**

| Effect                 | Language and Literacy           |  | Math                              |                       | General Knowledge     |
|------------------------|---------------------------------|--|-----------------------------------|-----------------------|-----------------------|
|                        | Receptive<br>Language<br>(TVIP) | Letter-Word<br>Identification<br>(Batería III) | Applied Problems<br>(Batería III) | Counting<br>Task      | Social<br>Awareness   |
|                        | Est <sup>a</sup> (SE)           | Est <sup>a</sup> (SE)                          | Est <sup>a</sup> (SE)             | Est <sup>a</sup> (SE) | Est <sup>a</sup> (SE) |
| Interactions           |                                 |  |                                   |                       |                       |
| Grade x Time           | 0.33 (2.71)                     | 0.74 (2.15)                                    | -3.17 (2.22)                      | 2.05 (1.00)           | 0.17 (0.29)           |
| Setting x Time         | -1.76 (3.02)                    | 0.44 (2.45)                                    | -0.16 (2.49)                      | 0.87 (1.21)           | 0.07 (0.32)           |
| Setting x Grade        | 2.14 (8.50)                     | -9.55 (6.81)                                   | 6.27 (7.02)                       | 5.32 (3.13)           | -1.41 (0.93)          |
| Setting x Time x Grade | 0.65 (4.42)                     | 4.82 (3.54)                                    | -2.09 (3.64)                      | -2.90 (1.63)          | 0.53 (0.48)           |
| Quality x Time         | -0.36 (1.72)                    | -0.56 (1.39)                                   | 0.50 (1.42)                       | -0.05 (0.69)          | -0.07 (0.19)          |
| Quality x Grade        | -5.01 (4.70)                    | 6.47 (3.76)                                    | -1.42 (3.88)                      | -0.93 (1.73)          | 0.59 (0.52)           |
| Quality x Time x Grade | 1.01 (2.48)                     | -1.57 (1.98)                                   | 0.55 (2.05)                       | 0.26 (0.91)           | -0.23 (0.27)          |
| Proficiency x Time     | 0.49 (0.35)                     | 0.15 (0.31)                                    | -0.23 (0.30)                      | 0.26 (0.21)           | -0.02 (0.03)          |
| Risk x Time            | -0.75 (0.80)                    | -0.82 (0.71)                                   | 0.17 (0.69)                       | -0.17 (0.46)          | 0.04 (0.08)           |

<sup>a</sup> Significance levels are \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

**Table 35. Combined Spanish Subsamples Regression Results for English Outcomes (Cohorts 2 and 3)**

| Effect                | Language and<br>Literacy                         | Math                         |                       | General Knowledge     | Classroom<br>Behavior   |                             |
|-----------------------|--|------------------------------|-----------------------|-----------------------|-------------------------|-----------------------------|
|                       | Receptive Language<br>(PPVT-III/4 <sup>a</sup> ) | Applied Problems<br>(WJ-III) | Counting<br>Task      | Social<br>Awareness   | Social Skills<br>(SSRS) | Problem Behaviors<br>(SSRS) |
|                       | Est <sup>b</sup> (SE)                            | Est <sup>b</sup> (SE)        | Est <sup>b</sup> (SE) | Est <sup>b</sup> (SE) | Est <sup>b</sup> (SE)   | Est <sup>b</sup> (SE)       |
| Intercept             | 64.73*** (1.71)                                  | 79.63*** (1.59)              | 7.52*** (0.95)        | 1.42*** (0.13)        | 99.85*** (1.85)         | 95.86*** (1.44)             |
| Age                   | -7.70** (2.86)                                   | -7.66** (2.43)               | 2.11 (1.53)           | 0.38 (0.21)           | 3.59 (2.71)             | -2.76 (2.25)                |
| Days bet. assessment  | 0.03 (0.02)                                      | 0.01 (0.02)                  | 0.04** (0.01)         | 0.01** (0.00)         | 0.03 (0.02)             | -0.01 (0.01)                |
| Time                  | 4.29 (2.72)                                      | 9.48*** (2.45)               | -0.23 (2.28)          | 0.32 (0.33)           | 9.17* (3.58)            | -0.17 (2.28)                |
| Grade-kindergarten    | 0.73 (2.37)                                      | 2.84 (2.12)                  | -18.25*** (2.09)      | -0.33 (0.31)          | -13.88*** (3.29)        | -0.46 (2.05)                |
| Gender-male           | 0.16 (1.61)                                      | -2.09 (1.37)                 | 0.21 (0.87)           | -0.25 (0.12)          | 2.09 (1.56)             | -0.88 (1.29)                |
| Setting-public school | 3.22 (2.32)                                      | 1.52 (2.16)                  | 0.65 (1.35)           | 0.20 (0.18)           | 1.23 (2.56)             | -1.94 (1.95)                |
| Class quality         | -0.19 (1.52)                                     | -0.05 (1.37)                 | -0.44 (0.84)          | 0.02 (0.12)           | -1.25 (1.66)            | 0.06 (1.26)                 |
| MAF attendance        | 0.12** (0.04)                                    | 0.06 (0.03)                  | 0.04 (0.02)           | 0.01* (0.00)          | 0.09 (0.04)             | -0.03 (0.03)                |
| Cohort 2              | -8.28*** (2.29)                                  | -0.46 (2.15)                 | 0.02 (1.26)           | 0.07 (0.17)           | -0.77 (2.50)            | 0.13 (1.95)                 |
| English proficiency   | 12.38*** (1.28)                                  | 9.72*** (1.18)               | 2.45*** (0.64)        | 0.79*** (0.09)        | 4.23** (1.38)           | -1.94 (1.10)                |
| Risk                  | 1.83 (1.59)                                      | 0.07 (1.44)                  | -0.15 (0.80)          | -0.07 (0.11)          | 0.80 (1.65)             | -0.43 (1.33)                |

<sup>a</sup> PPVT-III was used for Cohorts 1 and 2 and PPVT-4 was used for Cohort 3.

<sup>b</sup> Significance levels are \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

**Table 35. Combined Spanish Subsamples Regression Results for English Outcomes(Cohorts 2 and 3)**

| Effect                    | Language and<br>Literacy                         | Math                         |                       | General Knowledge     | Classroom<br>Behavior   |                             |
|---------------------------|--|------------------------------|-----------------------|-----------------------|-------------------------|-----------------------------|
|                           | Receptive Language<br>(PPVT-III/4 <sup>a</sup> ) | Applied Problems<br>(WJ-III) | Counting<br>Task      | Social<br>Awareness   | Social Skills<br>(SSRS) | Problem Behaviors<br>(SSRS) |
|                           | Est <sup>b</sup> (SE)                            | Est <sup>b</sup> (SE)        | Est <sup>b</sup> (SE) | Est <sup>b</sup> (SE) | Est <sup>b</sup> (SE)   | Est <sup>b</sup> (SE)       |
| Interactions              |  |                              |                       |                       |                         |                             |
| Proficiency by Risk       | -1.62 (1.69)                                     | -1.10 (1.55)                 | -0.86 (0.84)          | -0.07 (0.12)          | 1.11 (1.79)             | -1.38 (1.44)                |
| Grade x Time              | 0.20 (2.20)                                      | -5.01* (1.97)                | 13.28*** (1.87)       | 0.53 (0.27)           | -2.87 (2.88)            | -0.13 (1.82)                |
| Cohort 2 x Time           | 1.86* (0.76)                                     | 0.88 (0.83)                  | 0.10 (0.58)           | 0.08 (0.08)           | 1.07 (1.20)             | -0.60 (0.84)                |
| Setting x Time            | -0.03 (1.82)                                     | 0.56 (1.61)                  | 0.10 (1.49)           | 0.03 (0.22)           | -3.95 (2.38)            | 1.23 (1.52)                 |
| Setting x Grade           | 5.03 (4.78)                                      | 5.18 (4.26)                  | 0.02 (4.20)           | 0.43 (0.61)           | 5.37 (6.66)             | -5.48 (4.16)                |
| Setting x Time x Grade    | -3.32 (2.55)                                     | -3.42 (2.23)                 | -0.40 (2.18)          | -0.37 (0.32)          | 2.84 (3.46)             | 0.40 (2.16)                 |
| Quality x Time            | -2.57 (1.27)                                     | -2.46 (1.08)                 | -0.13 (1.00)          | 0.05 (0.15)           | -0.29 (1.66)            | 0.99 (1.06)                 |
| Quality x Grade           | -5.35 (3.19)                                     | -1.77 (2.80)                 | -3.00 (2.77)          | -0.21 (0.41)          | 0.98 (4.36)             | -0.59 (2.72)                |
| Quality x Time x Grade    | 3.96* (1.73)                                     | 2.42 (1.48)                  | 1.29 (1.45)           | 0.10 (0.21)           | 0.08 (2.32)             | -1.05 (1.44)                |
| Proficiency x Time        | -1.80*** (0.44)                                  | -1.98*** (0.50)              | -0.64 (0.34)          | -0.10 (0.05)          | -0.55 (0.71)            | 0.35 (0.50)                 |
| Risk x Time               | -1.08 (0.57)                                     | -0.49 (0.62)                 | -0.62 (0.43)          | 0.06 (0.06)           | -0.73 (0.88)            | 0.06 (0.62)                 |
| Risk x Proficiency x Time | 0.14 (0.65)                                      | 0.61 (0.72)                  | 0.37 (0.51)           | 0.02 (0.07)           | 1.29 (1.01)             | -0.13 (0.71)                |

<sup>a</sup> PPVT-III was used for Cohorts 1 and 2 and PPVT-4 was used for Cohort 3.

<sup>b</sup> Significance levels are \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .



**Table 36. Combined Spanish Subsamples Regression Results for Spanish Outcomes (Cohorts 2 and 3)**

| Effect                | Language and Literacy        | Math                              |                       | General Knowledge     |
|-----------------------|------------------------------|-----------------------------------|-----------------------|-----------------------|
|                       | Receptive Language<br>(TVIP) | Applied Problems<br>(Batería III) | Counting<br>Task      | Social<br>Awareness   |
|                       | Est <sup>a</sup> (SE)        | Est <sup>a</sup> (SE)             | Est <sup>a</sup> (SE) | Est <sup>a</sup> (SE) |
| Intercept             | 80.40*** (2.03)              | 85.34*** (1.60)                   | 6.15*** (0.62)        | 2.30*** (0.15)        |
| Age                   | 0.36 (3.86)                  | -6.31 (2.77)                      | 1.85 (1.04)           | 0.60 (0.24)           |
| Days bet. assessment  | -0.01 (0.02)                 | 0.00 (0.01)                       | -0.01 (0.01)          | 0.00 (0.00)           |
| Time                  | 0.76 (2.40)                  | 3.46 (1.93)                       | 3.28** (1.04)         | 0.26 (0.26)           |
| Grade-kindergarten    | -1.43 (2.64)                 | 2.30 (2.14)                       | -3.61** (1.12)        | -0.09 (0.30)          |
| Gender-male           | -4.05 (2.17)                 | -3.65 (1.56)                      | -0.56 (0.59)          | -0.38** (0.14)        |
| Setting-public school | 1.50 (2.74)                  | 4.16 (2.18)                       | 0.02 (0.88)           | 0.02 (0.21)           |
| Class quality         | -0.83 (1.73)                 | -1.99 (1.37)                      | -0.04 (0.54)          | 0.19 (0.14)           |
| MAF attendance        | 0.08 (0.04)                  | 0.01 (0.03)                       | 0.02 (0.01)           | 0.01 (0.00)           |
| Cohort 2              | -0.71 (2.75)                 | 1.57 (2.17)                       | -1.95 (0.84)          | 0.36 (0.20)           |
| English proficiency   | 3.36 (1.50)                  | 5.35*** (1.19)                    | 0.39 (0.42)           | 0.26 (0.12)           |
| Risk                  | -3.09 (1.85)                 | -0.92 (1.46)                      | -0.44 (0.54)          | 0.00 (0.14)           |

<sup>a</sup> Significance levels are \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

**Table 36. Combined Spanish Subsamples Regression Results for Spanish Outcomes (Cohorts 2 and 3)**

| Effect                    | Language and Literacy        | Math                              |                       | General Knowledge     |
|---------------------------|------------------------------|-----------------------------------|-----------------------|-----------------------|
|                           | Receptive Language<br>(TVIP) | Applied Problems<br>(Batería III) | Counting<br>Task      | Social<br>Awareness   |
|                           | Est <sup>a</sup> (SE)        | Est <sup>a</sup> (SE)             | Est <sup>a</sup> (SE) | Est <sup>a</sup> (SE) |
| Interactions              |                              |                                   |                       |                       |
| Proficiency by Risk       | 2.50 (1.98)                  | 1.71 (1.56)                       | -0.18 (0.56)          | 0.09 (0.15)           |
| Grade x Time              | 1.64 (2.13)                  | -2.05 (1.71)                      | 0.91 (0.91)           | 0.27 (0.23)           |
| Cohort 2 x Time           | -0.50 (0.84)                 | -1.06 (0.71)                      | 0.64 (0.49)           | -0.25** (0.08)        |
| Setting x Time            | -1.81 (1.88)                 | -2.99 (1.53)                      | 0.55 (0.84)           | -0.17 (0.20)          |
| Setting x Grade           | -3.93 (5.18)                 | -2.17 (4.20)                      | 4.36 (2.19)           | 0.25 (0.58)           |
| Setting x Time x Grade    | 2.81 (2.70)                  | 2.73 (2.18)                       | -2.80* (1.13)         | 0.01 (0.30)           |
| Quality x Time            | -0.90 (1.26)                 | -0.24 (1.04)                      | -0.53 (0.56)          | 0.06 (0.14)           |
| Quality x Grade           | -5.36 (3.39)                 | 0.07 (2.75)                       | -0.71 (1.43)          | -0.01 (0.38)          |
| Quality x Time x Grade    | 2.27 (1.79)                  | 0.29 (1.46)                       | 0.53 (0.75)           | -0.11 (0.20)          |
| Proficiency x Time        | -0.49 (0.50)                 | -0.97 (0.43)                      | -0.41 (0.30)          | -0.08 (0.05)          |
| Risk x Time               | 0.21 (0.62)                  | -0.05 (0.53)                      | -0.02 (0.37)          | 0.05 (0.06)           |
| Risk x Proficiency x Time | -0.62 (0.73)                 | -0.63 (0.62)                      | -0.04 (0.43)          | -0.04 (0.07)          |

<sup>a</sup> Significance levels are \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .