Evaluation of the North Carolina More at Four Pre-kindergarten Program Year 6 Report (July 1, 2006–June 30, 2007)

Children's Longitudinal Outcomes and Program Quality Over Time (2003–2007)

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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.

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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 first targets at-risk "unserved" children (those not already being served in a preschool program) and secondly, "underserved" children (those in a program but not receiving child care subsidies and/or those in lower quality settings). 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 20,468 children in the 2006-2007 school year, and has served over 69,000 children during the first six program years (2002-2007).

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[a]). The programs are administered at the county or region (multi-county groupings) level with oversight by the NC Office of School Readiness, 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 up to 300% of Federal poverty status with one or more other risk factors) and other risk factors (limited English proficiency, identified disability, chronic health condition, and developmental/ educational need). Priority for service is given first to at-risk children who are unserved in a preschool program at the time of enrollment, and second, to children who are underserved at enrollment. More at Four classrooms operate in a variety of 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 around 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[1].

[a] 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 78 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 More at Four Program has been conducted by the FPG Child Development Institute at the University of North Carolina-Chapel Hill. The current report describes findings on the quality of the program and the longitudinal outcomes for two separate cohorts of children over the pre-k and kindergarten years. Cohort 1 was recruited at the beginning of their More at Four pre-k year in 2003-2004 and followed through kindergarten in 2004-2005. Cohort 2 was recruited at the beginning of their More at Four pre-k year in 2005-2006 and followed through kindergarten in 2006-2007. The goal of this study was to provide information regarding the longer-term effectiveness of the program on children's readiness for and success in school. Previous reports are available with detailed results from Cohort 1 in the pre-k (2003-2004)[2] and kindergarten (2004-2005)[3] years, and for Cohort 2 in the pre-k (2005-2006)[4] year; in addition reports about the pre-k program in 2001-2002[5] and 2002-2003[6] are available.

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 programs attended by children?
- What were the longitudinal outcomes from pre-k through kindergarten for children who attended the More at Four Program?
- 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 characteristics of the program and demographic information about the children served. Observations were conducted in randomly-sampled classrooms to provide information about the quality 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. In addition, information about the quality of the classroom literacy environment and the sensitivity of teacher-child interactions was gathered for Cohort 2 (during pre-k in 2005-2006 and kindergarten in 2006-2007). Individual assessments of children's skills in these randomly-selected classrooms were conducted near the beginning and end of the program/school year to provide information about their developmental growth in pre-k and kindergarten. These assessments included measures 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.

Methods

CLASSROOM QUALITY OBSERVATION METHODS

Classroom quality was examined in both the pre-k and kindergarten years for each of the two cohorts, yielding two samples of pre-k classes and two samples of kindergarten classes. Classroom samples in the pre-k years were selected randomly from all More at Four classes, and in the kindergarten years classes were selected randomly from those attended by children in the pre-k sample the previous year. The Cohort 1 sample included pre-k classrooms in 2003-2004 and kindergarten classes in 2004-2005. Similarly, the Cohort 2 sample included pre-k classrooms in 2005-2006 and kindergarten classes in 2006-2007.

Participants

Classroom observations in both 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 insure that children had the opportunity for a full program year. In 2003-2004, observations were conducted in 99 More at Four classrooms, including 57 of the 58 classrooms from which the child sample described subsequently was drawn (one of the 58 classrooms was no longer part of the More at Four program at the time of the classroom observations). In 2005-2006, observations were conducted in the same 57 More at Four classrooms from which the child sample was drawn. The 2005-2006 sample included 2 first-year classrooms, 8 second-year classrooms, 15 third-year classrooms, 18 fourth-year classrooms, and 14 fifth-year classrooms. The classroom year of operation was not available for the 2003-2004 sample.

In the kindergarten years, classes were randomly selected from those attended by participants in the child outcomes longitudinal sample. In 2004-2005, observations were conducted in a sample of 97 of the 249 kindergarten classes attended by children who had participated in the 2003-2004 More at Four evaluation study. In 2006-2007, observations were conducted in 96 of the 292 kindergarten classes attended by children who had participated in the 2005-2006 evaluation study.

Procedures

Observations of classroom quality were conducted in the spring of each of the 4 school years. Data were collected in 2004 (3/19/04-6/3/04), 2005 (3/2/05-5/11/05), 2006 (3/9/06-5/2/06), and 2007 (2/27/07-5/23/07). Observations typically lasted 4 to 5 hours per classroom. Data collectors were trained to an acceptable criterion of reliability prior to gathering data. Interrater reliability data were collected in the field for 20% of each sample. Reliability data for the ECERS-R yielded a kappa of .85 in 2003-2004, .85 in 2004-2005, .74 in 2005-2006, and .69 in 2006-2007. For the ELLCO (available for Cohort 2 only), reliability data from 2005-2006 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 2006-2007, 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. Reliability data for the CIS (available for Cohort 2 only) yielded a kappa of .77 in 2005-2006 and .76 in 2006-2007. Reliability data for

the APEEC (available for the kindergarten year of Cohort 2 only) yielded a kappa of .70 in 2006-2007.

Measures

Global classroom quality was assessed in both pre-k and kindergarten classrooms in both cohorts using the Early Childhood Environment Rating Scale-Revised[7] (ECERS-R), 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. Items on the Parent and Staff subscale were not gathered in kindergarten classrooms except for the staff cooperation item. Each subscale item is rated on a 7-point scale[a] 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)[7] and predictive validity[8].

In Cohort 2, additional measures were completed for the participating classrooms: the Early Language and Literacy Classroom Observation[9] (ELLCO), the Caregiver Interaction Scale[10] (CIS), and the Assessment of Practices in Early Elementary Classrooms[11] (APEEC; used only in the kindergarten year). The ELLCO measures the extent to which classrooms provide children 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)[9].

The CIS 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 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

[a] Program guidelines for More at Four state that participating classrooms should score at least 4.5 on the ECERS-R by the second year of operation, through SFY 2006-2007. For all observations in subsequent years (effective SFY 2007-2008), classrooms are expected to 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.

calculated whereby higher scores indicated more positive teacher-child interactions. The scale has demonstrated good interrater reliability of 80%[10].

The APEEC is an observational rating scale designed to focus on elementary school practices (K-3) in general education classrooms, and was used only with the Cohort 2 kindergarten classrooms in our study. The APEEC covers three domains of instructional practices: physical environment, curriculum and instruction, and social context. The measure includes 16 items scored on a 1-7 scale with descriptors for "1"(inadequate), "3" (minimal), "5" (good), and "7" (excellent). Higher scores on the APEEC items reflect higher quality instructional practices. The measure has produced good interrater reliability (total scale r = .86).

In addition, information was gathered in the kindergarten classrooms in both cohorts about the use of specials, both types and frequency, based on the weekly schedules.

CHILD OUTCOMES ASSESSMENT METHODS

Two 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 classroom 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). 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 year in pre-k and kindergarten to provide information about children's growth.

Participants

Children from both cohorts 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 400 of these children in the fall and 394 in the spring.

Sample Selection

In both 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 both kindergarten years, we attempted to locate and assess all child participants from the previous year in their kindergarten classrooms.

Cohort 1. In the pre-k year of Cohort 1 (2003-2004), 58 More at Four classrooms were randomly selected from 599 eligible classrooms. 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. As seen in Table 1, comparisons of assessed children to all other More at Four children 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, health condition, and family size. There were some differences in terms of ethnicity, service priority status, and attendance. The assessed group had fewer African-American and Asian children, a slightly higher average service priority level, and more days of attendance.

Cohort 2. In the pre-K year of Cohort 2 (2005-2006), 57 classrooms were included. 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. 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. As seen in Table 1, comparisons of assessed children to all other More at Four children 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, health condition, and family size. There were some differences in terms of ethnicity, English proficiency, service priority status, and attendance. The assessed group had fewer African-American and more Latino children, a higher proportion of children with limited English proficiency, a higher average service priority level, and more days of attendance.

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.

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.

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).

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).

Measures

The child assessment battery consisted of eight measures focusing on language and literacy skills, pre-math skills, and general knowledge, which are appropriate for pre-k and kindergarten age children. Lead teachers also rated each child's social skills and problem behaviors in the classroom. The outcome areas measured were consistent with the recommendations of the National Education Goals Panel[12] for defining school readiness. (See Table 2 for an overview of these measures.) In addition, children were administered three subscales of the PreLAS 2000[13]

(Simon Says, Art Show, and The Human Body), an individual assessment designed to measure young children's oral language proficiency in English, including both receptive and expressive language ability. This measure was used to adjust for children's English language proficiency in the analyses, as well as to examine English language proficiency as a moderator of program effects. Fluency scores ranging from 1-5 were calculated, where 1=Non-English speaker, 2-3=Limited English speaker, and 4-5=Fluent English speaker.

All children were administered the eight child assessment measures plus the English proficiency assessment in both the fall and spring of each study year. For Cohort 2, children who spoke Spanish and scored below the fluent level on the initial PreLAS 2000 assessment were also administered the same measures in Spanish in separate sessions at each assessment period. It is important to note that for the standardized measures (receptive language, rhyming, 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. A total of 120 children were assessed in both languages in the pre-k year, and 92 were re-assessed in both languages in the kindergarten year.

Table 1. Characteristics of Assessed and Non-Assessed Children in Evaluation Sample

Factor[a]		2003-2004 N=10,891		2005-2006 N=17,251	
		Assessed (n=514)	**Non-Assessed** (n=10,377)	**Assessed** (n=478)	**Non-Assessed** (n=16,773)
Child age on 10/16[b] (Mean)		4.5	4.5	4.5	4.5
Gender[c] (% female)		50.4%	48.4%	49.8%	49.0%
Ethnicity (%)	Black/African-American	36.8%	43.1%*	30.1%	36.6%*
	White/European-American	36.4%	31.0%	32.6%	34.2%
	Hispanic/Latino	16.9%	17.8%	28.0%	21.7%*
	Other/Multiracial	9.1%	6.5%	8.0%	6.1%
	Asian	0.8%	1.7%*	1.3%	1.5%
Poverty Status (%)	Free Lunch Eligible	75.1%	74.7%	74.9%	73.6%
	Reduced Price Eligible	15.6%	14.9%	17.2%	16.3%
Risk Total[d] (Mean)		1.9	1.9	2.0	1.9
Individual Risk Factors (%)[e]	Limited English Proficiency	17.3%	18.0%	24.3%	18.4%*
	Identified Disability	6.2%	7.1%	4.0%	4.8%
	Chronic Health Condition	2.3%	3.4%	4.8%	3.8%
Service Priority Status[f] (Mean)		1.8	2.0**	2.2	2.7***
Total Days of Attendance (Mean)		149.1	123.5***	155.5	135.2***
Family Size[g] (Mean)		4.1	4.0	4.0	4.1

[a] Significant comparisons reported represent differences between the two groups based on t-tests or chi-square tests with a Bonferroni correction for multiple comparisons. Significance levels are *p< .05, **p< .01, ***p< .001.
[b] In Year 3, age was not reported for 1 child.
[c] In Year 3, gender was not reported for 49 children.
[d] In Year 3, risk total was not available for 58 children.
[e] In Year 3, individual risk factor information was not available for 58 children.
[f] 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.
[g] In Year 3, family size was not reported for 15 children.

Table 2: Child Outcome Measures for More at Four Evaluation

Domain	Measure	Skills Assessed	Scoring
Language and literacy	Peabody Picture Vocabulary Test-III (PPVT-III)[14] Test de Vocabulario en Imagenes Peabody (TVIP)[15]	Receptive vocabulary	Standardized measure, Mean=100, SD=15
	Woodcock Johnson-III Tests of Achievement (WJ-III)[16] Rhyming (Subtest 21A, Sound Awareness test) Batería III Pruebas de Aprovechamiento[17] Rima (Prueba 21A, Discernimiento de sonidos)	Phonological awareness	Range=0–17
	Naming Letters Task[18] (English and Spanish versions)	Alphabet knowledge	Range=0–26
	Story and Print Concepts Task[19] (English and Spanish versions)	Early literacy skills including book knowledge, story comprehension, and print awareness	Range=0–14
Math	Woodcock Johnson-III Tests of Achievement[16] Applied Problems Test (Test 10) Batería III Pruebas de Aprovechamiento[17] Problemas Aplicados (Prueba 10)	Ability to solve practical math problems including counting, simple addition, and subtraction	Standardized measure, Mean=100, SD=15
	Counting Bears Task[20] (English and Spanish versions)	Ability to count in one-to-one correspondence	Range=0–40
General knowledge	Social Awareness Task[21] (English and Spanish versions)	Knowledge of child's full name, age and birth date	Range=0–6
	Color Bears Task[22] (English and Spanish versions)	Knowledge of 10 basic colors	Range=0–20
Classroom behavior	Social Skills Rating System (SSRS) Social Skills subscale[23]	Social skills (e.g., "follows your directions")	Standardized measure, Mean=100, SD=15
	Social Skills Rating System (SSRS) Problem Behaviors subscale[23]	Problem behaviors (e.g., "argues with others")	Standardized measure, Mean=100, SD=15

Program Characteristics

Information about the characteristics of the More at Four Program, including the local sites, the classrooms, and the children served over a four year period, from 2003-2004 through 2006-2007, is described below.

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; the number of children served has almost doubled over the past four years, from 10,891 (in 2003-2004) to 20,468 in the most recent year (2006-2007). Table 3 describes various program characteristics for the four most recent years of operation. The number of sites, classrooms, and children served has increased substantially 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 median class size each year has been 18, the maximum class size allowable under the More at Four program guidelines. The proportion of More at Four children in each classroom has remained high, representing the vast majority of children. The program has targeted "unserved" children (both those never served and those currently unserved in a pre-k program at the time of enrollment), with three quarters or more of the children entering the program being unserved at the time of their enrollment.

As shown in Figure 1, Figure 2, Figure 3, and Figure 4, the distribution of site types has remained similar over the past four years of program operations, with approximately half the children being served in public preschool sites and half in private sites. The majority of private sites were private for-profit child care settings (serving one-quarter to one-third of all children), with smaller proportions served each year in private nonprofit child care settings or Head Start sites, including those administered by public schools.

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Table 3: More at Four Program Characteristics for Years 3–6

Program Characteristic	Year 3 2003-2004	Year 4 2004-2005	Year 5 2005-2006	Year 6 2006-2007
Total More at Four Local Contractors	91	91	91	91
Total More at Four Counties	100	100	100	100
Total More at Four Sites (Centers/Schools)	628	689	790	909
Total More at Four Classrooms	883	1,027	1,218	1,439
Total Children Served	10,891	13,515	17,251	20,468
Total Children Not Served at Time of Enrollment[a]	9,070 (83%)	10,583 (78%)	13,617 (79%)	15,558 (76%)
Total Children Never Previously Served[a]	6,788 (62%)	8,165 (60%)	10,325 (60%)	12,033 (59%)
Average Class Size[b]				
Mean	16.3	16.1	16.2	16.0
Median	17.6	17.7	17.6	17.6
SD	2.6	3.0	2.7	3.0
Average Number of More at Four Children per Class[c]				
Mean	10.7	11.5	12.3	12.6
Median	10.6	11.7	13.6	13.7
SD	5.8	5.5	4.9	4.7
Average Proportion of More at Four Children per Class[d]				
Mean	0.67	0.71	0.76	0.79
Median	0.78	0.89	0.91	0.93
SD	0.3	0.3	0.2	0.3

[a] These data are based on reported service priority status.
[b] 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.
[c] These data are based on the monthly reported number of More at Four children for each classroom.
[d] These data are based on the proportion of the monthly reported number of More at Four children and class size for each classroom.

Figure 1: Distribution of Children by Setting Type in Year 3[a]

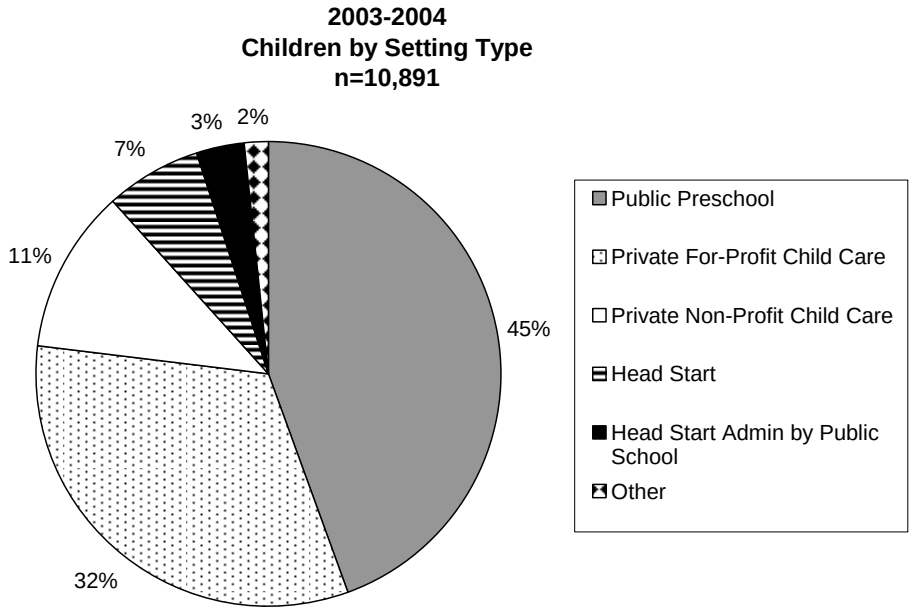
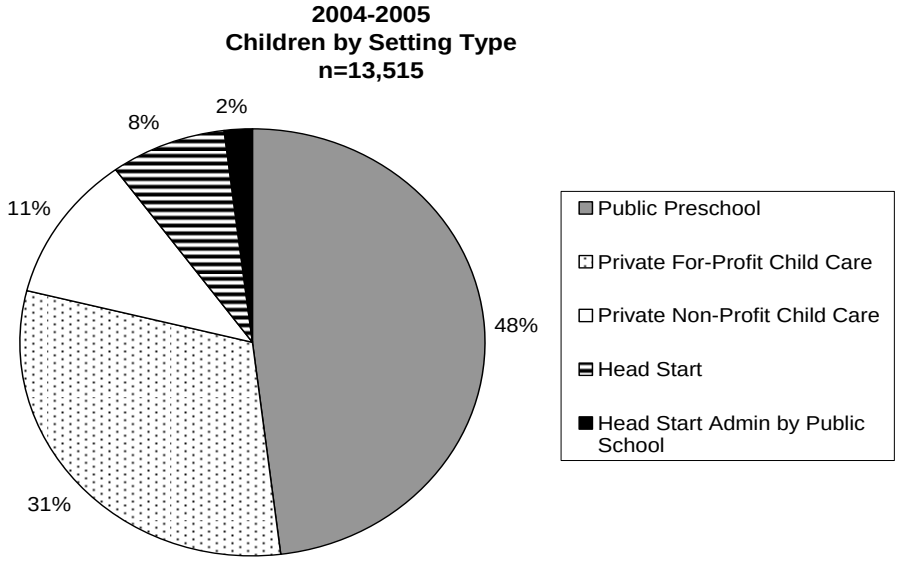


Figure 2: Distribution of Children by Setting Type in Year 4[a]



[a] Children who attended more than one More at Four site (in 2003-2004, 230 children attended 2 or more sites and in 2004-2005, 199 children attended 2 or more sites) are represented by the setting type in which they were enrolled the longest.

Figure 3: Distribution of Children by Setting Type in Year 5[a]

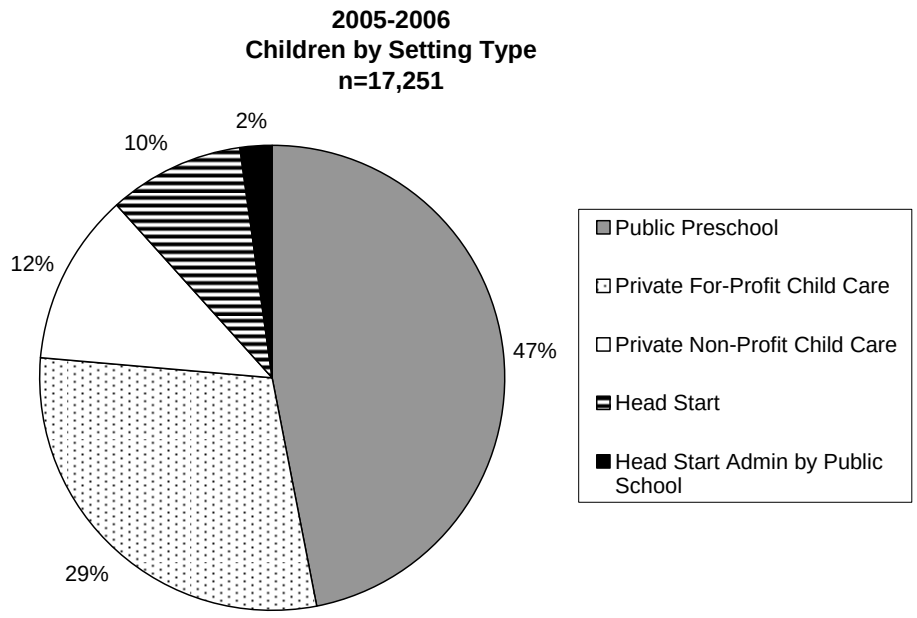
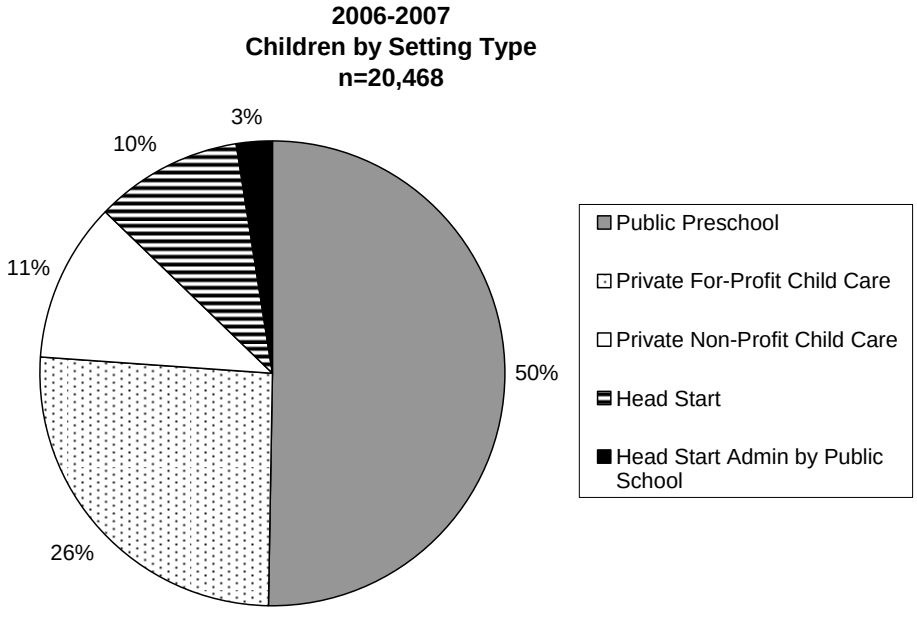


Figure 4: Distribution of Children by Setting Type in Year 6[a]



[a] Children who attended more than one More at Four site (in 2005-2006, 331 children attended 2 or more sites and in 2006-2007, 161 children attended 2 or more sites) are represented by the setting type in which they were enrolled the longest.

The characteristics of the More at Four classrooms have remained fairly similar over time as well. More at Four program guidelines recommend that classrooms use a research-based curriculum. As seen in Table 4, most classrooms each year reported using Creative Curriculum[24] as their primary curriculum with smaller numbers reporting using OWL[25] or Bright Beginnings[26], High/Scope[27], or Montessori[28].

Table 4: Primary Curriculum Type of More at Four Classrooms for Years 3–6

Curriculum Type[a]	**Year 3 2003-2004** n=871[b]	**Year 4 2004-2005** n=1,027[c]	**Year 5 2005-2006** n=1,218	**Year 6 2006-2007** n=1,439
Creative Curriculum	76.5% (666)	79.0% (811)	77.9% (949)	79.7% (1147)
Bright Beginnings/ OWL[d]	13.9% (121)	14.0% (144)	14.7% (179)	13.5% (194)
High/Scope	7.7% (67)	6.8% (70)	6.7% (82)	6.3% (90)
Montessori	0.5% (4)	0.4% (4)	0.3% (4)	0.1% (2)
Other	1.5% (13)	--	0.3% (4)	0.4% (5)

One area of the More at Four program that has evidenced some change over the past four years is teacher qualifications, which have shown some improvement. As seen in Table 5, the percentage of teachers with Bachelor's degrees or higher has risen slightly in public school settings while the percentage with High School degrees only has decreased across all settings. Program guidelines require that the lead teacher have a B-K license (or the equivalent) within four years. As shown in Table 6, the percentage of teachers with a B-K license (or equivalent) has increased, with the change occurring primarily in public school settings. Over the same period, in all settings, the percentage of lead teachers with no credential decreased each year.

[a] The Bank Street curriculum was also included in the guideline recommendations, but no classrooms reported it as the primary curriculum.
[b] In Year 3, curriculum was not reported for 12 classrooms.
[c] 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.
[d] The Bright Beginnings curriculum was changed to the OWL curriculum (Opening the World of Learning) in the 2004 edition. In 2005-2006, 132 (10.8%) of the programs reported using Bright Beginnings and 47 (3.9%) reported using OWL. In 2006-2007, 76 (5.3%) of the programs reported using Bright Beginnings and 118 (8.2%) reported using OWL.

Table 5: Education Levels of More at Four Lead Teachers for Years 3–6

Highest Degree Earned	Year 3 2003-2004			Year 4 2004-2005			Year 5 2005-2006			Year 6 2006-2007[a]		
	Public School Settings n=449[b]	Community Settings n= 535[c]	All Settings n=984	Public School Settings n=615	Community Settings n=518	All Settings n=1,133	Public School Settings n=725	Community Settings n=617	All Settings n=1,342	Public School Settings n=871	Community Settings n=680	All Settings n=1,555
MA/MS or higher	17.2% (77)	4.1% (22)	10.1% (99)	15.1% (93)	4.2% (22)	10.2% (115)	13.8% (100)	3.4% (21)	9.0% (121)	15.1% (132)	4.4% (30)	10.4% (162)
BA/BS	77.1% (346)	62.6% (335)	69.2% (681)	83.6% (514)	61.2% (317)	73.3% (831)	84.6% (613)	60.9% (376)	73.7% (989)	84.0% (732)	57.8% (393)	72.5% (1128)
AA/AAS	2.5% (11)	25.2% (135)	14.8% (146)	1.0% (6)	29.5% (153)	14.0% (159)	1.4% (10)	31.8% (196)	15.4% (206)	0.7% (6)	34.3% (233)	15.4% (240)
HS diploma/ GED	3.3% (15)	8.0% (43)	5.9% (58)	0.3% (2)	5.0% (26)	2.5% (28)	0.3% (2)	3.9% (24)	1.9% (26)	0.1% (1)	3.5% (24)	1.6% (25)

[a] Four teachers reported working in both public and community settings, their data is reflected only in the column for all settings.
[b] These data were not reported for 4 public school lead teachers.
[c] These data were not reported for 1 community setting lead teacher.

Table 6: Licensure/Credential Levels of More at Four Lead Teachers for Years 3–6

Highest License/ Credential[a]	Year 3 2003-2004			Year 4 2004-2005			Year 5 2005-2006			Year 6 2006-2007[b]		
	Public School Settings n=453	Community Settings n= 536	All Settings n=989	Public School Settings n=615	Community Settings n=518	All Settings n=1,133	Public School Settings n=725	Community Settings n=617	All Settings n=1,342	Public School Settings n=871	Community Settings n=680	All Settings n=1,555
B-K or Preschool add-on License	66.2% (300)	15.9% (85)	38.9% (385)	75.3% (463)	14.5% (75)	47.5% (538)	77.8% (564)	15.4% (95)	49.1% (659)	79.9% (696)	18.4% (125)	52.9% (823)
Provisional B-K License	1.8% (8)	0.8% (4)	1.2% (12)	0.0% (0)	0.6% (3)	0.3% (3)	5.1% (37)	1.1% (7)	3.3% (44)	6.3% (55)	2.2% (15)	4.5% (70)
Other Teacher's License	18.3% (83)	10.4% (56)	14.1% (139)	13.5% (83)	9.1% (47)	11.5% (130)	9.8% (71)	8.6% (53)	9.2% (124)	7.9% (69)	7.4% (50)	7.7% (120)
CDA Credential	0.0% (0)	3.9% (21)	2.1% (21)	0.7% (4)	9.7% (50)	4.8% (54)	0.5% (4)	6.5% (40)	3.3% (44)	0.6% (5)	5.6% (38)	2.8% (43)
NCECC	1.1% (5)	16.2% (87)	9.3% (92)	1.1% (7)	29.0% (150)	13.9% (157)	1.1% (8)	31.4% (194)	15.1% (202)	1.1% (10)	32.4% (220)	14.9% (231)
None	12.6% (57)	52.8% (283)	34.4% (340)	9.4% (58)	37.2% (193)	22.2% (251)	5.7% (41)	37.0% (228)	20.0% (269)	3.9% (34)	33.2% (226)	16.7% (260)

[a] 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.
[b] Four teachers reported working in both public and community settings. Their data is reflected only in the all settings category.

The demographic characteristics of the children served in the More at Four program have remained fairly constant over time (see Table 7). Approximately half the children served are boys and half are girls. The percentage of Latino children has increased slightly while the percentage of African-American children has decreased, although the absolute numbers of children served have increased over time. Median total household size remained at 4, and the vast majority of the children's primary caregivers were employed. 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 8, the risk status of the children served has remained high, with most children 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 consistent at about 18%, while the percentage with an identified disability has decreased slightly (although the total number served has increased). As shown in Table 9, the majority of children participating in More at Four were classified as unserved at the time of enrollment. Unserved children are the primary target group each year with more than half never having been served prior to enrollment in More at Four.

Table 7: Characteristics of All More at Four Children for Years 3–6

Characteristic		**Year 3 2003-2004** n=10,891[a]	**Year 4 2004-2005** n=13,515[b]	**Year 5 2005-2006** n=17,251[c]	**Year 6 2006-2007** n=20,468[d]
Gender	Male	51.5% (5,588)	51.1% (6,904)	51.0% (8,803)	50.9% (10,425)
	Female	48.5% (5,254)	48.9% (6,611)	49.0% (8,448)	49.1% (10,043)
Ethnicity	Black/African American	42.8% (4,658)	40.0% (5,403)	36.4% (6,277)	34.6% (7,085)
	White/European American	31.3% (3,404)	33.2% (4,480)	34.1% (5,890)	35.0% (7,166)
	Hispanic/Latino	17.8% (1,934)	18.9% (2,543)	21.8% (3,765)	22.7% (4,652)
	Multiracial	3.4% (369)	3.6% (488)	3.5% (604)	3.9% (800)
	Native American/Alaskan Native	3.0% (328)	2.8% (375)	2.4% (407)	2.0% (406)
	Asian	1.6% (176)	1.4% (195)	1.5% (263)	1.6% (318)
	Native Hawaiian/Pacific Islander	0.2% (22)	0.2% (31)	0.3% (45)	0.2% (41)
Median Total Household Size		4	4	4	4
Percent of Primary Caregivers Employed		69.3% (7,535)	76.4% (10,101)	79.3% (13,385)	81.5% (16,366)

[a] In Year 3, gender was not reported for 49 children, household size was not reported for 105 families and primary caregiver's employment was not reported for 14 families.
[b] In Year 4, primary caregiver's employment was not reported for 294 families.
[c] In Year 5, primary caregiver's employment was not reported for 369 families.
[d] In Year 6, primary caregiver's employment was not reported for 378 families.

Table 8: Risk Factor Status of All More at Four Children for Years 3–6

Risk Factor[a]	**Risk Factor Level**	**Year 3 2003-2004** n=10,833[b]	**Year 4 2004-2005** n=13,515	**Year 5 2005-2006** n=17,251	**Year 6 2006-2007** n=20,468
Family Income[c]	Below 130% of poverty (eligible for free lunch)	74.3% (8,051)	74.4% (10,052)	73.6% (12,694)	75.4% (15,439)
	131-185% of poverty (eligible for reduced price lunch)	15.3% (1,653)	16.4% (2,215)	16.4% (2,820)	15.4% (3,157)
	186-200% of poverty	10.4% (1,129)	3.2% (435)	3.6% (615)	3.1% (639)
	201-250% of poverty		4.8% (642)	4.8% (827)	4.0% (812)
	>251% of poverty		1.1% (150)	1.7% (295)	2.1% (421)
Limited English Proficiency	Family and/or child speak limited or no English in the home	18.1% (1,958)	17.1% (2,317)	18.6% (3,209)	17.5% (3,573)
Developmental/ Educational Need[d]	Developmental/educational need indicated by performance on a developmental screen	---	10.8% (1,459)	15.6% (2,694)	16.6% (3,395)
Identified Disability	Child has an IEP	7.0% (762)	5.7% (765)	4.8% (831)	4.5% (914)
Chronic Health Condition(s)	Child is chronically ill/ medically fragile	3.3% (361)	5.5% (746)	4.7% (818)	4.2% (867)

[a] In Year 3, sites could choose to use either Model I or Model II guidelines for determining risk levels; 75% used Model I and 25% used Model II. Only Model I was available in previous years and only Model II was available in subsequent years. For more information, see the Year 3 evaluation report.[3]
[b] In Year 3, risk factor data were not reported for 58 children.
[c] In Year 3, only one category for family income levels at or above 186% of poverty was distinguished under Model I.
[d] In Year 3, developmental/educational need was an additional risk factor only for Model II guidelines and only for children whose family incomes were 251-300% of poverty. In 2003-2004, 6 children in this category were identified as having a developmental/educational need. In 2005-2006, developmental/educational need was included as a risk factor for children in all income categories.

Table 9: Service Priority Status at Time of Enrollment for All More at Four Children for Years 3–6

Service Priority Status[a]	**Year 3 2003-2004** n=10,891	**Year 4 2004-2005** n=13,515	**Year 5 2005-2006** n=17,251	**Year 6 2006-2007** n=20,468
Unserved				
Children who have never been served in any preschool or child care setting.	62.3% (6,788)	60.4% (8,165)	59.9% (10,325)	58.8% (12,033)
Children who are currently unserved (may previously have been in child care or preschool program) and are on the subsidy waiting list.	9.8% (1,072)	8.3% (1,121)	5.5% (957)	5.3% (1,087)
Children who are currently unserved (may previously have been in child care or some other preschool program) and are not eligible for subsidy.	11.1% (1,210)	9.6% (1,297)	7.6% (1,313)	7.8% (1,589)
Children who are in a child care situation and served for 5 months or less in the year prior to More at Four.	--[b]	3.2% (436)	5.9% (1,022)	4.1% (849)
Underserved				
Children who are eligible for subsidy but are not receiving it (but are in some kind of child care or preschool program).	5.6% (606)	3.4% (463)	2.1% (364)	2.4% (497)
Children who are in unregulated child care that does not meet the More at Four Pre-K standards.	--[b]	4.5% (608)	4.2% (716)	4.0% (814)
Other children, including those in pre-kindergarten or child care that does not meet More at Four standards.	11.2% (1,215)	10.5% (1,425)	7.2% (1,236)	7.2% (1,474)
Children served by this site as 3-year-olds.	--[b]	--[c]	7.6% (1,318)	10.4% (2,125)

[a] Note that all children served must first meet the eligibility requirements as defined in the More at Four Program Guidelines.
[b] The program guidelines for service priority status did not distinguish this category in Year 3.
[c] The program guidelines for service priority status did not distinguish this category in Year 4.

Results

CLASSROOM QUALITY

Information was gathered in order to examine the quality of educational practices in children's More at Four classrooms during the pre-kindergarten year and in their kindergarten classrooms the following year for two cohorts (2003-2004/2004-2005 and 2005-2006/2006-2007). Observations were conducted in a random sample of classrooms each year, consisting of 99 More at Four pre-k classrooms in 2003-2004 (including 57 of the 58 classrooms in which child outcomes data were also gathered), 97 kindergarten classrooms in 2004-2005 (of the 248 kindergarten classrooms attended by children in the outcomes sample), 57 More at Four pre-k classrooms in 2005-2006 (all those in the child outcomes sample), and 96 kindergarten classrooms (of the 292 kindergarten classrooms attended by children in the outcomes sample). (See Methods Section for more information about the classroom quality data collection.)

Data were gathered each year about the developmental appropriateness of classroom practices using the ECERS-R[7] including the activities and materials provided, the interactions among teachers and children, the physical environment, and the daily organization of the program. In Cohort 2, observational data were also gathered in both pre-k and kindergarten about the quality of the literacy environment of the classroom using the ELLCO[9] and the sensitivity of teacher-child interactions using the CIS[10]. In addition, in Cohort 2 kindergarten classrooms, observational data were also gathered about the quality of instructional practices using the APEEC[11].

Classroom Practices

The average scores on the ECERS-R (which is scored on a 1-7 scale from inadequate to excellent) in pre-k and kindergarten for both cohorts are presented in Table 10. The mean total score (child-related items 1-37) in pre-k was 5.3 for Cohort 1 and 4.2 for Cohort 2, compared to kindergarten scores of 3.2 for Cohort 1 and 2.8 for Cohort 2, as shown in Table 11. For both the total and subscales, scores were significantly higher in pre-k than in kindergarten for both cohorts [Total: $F(1, 345)=493.40$, $p<.0001$; Space/Furnishings: $F(1, 345)=213.32$, $p<.0001$; Personal Care: $F(1, 345)=370.69$, $p<.0001$; Language/Reasoning: $F(1, 345)=134.13$, $p<.0001$; Activities $F(1, 345)=538.87$, $p<.0001$; Interaction: $F(1, 345)=54.32$, $p<.0001$; Program Structure: $F(1, 345)=495.45$, $p<.0001$]. There was a significant decline in scores between cohorts for both pre-k and kindergarten (with lower scores in Cohort 2 than Cohort 1), with even greater cohort differences for pre-k than kindergarten classes on the total score [$F(1,345)=26.64$, $p<.0001$] and three of the subscales: Space and Furnishings [$F(1,345)=21.89$, $p < .0001$]; Personal Care Routines [$F(1,345)=85.62$, $p<.0001$]; and Program Structure [$F(1,345)=33.40$, $p<.0001$].

As seen in Figure 5, none (0%) of the Cohort 2 kindergarten classrooms had average total scores in the high quality range (5.0-7.0), 35% had scores in the medium quality range (3.0-4.9), and 65% had scores in the low quality range (1.0-2.9), compared to 12% high, 83% medium, and 5% low in the pre-k classrooms attended by these same children the previous year. The scores for Cohort 1 kindergarten classrooms were somewhat higher, with none (0%) scoring in the high quality range, 65% scoring in the medium quality range, and 35% scoring in the low quality

range. In contrast, for the Cohort 1 pre-k classrooms attended by these same children, 76% scored in the high range, 24% medium, and 0% low.

As seen in Figure 6, a similar pattern was found at the subscale level, with higher scores in pre-k than in kindergarten, and lower scores for Cohort 2 than Cohort 1. Across both pre-k and kindergarten classes, scores tended to be higher in the areas of Interaction and Language/Reasoning and tended to be low in Personal Care Routines.

For kindergarten classes in Cohort 2, the average subscale scores were in the medium quality range for three areas (Space and Furnishings; Language and Reasoning; Interaction) and in the low quality range for three areas (Personal Care Routines; Activities; Program Structure). The pattern of subscale scores was similar in Cohort 1 kindergarten classrooms, although scores were slightly higher, with scores in the medium quality range for four subscales (Space and Furnishings; Language and Reasoning; Interaction; Program Structure) and in the poor quality range for the remaining two (Personal Care Routines and Activities).

The pattern of subscale scores in the pre-k classrooms was also similar across cohorts, although scores were again higher in Cohort 1. For Cohort 2, most scores were in the medium quality range (Space and Furnishings, Language and Reasoning, Activities, Interaction, and Program Structure) with one in the low quality range (Personal Care Routines). For Cohort 1, four subscale scores were in the high quality range (Space and Furnishings, Language and Reasoning, Interaction, Program Structure), and the remaining two were in the medium quality range (Personal Care Routines and Activities).

Table 10: Quality of Classroom Practices (ECERS-R) in More at Four and Kindergarten

Item Description[a]	Cohort 1		Cohort 2	
	Pre-k 2003-2004 n=99	**K 2004-2005** n=97	**Pre-k 2005-2006** n=57	**K 2006-2007** n=96
	Mean (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range
Total Child Items Score[b]	**5.3** (0.7) 3.0-6.6	**3.2** (0.8) 1.5-4.7	**4.2** (0.7) 2.7-5.8	**2.8** (0.6) 1.6-4.6
Space and Furnishings Subscale	**5.0** (0.9) 3.0-6.8	**3.5** (0.7) 1.4-6.4	**3.9** (0.7) 2.6-5.8	**3.1** (0.5) 1.8-4.5
Indoor space	**5.0** (1.9) 1-7	**4.6** (2.2) 1-7	**4.6** (1.6) 2-7	**4.6** (1.9) 1-7
Furniture for routine care, play, and learning	**6.4** (1.2) 2-7	**6.1** (1.5) 1-7	**5.1** (1.5) 2-7	**5.2** (1.4) 2-7
Furnishings for relaxation and comfort	**5.5** (1.6) 3-7	**2.8** (1.3) 1-7	**5.0** (1.8) 1-7	**2.6** (1.2) 1-4
Room arrangement for play	**5.6** (1.7) 1-7	**4.3** (1.7) 1-7	**3.3** (1.7) 2-7	**3.3** (1.4) 1-7
Space for privacy	**5.2** (1.9) 2-7	**3.5** (1.0) 1-7	**3.5** (1.9) 2-7	**3.0** (1.1) 1-7
Child-related display	**4.9** (1.5) 3-7	**3.1** (0.9) 2-6	**4.6** (1.5) 2-7	**3.1** (0.8) 2-5
Space for gross motor play[c]	**3.5** (2.0) 1-7	**1.8** (1.1) 1-6	**1.8** (1.3) 1-7	**1.2** (0.5) 1-3
Gross motor equipment	**3.9** (2.3) 1-7	**1.8** (0.7) 1-7	**3.2** (2.0) 1-7	**1.9** (0.6) 1-5

[a] Total and subscale scores could range from 1.0-7.0; item scores could range from 1-7.
[b] The Total Child Items Score includes items from all subscales on the ECERS-R but the Parents and Staff subscale (items 1-37).
[c] For this item in 2006-2007, n=95.

Table 10: Quality of Classroom Practices (ECERS-R) in More at Four and Kindergarten

Item Description[a]	Cohort 1		Cohort 2	
	Pre-k 2003-2004 n=99	**K 2004-2005** n=97	**Pre-k 2005-2006** n=57	**K 2006-2007** n=96
	Mean (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range
Personal Care Routines Subscale	**4.9** (1.1) 2.3-7.0	**2.4** (1.0) 1.0-5.0	**2.8** (0.9) 1.3-5.7	**2.1** (0.6) 1.0-4.2
Greeting/departing[b]	**6.6** (0.9) 4-7	**4.0** (2.3) 1-7	**5.5** (1.9) 1-7	**3.9** (1.7) 1-7
Meals/snacks[c]	**4.0** (2.1) 1-7	**1.3** (1.0) 1-7	**1.8** (1.1) 1-6	**1.0** (0.2) 1-2
Nap/rest[d]	**5.0** (2.0) 2-7	**1.5** (1.1) 1-4	**2.8** (2.0) 1-7	**2.1** (1.5) 1-6
Toileting/diapering[e]	**5.1** (2.5) 1-7	**3.2** (2.7) 1-7	**2.4** (1.6) 1-7	**2.3** (1.9) 1-7
Health practices	**5.2** (2.0) 1-7	**2.1** (1.2) 1-6	**2.7** (1.7) 1-7	**2.1** (0.7) 1-7
Safety practices[f]	**3.9** (2.5) 1-7	**2.0** (1.7) 1-7	**1.4** (0.6) 1-4	**1.3** (0.5) 1-2
Language-Reasoning Subscale	**5.8** (0.9) 3.3-7.0	**4.1** (1.3) 1.5-6.3	**4.8** (0.8) 3.3-7.0	**3.5** (1.0) 1.8-6.3
Books and pictures	**5.5** (1.6) 2-7	**3.0** (1.3) 1-7	**4.3** (1.3) 1-7	**3.0** (0.9) 1-4
Encouraging children to communicate	**6.6** (0.8) 4-7	**4.3** (2.4) 1-7	**6.3** (1.0) 4-7	**4.0** (2.0) 1-7

[a] Total and subscale scores could range from 1.0-7.0; item scores could range from 1-7.
[b] For this item in 2004-2005, n=96 and in 2006-2007, n=95.
[c] For this item in 2005-2006, n=56.
[d] For this item in 2003-2004, n=91; in 2004-2005, n=61; in 2005-2006, n=56; and in 2006-2007, n=45.
[e] For this item in 2006-2007, n=95.
[f] For this item in 2006-2007, n=95.

Table 10: Quality of Classroom Practices (ECERS-R) in More at Four and Kindergarten

Item Description[a]	Cohort 1		Cohort 2	
	Pre-k 2003-2004 n=99	**K 2004-2005** n=97	**Pre-k 2005-2006** n=57	**K 2006-2007** n=96
	Mean (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range
Using language to develop reasoning skills	**4.9** (1.5) 2-7	**4.5** (1.4) 1-7	**4.1** (1.2) 2-7	**3.5** (1.0) 1-7
Informal use of language	**5.9** (1.4) 2-7	**4.5** (2.1) 1-7	**4.4** (1.1) 3-7	**3.5** (1.6) 1-7
Activities Subscale	**4.9** (0.8) 2.8-6.6	**2.4** (0.7) 1.1-4.4	**4.5** (0.9) 2.2-6.9	**2.2** (0.5) 1.4-4.2
Fine motor	**5.6** (1.5) 3-7	**3.1** (1.6) 1-7	**5.2** (1.4) 2-7	**2.6** (1.0) 1-6
Art	**5.0** (1.7) 1-7	**2.8** (1.0) 1-7	**4.4** (1.5) 2-7	**2.8** (0.7) 2-4
Music/ movement	**4.3** (1.6) 2-7	**2.1** (1.0) 1-7	**4.7** (1.5) 2-7	**1.9** (0.6) 1-4
Blocks	**4.5** (1.1) 3-7	**1.8** (1.0) 1-4	**4.3** (1.2) 1-7	**1.7** (0.9) 1-4
Sand/water[b]	**4.8** (1.4) 1-7	**2.1** (1.3) 1-6	**5.4** (1.6) 1-7	**1.8** (1.2) 1-6
Dramatic play	**5.0** (1.4) 2-7	**2.0** (1.0) 1-4	**4.6** (1.1) 2-7	**2.0** (0.8) 1-4
Nature/science	**4.5** (1.7) 2-7	**1.7** (1.0) 1-4	**4.3** (1.4) 2-7	**1.6** (0.9) 1-4
Math/number[c]	**4.9** (1.5) 1-7	**3.0** (1.2) 1-4	**4.5** (1.4) 1-7	**2.9** (1.3) 1-7

[a] Total and subscale scores could range from 1.0-7.0; item scores could range from 1-7.
[b] For this item in 2006-2007, n=95.
[c] For this item in 2006-2007, n=95.

Table 10: Quality of Classroom Practices (ECERS-R) in More at Four and Kindergarten

Item Description[a]	Cohort 1		Cohort 2	
	Pre-k 2003-2004 n=99	**K 2004-2005** n=97	**Pre-k 2005-2006** n=57	**K 2006-2007** n=96
	Mean (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range
Use of TV, video, and/or computers[b]	**5.2** (2.0) 1-7	**2.7** (2.3) 1-7	**3.7** (2.0) 1-7	**2.4** (2.1) 1-7
Promoting acceptance of diversity	**5.1** (1.4) 2-7	**3.0** (0.7) 1-5	**4.2** (1.8) 2-7	**2.6** (0.8) 1-4
Interaction Subscale	**6.2** (1.0) 1.4-7.0	**4.7** (1.8) 1.0-7.0	**4.8** (1.2) 2.0-7.0	**3.8** (1.5) 1.0-6.8
Supervision of gross motor activities[c]	**5.1** (1.7) 1-7	**3.3** (1.9) 1-7	**4.2** (1.4) 2-7	**3.0** (1.4) 1-6
General supervision of children[d]	**6.3** (1.4) 1-7	**5.2** (2.1) 1-7	**4.6** (2.0) 1-7	**4.1** (1.7) 1-7
Discipline[e]	**6.2** (1.2) 1-7	**4.6** (2.5) 1-7	**4.6** (1.6) 1-7	**3.8** (1.9) 1-7
Staff-child interactions	**6.6** (1.2) 1-7	**5.1** (2.5) 1-7	**5.3** (2.0) 1-7	**4.2** (2.3) 1-7
Interactions among children[f]	**6.6** (1.0) 1-7	**5.2** (2.5) 1-7	**5.4** (1.7) 2-7	**3.8** (2.2) 1-7
Program Structure Subscale	**6.2** (0.9) 3.8-7.0	**3.1** (0.9) 1.0-4.8	**4.4** (1.4) 1.7-7.0	**2.6** (0.9) 1.3-6.8
Schedule	**6.0** (1.6) 2-7	**1.7** (0.6) 1-4	**2.9** (1.5) 2-7	**1.9** (0.9) 1-7

[a] Total and subscale scores could range from 1.0-7.0; item scores could range from 1-7.
[b] For this item in 2003-2004, n=90 and in 2005-2006, n=55.
[c] For this item in 2003-2004, n=98; in 2004-2005, n=87; and in 2006-2007, n=83.
[d] For this item: 2006-2007, n=95.
[e] For this item: 2006-2007, n=95.
[f] For this item in 2004-2005, n=96.

Table 10: Quality of Classroom Practices (ECERS-R) in More at Four and Kindergarten

	Cohort 1		Cohort 2	
	Pre-k 2003-2004 n=99	**K 2004-2005** n=97	**Pre-k 2005-2006** n=57	**K 2006-2007** n=96
Item Description[a]	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range
Free play	**6.3** (1.3) 1-7	**2.2** (1.3) 1-4	**4.8** (2.3) 2-7	**2.2** (1.1) 1-7
Group time	**6.3** (1.2) 3-7	**3.2** (2.0) 1-7	**4.9** (1.9) 1-7	**2.5** (1.6) 1-7
Provisions for children with disabilities[b]	**6.1** (1.2) 1-7	**5.6** (1.2) 1-7	**5.8** (1.5) 2-7	**3.9** (1.7) 1-7
Parents and Staff Subscale[c]				
Staff interaction[d]	**6.6** (1.1) 1-7	**6.0** (1.7) 1-7	**6.4** (1.1) 2-7	**5.6** (1.5) 1-7

[a] Total and subscale scores could range from 1.0-7.0; item scores could range from 1-7.
[b] For this item in 2003-2004, n=70; in 2004-2005, n=80; in 2005-2006, n=40; and in 2006-2007, n=79.
[c] Only one item from this subscale was gathered in kindergarten classrooms.
[d] For this item in 2004-2005, n=91; in 2006-2007, n=83.

Table 11: Grade and Cohort Effects for More at Four and Kindergarten Classroom Practices (ECERS-R)[a]

ECERS-R Item Description	Cohort 1 Means		Cohort 2 Means		Grade Effect	Cohort Effect	Grade By Cohort Effect
	Pre-K 2003-2004 n=99	K 2004-2005 n=97	Pre-K 2005-2006 n=57	K 2006-2007 n=96			
Total Child Items Score	5.3	3.2	4.2	2.8	***	***	***
Space and Furnishings Subscale	5.0	3.5	3.9	3.1	***	***	***
Personal Care Routines Subscale	4.9	2.4	2.8	2.1	***	***	***
Language-Reasoning Subscale	5.8	4.1	4.8	3.5	***	***	NS
Activities Subscale	4.9	2.4	4.5	2.2	***	**	NS
Interaction Subscale	6.2	4.7	4.8	3.8	***	***	NS
Program Structure Subscale	6.2	3.1	4.4	2.6	***	***	***

[a] Significance levels are based on analyses of variance testing for effects by grade (pre-k vs. kindergarten), cohort (2003-2005 vs. 2005-2007) and the grade x cohort interaction.

Figure 5: Classroom Practices Scores in More at Four and Kindergarten (ECERS-R Total Child Items)

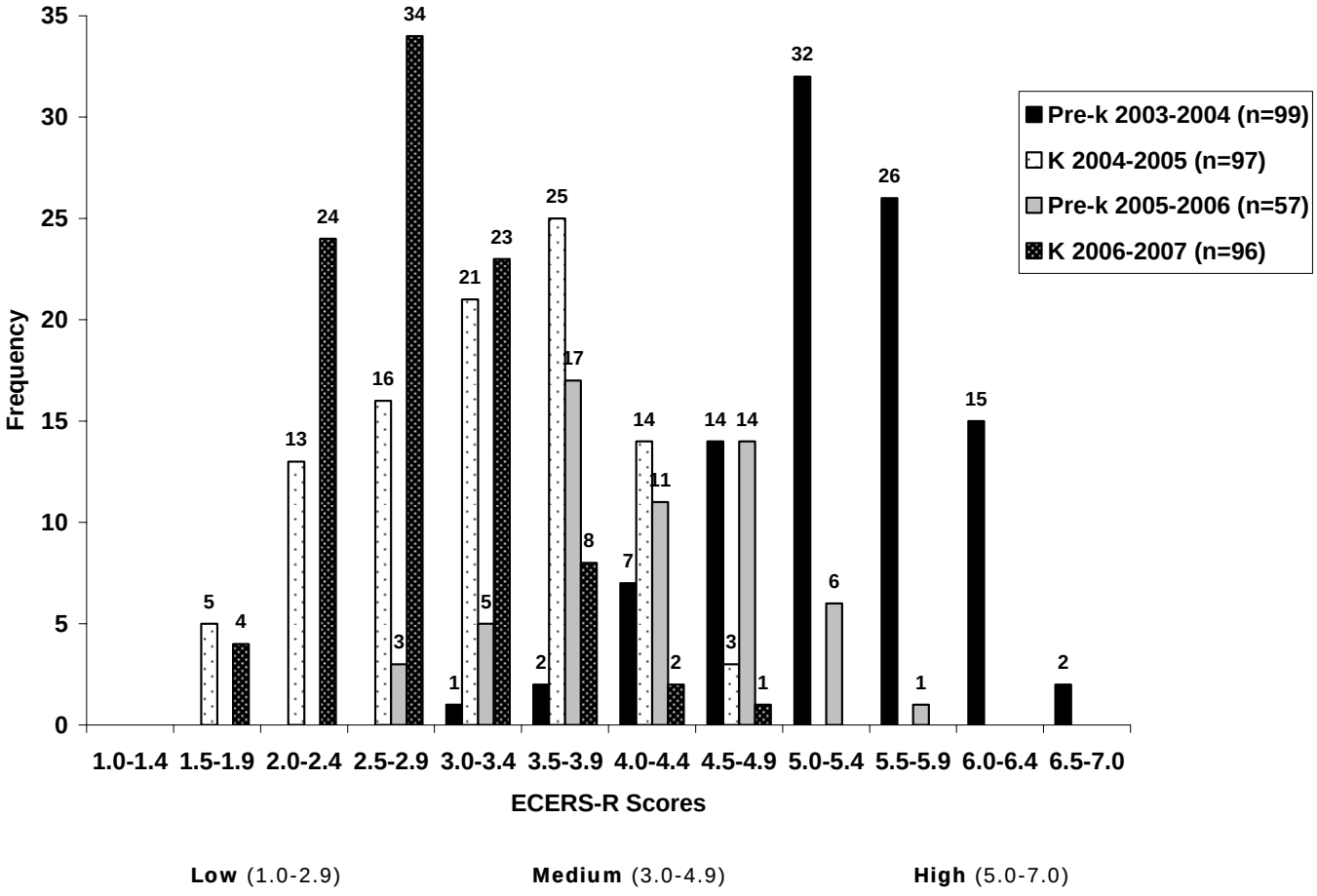
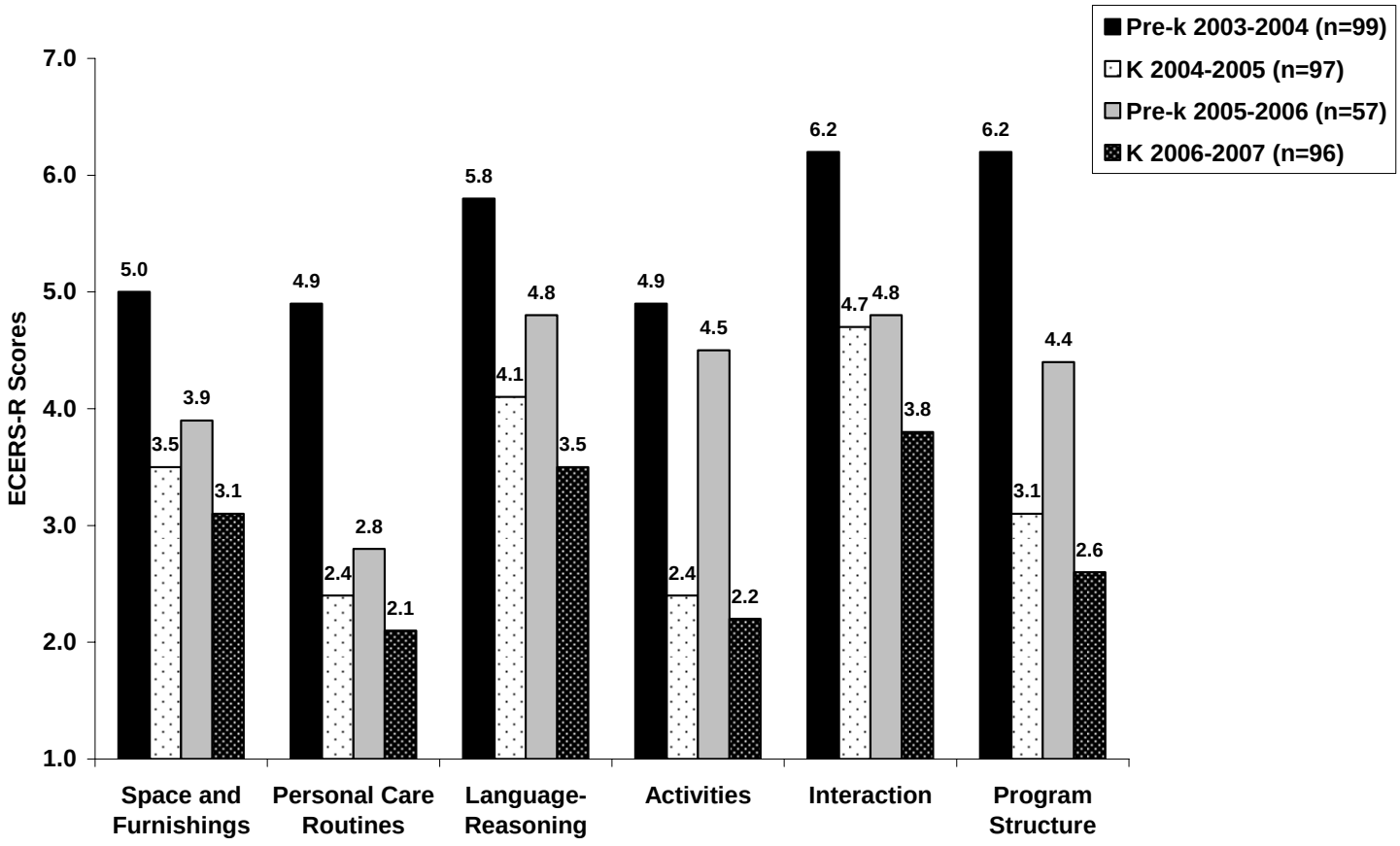


Figure 6: Classroom Practices Mean Subscale Scores in More at Four and Kindergarten (ECERS-R)



Literacy Environment

Observations of the quality of the literacy environment were conducted for the pre-k and kindergarten classrooms in Cohort 2 only using the ELLCO (see Table 12, Figure 7, Figure 8 and Figure 9). The Classroom Observation Scale, which includes subscales measuring both the General Classroom Environment and Language, Literacy and Curriculum, is the primary quality indicator on the ELLCO. Items on this scale are scored from 1-5, representing quality levels from deficient (1) to basic (3) to exemplary (5). Scores tended to be in the basic to exemplary range, with an average item score on the Classroom Observation Scale of 3.7 in the pre-k classrooms and 3.4 in the kindergarten classrooms. Of the pre-k classrooms, 35% scored 4.0 or above on the Classroom Observation Scale and 70% scored 3.5 or above, compared to 16% and 51%, respectively, of the kindergarten classrooms. For pre-k classrooms, scores were somewhat higher on the General Classroom Environment subscale (4.0) than on the Language, Literacy and Curriculum subscale (3.6), while the reverse was true for kindergarten classrooms (General Classroom Environment score=3.2 and Language, Literacy and Curriculum score=3.5). There were fewer differences between pre-k and kindergarten classrooms in the quality of the language and literacy environment than the general quality of the classroom environment, with significantly higher scores in pre-k on the Classroom Observation Scale [$F(1, 151)=11.58$, $p<.001$] and the General Classroom Environment subscale [$F(1, 151)=46.87$, $p<.0001$], but not on the Language, Literacy, and Curriculum subscale.

Comparisons across the different scales on the ELLCO indicate that classroom quality scores (Classroom Observation Scale) were relatively higher for both pre-k and kindergarten (74% and 68% of the total possible, respectively) compared to the other scales measuring presence of literacy materials (Literacy Environment Checklist; 71% and 57%) and frequency of literacy activities (Literacy Activities Rating Scale; 63% and 65%). Analyses showed that scores were significantly higher for the pre-k classrooms compared to the kindergarten classrooms on the Literacy Environment [$F(1, 151)=48.55$, $p<.0001$], but there were no differences for Literacy Activities. In pre-k, the More at Four classrooms did a somewhat better job of setting up a literacy-rich environment than actually carrying out literacy-related activities, while the reverse was true for the kindergarten classrooms attended subsequently by these children.

Table 12: Quality of the Literacy Environment (ELLCO) in More at Four and Kindergarten Classrooms

Item Description	Total Possible Range	Pre-k 2005-2006 n=57	K 2006-2007 n=96
		Mean (SD)	**Mean** (SD)
Classroom Observation Scale (Mean Item Score)	1-5	**3.7** (0.6)	**3.4** (0.5)
General Classroom Environment	1-5	**4.0** (0.7)	**3.2** (0.7)
Language, Literacy and Curriculum[a]	1-5	**3.6** (0.7)	**3.5** (0.5)
Literacy Environment Checklist (Total Score)[b]	0-41	**29.2** (5.8)	**23.5** (4.4)
Book Area	0-3	**2.3** (0.7)	**1.8** (1.1)
Book Selection[c]	0-8	**7.5** (0.7)	**7.4** (1.0)
Book Use	0-9	**5.2** (2.7)	**2.7** (2.0)
Writing Materials	0-8	**6.2** (1.1)	**5.9** (1.1)
Writing Around the Room	0-13	**8.0** (2.9)	**5.6** (2.1)
Literacy Activities Rating Scale (Total Score)	0-13	**8.2** (2.3)	**8.4** (2.4)
Book Reading	0-8	**5.3** (1.8)	**4.9** (2.1)
Writing	0-5	**2.9** (1.6)	**3.5** (1.1)

[a] For this item in 2006-2007, n=95.
[b] For this item in 2006-2007, n=95.
[c] For this item in 2006-2007, n=95.

Figure 7: Classroom Observation Scale Scores (ELLCO) in More at Four and Kindergarten Classrooms

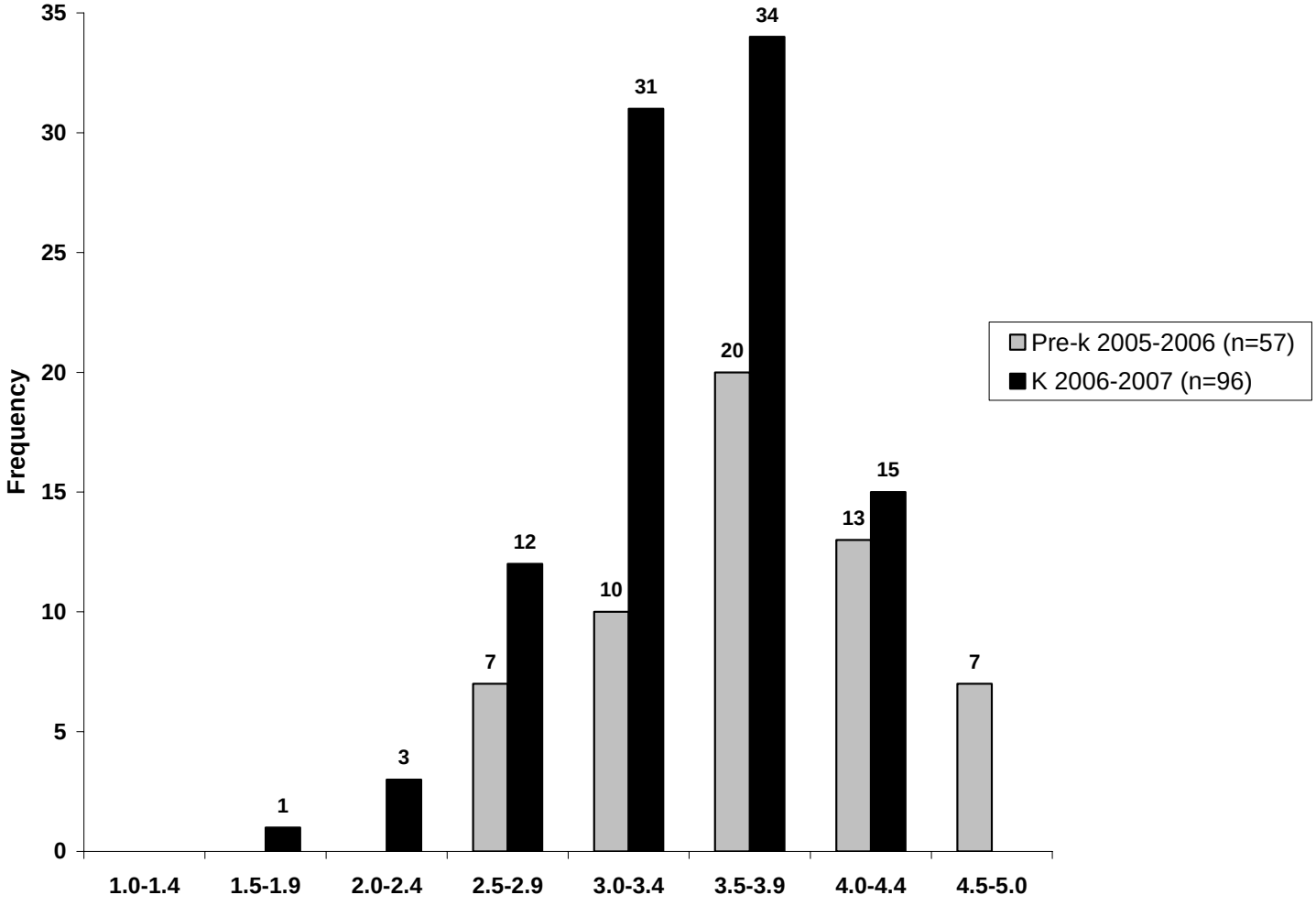


Figure 8: Literacy Environment Checklist Scores (ELLCO) in More at Four and Kindergarten Classrooms

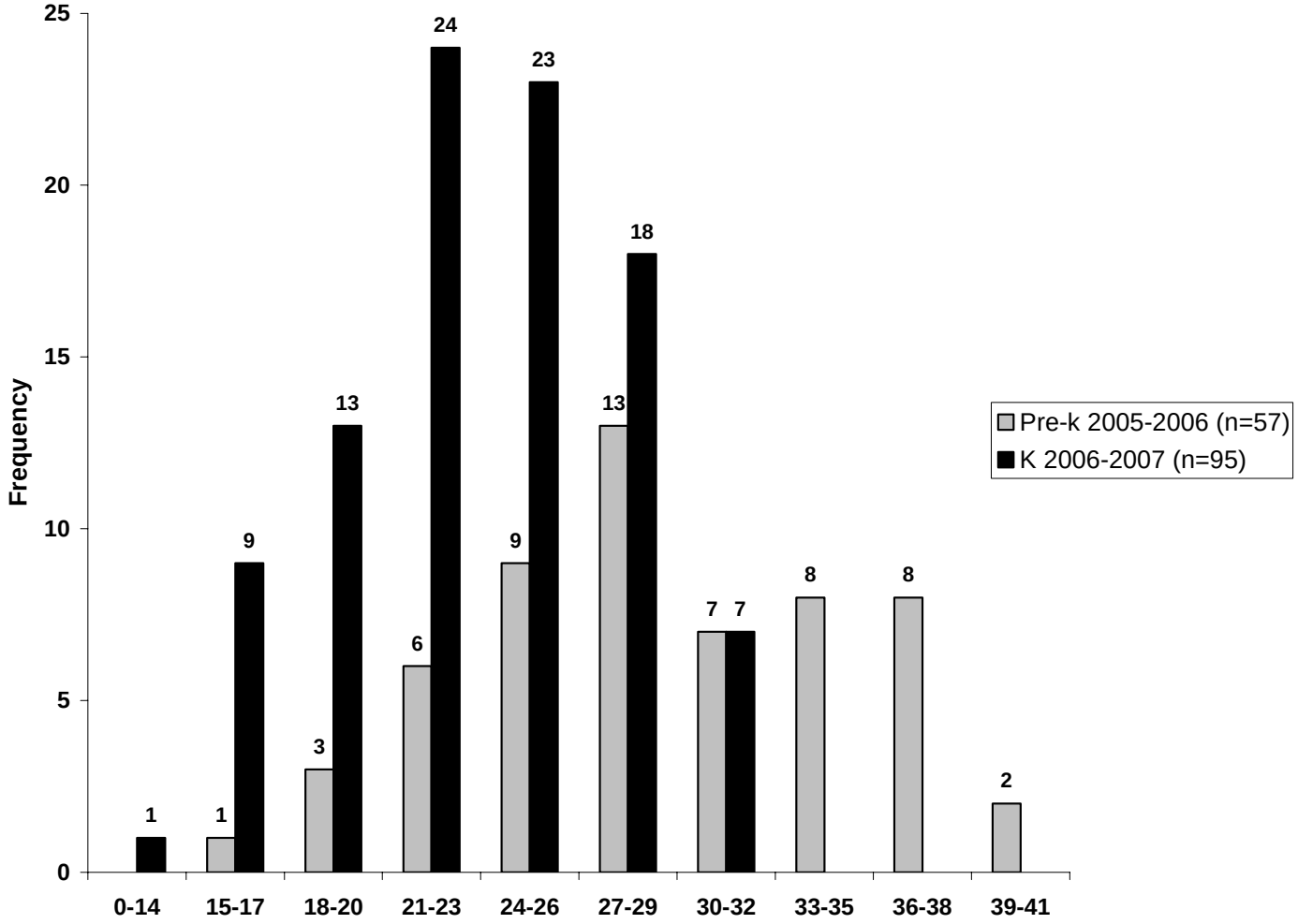
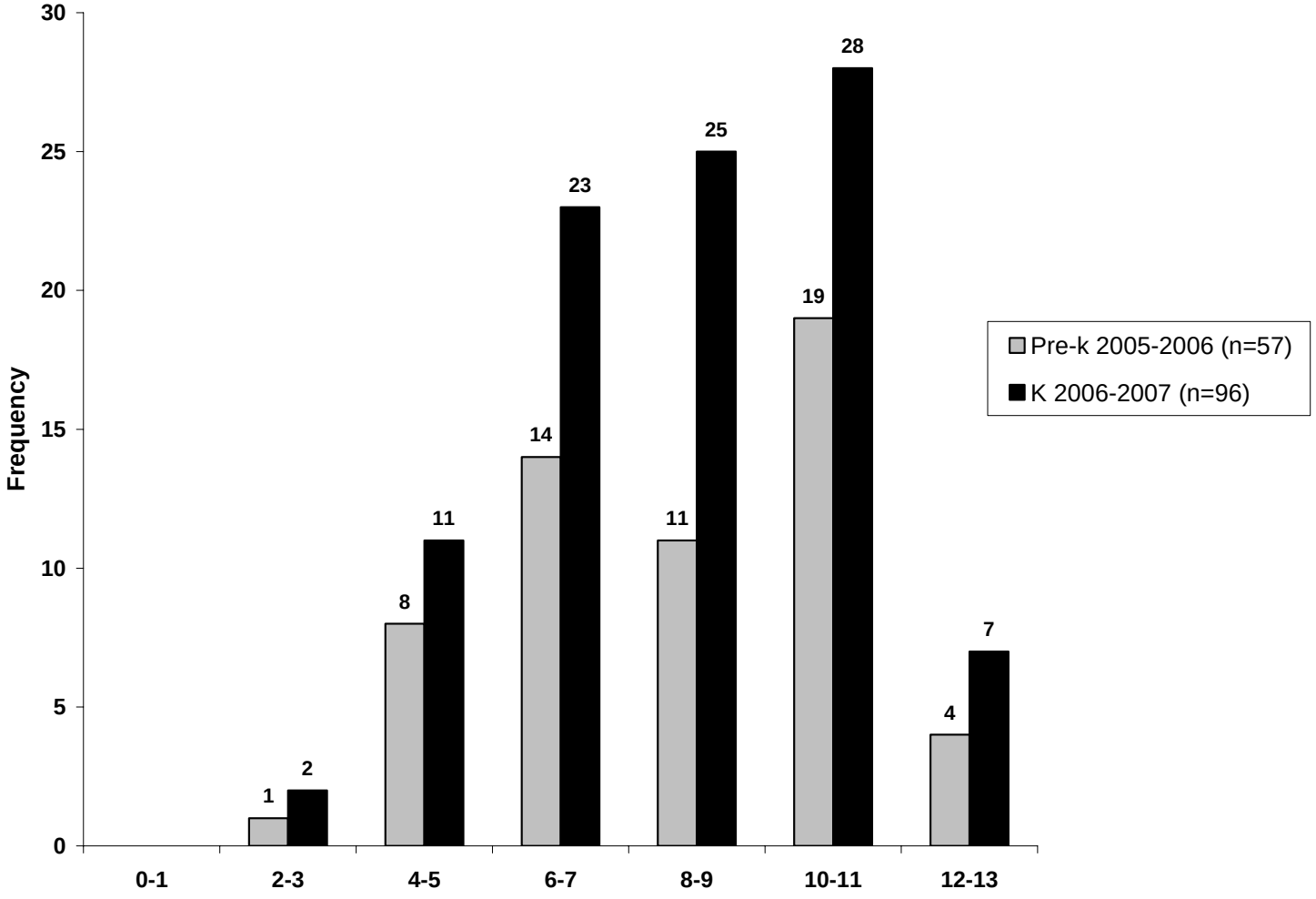


Figure 9: Literacy Activities Rating Scale Scores (ELLCO) in More at Four and Kindergarten Classrooms



Teacher-Child Interactions

Observations of the quality of teacher-child interactions were conducted in the pre-k and kindergarten classrooms for Cohort 2 (2005-2007) using the CIS (see Table 13, Figure 10, and Figure 11). Average total scores on the CIS indicate that teachers were fairly sensitive in their interactions with children in both pre-k (mean=3.4) and kindergarten (mean=3.1), although scores were significantly higher in pre-k [$F(1, 151)=16.15$, $p<.0001$]. The majority of the More at Four pre-k classrooms (88%) scored 3.0 or above on the CIS total score, with higher scores representing more positive interactions, compared to about two-thirds of the kindergarten classrooms (66%). Scores on the Sensitivity subscale, which indicates positive interactions with children, were generally higher, while scores on the Harshness, Detachment, and Permissiveness subscales, which indicate negative interactions, were lower (i.e., fewer negative interactions occurred). Compared to the kindergarten classrooms, the pre-k classrooms tended to have better scores on Sensitivity, Harshness and Detachment, while the reverse was true for Permissiveness. On the Sensitivity subscale, 58% of the pre-k classrooms and 32% of kindergarten classrooms scored 3.0 or above, where higher scores represent more positive interactions. For the three negative subscales, where lower scores represent more positive interactions, scores were below 2.0 for most of the pre-k classrooms (Harshness=84%, Detachment=96%, Permissiveness=88%) and the kindergarten classrooms (Harshness=64%, Detachment=91%, Permissiveness=93%). A substantial number of the pre-k classes had scores of 1.0 (indicating the least negative interactions) on each of these three subscales (Harshness=23%, Detachment=63%, Permissiveness=35%); for kindergarten classes, fewer scored at the lowest range on Harshness (10%) and Detachment (40%), but more were in the lower range on Permissiveness (58%).

Table 13: Quality of Teacher-Child Interactions (CIS) in More at Four and Kindergarten Classrooms

Item Description[a]	**Pre-k 2005-2006** n=57 **Mean** (SD) Range[b]	**K 2006-2007** n=96 **Mean** (SD) Range[b]
Total Items Score	**3.4** (0.4) 2.4-3.9	**3.1** (0.5) 1.6-4.0
Sensitivity Subscale	**3.1** (0.4) 2.2-3.8	**2.6** (0.6) 1.2-3.9
Harshness Subscale	**1.5** (0.5) 1.0-3.3	**1.9** (0.8) 1.0-3.9
Detachment Subscale	**1.2** (0.3) 1.0-2.3	**1.3** (0.4) 1.0-3.0
Permissiveness Subscale	**1.4** (0.4) 1.0-2.3	**1.2** (0.3) 1.0-2.3

[a] 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.
[b] Possible range=1.0-4.0.

Figure 10: Teacher-Child Interaction Scores (CIS Total) in More at Four and Kindergarten Classrooms

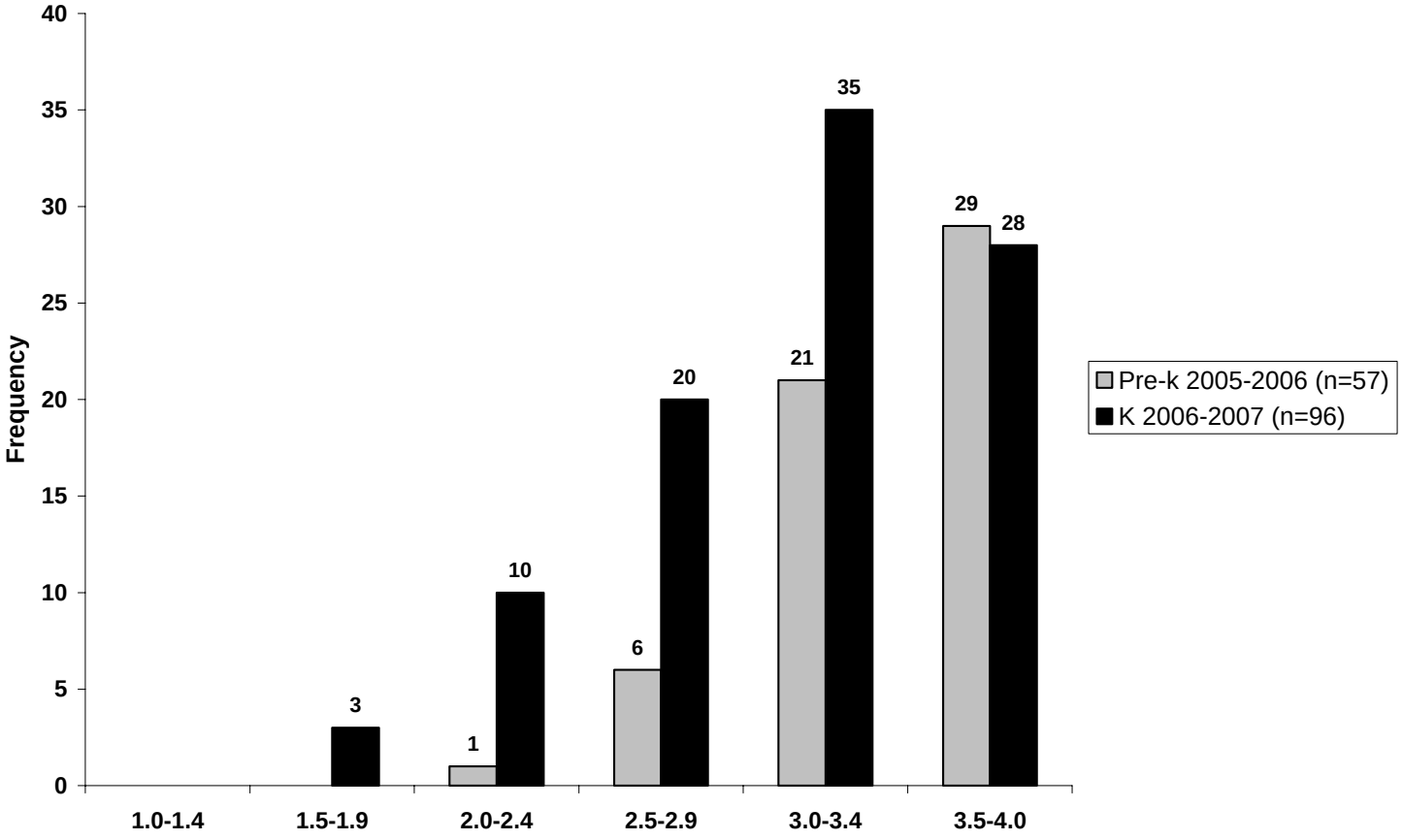
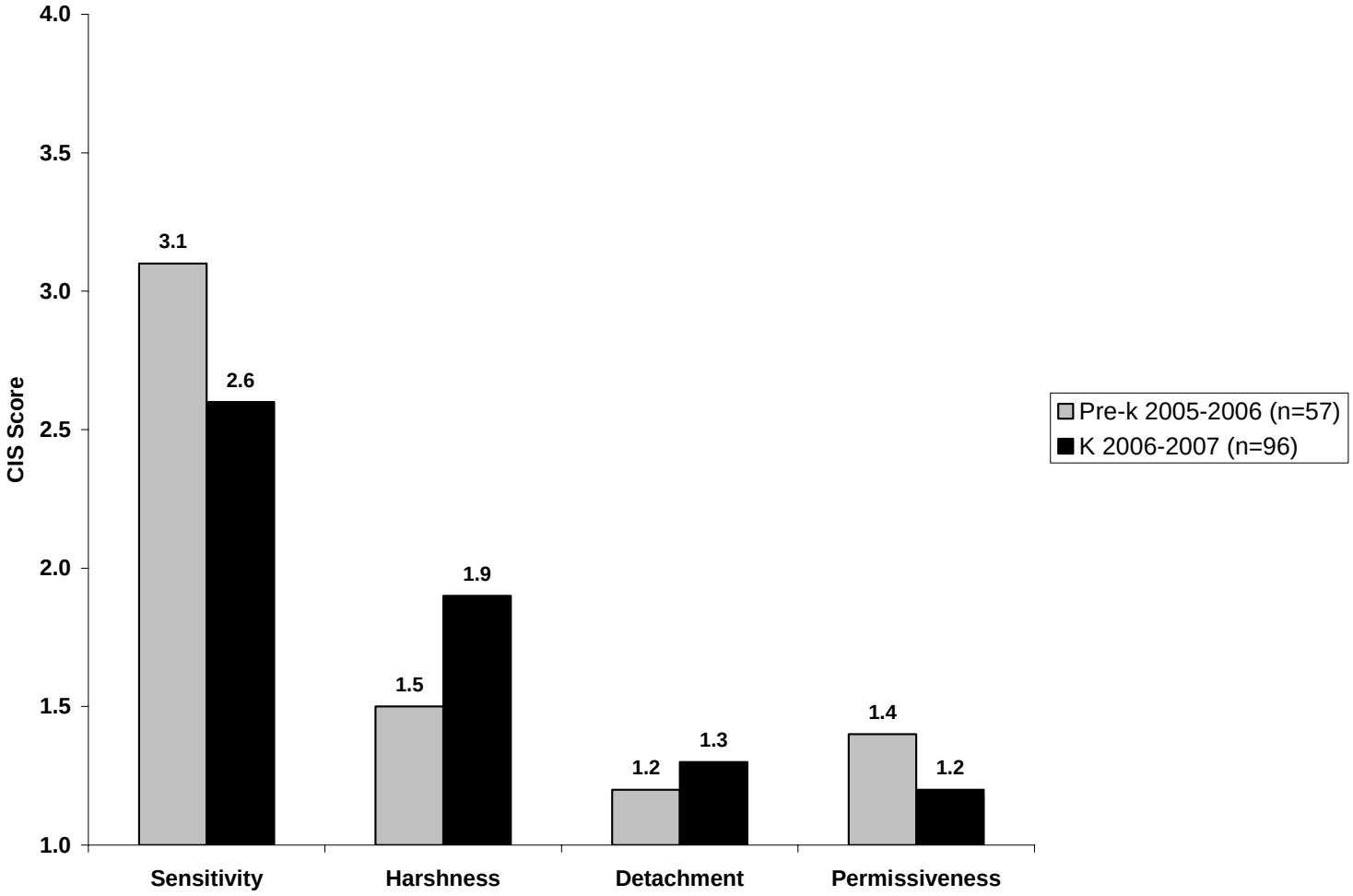


Figure 11: Teacher-Child Interaction Mean Subscale Scores (CIS)[a] in More at Four and Kindergarten Classrooms



[a] Note: Higher scores on the Sensitivity subscale and lower scores on the Harshness, Detachment, and Permissiveness subscales represent higher quality interactions.

Instructional Practices in Kindergarten

Observations of the quality of instructional practices in kindergarten classrooms were gathered in Cohort 2 using the APEEC. The average score on the APEEC was 3.6, based on a 1-7 scale from inadequate to excellent (see Table 14). This average is just above minimal (3) and well below good (5). As seen in Figure 12, the majority of classrooms (86%) scored in the medium range (3.0-4.9), with more classrooms (56%) scoring in the lower half of the range (3.0-3.9) compared to those (30%) the upper half of the range (4.0-4.9). Another 13% scored in the low range (1.0-2.9) and only one classroom (1%) scored in the high range (5.0-7.0). As seen in Table 14, individual item scores tended to be highest in the Instructional Context domain, with average scores for all of the items in the medium range. Most of the items in the Social Context domain also had average scores in the medium range. The one exception was the diversity item, which scored in the low range, similarly to the findings on the ECERS-R measure of classroom practices. Items in the Physical Environment domain tended to have the lowest average scores, with the exception of classroom accessibility which was the only item with an average score in the good range.

Table 14: Quality of Instructional Practices in Kindergarten Classrooms (APEEC)

n=88

Item Description[a]	Mean	(SD)	Range
Total Score[b]	**3.6**	**(0.7)**	**2.1-5.4**
Physical Environment Score	**3.3**	**(0.8)**	**2.0-6.3**
Room Arrangement	3.2	(1.3)	2-7
Display of Child Products	2.9	(1.3)	1-6
Classroom Accessibility	5.0	(1.5)	2-7
Health and Classroom Safety	2.2	(1.2)	1-7
Instructional Context Score[c]	**4.1**	**(0.7)**	**2.3-6.2**
Use of Materials	4.2	(1.2)	1-6
Use of Computers[d]	4.6	(1.7)	1-7
Monitoring Child Progress[e]	4.6	(1.2)	2-7
Teacher-Child Language	3.5	(1.5)	1-7

[a] Total and domain scores could range from 1.0-7.0; item scores could range from 1-7.
[b] For this item, n=87.
[c] For this item, n=87.
[d] For this item, n=87.
[e] For this item, n=87.

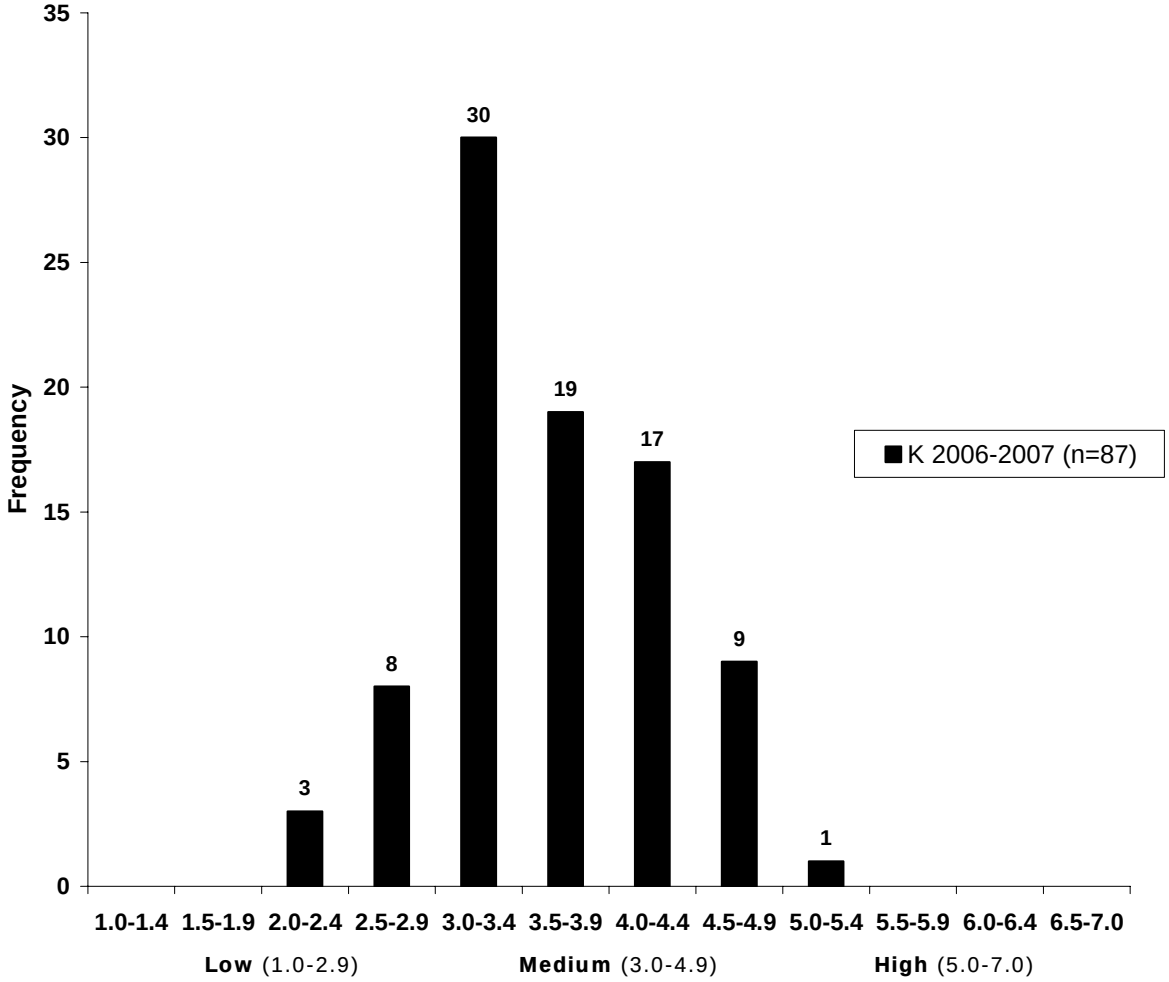
Table 14: Quality of Instructional Practices in Kindergarten Classrooms (APEEC)

n=88

Item Description[a]	**Mean**	**(SD)**	**Range**
Instructional Methods	3.9	(1.2)	1-7
Integration and Breadth of Subjects	3.9	(0.9)	1-6
Social Context Score[b]	**3.3**	**(1.0)**	**1.4-5.5**
Children's Role in Decision-Making[c]	3.3	(1.5)	1-7
Participation of Children with Disabilities in Classroom Activities[d]	4.3	(2.0)	1-7
Social Skills[e]	3.5	(1.7)	1-7
Diversity	1.6	(1.0)	1-4
Appropriate Transitions	4.1	(1.8)	1-7
Family Involvement	3.6	(1.9)	2-7

[a] Total and domain scores could range from 1.0-7.0; item scores could range from 1-7.
[b] For this item, n=87.
[c] For this item, n=87.
[d] For this item, n=69.
[e] For this item, n=87.

Figure 12: Kindergarten Instructional Practice Scores (APEEC Total Mean Item Scores)



Use of Specials in Kindergarten

Another important difference between pre-k and kindergarten classrooms is the common use of "specials" in kindergartens, where children receive instruction in different topics such as art, music, or physical education from teachers other than the regular classroom teacher who specialize in the particular area (e.g., the PE teacher, the art teacher). To further explore the differences in the quality of kindergarten classrooms, we gathered information on the use of specials in the classrooms we visited, and examined the associations between the time spent in different types of specials and related scores on the ECERS-R. We expected that there might be fewer materials and instructional time within the classroom for areas covered in specials, and conversely, that there might be more provisions within the classrooms for specific areas with less (or no) specials time offered. Since the ECERS-R scores were primarily based on activities and materials within the regular classroom as opposed to those provided during specials, we examined whether greater use of specials was associated with lower ECERS-R scores on related items, and vice versa.

Information about the use of specials was obtained by reviewing weekly class schedules provided by the lead teachers, including information about all specials provided to children, even those provided less often than weekly.

Class schedule information was available for 95% (92/97) of the kindergarten classes in Cohort 1 and 79% (76/96) of the classes in Cohort 2. The class schedules revealed that all of these classes in our sample offered at least one special per week, up to as many as seven per week (see Table 15). The use of specials remained fairly consistent from one cohort to the next.

The average number of specials per class was 4.8 (sd=1.1) in Cohort 1 and 4.7 (sd=1.0) in Cohort 2, with most classes (92% Cohort 1; 87% Cohort 2) providing at least four or more types of specials. On average, classes in our sample provided almost 3 hours of specials per week (172 minutes Cohort 1; 189 minutes Cohort 2), although the totals ranged from ½-hour per week to nearly 5-½ hours per week (see Table 16). The majority of classrooms in both Cohorts 1 and 2 (respectively) provided specials in the areas of Physical Education (91%; 100%), Music (79%; 90%), Library (86%; 84%), Art (65%; 86%), and Computers (74%; 67%). Less frequently reported specials included Guidance (39%; 24%), Spanish (10%; 9%), and Science (6%; 8%). When specials were provided, an average of about ½-hour per week was spent in each special. The one exception was Physical Education, which was provided for the largest amount of time, for an average of almost an hour per week.

We also examined the correlations between the amount of time spent in various specials and related items on the ECERS-R to see whether the provision of specific specials resulted in lesser (or greater) attention to those areas during the regular classroom activities. Across the two cohorts, we examined the associations of the Schedule, Free play, and Group time ECERS-R items with the total amount of time spent in specials, and also examined the correlations with specific items on the ECERS-R that were relevant to the particular type of special. There were no significant associations between ECERS-R scores on the Schedule, Free play, or Group time items and the amount of time spent in specials. Similarly, there were no associations between specific ECERS-R item scores (listed in parentheses) and specials time for Library (Books/pictures), Music (Music), Computers (TV/computers), Art (Art), Guidance (Diversity, Discipline, Staff-child interactions, Interactions among children), Spanish (Books/pictures, Encouraging communication, Diversity), Science (Nature/science), or Physical Education (Gross motor space, Gross motor equipment). The only significant correlation was found between the specials time spent in Physical Education and the ECERS-R item for Gross motor supervision (r=.20, p<.05), indicating that gross motor supervision was better for classrooms with more Physical Education specials time. For the remaining types of specials, however, the amount of instructional time spent in these areas as well as the amount of time spent overall in specials did not account for any systematic differences in ECERS-R scores.

Because we were not able to systematically observe specials, the nature and quality of these activities is not reflected in the other measures of kindergarten quality. However, these findings suggest that children in our kindergarten sample were receiving a moderate amount of specials instruction outside of the classroom on a regular basis, providing them with additional opportunities to develop skills in such areas as gross motor development (e.g., physical education), language and literacy (e.g., library), and creative activities (e.g., music and art).

Table 15: Frequency of Total Number of Specials Provided in Kindergarten Classrooms

Total Number of Specials Provided	Cohort 1 2004-2005 n=92[a]		Cohort 2 2006-2007 n=76[b]	
	Number of Classes	% of Classes	Number of Classes	% of Classes
1	1	1.1%	0	0.0%
2	1	1.1%	1	1.3%
3	5	5.4%	9	11.8%
4	32	34.8%	18	23.7%
5	30	32.6%	36	47.4%
6	20	21.7%	10	13.2%
7	3	3.3%	2	2.6%

[a] For 2004-2005, specials information was not available for 5 classes.
[b] For 2006-2007, specials information was not available for 20 classes.

Table 16: Types of Specials and Amount of Time Provided per Week in Kindergarten Classrooms

Type of Special	Cohort 1 2004-2005 n=92[a]				Cohort 2 2006-2007 n=76[b]			
	Number (%) of Classrooms	Average Minutes/Week[c]			Number (%) of Classrooms	Average Minutes/Week[c]		
	n (%)	Mean	SD	Range	n (%)	Mean	SD	Range
Physical Education	88 (90.7%)	44.3	25.1	13-150	76 (100.0%)	54.1	34.7	22-150
Library/Media	83 (85.6%)	36.2	13.2	13-80	64 (84.2%)	36.1	9.9	15-60
Music	77 (79.4%)	32.6	10.7	13-60	68 (89.5%)	37.2	8.1	20-55
Computers	72 (74.2%)	37.5	15.4	13-90	51 (67.1%)	38.1	7.7	22-55
Art	63 (65.0%)	33.8	14.2	7-90	65 (85.5%)	37.8	10.9	15-90
Guidance	38 (39.2%)	26.1	16.0	8-90	18 (23.7%)	30.0	10.9	15-45
Spanish[d]	10 (10.3%)	37.8	11.8	25-60	7 (9.2%)	38.6	14.1	25-55
Science	6 (6.2%)	27.6	11.2	13-40	6 (7.9%)	36.7	12.1	20-50
Total Minutes/Week	---	171.6	57.5	30-325	---	189.2	47.9	60-315

[a] For 2004-2005, specials information was not available for 5 classes.
[b] For 2006-2007, specials information was not available for 20 classes.
[c] The calculation for average minutes/week only includes classrooms which indicated that they provide that type of special.
[d] The data for 1 immersion Spanish language class were not included.

Factors Predicting Classroom Quality

Total class size and teacher qualifications in early childhood education (whether or not the teacher had a B-K license or the equivalent) were two factors that could be measured in common across the pre-k and kindergarten settings and which have been found to relate to classroom quality. As expected, the average class size was smaller in pre-k (Cohort 1=14.1 and Cohort 2=14.9) than in kindergarten (Cohort 1=18.5 and Cohort 2=18.3). The proportion of teachers reporting having a B-K license or the equivalent was higher in pre-k (Cohort 1=45.5% and Cohort 2=61.4%) than in kindergarten (Cohort 1=17.5% and Cohort 2=10.4%). We examined whether these factors were associated with the different measures of classroom quality, as well as whether there were 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 (Cohorts 1 and 2 pre-k and kindergarten); 2) Sensitivity of teacher-child interactions as measured by the CIS total score (Cohort 2 pre-k and kindergarten); 3) Literacy environment as measured by the ELLCO Classroom Observation Score (Cohort 2 pre-k and kindergarten); and 4) Instructional practices in kindergarten as measured by the APEEC total score (Cohort 2 kindergarten).

Higher quality classroom practices (ECERS-R total score) were found for classrooms serving fewer children in both pre-k and kindergarten [$F(1, 344)=21.87$, $p<.0001$], with differences in class size having a stronger effect on quality in Cohort 1 than Cohort 2 [$F(1, 344)=19.79$, $p<.0001$]. Teacher qualifications were not related to ECERS-R scores.

Higher quality literacy environments were found in classrooms where teachers had a B-K license or the equivalent in both pre-k and kindergarten [$F(1, 149)=5.32$, $p<.03$]. Class size was not related to the quality of the literacy environment.

Neither factor (class size or teacher qualifications) was related to the sensitivity of teacher-child interactions (CIS) in pre-k or kindergarten or the quality of instructional practices in kindergarten (APEEC).

Analysis Strategies

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). For the ECERS-R, which was the only measure gathered across both cohorts, we also tested whether there were any differences in scores by cohort (2003-2005 vs. 2005-2007), as well as whether there were any grade x cohort interactions.

To examine the factors predicting classroom quality, we conducted a series of regression models 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 grade (pre-k vs. kindergarten) effects and cohort (1 vs. 2) effects (when possible) and tested whether there were any differential effects by grade or cohort (when possible). 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; and 3) Sensitivity of teacher-child interactions, as measured by the total score on the CIS.

CHILD OUTCOMES

In order to address questions about the longitudinal outcomes for children attending More at Four and factors associated with better outcomes, individual child assessments were conducted near the beginning and end of children's pre-k and kindergarten years. The sample was comprised of two 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 and the second cohort including children who attended the More at Four Program in 2005-2006 and then were followed into kindergarten in 2006-2007.

The child assessments included measures of children's language and literacy skills (receptive language, rhyming, story concepts, letter naming), math skills (applied problems, counting), general knowledge (social awareness , color knowledge), and behavioral skills (social skills, problem behaviors). Two sources of data were gathered: trained assessors administered measures of children's language/literacy skills, math skills, and general knowledge, and teachers completed ratings of children's behavioral skills. In addition, for the second cohort only, assessments were administered in both English and Spanish for Spanish-speaking children.

These data provided information about the amount of developmental growth experienced by children from the beginning of the More at Four program through the end of kindergarten based on a number of widely-used measures. In accord with the overall goal of More at Four, the outcome areas measured were consistent with generally accepted definitions of school readiness, including the recommendations of the National Education Goals Panel[12].

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 based on both cohorts of data. These analyses adjusted for other child characteristics that could potentially affect outcomes (age at entry into More at Four, amount of More at Four attendance, gender) and controlled for other variables as well (time elapsed between assessments, class, cohort). In addition, we examined the influence of factors that might be associated with differences in children's outcomes, including the quality of the pre-k classroom practices 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 in the second cohort (Spanish assessments were not gathered for the first cohort). A further set of analyses examined the associations of initial skill levels and growth in Spanish with growth in English for this subset of children.

Changes over Time in Child Outcomes

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 for both cohorts of children, after adjusting for child characteristics and other variables (see analysis strategies section for further details). These results indicated that

children exhibited significant growth throughout this time period across all of the domains: Language and literacy skills (receptive language, rhyming, story concepts, letter naming), math skills (applied problems, counting), general knowledge (social awareness, color knowledge), and behavioral skills (social 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 17). A similar pattern of changes was found when looking at growth within the pre-k year and the kindergarten year, indicating that children made significant gains during each program year as well as across the two-year period. The one exception was that during kindergarten, there were no significant gains on color knowledge due to ceiling effects (i.e., the average score was near the maximum by the fall of kindergarten so there was little room for growth).

However, the amount of growth was significantly greater during pre-k than kindergarten for some skills: Language and literacy skills (receptive language, letter knowledge), general knowledge (social awareness, color knowledge), and behavioral skills (social skills). For some measures (social awareness, color knowledge), children had reached close to the maximum score by the end of pre-k or beginning of kindergarten, which limited the possible room for growth in kindergarten. For the others, children continued to make gains each year, but made relatively greater gains in pre-k than in kindergarten.

Factors Associated with Differences in Child Outcomes

We also examined whether different factors were associated with differences in children's growth in developmental skills from pre-k through kindergarten for both cohorts, including the level of classroom quality experienced in pre-k and individual children's cumulative risk levels and English proficiency levels, after adjusting for all other variables in the model (see analysis strategies section for further details).

Classroom Quality

We examined whether differences in the quality of classroom practices during More at Four, as measured by the ECERS-R total child items score, predicted differences in children's outcomes. There were few differences in children's outcomes in relation to the quality of the pre-k classroom, with no clear pattern of effects. Children in higher quality More at Four classrooms exhibited greater growth during pre-k in social skills [$t(1843)=3.24$, $p<.01$] but less growth in letter knowledge [$t(2030)=-2.59$, $p<.01$], and less growth during kindergarten in rhyming skills [$t(2011)=-2.25$, $p<.05$].

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 an identified special need, limited English proficiency, and chronic

health condition.[a] As seen in Table 18, children in the highest risk group (risk level=3) scored lower than other children at all time points (fall pre-k, spring pre-k, fall kindergarten, spring kindergarten) for most outcomes: Language and literacy skills (receptive language, rhyming, story concepts), math skills (applied problems, counting), and general knowledge (social awareness). For two measures, children in the highest risk group scored lower in pre-k but had caught up to other groups either by entry into kindergarten (color knowledge), or by the spring of kindergarten (letter naming). There were little or no differences in behavioral skills (social skills, problem behaviors).

Children at greatest risk also exhibited greater growth over time (i.e., steeper growth curves) in many of these areas: Language and literacy skills (receptive language, letter naming), math skills (applied problems, counting), and general knowledge (social awareness, color knowledge). These differences were primarily due to greater growth during pre-k for some skills (receptive language, applied problems, color knowledge) and during kindergarten for others (letter naming, counting). For rhyming, a higher-level language/literacy skill, children at greatest risk exhibited a lower rate of growth over time, with these effects primarily due to differences in pre-k. (See Figure 13, Figure 14, Figure 15, Figure 16, Figure 17, Figure 18, and Figure 19).

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).

As seen in Table 19, children with lower English proficiency levels (especially levels 1 and 2) scored lower than children with higher proficiency levels at each time point (fall pre-k, spring pre-k, fall kindergarten, spring kindergarten) in nearly all areas: Language and literacy skills (receptive language, rhyming, story concepts, letter naming), math skills (applied problems, counting), general knowledge (social awareness), and behavioral skills (social skills). For color knowledge, they scored lower from pre-k through entry into kindergarten, but had caught up to other groups by the end of kindergarten. There was less evidence of differences for problem behaviors, although children at the lowest proficiency level were rated as having fewer behavior problems than some more proficient children in kindergarten.

However, children at lower proficiency levels (especially those at the lowest proficiency level) made greater progress over time (i.e., steeper growth curves) in most skill areas: Language and literacy (receptive language, letter knowledge), math skills (applied problems, counting), general knowledge (social awareness, color knowledge), and behavioral skills (social skills, problem behaviors) (see Figure 20, Figure 21, Figure 22, Figure 23, Figure 24, Figure 25, Figure 26, and Figure 27). In contrast, children at lower proficiency levels made less progress in rhyming over

[a] 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.

time (see Figure 28). For some skills, these differences in growth rates persisted over the pre-k and kindergarten years (receptive language, applied problems, social awareness). For other skills, these differences were primarily attributable to greater growth during pre-k (color knowledge, social skills, problem behaviors), and during kindergarten for others (letter knowledge, counting). For story concepts, children at the higher end of limited English proficiency (level=3) made greater progress in kindergarten than other children (see Figure 29).

Growth in Developmental Skills for Spanish Subsample

Two sets of analyses were conducted for the subsample of children (n=120) administered measures in both English and Spanish in Cohort 2 (2005-2007). The purpose of these analyses was to examine whether children exhibited similar patterns of growth when assessed in English vs. Spanish and the extent to which changes in one language were related to changes in the other. The outcomes with both Spanish and English assessments included the measures of language/literacy skills (receptive language, rhyming, story concepts, letter naming), math skills (applied problems, counting), and general knowledge (social awareness, color knowledge). It is important to note that for the standardized measures (receptive language, rhyming, 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

The first series of longitudinal analyses examined the amount of growth the Spanish-speaking subsample of children exhibited on the various Spanish and English outcome measures over the More at Four program year, after adjusting for child characteristics and other variables (see analysis strategies section for further details). As shown in Table 20, children exhibited significant growth over this two-year period on most of the English and Spanish measures, including language/literacy skills (rhyming, story concepts, letter naming), math skills (applied problems, counting), and general knowledge (social awareness, color knowledge). The one area that showed no significant growth in Spanish was receptive language skills, although children did show significant growth in English. For most of these skills, Spanish-speaking children made similar amounts of gain during pre-k and kindergarten, with a few exceptions. Children exhibited significant growth only during the pre-k period for social awareness in Spanish and for color knowledge in English (which had reached a ceiling by kindergarten). In contrast, they showed significant growth only during kindergarten for rhyming and letter naming in Spanish. For counting in both Spanish and English, children exhibited significant growth at both times, but with greater growth during kindergarten.

Associations between English and Spanish Growth

Given that the More at Four classrooms are primarily conducted in English, for the second set of analyses, we were interested in whether Spanish-speaking children's growth in skills in English was related to their level of skills in Spanish. Specifically, we were interested in whether children's level of initial level of skills and/or rate of growth when assessed in Spanish predicted their rate of growth over time when assessed in English for corresponding outcomes. These

analyses provided information about the extent to which children were exhibiting general patterns of skill development regardless of the language in which they were assessed vs. language-specific patterns of development. A series of longitudinal growth models were conducted to test whether growth on the English measures over this two-year period (from pre-k through kindergarten) was related to children's initial scores in Spanish at entry into More at Four (fall pre-k scores) and/or gains on the Spanish measures over time (from pre-k through kindergarten) for the same outcomes (e.g., receptive language as measured by the PPVT-III and the TVIP).

As seen in Table 21, the results of these analyses indicated that children's initial skills in Spanish at entry into pre-k were positively associated with their rate of growth in English through kindergarten for some measures of language/literacy skills (story concepts, letter naming), math skills (applied problems, counting), and general knowledge (social awareness, color knowledge). Children's growth in Spanish was associated with their growth in English from pre-k through kindergarten for two language/literacy measures (rhyming, letter naming) and one math measure (counting). The one exception was receptive language skills, which were not associated with either initial Spanish skill level or Spanish growth.

Analysis Strategies

Changes over Time

To investigate whether significant levels of growth occurred in the child outcomes assessed in English, we estimated a series of longitudinal growth models. 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 mixed models approach to account for repeated measures across each child and multiple children clustered within each classroom[29]. 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. The following variables were included as covariates: cohort (1 vs. 2); time (1, 2, 3, 4); class level (pre-k vs. kindergarten); pre-k classroom quality (ECERS-R total child items score); age at first assessment, days elapsed since previous assessment, time between enrollment and first assessment, days of attendance at More at Four, gender; cumulative risk factor score at entry into pre-k (four levels scored 0-3 from less to more at-risk), and English proficiency level (five levels scored 1-5 from less to more proficient). Additionally, the interactions of class level and time with the other covariates were included to provide estimates of performance at specific time points and growth by class level. As a precaution against Type I error, all analyses included adjustments to the p-values using the Benjamini-Hochberg correction for multiple comparisons[30].

Factors Affecting Children's Growth

To examine whether classroom or child factors affected children's rate of growth from pre-k through kindergarten, effects were estimated based on the longitudinal growth models described above, adjusting for all other variables in the model. The factors examined included the quality of pre-k classroom practices (ECERS-R total child item scores), 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

To investigate whether significant levels of growth occurred in child outcomes assessed in English and Spanish, we estimated a series of longitudinal growth models for the Spanish-speaking subsample assessed in both languages, with separate models estimated for each outcome measure. (These data were only available for Cohort 2.) These analyses examined the amount of growth this subsample of children exhibited on the various Spanish and English outcome measures during the More at Four pre-k year and during kindergarten. Similarly to the longitudinal models conducted for the full sample, 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 and the models accounted for repeated measures across each child and multiple children within each classroom. The following variables were included as covariates: time (1, 2, 3, 4); class level (pre-k vs. kindergarten); pre-k classroom quality (ECERS-R total child items scores); age at first assessment, days elapsed since previous assessment, time between enrollment and first assessment, days of attendance at More at Four, gender; cumulative risk factor score at entry into pre-k (four levels scored 0-3 from less to more at-risk), and English proficiency level (five levels scored 1-5 from less to more proficient).

Associations between English and Spanish Growth

A 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 class level (pre-k vs. kindergarten) as covariates.

Table 17: Child Outcome Scores by Year

Domain	Outcome	Pre-K 2003-2004		K 2004-2005		Pre-K 2005-2006		K 2006-2007		Combined Cohort Growth[a,b]		
		Fall n=453-514	**Spring** n=419-464	**Fall** n=311-348	**Spring** n=299-327	**Fall** n=416-478	**Spring** n=372-445	**Fall** n=313-399	**Spring** n=342-393			
		Mean (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Pre-K Growth**	**K Growth**	**Total Growth**
Language and Literacy	Receptive Language (PPVT-III[c])	**85.4** (19.3) 40-124	**89.9** (17.2) 40-126	**94.7** (15.9) 40-127	**96.3** (13.8) 40-132	**81.1** (20.9) 21-125	**87.0** (19.7) 32-129	**90.7** (17.4) 32-132	**93.4** (15.8) 25-135	***	***	***
	Rhyming (WJ-III[d])	**1.9** (2.7) 0-15	**4.4** (4.1) 0-15	**6.6** (4.4) 0-16	**8.7** (4.5) 0-17	**1.9** (2.8) 0-15	**3.8** (3.8) 0-15	**5.8** (4.2) 0-17	**8.6** (4.3) 0-17	***	***	***
	Story and Print Concepts[e]	**3.0** (2.2) 0-10	**4.9** (2.6) 0-12	**7.3** (2.4) 0-14	**9.1** (2.4) 1-14	**2.9** (2.4) 0-10	**4.7** (2.6) 0-12	**6.7** (2.6) 0-14	**8.6** (2.6) 1-14	***	***	***
	Naming Letters[f]	**6.1** (7.9) 0-26	**15.1** (9.5) 0-26	**21.4** (7.1) 0-26	**24.8** (4.0) 2-26	**6.6** (8.7) 0-26	**15.3** (9.6) 0-26	**20.0** (8.0) 0-26	**24.8** (3.6) 0-26	***	***	***
Math	Applied Problems (WJ-III[c])	**93.1** (15.0) 46-128	**94.0** (13.9) 51-124	**97.2** (12.1) 46-131	**99.9** (11.1) 60-131	**91.1** (15.9) 47-135	**94.0** (14.3) 46-127	**95.6** (12.5) 35-123	**99.1** (11.7) 53-142	***	***	***
	Counting Task[g]	**11.3** (8.3) 0-40	**18.9** (11.5) 1-40	**28.2** (11.9) 1-40	**33.7** (9.5) 1-40	**11.2** (8.0) 0-40	**18.8** (10.6) 0-40	**24.4** (11.8) 2-40	**34.7** (9.2) 4-40	***	***	***

[a] *p < .05, **p<.01, ***p<.001, NS=nonsignificant.
[b] Significance levels indicate results of testing of the parameter estimates for the adjusted gains over time based on longitudinal growth model estimations.
[c] Indicates standardized, norm-referenced measure with mean=100, SD=15.
[d] Possible range=0-17.
[e] Possible range=0-14.
[f] Possible range=0-26.
[g] Possible range=0-40.

Table 17: Child Outcome Scores by Year

Domain	Outcome	Pre-K 2003-2004		K 2004-2005		Pre-K 2005-2006		K 2006-2007		Combined Cohort Growth[a,b]		
		Fall n=453-514	**Spring** n=419-464	**Fall** n=311-348	**Spring** n=299-327	**Fall** n=416-478	**Spring** n=372-445	**Fall** n=313-399	**Spring** n=342-393			
		Mean (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Pre-K Growth**	**K Growth**	**Total Growth**
General Knowledge	Social Awareness[c]	**3.7** (1.8) 0-6	**4.5** (1.5) 0-6	**4.8** (1.2) 1-6	**5.4** (1.0) 1-6	**3.3** (1.9) 0-6	**4.2** (1.5) 0-6	**4.6** (1.4) 0-6	**5.3** (1.0) 1-6	***	***	***
	Color Knowledge[d]	**16.3** (5.6) 0-20	**18.8** (2.7) 3-20	**19.7** (1.3) 2-20	**19.9** (0.4) 17-20	**15.6** (6.0) 0-20	**18.6** (3.2) 0-20	**19.5** (1.6) 6-20	**19.8** (1.1) 10-20	***	NS	***
Classroom Behavior	Social Skills (SSRS[e])	**100.8** (15.3) 56-130	**107.8** (15.3) 62-130	**101.6** (14.3) 64-130	**106.4** (14.3) 61-130	**100.4** (15.7) 53-130	**109.7** (14.7) 60-130	**101.8** (15.2) 49-130	**107.7** (15.5) 54-130	***	***	***
	Problem Behaviors (SSRS[e])	**98.6** (11.9) 85-138	**99.3** (12.8) 85-145	**99.0** (12.8) 85-135	**99.0** (13.0) 85-137	**98.2** (13.1) 85-142	**97.2** (12.0) 85-135	**96.9** (12.7) 85-137	**98.0** (13.4) 85-141	NS	NS	NS

[a] *p < .05, **p<.01, ***p<.001, NS=nonsignificant.
[b] Significance levels indicate results of testing of the parameter estimates for the adjusted gains over time based on longitudinal growth model estimations.
[c] Possible range=0-6.
[d] Possible range=0-20.
[e] Indicates standardized, norm-referenced measure with mean=100, SD=15.

Table 18: Child Outcome Scores by Risk Factor Levels (Cohorts 1 & 2)

Domain Outcome	Risk Total Group[a]	Pre-K		K	
		Fall	Spring	Fall	Spring
		Mean (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range
Language and Literacy Receptive Language (PPVT-III[b])	**0** n=53-65	**96.8** (13.8) 68-124	**98.4** (11.6) 72-121	**102.1** (11.3) 71-127	**102.9** (8.6) 84-132
	1 n=100-138	**90.7** (15.5) 39-120	**94.3** (16.0) 33-119	**98.1** (14.3) 40-122	**101.3** (10.3) 63-123
	2 n=411-558	**87.0** (17.2) 21-125	**91.6** (16.2) 40-129	**95.0** (15.2) 35-132	**97.0** (13.5) 36-135
	3+ n=151-201	**63.9** (19.7) 23-111	**72.4** (19.0) 32-113	**79.0** (16.9) 32-117	**81.5** (15.2) 25-109
	Significant group differences[c]	3<2,1,0 2<0	3<2,1,0 2<0	3<2,1,0 2<0	3<2<1,0
Language and Literacy Rhyming (WJ-III[d])	**0** n=53-63	**3.3** (3.6) 0-13	**6.3** (4.5) 0-15	**7.7** (3.8) 1-15	**9.9** (4.1) 0-16
	1 n=99-128	**2.4** (3.1) 0-15	**4.6** (4.2) 0-15	**7.2** (4.6) 0-16	**9.8** (4.0) 1-16
	2 n=406-530	**2.0** (2.8) 0-15	**4.5** (4.0) 0-15	**6.5** (4.3) 0-16	**9.0** (4.2) 0-17
	3+ n=152-189	**0.6** (1.2) 0-7	**2.0** (2.3) 0-13	**3.9** (3.4) 0-17	**6.3** (4.4) 0-15
	Significant group differences[c]	3<2,1,0 2<0	3<2,1,0 2<0	3<2,1,0 2<0	3<2,1<0

[a] 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.
[b] Indicates standardized, norm-referenced measure with mean=100, SD=15.
[c] Significance levels indicate results of post-hoc comparisons of the parameter estimates for each risk category based on longitudinal growth model estimations.
[d] Possible range=0-17.

Table 18: Child Outcome Scores by Risk Factor Levels (Cohorts 1 & 2)

Domain Outcome	Risk Total Group[a]	Pre-K		K	
		Fall	Spring	Fall	Spring
		Mean (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range
Language and Literacy Story and Print Concepts[b]	**0** n=53-64	**4.2** (2.5) 0-10	**5.9** (2.4) 1-11	**7.9** (1.9) 3-13	**9.8** (2.1) 6-13
	1 n=101-138	**3.5** (2.4) 0-10	**5.5** (2.7) 1-12	**7.3** (2.7) 1-14	**9.3** (2.5) 3-14
	2 n=412-562	**3.0** (2.2) 0-10	**4.9** (2.5) 0-12	**7.1** (2.4) 0-13	**9.0** (2.5) 2-14
	3+ n=153-193	**1.9** (1.7) 0-9	**3.7** (2.4) 0-10	**5.9** (2.6) 0-11	**7.9** (2.6) 1-13
	Significant group differences[c]	3<2,1,0 2<0	3<2,1,0 2<1	3<2,1,0	3<2,1,0
Language and Literacy Naming Letters[d]	**0** n=53-64	**9.7** (9.2) 0-26	**17.4** (8.8) 0-26	**23.0** (5.9) 3-26	**25.1** (2.9) 11-26
	1 n=101-138	**8.3** (9.5) 0-26	16.6 (9.0) 0-26	**21.9** (6.7) 0-26	**24.9** (4.0) 0-26
	2 n=412-568	**6.7** (8.2) 0-26	**15.9** (9.4) 0-26	**21.0** (7.3) 0-26	**24.9** (3.6) 2-26
	3+ n=152-212	**3.1** (6.0) 0-26	**11.5** (9.6) 0-26	**17.9** (8.9) 0-26	**24.4** (4.4) 2-26
	Significant group differences[c]	3<2,1,0 2<0	3<2,1,0	3<2,1,0	NS

[a] 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.
[b] Possible range=0-14.
[c] Significance levels indicate results of post-hoc comparisons of the parameter estimates for each risk category based on longitudinal growth model estimations.
[d] Possible range=0-26.

Table 18: Child Outcome Scores by Risk Factor Levels (Cohorts 1 & 2)

Domain Outcome	Risk Total Group[a]	Pre-K		K	
		Fall	Spring	Fall	Spring
		Mean (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range
Math Applied Problems (WJ-III[b])	**0** n=53-63	**99.9** (13.6) 61-127	**100.2** (10.9) 75-126	**101.1** (10.9) 79-125	**101.9** (10.9) 68-126
	1 n=99-128	**98.0** (13.3) 47-135	**97.6** (13.7) 51-124	**100.3** (10.9) 63-129	**102.4** (10.9) 73-142
	2 n=406-530	**92.9** (14.1) 51-128	**95.0** (13.1) 46-127	**96.8** (11.5) 46-131	**99.8** (10.6) 64-131
	3+ n=146-152	**80.4** (16.6) 46-126	**86.5** (15.1) 51-115	**91.0** (14.0) 35-123	**95.8** (13.2) 53-131
	Significant group differences[c]	3<2<1,0	3<2,1,0 2<0	3<2,1,0 2<0	3<2,1,0
Math Counting Task[d]	**0** n=53-64	**14.7** (9.4) 0-40	**22.8** (11.6) 4-40	**30.5** (10.8) 7-40	**36.4** (7.9) 13-40
	1 n=101-138	**13.0** (7.8) 0-40	**20.7** (11.7) 1-40	**28.4** (12.0) 5-40	**36.2** (7.5) 13-40
	2 n=412-562	**11.7** (8.4) 0-40	**19.3** (11.2) 0-40	**26.7** (12.0) 2-40	**34.0** (9.4) 4-40
	3+ n=153-207	**7.6** (5.7) 0-40	**15.0** (8.9) 1-40	**21.8** (11.4) 1-40	**32.9** (10.2) 1-40
	Significant group differences[c]	3<2,1,0	3<2,1,0 2<0	3<2,1,0	3<0

[a] 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.
[b] Indicates standardized, norm-referenced measure with mean=100, SD=15.
[c] Significance levels indicate results of post-hoc comparisons of the parameter estimates for each risk category based on longitudinal growth model estimations.
[d] Possible range=0-40.

Table 18: Child Outcome Scores by Risk Factor Levels (Cohorts 1 & 2)

Domain Outcome	Risk Total Group[a]	Pre-K		K	
		Fall	Spring	Fall	Spring
		Mean (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range
General Knowledge Social Awareness[b]	**0** n=53-66	**4.4** (1.5) 1-6	**5.1** (1.0) 3-6	**5.2** (1.0) 3-6	**5.7** (0.7) 3-6
	1 n=101-140	**4.0** (1.6) 0-6	**4.8** (1.3) 1-6	**5.0** (1.2) 1-6	**5.5** (0.8) 2-6
	2 n=412-569	**3.9** (1.7) 0-6	**4.5** (1.4) 0-6	**4.9** (1.2) 1-6	**5.4** (1.0) 1-6
	3+ n=153-213	**1.9** (1.5) 0-6	**3.3** (1.5) 0-6	**4.0** (1.4) 0-6	**4.9** (1.1) 2-6
	Significant group differences[c]	3<2,1,0	3<2,1,0 2<0	3<2,1,0	3<2,1,0
General Knowledge Color Knowledge[d]	**0** n=53-66	**18.6** (2.7) 7-20	**19.3** (1.4) 14-20	**19.7** (0.7) 17-20	**19.9** (0.5) 17-20
	1 n=101-140	**17.3** (4.9) 0-20	**19.2** (1.9) 9-20	**19.8** (0.8) 14-20	**19.9** (0.6) 15-20
	2 n=411-570	**16.8** (5.2) 0-20	**18.8** (2.9) 0-20	**19.7** (1.3) 7-20	**19.9** (0.8) 10-20
	3+ n=153-213	**12.0** (6.7) 0-20	**17.9** (3.9) 1-20	**19.3** (2.4) 2-20	**19.8** (1.2) 10-20
	Significant group differences[c]	3<2,1,0 2<0	3<2,1,0	NS	NS

[a] 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.
[b] Possible range=0-6.
[c] Significance levels indicate results of post-hoc comparisons of the parameter estimates for each risk category based on longitudinal growth model estimations.
[d] Possible range=0-20.

Table 18: Child Outcome Scores by Risk Factor Levels (Cohorts 1 & 2)

Domain Outcome	Risk Total Group[a]	Pre-K		K	
		Fall	Spring	Fall	Spring
		Mean (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range
Behavioral Skills Social Skills (SSRS[b])	**0** n=43-61	**104.8** (13.6) 68-130	**110.5** (14.8) 76-130	**103.3** (17.7) 53-130	**109.1** (17.8) 72-130
	1 n=82-136	**100.8** (16.2) 60-130	**107.6** (14.4) 80-130	**100.1** (15.4) 49-130	**107.2** (17.2) 54-130
	2 n=373-554	**100.1** (15.4) 53-130	**108.2** (14.8) 60-130	**101.4** (14.1) 53-130	**106.3** (14.5) 67-130
	3+ n=135-204	**100.5** (15.8) 60-130	**110.1** (16.2) 62-130	**102.7** (14.8) 64-130	**108.5** (13.7) 70-130
	Significant group differences[c]	NS	NS	NS	NS
Behavioral Skills Problem Behaviors (SSRS[b])	**0** n=43-62	**98.9** (11.9) 85-132	**97.4** (12.4) 85-137	**97.5** (14.2) 85-135	**98.4** (14.6) 85-135
	1 n=83-136	**98.0** (12.7) 85-133	**99.8** (12.7) 85-130	**99.3** (12.6) 85-133	**99.8** (13.9) 85-134
	2 n=373-560	**98.9** (12.8) 85-140	**98.6** (12.6) 85-145	**98.3** (12.6) 85-135	**99.4** (13.1) 85-137
	3+ n=134-208	**97.3** (11.7) 85-142	**96.6** (11.8) 85-139	**96.3** (12.9) 85-137	**95.3** (12.4) 85-141
	Significant group differences[c]	NS	3<2	NS	3<2

[a] 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.

[b] Indicates standardized, norm-referenced measure with mean=100, SD=15.

[c] Significance levels indicate results of post-hoc comparisons of the parameter estimates for each risk category based on longitudinal growth model estimations.

Figure 13: Growth in Receptive Language Skills (PPVT-III) by Cumulative Risk (Cohorts 1 and 2)

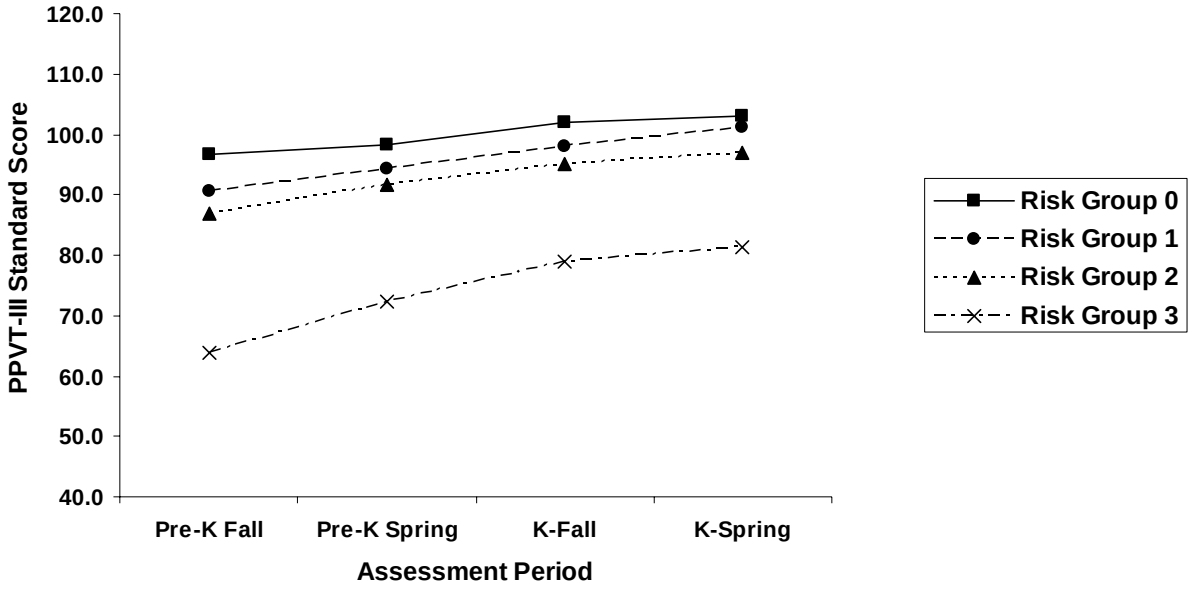


Figure 14: Growth in Letter Knowledge (Naming Letters Task) by Cumulative Risk (Cohorts 1 and 2)

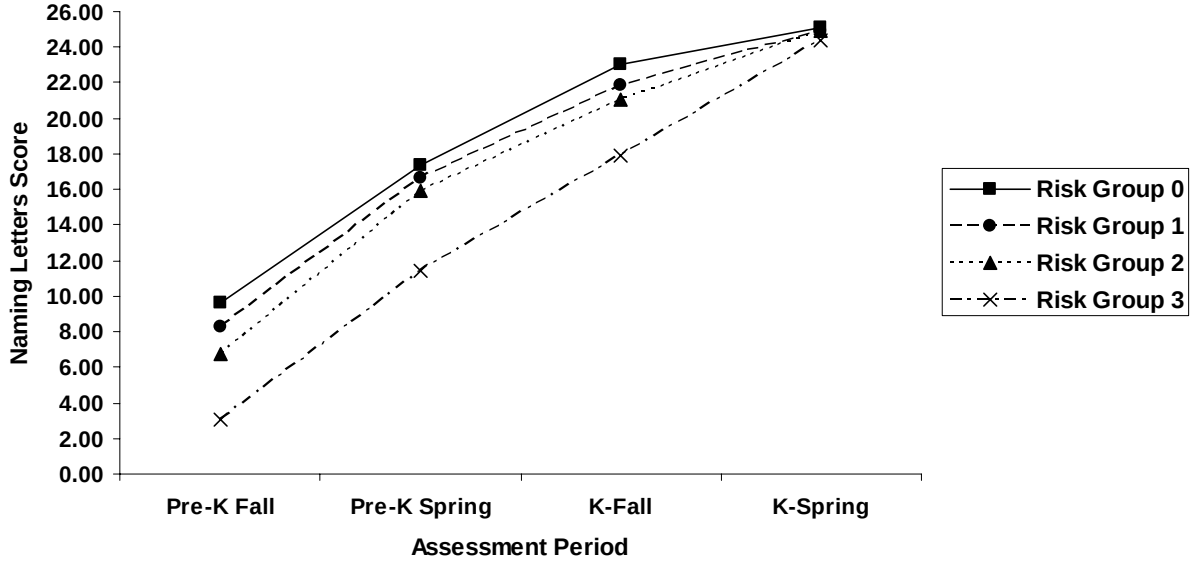


Figure 15: Growth in Math Skills (WJ-III Applied Problems) by Cumulative Risk (Cohorts 1 and 2)

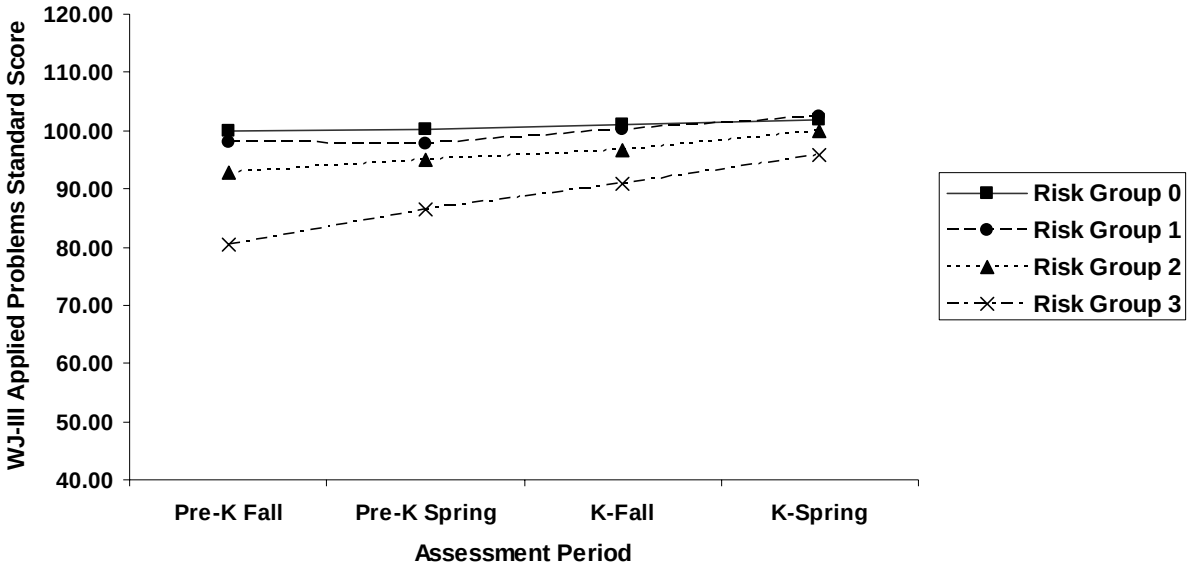


Figure 16: Growth in Counting Skills (Counting Task) by Cumulative Risk (Cohorts 1 and 2)

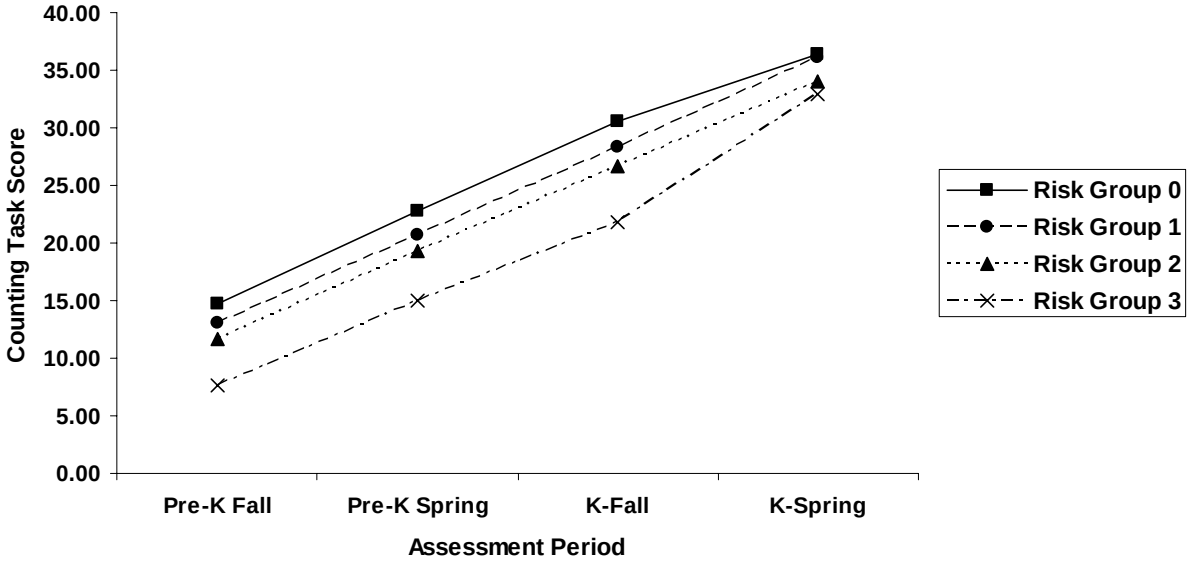


Figure 17: Growth in Social Knowledge (Social Awareness Task) by Cumulative Risk (Cohorts 1 and 2)

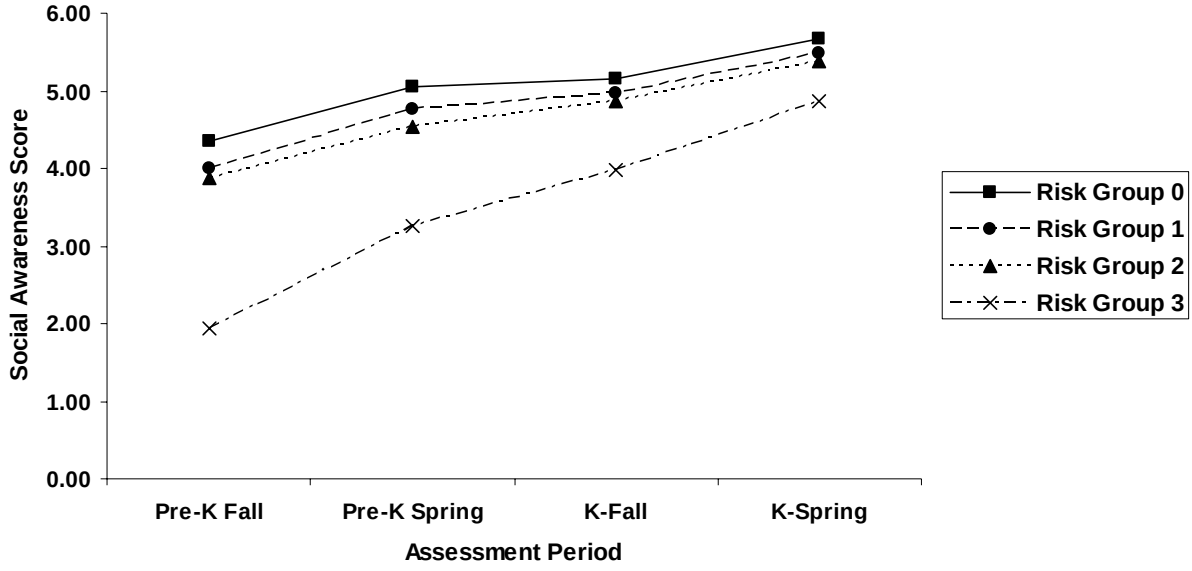


Figure 18: Growth in Color Knowledge (Color Naming Task) by Cumulative Risk (Cohorts 1 and 2)

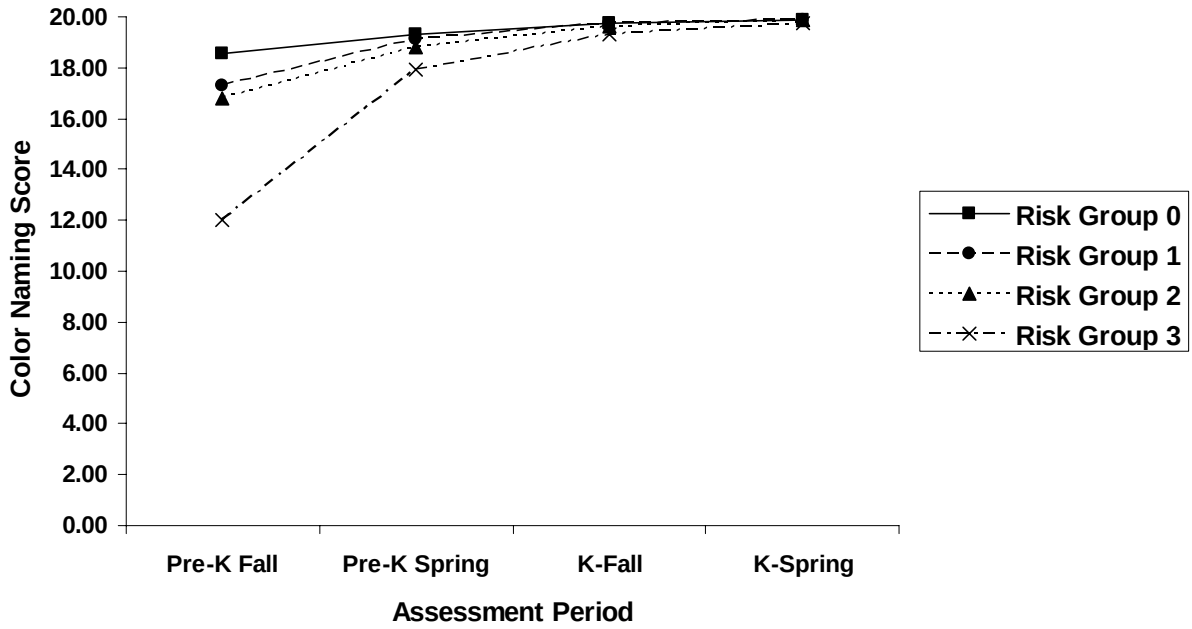


Figure 19: Growth in Phonological Awareness (WJ-III Rhyming) by Cumulative Risk (Cohorts 1 and 2)

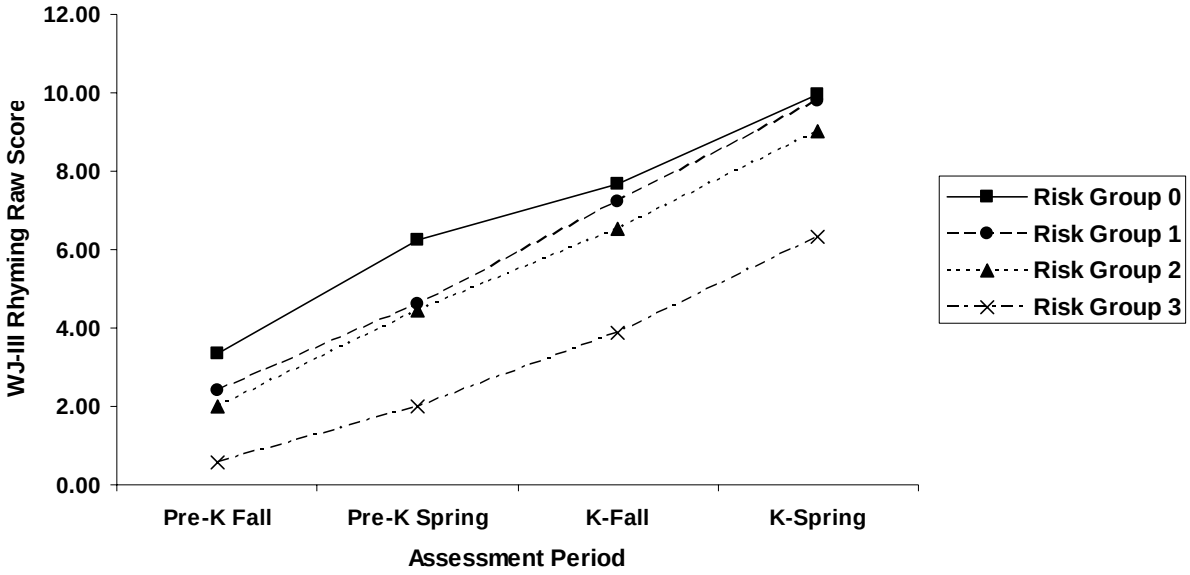


Table 19: Child Outcome Scores by English Language Proficiency (Cohorts 1 & 2)

Domain Outcome	Language Proficiency Level[a]	Pre-K		K	
		Fall	Spring	Fall	Spring
		Mean (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range
Language and Literacy Receptive Language (PPVT-III[b])	**1** n=163-203	**57.2** (15.7) 23-102	**66.3** (16.7) 32-105	**73.4** (14.7) 32-105	**78.5** (13.5) 36-109
	2 n=39-53	**76.3** (10.4) 48-93	**80.6** (14.4) 46-101	**86.2** (12.5) 42-108	**89.3** (11.7) 64-109
	3 n=104-145	**82.0** (12.9) 40-118	**88.9** (11.1) 54-110	**93.2** (11.6) 40-115	**95.9** (11.4) 62-126
	4 n=180-256	**89.9** (12.6) 21-121	**94.4** (11.3) 33-120	**97.7** (11.3) 40-127	**98.4** (10.6) 25-121
	5 n=221-295	**98.1** (12.1) 66-125	**101.2** (11.1) 70-129	**103.7** (11.3) 40-132	**104.5** (10.0) 72-135
	Significant group differences[c]	1<2<3<4<5	1<2<3<4<5	1<2<3<4<5	1<2<3<4<5
Language and Literacy Rhyming (WJ-III[d])	**1** n=163-196	**.35** (.74) 0-4	**1.5** (1.7) 0-10	**3.1** (2.9) 0-17	**5.5** (4.0) 0-15
	2 n=39-53	**0.8** (1.5) 0-10	**2.2** (2.6) 0-11	**4.1** (3.5) 0-14	**6.8** (4.4) 0-17
	3 n=104-154	**1.2** (1.9) 0-10	**3.4** (3.6) 0-14	**5.2** (4.0) 0-15	**8.2** (4.5) 0-17
	4 n=180-254	**1.8** (2.3) 0-12	**4.4** (3.8) 0-14	**6.5** (4.0) 0-15	**9.4** (3.7) 0-17
	5 n=222-294	**3.5** (3.6) 0-15	**6.5** (4.2) 0-15	**9.0** (4.0) 0-16	**11.0** (3.5) 1-17
	Significant group differences[c]	1,2<3,4,5	1<3<4<5 2<4<5	1<3<4<5 2<4<5	1<3<4<5 2<4<5

[a] 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.
[b] Indicates standardized, norm-referenced measure with mean=100, SD=15.
[c] Significance levels indicate results of post-hoc comparisons of the parameter estimates for each English proficiency level category based on longitudinal growth model estimations.
[d] Possible range=0-17.

Table 19: Child Outcome Scores by English Language Proficiency (Cohorts 1 & 2)

Domain Outcome	Language Proficiency Level[a]	Pre-K		K	
		Fall	**Spring**	**Fall**	**Spring**
		Mean (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range
Language and Literacy Story and Print Concepts[b]	**1** n=164-207	**1.2** (1.2) 0-6	**3.1** (2.0) 0-12	**5.4** (2.4) 0-11	**7.3** (2.4) 1-13
	2 n=39-52	**1.7** (1.5) 0-7	**3.6** (2.3) 0-9	**5.5** (2.5) 0-10	**7.2** (2.4) 1-12
	3 n=104-142	**2.3** (1.6) 0-9	**3.9** (2.3) 0-10	**6.3** (2.6) 1-11	**8.8** (2.7) 2-14
	4 n=182-254	**3.2** (2.0) 0-9	**5.0** (2.2) 0-10	**7.2** (2.2) 1-11	**9.1** (2.0) 3-13
	5 n=222-294	**4.5** (2.3) 0-10	**6.6** (2.2) 0-12	**8.5** (1.8) 3-14	**10.14** (2.1) 3-14
	Significant group differences[c]	1<3<4<5 2<4<5	1<3<4<5 2<4<5	1<3<4<5 2<4<5	1,2<3,4<5
Language and Literacy Naming Letters[d]	**1** n=163-224	**2.2** (5.3) 0-26	**10.7** (9.5) 0-26	**17.7** (8.9) 0-26	**24.5** (3.9) 4-26
	2 n=39-53	**2.9** (5.5) 0-25	**12.7** (10.0) 0-26	**16.9** (9.4) 0-26	**22.0** (7.0) 2-26
	3 n=104-145	**4.6** (7.3) 0-26	**13.6** (9.8) 0-26	**19.3** (8.4) 0-26	**24.3** (5.1) 0-26
	4 n=182-256	**6.9** (8.0) 0-26	**15.2** (9.3) 0-26	**21.2** (6.9) 1-26	**25.0** (3.1) 4-26
	5 n=222-295	**10.5** (9.2) 0-26	**19.7** (7.6) 0-26	**23.7** (4.7) 2-26	**25.5** (2.2) 2-26
	Significant group differences[c]	1<3<4<5 2<4<5	1<3,4<5 2,3,4<5	1,2,3<4<5	2<1,3,4,5

[a] 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.
[b] Possible range=0-14.
[c] Significance levels indicate results of post-hoc comparisons of the parameter estimates for each English proficiency level category based on longitudinal growth model estimations.
[d] Possible range=0-26.

Table 19: Child Outcome Scores by English Language Proficiency (Cohorts 1 & 2)

		Pre-K		K	
		Fall	**Spring**	**Fall**	**Spring**
Domain Outcome	**Language Proficiency Level**[a]	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range
Math Applied Problems (WJ-III[b])	**1** n=130-187	**76.3** (14.8) 46-111	**84.4** (14.2) 46-112	**89.1** (12.3) 46-117	**95.4** (11.4) 60-122
	2 n=39-46	**85.5** (12.0) 53-108	**86.2** (12.9) 51-113	**89.3** (13.4) 35-114	**92.6** (12.2) 53-118
	3 n=104-139	**87.2** (14.5) 51-123	**91.0** (13.7) 53-124	**94.4** (12.6) 60-124	**96.7** (11.8) 67-131
	4 n=179-253	**94.8** (12.1) 47-124	**96.0** (11.3) 54-119	**97.7** (9.5) 72-129	**100.2** (9.7) 76-121
	5 n=218-293	**100.4** (12.3) 61-135	**102.3** (10.4) 71-127	**103.0** (10.0) 77-131	**104.4** (10.3) 68-142
	Significant group differences[c]	1<2,3<4<5	1,2<3<4<5	1,2<3<4<5	1,2,3<4<5 2<3
Math Counting Task[d]	**1** n=164-220	**6.7** (5.4) 0-39	**13.6** (9.0) 0-40	**20.2** (11.6) 1-40	**32.0** (10.6) 1-40
	2 n=39-52	**7.8** (7.2) 0-40	**12.8** (7.2) 0-40	**19.6** (11.6) 3-40	**27.8** (11.1) 4-40
	3 n=104-144	**10.0** (7.2) 0-38	**18.5** (11.1) 1-40	**26.3** (12.0) 2-40	**34.3** (9.0) 9-40
	4 n=182-255	**12.1** (7.3) 1-40	**19.1** (10.4) 1-40	**26.7** (11.6) 3-40	**34.8** (8.7) 7-40
	5 n=222-295	**15.2** (9.0) 1-40	**23.9** (11.3) 3-40	**31.2** (10.2) 5-40	**36.6** (7.6) 4-40
	Significant group differences[c]	1<3,4<5 2<4<5	1,2<3,4<5	1,2<3,4<5	1<4,5 2<1,3,4,5

[a] 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.
[b] Indicates standardized, norm-referenced measure with mean=100, SD=15.
[c] Significance levels indicate results of post-hoc comparisons of the parameter estimates for each English proficiency level category based on longitudinal growth model estimations.
[d] Possible range=0-40.

Table 19: Child Outcome Scores by English Language Proficiency (Cohorts 1 & 2)

Domain Outcome	Language Proficiency Level[a]	Pre-K		K	
		Fall	**Spring**	**Fall**	**Spring**
		Mean (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range
General Knowledge Social Awareness[b]	**1** n=164-225	**1.4** (1.2) 0-6	**2.9** (1.5) 0-6	**3.7** (1.3) 1-6	**4.7** (1.2) 1-6
	2 n=39-52	**3.2** (1.5) 1-6	**4.1** (1.5) 0-6	**4.3** (1.5) 0-6	**5.0** (1.1) 2-6
	3 n=104-145	**3.6** (1.6) 0-6	**4.6** (1.3) 1-6	**4.8** (1.3) 0-6	**5.5** (1.0) 2-6
	4 n=182-259	**4.1** (1.4) 1-6	**4.8** (1.2) 1-6	**5.0** (1.0) 2-6	**5.5** (0.9) 1-6
	5 n=222-297	**4.7** (1.2) 1-6	**5.0** (1.0) 2-6	**5.2** (0.9) 2-6	**5.7** (0.7) 3-6
	Significant group differences[c]	1<2,3<4<5	1<2<3,4,5 3<5	1<2<3,4,5 3<5	1,2<3,4,5
General Knowledge Color Knowledge[d]	**1** n=164-225	**10.5** (6.8) 0-20	**17.3** (4.4) 0-20	**19.1** (2.5) 2-20	**19.8** (1.0) 10-20
	2 n=39-53	**14.6** (5.9) 0-20	**18.2** (4.1) 4-20	**19.1** (2.3) 8-20	**19.4** (2.2) 10-20
	3 n=103-145	**16.1** (5.3) 1-20	**18.6** (2.8) 5-20	**19.7** (0.7) 16-20	**19.9** (0.5) 17-20
	4 n=182-259	**17.7** (4.1) 0-20	**19.1** (2.3) 3-20	**19.7** (1.1) 11-20	**19.9** (0.8) 11-20
	5 n=222-297	**18.9** (2.6) 1-20	**19.5** (1.2) 12-20	**19.9** (0.4) 17-20	**19.9** (0.3) 17-20
	Significant group differences[c]	1<2<3<4<5	1<3,4,5 2<5	1<4,5	NS

[a] 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.
[b] Possible range=0-6.
[c] Significance levels indicate results of post-hoc comparisons of the parameter estimates for each English proficiency level category based on longitudinal growth model estimations.
[d] Possible range=0-20.

Table 19: Child Outcome Scores by English Language Proficiency (Cohorts 1 & 2)

Domain Outcome	Language Proficiency Level[a]	Pre-K		K	
		Fall	**Spring**	**Fall**	**Spring**
		Mean (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range	**Mean** (SD) Range
Behavioral Skills Social Skills (SSRS[b])	**1** n=142-214	**95.5** (16.4) 53-130	**109.1** (16.4) 70-130	**100.1** (14.0) 49-130	**106.9** (14.5) 54-130
	2 n=32-51	**92.7** (16.1) 62-130	**101.4** (16.7) 66-130	**99.8** (14.8) 62-130	**100.9** (13.1) 76-128
	3 n=92-142	**99.5** (12.5) 66-130	**106.7** (13.5) 78-130	**97.1** (14.9) 53-130	**102.7** (14.8) 70-130
	4 n=159-253	**100.9** (14.9) 60-130	**107.4** (14.6) 60-130	**100.3** (14.7) 53-130	**106.0** (15.1) 67-130
	5 n=192-285	**106.1** (14.5) 62-130	**111.7** (13.8) 66-130	**106.5** (13.9) 68-130	**111.2** (14.4) 61-130
	Significant group differences[c]	1,2,3,4<5 1<3,4<5 2<4<5	1,2,3,4<5 2<4<5	1,3,4<5	1,2,3,4<5
Behavioral Skills Problem Behaviors (SSRS[b])	**1** n=141-219	**98.3** (12.3) 85-132	**96.4** (11.9) 85-145	**96.1** (11.3) 85-135	**94.6** (10.8) 85-123
	2 n=32-52	**101.2** (13.4) 85-135	**101.6** (13.5) 85-135	**97.3** (12.2) 85-125	**101.4** (11.3) 85-123
	3 n=91-144	**98.9** (12.0) 85-138	**98.5** (12.3) 85-139	**101.8** (14.8) 85-137	**102.8** (14.4) 85-141
	4 n=160-253	**99.3** (13.0) 85-140	**99.3** (12.4) 85-137	**100.0** (13.1) 85-135	**100.0** (14.1) 85-137
	5 n=192-288	**97.1** (12.3) 85-142	**98.1** (12.8) 85-139	**96.0** (12.1) 85-135	**97.5** (13.0) 85-135
	Significant group differences[c]	NS	NS	1,5<4	1<3,4

[a] 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.
[b] Indicates standardized, norm-referenced measure with mean=100, SD=15.
[c] Significance levels indicate results of post-hoc comparisons of the parameter estimates for each English proficiency level category based on longitudinal growth model estimations.

Figure 20: Growth in Receptive Language Skills (PPVT-III) by English Proficiency (Cohorts 1 and 2)

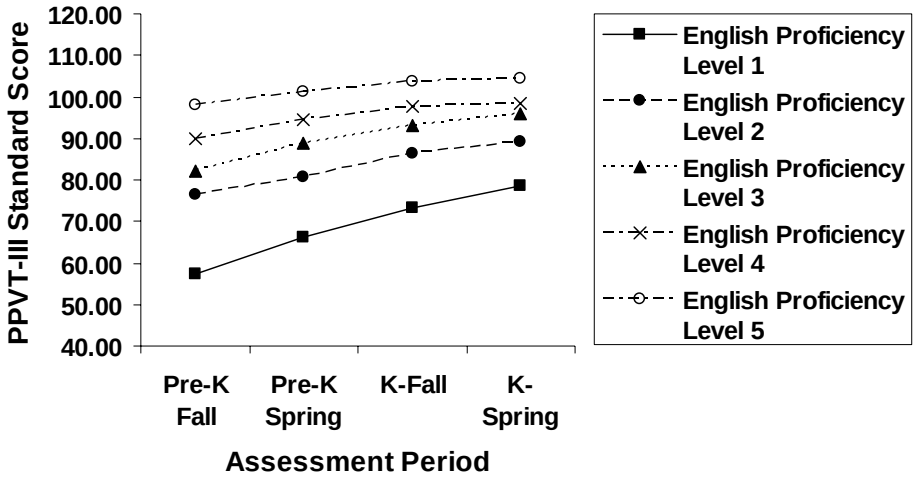


Figure 21: Growth in Letter Knowledge (Naming Letters Task) by English Proficiency (Cohorts 1 and 2)

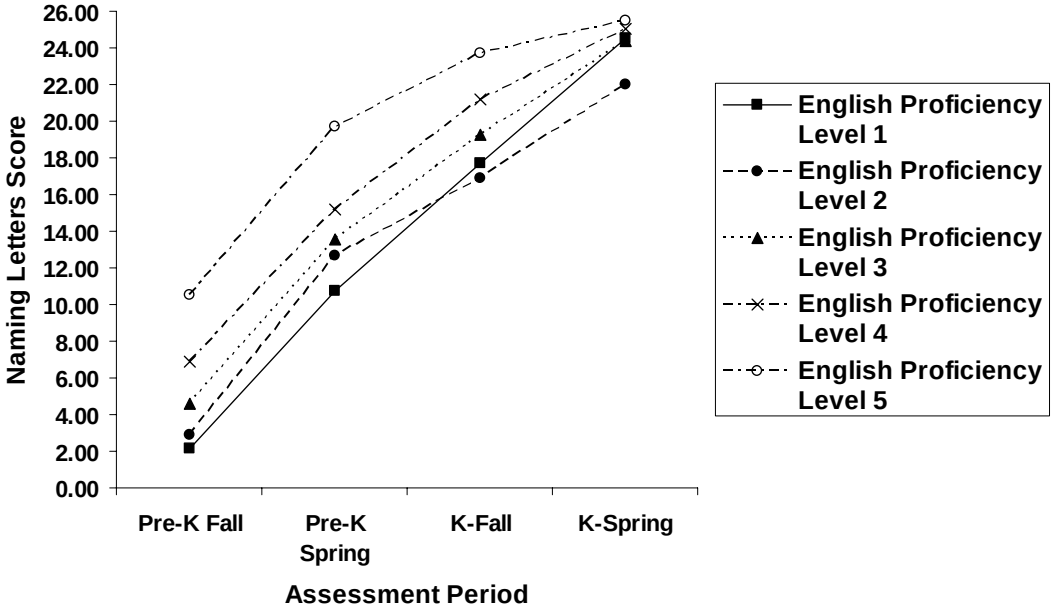


Figure 22: Growth in Math Skills (WJ-III Applied Problems) by English Proficiency (Cohorts 1 and 2)

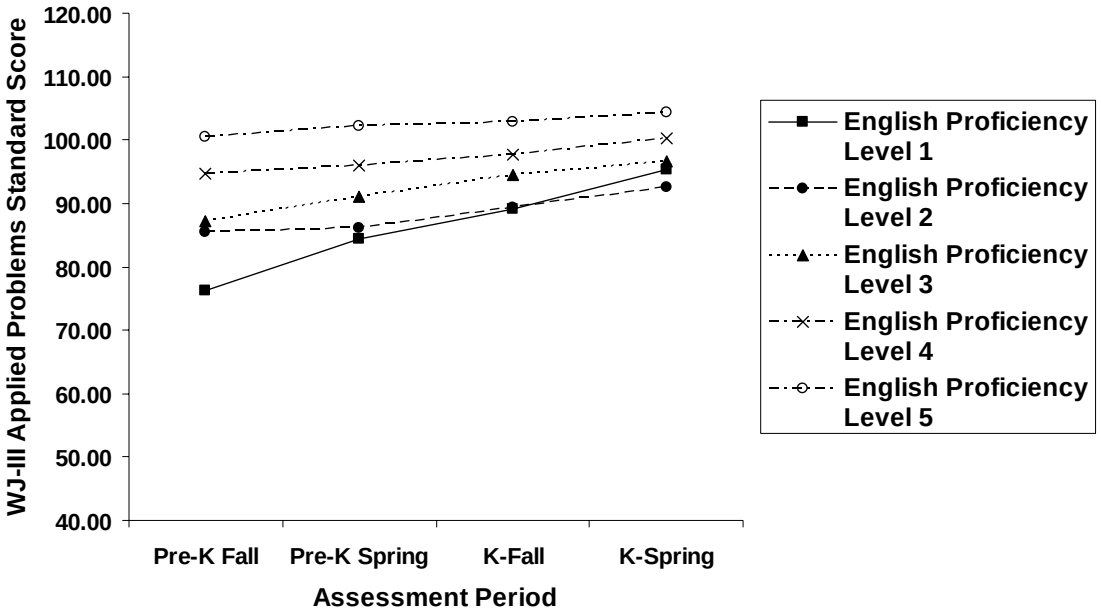


Figure 23: Growth in Counting Skills (Counting Task) by English Proficiency (Cohorts 1 and 2)

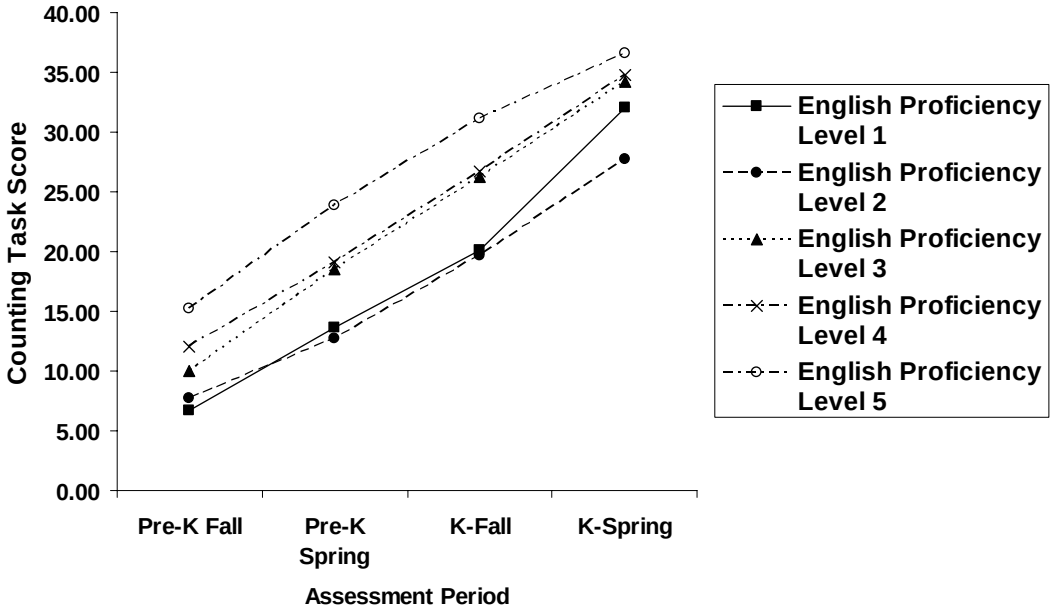


Figure 24: Growth in Social Knowledge (Social Awareness Task) by English Proficiency (Cohorts 1 and 2)

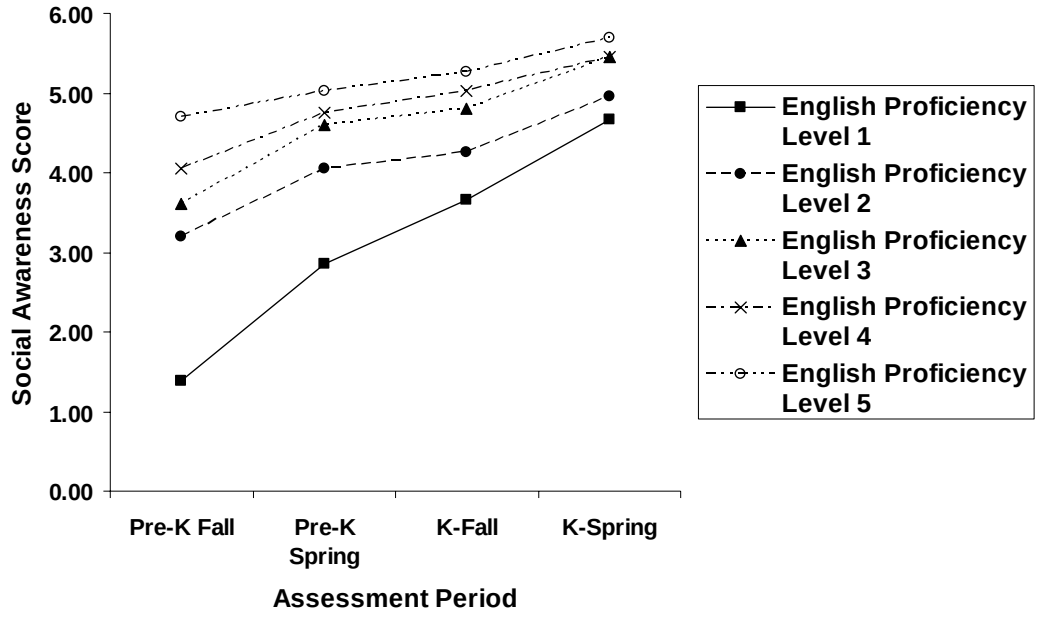


Figure 25: Growth in Color Knowledge (Color Naming Task) by English Proficiency (Cohorts 1 and 2)

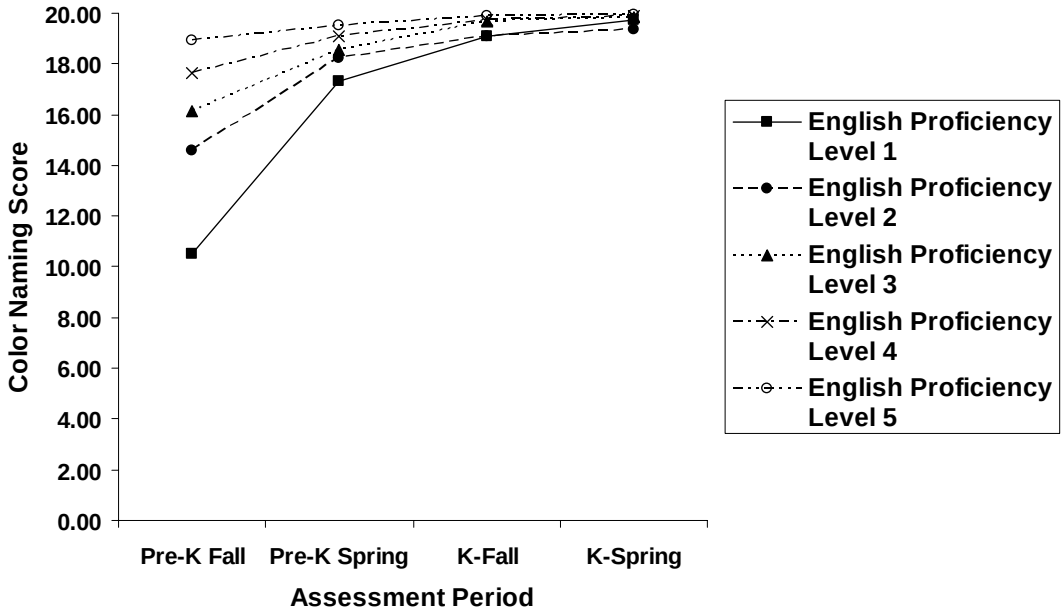


Figure 26: Growth in Social Skills (SSRS) by English Proficiency (Cohorts 1 and 2)

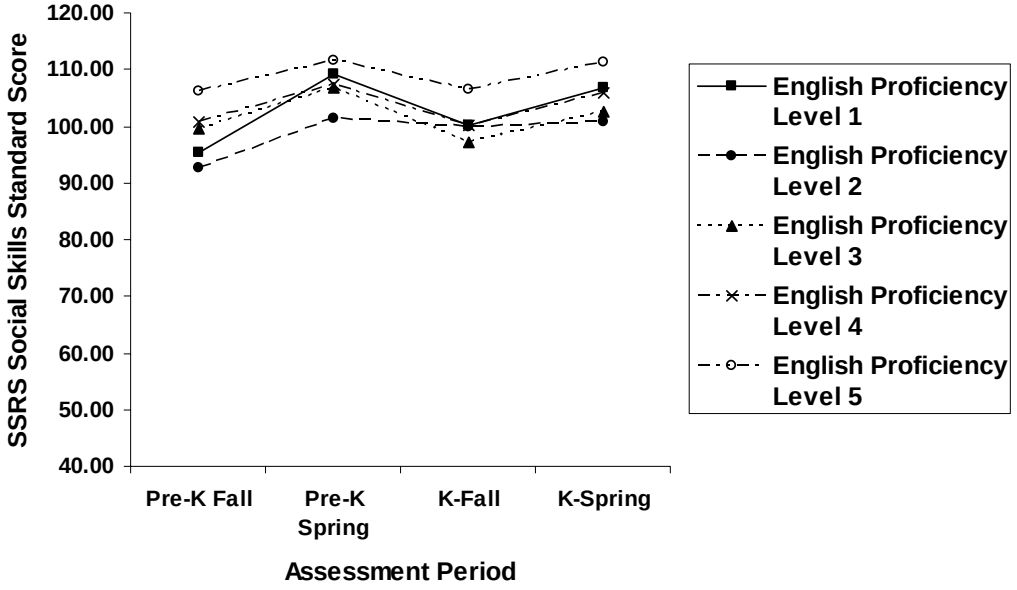


Figure 27: Growth in Problem Behaviors (SRSS) by English Proficiency (Cohorts 1 and 2)

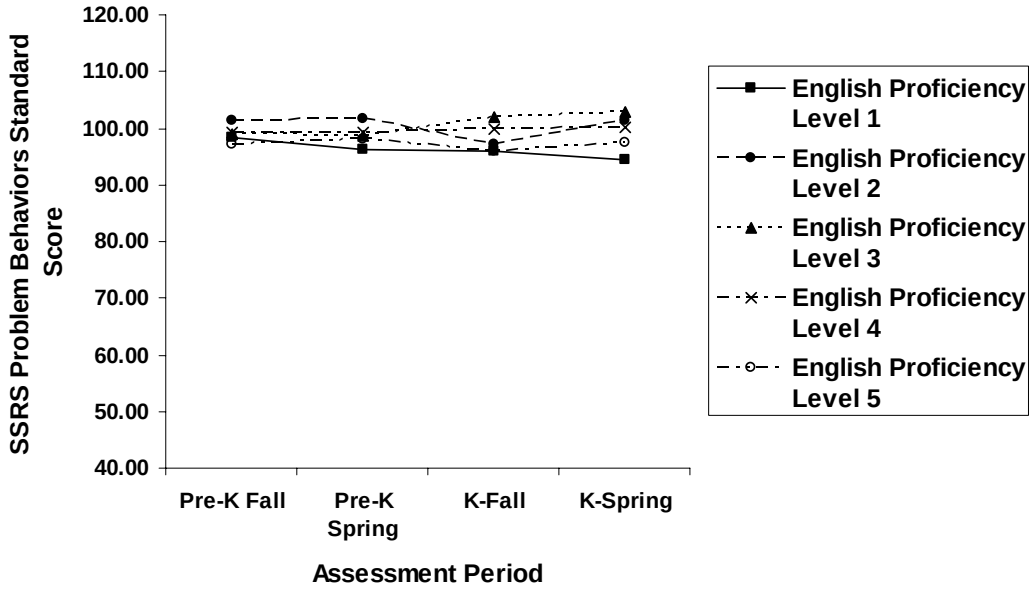


Figure 28: Growth in Phonological Awareness (WJ-III Rhyming) by English Proficiency (Cohorts 1 and 2)

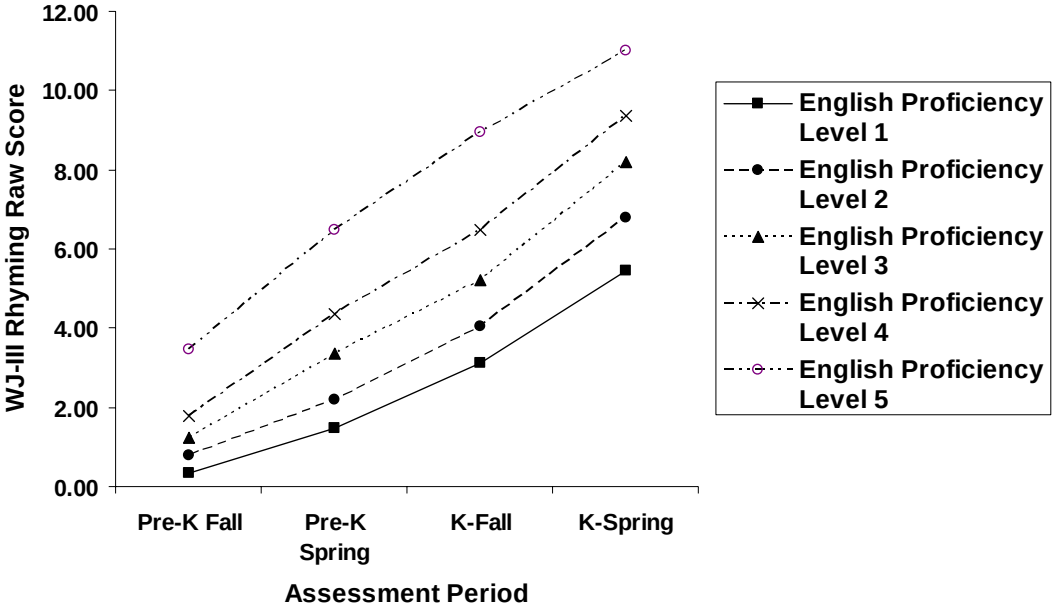


Figure 29: Growth in Literacy Skills (Story and Print Concepts) by English Proficiency (Cohorts 1 and 2)

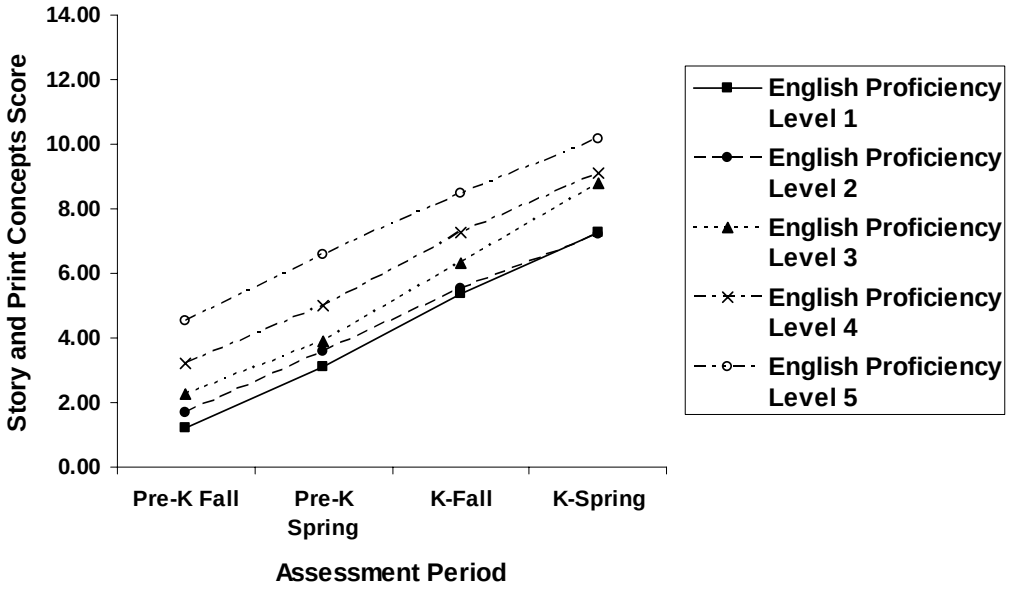


Table 20: Child Outcome Scores for Children with English and Spanish Assessments (Cohort 2)

Domain	Outcome	English				Total Growth[a,b]	Spanish				Total Growth[a, b]
		Pre-K 2005-2006		K 2006-2007			Pre-K 2005-2006		K 2006-2007		
		Fall n=74-120	Spring[a,c] n=89-108	Fall n=76-94	Spring[a,c] n=78-93		Fall n=114-120	Spring[a,c] n=101-106	Fall n=91-92	Spring[a,c] n=91	
		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	Receptive Language (PPVT-III/ TVIP[d])	55.3 (14.5) 23-88	66.1*** (16.6) 32-107	72.2 (15.0) 32-105	78.3*** (13.6) 36-108	***	79.9 (14.8) 58-129	79.6 NS (16.0) 55-122	81.4 (18.5) 55-113	84.7* (18.8) 55-125	NS
	Rhyming (WJ-III/ Batería[e])	0.4 (0.9) 0-7	1.8*** (2.3) 0-12	3.5 (3.1) 0-17	6.0*** (4.0) 1-15	***	.75 (1.1) 0-7	1.2NS (2.0) 0-14	1.7 (2.2) 0-10	4.0*** (3.3) 0-12	***
	Story and Print Concepts[f]	1.2 (1.4) 0-6	3.4*** (2.2) 0-9	5.7 (2.4) 1-11	7.5*** (2.4) 2-13	***	2.6 (2.0) 0-9	4.3*** (2.4) 0-10	5.8 (2.4) 0-10	7.1*** (2.2) 0-14	***
	Naming Letters[g]	1.0 (2.8) 0-22	5.9*** (8.5) 0-26	10.0 (10.0) 0-26	15.7*** (11.0) 0-26	***	0.6 (1.7) 0-13	1.2 NS (2.9) 0-20	2.9 (5.0) 0-23	6.5*** (8.1) 0-26	***

[a] *p < .05, **p < .01, ***p <.001, NS=nonsignificant.
[b] Significance levels indicate results of t-tests of the parameter estimates for the adjusted gains over time based on longitudinal growth model estimations.
[c] Significance levels indicate results of t-tests of the parameter estimates for the adjusted gains from fall to spring over the program year based on longitudinal growth model estimations.
[d] Indicates standardized, norm-referenced measure with mean=100, SD=15.
[e] Possible range=0-17.
[f] Possible range=0-14.
[g] Possible range=0-26.

Table 20: Child Outcome Scores for Children with English and Spanish Assessments (Cohort 2)

Domain	Outcome	English				Total Growth[a,b]	Spanish				Total Growth[a, b]
		Pre-K 2005-2006		K 2006-2007			Pre-K 2005-2006		K 2006-2007		
		Fall n=74-120	Spring[a,c] n=89-108	Fall n=76-94	Spring[a,c] n=78-93		Fall n=114-120	Spring[a,c] n=101-106	Fall n=91-92	Spring[a,c] n=91	
		Mean (SD) Range	Mean (SD) Range	Mean (SD) Range	Mean (SD) Range		Mean (SD) Range	Mean (SD) Range	Mean (SD) Range	Mean (SD) Range	
Math	Applied Problems (WJ-III/ Batería[d])	77.8 (15.5) 47-115	86.5*** (14.9) 51-116	91.0 (11.3) 66-123	97.2*** (11.4) 69-131	***	80.1 (15.6) 39-109	84.0[NS] (15.8) 38-115	85.5 (12.8) 50-111	90.0[NS] (11.7) 57-118	***
	Counting Task[e]	6.8 (4.5) 0-22	14.1*** (8.2) 2-40	20.3 (11.4) 3-40	34.4*** (9.6) 6-40	***	4.2 (3.8) 0-19	7.7* (5.3) 0-29	10.5 (6.9) 0-39	14.5*** (9.5) 3-40	***
General Knowledge	Social Awareness[f]	1.4 (1.1) 0-5	2.8*** (1.4) 1-6	3.6 (1.4) 0-6	4.7*** (1.2) 2-6	***	2.6 (1.3) 0-6	3.0* (1.4) 0-6	3.4 (1.2) 1-6	3.8[NS] (1.2) 1-6	***
	Color Knowledge[g]	10.9 (6.7) 0-20	17.4*** (4.4) 1-20	19.0 (2.5) 6-20	19.7[NS] (1.1) 11-20	***	7.0 (5.5) 0-20	9.3** (5.5) 0-20	12.0 (6.3) 0-20	14.2** (5.7) 0-20	***

[a] *p < .05, **p < .01, ***p <.001, NS=nonsignificant.
[b] Significance levels indicate results of t-tests of the parameter estimates for the adjusted gains over time based on longitudinal growth model estimations.
[c] Significance levels indicate results of t-tests of the parameter estimates for the adjusted gains from fall to spring over the program year based on longitudinal growth model estimations.
[d] Indicates standardized, norm-referenced measure with mean=100, SD=15.
[e] Possible range=0-40.
[f] Possible range=0-6.
[g] Possible range=0-20.

Table 21: Associations of Growth on English Assessments with Initial Skills and Growth on Spanish Assessments (Cohort 2)

Domain	Assessment	Association with English Growth[ab]	
		Initial Spanish Skill Level[c]	Spanish Growth[d]
Language and Literacy	Receptive Language	NS	NS
	Rhyming	NS	***
	Story and Print Concepts	***	NS
	Naming Letters	*	***
Math	Applied Problems	***	NS
	Counting Task	***	*
General Knowledge	Social Awareness	**	NS
	Color Knowledge	*	NS

[a] *p < .05, **p < .01, ***p <.001, NS=nonsignificant.
[b] Represents total growth over time from fall pre-k through spring kindergarten on English assessments.
[c] Represents fall pre-k scores on Spanish assessments. Significance levels indicate results of t-tests of the parameter estimates for Spanish fall pre-k scores based on longitudinal growth model estimations.
[d] Represents growth during pre-k from fall to spring on Spanish assessments. Significance levels indicate results of t-tests of the parameter estimates for slope of Spanish growth based on longitudinal growth model estimations.

Summary and Discussion

Program Characteristics

The characteristics of the More at Four Program have remained fairly consistent over the past four years, even as it has almost doubled from under 11,000 children to over 20,000 children served each year. Although the program has continued to scale up, many of the basic characteristics have not changed, in line with the program guidelines. Classrooms have continued to serve a median of 18 children, with most of those funded by More at Four. The majority of children served by the program have been in the targeted group of those unserved at the time of enrollment, including more than half who had never been served in a pre-k program. Most children are eligible for free or reduced-price lunch (about 90% each year), with a substantial proportion possessing other risk factors, including limited English proficiency, developmental/educational need, an identified disability, and/or a chronic health condition. Children are served in a variety of settings, including about half in public school sites and half in private sites. Nearly all of the classrooms report using one of the recommended curricula. One area that has shown a positive change is the qualifications of teachers, with slight increases over time in the education level of lead teachers and the percentage with a B-K license or the equivalent, although more of the improvement is attributable to those in public school settings than community settings.

Classroom Quality

In looking at the quality of the More at Four pre-K program, based on independent ratings of classroom practices over time using the ECERS-R, there was a slight decrease in quality from the 2003-2004 sample to the 2005-2006 sample, as noted in the last report[4]. As indicated previously, it will be important to continue to examine this over time to determine whether or not it is an indication of reduced quality in conjunction with continued scaling up of the program. We followed children from each of these cohorts into kindergarten and observed the quality of kindergarten classroom practices as well. There is less explanation for the similar decline between cohorts in kindergarten classroom quality scores since the statewide kindergarten program has been in existence for decades and there were no substantial program changes during that time that would be likely to lead to such a difference. This decline for the second cohort of children compared to the first may suggest some evidence of a difference in the samples for the two cohorts that is reflected in both pre-k and kindergarten quality. Across both cohorts, however, quality was significantly higher in the pre-k classrooms than the kindergarten classrooms. One factor that was associated with higher quality classroom practices in both pre-k and kindergarten was smaller class sizes.

Other aspects of classroom quality were examined for the second cohort, including the literacy environment and the sensitivity of teacher-child interactions. Pre-k classrooms tended to have higher quality literacy environments than kindergarten classrooms, although there were no differences in the frequency of literacy activities. Further, teachers with B-K licenses (or the equivalent) had classrooms with higher quality literacy environments in both pre-k and kindergarten. Teacher-child interactions in pre-k classrooms also tended to be more sensitive than those in kindergarten classrooms. Two unique characteristics (compared to pre-k) that were acknowledged for kindergarten classrooms were the use of instructional practices designed for elementary school settings and the use of specials, with data gathered on both. The scores for

instructional practices in kindergarten were generally in the medium range, indicating that they were slightly above the minimal implementation of developmentally appropriate practices but were still well below the good range. All of the classrooms observed utilized specials, with an average of nearly 5 per week for an average of nearly 3 hours per week. There was little association between use of specials and observed classroom quality scores, suggesting that specials are not substituting for similar activities in the classroom nor are regular activities within the classroom being enhanced in the absence of specials. Although we were not able to systematically observe the quality of specials, they clearly provide additional opportunities for children's skill development in particular areas.

Child Outcomes

We examined children's longitudinal development over both the More at Four and kindergarten years to determine the extent to which participation in the pre-k program was associated with sustained patterns of growth over time, after adjusting for other relevant factors (e.g., children's age at entry, attendance, gender, risk level, English proficiency level, and classroom quality). Children made substantial gains over this time, during both the pre-k and the kindergarten years, across all domains: Language and literacy skills (receptive language, rhyming, story concepts, letter naming), math skills (applied problems, counting), general knowledge (social awareness, color knowledge), and behavioral skills (social skills). For some of these skills with age-standardized measures (receptive language, applied math problems, social skills), their scores indicated that children progressed at an even greater rate than would be expected for normal developmental growth. The one area that showed no changes was problem behaviors, which remained just below the average expected score for children in these age ranges (i.e., slightly fewer problem behaviors than expected). For many of these skills, children made greater gains in pre-k than kindergarten. For a few of these measures (social awareness and color knowledge), children had mastered these skills (scoring close to the maximum) by the end of pre-k or beginning of kindergarten, which limited the possible room for growth in kindergarten. For other measures, these results suggest that children's earlier experiences in pre-k may have provided an initial exposure to information that offered a more rapid period of growth, which then slowed slightly in kindergarten.

We also examined the growth on both Spanish and English measures for a subsample of Spanish-speaking children, to explore the extent to which their progress is similar or different across languages. In general, these children showed growth on all English skills and most Spanish skills (except receptive language) over this period. Children made similar amounts of gain during pre-k and kindergarten on most measures, although they exhibited greater growth in pre-k on some more basic skills (social awareness and color knowledge). For such skills that children master more quickly—story concepts, social awareness, color knowledge—growth in English was related to children's initial skill levels in Spanish at entry into pre-k, but not growth in Spanish. In contrast, children's growth on two of the more specific academic skills in English (letter knowledge, counting) was associated with both initial skill levels and growth rates in Spanish. Growth in phonological awareness in English, a skill requiring an even higher developmental level to master, was associated with growth in the same skill in Spanish, but not with the initial skill level in Spanish, given the low variation and generally low initial skill levels among children. These differences in associations of growth during pre-k and kindergarten with initial skill levels versus growth in another language may reflect differences in the general difficulty of the tasks which are further highlighted for children who are attempting to learn

bilingually. Children may first master easier skills in both languages, and then move to learning more difficult tasks during pre-k and kindergarten as they are ready. For simpler tasks, children entering pre-k at a higher level of knowledge in one language are able to more quickly develop skills in a second language. As the tasks become more difficult developmentally, skill growth in the home language becomes a stronger predictor of their growth in a second language. These findings speak to the importance of promoting children's native language skills in conjunction with their growth in English skills. Interestingly, growth in English receptive language was not related to Spanish receptive language skills (either initial level or growth) nor was there significant growth in Spanish receptive language, which may reflect the emphasis on English for all children once they enter the pre-k program and as they continue into kindergarten.

Factors Associated with Differences in Child Outcomes

In general, the quality of the pre-k program was not strongly related to children's outcomes over time, with no clear pattern of effects. The quality of the More at Four classrooms was generally high, which reduces the variability and the likelihood of finding differences in the effects on children. Further, children had varied experiences in kindergarten unrelated to their experiences in pre-k, which may have made it more difficult to find associations over time. The differences in ratings of children's social skills during pre-k, with children in higher quality classrooms making greater progress, may reflect differences in teacher knowledge and expectations in higher versus lower quality classrooms. The other differences that were found, less progress on letter knowledge in pre-k and less growth on rhyming in kindergarten, could represent a less direct focus on such skills in higher quality classrooms.

In looking at the effects of children's cumulative risk factor levels, not surprisingly, children at greater risk, especially those in the highest risk category, entered More at Four with lower scores and continued to score lower in most language and cognitive skills, but not in behavioral skills. However, these children made greater gains from pre-k through kindergarten in many key school readiness and early academic skills (receptive language, letter knowledge, applied math skills, counting, social awareness, color knowledge). Even though these higher-risk children were entering pre-k at a deficit, they were gaining at a similar or even greater rate, and in some cases, even catching up to other children (e.g., letter knowledge, color knowledge). The one exception was phonological awareness, a higher-order pre-reading skill, where higher-risk children gained at a slower rate than those at lower risk.

A similar pattern was found for children with lower levels of English proficiency, where they scored lower at entry into pre-k in most areas except problem behaviors. However, children with less English proficiency also exhibited greater rates of growth in most areas (receptive language, letter knowledge, applied math skills, counting, social awareness, color knowledge, social skills). In contrast, children with higher proficiency levels exhibited greater growth in some language/literacy skills (phonological awareness, literacy concepts), perhaps reflecting the higher level of linguistic knowledge needed in order to master these types of skills. In the case of phonological awareness, the findings were similar to those for risk levels, where children at the highest proficiency level made the greatest progress. For literacy concepts, children at the higher end of limited English proficiency gained at the most rapid rate (although still performing at a lower level than more proficient children), suggesting that reaching a certain level of linguistic competence in English was beneficial to learning these particular skills.

Conclusions

In sum, evaluation results continue to indicate that even as the More at Four Program has expanded substantially each year it has maintained the provision of services in accord with the program guidelines. Moreover, the program has continued to serve a high-risk and unserved population of children who are likely to benefit from such an intervention. Consistent with program goals and past evaluation findings, children exhibited substantial developmental growth from pre-k through kindergarten across multiple skill areas—language/literacy, math, general cognitive knowledge, and social skills. These findings are consistent with a number of other large-scale studies that have found that pre-k participation was associated with sustained gains in language/literacy, math, and social skills as well as greater gains for children at greater risk.[31,32,33,34,35,36] For Spanish-speaking children, growth occurred for skills assessed in both English and Spanish, with higher skill levels and growth in their home language associated with greater growth in skills in English. While children at greatest risk (those with higher cumulative risk levels and those with less proficiency in English) made similar or even greater gains over time to other children, they entered the program with lower skill levels and still had not caught up to their peers in many areas by the end of kindergarten. Although the quality of the pre-k classrooms was significantly higher than the kindergarten classrooms, most children exhibited continued growth throughout this time period. These results suggest that the pre-k experiences provided in More at Four helped prepare these at-risk children for school and enabled them to continue to progress, often at a greater than expected rate, in kindergarten. Given the implications of the impact of early school success on children's continued positive trajectories[37], these findings suggest that experiences such as those provided in the More at Four Program may offer an important and ameliorative experience for children who otherwise may not have such opportunities during the pre-k year.

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