Children's Kindergarten Outcomes and Program Quality in the North Carolina Pre-Kindergarten Program

2013-2014 Statewide Evaluation

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Purpose of the NC Pre-Kindergarten Evaluation Study

The purpose of the 2013–2014 North Carolina Pre-Kindergarten (NC Pre-K) Evaluation study was to conduct a longitudinal follow-up study of children who attended the pre-k program to examine their outcomes through kindergarten. In addition, the characteristics and quality of the NC Pre-K Program during 2013–2014 were examined, along with comparisons to previous years. Since the inception of the statewide pre-k program in North Carolina in 2001–2002, the evaluation has been conducted by the FPG Child Development Institute at the University of North Carolina-Chapel Hill. See Table 1 for a list of previous reports for further information about prior years, including studies of classroom quality and longitudinal and comparison studies of children's outcomes.

The primary research questions addressed by this evaluation included: What are the longitudinal outcomes through kindergarten of children who attended NC Pre-K and What factors were associated with better outcomes? Secondarily, the evaluation also addressed: What were the key site, classroom, teacher, and child characteristics of the local programs? and What was the quality of a sample of NC Pre-K classrooms?

To address these questions, information was gathered from multiple sources, including individual assessments of children's outcomes, teacher and parent surveys, monthly service reports, and observations of classroom quality. A sample of 561 children was included in the study, with data gathered at the beginning and end of NC Pre-K (2012–2013) and kindergarten (2013–2014). Researchers conducted individual assessments to examine growth in language, literacy, math, and general knowledge skills, and gathered teacher ratings of behavior skills. For 119 Spanish-speaking dual language learners (DLLs) in the sample, skills were measured in both English and Spanish using parallel measures. Information from children's pre-k year about child characteristics and observations of classroom quality were examined as potential moderators of their growth in skills. Information about characteristics of the local NC Pre-K Program settings and the children served was obtained from the statewide monthly service report data. Observations conducted in a sample of 374 NC Pre-K classrooms as part of the NC rated license assessments provided information about the quality of classroom practices in the 2013–2014 program year, and teacher and classroom characteristics from the statewide database were examined as predictors of quality.

Overview of the NC Pre-Kindergarten Program

NC Pre-K is a state-funded educational program for eligible 4-year-olds, designed to enhance their school readiness skills. Initiated in the 2001–2002 school year, the program became statewide by the 2003–2004 school year[a]. Since its inception, the statewide pre-k program has served over 292,000 children. According to program guidelines[i], children are eligible for NC Pre-K primarily based on age and family income. Children must be four years old by August 31 of the program year, with a gross family income of no more than 75% of state median income. Within a given program, up to 20% of age-eligible children with higher family incomes may be enrolled if the child has at least one of the following additional factors: limited English proficiency, identified disability, chronic health condition, or educational need as indicated by results from developmental screening. In addition, children with a parent actively serving in the military are eligible regardless of family income or other eligibility factors[b]. NC Pre-K provides funding for serving eligible children in classroom-based educational programs in a variety of setting types, including public schools, Head Start, and private child care centers (both for-profit and nonprofit).

The requirements for NC Pre-K are designed to provide a high-quality, classroom-based educational experience for children, and to ensure uniformity in the program across the state, to the extent possible. The NC Pre-K Program operates on a school day and school calendar basis for 6-1/2 hours/day and 180 days/year. Local sites are expected to meet a variety of program standards around curriculum, screening and assessment, training and education levels for teachers and administrators, class size, adult:child ratios, North Carolina child care licensing levels, and provision of other program services.[i] Class sizes are restricted to 18 children with a lead and assistant teacher, with adult:child ratios of 1:9. Lead teachers are required to hold or be working toward a NC Birth through Kindergarten (B-K) license or the equivalent and assistant teachers are required to hold or be working toward an Associate Degree in early childhood education or child development (ECE/CD) or a Child Development Associate (CDA) credential. Classroom activities and instruction are based on the state early learning standards[ii] and an approved curriculum; classroom staff are expected to conduct developmental screenings and ongoing assessments to gather information on individual children's growth and skill development as well as to inform instruction. Monthly reimbursement rates by the NC Pre-K Program vary by the type of classroom and teacher qualifications, ranging from up to $400 per child (in Head Start sites) to a maximum of $650 (private sites with a B-K-licensed lead teacher), with an approximate average annual cost per child of $5,000.[iii]

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[a] In 2011, the North Carolina General Assembly transferred the existing state pre-k program from the Department of Public Instruction (DPI) to the Division of Child Development and Early Education (DCDEE) in the North Carolina Department of Health and Human Services (DHHS) and renamed it from the More at Four Pre-Kindergarten Program to the North Carolina Pre-Kindergarten Program.

[b] This eligibility factor was added to the program guidelines in 2007–2008.

Methods

Child Outcomes

Participants

The study included a sample of children who were followed from the beginning of pre-k through the end of kindergarten. These children initially attended 99 randomly-selected NC Pre-K classrooms in the 2012–2013 program year and 340 kindergarten classrooms in 2013–2014. The sample included 561 children in year 1 (pre-k) and 437 children in year 2 (kindergarten). In addition, the sample included Spanish-speaking dual language learners (DLL subsample)—119 children in year 1 (pre-k) and 83 children in year 2 (kindergarten). Parent permission forms were distributed to all children who were participating in NC Pre-K in each randomly-selected classroom, with an overall permission rate of 78% (1,023/1,319). Approximately 5–6 children with parent permission were randomly selected from each pre-k classroom for the study in year 1 (for further details about the original sampling plan for the study, see the 2012–2013 NC Pre-K Program evaluation report[iv]). Children were excluded from year 2 of the study for the following reasons: had not enrolled in kindergarten (n=2), had moved out of state (n=39), the school district or school was unwilling to participate (n=18), parent declined to continue participation in year 2 (n=10), the research team was unable to schedule an assessment (n=4), or the research team was not able to locate the child in a school during kindergarten (n=51).

In addition, longitudinal data gathered from three previous cohorts of children during pre-k and kindergarten were compared to the current sample (Cohort 4: 2012–2014) to examine whether there were any changes over time in children's outcomes. A similar set of sampling procedures was used for previous cohorts as for the most recent cohort, where a random sample of classrooms was selected from the statewide pre-k program and children were selected from within those classrooms and followed longitudinally [Cohort 1 (2003–2004/2004–2005) classroom n=99, child n=514 pre-k, 348 K; Cohort 2 (2005–2006/2006–2007) classroom n=57, child n=478 pre-k, 401 K; Cohort 3 (2007–2008/2008–2009), classroom n=50, child n=321 pre-k, 281 K)].

The NC Pre-K classrooms attended by children in the study sample included public school (59%), private (22%), and Head Start (19%) settings. The average class size was about 16 children, with about 84% of those being NC Pre-K children. Most (86%) of the teachers had a bachelor's degree and 14% had a master's degree; most (84%) also had a B-K license. (See Table 2.) Teachers reported an average of 14 years of teaching experience (M=14.0, SD=9.0). On average, teachers reported that about 80% of the children spoke mostly English as a home language, 18% spoke mostly Spanish or Spanish and English, and 2% spoke other languages.

The kindergarten classrooms attended by children in the sample were located in public school settings. The average class size was about 20 children (M=20.0, SD=2.6). About two-thirds (69%) of the teachers had a bachelor's degree and almost one-third (32%) had a master's degree; less

than one-third (29%) reported having a B-K license or the equivalent. Teachers reported an average of 15 years of teaching experience (M=15.0, SD=9.4). On average, teachers reported that about 85% of the children spoke mostly English as a home language, 14% spoke mostly Spanish, and 2% spoke other or a combination of languages.

The children in the sample in year 1 were about half boys (54%) and half girls (47%); from varied racial backgrounds, including about half (55%) White, about one-third African-American (30%), and the remainder from other or multiracial backgrounds (16%); almost one-quarter (23%) of these children were of Latino ethnicity. Almost half of the children's mothers (43%) and almost half of the fathers (45%) were employed. About 65% of the children had never previously been served in a pre-k setting—a high priority service group for the NC Pre-K Program. Most (91%) of these children qualified for free or reduced price lunch, and varying proportions had other eligibility risk factors. Examination of the year 2 sample suggests that there was little change in these characteristics. (See Tables 3, 4, 5, and 6.)

Based on individual assessments of English language proficiency at the beginning of year 1 for the full sample (see measures below), 17% (n=93) were categorized as non-English speakers, 26% (n=144) were limited English speakers, and 58% (n=322) were fluent English speakers. For the Spanish-speaking DLL subsample, 59% (n=68) were categorized as non-English speakers, 26% (n=30) were limited English speakers, and 16% (n=18) were fluent English speakers. In terms of Spanish language proficiency assessments for the DLL subsample, 22% (n=26) were categorized as non-Spanish speakers, 28% (n=33) were limited Spanish speakers, and 50% (n=58) were fluent Spanish speakers. (See Table 7.)

Analyses were conducted to compare the characteristics of children included in year 1 of the study to those not in the sample but participating in the NC Pre-K Program at the same time to examine the representativeness of the sample (see Analysis Approach section for further details). Overall, children in the sample were not significantly different from children who were not in the sample on most characteristics. There were no differences between the groups in children's age, proportion by gender, or ethnicity; the proportion of employed mothers and fathers; or in program eligibility factors, including the proportion of children who were eligible for free lunch, had limited English proficiency, had an educational need, had an IEP, had a chronic health condition, or had a parent in the military. However, there were some modest differences between sample and non-sample children on a few characteristics. The proportion of White/European-American children was slightly higher for sample than non-sample children, whereas the proportion of Black/African-American children was slightly lower [$\chi^2(1)=12.85$, $p<.001$]; the proportion of children who had never previously been served was slightly higher and the proportion of children who had previously been served (including those who were currently unserved at the time of enrollment or were in other care) was slightly lower for sample than non-sample children [$\chi^2(1)=6.02$, $p<.05$]; and the average days of attendance per child was higher for sample than non-sample children [$t(32,140)=-11.28$, $p<.001$]. (See Tables 3 and 4.)

A second set of analyses was conducted to compare the pre-k characteristics of children who remained in the study during year 2 to all other children who participated in NC Pre-K at the same time (see Analysis Approach section for further details). These analyses allowed us to determine whether study attrition caused any further differences in sample representativeness between year 1 and year 2. These results were similar to the results from the year 1 sample. The two groups were similar on most characteristics, including children's age, proportion by gender and ethnicity; the proportion of employed mothers and fathers; service priority status; and program eligibility factors, including the proportion of children who were eligible for free lunch, had limited English proficiency, had an educational need, had an IEP, and had a chronic health condition. The two groups exhibited differences in race, attendance, and parent military service. The proportion of White/European children in the sample was slightly higher [$\chi^2(1)= 4.90$, $p <.05$] and the proportion of Black/African-American children in the sample was somewhat lower than the non-sample children [$\chi^2(1)= 9.42$, $p <.01$]. The average days of attendance per child was higher for sample than non-sample children [$t(32,140)=-12.05$, $p <.001$]. In addition, there was a somewhat lower proportion of children in military families in the sample than not in the sample [$\chi^2(1)=9.9$, $p <.05$]. (See Tables 5 and 6.)

A third set of analyses compared the characteristics of the NC Pre-K classrooms selected for the evaluation sample (i.e., those attended by children in year 1) with those not in the sample to examine the representativeness of the random sample of classrooms. In general, sample classrooms were not significantly different from those not in the sample. There were no differences between the two groups in teacher education and credential levels, the percentage of NC Pre-K children, or the distribution of setting types. The average class size, however, was slightly larger for sample classrooms compared to non-sample classrooms [$t(2,148) = 2.14$, $p<.05$]. (See Table 2.)

Measures and Procedures

Individual assessments to measure children's growth in skills were conducted in their pre-k and kindergarten settings. Children were assessed at four time points: 1) fall pre-k (10/19/12–12/19/12); 2) spring pre-k (4/22/13–5/31/13); 3) fall kindergarten (10/3/13–2/26/14); and 4) spring kindergarten (4/22/14–6/10/14). Assessments were conducted by trained data collectors, and children's verbal assent was obtained prior to the assessment. Children who were reported by their parents or teachers to speak Spanish received a second set of parallel assessments using Spanish language versions of these measures. The Spanish assessments were conducted by a different, bilingual data collector on a separate day, an average of 18 days after the English assessments. In addition, parents completed demographic surveys and both pre-K and kindergarten teachers completed online surveys that included information about their classrooms and demographic information. Existing data from observations of classroom quality conducted in the children's pre-k classrooms were used, along with child and classroom data from the statewide database.

Child Assessments

The child assessment battery consisted of seven measures appropriate for pre-k and kindergarten children across five primary areas – language, literacy, math, general knowledge,

and behavior skills. (See Table 8 for an overview of all measures, including key constructs and scoring).

Language and literacy skills were assessed with four measures. The Receptive One-Word Picture Vocabulary Test, 4th Edition[v] (ROWPVT-4) and the Receptive One-Word Picture Vocabulary Test Spanish-Bilingual Edition[vi] (ROWPVT-SBE) measure children's receptive vocabulary skills (understanding of language). The Expressive One-Word Picture Vocabulary Test, 4th Edition[vii] (EOWPVT-4) and the Expressive One-Word Picture Vocabulary Test Spanish-Bilingual Edition[viii] (EOWPVT-SBE) measure children's expressive vocabulary skills (expression of language). Two subtests from the Woodcock-Johnson III Tests of Achievement[ix] (WJ Ach) and the Batería III Woodcock-Muñoz Pruebas de Aprovechamiento[x] (WM Apr) also were used. The Letter-Word Identification subtest measures basic pre-reading and reading skills, including letter and word recognition and identification skills. The Sound Awareness-Rhyming subtest measures phonological awareness skills, including rhyming.

Math skills were assessed with two measures. The WJ Ach/WM Apr Applied Problems subtest was used to measure math problem-solving skills including simple comparisons, counting, addition, and subtraction. The Counting Task[xi] , English and Spanish versions, was used to measure children's ability to count in one-to-one correspondence.

General knowledge was assessed with the Social Awareness Task[xii] which measures whether the child knows and is able to communicate basic self-knowledge (full name, age, birthday), with both English and Spanish versions.

Pre-k and kindergarten teachers completed two subscales of the Social Skills Improvement System[xiii] (SSiS) to rate children's behavior skills. The Social Skills subscale rates behaviors that promote positive interactions while discouraging negative interactions. The Problem Behaviors subscale rates commonly occurring and rarer negative behaviors that interfere with social skills development.

The *pre*LAS 2000[xiv] was used to measure oral language proficiency for all children in English and the DLL subsample in Spanish as well. Scores on this measure were used as covariates in the analyses to examine whether differences in children's growth on the various outcome measures was related to their level of language proficiency (1=Non-speaker, 2–3=Limited speaker, 4–5=Fluent speaker).

Pre-K Classroom Quality

Classroom observations were conducted in the random sample of NC Pre-K classrooms attended by children in the evaluation study during the 2012–2013 year to gather information about the quality of classroom practices. Several aspects of classroom quality were examined, including global classroom quality, teacher-child instructional interactions, language and literacy environment, and sensitivity of teacher-child interactions. Global classroom quality was measured using the Early Childhood Environment Rating Scale-Revised[xv] (ECERS-R), an observational rating of 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 seven subscales: Space and furnishings, Personal care routines, Language-reasoning, Activities, Interaction, Program structure, and Parents and staff. Each item is rated on a 7-point scale 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. Scores from 1.0–2.9 are considered low quality, 3.0–4.9 are considered medium quality, and 5.0–7.0 are considered in the good quality range.

The quality of teacher-child instructional interactions was measured using the Classroom Assessment Scoring System[xvi] (CLASS). The CLASS includes ratings on 10 dimensions across three domains—Emotional Support (teachers' abilities to support social and emotional functioning in the classroom), Classroom Organization (classroom processes related to organizing and managing children's behavior, time, and attention), and Instructional Support (ways in which curriculum is implemented to support cognitive and language development). Each dimension is scored on a 7-point scale from low (1–2) to middle (3–5) to high (6–7), with separate scores calculated for each domain based on the average of the dimension scores. In the current study, the domain and dimension scores were used, computed as mean item and mean scores, respectively, ranging from 1.0 to 7.0.

The quality of the literacy environment was measured with the Early Language and Literacy Classroom Observation Pre-K Tool[xvii] (ELLCO). The ELLCO measures the extent to which classrooms provide support for language and literacy development. It includes two main subscales—General Classroom Environment and Language and Literacy—which consist of five sections with 19 items. The General Classroom Environment subscale includes sections on classroom structure and curriculum. The Language and Literacy subscale contains sections on the language environment, books and book reading, and print and early writing. Each item is scored on a 1–5 scale, where 1="deficient," 2="inadequate," 3="basic," 4="strong," and 5="exemplary." Mean item scores for subscales and sections, ranging from 1.0–5.0, were computed for the present study.

The sensitivity of teachers' interactions with children was measured with the Caregiver Interaction Scale[xviii] (CIS). It includes 26 items organized into 4 subscales: Sensitivity (warm interactions), Harshness (criticism and punishment), Detachment (lacking involvement and interest in the children), and Permissiveness (lack of necessary limits on behavior). 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 current study. For the total score, scores on the three negative subscales (Harshness, Detachment, and Permissiveness) were reversed and a total mean item score was calculated whereby higher scores indicated more positive teacher-child interactions.

Observations of classroom quality were conducted during the second half of the program year (2/27/13–5/1/13) on two different days for each classroom; the CLASS and CIS were gathered on

one day and the ECERS-R and ELLCO were gathered on a different day. The measures were gathered in counterbalanced order, with approximately half of the classrooms being observed with the CLASS/CIS on Day 1 and the ECERS-R/ELLCO on Day 2 and half in the reverse order. Each observation typically lasted 3–5 hours. Data collectors were trained to the reliability criterion on each measure prior to gathering data (e.g., 85% agreement). Inter-rater reliability data were collected for 20% of the observations for each measure and intra-class correlations indicated adequate reliability overall, with values ranging from fair (.40-.59) to good (.60-.74) to excellent (.75-1.0)[xix]: ECERS-R Total score=.81; CLASS Emotional Support=.67, Classroom Organization=.51, Instructional Support=.90; ELLCO General Classroom Environment=.71, Language and Literacy=.73; and CIS Total score=.78.

Child and Program Characteristics

Information from the NC Pre-K Plan (Plan) and NC Pre-K Kids (Kids) statewide databases provided data about child and classroom characteristics for the children and classrooms in the evaluation sample. This information provided baseline data from the pre-k year about child demographic characteristics that were examined as moderators of child outcomes, as well as other covariates. Database information included program type (public or private), child attendance, child age, child gender, family income (eligibility for free lunch), and children's status with regard to other risk factors (educational need, chronic health condition, IEP), as well as other information used for descriptive purposes.

Program Characteristics

Statewide Databases

Data on program characteristics from all local NC Pre-K Programs were obtained from two statewide databases of service report data, Plan and Kids. Data from the 2013–2014 program year are the focus of this report, with data from past years of the program since 2003 included for comparison. Data are entered by system users from all local NC Pre-K contracts, each representing a county or multi-county region, with Plan data updated as needed and Kids data entered on a monthly basis. Plan data include hierarchically-linked information about the contracts (agency contact information), sites (site type, licensing star rating, number of classes, and site program service dates), classrooms (curriculum, ongoing assessment tools, developmental screening tools, daily hours of operation, and class size), and teachers (teacher education and licensure/credentials). Kids data include hierarchically-linked information about the sites (operation days and teacher workdays), classrooms (total monthly enrollment and classroom composition—number of NC Pre-K and non-NC Pre-K children), and individual children being served (household composition; service priority placement; race; ethnicity; gender; birth date; parent employment; payment reimbursement rate; attendance; and eligibility factors of family income level, identified disability, limited English proficiency, educational need, chronic health condition, and parent military service). The NC Pre-K Program Evaluation Team downloaded, verified, corrected, and archived data from both systems monthly. The current report includes statewide data from the 2003–2004 through 2013–2014 program years (July 1–June 30), with a focus on the most recent year.

Classroom Quality

Participants

Data on classroom quality were obtained from the North Carolina Rated License Assessment Project (NCRLAP), and represent the observations conducted on the sample of NC Pre-K classrooms in 2013-2014. Observations are required as part of the NC rated license assessment of each site every three years, with classrooms selected at random for observation, including at least one NC Pre-K classroom where applicable. In addition, NC Pre-K classrooms that did not meet the minimum score of 5.0 required by the program guidelines on the assessment the previous year also are included. The NCRLAP sample includes 374 NC Pre-K classrooms.

Measures and Procedures

Global Quality

Observations of classrooms were conducted throughout the program year by data collectors hired and trained by the NCRLAP. Within a site, classrooms were randomly selected to be observed for the rated license assessments; if no NC Pre-K classroom was chosen, an additional observation was conducted within two weeks to assess a randomly-selected NC Pre-K classroom. Observations were scheduled within one-month periods throughout the year, but occurred on an unannounced day. Each observation lasted at least three hours. Inter-rater reliability data were collected for 13 of these observations as part of the overall rated license data collection process, with an average of 92% agreement within one and no reliability scores of less than 86% agreement.

Global classroom quality was measured with the Early Childhood Environment Rating Scale-Revised (ECERS-R)[xv], an observational rating of 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 seven subscales: Space and furnishings, Personal care routines, Language-reasoning, Activities, Interaction, Program structure, and Parents and staff. Each item is rated on a 7-point scale from low to high, where 1="inadequate," 3="minimal," 5="good," and 7="excellent." Total and subscale scores were computed as mean item scores ranging from 1.0 to 7.0, with higher scores indicating better classroom quality. Scores from 1.0–2.9 are considered low quality, 3.0–4.9 are considered medium quality, and 5.0–7.0 are considered in the good quality range. Modified scoring procedures used by NCRLAP differed somewhat from the standard method in the ECERS-R manual: a few additional indicators and one additional item were permitted to be coded as Not Applicable and therefore, excluded from the calculation of item, subscale, and total scores; tables to indicate tallies or times were omitted from the scoresheet; and reminders of indicators with substantial portion of the day requirements were omitted from the scoresheet.

Classroom Characteristics

Information from the Plan and Kids statewide database for each classroom in the NCRLAP sample was used to examine predictors of quality. The database elements used included teacher qualifications (teacher B-K licensure and education level), class size, and child characteristics of the classroom (proportion of NC Pre-K children; proportion of children with limited English proficiency, with an IEP, with a chronic health condition, and with an educational need; proportion of children eligible for free lunch; and proportion of children who had never been previously served).

Analysis Approach

Sample Comparisons

Characteristics of NC Pre-K children and classrooms selected for the evaluation sample were compared with all those not in the evaluation study to investigate the representativeness of the randomly-selected sample. Available data were used from the statewide databases. Classroom-level data included teacher education and credential levels, class size, the percentage of NC Pre-K children in the classroom, and setting type. Child-level data included child demographic variables, parent employment, service priority status, days of program attendance, and child eligibility factors. Analyses were conducted to compare children in the sample and not in the sample in year 1, as well as in year 2 to determine whether attrition impacted sample representativeness. Analyses also were conducted to compare the initial sample of pre-k classrooms these children attended with all other NC Pre-K classrooms to determine the representativeness of the sample classrooms. T-tests were conducted to test 2-level variables and chi-square tests were conducted to test variables with three or more levels. Chi-square tests were only conducted for comparisons with sufficient sample sizes (n>5) in each category.

Child Outcomes

Changes over Time

To investigate whether significant levels of growth occurred in children's outcomes during the pre-k year, a series of hierarchical linear model (HLM) regressions was estimated, with separate models for each outcome measure. The same set of analyses was conducted for the full sample on English outcome measures and the DLL subsample on both English and Spanish outcome measures. Fall and spring scores in pre-k and kindergarten were included as the dependent variables using a repeated measures approach. Children were nested within classrooms, and a time variable (0, 1, 2, 3 for the four time points from fall pre-k to spring kindergarten) was used as the predictor to test children's growth over time. Grade tested whether there were differences in the amount of growth between pre-k and kindergarten (0=pre-k, 1=K). Model 1 included the following covariates, in addition to time and grade: program type (private=0, public=1), time between assessments in months, days of attendance, child's age at the initial fall pre-k assessment, child gender (F=0, M=1), family income (free lunch eligibility: No=0, Yes=1), whether the child had an educational need (as an additional risk factor defined by the program guidelines: No=0, Yes=1), whether the child had an IEP (No=0, Yes=1), whether the child had a

chronic health condition (No=0, Yes=1), and children's English/Spanish language proficiency level (a 1–5 categorical variable based on preLAS scores). English language proficiency scores were included for English outcome measures and Spanish language proficiency scores for Spanish outcome measures. IEP status was excluded from the analysis of the DLL subsample because none of the children in the DLL subsample had an IEP. All continuous model covariates were centered; reference cell coding was used for language proficiency, with level 5 as the reference cell.

In addition, a separate series of HLM analyses were conducted to investigate whether there were changes over time in children's longitudinal outcomes, using the same approach as in model 1 (the educational need variable was excluded because it was not a risk factor used in earlier years of the program and English proficiency was used in all analyses because Spanish proficiency was not available for all years). A variable representing cohort (1–4) was included with cohort 4 coded as the reference cell, along with the time by cohort interaction to test for differences among cohorts in growth rates. Data from the current and three previous cohorts of NC Pre-K/More at Four children were compared where equivalent outcome measures were available [Cohort 1 (2003–2004/2004–2005), Cohort 2 (2005–2006/2006–2007), Cohort 3 (2007–2008/2008–2009), Cohort 4 (2012–2013/2013–2014)]. The child outcome measures available included WJ Ach Letter-Word Identification (Cohorts 3, 4), Sound Awareness (Cohorts 1, 2, 4), and Applied Problems (Cohorts 1–4); Counting Task (Cohorts 1–4); and Social Awareness Task (Cohorts 1–4).

Moderators of Growth

To examine moderators of growth in children's outcomes over the pre-k year, a series of HLM analyses was conducted building on the base model described above, with separate analyses conducted for each outcome measure. A parallel set of analyses was conducted for the full sample on English outcome measures and the DLL subsample on both English and Spanish outcome measures. Fall and spring scores in pre-k and kindergarten were included as the dependent variables using a repeated measures approach. Children were nested within classrooms and a time variable (0, 1, 2, 3 for the four time points from fall pre-k to spring kindergarten) was used as the predictor to model children's growth over time. Two sets of variables, child characteristics and the quality of pre-k classroom practices, were tested as potential moderators of children's growth in skills, after accounting for the covariates in the base model. Child characteristics included child gender, family income (free lunch eligibility), whether the child had an educational need, whether the child had an IEP, whether the child had a chronic health condition, and children's English/Spanish language proficiency level. Model 2 tested the effects of the child characteristics as moderators through interactions with time. These effects were retained in the remaining models 3a–3d, which tested for moderating effects of classroom quality, including the quality scores and their interactions with time (to test for the effects on growth). Separate models were conducted for each of the four measures of quality: the ECERS-R Total score (model 3a); the CLASS Emotional Support, Classroom Organization, and Instructional Support domain scores (model 3b); the ELLCO General Classroom Environment and Language and Literacy scores (model 3c); and the CIS Total score (model 3d).

The tables present all results from model 1, along with results from the additional variables included in each of the subsequent models 2–3d. Full regression results from these models are available upon request.

Program Characteristics and Services

Analyses were conducted to examine changes in key program characteristics over time. Data from the statewide databases for each program year from 2003–2004 (the first year the program was statewide) to 2013–2014 (the current year of the study) were examined. Data from each program year were considered to be independent. The characteristics examined included teacher qualifications (whether teachers had a B-K license or the equivalent, whether teachers had no credential), classroom setting types (public schools, private settings, and Head Start), classroom proportion of NC Pre-K children, and children's service priority status (proportion never served, proportion previously served). Logistic regression models tested differences over time for teacher qualifications, setting types, and children's service priority status, with dichotomous variables created for each of these characteristics. Analysis of variance (ANOVA) models were conducted to test differences between years for the proportion of NC Pre-K children, with continuous variables created for this characteristic.

Classroom Quality

Analyses were conducted to examine whether specific teacher and classroom characteristics predicted the level of classroom quality for the current sample of NC Pre-K classrooms. HLM analyses, clustering teachers within sites, were used to examine associations between the ECERS-R Total score and various teacher and classroom characteristics.

The models included two sets of predictor variables, based on data from the statewide databases: 1) teacher and classroom structural characteristics—lead teacher licensure (B-K license/equivalent or not), lead teacher education (MA/MS or above or not), and total class size; and 2) characteristics of NC Pre-K children in the classroom—proportion of NC Pre-K children in the classroom, proportion with limited English proficiency, proportion with IEPs, proportion with chronic health condition, proportion with educational need, proportion eligible for free lunch, and proportion who had never previously been served. All continuous model covariates were centered before analysis.

Results

Child Outcomes

Children's longitudinal growth in skills from pre-k through kindergarten and factors associated with greater growth were examined for participants in the NC Pre-K Program. The full sample consisted of 561 children, including a subsample of 119 DLLs who were assessed in both English and Spanish. Measures included individual assessments of children's language and literacy skills (receptive and expressive vocabulary, letter-word identification, phonological awareness), math skills (math problem-solving, counting), general knowledge (basic self-knowledge), and behavior skills (social skills, problem behaviors) gathered at the beginning and end of their pre-k and kindergarten years. Additional analyses were conducted that included three cohorts of children who attended the pre-k program in previous years in order to examine whether there were any changes over time in the patterns of results. (See Methods section for further information.)

Full Sample Growth over Time

Children's growth on the various outcomes measures from entry into NC Pre-K through the end of kindergarten was examined. A series of hierarchical linear models (HLM) regression analyses was conducted which adjusted for various child background characteristics and pre-k program type (public or private), and tested for significant changes over time and grade (pre-k vs kindergarten). (See Analysis Approach section for further details.)

Children enrolled in the NC Pre-K Program made significant gains over this time period across all domains of learning. Children showed significant growth (as indicated by the variable time) in language and literacy skills (receptive vocabulary, expressive vocabulary, letter-word identification, phonological awareness), math skills (math problem-solving, counting), general knowledge (basic self-knowledge), and behavior skills (social skills). Their scores were generally in the expected ranges for their age group, with mean scores slightly below the norm at the beginning of pre-k and slightly above the norm by the end of kindergarten for most standardized measures. The only area that exhibited no change was problem behaviors, where children's scores remained consistently around the norm over time. (See Table 9, Table 10 model 1, and Table 11 model 1). Most of these skills were measured using standard scores (receptive vocabulary, expressive vocabulary, letter-word identification, math problem-solving, social skills, problem behaviors). Growth on these measures indicates that children progressed at an even greater rate from the time they entered the NC Pre-K Program through the end of kindergarten than would be expected for normal developmental growth. However, without a comparison group, it is not possible to establish a clear causal link between outcomes and program participation.

In addition, although children made gains over the entire period from the beginning of pre-k through the end of kindergarten, there were some differences in the amount of gains each year.

There was a relatively greater rate of growth during pre-k compared to kindergarten for several skills, including measures of language and literacy skills (letter-word identification, phonological awareness), general knowledge (basic self-knowledge), and behavior skills (social skills). In contrast, children's rate of growth was relatively greater in kindergarten compared to pre-k for two measures (receptive vocabulary, counting). In addition, there was a difference between pre-k and kindergarten teachers in the amount of change on problem behaviors, but the growth rate overall was not significant.

Further, although there was significant growth for all four cohorts across all skill areas, the pattern of growth was slightly different for the most recent cohort for most of the available measures in language and literacy skills (letter-word identification, phonological awareness), math skills (math problem-solving), and general knowledge (basic self-knowledge). (See Tables 12, 13, and 14 for results from previous cohorts.) For letter-word identification, children in cohort 4 made greater gains than children in cohort 3. In contrast, children in cohort 4 made somewhat lower gains than children in the other cohorts on phonological awareness skills. A similar pattern was found for math problem-solving, with lower growth for children in the most recent cohort compared to other cohorts, although the scores for children in cohort 4 were slightly higher overall. Children's scores on counting also were slightly higher for cohort 4, although the rates of growth were similar to those of other cohorts. For basic self-knowledge, children in cohort 2 made greater gains than children in all other cohorts, including the most recent cohort.

Full Sample Moderators of Growth

Two types of factors, child characteristics and the quality of practices in their pre-k classrooms, were examined as potential moderators of children's growth in skills, after accounting for other background characteristics and program type. Separate series of HLM analyses were conducted to test the moderating effects of child characteristics (gender, family income, educational need, IEP status, chronic health condition, English language proficiency level) and each of four aspects of pre-k classroom quality (global classroom quality, teacher-child instructional interactions, literacy environment, sensitivity of teacher-child interactions), using the same base model that examined growth over time. (See Analysis Approach section for further details.)

There were few differences in children's growth rates from pre-k through kindergarten on the basis of most background characteristics across the different domains of learning, after adjusting for other factors (as evidenced by the interactions of these characteristics with time). (See Table 10 model 2 additions and Table 11 model 2 additions.) Not surprisingly, children who qualified for free lunch had relatively lower scores compared to other children on many measures (receptive vocabulary, expressive vocabulary, letter-word identification, phonological awareness, math problem-solving). However, there were no differences in the gains children made on the basis of family income. There were a few differences by gender; boys showed greater growth than girls on expressive vocabulary and math problem-solving (see Figures 1 and 2). In addition, boys scored relatively higher in some areas (expressive vocabulary, social skills), but lower in others (counting skills). Children with an educational need (as an additional

risk factor defined by the program guidelines) had lower gains in a few areas—letter-word identification, phonological awareness, and math problem-solving—but no differences in their overall level of scores once these interactions were added to the model (see Figures 3, 4, and 5). Children with an IEP in the sample had lower growth rates on only one measure, letter-word identification, with generally similar scores to other children overall after including these moderator effects (see Figure 6). There were no differences in growth rates or scores on the basis of whether children had a chronic health condition.

The one factor that did show several differences in growth rates was children's level of English language proficiency. Children with lower English proficiency levels, as expected, had lower scores when they entered pre-k and continued to score lower than children with greater proficiency in almost all areas (except for problem behaviors). However, children with lower English proficiency levels made greater gains than their peers from pre-k through the end of kindergarten on most language and literacy skills (receptive vocabulary, expressive vocabulary), math skills (math problem-solving, counting), and general knowledge (basic self-knowledge); conversely, children with higher levels of English proficiency made greater gains in one area of language and literacy skills (phonological awareness). Although the specific differences varied across measures, the overall general pattern reflected greater gains for less proficient children on most measures. For receptive vocabulary, children at the two lowest English proficiency levels made greater gains than children at other levels (1>2, 3, 4, 5; 2>5) (see Figure 7). For expressive vocabulary, children at relatively lower levels of proficiency made greater gains than children at relatively higher levels (1>3, 4, 5; 2>4, 5; 3>5) (see Figure 8). For math problem-solving, children with lower English proficiency levels demonstrated progressively greater gains in these skills (1>2, 3>4>5) (see Figure 9). For counting skills, children at the four lowest levels of English proficiency made greater gains than children at the highest level (1, 2, 3, 4>5) (see Figure 10). For basic self-knowledge, children at the two lowest proficiency levels exhibited greater growth than children at higher levels (1>2>3, 4, 5) (see Figure 11). In contrast, children at the highest proficiency level made greater gains than other children (5>4, 3, 2, 1) on phonological awareness skills (see Figure 12). There were no differences in growth rates on the basis of English proficiency levels in one area of language and literacy skills (letter-word identification) or in teacher-rated behavior skills (social skills, problem behaviors).

There were no consistent associations between the quality of pre-k classroom practices and the amount of growth children experienced through kindergarten across different domains of learning. There were some isolated associations, but no clear patterns across outcome areas or quality measures. (See Table 10 models 3a–3d additions and Table 11 models 3a–3d additions.) With regard to language and literacy skills, children made greater gains in expressive vocabulary in classrooms that scored lower on the ELLCO Language and Literacy subscale. Children also made greater gains in letter-word identification skills in classrooms that scored lower on CLASS Classroom Organization. Teachers rated children's growth in social skills as higher in classrooms that scored higher on CLASS Instructional Support, and rated children's problem behaviors as increasing more in classrooms that scored higher on the CIS. There were

no associations with children's growth rates for other outcomes or quality measures, including the ECERS-R or other scales of the CLASS or the ELLCO.

Dual Language Learners Subsample Growth over Time

For the subsample of Spanish-speaking DLLs, children's growth from entry into NC Pre-K through kindergarten was examined, using parallel measures in both English and Spanish. The same series of analyses described above for the full sample was conducted to test for changes over time separately for the English and Spanish measures. (See Analysis Approach section for further details.) Similarly to the full sample, for skills measured in English, children made significant gains in all domains over this period, including language and literacy skills (receptive vocabulary, expressive vocabulary, letter-word identification, phonological awareness), math skills (math problem-solving, counting), and general knowledge (basic self-knowledge). The mean scores were somewhat to slightly below the norm at the beginning of pre-k, but were close to or slightly above the norm by the end of kindergarten for most standardized measures, suggesting that these children were performing within the normal range for their age on most of these skills. One area where children had lower scores was expressive vocabulary skills. (See Table 15, Table 16 model 1, and Table 17 model 1.)

For the same skills measured in Spanish, children exhibited significant growth in one area of language and literacy skills (phonological awareness), in math skills (math problem-solving, counting), and in general knowledge (basic self-knowledge). In contrast to their growth in skills measured in English, children made no gains in three areas of language and literacy skills in Spanish (receptive vocabulary, expressive vocabulary, letter-word identification). (See Table 15, Table 18 model 1, and Table 19 model 1.) As indicated above for the full sample, growth in many of these areas which used standardized measures (in both English and Spanish) indicates that children progressed at an even greater rate during the time they participated in the NC Pre-K Program than expected for normal development. Conversely, a lack of growth indicates progress at the expected rate. It is important to note that there were no significant decreases, or losses in skills in English or Spanish, during this time period.

Dual Language Learners Subsample Moderators of Growth

Potential moderators of children's growth in skills in both English and Spanish were examined for the DLL subsample using a similar series of analyses to those described above for the full sample. Two types of factors were examined as moderators (in interactions with time)—child characteristics (gender, family income, educational need, IEP status, chronic health condition, English or Spanish language proficiency level) and the quality of practices in their pre-k classrooms (global classroom quality, teacher-child instructional interactions, literacy environment, sensitivity of teacher-child interactions)—after accounting for other child background characteristics and program type. (See Analysis Approach section for further details.)

For skills measured in English, the pattern of effects for the DLL subsample was somewhat similar to that of the full sample. There were no moderating effects for most child background

characteristics—gender, family income, educational need, IEP status, and chronic health condition. There were differences, however, on the basis of English proficiency levels. (See Table 16 model 2 additions and Table 17 model 2 additions.) As expected, DLLs who had lower levels of English proficiency generally had lower scores in most skill areas at the beginning of pre-k. However, they made greater gains from pre-k through kindergarten on a range of language and literacy skills (receptive vocabulary), math skills (math problem-solving, counting), and general knowledge (basic self-knowledge). DLLs who were at the lowest English proficiency level exhibited greater growth in receptive vocabulary skills than children at higher levels of proficiency (1>3, 4) (see Figure 13). DLLs at lower English proficiency levels also made greater gains in math skills that those at higher levels, both for math problem-solving (1>3, 4, 5; 2, 3>4, 5) (see Figure 14) and for counting skills (1, 2, 3, 4>5) (see Figure 15). DLLs at the lowest English proficiency level also showed greater growth than their peers at higher levels (1>2, 4, 5) in basic self-knowledge (see Figure 16). In contrast, DLLs at the limited English proficiency level scored higher than their peers (3>1, 2, 4) on phonological awareness skills (see Figure 17). The two areas that showed no differences in growth rates on the basis of English proficiency level were expressive vocabulary and letter-word identification.

There were a few associations between classroom quality measures and children's growth rates in English skills for the DLL subsample, but no consistent patterns. Children in classrooms with higher scores on CLASS Instructional Support made greater gains in receptive vocabulary skills. DLLs showed greater growth in expressive vocabulary skills in classrooms with higher ELLCO General Classroom Environment or lower ELLCO Language and Literacy scores. Children made greater gains in counting skills in classrooms with higher ELLCO Language and Literacy scores. There were no associations with children's growth rates for other outcomes or quality measures, including other domains of the CLASS, the ECERS-R, or the CIS. (See Table 16 models 3a–3d additions and Table 17 models 3a–3d additions.)

For skills measured in Spanish, the results related to moderating factors were somewhat different than when measured in English. (See Table 18 model 2 additions and Table 19 model 2 additions.) There were a few differences on the basis of children's background characteristics. Girls exhibited greater growth than boys in receptive vocabulary skills (see Figure 18). Similarly, children who did not have an educational need (as an additional risk factor defined by the program guidelines) showed greater growth in receptive vocabulary than those with an educational need (see Figure 19). DLLs with lower family income (eligible for free lunch) made greater gains in math problem-solving skills than those from families with higher incomes (not eligible for free lunch) (see Figure 20). There were no differences on the basis of whether a child had a chronic health condition or on the basis of Spanish language proficiency level for skills measured in Spanish.

There was only one association between classroom quality and children's growth rates for skills measured in Spanish. DLLs in classrooms scoring lower on CLASS Emotional Support made greater gains in math problem-solving skills than those in classrooms scoring higher. There were no differences in growth rates across any other skills measured in Spanish or for any other

aspects of classroom quality. (See Table 18 models 3a–3d additions and Table 19 models 3a–3d additions.)

Program Characteristics and Services

Key characteristics of the NC Pre-K Program, including program size, days of operation and attendance, NC child care license star ratings, curricula, assessment and screening tools, setting types, and teacher education and credentials, were examined based on information from NC Pre-K Plan and NC Pre-K Kids statewide databases. Descriptive analyses as well as a series of logistic regression and ANOVA models tested for differences in program characteristics between the current year and previous years (see Analysis Approach section for further details).

In general, most program characteristics have been fairly stable over time, with a few exceptions. As legislative funding increased and the program grew across the state, the number of children served showed steady increases each year until it peaked from 2008–2009 through 2010–2011, with a slight decrease since then. In 2013–2014, the NC Pre-K Program served 29,346 children (in 26,617 slots) in 1,993 classrooms located in 1,165 sites. The majority of programs (67%) were at the highest, five-star child care licensing level, with another 19% at the four-star level, and the rest in process. On average, the total class size was 16 children, with 13 of those children (85%) funded by NC Pre-K. This pattern is fairly similar to recent years, although the proportion of NC Pre-K children is slightly higher compared to some earlier years. Children attended NC Pre-K for an average of 135 days, which represents 79% of the 170 average actual days of operation or 75% of the 180 planned instructional days offered by the program. The days of attendance have decreased slightly over the past two years compared to the previous four years. (See Tables 20, 21, and 22.) All classrooms reported using a primary curriculum, ongoing assessment tool, and developmental screening tool from the approved lists provided by the NC Pre-K Program Guidelines. The majority of programs used Creative Curriculum (84%), which is similar to past years, along with Teaching Strategies Gold for ongoing assessment (83%). More than half (59%) use DIAL for developmental screening, with most of the rest (37%) using Brigance. (See Tables 23 and 21.) The distribution of setting types has remained relatively constant over time, similar to the current distribution of approximately half (54%) public school settings, about one-third (32%) private settings (23% for-profit and 9% non-profit child care centers), and 14% Head Start. The only difference is that the proportion of Head Start settings is higher and private settings is lower in the current year than in a few early years of the program (see Table 24, 25, and 22).

Information about the characteristics of the children and families served by NC Pre-K, including eligibility factors (family income, limited English proficiency, educational need, identified disability, military parent); service priority status; child gender, race, and ethnicity; and caregiver employment were examined based on information from the NC Pre-K Kids statewide database. In 2013–2014, similarly to previous years, the program continued to serve children from a variety of racial and ethnic backgrounds (see Tables 26 and 27). As in past program years, children served by NC Pre-K primarily came from low-income families; 91% were

eligible for free or reduced-price lunch, with variability in other eligibility factors, including 26% with an educational need (determined by developmental screening), 16% with limited English proficiency, and 4–7% with an identified disability, chronic health condition, or military parent (see Tables 28 and 29). Information on children's service priority status indicated that 62% had never previously been served in any preschool setting and 16% were currently unserved at the time of enrollment. These proportions of high service priority children were generally greater than most past years (except for a lower proportion of currently unserved children compared to the previous year and early years). (See Tables 30, 31, and 22.)

One consistent change in the program is in the area of teacher education and credentials which have increased steadily over time. Almost all lead teachers in the NC Pre-K Program in 2013–2014 had at least a bachelor's degree in both public school (over 99%) and private settings (99%) (see Table 32). Nearly all teachers had a Birth-Kindergarten (B-K) license (or the equivalent) in public school settings (94%) and nearly two-thirds in private settings (64%). Almost no teachers in public school settings (1%) and under one-fifth in private settings (19%) were reported to have no credential (see Table 33). Analyses comparing education and credential levels over time showed that teacher qualifications for NC Pre-K were higher in the most recent year compared to previous years. In 2013–2014, a higher proportion of teachers had a bachelor's degree or higher compared to all previous years. Similarly, in 2013–2014, a higher proportion of teachers had a B-K license (or the equivalent) than in all past years of the program. Conversely, the proportion of teachers with no credential was lower than in most other years of the program. (See Tables 22, 32, 33, 34, and 35.)

Classroom Quality

Global Quality

The quality of classroom practices was examined based on a sample of 374 NC Pre-K classrooms operating in the 2013–2014 program year, gathered as part of the NC rated license assessments. An observational measure of global quality, the ECERS-R[xv] was used. Comparisons were not conducted between this sample and previous samples of NC Pre-K classrooms included in the statewide evaluations because the method for selecting the classrooms as well as some of the procedures for gathering the data differed between the NCRLAP and the NC Pre-K Evaluation Project.

The average total score for the rated license sample of NC Pre-K classrooms was 5.7, in the high quality range (5.0–7.0). (See Table 36.) Almost all (97%) of the sample classrooms scored in the high quality range, with the remainder (3%) scoring in the medium quality range (3.0–4.9), and none scoring in the low quality range (1.0–2.9.) (See Figure 21.) A similar pattern was found when examining the subscales. Six of the seven subscales had average scores in the high range as well—Space and furnishings (5.5), Language-Reasoning (5.9), Activities (6.0), Interaction (6.4), Program structure (5.9), and Parents and staff (5.8). One subscale had average scores in the medium quality range—Personal care routines (4.8). Most individual items had average scores

in the high quality range as well, including all items on the Interaction and Program structure subscales, and almost all items on the Space and furnishings, Language-Reasoning, Activities, and Parents and staff subscales. Of the remaining items, most had average scores near the upper end of the medium quality range. In contrast, a few areas that scored somewhat lower were space for gross motor play, meals/snacks, safety practices, and provisions for staff personal needs.

Predictors of Classroom Quality

Teacher and classroom characteristics were examined as potential predictors of the level of classroom quality (ECERS-R total score) for the rated license sample of NC Pre-K classrooms using HLM analyses. (See Analysis Approach section for further details.) Two sets of predictors were examined, based on data from the statewide databases matched to each classroom: 1) teacher and classroom structural characteristics—lead teacher licensure (B-K license/equivalent or not), lead teacher education (MA/MS or above or not), and total class size; and 2) characteristics of NC Pre-K children in the classroom—proportion of NC Pre-K children in the classroom, proportion with limited English proficiency, proportion with IEPs, proportion with a chronic health condition, proportion with an educational need, proportion eligible for free lunch, and proportion who had not previously been served. (See Table 37 for the distribution of the sample on these characteristics.) Overall, most of these teacher and classroom characteristics were not related to the quality of practices in the classroom. Significant associations were found for one aspect of teacher qualifications. Teachers who had a B-K license or equivalent credential had classrooms with higher ECERS-R scores compared to teachers without a B-K license. (See Table 38.)

Summary and Conclusions

The 2013–2014 NC Pre-Kindergarten (NC Pre-K) Evaluation study was designed to examine the longitudinal outcomes through kindergarten for children who attended the pre-k program, along with comparisons to previous cohorts of program attendees. A sample of 561 children was included in the study, with data gathered at the beginning and end of NC Pre-K (2012–2013) and kindergarten (2013–2014) to examine their growth in skills. Researchers conducted individual assessments of children's language, literacy, math, and general knowledge skills and gathered teacher ratings of behavior skills. For 119 Spanish-speaking DLLs in the sample, parallel assessments were conducted in both English and Spanish to examine their progress when measured in both languages. In addition, program characteristics and services were examined for the 2013–2014 NC Pre-K Program using data from the statewide databases, as well any changes over time since the program became statewide in 2003–2004. Information about the observed quality of classroom practices was obtained from NC rated license assessments of a sample of 374 NC Pre-K classrooms conducted by the NC Rated License Assessment Project (NCRLAP) in 2013–2014.

Child Outcomes

Children enrolled in the NC Pre-K Program made significant gains from pre-k through kindergarten across all domains of learning. Children made significant gains from pre-k through kindergarten in language and literacy skills (receptive vocabulary, expressive vocabulary, letter-word identification, phonological awareness), math skills (math problem-solving, counting), general knowledge (basic self-knowledge), and behavior skills (social skills), with scores generally in the expected range for their age group. Most of these were standardized measures, so that changes indicate that children progressed at an even greater rate since the time they entered NC Pre-K than would be expected for normal developmental growth. However, without a comparison group, it is not possible to establish a clear causal link between outcomes and program participation.

Growth rates for children who had enrolled in NC Pre-K were even greater during pre-k than during kindergarten for many skills. Although children made significant gains throughout this entire time period, the rate of gain was even greater during pre-k on several measures, including language and literacy skills (letter-word identification, phonological awareness), general knowledge (basic self-knowledge), and behavior skills (social skills). In contrast, children's rate of growth was relatively greater in kindergarten compared to pre-k for two measures (receptive vocabulary, counting). Given the focus of NC Pre-K on serving at-risk children who are otherwise unserved, these findings suggest that participation in such a program may have provided an opportunity for strong initial growth of some key school readiness skills.

Dual-language learners made significant gains for all skills measured in English and for most skills measured in Spanish. Similarly to the full sample, DLLs made significant gains in all domains of learning for English skills, including language and literacy (receptive vocabulary, expressive vocabulary, letter-word identification, phonological awareness), math (math problem-solving, counting), and general knowledge (basic self-knowledge). Even though the language of instruction in these classrooms was most likely English, these children made significant gains for many of the same skills measured in Spanish (phonological awareness, math problem-solving, counting, basic self-knowledge), with the exception of most language and literacy skills. In general, their scores were within the normal range for their age in both languages; one exception was somewhat lower scores for expressive vocabulary in English, an area which may be worth examining with regard to instructional supports for these children.

Children with lower levels of English proficiency showed greater growth than their peers from pre-k through kindergarten in most skills. For participants in NC Pre-K, including DLLs, children with lower levels of English proficiency made greater gains than their peers in most areas of language and literacy skills, math skills, and general knowledge. Conversely, children with higher levels of English proficiency made greater gains than their peers in phonological awareness, which is a more complex language skill that may require a higher level of proficiency to learn. In contrast, when skills were measured in Spanish for DLLs, there were no differences in growth based on the level of Spanish language proficiency. These findings suggest that while participation in NC Pre-K is beneficial for all children, it may be especially beneficial for children with lower levels of English proficiency. For DLLs, however, it may be important to consider whether bilingual supports may further enhance children's acquisition of the skills and knowledge being taught in pre-k and kindergarten.

There were no consistent patterns of association of other child characteristics or classroom quality with children's growth in skills from pre-k through kindergarten. These findings suggest that across different background characteristics, children who participate in NC Pre-K exhibit similar rates of growth through kindergarten in most skill areas. There were some isolated associations between various child characteristics (gender, educational need, IEP status, family income) and growth in language, literacy, and math skills, but these patterns were not consistent across measures. There also were a few isolated associations for different aspects of classroom quality, but again, these associations were not consistent across measures of quality or child outcomes. The few associations that were found varied in direction, which may have been an artifact of including measures with multiple scales (where no overall score was available) that necessarily had some interrelationship with one another. Further, there was a relatively restricted range of quality in NC Pre-K, with few classrooms scoring in the low range, which may have prevented the detection of clearer associations.

The pattern of longitudinal growth in skills shown by children in the most recent cohort of NC Pre-K varied slightly from previous cohorts. Comparisons between the current cohort and three previous cohorts of children who attended the pre-k program indicated that their pattern of growth differed slightly for most available measures, with greater gains in some areas (letter-word identification) and lower gains in others (phonological awareness, math problem-solving,

and basic self-knowledge). In the case of math skills, scores for children in the most recent cohort tended to be higher than those of other cohorts.

Program Characteristics and Quality

Many of the characteristics of the NC Pre-K Program were consistent with good quality standards, as well as program guidelines. In 2013–2014, the average total class size was 16 children, of which 13 (85%) children were funded by NC Pre-K. This number is actually below the program guidelines which specify a maximum class size of 18. The majority of the programs (67%) were at the highest, five-star licensing level, with another 19% at the four-star level. All classrooms reported using an approved curriculum (primarily Creative Curriculum) and conducting ongoing assessments (primarily Teaching Strategies Gold) and developmental screenings (primarily DIAL and Brigance). The average days of attendance, however, was only 135 days (79% of the days of operation and 75% of the intended instructional days), a number which has decreased slightly in recent years.

Many program characteristics have been fairly stable over time. In 2013–2014, the NC Pre-K Program served almost 30,000 children in nearly 2,000 classrooms located in more than 1,100 sites. In accord with shifts in legislative funding, this represents a slight decrease in program size since the peak a few years earlier (2008–2009 through 2010–2011). Similarly to previous years, the program was offered in a variety of setting types, with about half in public schools, about one-third in private settings, and 14% in Head Start. As in past years, the majority of children were from low-income families (91% qualified for free or reduced-price lunch) and most (78%) had never been served or were currently unserved in a preschool setting. The program continued to serve children from a variety of backgrounds and with different additional risk factors, including a substantial proportion of children with an educational need (26%) or limited English proficiency (16%), as well as children with identified disabilities and other factors (4–7%).

One continuing trend in the NC Pre-K Program has been a steady improvement in the levels of teacher education and credentials, with increases in both of these areas in 2013–2014 compared to past years. In 2013–2014, the proportion of teachers with bachelor's degrees or higher and B-K licenses was higher than in past years, consistent with a similar pattern of increases over recent years. Almost all (99%) NC Pre-K lead teachers had at least a bachelor's degree in both public school and private settings. Nearly all lead teachers in public schools and nearly two-thirds in private settings had a B-K license, while almost no teachers in public schools and under one-fifth in private settings had no credential.

The quality of classroom practices for a sample of NC Pre-K classrooms gathered as part of the NC rated license assessments was in the high quality range overall. The average global quality score for the NCRLAP sample of classrooms was in the high quality range on the ECERS-R (5.7), with almost all classrooms scoring at or above the required score of 5.0 based on the program guidelines. In addition, teachers who had a B-K license had classrooms with higher

ECERS-R scores compared to teachers without a B-K license. Other teacher and classroom characteristics were not associated with differences in the level of classroom quality. Comparisons could not be conducted between this sample and previous statewide evaluation samples of NC Pre-K classrooms because of differences between the NCRLAP and NC Pre-K Evaluation Project in the method for selecting the classrooms (non-random vs random selection) as well as some of the procedures for gathering the data (modified vs standard scoring).

Table 1. NC Pre-K Evaluation Reports Reference List

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Table 2. Characteristics of NC Pre-K Classrooms in Sample and Not in Sample in Year 1 (2012–2013)

	Sample n=99		Not in Sample n=2,250[a]	
Characteristic	%/mean	n	%/mean	n
Teacher Education Level				
MA/MS or Higher	14.1%	14	12.3%	264
BA/BS	85.9%	85	86.6%	1,862
AA/AS	0.0%	0	1.1%	24
HS Diploma/GED	0.0%	0	0.1%	1
Teacher Credential				
B-K or Preschool Add-on License	83.8%	83	75.6%	1,625
Other Teacher's License	7.1%	7	6.8%	147
CDA Credential	0.0%	0	0.5%	11
NCECC	1.0%	1	5.6%	121
None	8.1%	8	11.5%	247
Class Size	16.4	99	15.7	2,051
% NC Pre-K Children in Class	84%	99	85%	2,051
Setting Type				
Public Preschool	58.6%	58	50.3%	1,032
Private For-Profit	15.2%	15	24.7%	507
Private Non-Profit	7.1%	7	9.3%	190
Head Start Not Administered by Public School	14.1%	14	12.8%	262
Head Start Administered by Public School	5.1%	5	2.9%	60

[a] The ns for Class Size, % NC Pre-K Children in Class, and Setting Type were 2,051.

Table 3. Characteristics of NC Pre-K Children in Sample and Not in Sample in Year 1 (2012–2013)

	Sample n=561		Not in Sample n=31,581	
Characteristic	%/mean	n	%/mean	n
Child's Age on 8/31 of Program Year	4.5	561	4.5	31,581
Gender				
Male	53.5%	300	51.2%	16,158
Female	46.5%	261	48.8%	15,423
Race				
White/European-American	54.6%	306	48.4%	15,290
Black/African-American	29.6%	166	37.2%	11,732
Native American/Alaskan Native	8.2%	46	6.5%	2,064
Multiracial	5.2%	29	5.2%	1,652
Asian	2.0%	11	1.9%	586
Native Hawaiian/Pacific Islander	0.5%	3	0.8%	257
Ethnicity				
Non-Hispanic/Latino	76.8%	431	75.7%	23,898
Hispanic/Latino	23.2%	130	24.3%	7,683
Parents Employed				
Mother	43.3%	243	45.8%	14,464
Father	45.1%	253	42.1%	13,281
Service Priority Status				
Never Served	64.5%	362	59.4%	18,758
Previously Served	35.5%	199	40.6%	12,823
Days of Attendance per Child	154.1	561	134.3	31,581

Table 4. Eligibility Factors for NC Pre-K Children in Sample and Not in Sample in Year 1 (2012–2013)

	Sample n=561		Not in Sample n=31,581	
Eligibility Factor[a]	%	n	%	n
Family Income				
130% of poverty and below (eligible for free lunch)	77.0	432	76.8	24,267
131–185% of poverty (eligible for reduced-price lunch)	14.1	79	13.8	4,361
186–200% of poverty	1.4	8	2.4	744
201–250% of poverty	4.5	25	3.7	1,162
>251% of poverty	3.0	17	3.3	1,047
Limited English Proficiency				
Family and/or child speak limited or no English in the home	19.8	111	20.0	6,301
Educational Need				
Educational need indicated by performance on a developmental screen	26.6	149	25.4	8,005
Identified Disability				
Child has an IEP	4.6	26	4.7	1,475
Chronic Health Condition(s)				
Child is chronically ill/medically fragile	6.8	38	5.4	1,689
Military Parent	5.0	28	6.4	2,028

[a] Children are eligible for the NC Pre-K Program primarily based on age and family income. Children must be four years old by August 31 of the program year, with a gross family income of no more than 75% of state median income. Children who do not meet the income eligibility may be eligible if they have at least one of the following: limited English proficiency, identified disability, chronic health condition, educational need, or a parent actively serving in the military.

Table 5. Characteristics of NC Pre-K Children in Sample and Not in Sample in Year 2 (2013–2014)

	Sample n=437		Not in Sample n=31,705	
Characteristic	%/mean	n	%/mean	n
Child's Age on 8/31 of Program Year	4.5	437	4.5	31,705
Gender				
Male	53.6%	234	51.2%	16,224
Female	46.5%	203	48.8%	15,481
Race				
White/European-American	53.8%	235	48.5%	15,361
Black/African-American	30.0%	131	37.1%	11,767
Native American/Alaskan Native	8.0%	35	6.5%	2,075
Multiracial	5.3%	23	5.2%	1,658
Asian	2.5%	11	1.9%	586
Native Hawaiian/Pacific Islander	0.5%	2	0.8%	258
Ethnicity				
Non-Hispanic/Latino	77.8%	340	75.7%	23,989
Hispanic/Latino	22.2%	97	24.3%	7,716
Parents Employed				
Mother	43.9%	192	45.8%	14,515
Father	44.2%	193	42.1%	13,341
Service Priority Status				
Never Served	63.8%	279	59.4%	18,841
Previously Served	36.2%	158	40.6%	12,864
Days of Attendance per Child	158.3	437	134.3	31,705

Table 6. Eligibility Factors for NC Pre-K Children in Sample and Not in Sample in Year 2 (2013–2014)

	Sample n=437		Not in Sample n=31,705	
Eligibility Factor[a]	%	n	%	n
Family Income				
130% of poverty and below (eligible for free lunch)	77.4	338	76.8	24,361
131–185% of poverty (eligible for reduced-price lunch)	13.3	58	13.8	4,382
186–200% of poverty	1.6	7	2.4	745
201–250% of poverty	4.6	20	3.7	1,167
>251% of poverty	3.2	14	3.3	1,050
Limited English Proficiency				
Family and/or child speak limited or no English in the home	19.7	86	20.0	6,326
Educational Need				
Educational need indicated by performance on a developmental screen	28.2	123	25.3	8,031
Identified Disability				
Child has an IEP	5.0	22	4.7	1,479
Chronic Health Condition(s)				
Child is chronically ill/medically fragile	6.4	28	5.4	1,699
Military Parent	2.8	12	6.5	2,044

[a] Children are eligible for the NC Pre-K Program primarily based on age and family income. Children must be four years old by August 31 of the program year, with a gross family income of no more than 75% of state median income. Children who do not meet the income eligibility may be eligible if they have at least one of the following: limited English proficiency, identified disability, chronic health condition, educational need, or a parent actively serving in the military.

Table 7. Child Pre-K Language Proficiency Levels

	Full Sample		DLL Subsample			
	English Language Proficiency n=559		English Language Proficiency n=116		Spanish Language Proficiency n=117	
*pre*LAS Proficiency Level	%	n	%	n	%	n
Level 1 (Non-Speakers)	16.6	93	58.6	68	22.2	26
Level 2 (Limited Speakers)	7.7	43	12.1	14	9.4	11
Level 3 (Limited Speakers)	18.1	101	13.8	16	18.8	22
Level 4 (Fluent Speakers)	32.7	183	12.9	15	22.2	26
Level 5 (Fluent Speakers)	24.9	139	2.6	3	27.4	32

Table 8. Child Outcome Measures

Measure	Scoring
Language and Literacy Skills	
Receptive Vocabulary	
Receptive One-Word Picture Vocabulary Test, 4th Edition / Receptive One-Word Picture Vocabulary Test, Spanish Bilingual Edition	Standard score Mean=100, SD=15
Expressive Vocabulary	
Expressive One-Word Picture Vocabulary Test, 4th Edition / Expressive One-Word Picture Vocabulary Test, Spanish Bilingual Edition	Standard score Mean=100, SD=15
Letter-Word Identification	
Woodcock-Johnson III Tests of Achievement Letter-Word Identification (Subtest 1) / Batería III Woodcock Muñoz Pruebas de Aprovechamiento Identificación de Letras y Palabras (Prueba 1)	Standard score Mean=100, SD=15
Phonological Awareness	
Woodcock-Johnson III Tests of Achievement Sound Awareness - Rhyming (Subtest 21A) / Batería III Woodcock Muñoz Pruebas de Aprovechamiento Discernimiento de Sonidos - Rima (Prueba 21A)	Raw score Range=0–17
Math Skills	
Math Problem-Solving	
Woodcock-Johnson III Tests of Achievement Applied Problems (Subtest 10) / Batería III Woodcock Muñoz Pruebas de Aprovechamiento Problemas Aplicados (Prueba 10)	Standard score Mean=100, SD=15
Counting	
Counting Task (English and Spanish)	Total score Range=0–40
General Knowledge	
Basic Self-Knowledge	
Social Awareness Task (English and Spanish)	Total score Range=0–6
Behavior Skills	
Social Skills	
Social Skills Improvement System (SSiS) Social Skills subscale	Standard score Mean=100, SD=15
Problem Behaviors	
Social Skills Improvement System (SSiS) Problem Behaviors subscale	Standard score Mean=100, SD=15

Table 9. Child Outcome Scores for Full Sample (2012–2014)

Measure	Pre-K Fall N	Pre-K Fall Mean (SD) Range	Pre-K Spring N	Pre-K Spring Mean (SD) Range	K Fall N	K Fall Mean (SD) Range	K Spring N	K Spring Mean (SD) Range
Language and Literacy								
Receptive Vocabulary (ROWPVT-4[a])	537	98.3 (13.8) 55–139	517	100.0 (13.1) 58–129	431	102.3 (12.1) 71–138	417	103.2 (11.6) 69–138
Expressive Vocabulary (EOWPVT-4[a])	517	97.3 (17.0) 55–139	494	97.9 (17.5) 55–137	431	97.5 (16.5) 57–137	418	98.0 (15.9) 58–140
Letter-Word Identification (WJ Ach Letter-Word Identification[a])	556	95.5 (12.1) 62–159	518	99.1 (11.6) 63–154	437	102.8 (11.6) 66–146	420	111.0 (11.5) 66–151
Phonological Awareness (WJ Ach Sound Awareness - Rhyming[b])	554	2.0 (2.4) 0–15	516	4.1 (3.7) 0–16	437	5.6 (4.1) 0–16	420	8.1 (4.1) 0–17
Math								
Math Problem-Solving (WJ Ach Applied Problems[a])	555	98.3 (13.4) 58–133	517	100.7 (10.6) 61–134	436	101.7 (9.95) 75–129	421	102.9 (10.8) 57–129
Counting (Counting Task[c])	556	14.1 (9.0) 0–40	518	21.2 (11.6) 1–40	437	29.9 (11.1) 2-40	421	36.9 (6.7) 8-40
General Knowledge								
Basic Self-Knowledge (Social Awareness Task[d])	559	3.6 (1.6) 0–6	518	4.5 (1.5) 0–6	437	4.8 (1.1) 1–6	421	5.2 (1.0) 2–6
Classroom Behavior								
Social Skills (SSiS[a])	527	95.9 (14.4) 41–130	492	98.9 (14.1) 55–130	376	98.1 (14.6) 46–131	389	99.3 (15.0) 55–131
Problem Behaviors (SSiS[a])	528	100.2 (14.6) 82–159	497	100.3 (15.3) 82–160	381	99.0 (14.0) 82–159	387	100.0 (13.8) 82–157

[a] Indicates standard scores on norm-referenced measure with mean=100, SD=15.
[b] Possible range=0–17.
[c] Possible range=0–40.
[d] Possible range=0–6.

Table 10. Full Sample Child Outcomes Regression Results—Language and Literacy

	Receptive Vocabulary (ROWPVT-4) n=558		Expressive Vocabulary (EOWPVT-4) n=554		Letter-Word Identification (WJ Ach Letter-Word ID) n=559		Phonological Awareness (WJ Ach Sound Awareness - Rhyming) n=556	
Effect	Est[e]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Model 1								
Intercept	108.22***	(1.29)	108.37***	(1.75)	99.97***	(1.54)	3.44***	(0.34)
Time	1.03**	(0.36)	1.26***	(0.34)	6.08***	(0.33)	2.01***	(0.13)
Grade	1.35*	(0.64)	-0.53	(0.63)	-2.45***	(0.57)	-0.49*	(0.23)
Program Type	-0.99	(0.83)	-1.75	(1.21)	0.60	(1.10)	-0.15	(0.22)
Months Btwn Assess	0.41***	(0.11)	0.14	(0.11)	-0.05	(0.11)	0.12**	(0.04)
Attendance	-0.64	(0.55)	-1.92**	(0.72)	-0.14	(0.63)	0.06	(0.13)
Age	--	--	--	--	--	--	0.47	(0.32)
Gender	0.48	(0.73)	3.32***	(0.98)	-0.88	(0.85)	-0.04	(0.19)
Income	-3.64***	(0.88)	-5.00***	(1.19)	-3.55***	(1.04)	-0.55*	(0.22)
Ed Need	-0.71	(0.96)	-0.80	(1.36)	-0.63	(1.22)	-0.35	(0.25)
IEP	-0.37	(1.88)	-0.25	(2.55)	-0.33	(2.25)	-0.80	(0.49)
Health Condition	-0.34	(1.49)	-0.86	(2.02)	-0.89	(1.76)	-0.06	(0.38)
English Proficiency	***		***		***		***	
Level 1	-23.63***	(1.17)	-33.03***	(1.60)	-8.51***	(1.38)	-3.14***	(0.30)
Level 2	-14.88***	(1.49)	-18.98***	(1.99)	-7.12***	(1.74)	-2.33***	(0.38)
Level 3	-10.13***	(1.11)	-14.47***	(1.49)	-7.21***	(1.30)	-1.70***	(0.29)
Level 4	-6.15	(0.97)	-8.06***	(1.29)	-5.65***	(1.13)	-1.25***	(0.25)
Level 5[f]	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)
Model 2 Additions								
Time x Gender	0.01	(0.31)	0.69*	(0.31)	0.44	(0.34)	-0.04	(0.12)
Time x Income	0.66	(0.37)	0.36	(0.36)	0.13	(0.40)	-0.13	(0.14)
Time x Ed Need	0.03	(0.37)	0.02	(0.37)	-1.02*	(0.41)	-0.31*	(0.14)
Time x IEP	-0.17	(0.76)	-0.21	(0.75)	-2.41**	(0.83)	0.02	(0.29)
Time x Health Condition	-0.61	(0.64)	-0.87	(0.65)	0.18	(0.68)	-0.25	(0.23)
Time x Eng Proficiency	***		***		NS		***	
Time x Level 1	3.59***	(0.51)	2.92***	(0.54)	0.95	(0.54)	-0.98***	(0.19)
Time x Level 2	1.43*	(0.62)	1.92**	(0.61)	1.24	(0.68)	-0.16	(0.23)
Time x Level 3	0.35	(0.47)	1.40**	(0.46)	0.47	(0.51)	-0.19	(0.18)
Time x Level 4	0.39	(0.41)	0.64	(0.40)	-0.04	(0.45)	-0.27	(0.15)

[e] Significance levels are *p< .05, **p< .01, ***p< .001

[f] English Proficiency Level 5 is the reference cell.

Table 10. Full Sample Child Outcomes Regression Results—Language and Literacy

	Receptive Vocabulary (ROWPVT-4) n=558		Expressive Vocabulary (EOWPVT-4) n=554		Letter-Word Identification (WJ Ach Letter-Word ID) n=559		Phonological Awareness (WJ Ach Sound Awareness - Rhyming) n=556	
Effect	Est[e]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Time x Level 5[b]	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)
Model 3a Additions								
ECERS-R Total	0.79	(0.45)	1.67**	(0.64)	0.54	(0.58)	0.24*	(0.11)
Time x ECERS-R	-0.07	(0.16)	-0.12	(0.16)	-0.15	(0.17)	0.00	(0.06)
Model 3b Additions								
CLASS Emotional Sup	-0.41	(0.66)	-0.35	(0.95)	-1.89*	(0.80)	0.12	(0.16)
CLASS Class Org	0.48	(0.67)	0.25	(0.96)	2.25**	(0.81)	0.12	(0.16)
CLASS Instructn Sup	-0.40	(0.51)	0.09	(0.73)	0.81	(0.62)	0.03	(0.12)
Time x CLASS ES	0.05	(0.23)	0.11	(0.23)	0.25	(0.25)	-0.12	(0.09)
Time x CLASS CO	-0.27	(0.24)	0.02	(0.24)	-0.70**	(0.26)	0.00	(0.09)
Time x CLASS IS	0.18	(0.18)	-0.05	(0.18)	0.00	(0.19)	0.11	(0.07)
Model 3c Additions								
ELLCO Gen Class Env	0.49	(0.79)	0.78	(1.11)	-1.15	(0.99)	0.12	(0.19)
ELLCO Lang & Literacy	-0.34	(0.82)	0.48	(1.15)	2.13*	(1.02)	0.13	(0.20)
Time x ELLCO GCE	0.00	(0.28)	0.52	(0.28)	0.21	(0.31)	-0.17	(0.11)
Time x ELLCO L & L	-0.04	(0.29)	-0.86**	(0.29)	-0.43	(0.32)	0.19	(0.11)
Model 3d Additions								
CIS Total Score[h]	0.28	(0.45)	0.63	(0.63)	0.74	(0.56)	0.35**	(0.10)
Time x CIS Total Score	-0.12	(0.16)	0.00	(0.16)	-0.22	(0.18)	-0.06	(0.06)

[g] Significance levels are *p< .05, **p< .01, ***p< .001

[h] The ns for model 3d were reduced by 2 because one classroom had missing CIS data.

Table 11. Full Sample Child Outcomes Regression Results—Math, General Knowledge, and Classroom Behavior

	Math				General Knowledge		Classroom Behavior			
	Math Problem-Solving (WJ Ach Applied Problems) n=559		Counting (Counting Task) n=556		Basic Self-Knowledge (Social Awareness Task) n=556		Social Skills (SSiS) n=549		Problem Behaviors (SSiS) n=550	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Model 1										
Intercept	104.50***	(1.26)	17.12***	(0.99)	4.43***	(0.14)	97.42***	(1.82)	102.95***	(1.83)
Time	1.57***	(0.35)	6.37***	(0.41)	0.50***	(0.05)	1.84***	(0.45)	0.55	(0.46)
Grade	-0.75	(0.58)	2.06*	(0.82)	-0.21*	(0.08)	-2.61*	(1.08)	-2.16*	(1.08)
Program Type	0.89	(0.81)	0.12	(0.67)	-0.16	(0.09)	0.81	(1.53)	-2.70	(1.64)
Months Btwn Assess	0.24*	(0.11)	0.37**	(0.14)	0.10***	(0.02)	0.28*	(0.14)	0.02	(0.14)
Attendance	-0.19	(0.55)	0.89*	(0.41)	0.01	(0.06)	-0.16	(0.74)	1.11	(0.74)
Age	--	--	3.56***	(0.89)	0.32*	(0.13)	--	--	--	--
Gender	0.53	(0.72)	-1.01*	(0.50)	-0.13	(0.07)	2.62**	(0.95)	-1.13	(0.95)
Income	-2.55**	(0.86)	-0.62	(0.62)	-0.15	(0.09)	-1.86	(1.20)	1.21	(1.20)
Ed Need	-1.87*	(0.94)	-1.15	(0.73)	0.02	(0.10)	-1.06	(1.53)	1.61	(1.58)
IEP	-2.36	(1.83)	-0.36	(1.31)	-0.18	(0.19)	-4.92	(2.57)	5.23*	(2.56)
Health Condition	-0.18	(1.45)	-1.16	(1.04)	-0.11	(0.15)	-0.49	(2.02)	2.48	(2.01)
English Proficiency[b]	***		***		***		***		NS	
Level 1	-15.25***	(1.14)	-5.99***	(0.82)	-1.72***	(0.12)	-7.13***	(1.57)	1.98	(1.58)
Level 2	-10.08***	(1.46)	-4.14***	(1.01)	-0.9***	(0.15)	-5.18**	(1.93)	1.51	(1.92)
Level 3	-7.96***	(1.09)	-3.44***	(0.77)	-0.78***	(0.11)	-5.02***	(1.47)	3.31*	(1.47)
Level 4	-5.39***	(0.95)	-2.43***	(0.67)	-0.46***	(0.10)	-1.67	(1.27)	-0.08	(1.26)
Level 5	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)
Model 2 Additions										
Time x Gender	0.95**	(0.32)	0.06	(0.30)	0.02	(0.04)	0.32	(0.54)	-0.81	(0.54)
Time x Income	-0.33	(0.39)	0.43	(0.36)	-0.04	(0.05)	-0.10	(0.66)	0.76	(0.65)
Time x Ed Need	-0.94*	(0.39)	-0.33	(0.36)	0.09	(0.05)	-0.08	(0.67)	0.81	(0.66)
Time x IEP	-1.25	(0.79)	-0.60	(0.75)	0.05	(0.10)	-0.82	(1.37)	-0.13	(1.34)
Time x Health Conditn	0.78	(0.65)	-0.78	(0.60)	-0.01	(0.08)	-0.06	(1.12)	-0.98	(1.09)
Time x Eng Proficiency	***		***		***		NS		NS	
Time x Level 1	5.46***	(0.51)	1.77***	(0.48)	0.56***	(0.07)	1.86*	(0.86)	-0.10	(0.85)
Time x Level 2	2.73***	(0.65)	1.55*	(0.61)	0.28**	(0.08)	1.21	(1.09)	-0.42	(1.08)
Time x Level 3	2.06***	(0.49)	1.85***	(0.46)	0.10	(0.06)	0.00	(0.83)	0.00	(0.82)
Time x Level 4	0.87*	(0.43)	1.04**	(0.40)	0.03	(0.05)	-0.03	(0.72)	-0.26	(0.71)
Time x Level 5[b]	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)

[a] Significance levels are *p< .05, **p< .01, ***p< .001

[b] English Proficiency Level 5 is the reference cell.

Table 11. Full Sample Child Outcomes Regression Results—Math, General Knowledge, and Classroom Behavior

	Math				General Knowledge		Classroom Behavior			
	Math Problem-Solving (WJ Ach Applied Problems) n=559		Counting (Counting Task) n=556		Basic Self-Knowledge (Social Awareness Task) n=556		Social Skills (SSiS) n=549		Problem Behaviors (SSiS) n=550	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Model 3a Additions										
ECERS-R Total	0.90*	(0.45)	0.48	(0.42)	0.04	(0.06)	1.38	(0.79)	-0.88	(0.86)
Time x ECERS-R Total	-0.16	(0.16)	-0.23	(0.16)	-0.02	(0.02)	-0.36	(0.28)	0.22	(0.27)
Model 3b Additions										
CLASS Emotional Sup	0.41	(0.64)	-0.36	(0.59)	-0.01	(0.08)	0.99	(1.14)	0.61	(1.24)
CLASS Class Org	-0.33	(0.65)	0.30	(0.60)	0.10	(0.08)	0.59	(1.17)	-2.00	(1.26)
CLASS Instructn Sup	0.72	(0.50)	0.75	(0.46)	0.04	(0.06)	-1.49	(0.91)	-0.06	(0.98)
Time x CLASS ES	-0.05	(0.24)	0.02	(0.23)	-0.05	(0.03)	-0.38	(0.40)	-0.14	(0.40)
Time x CLASS CO	-0.18	(0.25)	-0.23	(0.23)	0.00	(0.03)	-0.38	(0.41)	0.60	(0.41)
Time x CLASS IS	-0.13	(0.19)	-0.07	(0.17)	0.01	(0.02)	0.69*	(0.33)	0.16	(0.32)
Model 3c Additions										
ELLCO Gen Class Env	-0.03	(0.78)	-0.19	(0.72)	0.00	(0.10)	3.91**	(1.34)	-2.62	(1.47)
ELLCO Lang & Literacy	0.60	(0.81)	0.70	(0.74)	0.05	(0.10)	-2.19	(1.40)	1.10	(1.53)
Time x ELLCO GCE	0.18	(0.30)	-0.28	(0.28)	-0.01	(0.04)	-0.70	(0.49)	0.16	(0.49)
Time x ELLCO L & L	-0.30	(0.30)	0.14	(0.28)	-0.01	(0.04)	0.19	(0.52)	0.17	(0.51)
Model 3d Additions										
CIS Total Score[b]	0.62	(0.43)	0.44	(0.40)	0.07	(0.06)	0.76	(0.77)	-1.47	(0.84)
Time x CIS Total Score	-0.13	(0.17)	-0.12	(0.16)	-0.03	(0.02)	-0.16	(0.28)	0.76**	(0.28)

[a] Significance levels are *p< .05, **p< .01, ***p< .001

[b] The ns for model 3d were reduced by 2 because one classroom had missing CIS data.

Table 12. Child Outcome Scores for Previous Cohorts

	Cohort 1				Cohort 2				Cohort 3			
	Pre–K 2003–2004 n=514		K 2004–2005 n=348		Pre–K 2005–2006 n=478		K 2006–2007 n=399		Pre–K 2007–2008 n=321		K 2008–2009 n=348	
Child Outcome	Fall Mean (SD) Range	Spring Mean (SD) Range	Fall Mean (SD) Range	Spring Mean (SD) Range	Fall Mean (SD) Range	Spring Mean (SD) Range	Fall Mean (SD) Range	Spring Mean (SD) Range	Fall Mean (SD) Range	Spring Mean (SD) Range	Fall Mean (SD) Range	Spring Mean (SD) Range
Language and Literacy												
Letter–Word Identification (WJ Ach Letter–Word Identification[a])	—	—	—	—	—	—	—	—	93.4 (12.2) 62–136	96.5 (12.3) 61–151	97.1 (11.8) 51–145	107.2 (12.8) 58–147
Phonological Awareness (WJ Ach Sound Awareness–Rhyming[a])	1.9 (2.7) 0–15	4.4 (4.1) 0–15	6.6 (4.4) 0–16	8.7 (4.5) 0–17	1.8 (2.8) 0–15	3.8 (3.8) 0–15	5.8 (4.2) 0–17	8.6 (4.3) 0–17	—	—	—	—
Math												
Math Problem–Solving (WJ Ach Applied Problems[a])	96.1 (13.0) 58–128	98.3 (11.4) 60–126	97.2 (12.1) 46–131	99.9 (11.1) 60–131	92.4 (15.2) 58–135	97.7 (12.5) 58–128	95.6 (12.5) 35–123	99.1 (11.7) 53–142	96.1 (13.0) 58–128	98.3 (11.4) 60–126	97.7 (12.2) 34–131	101.8 (11.5) 65–132
Counting (CountingTask[b])	11.2 (8.3) 0–40	18.9 (11.5) 1–40	28.2 (11.9) 1–40	33.7 (9.4) 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	11.2 (8.3) 0–40	18.9 (11.5) 1–40	25.0 (12.5) 2–40	35.5 (8.6) 3–40
General Knowledge												
Basic Self–Knowledge (Social Awareness Task[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	3.7 (1.8) 0–6	4.5 (1.5) 0–6	4.5 (1.4) 0–6	5.3 (1.1) 2–6

[a] Indicates standard scores on norm-referenced measure with mean=100, SD=15.

[b] Possible range=0–40.

[c] Possible range=0–6.

Table 13. Multiple Cohorts Child Outcomes Regression Results—Language and Literacy

	Letter-Word Identification (WJ Ach Letter-Word ID) n=216		Phonological Awareness (WJ Ach Sound Awareness - Rhyming) n=433	
Effect	Est[a]	(SE)	Est[a]	(SE)
Intercept[a]	100.18***	(1.32)	3.23***	(0.25)
Time	6.51***	(0.33)	2.05***	(0.10)
Grade	-3.96***	(0.50)	-0.30	(0.16)
Cohort	NS		NS	
Cohort 1	--	--	-0.30	(0.19)
Cohort 2	--	--	0.01	(0.19)
Cohort 3	-1.79	(0.96)	--	--
Cohort 4[a]	0.00	(0.00)	0.00	(0.00)
Program Type	0.59	(0.86)	-0.11	(0.15)
Months Btwn Assess	0.03	(0.10)	0.03	(0.03)
Attendance	0.51	(0.46)	0.14	(0.07)
Age	--	--	0.77***	(0.20)
Gender	-1.52*	(0.67)	-0.22	(0.11)
Income	-2.48**	(0.79)	-0.46***	(0.14)
IEP	-0.80	(1.76)	-1.03***	(0.28)
Health Condition	-0.12	(1.43)	-0.23	(0.29)
English Proficiency	***		***	
Level 1	-10.25***	(1.03)	-3.47***	(0.18)
Level 2	-7.68***	(1.40)	-2.65***	(0.25)
Level 3	-6.87***	(1.03)	-2.01***	(0.18)
Level 4	-5.25***	(0.09)	-1.52***	(0.15)
Level 5[b]	0.00	(0.00)	0.00	(0.00)
Time x Cohort	**		***	
Time x Cohort 1	--	--	0.36***	(0.09)
Time x Cohort 2	--	--	0.20*	(0.09)
Time x Cohort 3	-0.93**	(0.28)	--	--
Time x Cohort 4[b]	0.00	(0.00)	0.00	(0.00)

[a] Significance levels are *p< .05, **p< .01, ***p< .001

[b] Cohort 4 and English Proficiency Level 5 are reference cells.

Table 14. Multiple Cohorts Child Outcomes Regression Results – Math and General Knowledge

	Math				General Knowledge	
	Applied Problems (WJ Applied Problems) n=512		Counting (Counting Task) n=510		Basic Self-Knowledge (Social Awareness Task) n=511	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Intercept	103.74***	(0.85)	17.06***	(0.68)	4.21***	(0.10)
Time	1.66***	(0.29)	6.77***	(0.31)	0.52***	(0.04)
Grade	-1.07**	(0.41)	1.21*	(0.53)	-0.17**	(0.05)
Cohort	***		***		NS	
Cohort 1	-3.45***	(0.71)	-2.4***	(0.55)	0.11	(0.09)
Cohort 2	-4.44***	(0.70)	-1.95***	(0.54)	-0.14	(0.09)
Cohort 3	-3.58***	(0.78)	-1.73**	(0.60)	-0.02	(0.10)
Cohort 4[b]	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)
Program Type	0.35	(0.46)	-0.56	(0.35)	-0.08	(0.05)
Months Btwn Assess	0.27***	(0.07)	0.27***	(0.08)	0.06***	(0.01)
Attendance	0.17	(0.28)	0.81***	(0.20)	0.07*	(0.03)
Age	--	--	3.36***	(0.52)	0.24**	(0.07)
Gender	-0.71	(0.40)	-1.42***	(0.29)	-0.16***	(0.04)
Income	-2.36***	(0.47)	-1.27***	(0.34)	-0.10*	(0.05)
Ed Need	--	--	--	--	--	--
IEP	-5.91***	(0.99)	-1.94**	(0.74)	-0.39***	(0.10)
Health Condition	-0.36	(0.98)	-0.33	(0.72)	0.02	(0.10)
English Proficiency	***		***		***	
Level 1	-17.13***	(0.59)	-7.01***	(0.44)	-1.79***	(0.06)
Level 2	-11.29***	(0.88)	-5.53***	(0.65)	-0.81***	(0.09)
Level 3	-8.42***	(0.62)	-3.66***	(0.47)	-0.55***	(0.06)
Level 4	-5.19***	(0.53)	-2.82***	(0.39)	-0.37***	(0.05)
Level 5[b]	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)
Time x Cohort	**		NS		*	
Time x Cohort 1	0.73*	(0.29)	-0.04	(0.23)	0.01	(0.03)
Time x Cohort 2	1.00***	(0.28)	-0.05	(0.23)	0.09**	(0.03)
Time x Cohort 3	0.67*	(0.31)	0.03	(0.25)	0.01	(0.04)
Time x Cohort 4[b]	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)

[a] Significance levels are *p< .05, **p< .01, ***p< .001

[b] Cohort 4 and English Proficiency Level 5 are reference cells.

Figure 1. Growth in Expressive Vocabulary (EOWPVT-4) by Gender
n=554

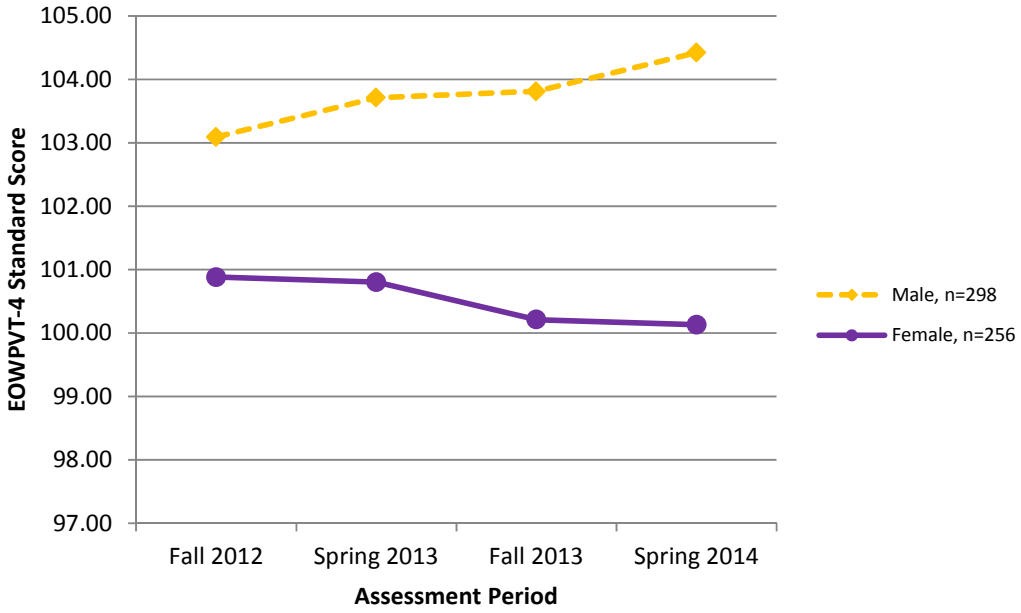

Figure 2. Growth in Math Problem-Solving (WJ Ach) by Gender
n=559

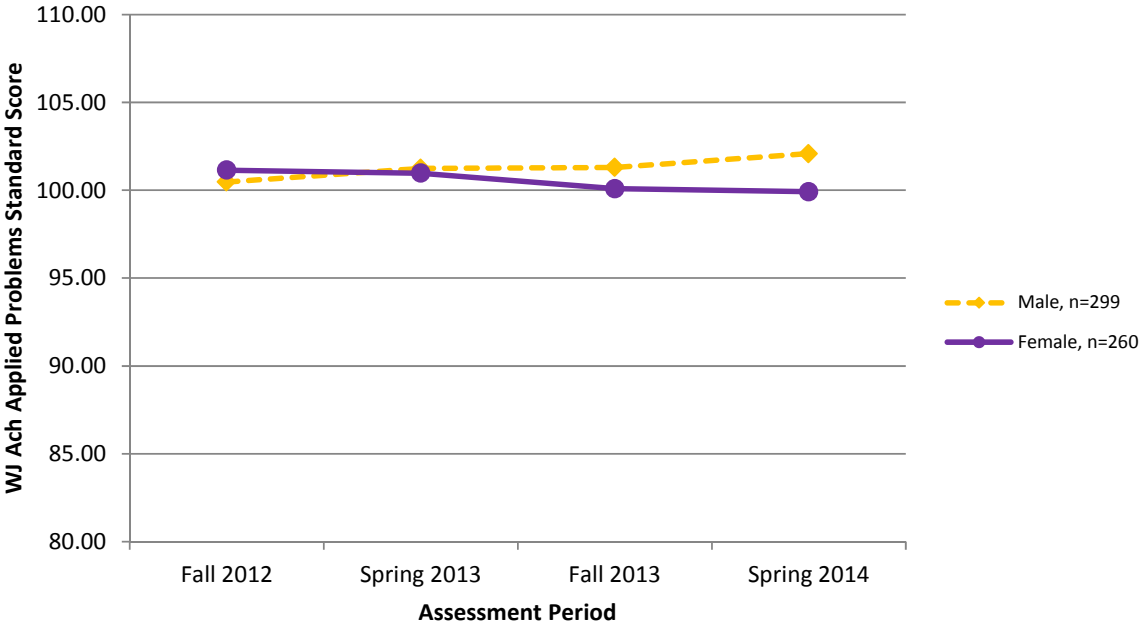

Figure 3. Growth in Letter-Word Identification (WJ Ach) by Educational Need
n=559

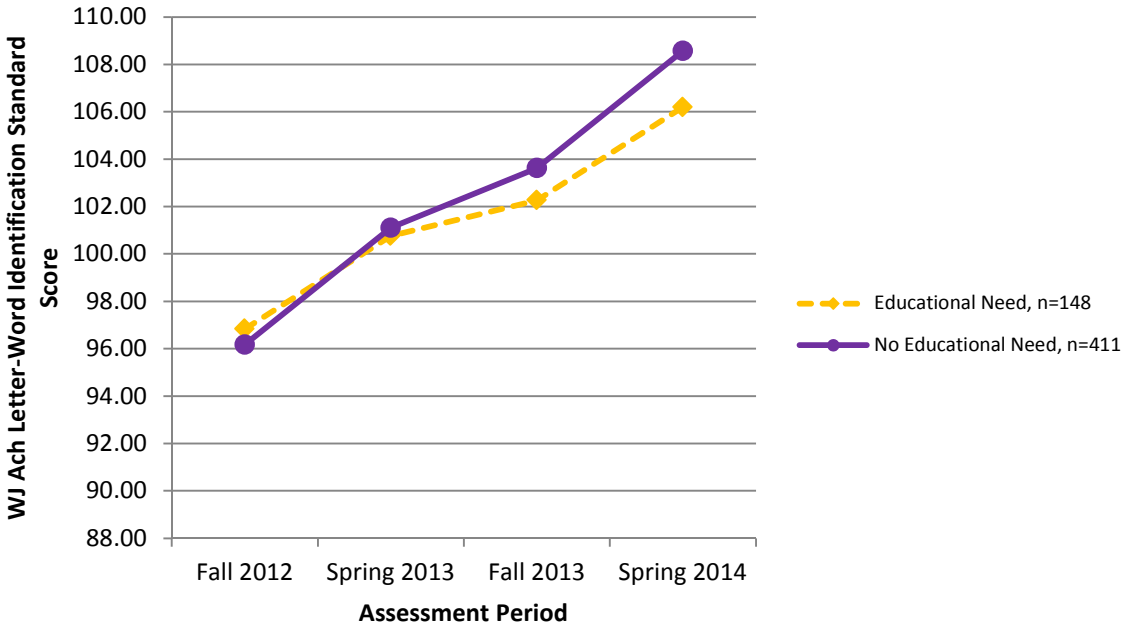

Figure 4. Growth in Sound Awareness (WJ Ach) by Educational Need
n=556

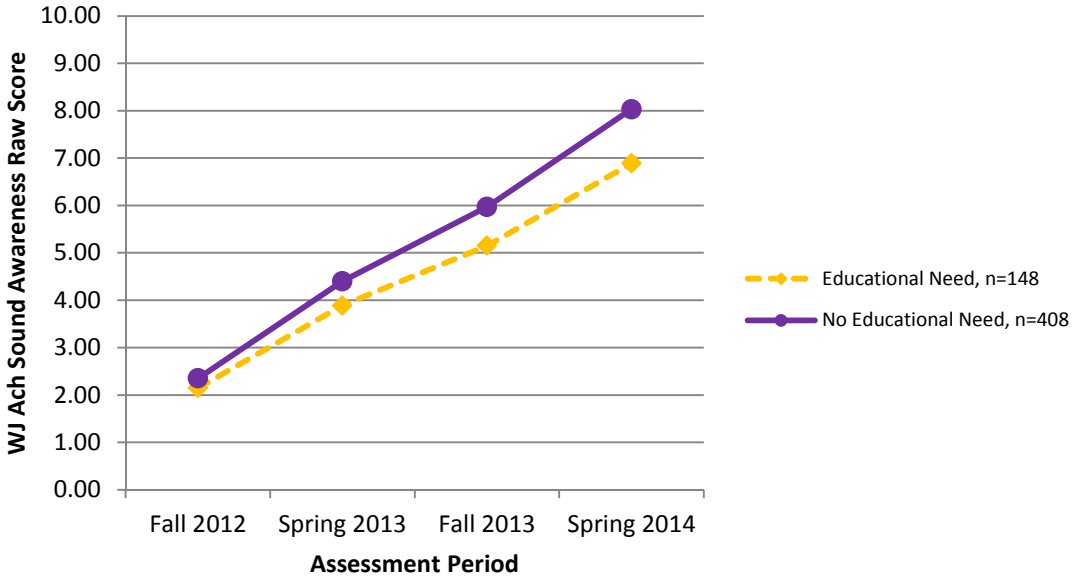

Figure 5. Growth in Math Problem-Solving (WJ Ach) by Educational Need
n=559

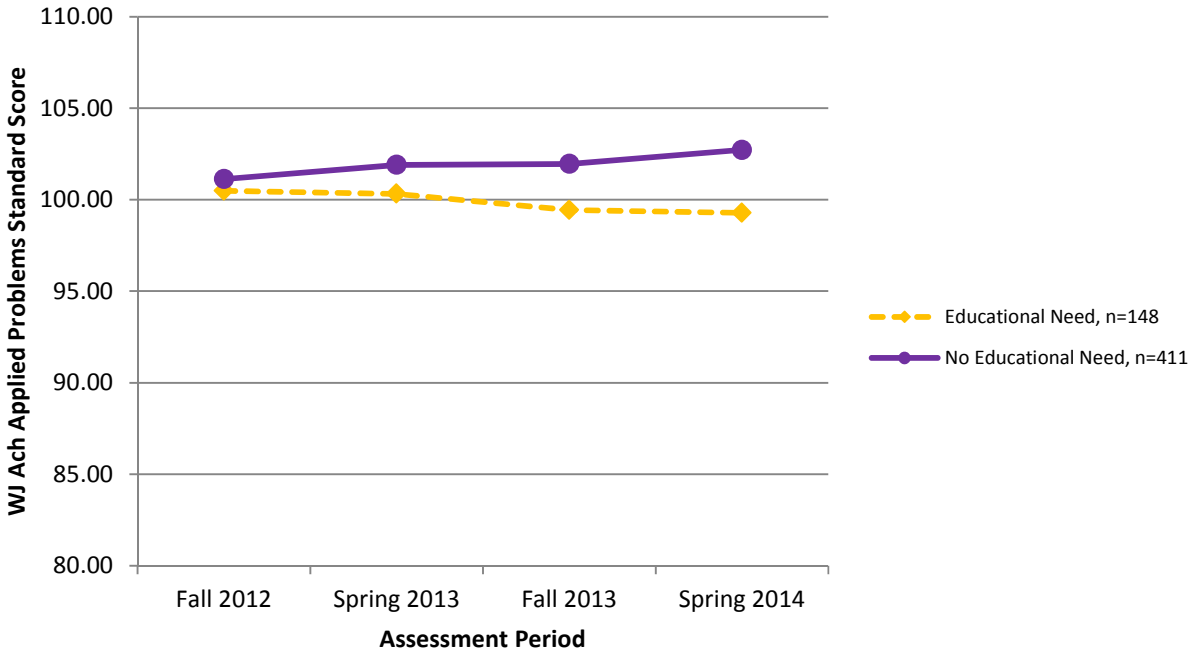

Figure 6. Growth in Letter-Word Identification (WJ Ach) by IEP
n=559

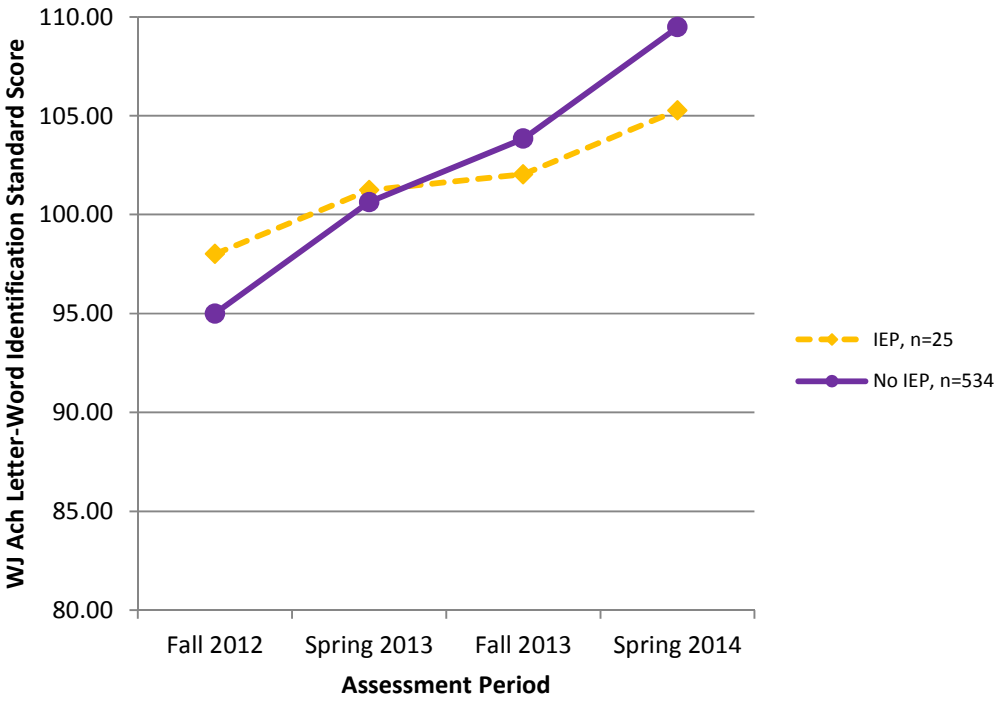

Figure 7. Growth in Receptive Vocabulary (ROWPVT-4) by English Proficiency
n=558

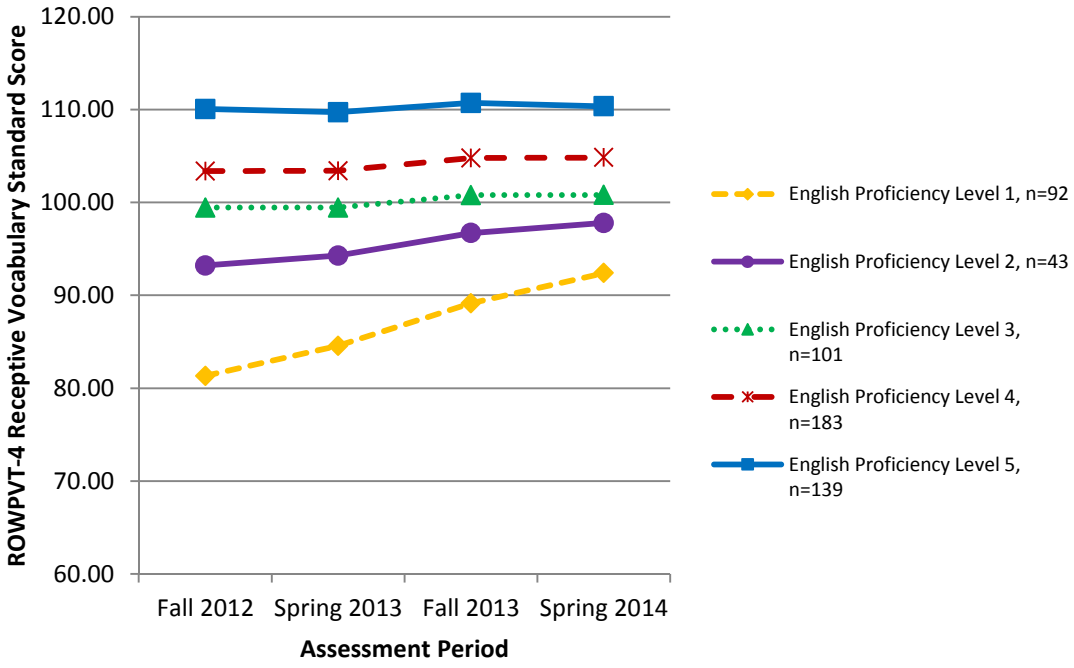

Figure 8. Growth in Expressive Vocabulary (EOWPVT-4) by English Proficiency
n=554

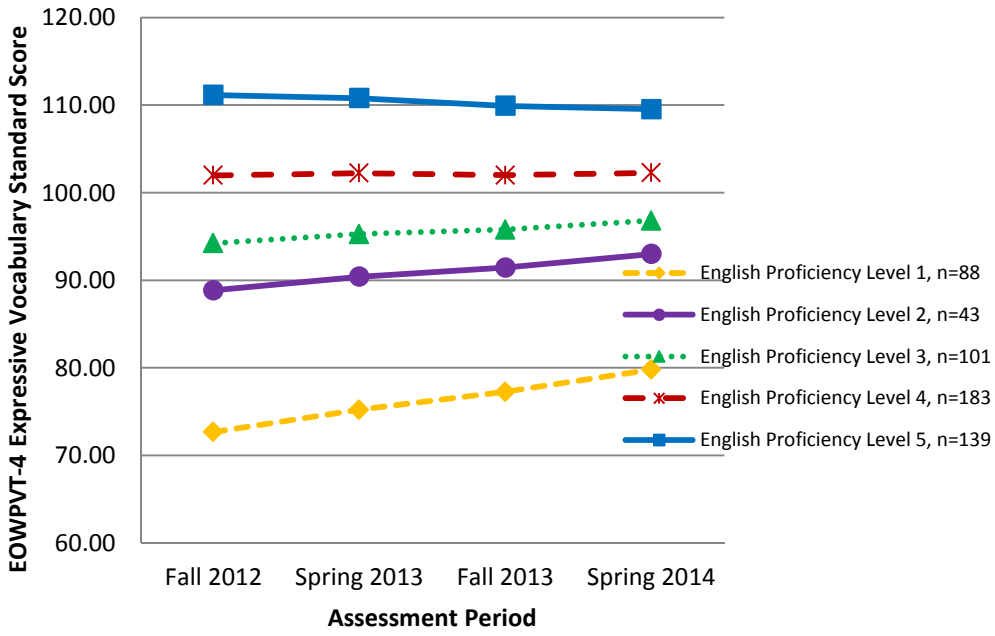

Figure 9. Growth in Math Problem-Solving (WJ Ach) by English Proficiency
n=559

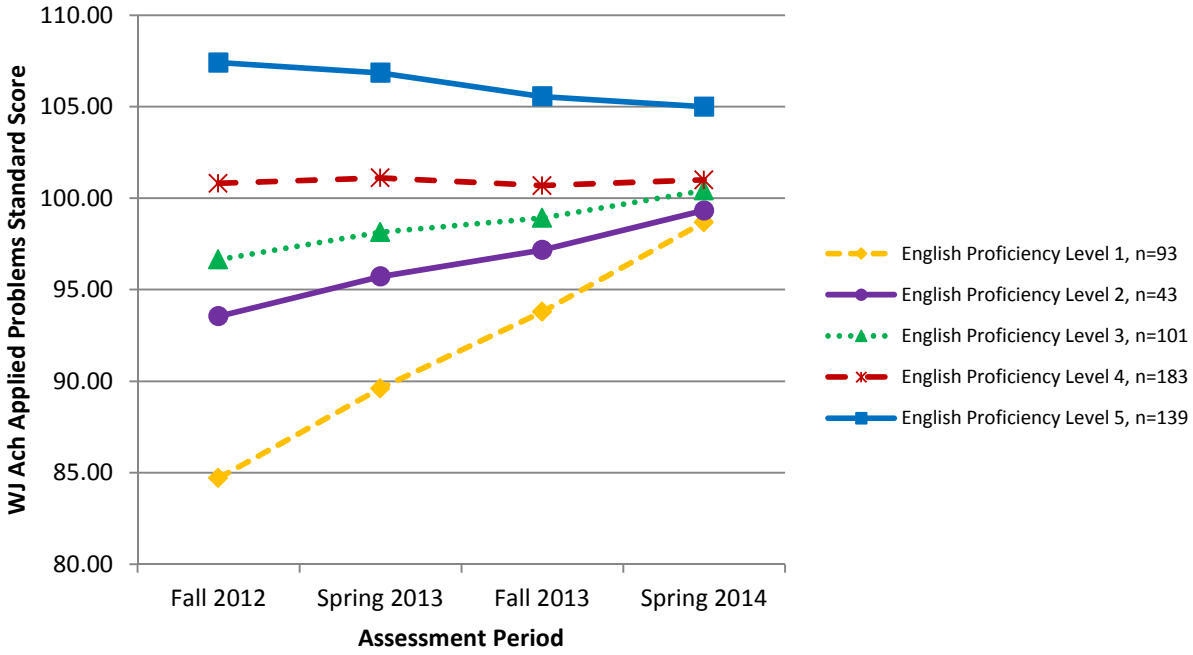

Figure 10. Growth in Math Counting Skills (Counting Task) by English Proficiency
n=556

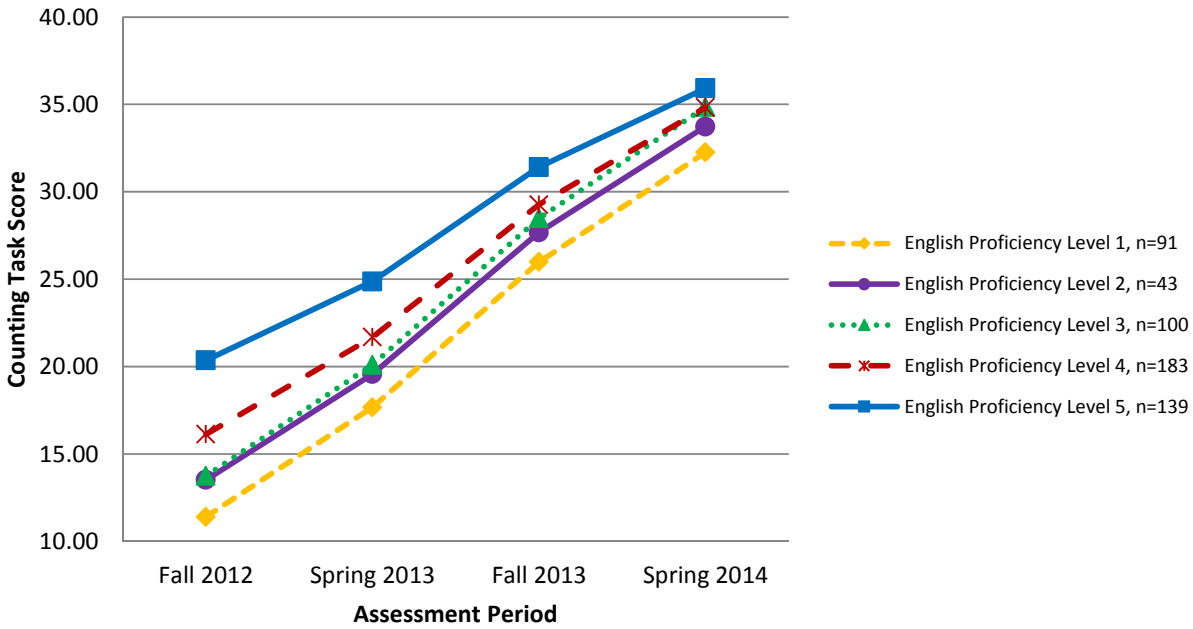

Figure 11. Growth in Basic Self-Knowledge (Social Awareness Task) by English Proficiency
n=556

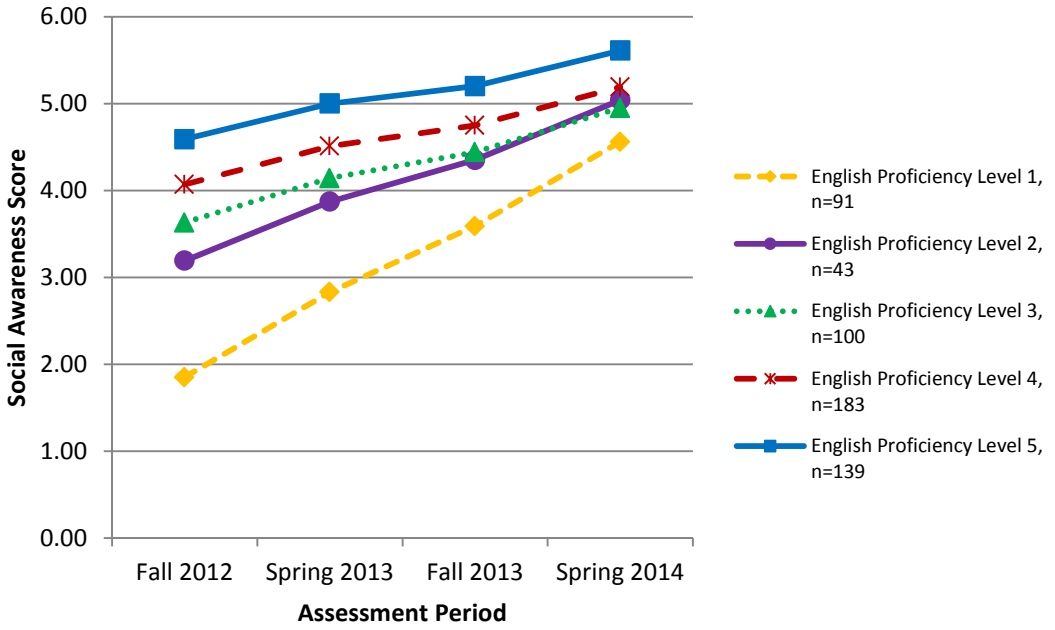

Figure 12. Growth in Sound Awareness (WJ Ach) by English Proficiency
n= 556

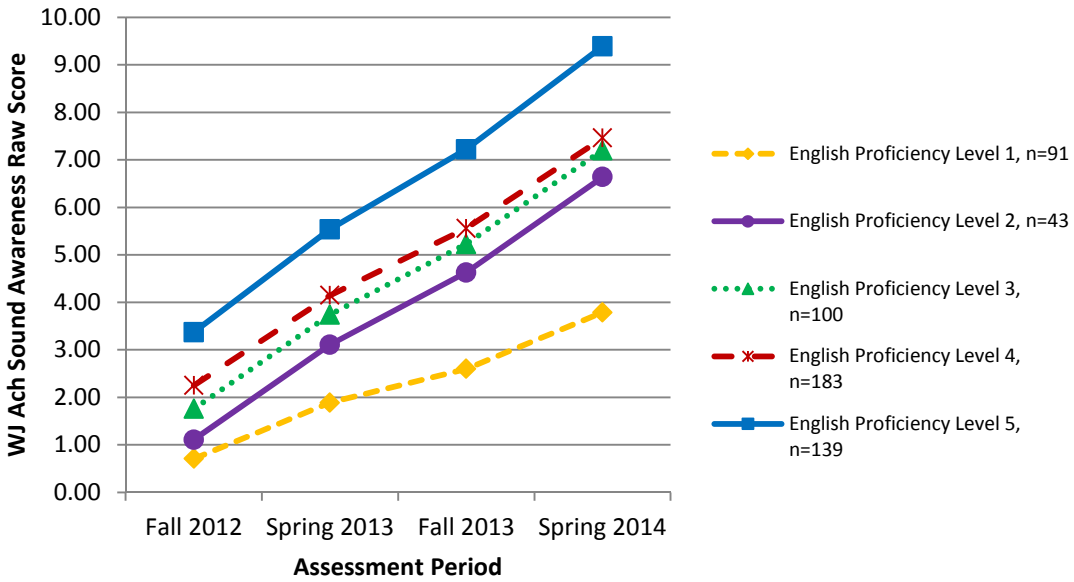

Table 15. Child Outcome Scores for DLL Subsample

	English Outcomes								Spanish Outcomes							
	Pre-K				K				Pre-K				K			
	Fall		Spring		Fall		Spring		Fall		Spring		Fall		Spring	
	Mean (SD)		Mean (SD)		Mean (SD)		Mean (SD)		Mean (SD)		Mean (SD)		Mean (SD)		Mean (SD)	
Measure	N	Range	N	Range	N	Range	N	Range	N	Range	N	Range	N	Range	N	Range
Language and Literacy																
Receptive Vocabulary (ROWPVT-4 / SBE[a])	98	84.0 (13.6) 55–118	108	87.8 (12.8) 58–115	81	93.7 (11.3) 71–121	82	95.6 (10.7) 77–136	108	84.5 (19.1) 55–128	100	88.9 (20.4) 55–141	81	95.9 (12.4) 64–121	82	95.6 (14.5) 65–131
Expressive Vocabulary (EOWPVT-4 / SBE[a])	79	78.0 (15.4) 55–114	87	79.0 (15.1) 55–124	78	80.0 (15.3) 57–132	82	83.6 (14.6) 58–125	87	93.5 (21.6) 55–142	79	92.4 (19.0) 55–135	74	89.3 (20.0) 55–135	72	89.0 (20.1) 55–128
Letter-Word Identification (WJ Ach / WM Apr Letter-Word Identification[a,b])	114	90.7 (11.3) 63–131	108	97.0 (12.2) 69–154	82	101.7 (11.7) 74–146	81	110.7 (11.8) 83–151	117	90.0 (10.9) 68–155	109	87.9 (11.4) 67–146	82	88.1 (15.3) 60–167	82	91.5 (19.9) 62–162
Phonological Awareness (WJ Ach / WM Apr Sound Awareness - Rhyming[c])	113	1.0 (1.8) 0–12	108	2.7 (2.6) 0–13	82	3.9 (3.3) 0–13	81	6.1 (4.0) 0–15	117	1.3 (1.9) 0–10	109	1.9 (2.1) 0–9	82	3.0 (2.9) 0–12	81	4.7 (3.5) 0–14
Math																
Math Problem-Solving (WJ Ach / WM Apr Applied Problems[a,b])	114	88.6 (15.2) 58–121	108	96.7 (11.4) 61–134	82	100.4 (8.6) 84–122	82	102.5 (9.2) 72–125	117	92.0 (11.9) 55–124	108	94.6 (11.1) 57–122	82	96.3 (8.9) 73–122	82	100.0 (10.9) 66–126
Counting (Counting Task[d])	114	12.0 (7.6) 0–40	108	17.8 (9.9) 1–40	82	28.1 (11.4) 3–40	82	37.1 (6.8) 12–40	117	8.2 (5.2) 1–40	109	10.2 (6.7) 0–40	82	12.4 (8.6) 0–40	82	16.3 (10.8) 5–40
General Knowledge																
Basic Self-Knowledge (Social Awareness Task[e])	116	2.0 (1.3) 0–6	109	3.2 (1.5) 0–6	83	4.0 (1.1) 1–6	82	4.9 (1.1) 2–6	117	2.4 (1.2) 0–4	110	3.2 (1.2) 0–6	83	3.7 (0.9) 1–6	82	4.0 (1.1) 1–6

[a] Indicates standard scores on norm-referenced measure with mean=100, SD=15.
[b] Scores reflect use of updated normative tables (2007).
[c] Possible range=0–17.
[d] Possible range=0–40.
[e] Possible range=0–6.

Table 16. DLL Subsample English Child Outcomes Regression Results—Language and Literacy

	Receptive Vocabulary (ROWPVT-4) n=117		Expressive Vocabulary (EOWPVT-4) n=114		Letter-Word Identification (WJ Ach Letter-Word ID) n=119		Phonological Awareness (WJ Ach Sound Awareness - Rhyming) n=117	
Effect	Est[f]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Model 1								
Intercept	110.89***	(4.98)	109.16***	(5.45)	119.21***	(4.69)	6.92***	(0.94)
Time	3.00***	(0.78)	4.39***	(0.76)	7.61***	(0.85)	1.97***	(0.25)
Grade	1.49	(1.42)	-1.65	(1.45)	-3.46*	(1.58)	-0.99*	(0.45)
Program Type	1.60	(1.82)	0.78	(2.02)	4.88*	(2.39)	0.10	(0.38)
Time Btwn Assess	0.80**	(0.24)	0.05	(0.24)	0.12	(0.26)	0.01	(0.07)
Attendance	0.24	(1.28)	-1.49	(1.34)	-1.40	(1.23)	-0.12	(0.24)
Age	--	--	--	--	--	--	0.71	(0.49)
Gender	1.24	(1.55)	3.73*	(1.72)	0.59	(1.40)	-0.05	(0.28)
Income	-3.57	(2.63)	-2.55	(2.88)	-1.92	(2.65)	-0.23	(0.50)
Ed Need	2.28	(2.01)	1.35	(2.23)	-0.94	(2.35)	0.60	(0.40)
Health Condition	-1.05	(2.74)	-4.66	(3.12)	-1.11	(2.66)	-0.98	(0.52)
English Proficiency	***		***		***		***	
Level 1	-30.62***	(4.72)	-45.50***	(5.18)	-31.30***	(4.33)	-6.66***	(0.89)
Level 2	-26.51***	(5.26)	-35.91***	(5.77)	-28.90***	(4.66)	-6.76***	(0.96)
Level 3	-17.66***	(4.98)	-28.83***	(5.46)	-31.88***	(4.63)	-5.76***	(0.95)
Level 4	-12.80*	(5.18)	-20.02***	(5.67)	-26.08***	(4.87)	-5.20***	(0.98)
Level 5[b]	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)
Model 2 Additions								
Time x Gender	-0.19	(0.78)	0.51	(0.80)	-0.93	(0.85)	0.34	(0.26)
Time x Income	0.66	(1.26)	1.41	(1.18)	-0.63	(1.35)	0.45	(0.43)
Time x Ed Need	-0.23	(0.94)	0.07	(0.98)	-1.09	(1.02)	-0.02	(0.32)
Time x Hlth Cndtn	0.45	(1.35)	-1.33	(1.47)	-0.28	(1.44)	-0.64	(0.44)
Time x Eng Prof	***		NS		NS		*	
Time x Level 1	2.53	(2.14)	0.00	(2.04)	-1.77	(2.39)	-0.76	(0.73)
Time x Level 2	0.92	(2.42)	-0.09	(2.30)	-1.66	(2.71)	-0.65	(0.83)
Time x Level 3	-2.00	(2.26)	-1.46	(2.11)	-2.63	(2.53)	0.55	(0.77)
Time x Level 4	-1.54	(2.35)	-2.41	(2.20)	-2.21	(2.62)	-0.55	(0.80)
Time x Level 5[g]	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)

[f] Significance levels are *p< .05, **p< .01, ***p< .001

[g] English Proficiency Level 5 is the reference cell.

Table 16. DLL Subsample English Child Outcomes Regression Results—Language and Literacy

	Receptive Vocabulary (ROWPVT-4) n=117		Expressive Vocabulary (EOWPVT-4) n=114		Letter-Word Identification (WJ Ach Letter-Word ID) n=119		Phonological Awareness (WJ Ach Sound Awareness - Rhyming) n=117	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Model 3a Additions								
ECERS-R Total	-0.84	(1.26)	-0.75	(1.42)	0.22	(1.49)	-0.10	(0.24)
Time x ECERS-R	0.52	(0.52)	0.44	(0.53)	-0.42	(0.59)	0.05	(0.18)
Model 3b Additions								
CLASS Emot Sup	-0.19	(1.34)	2.88	(1.57)	-0.47	(1.61)	-0.44	(0.24)
CLASS Class Org	1.09	(1.32)	-1.84	(1.53)	1.57	(1.61)	0.48	(0.24)
CLASS Instrctn Sup	-2.41	(1.27)	-0.68	(1.46)	-1.58	(1.48)	-0.04	(0.23)
Time x CLASS ES	-0.56	(0.55)	-0.98	(0.56)	-0.20	(0.59)	0.04	(0.19)
Time x CLASS CO	-0.10	(0.55)	0.20	(0.56)	-1.10	(0.59)	-0.22	(0.19)
Time x CLASS IS	1.48**	(0.52)	0.66	(0.55)	0.36	(0.57)	0.33	(0.18)
Model 3c Additions								
ELLCO Gn Clas Env	1.14	(1.99)	-1.98	(2.25)	1.08	(2.51)	-0.04	(0.38)
ELLCO Lang & Lit	-2.53	(1.96)	2.12	(2.22)	-0.97	(2.38)	0.26	(0.36)
Time x ELLCO GCE	-0.18	(0.79)	1.69*	(0.80)	-1.49	(0.87)	-0.32	(0.27)
Time x ELLCO L& L	1.33	(0.77)	-1.68*	(0.76)	1.05	(0.84)	0.26	(0.27)
Model 3d Additions								
CIS Total Score[b]	-0.16	(1.03)	-0.04	(1.21)	-0.03	(1.30)	-0.07	(0.20)
Time x CIS Total	0.28	(0.46)	0.01	(0.49)	-0.08	(0.52)	0.15	(0.16)

[a] Significance levels are *p< .05, **p< .01, ***p< .001

[b] The ns for model 3d were reduced by 2 because one classroom had missing CIS data.

Table 17. DLL Subsample English Child Outcomes Regression Results—Math and General Knowledge

	Math				General Knowledge	
	Math Problem-Solving (WJ Ach Applied Problems) n=119		Counting (Counting Task) n=117		Basic Self-Knowledge (Social Awareness Task) n=117	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Model 1						
Intercept	105.40***	(4.75)	25.97***	(3.79)	4.01***	(0.52)
Time	3.88***	(0.85)	7.44***	(0.87)	0.93***	(0.12)
Grade	-1.43	(1.46)	2.59	(1.70)	-0.27	(0.24)
Program Type	2.52	(1.88)	1.73	(1.62)	-0.20	(0.19)
Months Btwn Assess	1.08***	(0.24)	-0.09	(0.28)	0.09*	(0.04)
Attendance	1.14	(1.36)	0.38	(0.99)	0.00	(0.14)
Age	--	--	4.09*	(2.02)	0.48	(0.28)
Gender	1.23	(1.47)	-0.89	(1.14)	-0.15	(0.16)
Income	-1.29	(2.48)	0.97	(2.02)	-0.35	(0.27)
Ed Need	-1.05	(2.02)	-1.93	(1.69)	0.49*	(0.21)
Health Condition	-2.56	(2.62)	-1.41	(2.13)	-0.26	(0.29)
English Proficiency	***		***		***	
Level 1	-18.53***	(4.41)	-18.73***	(3.55)	-2.03***	(0.49)
Level 2	-14.49**	(4.90)	-16.72***	(3.87)	-1.31*	(0.55)
Level 3	-11.29*	(4.68)	-14.71***	(3.81)	-1.04*	(0.52)
Level 4	-7.39	(4.88)	-13.51***	(3.94)	-0.93	(0.54)
Level 5[b]	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)
Model 2 Additions						
Time x Gender	0.12	(0.87)	-1.06	(0.68)	0.12	(0.10)
Time x Income	0.28	(1.41)	-0.21	(1.07)	-0.09	(0.15)
Time x Ed Need	-1.89	(1.06)	-0.83	(0.82)	0.04	(0.12)
Time x Health Cndtn	0.22	(1.51)	-0.51	(1.16)	0.12	(0.16)
Time x Eng Prof	***		*		**	
Time x Level 1	9.54***	(2.54)	6.56***	(1.89)	0.76**	(0.27)
Time x Level 2	7.52*	(2.86)	6.57**	(2.15)	0.45	(0.30)
Time x Level 3	6.29*	(2.69)	7.25***	(2.00)	0.54	(0.28)
Time x Level 4	2.96	(2.78)	6.33**	(2.08)	0.30	(0.29)
Time x Level 5[b]	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)

[a] Significance levels are *p< .05, **p< .01, ***p< .001

[b] English Proficiency Level 5 is the reference cell.

Table 17. DLL Subsample English Child Outcomes Regression Results—Math and General Knowledge

	Math				General Knowledge	
	Math Problem-Solving (WJ Ach Applied Problems) n=119		Counting (Counting Task) n=117		Basic Self-Knowledge (Social Awareness Task) n=117	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Model 3a Additions						
ECERS-R Total	0.67	(1.46)	0.38	(1.01)	-0.06	(0.14)
Time x ECERS-R	0.37	(0.59)	0.30	(0.47)	-0.01	(0.07)
Model 3b Additions						
CLASS Emot Sup	0.05	(1.54)	-0.89	(1.08)	0.06	(0.14)
CLASS Class Org	0.17	(1.53)	1.13	(1.08)	0.07	(0.14)
CLASS Instrctn Sup	0.32	(1.50)	-0.41	(1.03)	-0.13	(0.14)
Time x CLASS ES	-0.34	(0.63)	0.34	(0.50)	-0.12	(0.07)
Time x CLASS CO	-0.21	(0.62)	-0.25	(0.50)	0.04	(0.07)
Time x CLASS IS	0.24	(0.61)	0.36	(0.48)	0.02	(0.07)
Model 3c Additions						
ELLCO Gen Clas Env	4.54	(2.31)	1.12	(1.65)	0.19	(0.22)
ELLCO Lang & Lit	-3.97	(2.26)	-0.61	(1.59)	-0.17	(0.21)
Time x ELLCO GCE	-1.69	(0.90)	-1.19	(0.70)	-0.07	(0.10)
Time x ELLCO L & L	1.35	(0.88)	1.56*	(0.68)	0.04	(0.10)
Model 3d Additions						
CIS Total Score[b]	0.04	(1.23)	-0.22	(0.88)	-0.07	(0.12)
Time x CIS Total	0.03	(0.52)	0.31	(0.42)	0.02	(0.06)

[a] Significance levels are *p< .05, **p< .01, ***p< .001

[b] The ns for model 3d were reduced by 2 because one classroom had missing CIS data.

Table 18. DLL Subsample Spanish Child Outcomes Regression Results—Language and Literacy

	Receptive Vocabulary (ROWPVT-SBE) n=115		Expressive Vocabulary (EOWPVT-SBE) n=98		Letter-Word Identification (WM Apr Letter-Word ID) n=119		Phonological Awareness (WM Apr Sound Awareness - Rhyming) n=119	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Model 1								
Intercept	97.98***	(3.14)	108.00***	(5.04)	92.33***	(2.86)	1.93***	(0.46)
Time	1.44	(1.12)	-1.67	(1.07)	0.66	(0.92)	1.08***	(0.21)
Grade	4.21	(2.41)	1.97	(2.23)	-0.69	(1.74)	0.06	(0.41)
Program Type	0.42	(2.69)	-1.27	(5.17)	4.44	(2.48)	0.24	(0.40)
Months Betwn Assess	0.69	(0.40)	-0.07	(0.38)	-0.78*	(0.30)	-0.07	(0.07)
Attendance	2.45	(1.93)	2.37	(3.62)	-1.09	(1.48)	-0.35	(0.26)
Age	--	--	--	--	--	--	1.46**	(0.52)
Gender	0.90	(1.96)	-0.25	(3.04)	-0.24	(1.90)	-0.02	(0.30)
Income	-3.69	(3.28)	-4.79	(5.90)	-0.22	(3.25)	-0.55	(0.52)
Ed Need	0.05	(2.67)	1.16	(4.73)	-3.03	(2.53)	-0.20	(0.41)
Health Condition	-1.19	(3.56)	7.25	(5.62)	0.26	(3.55)	-0.09	(0.57)
Spanish Proficiency	***		***		**		*	
Level 1	-26.62***	(2.97)	-32.58***	(5.81)	-9.85***	(2.78)	-1.25**	(0.45)
Level 2	-20.67***	(3.49)	-23.59***	(6.32)	-8.87*	(3.80)	-1.56*	(0.61)
Level 3	-15.36***	(2.89)	-21.23***	(4.37)	-4.82	(2.90)	-0.93*	(0.46)
Level 4	-7.36**	(2.75)	-12.65**	(4.02)	-7.64***	(2.76)	-1.04*	(0.44)
Level 5[b]	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)
Model 2 Additions								
Time x Gender	-2.28*	(1.09)	-1.91	(1.24)	2.10	(1.22)	0.22	(0.26)
Time x Income	1.47	(1.72)	-0.42	(2.11)	-0.31	(1.91)	0.51	(0.40)
Time x Ed Need	-2.50 *	(1.19)	-1.34	(1.35)	-1.14	(1.34)	-0.36	(0.28)
Time x Health Cndtn	0.80	(1.85)	1.83	(1.91)	0.50	(2.05)	-0.37	(0.44)
Time x Span Prof	NS		NS		NS		NS	
Time x Level 1	1.60	(1.67)	0.32	(2.49)	-2.90	(1.83)	-0.42	(0.39)
Time x Level 2	1.35	(2.12)	-1.00	(2.45)	0.24	(2.36)	-0.22	(0.51)
Time x Level 3	3.17*	(1.54)	2.23	(1.62)	-2.92	(1.72)	0.57	(0.37)
Time x Level 4	3.39*	(1.50)	0.12	(1.56)	0.58	(1.68)	0.16	(0.36)
Time x Level 5[b]	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)

[a] Significance levels are *p< .05, **p< .01, ***p< .001

[b] Spanish Proficiency Level 5 is the reference cell.

Table 18. DLL Subsample Spanish Child Outcomes Regression Results—Language and Literacy

	Receptive Vocabulary (ROWPVT-SBE) n=115		Expressive Vocabulary (EOWPVT-SBE) n=98		Letter-Word Identification (WM Apr Letter-Word ID) n=119		Phonological Awareness (WM Apr Sound Awareness - Rhyming) n=119	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Model 3a Additions								
ECERS-R Total	0.31	(2.14)	1.82	(3.22)	-1.52	(1.48)	0.06	(0.25)
Time x ECERS-R	-0.20	(0.73)	0.23	(0.82)	0.66	(0.82)	0.19	(0.17)
Model 3b Additions								
CLASS Emot Sup	0.78	(2.24)	-0.60	(3.57)	-0.64	(1.54)	-0.52*	(0.24)
CLASS Class Org	-0.28	(2.28)	0.37	(3.58)	1.04	(1.56)	0.54*	(0.24)
CLASS Instrctn Sup	-1.49	(2.15)	-1.92	(3.31)	-3.15*	(1.47)	0.16	(0.24)
Time x CLASS ES	0.08	(0.78)	-0.36	(0.93)	-0.91	(0.88)	-0.02	(0.19)
Time x CLASS CO	-0.10	(0.81)	0.34	(0.91)	0.80	(0.89)	0.18	(0.19)
Time x CLASS IS	0.49	(0.75)	-0.78	(0.87)	-0.56	(0.85)	-0.01	(0.18)
Model 3c Additions								
ELLCO Gen Clas Env	-1.33	(3.38)	1.75	(5.56)	-4.30	(2.30)	-0.39	(0.40)
ELLCO Lang & Lit	1.18	(3.31)	-0.81	(5.32)	3.88	(2.22)	0.56	(0.39)
Time x ELLCO GCE	1.38	(1.11)	0.46	(1.31)	1.38	(1.25)	-0.05	(0.27)
Time x ELLCO L & L	-1.32	(1.09)	-1.12	(1.28)	-1.44	(1.21)	0.19	(0.26)
Model 3d Additions								
CIS Total Score[b]	1.34	(1.86)	-1.57	(2.72)	-1.62	(1.24)	-0.02	(0.21)
Time x CIS Total	-0.37	(0.65)	-0.31	(0.72)	0.03	(0.74)	0.14	(0.15)

[a] Significance levels are *p< .05, **p< .01, ***p< .001

[b] The ns for model 3d were reduced by 2 because one classroom had missing CIS data.

Table 19. DLL Subsample Spanish Child Outcomes Regression Results—Math and General Knowledge

	Math				General Knowledge	
	Math Problem-Solving (WM Apr Applied Problems) n=119		Counting (Counting Task) n=119		Basic Self-Knowledge (Social Awareness Task) n=119	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Model 1						
Intercept	95.74***	(2.21)	9.72***	(1.43)	3.22***	(0.20)
Time	3.17***	(0.74)	2.69***	(0.51)	0.40***	(0.12)
Grade	-2.10	(1.57)	-0.86	(0.97)	0.02	(0.23)
Program Type	4.06*	(1.77)	1.42	(1.19)	0.23	(0.16)
Months Btwn Assess	-0.29	(0.27)	-0.08	(0.17)	0.06	(0.04)
Attendance	1.12	(1.27)	0.05	(0.76)	0.02	(0.12)
Age	--	--	3.37*	(1.65)	0.40	(0.20)
Gender	1.02	(1.49)	0.99	(0.99)	0.03	(0.12)
Income	-2.98	(2.45)	-0.60	(1.65)	-0.39	(0.20)
Educational Need	-4.70*	(1.81)	-1.61	(1.23)	-0.23	(0.16)
Health Condition	-2.81	(2.62)	0.67	(1.79)	-0.02	(0.22)
Spanish Proficiency	***		NS		***	
Level 1	-14.13***	(2.17)	-3.76**	(1.43)	-1.18***	(0.18)
Level 2	-9.50**	(2.90)	-2.07	(1.93)	-0.89***	(0.24)
Level 3	-5.20*	(2.19)	-3.07*	(1.49)	-0.49**	(0.18)
Level 4	-5.15*	(2.11)	-1.91	(1.43)	-0.43*	(0.17)
Level 5[b]	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)
Model 2 Additions						
Time x Gender	1.23	(0.76)	-0.47	(0.70)	0.06	(0.10)
Time x Income	2.43*	(1.19)	0.71	(1.10)	0.19	(0.16)
Time x Ed Need	0.80	(0.84)	-0.11	(0.76)	-0.14	(0.11)
Time x Health Cndtn	-1.19	(1.31)	0.62	(1.17)	-0.04	(0.17)
Time x Spanish Prof	NS		NS		NS	
Time x Level 1	0.08	(1.13)	-1.62	(1.04)	0.03	(0.15)
Time x Level 2	-1.11	(1.46)	0.71	(1.35)	-0.20	(0.19)
Time x Level 3	0.66	(1.08)	-0.79	(0.98)	-0.07	(0.14)
Time x Level 4	-0.14	(1.06)	0.76	(0.96)	0.08	(0.14)
Time x Level 5[b]	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)

[a] Significance levels are *p< .05, **p< .01, ***p< .001

[b] Spanish Proficiency Level 5 is the reference cell.

Table 19. DLL Subsample Spanish Child Outcomes Regression Results—Math and General Knowledge

	Math				General Knowledge	
	Math Problem-Solving (WM Apr Applied Problems) n=119		Counting (Counting Task) n=119		Basic Self-Knowledge (Social Awareness Task) n=119	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Model 3a Additions						
ECERS-R Total	-0.01	(1.33)	0.41	(0.71)	0.06	(0.14)
Time x ECERS-R	0.35	(0.52)	0.26	(0.47)	0.05	(0.07)
Model 3b Additions						
CLASS Emot Sup	2.04	(1.33)	0.21	(0.72)	0.05	(0.14)
CLASS Class Org	0.45	(1.33)	0.56	(0.73)	0.11	(0.14)
CLASS Instrctn Sup	-1.26	(1.30)	-0.96	(0.71)	-0.07	(0.14)
Time x CLASS ES	-1.65**	(0.53)	-0.41	(0.51)	-0.02	(0.07)
Time x CLASS CO	0.42	(0.54)	0.20	(0.51)	-0.01	(0.07)
Time x CLASS IS	0.72	(0.51)	0.24	(0.49)	-0.02	(0.07)
Model 3c Additions						
ELLCO Gen Clas Env	0.11	(2.06)	0.26	(1.12)	0.22	(0.22)
ELLCO Land & Lit	0.34	(2.01)	0.04	(1.09)	-0.14	(0.21)
Time x ELLCO GCE	0.28	(0.79)	0.18	(0.71)	0.04	(0.10)
Time x ELLCO L & L	-0.40	(0.77)	-0.30	(0.70)	-0.07	(0.10)
Model 3d Additions						
CIS Total Score[b]	2.09	(1.08)	-0.11	(0.60)	0.18	(0.12)
Time x CIS Total	-0.74	(0.46)	-0.07	(0.42)	-0.11	(0.06)

[a] Significance levels are *p< .05, **p< .01, ***p< .001

[b] The ns for model 3d were reduced by 2 because one classroom had missing CIS data.

Figure 13. Growth in DLL Subsample Receptive Vocabulary (ROWPVT-4) by English Proficiency
n=117

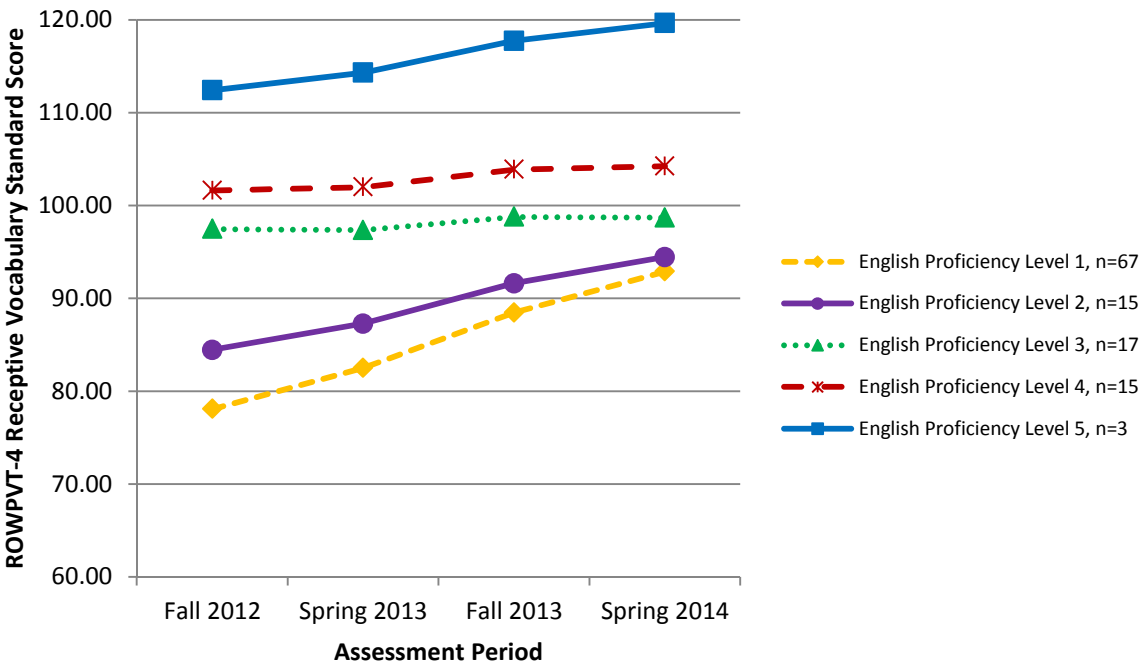

Figure 14. Growth in DLL Subsample Math Problem-Solving (WJ Ach) by English Proficiency
n=119

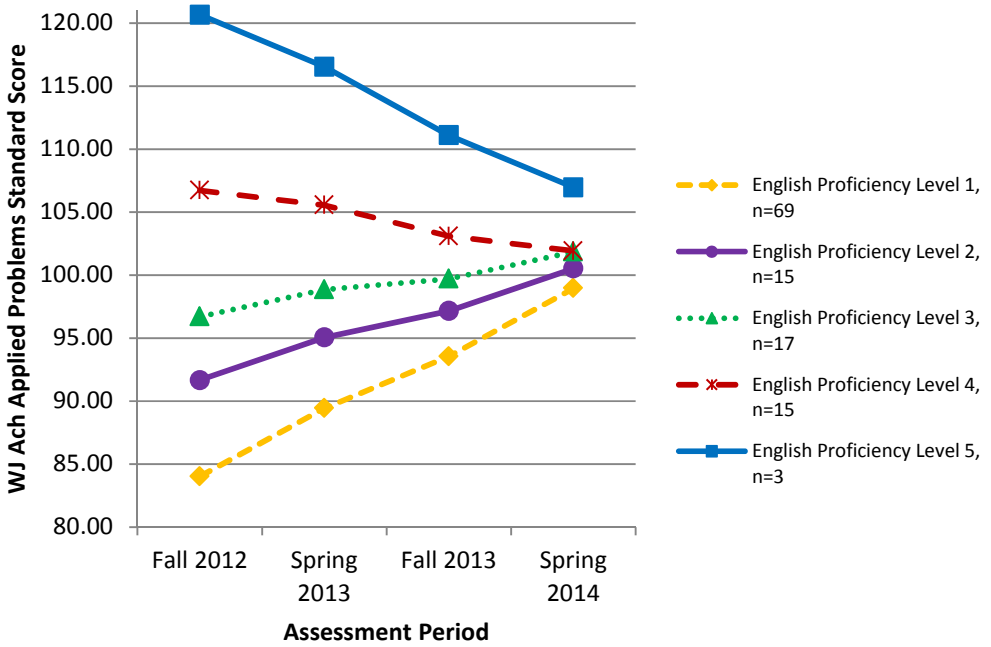

Figure 15. Growth in DLL Subsample Math Counting (Counting Task) by English Proficiency
n=117

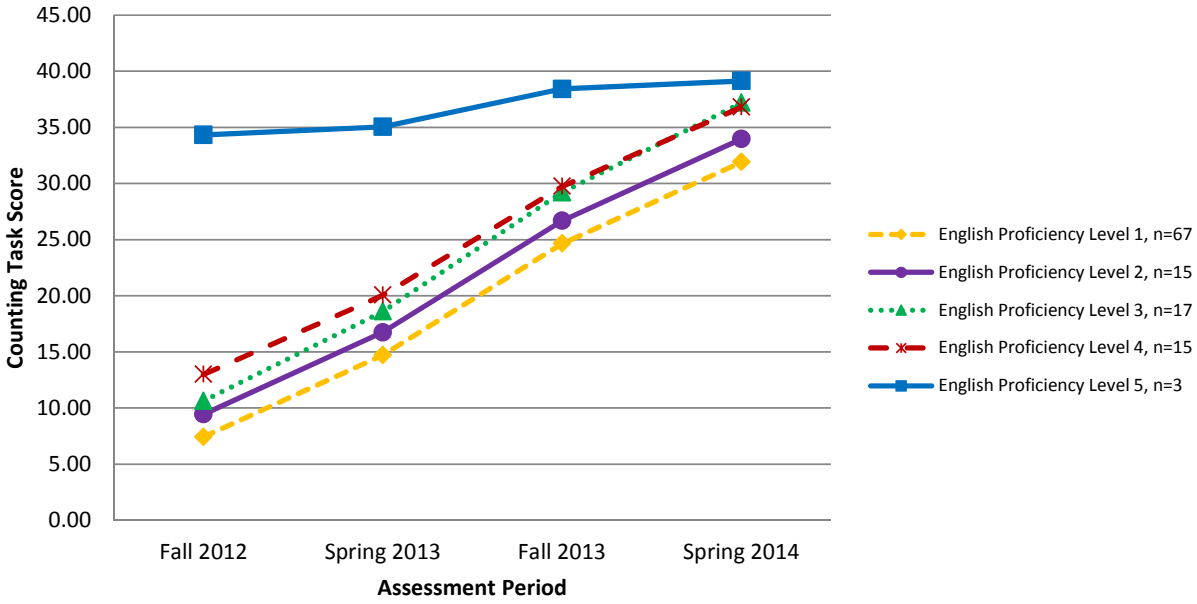

Figure 16. Growth in DLL Subsample Basic Self-Knowledge (Social Awareness Task) by English Proficiency
n=117

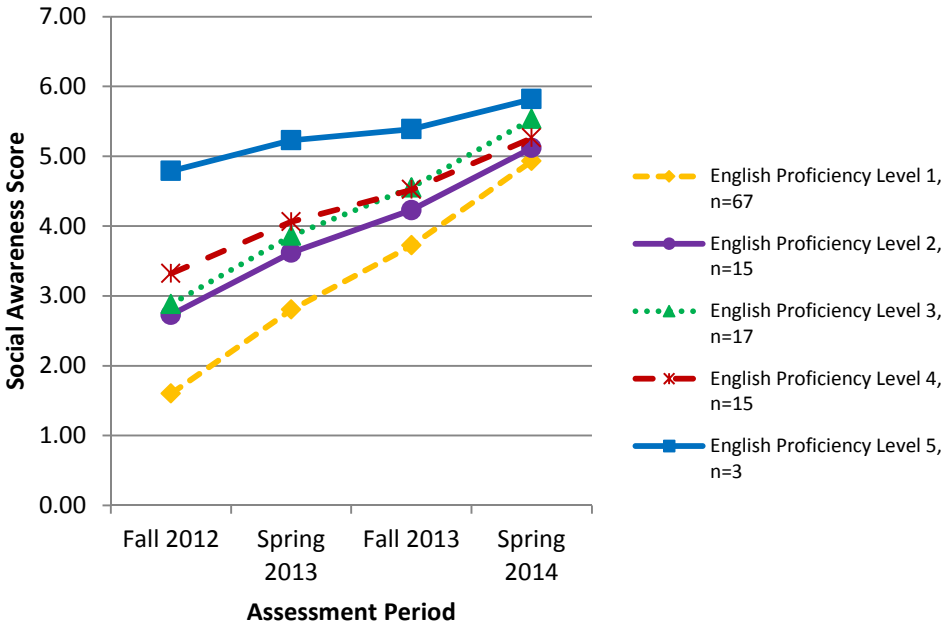

Figure 17. Growth in DLL Subsample Sound Awareness (WJ Ach) by English Proficiency
n=117

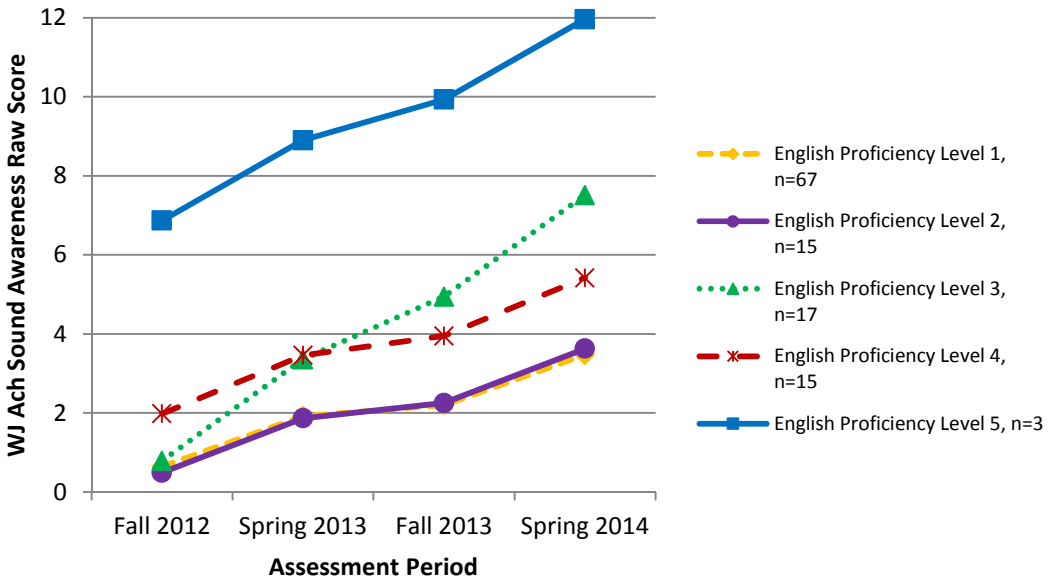

Figure 18. Growth in DLL Subsample Receptive Language (ROWPVT Spanish Bilingual) by Gender
n=115

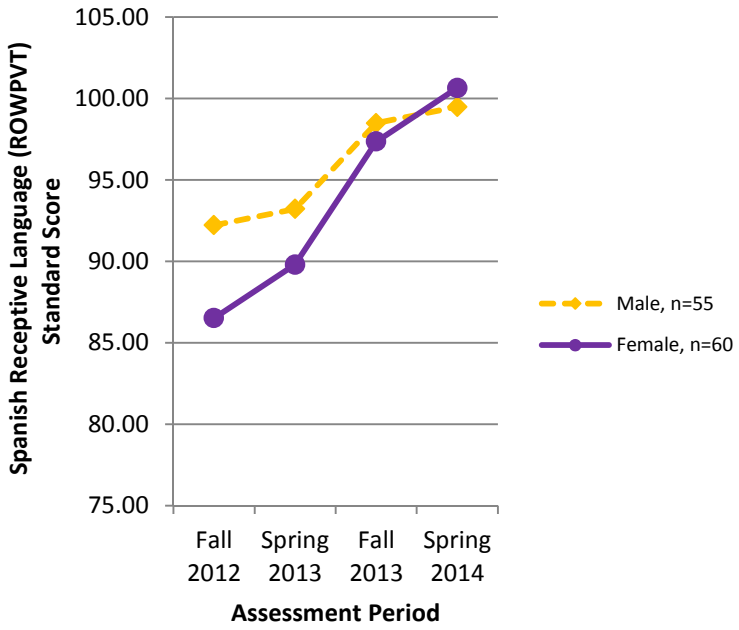

Figure 19. Growth in DLL Subsample Receptive Language (ROWPVT Spanish Bilingual) by Educational Need

n=115

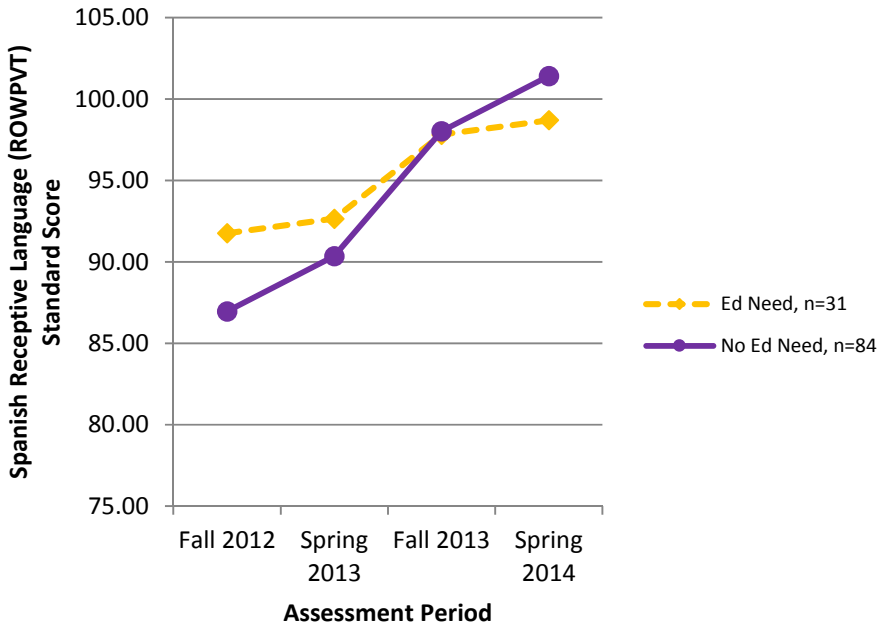

Figure 20. Growth in DLL Subsample Math Problem-Solving (WM Apr) by Income

n=119

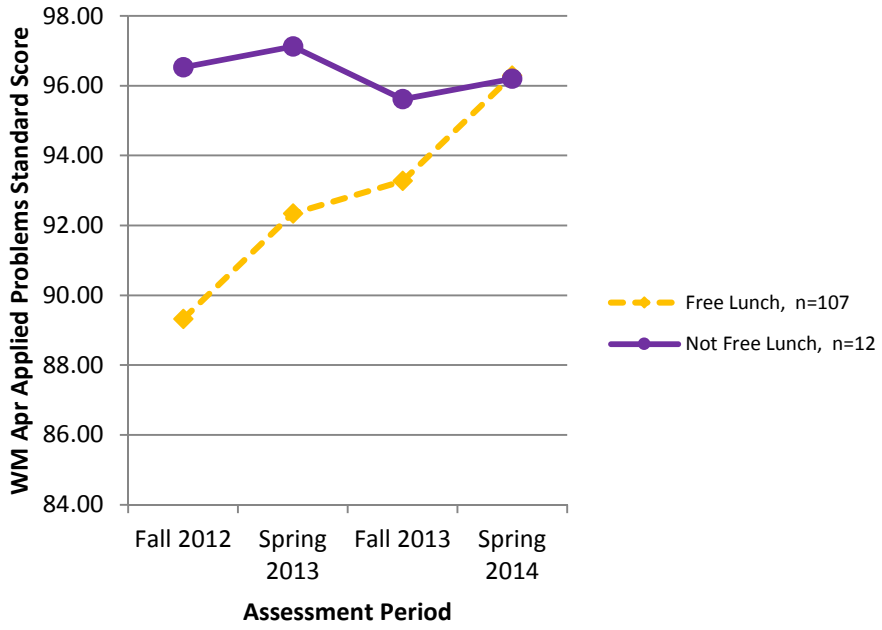

Table 20. NC Pre-K Program Characteristics (2013–2014)

Program Characteristic			
Total NC Pre-K Sites (Centers/Schools)	N=1,165		
Total NC Pre-K Classrooms	N=1,993		
Total Children Served	N=29,346		
	Mean	(SD)	Median
Class Size	15.7	(3.3)	17.5
Number of NC Pre-K Children per Class	13.1	(4.4)	14.0
Proportion of NC Pre-K Children per Class	0.83	(0.2)	0.9
Days of Attendance per Child	135.4	(39.8)	151
Days of Operation	170	(11.6)	171
NC Child Care License Star Ratings	%	n	
Five-Star	66.8	778	
Four-Star	18.6	217	
Temporary	4.9	57	
Public School in Process	9.7	113	

Table 21. Pre-K Program Characteristics (2003–2013)

Program Characteristic	2003–2004	2004–2005	2005–2006	2006–2007	2007–2008	2008–2009	2009–2010	2010–2011	2011–2012	2012–2013
Total Pre-K Sites (Centers/Schools)	628	689	790	909	1,178	1,285	1,273	1,239	1,174	1,218
Total Pre-K Classrooms	883	1,027	1,218	1,439	2,148	2,322	2,313	2,262	2,057	2,150
Total Children Served	10,891	13,515	17,251	20,468	29,978	33,798	34,212	33,747	29,312	32,142
Class Size										
Mean	16.3	16.1	16.2	16.0	15.8	15.7	16.1	16.1	15.6	15.7
(SD)	(2.6)	(3.0)	(2.7)	(3.0)	(3.4)	(3.4)	(3.0)	(3.2)	(3.6)	(3.4)
Number of NC Pre-K Children per Class										
Mean	10.7	11.5	12.3	12.6	12.8	12.9	13.4	13.4	12.8	13.3
(SD)	(5.8)	(5.5)	(4.9)	(4.7)	(4.4)	(4.4)	(4.3)	(4.4)	(4.6)	(4.2)
Proportion of NC Pre-K Children per Class										
Mean	0.67	0.71	0.76	0.79	0.82	0.83	0.83	0.83	0.82	0.85
(SD)	(0.3)	(0.3)	(0.2)	(0.3)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Days Attended										
Mean	124.7	133.8	135.8	138.5	132.3	138.0	140.0	140.8	137.1	134.6
(SD)	(48.1)	(44.6)	(44.5)	(42.8)	(43.6)	(41.7)	(39.7)	(40.2)	(43.6)	(41.4)
Days of Operation										
Mean	166	170	175	175	168	173	172	175	176	171
(SD)	(31.0)	(22.1)	(13.8)	(17.9)	(26.6)	(18.2)	(19.5)	(11.2)	(23.9)	(21.4)
Primary Curriculum										
Creative Curriculum	76.5% (666)	79.0% (811)	77.9% (949)	79.7% (1,147)	84.2% (1,809)	86.7% (2,014)	86.3% (1,996)	84.6% (1,914)	84.8% (1,744)	83.7% (1,800)

Table 22. Comparisons of Pre-K Program Characteristics over Time (2003–2014)

Year	Site Type: Public School		Site Type: Private School		Site Type: Head Start		Proportion of NC Pre-K Children per Class		% Children Never Served		% Children Unserved		Days of Attendance		Teacher BA or Higher		Teacher BK License		Teacher No Credential	
2013– 2014 vs.	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
2003–2004	0.11	(0.10)	-0.21*	(0.10)	0.16	(0.15)	0.17***	0.01	-0.03	(0.02)	-0.35***	(0.03)	10.68***	(0.47)	3.90***	(0.31)	1.81***	(0.08)	-1.68***	(0.10)
2004–2005	0.03	(0.10)	-0.22*	(0.10)	0.40**	(0.15)	0.11***	0.01	0.05*	(0.02)	-0.23***	(0.03)	1.57***	(0.44)	3.62***	(0.31)	1.49***	(0.08)	-1.06***	(0.10)
2005–2006	0.04	(0.09)	-0.18	(0.10)	0.29*	(0.14)	0.07***	0.01	0.08***	(0.02)	-0.07**	(0.02)	-0.38	(0.40)	3.68***	(0.31)	1.31***	(0.08)	-0.94***	(0.10)
2006–2007	-0.04	(0.09)	-0.02	(0.09)	0.13	(0.13)	0.04***	0.01	0.12***	(0.02)	0.10***	(0.02)	-3.10***	(0.38)	3.66***	(0.31)	0.11***	(0.08)	-0.76***	(0.10)
2007–2008	0.03	(0.08)	0.05	(0.09)	-0.14	(0.11)	0.02*	0.01	0.29***	(0.02)	0.33***	(0.02)	3.11***	(0.35)	3.97***	(0.31)	1.22***	(0.07)	-0.78***	(0.09)
2008–2009	0.08	(0.08)	0.02	(0.09)	-0.18	(0.11)	0.01	0.01	0.32***	(0.02)	0.29***	(0.02)	-2.63***	(0.34)	3.91***	(0.31)	1.10***	(0.07)	-0.57***	(0.10)
2009–2010	0.07	(0.08)	0.07	(0.09)	-0.24	(0.11)	0.00	0.01	0.28***	(0.02)	0.31***	(0.02)	-4.62***	(0.34)	3.57***	(0.31)	0.92***	(0.07)	0.36***	(0.10)
2010–2011	0.01	(0.08)	0.12	(0.09)	-0.21	(0.11)	0.00	0.01	0.18***	(0.02)	0.23***	(0.02)	-5.35***	(0.34)	2.94***	(0.31)	0.50***	(0.07)	-0.13	(0.10)
2011–2012	0.08	(0.08)	-0.02	(0.09)	-0.12	(0.11)	0.01	0.01	0.09***	(0.02)	0.02	(0.02)	-1.71***	(0.35)	1.45***	(0.34)	0.46***	(0.07)	-0.37***	(0.10)
2012–2013	0.06	(0.08)	-0.03	(0.09)	-0.07	(0.11)	-0.01*	0.01	0.09***	(0.02)	-0.05**	(0.02)	0.79*	(0.34)	0.76*	(0.36)	0.26***	(0.07)	-0.27**	(0.10)

[a] Significance levels are *p< .05, **p< .01, ***p< .001.

Table 23. NC Pre-K Classrooms: Curricula, Assessment Tools, and Developmental Screening Tools (2013–2014)

Educational Resources	n=1,993	%	n
Primary Curriculum[b]			
Creative Curriculum		83.6	1,667
OWL		9.0	180
HighScope		3.8	76
Tools of the Mind		2.7	53
Passports: Experiences for PreK Success		0.6	11
Investigator Club Prekindergarten Learning System		0.3	5
Tutor Time LifeSmart		0.1	1
Ongoing Assessment Tool			
Creative Curriculum Assessment/Teaching Strategies Gold		82.9	1,651
Work Sampling System		7.7	153
HighScope Preschool Child Observation Record (COR)		3.8	76
Learning Accomplishment Profile-3rd edition (LAP-3)		2.6	51
Tools of the Mind Assessment		1.2	24
Galileo Online Assessment System		0.9	17
Investigator Club Prekindergarten Learning System Assessment		0.2	4
Other[c]		0.9	17
Developmental Screening Tool			
Developmental Indicators for the Assessment of Learning (DIAL)		59.1	1,177
Brigance		36.5	728
Parents' Evaluation of Developmental Status (PEDS)		2.5	49
Ages & Stages Questionnaire (ASQ)		2.0	39

[b] Other approved curricula included Bank Street Curriculum; The Empowered Child, Childtime; High Reach Learning; and Investigator Club Prekindergarten Learning System.

[c] Other approved ongoing assessment tools included Learning Care System and mCLASS: CIRCLE.

Table 24. Distribution of NC Pre-K Classrooms by Setting Type (2013–2014)

Setting Type	n=1,993	%	n
Public Preschool		**54.2**	**1,080**
Private		**31.9**	**636**
Private For-Profit		23.4	466
Private Non-Profit		8.5	170
Head Start		**13.9**	**277**
Head Start Not Administered by Public School		10.6	212
Head Start Administered by Public School		3.3	65

Table 25. Distribution of Pre-K Classrooms by Setting Type (2003–2013)

Setting Type	2003–2004 n=866	2004–2005 n=1,027	2005–2006 n=1,218	2006–2007 n=1,439	2007–2008 n=2,110	2008–2009 n=2,322	2009–2010 n=2,308	2010–2011 n=2,262	2011–2012 n=2,057	2012–2013 n=2,150
Public Preschool	**49.7% (430)**	**54.1% (556)**	**53.0% (646)**	**55.0% (791)**	**53.4% (1,127)**	**51.9% (1,205)**	**52.2% (1,205)**	**54.1% (1,223)**	**50.6% (1,041)**	**50.7% (1,090)**
Private	**35.2% (305)**	**34.8% (357)**	**35.1% (427)**	**32.0% (461)**	**28.5% (602)**	**28.8% (669)**	**28.1% (649)**	**27.1% (613)**	**33.3% (686)**	**33.5% (719)**
Private For-Profit	25.1% (217)	24.1% (247)	23.6% (287)	21.3% (306)	19.4% (409)	20.1% (467)	19.3% (446)	18.7% (424)	24.2% (497)	24.3% (522)
Private Non-Profit	10.2% (88)	10.7% (110)	11.5% (140)	10.8% (155)	9.1% (193)	8.7% (202)	8.8% (203)	8.4% (189)	9.2% (189)	9.2% (197)
Head Start	**15.1% (131)**	**11.1% (114)**	**11.9% (145)**	**13.0% (187)**	**18.1% (381)**	**19.3% (448)**	**19.7% (454)**	**18.8% (426)**	**16.0% (330)**	**15.8% (341)**
Head Start Not Administered by Public School	9.2% (80)	8.4% (86)	9.0% (110)	10.1% (145)	14.8% (313)	15.8% (366)	15.8% (364)	14.9% (338)	12.4% (256)	12.8% (276)
Head Start Administered by Public School	5.9% (51)	2.7% (28)	2.9% (35)	2.9% (42)	3.2% (68)	3.5% (82)	3.9% (90)	3.9% (88)	3.6% (74)	3.0% (65)

Table 26. Characteristics of NC Pre-K Children (2013–2014)

Characteristic n=29,346	%/Mean	n
Child's age on 8/31 of program year	4.4	29,346
Gender		
Male	51.8	15,206
Female	48.2	14,140
Race		
White/European-American	47.6	13,969
Black/African-American	36.6	10,738
Native American/Alaskan Native	6.8	2,007
Multiracial	6.0	1,759
Asian	1.8	538
Native Hawaiian/Pacific Islander	1.1	335
Ethnicity		
Non-Hispanic/Latino	74.6	21,894
Hispanic/Latino	25.4	7,452
Parents Employed		
Mother	46.2	13,563
Father	42.0	12,328

Table 27. Characteristics of Pre-K Program Children (2003–2013)

Characteristic	2003–2004 n=10,891	2004–2005 n=13,515	2005–2006 n=17,251	2006–2007 n=20,468	2007–2008 n=29,978	2008–2009 n=33,798	2009–2010 n=34,212	2010–2011 n=33,747	2011–2012 n=29,312	2012–2013 n=32,142
Gender[a]										
Male	51.5% (5,588)	51.1% (6,904)	51.0% (8,803)	50.9% (10,425)	51.3% (15,374)	51.5% (17,417)	51.6% (17,667)	51.8% (17,473)	51.5% (15,092)	51.2% (16,458)
Female	48.5% (5,254)	48.9% (6,611)	49.0% (8,448)	49.1% (10,043)	48.7% (14,604)	48.5% (16,381)	48.4% (16,545)	48.2% (16,274)	48.5% (14,220)	48.8% (15,684)
Race/Ethnicity										
Hispanic/Latino[b]	17.8% (1,934)	18.9% (2,543)	21.8% (3,765)	22.7% (4,652)	22.2% (6,641)	21.3% (7,200)	22.9% (7,835)	25.5% (8,616)	25.4% (7,442)	24.3% (7,813)
Black/African-American	42.8% (4,658)	40.0% (5,403)	36.4% (6,277)	34.6% (7,085)	36.1% (10,818)	35.7% (12,074)	35.2% (12,042)	35.1% (11,836)	36.2% (10,607)	37.0% (11,898)
White/European-American	31.3% (3,404)	33.2% (4,480)	34.1% (5,890)	35.0% (7,166)	32.8% (9,826)	33.9% (11,447)	32.8% (11,217)	47.9% (16,168)	49.0% (14,371)	48.5% (15,596)
Multiracial	3.4% (369)	3.6% (488)	3.5% (604)	3.9% (800)	4.5% (1,355)	5.2% (1,763)	4.9% (1,679)	6.4% (2,146)	5.3% (1,551)	5.2% (1,681)
Native American/Alaskan Native	3.0% (328)	2.8% (375)	2.4% (407)	2.0% (406)	2.6% (764)	2.2% (745)	2.3% (795)	7.5% (2,521)	6.5% (1,914)	6.6% (2,110)
Asian	1.6% (176)	1.4% (195)	1.5% (263)	1.6% (318)	1.7% (498)	1.5% (513)	1.7% (593)	1.8% (597)	1.8% (535)	1.9% (597)
Native Hawaiian/Pacific Islander	0.2% (22)	0.2% (31)	0.3% (45)	0.2% (41)	0.3% (76)	0.2% (56)	0.2% (51)	1.4% (479)	1.1% (334)	0.8% (260)
Primary Caregiver Employed[c]	69.3% (7,535)	76.4% (10,101)	79.3% (13,385)	81.5% (16,366)	81.9% (23,338)	81.3% (25,939)	77.7% (25,258)	75.0% (24,264)	70.8% (20,750)	74.7% (21,908)

[a] In 2003–2004, gender was not reported for 49 children, and household size was not reported for 105 families.

[b] Beginning in 2010–2011, whether a child was of Hispanic/Latino ethnicity was asked as a separate question. In previous years, it was asked as a choice within the race/ethnicity question.

[c] Primary caregiver's employment was not reported for 14 families in 2003–2004; 294 families in 2004–2005; 369 families in 2005–2006; 378 families in 2006–2007; 1,485 families in 2007–2008; 1,909 families in 2008–2009; 1,721 families in 2009–2010, and 1,403 families in 2010–2011.

Table 28. Eligibility Factors for NC Pre-K Children (2013–2014)

Eligibility Factors[a]	n=29,346	%	n
Family Income			
130% of poverty and below (eligible for free lunch)		76.8	22,548
131–185% of poverty (eligible for reduced-price lunch)		13.9	4,071
186–200% of poverty		2.5	723
201–250% of poverty		3.7	1,084
>251% of poverty		3.1	920
Limited English Proficiency			
Family and/or child speak limited or no English in the home		15.5	4,552
Educational Need			
Educational need indicated by performance on a developmental screen		26.2	7,673
Identified Disability			
Child has an IEP		3.5	1,035
Chronic Health Condition(s)			
Child is chronically ill/medically fragile		5.4	1,573
Military Parent		6.6	1,946

[a] Children are eligible for the NC Pre-K Program primarily based on age and family income. Children must be four years old by August 31 of the program year, with a gross family income of no more than 75% of state median income. Children who do not meet the income eligibility may be eligible if they have at least one of the following: limited English proficiency, identified disability, chronic health condition, educational need, or a parent actively serving in the military.

Table 29. Eligibility Factors of Pre-K Program Children (2003–2013)

Factor	2003–2004 n=10,833	2004–2005 n=13,515	2005–2006 n=17,251	2006–2007 n=20,468	2007–2008 n=29,978	2008–2009 n=33,798	2009–2010 n=34,212	2010–2011 n=33,747	2011–2012 n=29,312	2012–2013 n=32,142
Family Income										
130% of poverty and below (eligible for free lunch)	74.3% (8,051)	74.4% (10,052)	73.6% (12,694)	75.4% (15,439)	74.5% (22,323)	74.0% (25,023)	76.7% (26,226)	78.3% (26,407)	76.2% (22,330)	76.8% (24,699)
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)	15.4% (4,626)	14.0% (4,745)	13.5% (4,607)	12.6% (4,235)	13.8% (4,044)	13.8% (4,440)
186–200% of poverty		3.2% (435)	3.6% (615)	3.1% (639)	3.0% (900)	2.7% (899)	2.7% (932)	2.4% (807)	2.3% (669)	2.3% (725)
201–250% of poverty	10.4% (1,129)[a]	4.8% (642)	4.8% (827)	4.0% (812)	4.5% (1,346)	4.0% (1,359)	3.2% (1,083)	2.9% (979)	3.9% (1,156)	3.7% (1,187)
>251% of poverty		1.1% (150)	1.7% (295)	2.1% (421)	2.6% (783)	5.2% (1,772)	4.0% (1,364)	3.9% (1,319)	3.8% (1,113)	3.3% (1,064)
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)	18.2% (5,461)	19.1% (6,467)	21.0% (7,166)	21.4% (7,233)	21.6% (6,339)	20.0% (6,412)
Educational Need										
Educational need indicated by performance on a developmental screen	--	10.8% (1,459)	15.6% (2,694)	16.6% (3,395)	21.2% (6,339)	30.2% (10,216)	30.9% (10,570)	30.7% (10,369)	24.4% (7,153)	25.4% (8,154)
Identified Disability										
Child has an IEP	7.0% (762)	5.7% (765)	4.8% (831)	4.5% (914)	5.6% (1,674)	6.0% (2,042)	6.3% (2,140)	5.7% (1,906)	6.5% (1,903)	4.2% (1,349)
Chronic Health Condition(s)										
Child is chronically ill/medically fragile	3.3% (361)	5.5% (746)	4.7% (818)	4.2% (867)	4.9% (1,460)	5.2% (1,759)	5.7% (1,957)	5.6% (1,904)	6.6% (1,943)	5.4% (1,727)
Military Parent	--	--	--	--	6.4% (1,916)	6.8% (2,284)	6.6% (2,268)	6.7% (2,244)	7.1% (2,085)	6.4% (2,056)

[a] In 2003–2004, only one category for family income levels above 185% of poverty was used by some programs.

Table 30. Service Priority Status for NC Pre-K Children (2013–2014)

Service Priority Status n=29,346	%	n
Children who have never been served in any preschool or child care setting.	61.7	18,111
Children who are currently unserved (may previously have been in preschool or child care setting).	16.1	4,729
Children who are in unregulated child care.	1.8	520
Children who are in a regulated preschool or child care setting, but are not receiving subsidy.	13.4	3,928
Children who are receiving subsidy and are in some kind of regulated child care or preschool program.	7.0	2,058

Table 31. Service Priority Status of Pre-K Children (2003–2013)

Service Priority Status	2003–2004 n=10,891	2004–2005 n=13,515	2005–2006 n=17,251	2006–2007 n=20,468	2007–2008 n=29,978	2008–2009 n=33,798	2009–2010 n=34,212	2010–2011 n=33,747	2011–2012 n=29,311	2012–2013 n=32,142
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)	54.6% (16,353)	54.0% (18,237)	54.8% (18,755)	57.5% (19,397)	59.6% (17,484)	59.5% (19,120)
Children who are currently unserved (may previously have been in preschool or child care setting).[a]	20.9% (2,282)	17.9% (2,418)	13.2% (2,270)	13.1% (2,676)	13.1% (3,938)	16.1% (5,433)	15.1% (5,155)	14.6% (4,918)	17.9% (5,234)	19.2% (6,181)
Children served for 5 months or less in the year prior to service in the More at Four program in any preschool or child care setting.[b]	--	3.2% (436)	5.9% (1,022)	4.1% (849)	3.9% (1,161)	2.3% (780)	2.1% (721)	1.5% (520)	--	--
Children who are in unregulated child care.	--	4.5% (608)	4.2% (716)	4.0% (814)	5.3% (1,592)	5.9% (1,981)	4.7% (1,609)	3.8% (1,291)	2.8% (810)	2.0% (647)
Children who are in a regulated preschool or child care setting, but are not receiving subsidy.	5.6% (606)	3.4% (463)	2.1% (364)	2.4% (497)	3.6% (1,072)	4.5% (1,510)	4.7% (1,612)	5.2% (1,765)	13.5% (3,955)	12.0% (3,845)
Children who are receiving subsidy and are in some kind of regulated child care or preschool program	--	--	--	--	--	--	--	--	6.2% (1,828)	7.3% (2,349)
Other children, including those in pre-kindergartens or child care settings that do not meet More at Four program standards.	11.2% (1,215)	10.5% (1,425)	7.2% (1,236)	7.2% (1,474)	8.5% (2,556)	4.6% (1,570)	4.4% (1,507)	4.5% (1,527)	--	--
Children served by this site as 3-year-olds.	--	--	7.6% (1,318)	10.4% (2,125)	11.0% (3,306)	12.7% (4,287)	14.2% (4,853)	12.8% (4,329)	--	--

[a] This category included two separate categories indicating children's eligibility for subsidy prior to 2007–2008.

[b] This category was considered part of the unserved service priority status.

Table 32. Education Levels of NC Pre-K Lead Teachers (2013–2014)

		Highest Education Level							
		MA/MS or higher		BA/BS		AA/AAS		HS diploma/GED	
Setting Type[a]	Total n[b]	%	n	%	n	%	n	%	n
Public School	1,168	15.4	180	84.4	985	0.2	2	0.0	0
Private	932	11.2	104	88.0	819	1.0	9	0.0	0
All	2,099	13.6	285	85.9	1,803	0.5	11	0.0	0

Table 33. Licensure/Credential Levels of NC Pre-K Lead Teachers (2013–2014)

		Highest Licensure/Credential[c]									
		B-K[d]		Other Teacher's License		CDA Credential		NCECC		None	
Setting Type[a]	Total n[b]	%	N	%	n	%	n	%	n	%	n
Public School	1,168	93.7	1,093	5.1	59	0.1	1	0.1	1	1.2	14
Private	932	63.8	594	10.5	98	0.9	8	6.3	59	18.6	173
All	2,099	80.3	1,686	7.5	157	0.4	9	2.9	60	8.9	187

[a] Teachers in Head Start classrooms administered by public schools are included in public school setting types; teachers in Head Start classrooms not administered by public schools are included in private setting types.

[b] In 2013–2014, the *n* for All is less than the sum of the *n*'s for Public School and Private because 1 teacher worked in both public and private settings

[c] 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.

[d] This category includes teachers with a B-K license, B-K Standard Professional I or II, provisional B-K license, or Preschool Add-on.

Table 34. Education Levels of Pre-K Lead Teachers (2003–2013)

		Highest Education Level							
		MA/MS or higher		BA/BS		AA/AAS		HS diploma/GED	
Setting Type[a]	Total n[b]	%	n	%	n	%	n	%	n
2003–2004									
Public School	450	17.1	77	77.1	347	2.4	11	3.3	15
Private	534	4.1	22	62.5	334	25.3	135	8.1	43
All	984	10.1	99	69.2	681	14.8	146	5.9	58
2004–2005									
Public School	615	15.1	93	83.6	514	1.0	6	0.3	2
Private	519	4.2	22	61.3	318	29.5	153	5.0	26
All	1,133	10.2	115	73.3	831	14.0	159	2.5	28
2005–2006									
Public School	725	13.8	100	84.6	613	1.4	10	0.3	2
Private	620	3.4	21	61.0	378	31.8	197	3.9	24
All	1,342	9.0	121	73.7	989	15.4	206	1.9	26
2006–2007									
Public School	875	15.1	132	84.0	735	0.8	7	0.1	1
Private	684	4.4	30	57.9	396	34.2	234	3.5	24
All	1,555	10.4	162	72.5	1,128	15.4	240	1.6	25
2007–2008									
Public School	1,197	13.8	165	84.5	1,012	1.5	18	0.2	2
Private	990	3.8	38	50.0	495	41.8	414	4.3	43
All	2,183	9.3	203	68.9	1,503	19.8	432	2.1	45
2008–2009									
Public School	1,305	14.9	195	83.5	1,090	1.4	18	0.2	2
Private	1,109	4.2	47	52.4	581	41.3	458	2.1	23
All	2,409	10.0	241	69.2	1,667	19.8	476	1.0	25
2009–2010									
Public School	1,308	15.3	200	83.0	1,085	1.8	23	0.0	0
Private	1,107	5.3	59	62.2	689	31.7	351	0.7	8
All	2,412	10.7	259	73.5	1,772	15.5	373	0.3	8
2010–2011									
Public School	1,333	16.0	213	82.9	1,105	1.1	15	0.0	0
Private	1,065	7.2	77	73.9	787	18.8	200	0.1	1
All	2,395	12.1	289	78.9	1,889	9.0	216	0.0	1
2011–2012									
Public School	1,142	15.8	181	83.7	956	0.4	5	0.0	0
Private	1,054	8.6	91	87.3	920	3.6	38	0.5	5
All	2,191	12.4	271	85.4	1,872	2.0	43	0.2	5
2012–2013									
Public School	1,191	16.3	194	83.5	995	0.2	2	0.0	0
Private	1,064	7.9	84	89.9	957	2.1	22	0.1	1
All	2,255	12.3	278	86.6	1,952	1.1	24	0.0	1

[a] Teachers in Head Start classrooms administered by public schools are included in public school setting types; teachers in Head Start classrooms not administered by public schools are included in private setting types.

[b] In some cases, the *n* for All is less than the sum of the *n*'s for Public School and Private because some teachers worked in both public and private settings (n=1 in 2004–2005; n=3 in 2005–2006 and 2009–2010; n=4 in 2006–2007, 2007–2008, and 2010–2011; and n=5 in 2008–2009 and 2011–2012.)

Table 35. Licensure/Credential Levels of Pre-K Lead Teachers (2003–2013)

		Highest Licensure/Credential[a]									
		B-K License[b]		Other Teacher's License		CDA Credential		NCECC		None	
Setting Type[c]	Total n[d]	%	n	%	n	%	n	%	n	%	n
2003–2004											
Public School	454	68.1	309	18.3	83	0.0	0	1.1	5	12.6	57
Private	535	16.4	88	10.5	56	3.9	21	16.3	87	52.9	283
All	989	40.1	397	14.1	139	2.1	21	9.3	92	34.4	340
2004–2005											
Public School	615	75.4	464	13.5	83	0.7	4	1.1	7	9.3	57
Private	519	15.2	79	9.1	47	9.6	50	28.9	150	37.2	193
All	1,133	47.8	542	11.5	130	4.8	54	13.9	157	22.1	250
2005–2006											
Public School	725	83.1	601	9.8	71	0.6	4	1.1	8	5.7	41
Private	620	16.5	103	8.5	53	6.5	40	31.5	195	36.9	229
All	1,342	52.3	702	9.2	124	3.3	44	15.1	202	20.0	269
2006–2007											
Public School	875	86.2	753	8.0	70	0.6	5	1.3	11	4.1	36
Private	684	20.6	142	7.5	51	5.6	38	32.3	221	33.9	232
All	1,555	57.4	893	7.7	120	2.8	43	14.9	231	17.2	268
2007–2008											
Public School	1,197	85.7	1,025	7.2	86	0.9	11	1.1	13	5.2	62
Private	990	17.1	172	5.7	56	6.5	64	37.9	375	32.6	323
All	2,183	54.7	1,194	6.5	142	3.4	75	17.7	387	17.6	385
2008–2009											
Public School	1,305	86.8	1,134	7.5	98	0.6	8	1.2	16	3.8	49
Private	1,109	22.7	256	5.8	64	4.4	49	39.2	435	27.5	305
All	2,409	57.5	1,385	6.7	162	2.4	57	18.7	451	14.7	354
2009–2010											
Public School	1,308	88.5	1,156	7.0	91	0.5	6	1.9	25	2.3	30
Private	1,107	30.8	341	7.6	84	4.6	51	32.9	364	24.1	267
All	2,412	62.0	1,496	7.3	175	2.3	56	16.1	388	12.3	297
2010–2011											
Public School	1,333	92.8	1,237	4.6	61	0.2	3	1.3	17	1.1	15
Private	1,065	44.0	471	9.2	98	2.9	31	22.6	241	21.0	224
All	2,394	71.2	1,704	6.6	159	1.4	34	10.8	259	10.0	239
2011–2012											
Public School	1,142	91.3	1,043	6.0	68	0.1	1	0.7	8	1.9	22
Private	1,054	51.0	538	11.0	116	1.4	15	12.9	135	23.7	250
All	2,191	72.0	1,578	8.4	183	0.7	16	6.5	143	12.4	271
2012–2013											
Public School	1,191	92.9	1,106	4.9	58	0.1	1	0.3	3	1.9	23
Private	1,064	57.0	606	9.0	96	0.9	10	11.2	119	21.9	233
All	2,255	75.9	1,712	6.8	154	0.5	11	5.4	122	11.4	256

[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] This category includes teachers with a B-K license, provisional B-K license, or Preschool Add-on.

[c] Teachers in Head Start classrooms administered by public schools are included in public school setting types; teachers in Head Start classrooms not administered by public schools are included in private setting types.

[d] In some cases, the *n* for All is less than the sum of the *n*'s for Public School and Private because teachers worked in both setting types (n=1 in 2004–2005; n=3 in 2005–2006 and 2009–2010; n=4 in 2006–2007, 2007–2008, and 2010–2011; and n=5 in 2008–2009 and 2011–2012.)

Table 36. Global Classroom Quality (ECERS-R): Rated License Assessment Sample of NC Pre-K Classrooms (2013–2014)

ECERS-R Subscale/Item	n=374	Mean	(SD)	Range[a]
Total Score		5.7	(0.4)	4.2–6.7
Space and Furnishings Subscale		5.5	(0.7)	3.5–7.0
Indoor space		5.4	(1.5)	2–7
Furniture for routine care, play, and learning		4.6	(1.2)	2–7
Furnishings for relaxation and comfort		5.6	(1.8)	2–7
Room arrangement for play		6.2	(1.5)	2–7
Space for privacy		6.1	(1.7)	2–7
Child-related display		5.9	(1.3)	3–7
Space for gross motor play		3.8	(2.1)	1–7
Gross motor equipment		6.3	(1.4)	2–7
Personal Care Routines Subscale		4.8	(0.9)	2.5–6.8
Greeting/departing		6.7	(0.9)	2–7
Meals/snacks		4.3	(1.8)	1–7
Nap/rest		4.7	(2.1)	1–7
Toileting/diapering		4.7	(2.2)	1–7
Health practices		4.9	(2.0)	2–7
Safety practices		3.4	(2.2)	2–7
Language-Reasoning Subscale		5.9	(0.7)	4.0–7.0
Books and pictures		6.1	(1.4)	3–7
Encouraging children to communicate		7.0	(0.1)	6–7
Using language to develop reasoning skills		4.6	(1.2)	2–7
Informal use of language		5.9	(1.3)	4–7
Activities Subscale		6.0	(0.6)	4.1–7.0
Fine motor		6.7	(0.8)	4–7
Art		6.3	(1.2)	3–7
Music/movement		6.3	(1.0)	2–7
Blocks		4.7	(1.4)	3–7
Sand/water		6.3	(0.9)	2–7
Dramatic play		6.2	(1.0)	4–7
Nature/science		6.3	(1.2)	2–7
Math/number		6.0	(1.4)	3–7
Use of TV, video, and/or computers		5.0	(1.9)	2–7
Promoting acceptance of diversity		6.2	(0.7)	4–7

[a] Total score and subscale scores could range from 1.0–7.0; item scores could range from 1–7.

Table 36. Global Classroom Quality (ECERS-R): Rated License Assessment Sample of NC Pre-K Classrooms (2013–2014)

ECERS-R Subscale/Item	n=374	Mean	(SD)	Range[a]
Interaction Subscale		6.4	(0.6)	3.8–7.0
Supervision of gross motor activities		6.0	(1.1)	2–7
General supervision of children		6.5	(0.9)	2–7
Discipline		6.2	(0.9)	3–7
Staff-child interactions		6.9	(0.6)	1–7
Interactions among children		6.5	(1.0)	4–7
Program Structure Subscale		5.9	(1.0)	2.5–7.0
Schedule		5.2	(1.8)	2–7
Free play		6.3	(1.6)	2–7
Group time		6.6	(0.9)	3–7
Provisions for children with disabilities		5.2	(1.4)	2–7
Parents and Staff Subscale		5.8	(0.7)	3.3–7.0
Provisions for parents		6.2	(0.9)	4–7
Provisions for staff personal needs		4.2	(1.6)	1–7
Provisions for staff professional needs		5.8	(1.7)	2–7
Staff interaction		6.4	(0.9)	3–7
Staff supervision		6.4	(1.2)	3–7
Professional growth		5.8	(1.3)	2–7

[a] Total score and subscale scores could range from 1.0–7.0; item scores could range from 1–7.

Figure 21. Global Classroom Quality (ECERS-R Total)
n=374

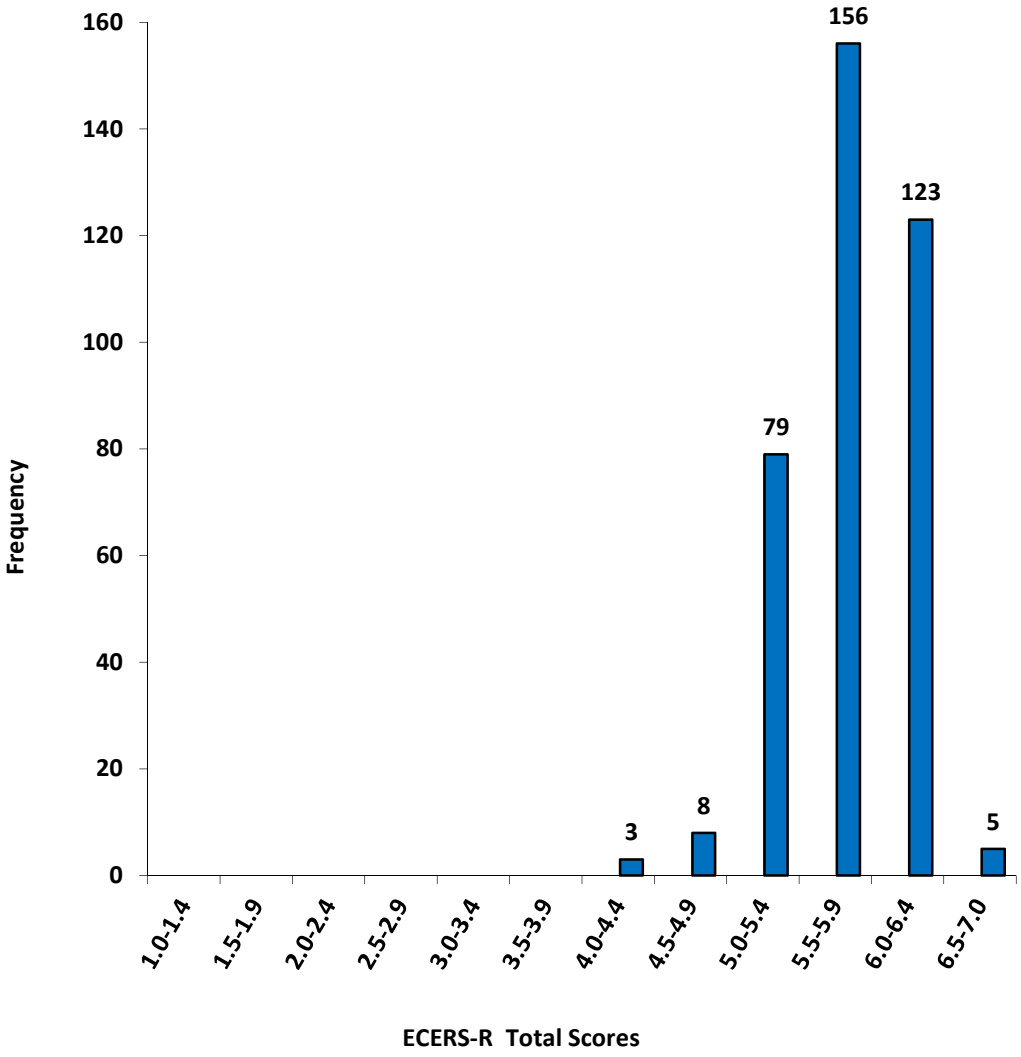

Table 37. Rated License Sample Characteristics

Characteristic	n=372	Classroom Observation Sample Mean	(SD)	Range
Teacher/Classroom Characteristics				
% Teachers with B-K or Preschool Add-on License[a]		0.87	(0.34)	0.00–1.00
% Teachers with MA/MS or Higher[a]		0.12	(0.33)	0.00–1.00
Class Size		15.9	(3.4)	1.0–19.0
Classroom-wide NC Pre-K Child Characteristics				
% NC Pre-K Children in Class		0.81	(0.25)	0.06–1.00
% Limited English Proficiency		0.15	(0.19)	0.00–0.83
% IEP		0.04	(0.10)	0.00–1.00
% Chronic Health Condition		0.05	(0.08)	0.00–0.50
% Educational Need		0.26	(0.33)	0.00–1.00
% Eligible for Free Lunch		0.77	(0.18)	0.00–1.00
% Never Served		0.60	(0.26)	0.00–1.00

[a] The n for these characteristics was 371.

Table 38. Predictors of Classroom Quality Regression Results: NC Pre-K Classrooms (2013–2014)

		ECERS-R Total Score	
Effect	n=374	Est[a]	(SE)
Intercept		5.60***	(0.06)
Teacher/Classroom Characteristics			
B-K License		0.16*	(0.07)
MA/MS or Higher		0.04	(0.07)
Class Size		0.00	(0.01)
Classroom-wide NC Pre-K Child Characteristics			
% NC Pre-K Children in Class		-0.13	(0.09)
% Limited English Proficiency		-0.06	(0.12)
% IEP		0.08	(0.25)
% Chronic Health Condition		-0.25	(0.27)
% Educational Need		0.03	(0.07)
% Eligible for Free Lunch		-0.03	(0.12)
% Never Served		0.10	(0.09)

[a] Significance levels are *p< .05, **p< .01, ***p< .001

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