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

2012-2013 Statewide Evaluation

NC Pre-K Program Evaluation Project

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Purpose of the NC Pre-Kindergarten Evaluation Study

The purpose of the 2012-2013 NC Pre-Kindergarten (NC Pre-K) Evaluation study was to examine the quality of the program and the outcomes for children, 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 were the key characteristics of the local NC Pre-K programs?
- What was the quality of the NC Pre-K classrooms attended by children and what factors were associated with better quality?
- What were the outcomes of children attending the NC Pre-K Program and what factors were associated with better outcomes?
- To what extent have there been any changes over time in these results?

To address these questions, information was gathered from multiple sources, including monthly service reports, teacher surveys, observations of classroom quality, and individual assessments of children's outcomes. The statewide monthly service report data provided information about characteristics of the program and demographic information about the children served. Observations conducted in a random sample of 99 NC Pre-K classrooms provided information about classroom quality, including global classroom quality, teacher-child instructional interactions, language and literacy environment, and sensitivity of teacher-child interactions, and teacher surveys provided information about classroom characteristics and teacher perceptions. Child outcomes data were gathered for a sample of 561 children to examine changes in language, literacy, math, general knowledge, and behavior skills over the course of the pre-k year. For 117 Spanish-speaking dual language learners (DLLs) in the sample, skills were measured in both English and Spanish using parallel measures.

Overview of the North Carolina Pre-Kindergarten Program

The NC Pre-K Program 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 255,000 children. The NC Pre-K Program is based on the premise that in order to be successful when they enter elementary school, children need to be prepared in all five developmental domains as outlined by the National Education Goals Panel[i]—approaches to learning, emotional and social development, health and physical development, language development and communication, and cognitive development. According to program guidelines[ii], 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. 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 risk factors: limited English proficiency, identified disability, chronic health condition, or developmental/educational need. 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 the NC Pre-K Program 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.[ii] 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[iii] 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 payment rates per child vary by the type of classroom and teacher qualifications, ranging from up to $300

[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.

(in Head Start sites) to a maximum of $650 (private sites with a B-K-licensed lead teacher), with an estimated annual cost per child of $5,000.[iv]

Methods

Program Characteristics

Statewide Databases

Data on program characteristics were obtained from two statewide databases of service report data, NC Pre-K Plan (Plan) and NC Pre-K Kids (Kids). 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; prior placement; race; ethnicity; gender; birth date; primary caregiver's employment; payment reimbursement rate; attendance; and eligibility factors of family income level, limited English proficiency, developmental/educational need, identified disability, chronic health condition, and parental 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 the 2012–2013 program years (July 1–June 30), with a focus on the most recent year.

Teacher Survey

The NC Pre-K Program Evaluation Team gathered surveys from a sample of 94 randomly-selected teachers who also were participating in the classroom observations. (See below for further details about the classroom observation sample.) Teacher surveys included a measure of beliefs about teaching practices, a rating of work climate, and demographic information. A developmentally appropriate practices scale was used to measure beliefs about teaching practices. Teachers rated their agreement with 32 various teaching practices, including both appropriate and inappropriate practices, on a scale from 1 (strongly disagree) to 5 (strongly agree). An overall mean item score was calculated, with scores for inappropriate practices reversed, so that higher scores indicated more appropriate beliefs. Teacher perceptions of the work climate were measured using a work environment scale, including areas such as interactions with staff and supervisors, support for professional development, autonomy and decision-making opportunities, material and administrative resources, daily operations, and salaries and benefits. Teachers rated their agreement with 20 items on a 0 (never) to 5 (always)

scale, with an overall mean item score calculated. Teachers also provided information related to their teaching experience, including the total years of teaching children birth through five years old and children of any age.

Classroom Quality

Participants

The sample included 99 classrooms that were selected randomly from the 1,845 NC Pre-K classrooms operating in September 2012. A sample of 100 classrooms was selected originally, but one classroom was dropped from the sample because no children were recruited. Analyses were conducted to compare the characteristics of NC Pre-K classrooms and teachers selected for the evaluation sample with those not in the sample (see Analysis Approach section for further details). 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 and Table 3.)

In addition, data gathered from four previous cohorts of the NC Pre-K Program (formerly More at Four) were used to examine whether there were any changes over time in classroom quality in comparison to the current sample (Cohort 5: 2012–2013). For all cohorts, classrooms were randomly sampled from all classrooms participating in the statewide pre-k program at that time (Cohort 1: 2003–2004, n=99; Cohort 2: 2005–2006, n=57; Cohort 3: 2007–2008, n=50; Cohort 4: 2011–2012, n=99).

Measures & Procedures

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 (ECERS-R)[v], 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 (CLASS)[vi]. 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 (ELLCO)[vii]. 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 (CIS)[viii]. 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. 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)[ix]: 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 Outcomes

Participants

The full sample for the study consisted of 561 pre-k children who were attending the 99 randomly-selected NC Pre-K classrooms, and included a subsample of 117 Spanish-speaking dual language learners (DLL subsample). Parental permission forms were distributed to all children who were participating in the NC Pre-K Program in each randomly-selected classroom, with an overall permission rate of 78%. Approximately 5–6 children with parental permission were randomly selected per classroom for inclusion in the study, based on the number who could be assessed on the scheduled date for fall data collection (range=2–7).

Analyses were conducted to compare the characteristics of NC Pre-K children selected for the evaluation sample to those not in 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 average age; gender distribution; ethnicity; the percentage of employed mothers and fathers; or in program eligibility factors, including the percentage of children who were eligible for free lunch, the percentage of children with limited English proficiency, the percentage of children with a developmental or educational need, the percentage of children with an IEP, the percentage of children with a chronic health condition, or the percentage of children with a parent actively serving in the military. However, there were some characteristics that exhibited modest differences between sample and non-sample children. The percentage of White/European-American children was slightly higher for sample than non-sample children, whereas the percentage of Black/African-American children was slightly lower [$\chi^2(1)=12.85$, $p < .001$]; the percentage of children who had never previously been served was slightly higher and the percentage of children who were currently unserved at the time of enrollment 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 Table 4 and Table 5.) Based on individual assessments of children's language proficiency at the beginning of the program year (see measures below), 17% were categorized as non-English speakers (Level 1 n=93), 26% were limited English speakers (Level 2 n=43, Level 3 n=101), and 58% were fluent English speakers (Level 4 n=183, Level 5 n=139). For the 117 Spanish-speaking children in the DLL subsample, 59% were categorized as non-English speakers (Level 1 n=68), 26% were limited English speakers (Level 2 n=14, Level 3 n=16), and 16% were fluent English speakers (Level 4 n=15, Level 5 n=3). In addition, 22% of the DLL subsample were categorized as non-Spanish speakers (Level 1 n=26), 28% were limited Spanish speakers (Level 2 n=11, Level 3 n=22), and 50% were fluent Spanish speakers (Level 4 n=26, Level 5 n=32). (See Table 6.)

In addition, data gathered from three previous cohorts of children participating in the NC Pre-K Program (formerly More at Four) were used to examine whether there were any changes over time in children's outcomes in comparison to the current sample (Cohort 4: 2012–2013). For all cohorts, first a sample of classrooms was randomly selected from all classrooms participating in the statewide pre-k program at that time, and then children were sampled from within those

classrooms (Cohort 1: 2003–2004, n=514; Cohort 2: 2005–2006, n=478; Cohort 3: 2007–2008, n=321).

Measures & Procedures

The child assessment battery consisted of seven measures appropriate for pre-k children across five primary areas – language, literacy, math, general knowledge, and behavior skills. For children who were reported by their parents or teachers to speak Spanish, individual assessments were conducted with parallel English and Spanish language versions of these measures. See Table 7 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 (ROWPVT-4)[x] and the Receptive One-Word Picture Vocabulary Test Spanish-Bilingual Edition (ROWPVT-SBE)[xi] measure children's receptive vocabulary skills (understanding of language). The Expressive One-Word Picture Vocabulary Test, 4th Edition (EOWPVT-4)[xii] and the Expressive One-Word Picture Vocabulary Test Spanish-Bilingual Edition (EOWPVT-SBE)[xiii] measure children's expressive vocabulary skills (expression of language). Two subtests from the Woodcock-Johnson III Tests of Achievement (WJ Ach)[xiv] and the Batería III Woodcock-Muñoz Pruebas de Aprovechamiento (WM Apr)[xv] 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 and phonemic awareness.

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

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

Behavior skills were assessed with two subscales of the Social Skills Improvement System (SSiS)[xviii] completed by teachers. The Social Skills subscale rates behaviors that promote positive interactions while discouraging negative interactions. The Problem Behaviors subscale rates negative behaviors, some commonly occurring and some less commonly, that interfere with social skills development.

In addition, the *pre*LAS 2000[xix] 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).

Analysis Approach

Sample Comparisons

Characteristics of NC Pre-K classrooms, teachers, and children 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, prior placement status, days of program attendance, and child eligibility factors. *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 ($n \geq 5$) in each category.

Program Characteristics

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 2012–2013 (the current year of the study) were examined. Data from each program year were considered to be independent of each other. 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), and children's prior placement (proportion never served, proportion not served at time of enrollment). Logistic regression models tested differences over time for teacher qualifications and setting types, with dichotomous variables created for each of the five characteristics. Analysis of variance (ANOVA) models were conducted to test differences between years for the prior placement variables, with continuous variables created for each of these characteristics.

Classroom Quality

Changes over Time

Analyses were conducted to investigate whether there were changes over time in scores for various classroom quality measures. Data from the current and four previous cohorts of NC Pre-K/More at Four classrooms were compared where comparable measures were available (Cohort 1: 2003–2004, Cohort 2: 2005–2006, Cohort 3: 2007–2008, Cohort 4: 2011–2012, Cohort 5: 2012–2013). The classroom quality measures examined included ECERS-R Total scores (Cohorts 1–5); CLASS Emotional Support, Classroom Organization, and Instructional Support scores (Cohorts 3–5); and CIS Total score (Cohorts 2–5). Separate ANOVAs were conducted for each classroom quality measure to test cohort effects.

Predictors of 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. Separate linear regression analyses were conducted for each classroom quality measure, including the ECERS-R Total score; the CLASS Emotional Support, Classroom Organization,

and Instructional Support scores; the ELLCO General Classroom Environment and Language and Literacy scores; and the CIS Total score. The models included three blocks of predictor variables, based on data from the statewide databases and the teacher surveys: 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; 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 developmental/educational need, proportion eligible for free lunch, and proportion with no prior placement status; and 3) teacher beliefs measures—teaching practices (developmentally appropriate practices scale total score) and work climate (work environment scale total score).

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 along with a time indicator (to test for growth) were included as the dependent variables. Children were nested within classrooms for the full sample (the sample size precluded nesting for the DLL subsample). The base model included a set of covariates: program type (public or private), time between fall and spring assessment in months, days of attendance, child's age at the fall assessment, child gender, family income (free lunch eligibility), whether the child had a developmental/educational need, whether the child had an IEP, and whether the child had a chronic health condition.

In addition, a series of HLM analyses were conducted to investigate whether there were changes over time in children's outcomes. 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, Cohort 2: 2005–2006, Cohort 3: 2007–2008, Cohort 4: 2012–2013). The child outcome measures examined 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 models described above, 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 along with a time indicator (to test growth) were included as the dependent variables. Children were nested within classrooms for the full model (the sample size precluded nesting for the DLL subsample). Two factors, the level of children's language proficiency and the quality of practices in their pre-k classrooms, were examined as potential

moderators of children's growth in skills, after accounting for the covariates in the base model. To examine the effects of language proficiency as moderator, a categorical variable based on *pre*LAS scores (1–5) and its interaction with time (to test for the effects on growth) was added to the base model. English language proficiency scores were included for English outcome measures and Spanish language proficiency scores for Spanish outcome measures. These effects were retained in the remaining models, 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; the CLASS Emotional Support, Classroom Organization, and Instructional Support domain scores; the ELLCO General Classroom Environment and Language and Literacy scores; and the CIS Total score.

Results

Program Characteristics and Services

Key characteristics of the NC Pre-K Program, including program size, days of operation, licensing 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.

In 2012–2013, the NC Pre-K Program served 32,142 children in 2,150 classrooms located in 1,218 sites. The majority of the programs (61%) were at the highest, five-star licensing level, with another 19% at the four-star level, and the rest in process. Almost 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. On average, the total class size was 16 children, with 13 of those children (85%) funded by NC Pre-K. On average, children attended NC Pre-K for 135 days, which represents 79% of the 171 actual days of operation or 75% of the 180 planned instructional days offered by the program. (See Table 8 and Table 9.) 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 leveled off starting in 2008–2009, with a slight decrease in 2011–2012, increasing again in 2012–2013 (see Table 8 and

Table 10). The distribution of setting types has remained relatively constant over time, similar to the current distribution of approximately half (51%) public school settings; about one-third (33%) private settings (24% for-profit and 9% non-profit child care centers); and 16% Head Start. The one difference is that the proportion of Head Start settings is higher in the current year than it was in 2004–2005 and 2005–2006 (see Table 11, Table 12, and Table 13).

Information about the characteristics of the children and families served by the NC Pre-K Program, including eligibility factors (family income, limited English proficiency, developmental/educational need, identified disability, military parent); prior placement status; child gender, race, and ethnicity; and caregiver employment were examined based on information from NC Pre-K Kids statewide database. In 2012–2013, similarly to previous years, the program continued to serve children from a variety of backgrounds (see Table 14 and Table 15). As in past program years, children served by the NC Pre-K Program primarily came from low-income families, with 91% eligible for free or reduced-price lunch, with variability in other eligibility factors, from 20-25% with limited English proficiency or a developmental/educational need to 4-6% with an identified disability, chronic health condition, or military parent (see Table 16 and Table 17). Information on children's prior placement indicated that 60% had never previously been served in any preschool setting and 19% were currently unserved at the time of enrollment, proportions which were not significantly different from past years (see Table 13, Table 18, and Table 19).

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 2012–2013 had at least a bachelor's degree in both public school (over 99%) and private settings (98%) (see Table 20). Nearly all teachers in public school settings (93%) and over half of the teachers in private settings (57%) had a Birth-Kindergarten (B-K) license (or the equivalent). Almost no teachers in public school settings (2%) and under one-quarter in private settings (22%) were reported to have no credential (see Table 21). 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 (see Table 13). In 2012–2013, a higher proportion of teachers had a bachelor's degree or higher compared to all previous years. Similarly, in 2012–2013, 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 earlier years of the program (through 2008–2009), and was similar to more recent years (from 2009–2010 through 2011–2012). (See Table 22 and Table 23.)

In addition, survey data gathered from 94 teachers in the randomly-selected sample of classrooms for the 2012–2013 evaluation indicated that NC Pre-K teachers were fairly experienced on average, having taught children in the birth-5 year-old range for 11 years and having total teaching experience of 14 years. On a measure of beliefs about developmentally appropriate teaching practices, teachers scored relatively high on average (4.0 on a 1–5 scale), although there was some variability in individual scores (3.2–4.8). NC Pre-K teachers rated their work climate fairly high (3.9 on a 0–5 scale), although there was quite a bit of variability in individual scores (1.2–5.0). (See Table 24.)

Classroom Quality

The quality of educational practices in 99 randomly-selected NC Pre-K classrooms was examined during the 2012–2013 program year. Observational measures of quality were gathered across a number of dimensions, including global classroom quality, teacher-child instructional interactions, language and literacy environment, and sensitivity of teacher-child interactions. In addition, analyses were conducted including four cohorts of pre-k classrooms from previous years of the program (2003–2004, 2005–2006, 2007–2008, 2011–2012) in order to examine whether there were any changes over time in the patterns of results.

Global Quality

The global quality of classroom practices was measured using the ECERS-R (see Table 25). The average total score was 4.5, at the upper end of the medium quality range. About three-quarters (75%) of classrooms scored in the medium range (3.0–4.9) and about one-quarter (24%) scored in the high range (5.0–7.0), with only one classroom scoring in the low range (1.0–2.9). (See Figure 1.)

Six of the seven subscales had average scores in the medium or high range as well. Two subscales had average scores in the high quality range— Program structure (5.6) and Parents

and staff (5.1). Four subscales had average scores in the medium quality range—Space and furnishings (4.5), Language-Reasoning (4.8), Activities (4.4), and Interaction (4.9). One subscale had average scores in the low quality range—Personal care routines (2.6). Looking at individual items reveals several areas of strength in the program (based on average scores at or above 5.0), including furniture for routine care, play and learning; room arrangement for play; greeting/departing; encouraging children to communicate; fine motor; blocks; sand/water; discipline; staff-child interactions; interactions among children; free play; group time; provisions for children with disabilities; provisions for parents; provisions for staff; professional needs; staff interaction; staff supervision; and professional growth. In contrast, areas that especially need improvement (based on average scores below 3.0) include most of the items in the Personal care routines subscale, space for gross motor play, and provisions for staff personal needs.

To examine whether there have been any changes in global classroom quality over the years of the NC Pre-K Program, ECERS-R Total scores were compared across all five cohorts. In general, ECERS-R scores have been relatively stable over time. Scores in 2012–2013 were not significantly different from the previous three cohorts; however, scores were consistently higher in the first year (2003–2004) than in all other years (see Table 29 and Table 30).

Teacher-Child Instructional Interactions

Three aspects of teacher-child instructional interactions were examined based on the CLASS Emotional Support, Classroom Organization, and Instructional Support domain scores (see Table 26). Average scores were in the high range (5.5-7.0) on Emotional Support (5.8), the middle range (2.5–5.4) on Classroom Organization (5.2), and the low range (1.0-2.4) on Instructional Support (2.2). On Emotional Support, no classrooms scored in the low range, 23% scored in the middle range, and 77% scored in the high range (see Figure 2). On Classroom Organization, one classroom scored in the low range, 61% in the middle range, and 38% in the high quality range. (See Figure 3). On Instructional Support, 67% of the classrooms scored in the low range, 32% in the middle range, and one classroom in the high range (see Figure 4). The dimension scores within each domain were consistently higher for Emotional Support and Classroom Organization and consistently lower for Instructional Support.

CLASS scores were compared for the three most recent cohorts to examine whether there have been any changes over time in teacher-child instructional interactions in the statewide pre-k program (see Table 29 and Table 30). For two of the domains, Emotional Support and Classroom Organization, scores have remained consistent over time. However, there were significant differences between cohorts for Instructional Support, indicating that scores were significantly lower over time. For example, over the past three cohorts the proportion of classrooms scoring in the low range has increased from 26% to 59% to 67% and the proportion in the middle range has decreased from 74% to 41% to 32%.

Language and Literacy Environment

The quality of the language and literacy environments in the classrooms was examined based on the ELLCO Pre-K Tool (see Table 27). Average scores on the General Classroom Environment subscale (3.7) and the Language and Literacy subscale (3.2) were between basic and strong. On the General Classroom Environment subscale, most classrooms scored toward the upper half of the scale, with 56% in the basic to strong range (3.0-3.9), and 34% in the strong to exemplary range (4.0–5.0). Only 9% scored in the inadequate to basic range (2.0–2.9), and only one classroom scored in the deficient to inadequate range (1.0–1.9). (See Figure 5.) On the Language and Literacy subscale, scores were somewhat lower, with most classrooms scoring in the inadequate to basic range (33%) or in the basic to strong range (46%). Only 16% of the classrooms scored in the strong to exemplary range and 4% scored in the deficient to inadequate range. (See Figure 6.) Most of the individual section scores were in the basic to strong range, with somewhat higher scores for Classroom structure and Books and book reading than for the other areas.

To examine changes over time in language and literacy environments in the NC Pre-K Program, comparable data for the ELLCO were only available from the previous year (2011–2012). These comparisons indicated that General Classroom Environment scores were not significantly different between the two years, but that Language and Literacy scores were lower in 2012–2013 than in 2011–2012 (see Table 29 and Table 30).

Sensitivity of Teacher-Child Interactions

The sensitivity of teachers in interactions with children was measured using the CIS (see Table 28). The sensitivity of teacher-child interactions was fairly high, with an average Total score of 3.5 and almost all classrooms (94%) scoring at or above 3.0 (see Figure 7). At the subscale level, average scores were high on the Sensitivity subscale (3.2), indicating more positive interactions with children, and low on the Harshness (1.2), Detachment (1.4), and Permissiveness (1.3) subscales, indicating fewer negative interactions with children.

CIS Total scores were compared across the four most recent cohorts to examine whether there have been any changes over time in this aspect of classroom quality (see Table 29 and Table 30). Scores for the most recent year (2012–2013) were modestly, but significantly higher than in two of the previous cohorts (2005–2006 and 2011–2012).

Predictors of Classroom Quality

Specific teacher and classroom characteristics were examined as potential predictors of the level of classroom quality for the current 2012–2013 of NC Pre-K classrooms. The four aspects of classroom quality were examined in separate analyses: 1) Global quality as measured by the ECERS-R Total score; 2) Teacher-child instructional interactions as measured by the CLASS Emotional Support, Classroom Organization, and Instructional Support domain scores; 3) Language and literacy environment as measured by the ELLCO General Classroom Environment and Language and Literacy subscale scores, and 4) Sensitivity of teacher-child interactions as measured by the CIS Total score. Three sets of predictors were examined, based

on data from the statewide databases and the teacher surveys: 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; 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 developmental/educational need, proportion eligible for free lunch, and proportion with no prior placement status; and 3) teacher beliefs measures—teaching practices (developmentally appropriate practices scale total score) and work climate (work environment scale total score).

Results indicated that class size and percentage of NC Pre-K children in classrooms were significant predictors across some scores. Lower class size was associated with higher ECERS-R Total scores, CLASS Emotional Support, and ELLCO Language and Literacy scores. Having a higher proportion of NC Pre-K children in the classroom was associated with higher scores on CLASS Classroom Organization and the ELLCO General Classroom Environment and Language and Literacy subscales. A few other predictors were only significant for one or two quality measures: more developmentally appropriate beliefs about teaching practices were associated with higher ECERS-R Total scores, having a higher proportion of NC Pre-K children with a chronic health condition was associated with higher CLASS Classroom Organization scores, and having a higher proportion of NC Pre-K children with developmental/educational needs was associated with higher ECERS-R Total scores and CLASS Instructional Support scores. (See Table 31.)

Child Outcomes

Children's growth and factors associated with greater growth in language, literacy, math, general knowledge, and behavior skills were examined during their participation in the NC Pre-K Program. Individual child assessments were conducted for a sample of 561 children attending 99 randomly-selected NC Pre-K classrooms across the state during the 2012–2013 program year. The child assessments included measures 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). For the subsample of 117 Spanish-speaking DLLs, assessments were administered in both English and Spanish. In addition, analyses were conducted including three cohorts of children who attended the pre-k program in previous years (2003–2004, 2005–2006, 2007–2008) 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 the school year was examined. A series of hierarchical linear models (HLM) regression analyses, which also adjusted for various child background characteristics and program type (public or private), tested for significant changes over time. (See Analysis Approach section for further details.) Children exhibited significant growth during their pre-k year across all

domains of learning: 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 range for their age group, with mean scores slightly below the norm in the fall and about at the norm in the spring for most standardized measures. The only area that exhibited no change was problem behaviors, where children's scores remained consistent over time, with mean scores at the norm at both time points. (See Table 32, Table 33, and Table 34.) Further, this pattern of growth was consistent across all four cohorts for the available measures in language and literacy skills (letter-word identification, phonological awareness), math skills (math problem-solving, counting), and general knowledge (basic self-knowledge), with no significant differences between cohorts in the scores or rates of growth (see Table 35 for previous cohorts). 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 during the time they participated in the NC Pre-K Program 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.

Full Sample Moderators of Growth

Two factors, the level of children's English language proficiency 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 child background characteristics and program type. Additional series of HLM analyses were conducted based on the same models above examining growth over time, with the addition of English language proficiency level (based on direct assessments) and each of the four aspects of classroom quality that were measured (global classroom quality, teacher-child instructional interactions, literacy environment, sensitivity of teacher-child interactions) in interaction with time. (See Analysis Approach section for further details.)

Children with different levels of English proficiency exhibited similar rates of growth during pre-k for many skills across the various domains of learning (receptive vocabulary, expressive vocabulary, counting, basic self-knowledge, problem behaviors). However, there were differences in the rate of growth for some skills. Children with lower levels of English proficiency made greater gains than their peers in letter-word identification, math problem-solving and social skills; conversely, children with higher levels of English proficiency made greater gains than their peers in phonological awareness. (See Table 33 and Table 34.) For letter-word identification, children at the lowest English proficiency level made greater gains than children at the three highest levels; they began pre-k with significantly lower skills than their peers, but their scores were similar by the end of pre-k (see Figure 8). For math problem-solving, children at the lowest English proficiency level made greater gains than children at all other levels; they began pre-k with substantially lower skills, but by the end of pre-k were scoring similarly to most other groups although still below children at the highest proficiency level (see Figure 9). For social skills, children at the two lowest levels of English proficiency made greater gains than children at higher levels. Teachers generally rated children at the

lowest level of English proficiency as lower in social skills than their peers in the fall but rated them similarly to their peers by the spring (Figure 10). In contrast, children at the highest level of English proficiency (level 5) made greater gains than most other groups (levels 4, 3, 1) on phonological awareness skills; further, although phonological awareness scores for children in the highest language proficiency group were similar to their peers in the fall (except for children at the lowest level), their scores were substantially higher than their peers by the spring (see Figure 11).

For the most part, there were no clear patterns of association between classroom quality and the amount of growth children experienced during the pre-k year across different domains of learning, especially with regard to language and literacy skills, math skills, and general knowledge. There were some isolated associations, but no consistent patterns across outcome areas or quality measures. (See Table 33 and Table 34). With regard to language and literacy skills, children made greater gains in letter-word identification in classrooms that scored higher on the ELLCO Language and Literacy subscale. Children also made greater gains in phonological awareness skills in classrooms that scored higher on CLASS Instructional Support or lower on CLASS Emotional Support. With regard to math skills, children made greater gains in counting skills in classrooms that scored higher on CLASS Classroom Organization or lower on CLASS Emotional Support. Children exhibited greater growth in basic self-knowledge in classrooms that scored higher on the ELLCO Language and Literacy subscale. The one area that showed a more consistent pattern of association with classroom quality was social skills, although these were rated by teachers. Teachers rated children's progress in social skills as greater in classrooms that scored higher on the ECERS-R Total, CLASS Instructional Support, ELLCO General Classroom Environment, and CIS Total, and lower on ELLCO Language and Literacy.

DLL Subsample Growth over Time

For the subsample of Spanish-speaking DLLs, children's growth over time on language, literacy, math, and general knowledge skills in both English and Spanish was examined using parallel measures. 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.) For skills measured in English, children exhibited significant growth in all domains during the pre-k year, including language and literacy (receptive vocabulary, expressive vocabulary, letter-word identification, phonological awareness), math (math problem-solving, counting), and general knowledge (basic self-knowledge). Their scores were somewhat to slightly below the norm in the fall and spring for most standardized measures, suggesting that these children were performing within the normal range for their age on most of these skills. One area that was lower was expressive vocabulary skills, as well as basic self-knowledge (which is not standardized). (See Table 36, Table 37, and Table 38.) Children similarly made significant gains in most areas for the same skills measured in Spanish, including language and literacy skills (receptive vocabulary, phonological awareness), math skills (math problem-solving, counting), and general knowledge (basic self-knowledge). In contrast, in two areas of language and literacy skills in Spanish children

exhibited a different pattern, making no gains in expressive vocabulary and evidencing decreases in their scores for letter-word identification during pre-k. The level of scores in Spanish looked fairly similar to their scores in English, with the exception of expressive vocabulary, which was higher in Spanish than in English. (See Table 36, Table 39, and Table 40.) 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, whereas a decrease in scores indicates less progress than expected.

DLL Subsample Moderators of Growth

A similar series of analyses as those described above for the full sample was conducted for the DLL subsample to examine potential moderators of children's growth in skills in both English and Spanish. Two factors, the level of children's English or Spanish language proficiency (for outcomes measured in English or Spanish, respectively) and the quality of practices in their pre-k classrooms, were examined in interactions with time as potential moderators of children's growth in skills, after accounting for other child background characteristics and program type. (See Analysis Approach section for further details.)

When measured in English, children with different levels of English language proficiency exhibited similar rates of growth across most language and literacy skills (receptive vocabulary, expressive vocabulary, letter-word identification, phonological awareness) and math skills (math problem-solving, counting). (See Table 37 and Table 38.) For basic self-knowledge skills, when measured in English, DLLs who were more proficient in English made greater gains than those who were less proficient in English (see Figure 12).

There were some associations of classroom quality measures with children's rates of growth on English skills for the DLL subsample. (See Table 37 and Table 38.) Children in classrooms with higher ELLCO Language and Literacy subscale scores made greater gains in several areas of language and literacy skills in English, including receptive vocabulary, letter-word identification, and phonological awareness. DLLs in classrooms scoring higher on CLASS Instructional Support also made greater gains in phonological awareness. However, DLLs in classrooms scoring higher on ELLCO General Classroom Environment or CIS Total made fewer gains in letter-word identification. For math skills, DLLs in classrooms scoring higher on CLASS Classroom Organization made greater gains in counting skills during the pre-k year. Children also made greater gains in basic self-knowledge when attending classrooms scoring higher on CLASS Classroom Organization or lower on CLASS Emotional Support.

For skills measured in Spanish, the results were somewhat different than when measured in English. There were no associations between the level of Spanish language proficiency and growth on the outcome measures in Spanish. (See Table 39 and Table 40.)

There were some associations between classroom quality and growth in skills measured in Spanish, although there were no consistent patterns across child outcome measures or

classroom quality measures. In the area of language and literacy skills, greater growth in letter-word identification in Spanish was related to higher scores on CLASS Instructional Support and ELLCO General Classroom Environment, but lower scores on ELLCO Language and Literacy subscale. Also, greater growth in phonological awareness skills in Spanish was related to higher scores on the ECERS-R Total and CLASS Instructional Support. In contrast, greater growth in math skills in Spanish was related to lower classroom quality scores in two instances, with negative associations between math problem-solving and CLASS Emotional Support and between counting and CLASS Instructional Support. Similarly, one negative association was found between classroom quality and general knowledge, with greater growth in basic self-knowledge skills measured in Spanish related to lower scores on the CIS Total. (See Table 39 and Table 40.)

Summary and Conclusions

The 2012–2013 NC Pre-Kindergarten (NC Pre-K) Evaluation study was designed to examine the quality of the program and the outcomes for children, as well as any changes over time in these results since the program became statewide in 2003–2004. Program characteristics were examined for the NC Pre-K Program, using data from the statewide databases and survey data from a sample of teachers. Researchers gathered classroom practices data from a randomly-selected sample of 99 NC Pre-K classrooms, including measures of global quality, teacher-child instructional interactions, language and literacy environment, and sensitivity of teacher-child interactions. Child outcomes data were gathered at the beginning (fall) and end (spring) of the pre-k year to examine changes in skills for a sample of 561 children. Researchers conducted individual assessments of children's language, literacy, math, and general knowledge skills and gathered teacher ratings of behavior skills. For Spanish-speaking DLLs in the sample, assessments were conducted in both English and Spanish to examine their progress when measured in both languages. When possible, data on program characteristics, classroom quality, and child outcomes were compared to prior evaluation samples to examine changes over time.

Program Characteristics

Many of the characteristics of the NC Pre-K Program were consistent with good quality standards, as well as program guidelines. In 2012–2013, the average total class size was 16 children, of which 13 (85%) 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 (61%) were at the highest, five-star licensing level, with another 19% at the four-star level. Almost all classrooms reported using an approved curriculum and conducting ongoing assessments and developmental screenings. The average days of attendance was 135 days (79% of the days of operation and 75% of the intended instructional days).

In general, most program characteristics have been fairly stable over time. In 2012–2013, the NC Pre-K Program served over 32,000 children in 2,150 classrooms located in more than 1,200 sites, representing an increase over the previous year. 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 16% in Head Start. The program continued to serve children from a variety of backgrounds and with different eligibility factors, including a substantial proportion of children with limited English proficiency or developmental/educational needs (20-25%), as well as children with identified disabilities and other factors (4-6%). The majority of children were from low-income families (91% qualified for free or reduced-price lunch) and almost 80% of the children had never been served or were currently unserved in a preschool setting.

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 2012–2013 compared to past years. In 2012–2013, almost all 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 over half

in private settings had a B-K license, while almost no teachers in public schools and under one-quarter in private settings had no credential.

Classroom Quality

The quality of NC Pre-K classrooms in the 2012–2013 sample was in the medium to good range overall, across a number of different aspects of classroom practices. For most aspects of quality that were measured, classrooms generally scored in the medium to high quality range, with very few scoring in the low quality range. The average global quality score (ECERS-R) was at the upper end of the medium quality range (4.5), with about three-quarters of classrooms scoring in the medium range and about one-quarter scoring in the high range. However, this average score is below the expected score of 5.0 for NC Pre-K classrooms based on program guidelines. The quality of teacher-child instructional interactions (CLASS) varied across different aspects, with average scores in the high range for Emotional Support (5.8), middle range for Classroom Organization (5.2), and low range for Instructional Support (2.2). The quality of language and literacy practices (ELLCO) was between basic and strong, based on average scores on both the General Classroom Environment (3.7) and Language and Literacy subscales (3.2). The average score for sensitivity of teacher-child interactions (CIS) was fairly high (3.5), with high scores on positive interactions with children and low scores on negative interactions.

In general, the quality of the NC Pre-K Program has remained relatively stable over time, although there have been a few changes compared to more recent cohorts. There has been no change across many aspects that were measured, including ECERS-R scores, CLASS Emotional Support and Classroom Organization, and ELLCO General Classroom Environment. Compared to more recent cohorts, CLASS Instructional Support and ELLCO Language and Literacy have shown some decreases, while CIS Total has shown increases.

Lower class size and a higher proportion of NC Pre-K children in the classroom were associated with higher quality. Three sets of predictors of quality were examined, teacher and classroom structural characteristics (lead teacher B-K licensure and education and class size), characteristics of NC Pre-K children in the classroom, and teacher beliefs about teaching practices and work climate. Two stronger associations were lower class size predicting higher ECERS-R Total, CLASS Emotional Support, and ELLCO Language and Literacy scores and a higher proportion of NC Pre-K children in the classroom predicting higher scores on CLASS Classroom Organization and the ELLCO General Classroom Environment and Language and Literacy subscales. Other predictors showed more variable associations, with no consistent patterns across measures.

Child Outcomes

Children in the NC Pre-K Program exhibited significant growth during their pre-k year across all domains of learning, with scores generally in the expected range for their age group. Children made significant gains during pre-k 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). Most of these were standardized measures, so that changes indicate that children progressed at an even greater rate during the time they participated in 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.

The pattern of growth in skills shown by children in the NC Pre-K Program has been consistent over time. Comparisons between the current cohort and three previous cohorts of children who attended the pre-k program indicated that this pattern of growth was stable over time for the available measures in language and literacy skills (letter-word identification, phonological awareness), math skills (math problem-solving, counting), and general knowledge (basic self-knowledge).

Children's level of English proficiency was associated with different rates of growth for some skills and similar rates for others. Children with lower levels of English proficiency made greater gains than their peers for some skills (letter-word identification, math problem-solving and social skills). 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. For other skills, children with different levels of English proficiency exhibited similar rates of growth during pre-k (receptive vocabulary, expressive vocabulary, counting, basic self-knowledge, problem behaviors). 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 in some areas.

There were no strong associations between classroom quality and children's growth in academic skills during the NC Pre-K Program. There were some isolated associations, but no consistent patterns, between classroom quality and the amount of growth children experienced in the areas of language and literacy skills, math skills, and general knowledge. However, there was a relatively restricted range of quality in NC Pre-K, with few classrooms scoring in the low range on the quality measures, which may have prevented the detection of such associations. The one area that showed a more consistent pattern was that higher classroom quality was associated with better social skills; however, these were rated by teachers.

Similarly to the full sample, children in the DLL subsample exhibited significant growth for all skills measured in English during pre-k and for most skills measured in Spanish. 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). These children made significant gains in most areas for the same skills measured in Spanish, with the exception of expressive vocabulary and letter-word identification. In general, their scores were within the normal range for their age in both languages; one exception was expressive vocabulary in English, which was lower.

For DLLs, children with different levels of language proficiency experienced similar rates of growth during the NC Pre-K Program, both for skills measured in English and in Spanish. Children in the DLL subsample generally exhibited similar growth in skills, regardless of their level of language proficiency. There were no differences in growth on the basis of language proficiency for all language, literacy, and math skills measured in English. For one skill, basic self-knowledge, children who were more proficient in English made greater gains than less proficient children. When skills were measured in Spanish, there were no effects of the level of Spanish language proficiency for any domains of learning.

DLLs in classrooms with better quality language and literacy environments made greater gains in language and literacy skills in English during the NC Pre-K Program. There were some associations of classroom quality measures with children's rates of growth in English for the DLL subsample, but few consistent patterns for most measures. One stronger association was that children in classrooms with higher ELLCO Language and Literacy Environment scores made greater gains in several areas of language and literacy skills in English, including receptive vocabulary, letter-word identification, and phonological awareness. In contrast, there were some associations, but no clear patterns for skills measured in Spanish.

Table 1. Pre-K Evaluation Reports Reference List

Peisner-Feinberg, E. S. (2003). *Child and Program Characteristics of the North Carolina More at Four Pre-kindergarten Program: Year 1 (January–June 2002).* Chapel Hill: The University of North Carolina, FPG Child Development Institute.

Peisner-Feinberg, E. S., & Maris, C. L. (2005). *Evaluation of the North Carolina More at Four Pre-kindergarten Program: Year 2 (July 1, 2002–June 30, 2003).* Chapel Hill: The University of North Carolina, FPG Child Development Institute.

Peisner-Feinberg, E. S., & Maris, C. L. (2005). *Evaluation of the North Carolina More at Four Pre-kindergarten Program: Year 3 Report (July 1, 2003–June 30, 2004).* Chapel Hill: The University of North Carolina, FPG Child Development Institute.

Peisner-Feinberg, E. S., & Maris, C. L. (2006). *Evaluation of the North Carolina More at Four Pre-kindergarten Program: Children's longitudinal outcomes and classroom quality in kindergarten.* Chapel Hill: The University of North Carolina, FPG Child Development Institute.

Peisner-Feinberg, E. S., Elander, K.C., & Maris, C. L. (2006). *Evaluation of the North Carolina More at Four Pre-kindergarten Program: Year 4 (July 1, 2004–June 30, 2005) Program characteristics and services.* Chapel Hill: The University of North Carolina, FPG Child Development Institute.

Peisner-Feinberg, E. S., & Schaaf, J. M. (2007). *Evaluation of the North Carolina More at Four Pre-kindergarten Program: Children's outcomes and program quality in the fifth year.* Chapel Hill: The University of North Carolina, FPG Child Development Institute.

Peisner-Feinberg, E. S., & Schaaf, J. M. (2008). *Evaluation of the North Carolina More at Four Pre-kindergarten Program: Children's longitudinal outcomes and program quality over time (2003–2007).* Chapel Hill: The University of North Carolina, FPG Child Development Institute.

Peisner-Feinberg, E. S., & Schaaf, J.M. (2008). *Evaluation of the North Carolina More at Four Pre-kindergarten Program: Performance and progress in the seventh year (2007–2008).* Chapel Hill: The University of North Carolina, FPG Child Development Institute.

Peisner-Feinberg, E. S. & Schaaf, J. M. (2009). *Evaluation of the North Carolina More at Four Pre-kindergarten Program: A look across time at children's outcomes and classroom quality from pre-k through kindergarten (2003–2009).* Chapel Hill: The University of North Carolina, FPG Child Development Institute.

Peisner-Feinberg, E. S., & Schaaf, J.M. (2010). *Long-term effects of the North Carolina More at Four Pre-kindergarten Program: Children's reading and math skills at third grade.* Chapel Hill: The University of North Carolina, FPG Child Development Institute.

Peisner-Feinberg, E. S., & Schaaf, J.M. (2011). *Effects of the North Carolina More at Four Pre-kindergarten Program on children's school readiness skills Key Findings*. Chapel Hill: The University of North Carolina, FPG Child Development Institute.

Peisner-Feinberg, E. S., Schaaf, J. M., Hildebrandt, L., & LaForett, D. R. (2013). *Quality and characteristics of the North Carolina Pre-Kindergarten Program: 2011–2012 Statewide evaluation.* Chapel Hill: The University of North Carolina, FPG Child Development Institute.

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

		Sample		Not in Sample	
Characteristic	N	%/mean	n	%/mean	n
Teacher Education Level	2,250				
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	2,250				
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	2,150	16.4	99	15.7	2,051
% NC Pre-K Children in Class	2,150	84%	99	85%	2,051

Table 3. Distribution of NC Pre-K Classrooms in Sample and Not in Sample by Setting Type (2012–2013)

	Sample n=99		Not in Sample n=2,051	
Setting Type	%	n	%	n
Public Preschool	**58.6**	**58**	**50.3**	**1032**
Private	**22.2**	**22**	**34.0**	**697**
Private For-Profit	15.2	15	24.7	507
Private Non-Profit	7.1	7	9.3	190
Head Start	**19.2**	**19**	**15.7**	**322**
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

Table 4. Characteristics of NC Pre-K Children in Sample and Not in Sample (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
Prior Placement				
Never Served	64.5%	362	59.4%	18,758
Unserved	35.5%	199	40.6%	12,823
Days of Attendance per Child	154.1	561	134.3	31,581

Table 5. Eligibility Factors for NC Pre-K Children in Sample and Not in Sample (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
Dev/Ed Need				
Developmental/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, developmental/educational need, or a parent actively serving in the military.

Table 6. Child Language Proficiency Levels

	English Language Proficiency				Spanish Language Proficiency	
	Full Sample		DLL Subsample		DLL Subsample	
*pre*LAS Proficiency Level	%	n	%	n	%	n
Level 1	16.6	93	58.6	68	22.2	26
Level 2	7.7	43	12.1	14	9.4	11
Level 3	18.1	101	13.8	16	18.8	22
Level 4	32.7	183	12.9	15	22.2	26
Level 5	24.9	139	2.6	3	27.4	32
Total	100.0	559	100.0	116	100.0	117

Table 7. 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 8. NC Pre-K Program Characteristics (2012–2013)

Program Characteristic			
Total NC Pre-K Sites (Centers/Schools)	N=1,218		
Total NC Pre-K Classrooms	N=2,150		
Total Children Served	N=32,142		
	Mean	(SD)	Median
Class Size	15.7	(3.4)	17.4
Number of NC Pre-K Children per Class	13.3	(4.2)	14.2
Proportion of NC Pre-K Children per Class	0.85	(0.2)	0.94
Days of Attendance per Child	135	(41.4)	152
Days of Operation	171	(21.4)	176
Licensing Star Ratings	%	n	
Five-Star	61.3	747	
Four-Star	18.9	230	
Temporary	4.1	50	
Public School in Process	15.7	191	

Table 9. NC Pre-K Classrooms: Curricula, Assessment Tools, and Developmental Screening Tools (2012–2013)

Educational Resources	n=2,150	%	n
Primary Curriculum[a]			
Creative Curriculum		83.7	1,800
OWL		9.4	202
HighScope		4.0	85
Passports: Experiences for PreK Success		0.7	16
Tools of the Mind		2.1	46
Tutor Time LifeSmart		0.1	1
Ongoing Assessment Tool			
Creative Curriculum Assessment/Teaching Strategies Gold		79.3	1,704
Work Sampling System		7.8	168
HighScope Preschool Child Observation Record (COR)		4.0	86
Learning Accomplishment Profile-3rd edition (LAP-3)		3.8	82
Galileo Online Assessment System		0.8	17
Other[b]		4.3	93
Developmental Screening Tool			
Developmental Indicators for the Assessment of Learning (DIAL)		58.8	1,264
Brigance		37.0	795
Parents' Evaluation of Developmental Status (PEDS)		2.3	50
Ages & Stages Questionnaire (ASQ)		1.9	41

[a] Other approved curricula included Bank Street Curriculum; The Empowered Child, Childtime; High Reach Learning; and Investigator Club Prekindergarten Learning System.
[b] Other approved ongoing assessment tools included Learning Care System, Tools of the Mind Assessment, and mCLASS: CIRCLE.

Table 10. Pre-K Program Characteristics (2003–2012)

Program Characteristic	2003–2004	2004–2005	2005–2006	2006–2007	2007–2008	2008–2009	2009–2010	2010–2011	2011–2012
Total Pre-K Sites (Centers/Schools)	628	689	790	909	1,178	1,285	1,273	1,239	1,174
Total Pre-K Classrooms	883	1,027	1,218	1,439	2,148	2,322	2,313	2,262	2,057
Total Children Served	10,891	13,515	17,251	20,468	29,978	33,798	34,212	33,747	29,312
Class Size									
Mean (SD)	16.3 (2.6)	16.1 (3.0)	16.2 (2.7)	16.0 (3.0)	15.8 (3.4)	15.7 (3.4)	16.1 (3.0)	16.1 (3.2)	15.6 (3.6)
Median	17.6	17.7	17.6	17.6	17.2	17.0	17.9	17.9	17.2
Number of Pre-K Children per Class									
Mean (SD)	10.7 (5.8)	11.5 (5.5)	12.3 (4.9)	12.6 (4.7)	12.8 (4.4)	12.9 (4.4)	13.4 (4.3)	13.4 (4.4)	12.8 (4.6)
Median	10.6	11.7	13.6	13.7	14.0	14.2	14.6	14.5	13.7
Proportion of Pre-K Children per Class									
Mean (SD)	0.67 (0.3)	0.71 (0.3)	0.76 (0.2)	0.79 (0.3)	0.82 (0.2)	0.83 (0.2)	0.83 (0.2)	0.83 (0.2)	0.82 (0.2)
Median	0.78	0.89	0.91	0.93	0.93	0.93	0.94	0.94	0.94
Days Attended									
Mean (SD)	125 (48.1)	134 (44.6)	136 (44.5)	139 (42.8)	132 (43.6)	138 (41.7)	140 (39.7)	141 (40.2)	137 (43.6)
Primary Curriculum[a]									
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)

[a] Other approved curricula included OWL/Bright Beginnings (2003–2012), High Scope (2003–2012), and others [Tools of the Mind (2009–2012); Tutor Time LifeSmart (2009–2012); Passports: Experiences for PreK Success (2009–2012); Bank Street Curriculum (2003–2012); Montessori (2003–2008); The Empowered Child, Childtime (2009–2012); High Reach Learning (2012); and Investigator Club Prekindergarten Learning System (2012)].

Table 11. Distribution of NC Pre-K Classrooms by Setting Type (2012–2013)

Setting Type	n=2,150	%	n
Public Preschool		**50.7**	**1,090**
Private		**33.5**	**719**
Private For-Profit		24.3	522
Private Non-Profit		9.2	197
Head Start		**15.8**	**341**
Head Start Not Administered by Public School		12.8	276
Head Start Administered by Public School		3.0	65

Table 12. Distribution of Pre-K Classrooms by Setting Type (2003–2012)

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
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)**
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)**
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)
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)
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)**
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)
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)

Table 13. Comparisons of Pre-K Program Characteristics Over Time (2003–2013)

	Teacher BA or Higher		Teacher BK License		Teacher No Credential		Site Type: Public School		Site Type: Private School		Site Type: Head Start		% Children Never Served		% Children Unserved	
Year	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 vs. 2012–2013	3.1 5***	(0.22)	1.55***	(0.08)	-1.41***	(0.09)	0.05	(0.10)	-0.18	(0.10)	0.23	(0.14)	-5.66	(1.04)	-4.53	(0.97)
2004–2005 vs. 2012–2013	2.87***	(0.22)	1.23***	(0.08)	-0.79***	(0.10)	-0.03	(0.10)	-0.19	(0.10)	0.47**	(0.15)	-3.10	(0.99)	-3.62	(0.92)
2005–2006 vs. 2012–2013	2.93***	(0.21)	1.05***	(0.07)	-0.67***	(0.10)	-0.03	(0.09)	-0.15	(0.10)	0.36**	(0.14)	-2.55	(0.94)	-1.33	(0.87)
2006–2007 vs. 2012–2013	2.91***	(0.21)	0.85***	(0.07)	-0.49***	(0.09)	-0.10	(0.09)	0.01	(0.09)	0.20	(0.13)	0.04	(0.89)	2.11	(0.83)
2007–2008 vs. 2012–2013	3.22***	(0.21)	0.96***	(0.07)	-0.51***	(0.09)	-0.03	(0.08)	0.08	(0.09)	-0.08	(0.11)	5.64	(0.80)	7.33	(0.75)
2008–2009 vs. 2012–2013	3.15***	(0.21)	0.85***	(0.06)	-0.30***	(0.09)	0.02	(0.08)	0.05	(0.09)	-0.12	(0.11)	6.36	(0.78)	7.36	(0.73)
2009–2010 vs. 2012–2013	2.82***	(0.21)	0.66***	(0.06)	-0.09	(0.09)	0.01	(0.08)	0.10	(0.09)	-0.17	(0.11)	4.60	(0.78)	6.82	(0.73)
2010–2011 vs. 2012–2013	2.18***	(0.21)	0.25***	(0.07)	0.14	(0.10)	-0.06	(0.08)	0.16	(0.09)	-0.14	(0.11)	1.76	(0.79)	4.81	(0.73)
2011–2012 vs. 2012–2013	0.69***	(0.25)	0.20***	(0.07)	-0.10	(0.09)	0.02	(0.08)	0.01	(0.09)	-0.06	(0.11)	-0.87	(0.80)	0.76	(0.75)

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

Table 14. Characteristics of NC Pre-K Children (2012–2013)

Characteristic n=32,142	%/Mean	n
Child's age on 8/31 of program year	4.4	32,142
Gender		
Male	51.2%	16,458
Female	48.8%	15,684
Race		
White/European-American	48.5%	15,596
Black/African-American	37.0%	11,898
Native American/Alaskan Native	6.6%	2,110
Multiracial	5.2%	1,681
Asian	1.9%	597
Native Hawaiian/Pacific Islander	0.8%	260
Ethnicity		
Non-Hispanic/Latino	75.7%	24,329
Hispanic/Latino	24.3%	7,813
Parents Employed		
Mother	45.8%	14,707
Father	42.1%	13,534

Table 15. Characteristics of Pre-K Program Children (2003–2012)

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
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)
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)
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)
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)
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)
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)
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)
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)
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)
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)

[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 16. Eligibility Factors for NC Pre-K Children (2012–2013)

Eligibility Factors[a]	n=32,142	%	n
Family Income			
130% of poverty and below (eligible for free lunch)		76.8	24,699
131–185% of poverty (eligible for reduced-price lunch)		13.8	4,440
186–200% of poverty		2.3	752
201–250% of poverty		3.7	1,187
>251% of poverty		3.3	1,064
Limited English Proficiency			
Family and/or child speak limited or no English in the home		20.0	6,412
Dev/Ed Need			
Developmental/educational need indicated by performance on a developmental screen		25.4	8,154
Identified Disability			
Child has an IEP		4.2	1,349
Chronic Health Condition(s)			
Child is chronically ill/medically fragile		5.4	1,727
Military Parent		6.4	2,056

[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, developmental/educational need, or a parent actively serving in the military.

Table 17. Eligibility Factors of Pre-K Program Children (2003–2012)

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
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)
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)
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)
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)
>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)
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)
Dev/Ed Need									
Developmental/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)
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)
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)
Military Parent	--	--	--	--	6.4% (1,916)	6.8% (2,284)	6.6% (2,268)	6.7% (2,244)	7.1% (2,085)

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

Table 18. Prior Placement for NC Pre-K Children (2012–2013)

Prior Placement n=32,142	%	n
Children who have never been served in any preschool or child care setting.	59.5	19,120
Children who are currently unserved (may previously have been in preschool or child care setting).	19.2	6,181
Children who are in unregulated child care.	2.0	647
Children who are in a regulated preschool or child care setting, but are not receiving subsidy.	12.0	3,845
Children who are receiving subsidy and are in some kind of regulated child care or preschool program.	7.3	2,349

Table 19. Prior Placement of Pre-K Children (2003–2012)

Prior Placement	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
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)
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)
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)
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)
Children who are receiving subsidy and are in some kind of regulated child care or preschool program	--	--	--	--	--	--	--	--	6.2% (1,828)
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.	--	3.2% (436)	5.9% (1,022)	4.1% (849)	3.9% (1,161)	2.3% (780)	2.1% (721)	1.5% (520)	--
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.

Table 20. Education Levels of NC Pre-K Lead Teachers (2012–2013)

		Highest Education Level							
		MA/MS or higher		BA/BS		AA/AAS		HS diploma/GED	
Setting Type[a]	Total n	%	n	%	n	%	n	%	n
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

Table 21. Licensure/Credential Levels of NC Pre-K Lead Teachers (2012–2013)

		Highest Licensure/Credential[b]									
		B-K[c]		Other Teacher's License		CDA Credential		NCECC		None	
Setting Type[a]	Total n	%	N	%	n	%	n	%	n	%	n
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] 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] 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.
[c] 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 22. Education Levels of Pre-K Lead Teachers (2003–2012)

		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

[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 23. Licensure/Credential Levels of Pre-K Lead Teachers (2003–2012)

		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

[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 24. NC Pre-K Teacher Survey Results (2012–2013)

Characteristic	n	Mean	(SD)	Range
Years of experience teaching birth–5	93	11.2	(7.3)	0.3–43.7
Total years of teaching experience	92	14.0	(9.0)	0.3–43.7
Teacher beliefs—developmentally appropriate practices scale score[a]	94	4.0	(0.4)	3.2–4.8
Work climate—work environment summary scale score[b]	94	3.9	(0.9)	1.2–5.0

[a] Rated on a scale of 1–5 with higher scores representing more developmentally-appropriate teaching beliefs.
[b] Rated on a scale of 0–5 with higher scores representing a more positive work environment.

Table 25. Global Classroom Quality (ECERS-R): NC Pre-K Classrooms (2012–2013)

ECERS-R Subscale/Item n=99	Mean	(SD)	Range[a]
Total Score	4.5	(0.7)	1.8–6.3
Space and Furnishings Subscale	4.5	(0.9)	2.3–6.4
Indoor space	4.6	(2.2)	1–7
Furniture for routine care, play, and learning	6.4	(1.2)	1–7
Furnishings for relaxation and comfort	4.8	(1.7)	1–7
Room arrangement for play	5.4	(1.8)	2–7
Space for privacy	4.7	(1.7)	1–7
Child-related display	4.3	(1.5)	1–7
Space for gross motor play	2.4	(1.6)	1–7
Gross motor equipment	3.4	(1.9)	1–7
Personal Care Routines Subscale	2.6	(0.8)	1.0–5.3
Greeting/departing	5.6	(1.9)	1–7
Meals/snacks	1.4	(0.9)	1–6
Nap/rest	2.7	(2.0)	1–7
Toileting/diapering	1.2	(0.4)	1–2
Health practices	2.0	(0.8)	1–7
Safety practices	2.7	(2.0)	1–7
Language-Reasoning Subscale	4.8	(1.1)	1.0–7.0
Books and pictures	4.6	(1.7)	1–7
Encouraging children to communicate	5.9	(1.3)	1–7
Using language to develop reasoning skills	4.0	(1.6)	1–7
Informal use of language	4.9	(1.5)	1–7
Activities Subscale	4.4	(0.9)	1.7–7.0
Fine motor	5.3	(1.6)	1–7
Art	4.3	(1.5)	1–7
Music/movement	4.0	(1.5)	1–7
Blocks	5.0	(1.5)	2–7
Sand/water	5.1	(1.3)	1–7
Dramatic play	4.4	(1.1)	2–7
Nature/science	4.1	(1.8)	1–7
Math/number	4.5	(1.4)	2–7
Use of TV, video, and/or computers	3.1	(1.9)	1–7
Promoting acceptance of diversity	4.1	(1.5)	1–7

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

Table 25. Global Classroom Quality (ECERS-R): NC Pre-K Classrooms (2012–2013)

ECERS-R Subscale/Item n=99	Mean	(SD)	Range[a]
Interaction Subscale	4.9	(1.4)	1.2–7.0
Supervision of gross motor activities	4.0	(1.8)	1–7
General supervision of children	3.7	(2.2)	1–7
Discipline	5.3	(1.7)	1–7
Staff-child interactions	5.8	(2.0)	1–7
Interactions among children	5.9	(1.7)	1–7
Program Structure Subscale	5.6	(1.2)	1.0–7.0
Schedule	4.7	(2.0)	1–7
Free play	5.8	(1.5)	1–7
Group time	6.4	(1.2)	1–7
Provisions for children with disabilities	5.8	(1.5)	1–7
Parents and Staff Subscale	5.1	(0.8)	3.3–7.0
Provisions for parents	5.6	(1.3)	3–7
Provisions for staff personal needs	2.6	(1.4)	1–7
Provisions for staff professional needs	5.2	(2.1)	1–7
Staff interaction	5.9	(1.2)	1–7
Staff supervision	6.4	(1.0)	1–7
Professional growth	5.1	(1.6)	1–7

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

Figure 1. Global Classroom Quality (ECERS-R Total)
n=99

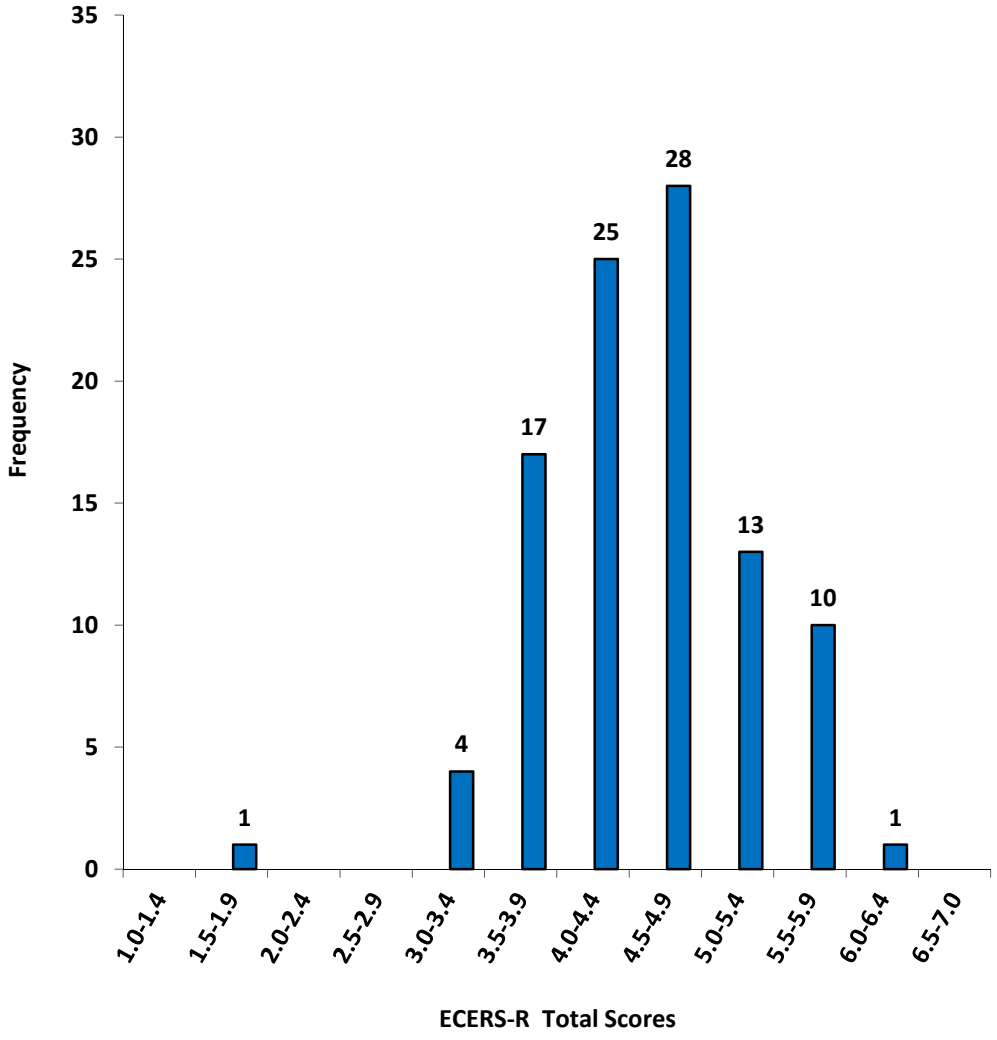


Table 26. Teacher-Child Instructional Interaction Quality (CLASS): NC Pre-K Classrooms (2012–2013)

CLASS Domain/Dimension	n=99	Mean	(SD)	Range[a]
Emotional Support Domain		5.8	(0.6)	2.8–6.9
Positive climate		5.8	(0.9)	2.0–7.0
Negative climate[b]		1.1	(0.3)	1.0–2.6
Teacher sensitivity		5.4	(0.9)	1.6–7.0
Regard for student perspectives		5.2	(0.9)	2.0–7.0
Classroom Organization Domain		5.2	(0.7)	1.5–6.8
Behavior management		5.7	(0.9)	1.6–7.0
Productivity		5.6	(0.8)	1.6–7.0
Instructional learning formats		4.5	(0.9)	1.4–6.3
Instructional Support Domain		2.2	(0.8)	1.1–5.5
Concept development		2.2	(0.9)	1.0–5.3
Quality of feedback		2.1	(0.9)	1.0–5.5
Language modeling		2.3	(0.9)	1.0–5.8

[a] Domain scores could range from 1.0–7.0; dimension scores could range from 1–7.
[b] Lower scores on Negative climate represent greater emotional support. Scores on this dimension are reversed for the Emotional Support Domain score.

Figure 2. Emotional Support (CLASS)
n=99

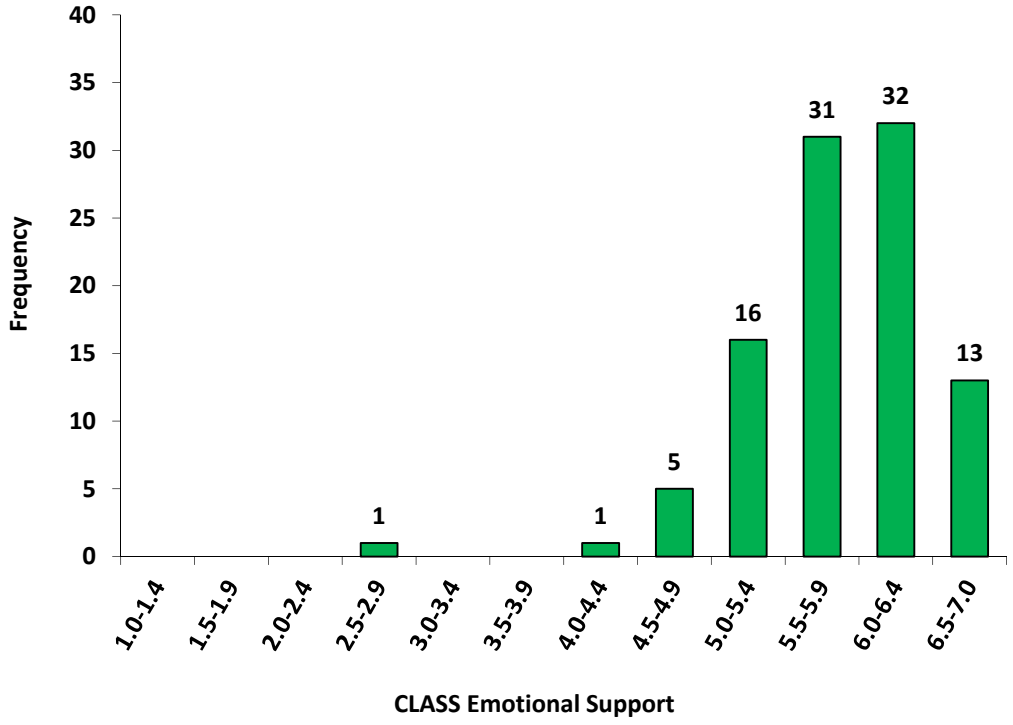


Figure 3. Classroom Organization (CLASS)
n=99

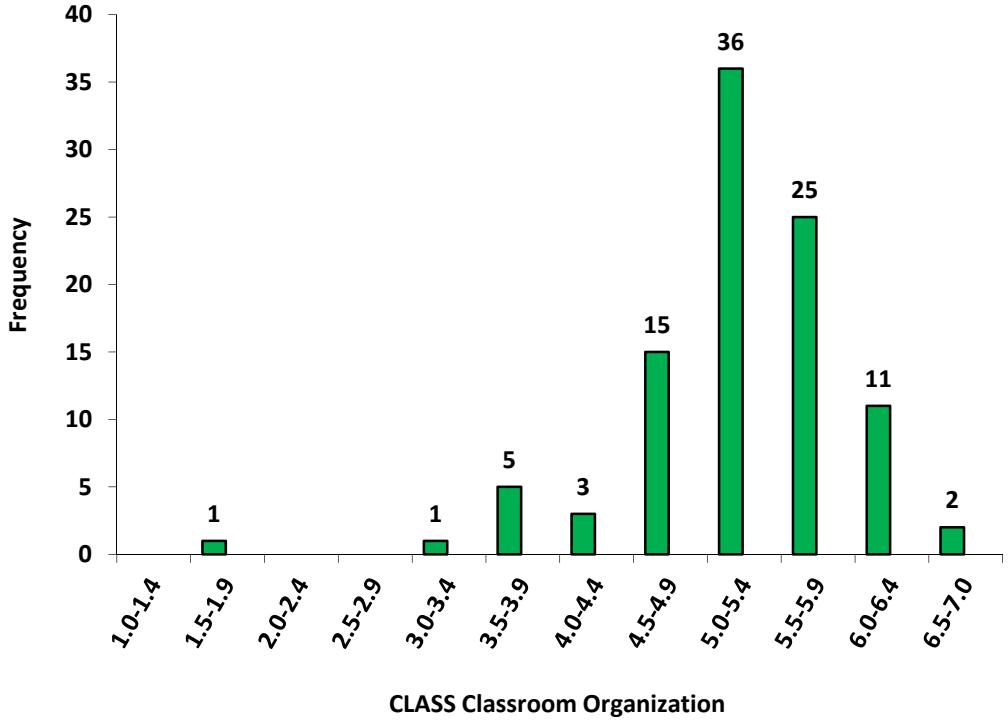


Figure 4. Instructional Support (CLASS)

n=99

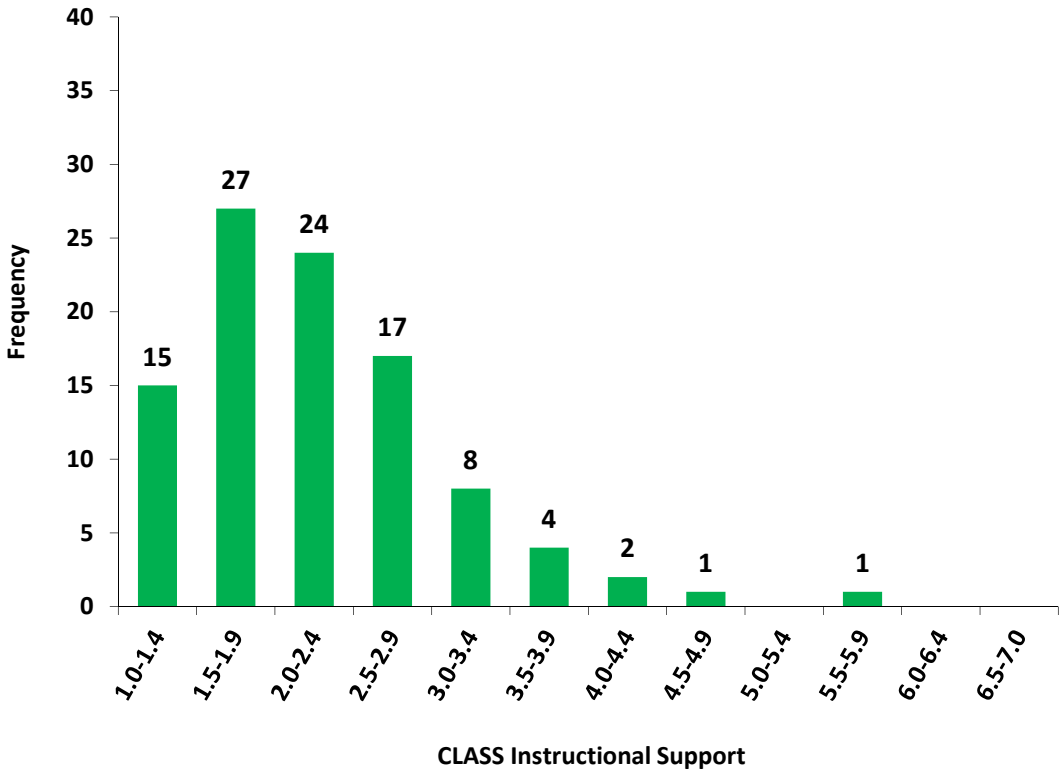


Table 27. Language and Literacy Environment Quality (ELLCO): NC Pre-K Classrooms (2012–2013)

ELLCO Subscale/Section n=99	Mean	(SD)	Range[a]
General Classroom Environment Subscale	3.7	(0.6)	1.3–5.0
Classroom Structure	3.9	(0.6)	1.5–5.0
Curriculum	3.4	(0.8)	1.0–5.0
Language and Literacy Subscale	3.2	(0.7)	1.3–5.0
Language Environment	2.9	(0.8)	1.5–5.0
Books and Book Reading	3.6	(0.8)	1.0–5.0
Print and Early Writing	3.0	(0.8)	1.3–5.0

[a] Scores could range from 1.0–5.0.

Figure 5. General Classroom Environment (ELLCO)
n=99

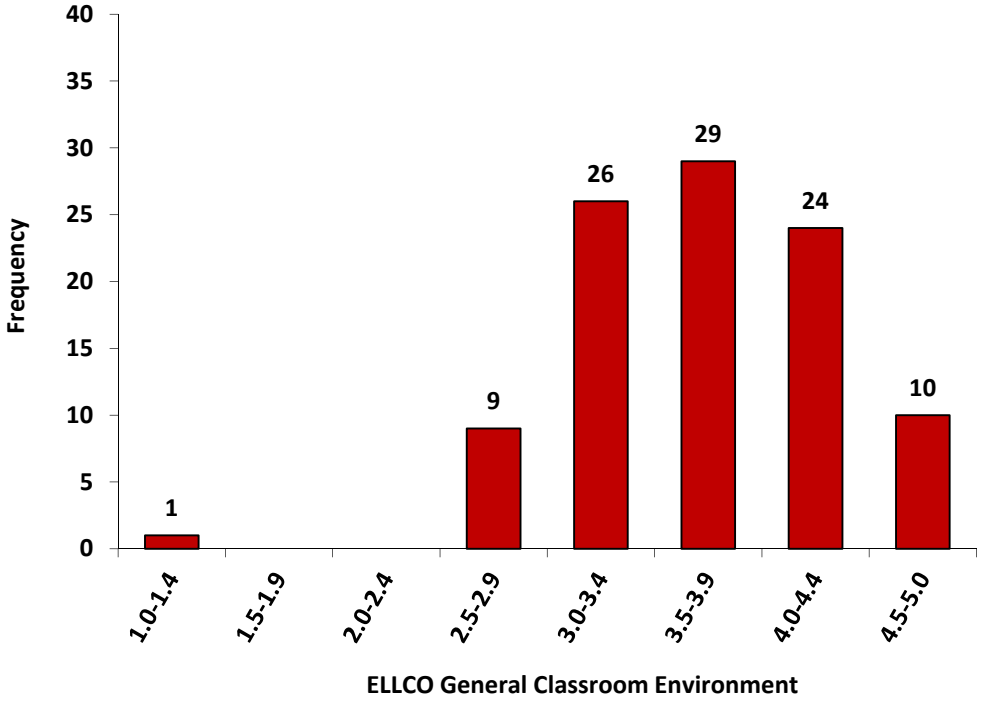


Figure 6. Language and Literacy (ELLCO)
n=99

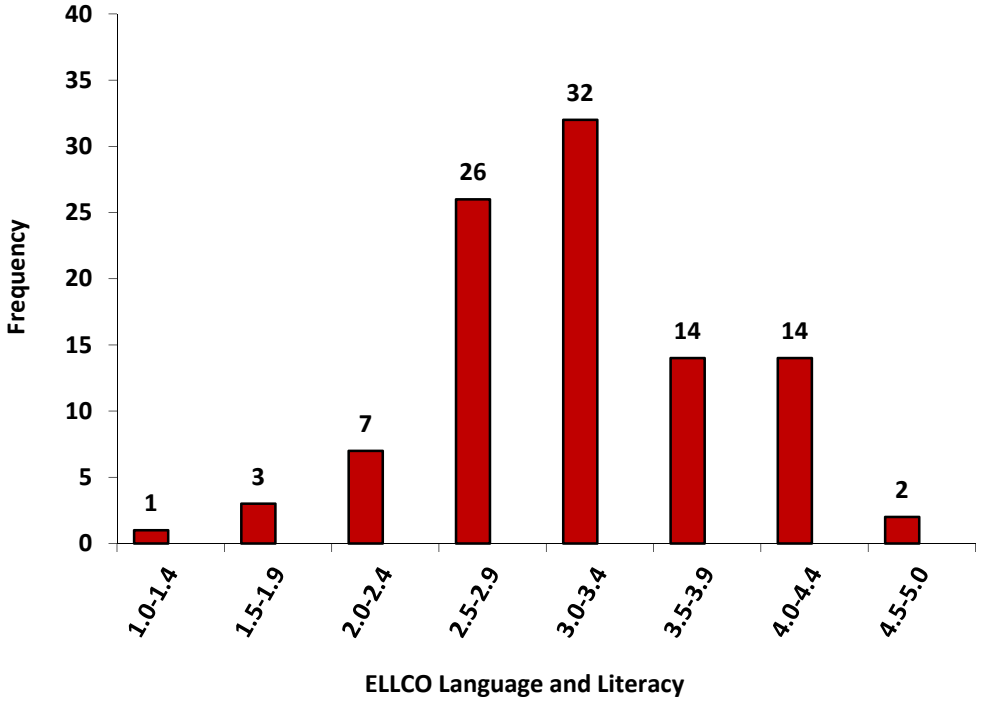
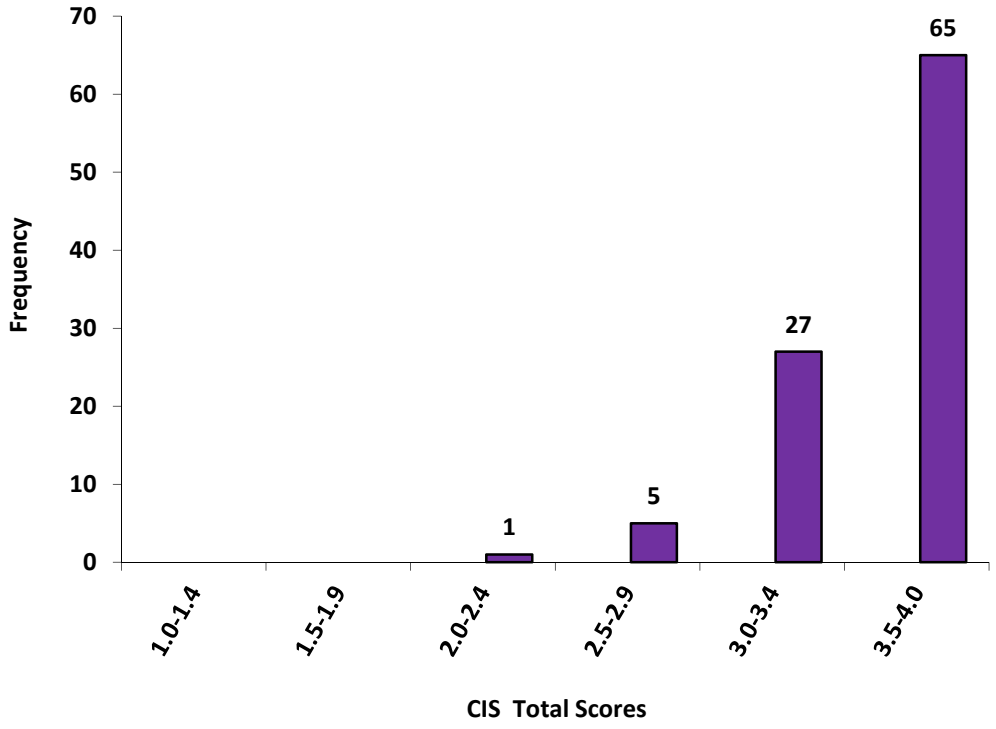


Table 28. Sensitivity of Teacher-Child Interactions Quality (CIS): NC Pre-K Classrooms (2012–2013)

CIS Subscale	n=98	Mean	(SD)	Range[a]
Total Items Score[b]		3.5	0.4	2.4–4.0
Sensitivity Subscale		3.2	0.6	1.7–4.0
Harshness Subscale		1.2	0.3	1.0–2.6
Detachment Subscale		1.4	0.5	1.0–3.0
Permissiveness Subscale		1.3	0.5	1.0–2.7

Figure 7. Sensitivity of Teacher-Child Interactions (CIS Total)
n=98



[a] Scores could range from 1.0–4.0.
[b] For the Total score calculation, scoring is reversed on the Harshness, Detachment, and Permissiveness subscales; for these subscale scores, lower scores represent more positive interactions. For the Total score and Sensitivity subscale, higher scores represent more positive interactions.

Table 29. Pre-K Classroom Quality Scores (2003–2012)

	Cohort 1 2003–2004 n=99			Cohort 2 2005–2006 n=57			Cohort 3 2007–2008 n=50			Cohort 4 2011–2012 n=99		
	Mean	(SD)	Range	Mean	(SD)	Range	Mean	(SD)	Range	Mean	(SD)	Range
ECERS-R Total	5.3	(0.7)	3.4–6.4	4.3	(0.6)	2.8–5.8	4.6	(0.9)	2.8–6.4	4.6	(0.7)	3.0–6.1
CLASS Emotional Support	--	--	--	--	--	--	5.8	(0.8)	2.8–7.0	5.8	(0.5)	4.4–6.6
CLASS Classroom Organization	--	--	--	--	--	--	5.3	(0.8)	2.9–6.7	5.4	(0.6)	3.4–6.6
CLASS Instructional Support	--	--	--	--	--	--	3.1	(1.0)	1.4–5.3	2.4	(0.6)	1.3–4.7
ELLCO General Classroom Enviroment[a]	--	--	--	--	--	--	--	--	--	3.8	(0.6)	2.7–4.9
ELLCO Language and Literacy[a]	--	--	--	--	--	--	--	--	--	3.5	(0.6)	2.3–4.8
CIS Total	--	--	--	3.4	(0.4)	2.4–3.9	3.5	(0.4)	2.3–4.0	3.4	(0.4)	2.0–4.0

[a] Comparable ELLCO data were not available from previous cohorts because a revised version of this measure was used beginning with the 2011-2012 study (Cohort 4).

Table 30. Comparisons of Pre-K Classroom Quality Over Time (2003–2013)

	ECERS-R		CLASS						ELLCO				CIS	
	Total Score		Emotional Support		Classroom Organization		Instructional Support		General Classroom Environment		Language and Literacy		Total Score	
Year	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
2003–2004 vs. 2005–2006	-0.92***	(0.11)	--	--	--	--	--	--	--	--	--	--	--	--
2003–2004 vs. 2007–2008	-0.70***	(0.12)	--	--	--	--	--	--	--	--	--	--	--	--
2003–2004 vs. 2011–2012	-0.72***	(0.10)	--	--	--	--	--	--	--	--	--	--	--	--
2003–2004 vs. 2012–2013	-0.79***	(0.10)	--	--	--	--	--	--	--	--	--	--	--	--
2005–2006 vs. 2007–2008	0.22	(0.14)	--	--	--	--	--	--	--	--	--	--	0.07	(0.07)
2005–2006 vs. 2011–2012	0.21	(0.12)	--	--	--	--	--	--	--	--	--	--	0.02	(0.06)
2005–2006 vs. 2012–2013	0.13	(0.12)	--	--	--	--	--	--	--	--	--	--	0.13*	(0.06)
2007–2008 vs. 2011–2012	-0.01	(0.12)	-0.01	(0.11)	0.13	(0.12)	-0.62***	(0.14)	--	--	--	--	-0.06	(0.07)
2007–2008 vs. 2012–2013	-0.09	(0.12)	0.05	(0.11)	-0.05	(0.12)	-0.84***	(0.14)	--	--	--	--	0.06	(0.07)
2011–2012 vs. 2012–2013	-0.07	(0.10)	0.06	(0.09)	-0.17	(0.10)	-0.22*	(0.11)	-0.10	(0.09)	-0.27**	(0.09)	0.11*	(0.05)

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

Table 31. Predictors of Classroom Quality Regression Results: NC Pre-K Classrooms (2012–2013)

	ECERS-R n=99		CLASS n=99						ELLCO n=99				CIS n=98	
	Total Score		Emotional Support		Classroom Organization		Instructional Support		General Classroom Environment		Language and Literacy		Total Score	
	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
	R^2=0.27**		R^2=0.20		R^2=0.19		R^2=0.22*		R^2=0.19		R^2=0.24*		R^2=0.16	
Intercept	4.29	(1.24)	6.59	(1.16)	5.62	(1.36)	1.89	(1.47)	3.02	(1.13)	2.59	(1.15)	3.22	(0.65)
Teacher/Classroom Characteristics														
Teacher has BK license	-0.25	(0.22)	-0.01	(0.20)	-0.16	(0.24)	-0.09	(0.26)	-0.15	(0.20)	-0.11	(0.20)	0.04	(0.11)
Teacher has MA/MS or higher	-0.13	(0.21)	0.16	(0.20)	0.15	(0.23)	0.00	(0.25)	0.00	(0.19)	0.05	(0.20)	-0.07	(0.11)
Classroom size	-0.07*	(0.03)	-0.07*	(0.03)	-0.06	(0.04)	0.01	(0.04)	-0.06	(0.03)	-0.07*	(0.03)	0.00	(0.02)
Classroom-wide NC Pre-K Child Characteristics														
% NC Pre-K children in class	0.36	(0.34)	0.28	(0.32)	0.89*	(0.37)	0.06	(0.41)	0.08*	(0.31)	0.93**	(0.32)	0.03	(0.18)
% limited English proficiency	-0.28	(0.34)	-0.35	(0.32)	0.04	(0.37)	-0.09	(0.40)	0.16	(0.31)	-0.22	(0.32)	-0.04	(0.18)
% with IEP	0.99	(0.75)	-0.10	(0.70)	0.19	(0.82)	-1.77	(0.89)	0.84	(0.68)	0.09	(0.69)	0.13	(0.39)
% with chronic health condition	-0.88	(0.69)	1.08	(0.65)	1.56*	(0.76)	0.98	(0.83)	-0.29	(0.64)	-0.51	(0.64)	-0.01	(0.36)
% with dev/ed need	0.48*	(0.22)	0.20	(0.21)	0.24	(0.25)	0.98***	(0.27)	0.19	(0.21)	0.41	(0.21)	0.21	(0.12)
% eligible for free lunch	-1.00	(0.73)	-1.11	(0.69)	-1.17	(0.80)	-0.92	(0.87)	-0.67	(0.67)	-0.62	(0.68)	-0.53	(0.38)
% no prior placement	0.09	(0.41)	-0.47	(0.39)	-0.63	(0.45)	-0.29	(0.49)	-0.08	(0.38)	0.12	(0.38)	0.05	(0.22)
Teacher Beliefs														
Teaching practices	0.44*	(0.21)	0.37	(0.20)	0.35	(0.23)	0.27	(0.25)	0.35	(0.20)	0.32	(0.20)	0.16	(0.11)
Work environment	0.07	(0.08)	0.00	(0.08)	0.02	(0.09)	-0.02	(0.10)	0.08	(0.07)	0.08	(0.07)	0.02	(0.04)

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

Table 32. Child Outcome Scores for Full Sample (2012–2013)

Measure	Fall N	Fall Mean (SD) Range	Spring N	Spring Mean (SD) Range
Language and Literacy				
Receptive Vocabulary (ROWPVT-4[a])	538	98.3 (13.8) 55–139	517	100.0 (13.1) 58–129
Expressive Vocabulary (EOWPVT-4[a])	517	97.3 (17.0) 55–139	494	97.9 (17.5) 55–137
Letter-Word Identification (WJ Ach Letter-Word Identification[a])	556	95.5 (12.1) 62–159	518	99.1 (11.6) 63–154
Phonological Awareness (WJ Ach Sound Awareness - Rhyming[b])	554	2.0 (2.4) 0–15	516	4.1 (3.7) 0–16
Math				
Math Problem-Solving (WJ Ach Applied Problems[a])	555	98.3 (13.4) 58–133	517	100.7 (10.6) 61–134
Counting (Counting Task[c])	556	14.1 (9.0) 0–40	518	21.2 (11.6) 1–40
General Knowledge				
Basic Self-Knowledge (Social Awareness Task[d])	559	3.6 (1.6) 0–6	518	4.5 (1.5) 0–6
Classroom Behavior				
Social Skills (SSiS[a])	527	95.9 (14.4) 41–130	492	98.8 (14.1) 55–130
Problem Behaviors (SSiS[a])	528	100.2 (14.6) 82–159	497	100.3 (15.3) 82–160

[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 33. Full Sample Child Outcomes Regression Results—Language & Literacy

	Receptive Vocabulary (ROWPVT-4) n=487		Expressive Vocabulary (EOWPVT-4) n=466		Letter-Word Identification (WJ Ach Letter-Word ID) n=505		Phonological Awareness (WJ Ach Sound Awareness - Rhyming) n=503	
	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Intercept	105.21	(8.40)	105.70	(11.53)	81.41	(9.42)	-2.13	(2.97)
Time	2.60***	(0.41)	1.98***	(0.43)	3.92***	(0.38)	2.17***	(0.13)
Program Type	-1.25	(1.33)	-2.61	(2.03)	1.20	(1.32)	-0.07	(0.32)
Months Between Assessments	1.95*	(0.97)	3.54**	(1.34)	2.27	(1.29)	0.45	(0.31)
Attendance	-0.07	(0.04)	-0.14**	(0.05)	0.05	(0.03)	0.00	(0.01)
Age	--	--	--	--	--	--	1.11**	(0.42)
Gender	1.53	(1.13)	3.20*	(1.47)	-1.21	(0.96)	0.06	(0.24)
Income	-6.60***	(1.33)	-6.53***	(1.74)	-3.88***	(1.15)	-0.43	(0.29)
Dev/Ed Need	-4.22**	(1.46)	-5.69**	(2.09)	-0.73	(1.37)	-0.78*	(0.34)
IEP	1.88	(2.76)	2.57	(3.69)	2.69	(2.43)	-0.83	(0.62)
Chronic Health Need	-1.47	(2.23)	0.64	(3.03)	-1.39	(1.94)	-0.35	(0.49)
English Proficiency[b]	***		***		NS		***	
Level 1	83.06***	(2.01)	85.32***	(3.24)	99.33***	(1.80)	1.74**	(0.55)
Level 2	88.84***	(1.88)	86.44***	(2.48)	97.19***	(1.81)	2.72***	(0.56)
Level 3	93.55***	(1.21)	90.48***	(1.53)	97.32***	(1.21)	2.89***	(0.36)
Level 4	100.69***	(0.79)	97.04***	(1.05)	98.64***	(0.83)	3.51***	(0.24)
Level 5	104.28***	(0.63)	102.12***	(0.92)	99.93***	(0.73)	5.24***	(0.19)
Time x English Proficiency	NS		NS		*		**	
Time x Level 1	-0.10	(2.12)	2.11	(3.30)	8.25***	(1.67)	0.80	(0.56)
Time x Level 2	-2.72	(2.26)	-4.29	(2.74)	4.91*	(2.09)	1.42*	(0.67)
Time x Level 3	-4.66**	(1.47)	-4.70**	(1.68)	2.71*	(1.36)	1.00*	(0.44)
Time x Level 4	0.31	(0.95)	-1.22	(1.01)	2.10*	(0.85)	1.32***	(0.28)
Time x Level 5	-0.97	(0.84)	-0.25	(0.89)	2.47**	(0.75)	2.42***	(0.26)
ECERS-R Total[b]	1.41*	(0.70)	2.96**	(1.13)	1.11	(0.89)	0.37	(0.21)
Time x ECERS-R Total	0.55	(0.62)	0.25	(0.64)	0.48	(0.53)	0.04	(0.19)
CLASS Emotional Support[b]	1.02	(1.21)	2.66	(2.02)	-2.87	(1.48)	-0.28	(0.37)
CLASS Instructional Support	-0.09	(0.70)	1.24	(1.14)	1.15	(0.86)	0.46*	(0.21)

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

[b] Separate models were used to test effects of English proficiency and each classroom quality measure.

Table 33. Full Sample Child Outcomes Regression Results—Language & Literacy

	Receptive Vocabulary (ROWPVT-4) n=487		Expressive Vocabulary (EOWPVT-4) n=466		Letter-Word Identification (WJ Ach Letter-Word ID) n=505		Phonological Awareness (WJ Ach Sound Awareness - Rhyming) n=503	
	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
CLASS Classroom Organization	-0.13	(1.09)	-1.91	(1.81)	2.81*	(1.33)	0.25	(0.33)
Time x CLASS Emotional Support	1.05	(1.11)	1.31	(1.16)	-0.54	(0.95)	-0.69*	(0.33)
Time x CLASS Instructional Support	-0.35	(0.61)	0.23	(0.64)	-0.14	(0.53)	0.41*	(0.19)
Time x CLASS Classroom Organization	0.74	(1.00)	-0.47	(1.05)	0.57	(0.85)	0.18	(0.30)
ELLCO General Classroom Environment[b]	-0.47	(1.41)	0.93	(2.29)	-2.12	(1.74)	-0.31	(0.42)
ELLCO Language and Literacy	1.06	(1.33)	1.34	(2.17)	4.27**	(1.64)	0.90*	(0.40)
Time x ELLCO General Classroom Environment	-0.51	(1.27)	1.23	(1.33)	-1.50	(1.10)	-0.34	(0.39)
Time x ELLCO Language and Literacy	1.51	(1.19)	-0.56	(1.24)	2.80**	(1.02)	0.56	(0.36)
CIS Total Score[b]	1.43	(1.45)	3.67	(2.37)	3.07	(1.83)	1.23**	(0.43)
Time x CIS Total Score	1.71	(1.30)	1.48	(1.35)	1.17	(1.12)	0.05	(0.40)

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

[b] Separate models were used to test effects of English proficiency and each classroom quality measure.

Table 34. 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=504		Counting (Counting Task) n=505		Basic Self-Knowledge (Social Awareness Task) n=508		Social Skills (SSiS) n=462		Problem Behaviors (SSiS) n=463	
	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Intercept	98.61	(8.80)	-20.13	(9.58)	-0.32	(1.47)	112.75	(7.87)	84.72	(8.20)
Time	2.85***	(0.42)	7.20***	(0.47)	0.91***	(0.06)	3.56***	(0.56)	-0.15	(0.55)
Program Type	0.01	(1.18)	-0.05	(1.02)	-0.20	(0.16)	-0.40	(2.02)	-2.14	(2.26)
Months Between Assessments	2.56*	(1.16)	1.81	(1.00)	0.55***	(0.16)	-22.36	(11.47)	30.76*	(12.47)
Attendance	-0.06	(0.03)	0.07*	(0.03)	0.00	(0.00)	-0.01	(0.04)	0.00	(0.04)
Age	--	--	4.99***	(1.35)	0.56**	(0.20)	--	--	--	--
Gender	0.39	(0.98)	-0.90	(0.79)	0.04	(0.12)	1.42	(1.07)	0.01	(1.06)
Income	-3.87***	(1.16)	-1.55	(0.94)	-0.33*	(0.14)	-2.10	(1.35)	1.76	(1.34)
Dev/Ed Need	-2.95*	(1.28)	-2.04	(1.08)	-0.37*	(0.17)	-2.42	(1.82)	2.43	(1.87)
IEP	0.20	(2.44)	0.14	(1.99)	-0.25	(0.30)	-4.19	(2.76)	5.33	(2.73)
Chronic Health Need	-2.11	(1.96)	-1.37	(1.59)	-0.24	(0.24)	0.01	(2.23)	2.11	(2.20)
English Proficiency[b]	***		***		***		*		NS	
Level 1	97.21***	(1.78)	15.06***	(1.88)	2.42***	(0.24)	97.90***	(2.42)	105.77***	(2.48)
Level 2	95.51***	(1.80)	12.44***	(1.90)	3.94***	(0.24)	101.13***	(2.44)	98.78***	(2.50)
Level 3	95.85***	(1.16)	16.24***	(1.22)	3.79***	(0.16)	94.48***	(1.73)	101.72***	(1.80)
Level 4	100.01***	(0.75)	21.60***	(0.79)	4.33***	(0.10)	98.58***	(1.24)	99.28***	(1.33)
Level 5	103.68***	(0.61)	23.47***	(0.64)	4.93***	(0.08)	100.19***	(1.10)	100.01***	(1.21)
Time x English Proficiency	***		NS		NS		***		NS	
Time x Level 1	11.90***	(1.76)	4.91*	(1.92)	0.66**	(0.25)	9.66***	(2.26)	4.28	(2.26)
Time x Level 2	1.28	(2.15)	0.58	(2.29)	0.81**	(0.29)	8.61**	(2.80)	-1.02	(2.80)
Time x Level 3	-0.88	(1.40)	3.65*	(1.48)	0.18	(0.19)	-1.32	(1.86)	2.10	(1.86)
Time x Level 4	-1.08	(0.89)	6.77***	(0.96)	0.41**	(0.13)	1.08	(1.18)	-1.48	(1.18)
Time x Level 5	-1.54	(0.80)	6.35***	(0.88)	0.59***	(0.12)	1.89	(1.04)	0.14	(1.04)
ECERS-R Total[b]	1.27	(0.68)	0.03	(0.72)	0.10	(0.09)	3.14*	(1.39)	-0.22	(1.59)
Time x ECERS-R Total	0.55	(0.58)	-0.75	(0.65)	0.09	(0.09)	1.80*	(0.75)	0.53	(0.75)
CLASS Emotional Support[b]	1.20	(1.17)	-2.99*	(1.19)	-0.24	(0.15)	1.08	(2.49)	2.74	(2.76)
CLASS Instructional Support	1.21	(0.68)	0.68	(0.69)	0.08	(0.09)	-0.20	(1.43)	2.47	(1.59)
CLASS Classroom Organization	-1.25	(1.05)	3.61***	(1.07)	0.35**	(0.13)	-1.13	(2.16)	-4.45	(2.40)
Time x CLASS Emotional Support	0.14	(1.02)	-3.27**	(1.14)	-0.28	(0.15)	0.95	(1.31)	0.33	(1.32)

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

[b] Separate models were used to test effects of English proficiency and each classroom quality measure.

Table 34. 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=504		Counting (Counting Task) n=505		Basic Self-Knowledge (Social Awareness Task) n=508		Social Skills (SSiS) n=462		Problem Behaviors (SSiS) n=463	
	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Time x CLASS Instructional Support	0.44	(0.57)	-0.40	(0.63)	0.08	(0.08)	2.72***	(0.78)	1.59*	(0.79)
Time x CLASS Classroom Organization	-0.71	(0.92)	3.89***	(1.03)	0.22	(0.14)	-1.95	(1.18)	-1.46	(1.19)
ELLCO General Classroom Environment[b]	-0.90	(1.37)	-1.20	(1.41)	-0.12	(0.18)	9.80***	(2.65)	-4.95	(3.09)
ELLCO Language and Literacy	1.63	(1.30)	2.41	(1.33)	0.32	(0.17)	-7.77**	(2.57)	3.32	(2.99)
Time x ELLCO General Classroom Environment	-0.50	(1.20)	-0.98	(1.35)	-0.22	(0.18)	4.60**	(1.53)	-1.00	(1.55)
Time x ELLCO Language and Literacy	0.61	(1.11)	1.53	(1.25)	0.38*	(0.16)	-4.29**	(1.48)	0.83	(1.49)
CIS Total Score[b]	1.72	(1.41)	1.00	(1.47)	0.11	(0.19)	5.04	(2.90)	-3.71	(3.25)
Time x CIS Total Score	-0.31	(1.22)	-0.91	(1.37)	-0.01	(0.18)	6.12***	(1.57)	-1.99	(1.59)

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

[b] Separate models were used to test effects of English proficiency and each classroom quality measure.

Table 35. Child Outcome Scores over Time (2003–2013)

	Cohort 1 2003–2004 n=514		Cohort 2 2005–2006 n=478		Cohort 3 2007–2008 n=321		Cohort 4 2012–2013 n=559	
	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
	Mean (SD) Range	Mean (SD) Range	Mean (SD) Range	Mean (SD) Range	Mean (SD) Range	Mean (SD) Range	Mean (SD) Range	Mean (SD) Range
Language and Literacy								
Letter-Word Identification (WJ Ach Letter-Word Identification)	--	--	--	--	93.4 (12.2) 62–136	96.5 (12.3) 61–151	95.5 (12.1) 62–159	99.1 (11.6) 63–154
Phonological Awareness (WJ Ach Sound Awareness-Rhyming)	1.9 (2.7) 0–15	4.4 (4.1) 0–15	1.8 (2.8) 0–15	3.8 (3.8) 0–15	--	--	2.0 (2.4) 0–15	4.1 (3.7) 0–16
Math								
Math Problem-Solving (WJ Ach Applied Problems)	96.1(13.0) 58–128	98.3 (11.4) 60–126	92.4 (15.2) 58–135	97.7 (12.5) 58–128	93.6 (14.7) 58–129	98.2 (12.2) 53–140	98.3 (13.4) 58–133	100.7 (10.6) 61–134
Counting (CountingTask)	11.2 (8.3) 0–40	18.9 (11.5) 1–40	11.2 (8.0) 0–40	18.8 (10.6) 0–40	11.6 (8.1) 0–40	18.0 (11.0) 0–40	14.1 (9.0) 0–40	21.2 (11.6) 1–40
General Knowledge								
Basic Self-Knowledge (Social Awareness Task)	3.7 (1.8) 0–6	4.5 (1.5) 0–6	3.3 (1.9) 0–6	4.2 (1.5) 0–6	3.5 (1.8) 0–6	4.2 (1.6) 0–6	3.6 (1.6) 0–6	4.5 (1.5) 0–6

Figure 8. Growth in Letter-Word Identification (WJ Ach) by English Proficiency

n=505

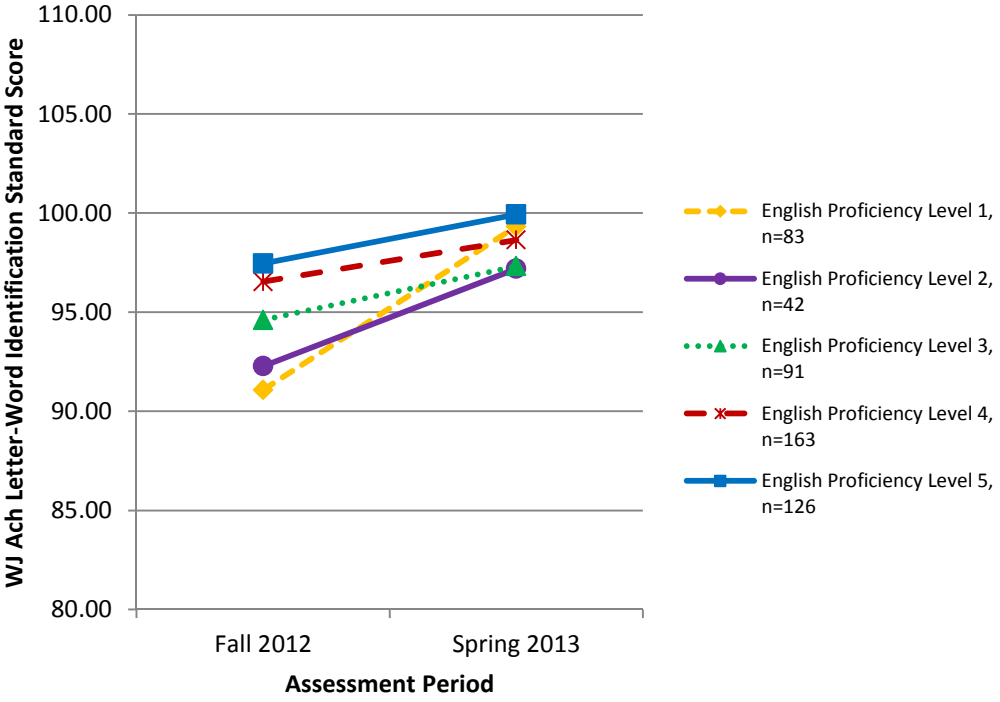


Figure 9. Growth in Math Problem-Solving (WJ Ach) by English Proficiency

n=504

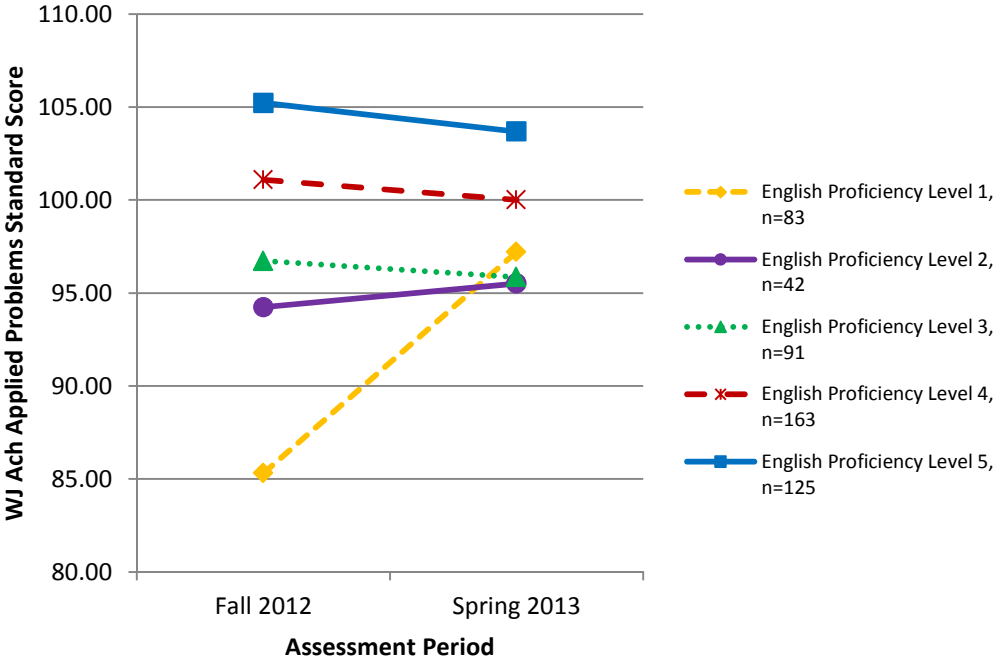


Figure 10. Growth in Social Skills (SSiS) by English Proficiency

n=462

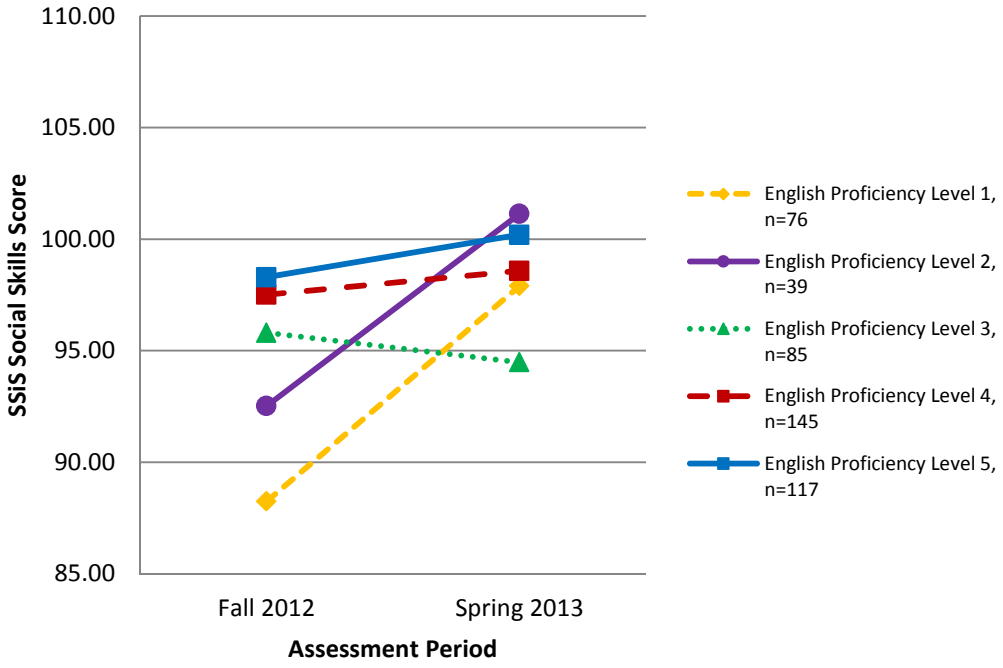


Figure 11. Growth in Phonological Awareness (WJ Ach) by English Proficiency

n=503

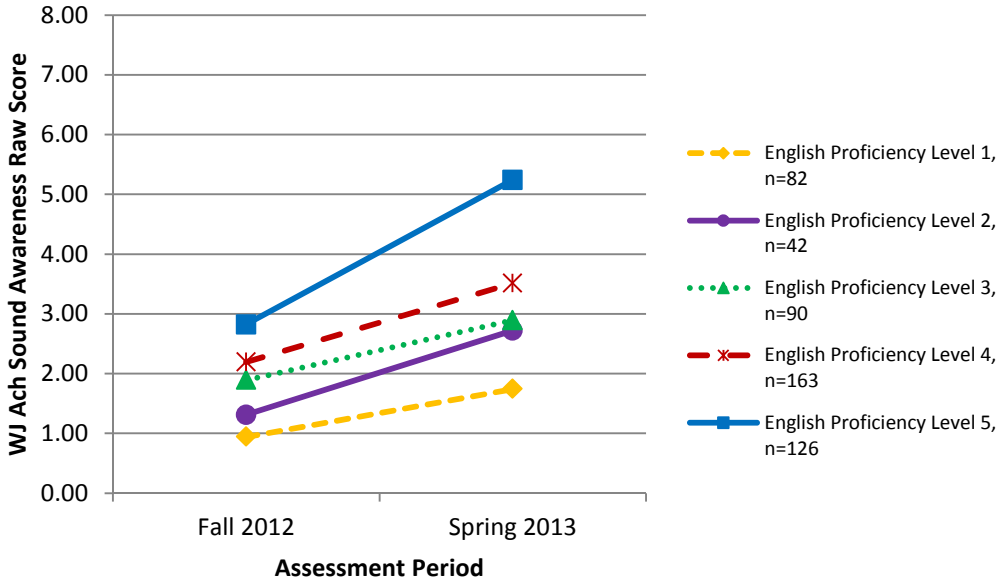


Table 36. Child Outcome Scores for DLL Subsample

	English Outcomes				Spanish Outcomes			
	Fall		Spring		Fall		Spring	
		Mean (SD)		Mean (SD)		Mean (SD)		Mean (SD)
Measure	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	108	84.5 (19.1) 55–128	100	88.9 (20.4) 55–141
Expressive Vocabulary (EOWPVT-4 / SBE[a])	79	78.0 (15.4) 55–114	88	78.7 (15.1) 55–124	87	93.4 (21.5) 55–142	79	92.4 (19.0) 55–135
Letter-Word Identification (WJ Ach / WM Apr Letter-Word Identification[a,b])	115	90.6 (11.3) 63–131	109	97.1 (12.1) 69–154	117	90.0 (10.9) 68–155	109	87.9 (11.4) 67–146
Phonological Awareness (WJ Ach / WM Apr Sound Awareness - Rhyming[c])	114	1.0 (1.75) 0–12	109	2.7 (2.6) 0–13	117	1.3 (1.9) 0–10	109	1.9 (2.1) 0–9
Math								
Math Problem-Solving (WJ Ach / WM Apr Applied Problems[a,b])	115	88.4 (15.4) 58–121	109	96.6 (11.4) 61–134	117	92.0 (11.9) 55–124	108	94.6 (11.1) 57–122
Counting (Counting Task[d])	115	11.8 (7.6) 0–40	109	17.9 (9.9) 1–40	117	8.2 (5.1) 1–40	109	10.2 (6.7) 0–40
General Knowledge								
Basic Self-Knowledge (Social Awareness Task[e])	117	2.0 (1.3) 0–6	109	3.2 (1.5) 0–6	117	2.4 (1.2) 0–4	110	3.2 (1.2) 0–6

[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 37. DLL Subsample English Child Outcomes Regression Results—Language & Literacy

	Receptive Vocabulary (ROWPVT-4) n=105		Expressive Vocabulary (EOWPVT-4) n=106		Letter-Word Identification (WJ Ach Letter-Word ID) n=106		Phonological Awareness (WJ Ach Sound Awareness - Rhyming) n=106	
	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Intercept	77.13	(21.22)	87.36	(26.60)	143.85	(20.68)	5.22	(4.53)
Time	6.32***	(0.95)	4.74***	(1.08)	6.93***	(1.03)	1.83***	(0.22)
Program Type	2.18	(3.01)	-0.89	(3.87)	4.15	(2.40)	-0.32	(0.43)
Months Between Assessments	-0.14	(2.13)	-0.06	(2.70)	-6.12**	(2.24)	-0.58	(0.40)
Attendance	0.09	(0.11)	-0.03	(0.13)	-0.10	(0.09)	-0.01	(0.02)
Age	--	--	--	--	--	--	0.38	(0.57)
Gender	3.70	(2.52)	4.66	(3.23)	1.94	(1.95)	0.35	(0.35)
Income	-4.77	(4.59)	-2.79	(5.37)	0.59	(3.38)	0.07	(0.61)
Dev/Ed Need	-3.91	(3.11)	-5.88	(3.84)	1.23	(2.39)	0.36	(0.43)
Chronic Health Need	-4.05	(4.34)	-7.70	(5.63)	-0.67	(3.37)	-0.83	(0.61)
English Proficiency[b]	NS		NS		NS		NS	
Level 1	85.48***	(2.93)	83.77***	(3.74)	97.00***	(2.42)	2.29***	(0.47)
Level 2	89.04***	(4.81)	80.93***	(6.15)	92.98***	(3.97)	3.00***	(0.75)
Level 3	88.37***	(3.06)	81.44***	(3.50)	100.31***	(2.55)	2.94***	(0.48)
Level 4	84.00***	(2.79)	70.08***	(3.43)	95.28***	(2.27)	2.18***	(0.43)
Level 5	92.38***	(2.47)	80.89***	(2.93)	99.13***	(2.03)	3.56***	(0.38)
Time x English Proficiency	NS		NS		NS		NS	
Time x Level 1	4.81*	(2.12)	4.36	(2.34)	9.32***	(2.26)	1.63**	(0.50)
Time x Level 2	7.52*	(3.41)	6.17	(3.72)	4.38	(3.69)	2.50**	(0.81)
Time x Level 3	4.43*	(2.19)	3.47	(2.41)	7.16**	(2.39)	1.74**	(0.53)
Time x Level 4	7.70***	(2.06)	7.31**	(2.66)	8.76***	(2.12)	1.56**	(0.47)
Time x Level 5	7.19***	(1.74)	4.07*	(1.97)	4.32*	(1.87)	2.03***	(0.41)
ECERS-R Total[b]	-3.15	(2.60)	-3.05	(3.22)	-1.49	(2.10)	-0.19	(0.39)
Time x ECERS-R Total	-1.31	(1.60)	-1.81	(1.88)	-2.52	(1.72)	0.22	(0.39)
CLASS Emotional Support[b]	-0.75	(3.01)	2.46	(4.13)	-2.99	(2.53)	-1.33**	(0.47)
CLASS Instructional Support	-3.49	(2.22)	-2.06	(2.67)	-2.98	(1.83)	0.54	(0.34)

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

[b] Separate models were used to test effects of English proficiency and each classroom quality measure.

Table 37. DLL Subsample English Child Outcomes Regression Results—Language & Literacy

	Receptive Vocabulary (ROWPVT-4) n=105		Expressive Vocabulary (EOWPVT-4) n=106		Letter-Word Identification (WJ Ach Letter-Word ID) n=106		Phonological Awareness (WJ Ach Sound Awareness - Rhyming) n=106	
	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
CLASS Classroom Organization	3.16	(2.60)	-0.10	(3.66)	2.39	(2.17)	0.79	(0.40)
Time x CLASS Emotional Support	-0.04	(2.39)	0.92	(2.70)	-2.19	(2.30)	-0.91	(0.48)
Time x CLASS Instructional Support	1.12	(1.41)	1.18	(1.73)	-1.26	(1.50)	0.95**	(0.31)
Time x CLASS Classroom Organization	-1.26	(2.20)	-2.80	(2.50)	0.74	(2.04)	0.25	(0.43)
ELLCO General Classroom Environment[b]	-6.88	(4.43)	-5.71	(5.15)	-5.92	(3.61)	-1.04	(0.68)
ELLCO Language and Literacy	5.93	(3.95)	7.46	(4.75)	5.92	(3.18)	1.44*	(0.60)
Time x ELLCO General Classroom Environment	-5.52	(2.90)	4.01	(3.49)	-7.86*	(3.20)	-0.95	(0.72)
Time x ELLCO Language and Literacy	6.58**	(2.44)	-1.82	(2.91)	8.32**	(2.64)	1.32*	(0.59)
CIS Total Score[b]	-0.65	(4.59)	-1.06	(5.69)	-3.01	(3.74)	0.64	(0.71)
Time x CIS Total Score	-5.18	(3.10)	-3.74	(3.51)	-6.44*	(3.24)	0.84	(0.72)

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

[b] Separate models were used to test effects of English proficiency and each classroom quality measure.

Table 38. DLL Subsample English Child Outcomes Regression Results—Math and General Knowledge

	Math				General Knowledge	
	Math Problem-Solving (WJ Ach Applied Problems) n=106		Counting (Counting Task) n=106		Basic Self-Knowledge (Social Awareness Task) n=108	
	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Intercept	126.36	(25.89)	30.82	(18.94)	0.29	(2.94)
Time	8.54***	(1.04)	6.00***	(0.86)	1.23***	(0.14)
Program Type	0.48	(3.00)	0.78	(1.82)	-0.25	(0.29)
Months Between Assessments	-3.55	(2.80)	-4.50**	(1.71)	-0.13	(0.27)
Attendance	-0.06	(0.11)	-0.02	(0.07)	0.01	(0.01)
Age	--	--	2.70	(2.41)	0.68	(0.38)
Gender	2.70	(2.44)	0.84	(1.48)	-0.07	(0.23)
Income	0.27	(4.24)	3.42	(2.57)	-0.20	(0.41)
Dev/Ed Need	-0.87	(2.99)	-0.53	(1.82)	0.33	(0.29)
Chronic Health Need	-5.22	(4.21)	-0.98	(2.57)	-0.61	(0.41)
English Proficiency[b]	*		NS		NS	
Level 1	92.28***	(2.87)	13.36***	(1.91)	2.68***	(0.31)
Level 2	90.91***	(4.72)	18.96***	(3.09)	2.48***	(0.48)
Level 3	96.47***	(3.03)	19.47***	(1.99)	3.11***	(0.31)
Level 4	95.37***	(2.69)	18.17***	(1.78)	3.51***	(0.29)
Level 5	103.67***	(2.41)	20.12***	(1.58)	3.46***	(0.26)
Time x English Proficiency	NS		NS		*	
Time x Level 1	6.66**	(2.32)	3.38	(1.91)	0.62*	(0.31)
Time x Level 2	7.38	(3.78)	7.88*	(3.12)	0.78	(0.47)
Time x Level 3	7.16**	(2.45)	5.37**	(2.02)	1.15***	(0.32)
Time x Level 4	9.73***	(2.17)	7.84***	(1.79)	1.99***	(0.29)
Time x Level 5	10.00***	(1.92)	6.19***	(1.58)	1.23***	(0.25)
ECERS-R Total[b]	-1.28	(2.52)	2.25	(1.62)	-0.10	(0.26)
Time x ECERS-R Total	-0.05	(1.78)	2.75	(1.45)	0.28	(0.23)
CLASS Emotional Support[b]	-2.65	(3.04)	-4.19*	(1.95)	-0.79*	(0.31)
CLASS Instructional Support	-1.34	(2.20)	-0.30	(1.40)	-0.21	(0.23)

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

[b] Separate models were used to test effects of English proficiency and each classroom quality measure.

Table 38. DLL Subsample English Child Outcomes Regression Results—Math and General Knowledge

	Math				General Knowledge	
	Math Problem-Solving (WJ Ach Applied Problems) n=106		Counting (Counting Task) n=106		Basic Self-Knowledge (Social Awareness Task) n=108	
	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
CLASS Classroom Organization	2.47	(2.60)	5.15**	(1.68)	0.79**	(0.27)
Time x CLASS Emotional Support	-1.75	(2.37)	-3.47	(1.87)	-1.10***	(0.29)
Time x CLASS Instructional Support	-0.35	(1.55)	-0.01	(1.23)	0.15	(0.19)
Time x CLASS Classroom Organization	-0.09	(2.10)	4.79**	(1.66)	0.76**	(0.26)
ELLCO General Classroom Environment[b]	-3.34	(4.33)	0.01	(2.80)	-0.26	(0.46)
ELLCO Language and Literacy	1.33	(3.82)	3.05	(2.46)	0.49	(0.40)
Time x ELLCO General Classroom Environment	-6.52	(3.38)	0.71	(2.67)	-0.11	(0.44)
Time x ELLCO Language and Literacy	4.95	(2.79)	3.64	(2.21)	0.56	(0.36)
CIS Total Score[b]	-0.66	(4.48)	2.69	(2.92)	-0.07	(0.47)
Time x CIS Total Score	-3.21	(3.39)	2.96	(2.79)	0.28	(0.45)

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

[b] Separate models were used to test effects of English proficiency and each classroom quality measure.

Figure 12. DLL Subsample English Growth in Basic Self-Knowledge (Social Awareness) by English Proficiency

n=108

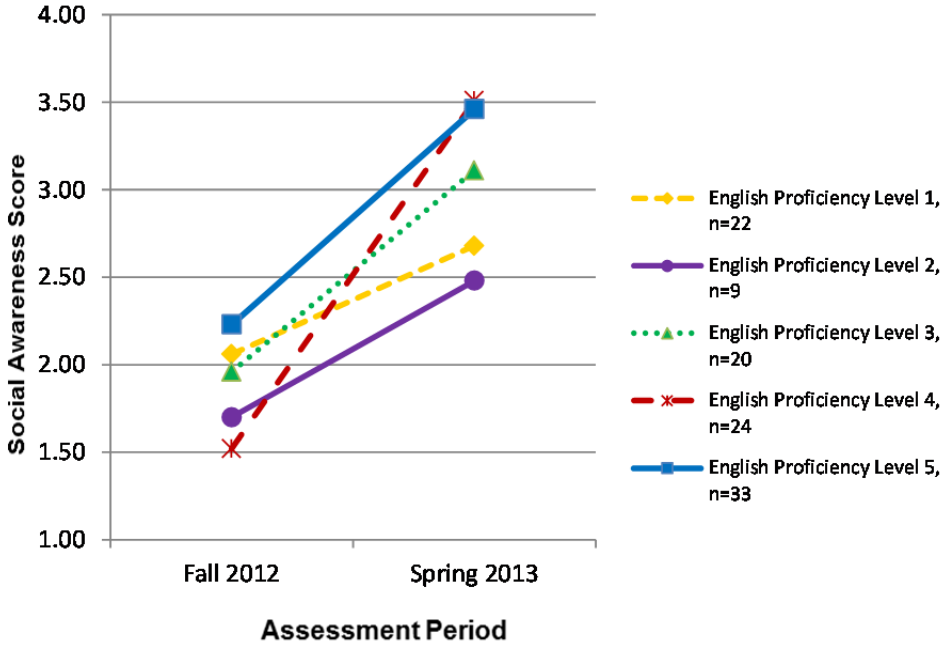


Table 39. DLL Subsample Spanish Child Outcomes Regression Results—Language & Literacy

	Receptive Vocabulary (ROWPVT-SBE) n=105		Expressive Vocabulary (EOWPVT-SBE) n=106		Letter-Word Identification (WM Apr Letter-Word ID) n=106		Phonological Awareness (WM Apr Sound Awareness - Rhyming) n=106	
	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Intercept	67.56	(31.55)	83.09	(36.40)	126.50	(21.43)	2.47	(3.99)
Time	3.33*	(1.64)	-2.05	(1.25)	-2.34*	(0.89)	0.61**	(0.20)
Program Type	-5.32	(4.55)	-8.40	(5.19)	2.89	(2.48)	-0.43	(0.38)
Months Between Assessments	-0.53	(3.19)	-6.05	(3.89)	-5.50*	(2.32)	-0.96**	(0.36)
Attendance	0.20	(0.16)	0.35	(0.18)	-0.06	(0.09)	0.00	(0.01)
Age	--	--	--	--	--	--	1.22*	(0.51)
Gender	0.38	(3.80)	1.96	(4.52)	-1.44	(2.02)	0.00	(0.31)
Income	-8.68	(6.46)	-14.46	(8.36)	1.86	(3.51)	-0.26	(0.54)
Dev/Ed Need	8.13	(4.62)	15.58**	(5.39)	-1.87	(2.47)	0.18	(0.38)
Chronic Health Need	1.75	(6.42)	7.60	(7.10)	1.04	(3.49)	0.05	(0.54)
English Proficiency[b]	***		*		**		**	
Level 1	68.03***	(3.87)	80.22***	(8.34)	82.12***	(2.36)	0.83*	(0.40)
Level 2	81.09***	(6.35)	91.11***	(8.22)	86.07***	(3.88)	1.27	(0.65)
Level 3	77.89***	(3.92)	83.44***	(4.74)	89.25***	(2.49)	1.92***	(0.42)
Level 4	94.48***	(3.60)	85.87***	(3.95)	86.24***	(2.21)	1.81***	(0.37)
Level 5	102.04***	(3.11)	99.88***	(3.61)	93.41***	(1.98)	2.90***	(0.33)
Time x English Proficiency	NS		NS		NS		NS	
Time x Level 1	-3.18	(3.76)	3.30	(5.15)	-4.80*	(1.99)	-0.31	(0.43)
Time x Level 2	8.43	(5.79)	2.38	(4.63)	-4.25	(3.24)	1.00	(0.71)
Time x Level 3	-0.24	(3.74)	2.56	(2.86)	-0.79	(2.10)	0.84	(0.46)
Time x Level 4	10.42**	(3.30)	-4.65*	(2.26)	-1.13	(1.86)	0.77	(0.41)
Time x Level 5	3.14	(2.82)	-4.02*	(1.93)	-2.13	(1.64)	0.87*	(0.36)
ECERS-R Total[b]	3.71	(3.26)	8.36*	(4.01)	-0.20	(2.05)	0.93**	(0.33)
Time x ECERS-R Total	2.85	(2.60)	1.58	(1.92)	2.97	(1.50)	0.75*	(0.32)
CLASS Emotional Support[b]	1.18	(3.85)	-5.31	(5.16)	-1.69	(2.41)	-1.21**	(0.39)
CLASS Instructional Support	-1.05	(2.85)	0.16	(3.59)	-2.22	(1.75)	0.71*	(0.28)

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

[b] Separate models were used to test effects of English proficiency and each classroom quality measure.

Table 39. DLL Subsample Spanish Child Outcomes Regression Results—Language & Literacy

	Receptive Vocabulary (ROWPVT-SBE) n=105		Expressive Vocabulary (EOWPVT-SBE) n=106		Letter-Word Identification (WM Apr Letter-Word ID) n=106		Phonological Awareness (WM Apr Sound Awareness - Rhyming) n=106	
	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
CLASS Classroom Organization	1.29	(3.35)	4.92	(4.37)	0.34	(2.06)	0.87*	(0.34)
Time x CLASS Emotional Support	-0.86	(3.50)	-1.35	(2.86)	1.14	(1.99)	-0.32	(0.43)
Time x CLASS Instructional Support	3.00	(2.29)	1.12	(1.74)	2.88*	(1.30)	0.60*	(0.28)
Time x CLASS Classroom Organization	0.16	(3.17)	1.18	(2.47)	-1.64	(1.77)	0.08	(0.38)
ELLCO General Classroom Environment[b]	3.22	(5.72)	6.51	(7.36)	-2.77	(3.47)	-0.79	(0.58)
ELLCO Language and Literacy	0.39	(5.18)	2.03	(6.76)	2.43	(3.07)	1.39**	(0.50)
Time x ELLCO General Classroom Environment	0.85	(5.18)	1.05	(3.93)	7.73**	(2.84)	-0.38	(0.64)
Time x ELLCO Language and Literacy	2.76	(4.41)	2.49	(3.35)	-4.65*	(2.34)	0.69	(0.52)
CIS Total Score[b]	9.55	(5.98)	5.73	(7.29)	-3.76	(3.58)	0.66	(0.61)
Time x CIS Total Score	9.94	(5.27)	0.62	(3.73)	3.42	(2.86)	0.56	(0.63)

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

[b] Separate models were used to test effects of English proficiency and each classroom quality measure.

Table 40. DLL Subsample Spanish Child Outcomes Regression Results—Math and General Knowledge

	Math				General Knowledge	
	Math Problem-Solving (WM Apr Applied Problems) n=106		Counting (Counting Task) n=106		Basic Self-Knowledge (Social Awareness Task) n=108	
	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Intercept	117.45	(21.68)	-14.19	(13.67)	1.47	(2.31)
Time	2.82**	(0.90)	2.05***	(0.49)	0.71***	(0.14)
Program Type	1.57	(2.51)	1.20	(1.31)	0.03	(0.23)
Months Between Assessments	-3.45	(2.34)	-0.96	(1.23)	-0.12	(0.21)
Attendance	0.01	(0.09)	0.08	(0.05)	0.00	(0.01)
Age	--	--	3.62*	(1.74)	0.57	(0.30)
Gender	-1.47	(2.05)	1.00	(1.07)	-0.14	(0.18)
Income	-2.62	(3.55)	0.77	(1.86)	-0.34	(0.32)
Dev/Ed Need	-5.55*	(2.50)	-1.47	(1.31)	0.09	(0.23)
Chronic Health Need	-0.05	(3.53)	1.54	(1.85)	0.16	(0.32)
English Proficiency[b]	***		NS		**	
Level 1	86.72***	(2.22)	7.39***	(1.30)	2.30***	(0.25)
Level 2	93.30***	(3.65)	9.76***	(2.11)	3.11***	(0.38)
Level 3	94.03***	(2.38)	8.97***	(1.36)	3.33***	(0.25)
Level 4	96.85***	(2.08)	10.68***	(1.22)	3.28***	(0.23)
Level 5	100.93***	(1.86)	12.08***	(1.08)	3.62***	(0.20)
Time x English Proficiency	NS		NS		NS	
Time x Level 1	3.31	(2.01)	1.59	(1.11)	0.55	(0.32)
Time x Level 2	3.50	(3.26)	2.38	(1.80)	0.78	(0.49)
Time x Level 3	0.94	(2.16)	1.58	(1.17)	0.80*	(0.33)
Time x Level 4	4.90*	(1.88)	2.68*	(1.04)	0.92**	(0.30)
Time x Level 5	1.74	(1.66)	2.06*	(0.92)	0.58*	(0.27)
ECERS-R Total[b]	2.15	(1.93)	-0.16	(1.12)	-0.12	(0.21)
Time x ECERS-R Total	2.74	(1.52)	-1.17	(0.84)	-0.27	(0.25)
CLASS Emotional Support[b]	-0.06	(2.30)	-0.58	(1.33)	-0.17	(0.25)
CLASS Instructional Support	0.26	(1.67)	-2.75**	(0.97)	-0.09	(0.18)

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

[b] Separate models were used to test effects of English proficiency and each classroom quality measure.

Table 40. DLL Subsample Spanish Child Outcomes Regression Results—Math and General Knowledge

	Math				General Knowledge	
	Math Problem-Solving (WM Apr Applied Problems) n=106		Counting (Counting Task) n=106		Basic Self-Knowledge (Social Awareness Task) n=108	
	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
CLASS Classroom Organization	1.24	(1.98)	2.06	(1.14)	0.22	(0.22)
Time x CLASS Emotional Support	-4.40*	(1.98)	-1.03	(1.10)	-0.35	(0.33)
Time x CLASS Instructional Support	1.81	(1.30)	-1.93**	(0.72)	-0.05	(0.21)
Time x CLASS Classroom Organization	1.04	(1.77)	1.84	(0.98)	0.21	(0.29)
ELLCO General Classroom Environment[b]	0.11	(3.35)	1.53	(1.94)	0.05	(0.37)
ELLCO Language and Literacy	1.47	(2.95)	-0.71	(1.72)	-0.06	(0.32)
Time x ELLCO General Classroom Environment	3.72	(2.91)	2.15	(1.63)	-0.39	(0.48)
Time x ELLCO Language and Literacy	-0.47	(2.41)	-1.30	(1.35)	0.26	(0.39)
CIS Total Score[b]	5.60	(3.39)	-2.32	(2.00)	-0.41	(0.36)
Time x CIS Total Score	0.34	(2.92)	-2.46	(1.60)	-1.18**	(0.44)

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

[b] Separate models were used to test effects of English proficiency and each classroom quality measure.

References

[i] Kagan, S.L., Moore, E., & Bredekamp, S. (1995). *Reconsidering children's early development and learning: Toward common views and vocabulary*. Washington, DC: National Education Goals Panel.

[ii] North Carolina Division of Child Development and Early Education. (2012). *NC Pre-Kindergarten (NC Pre-K) program requirements and guidance. Effective SFY 2012–2013.* Retrieved from http://ncchildcare.nc.gov/pdf_forms/NCPre-K_Program_Requirements_Guidance_2012-2013.pdf

[iii] North Carolina Foundations Task Force. (2013). *North Carolina foundations for early learning and development.* Raleigh, NC: Author.

[iv] North Carolina Division of Child Development and Early Education. (2012). *NC Pre-Kindergarten (NC Pre-K) program fiscal and contract manual.* Retrieved from http://ncchildcare.nc.gov/pdf_forms/NCPre-K_BudgetFinancialContractManual.pdf

[v] Harms, T., Clifford, R. M., & Cryer, D. (1998). *Early Childhood Environment Rating Scale Revised Edition*. New York, NY: Teachers College Press.

[vi] Pianta, R. C., La Paro, K. M., & Hamre, B. K. (2008). *Classroom Assessment Scoring System (CLASS) Manual*, *Pre-K*. Baltimore, MD: Paul H. Brookes Publishing.

[vii] Smith, M. W., Brady, J. P., & Anastasopoulos, L. (2008). *Early Language and Literacy Classroom Observation Pre-K Tool*. Newton, MA: Paul H. Brookes Publishing.

[viii] Arnett, J. (1989). Caregivers in day-care centers: Does training matter? *Journal of Applied Developmental Psychology, 10*, 541–552.

[ix] Hallgren, K.A. (2012). Computing inter-rater reliability for observational data: An overview and tutorial. *Tutorials in Quantitative Methods for Psychology, 8*(1), 23–34.

[x] Martin, N. A. & Brownell, R. (2011). *Receptive One-Word Picture Vocabulary Test—Fourth Edition (ROWPVT-4) Manual*. Novato, CA: Academic Therapy Publications.

[xi] Brownell, R. (2001). *Receptive One-Word Picture Vocabulary Test—Spanish-Bilingual Edition (ROWPVT-SBE) Manual*. Novato, CA: Academic Therapy Publications.

[xii] Martin, N., & Brownell, R. (2011). *Expressive One-Word Picture Vocabulary Test—Spanish-Fourth Edition (EOWPVT-4) Manual*. Novato, CA: Academic Therapy Publications.

[xiii] Brownell, R. (2001). *Expressive One-Word Picture Vocabulary Test-Spanish-Bilingual Edition (EOWPVT-SBE) Manual*. Novato, CA: Academic Therapy Publications.

[xiv] Woodcock, R. W., McGrew, K. S., & Mather, N. (2001). *Woodcock-Johnson III Tests of Achievement*. Rolling Meadows, IL: Riverside Publishing.

[xv] Muñoz-Sandoval, A. F., Woodcock, R. W., McGrew, K. S., & Mather, N. (2005). Batería III Woodcock-Muñoz: *Pruebas de Aprovechamiento.* Rolling Meadows, IL: Riverside Publishing.

[xvi] National Center for Early Development and Learning. (2001). *Counting Task*. Unpublished instrument.

[xvii] FACES Research Team, modified from the Social and Communicative Competence Tasks in: Jana M. Mason and Janice Stewart (1989). *The CAP Early Childhood Diagnostic Instrument* (prepublication edition). Iowa City, IA: American Testronics.

[xviii] Gresham, F., & Elliott, S. (2008). *Social Skills Improvement System*. Minneapolis, MN: Pearson.

[xix] Duncan, S. E., & De Avila, E. A. (1998). *PreLAS 2000*. Monterey, CA: CTB/McGraw-Hill.