Children's Growth and Classroom Experiences in Georgia's Pre-K Program

Findings from the 2011–2012 Evaluation Study

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The Executive Summary and full report of this study are available at http://fpg.unc.edu/projects/georgia-pre-kindergarten-evaluation or at www.decal.ga.gov

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Executive Summary

Study Overview

Georgia has one of the few state-funded universal pre-kindergarten programs in the United States, with the aim of providing pre-k services to all 4-year-olds whose families want their children to participate in the program, regardless of family income level. In the 2011–2012 school year, Georgia's Pre-K Program served a total of over 94,000 different children throughout the year in a variety of settings across the state, including local school systems, private settings, and blended Head Start/Georgia's Pre-K classrooms.

The 2011–2012 evaluation study included observations of classroom quality in a random sample of 100 Georgia's Pre-K classrooms and assessments of the language, literacy, math, general knowledge, and behavioral skills of a sample of 509 children attending these classrooms over the pre-k program year. The primary evaluation questions included:

- What are the outcomes for children attending Georgia's Pre-K Program?
- What factors predict better outcomes for children?
- What is the quality of Georgia's Pre-K classrooms?

Key Findings

Children's Outcomes

Children exhibited significant growth during their pre-k year across all domains of learning, including language and literacy skills, math skills, general knowledge, and behavioral skills. The sample of 509 children made positive gains from the beginning to the end of the pre-k program year on all of the assessment measures, including the areas of language and literacy (letter knowledge, letter-word identification, vocabulary, phonological awareness, phonemic awareness), math (math problem solving, counting), general knowledge (basic self-knowledge), and behavioral skills (social skills, problem behaviors). Children's growth in many areas indicated that they progressed at a greater rate during the time they participated in Georgia's Pre-K Program than would be expected for normal developmental growth.

Children who were Spanish-speaking dual language learners showed growth in skills in both English and Spanish, although their growth tended to be greater in English. For the English measures, similar to the full sample, they exhibited significant growth on all measures. For the Spanish measures, they exhibited growth in some areas of language and literacy skills (phonological awareness, phonemic awareness) and in math (math problem-solving, counting), with no change or decreases in the remaining areas.

Factors Predicting Better Outcomes

Factors which predicted greater growth in skills included individual level of English proficiency, having a higher proportion of non-English-speaking children in the classroom, and attending a pre-k program in a local school system. The most consistent predictor was the level of English proficiency, with children at lower levels of proficiency making greater gains in most

language and literacy, math, and general knowledge skills. The one exception was phonological awareness skills, a higher-order set of skills, which showed the opposite pattern with less proficient children making less progress.

Classroom Quality

The global quality of classroom practices was in the medium quality range, as measured by the ECERS-R. The mean total score across the sample of 100 classrooms was 3.6, which represents the medium quality range. Individual classroom scores ranged from low to high quality, although the majority (85%) scored in the medium quality range.

In the area of teacher-child interactions, classroom practices were stronger in emotional support and classroom organization than instructional support, as measured by the CLASS. The average score was in the middle to high quality range on Emotional Support (5.5), in the upper end of the middle range on Classroom Organization (5.2), and in the low to middle range on Instructional Support (2.8).

In general, program, teacher, and classroom factors that were examined did not predict differences in the quality of classroom practices. The predictors that were examined included the type of program (local school system vs. private), lead teacher certification (Georgia Professional Standards Commission certified vs. not certified), lead teacher years of experience teaching pre-k, and percentage of non-English-speaking children in the classroom. One factor was a significant predictor for one measure, indicating that teachers who had greater experience teaching pre-k had classrooms with higher global quality.

Conclusions

Based on this random sample of classrooms from the 2011–2012 Georgia's Pre-K Program, children made significant gains across all domains of learning during their pre-k year, with even greater than expected progress for many areas. Children who were Spanish-speaking dual language learners showed growth in skills in both English and Spanish, even though the primary language of instruction in these classrooms was most likely English. Further, children with different characteristics (boys and girls, different family income levels) generally showed similar gains during the pre-k year. It is worth further exploration to determine what factors of local school system programs that are associated with greater gains for children may be different from private programs, both in terms of the resources available and the populations served, in considering future directions for quality improvement. The quality of classroom practices tended to be in the medium range, below the high quality level. Compared to a study[i] involving a 2008–2009 sample of Georgia's Pre-K classrooms, the 2011–2012 sample showed gains in Instructional Support consistent with the emphasis of quality improvement efforts, although there were slight decreases in other areas. Recommendations related to improving quality and further enhancing children's acquisition of skills pertain to reduction of class size and the addition of bilingual supports during children's classroom experiences. In sum, these findings suggest that as a universal program, Georgia's Pre-K Program can offer a beneficial experience for all children.

Overview of Georgia's Pre-K Program

Georgia has one of the few state-funded universal pre-kindergarten programs in the United States, with the aim of providing pre-k services to all 4-year-olds whose families want their children to participate in the program, regardless of family income level. As one of the first states to offer such a universal program, beginning in 1995, Georgia's Pre-K Program has grown every year since its inception. In the 2011–2012 year, Georgia's Pre-K Program served over 94,000 different children throughout the year in a variety of settings across the state, including local school systems, private providers, and blended Head Start/pre-k classrooms. The program serves children from all income levels, with no fees charged to families for program participation.

Georgia's Pre-K Program is based on a school-year model and comprises 160 days of instruction[1] for 6.5 hours/day. Class sizes are restricted to 20-22 children with a lead and assistant teacher, with adult:child ratios of 1:11. Lead teachers are required to have at least a bachelor's degree in early childhood education or a related field (unless previously approved), and assistant teachers are required to have at least a CDA credential. In addition, program guidelines provide minimum salary requirements for lead teachers based on credentials, 90% of which is funded by the state, as well as minimum salary requirements for assistant teachers meeting the credential requirements. Further, to maintain quality standards, annual training is required for all staff directly associated with Georgia's Pre-K Program.

Guidelines for classroom instruction are provided through *Georgia's Pre-K Program Content Standards*, which are correlated with *Georgia's Early Learning Standards* and *Georgia's Kindergarten Performance Standards*. Georgia's Pre-K programs also are required to use an approved curriculum; provide written lesson plans which include educational experiences in language/literacy, math, science, social studies, creative (music, art, and drama), social and emotional, and physical development; implement individual child assessments using the *Georgia's Pre-K Child Assessment* which is based on the *Work Sampling System*[ii]; offer meals, rest time, and both indoor and outdoor play time; and provide support services or referrals to families as needed. In addition, staff from Bright from the Start: Georgia Department of Early Care and Learning (DECAL), which oversees the program, provide consultation and technical assistance and make announced and unannounced visits throughout the year to monitor and evaluate program progress.

Overview of the Evaluation Study

The 2011–2012 evaluation study focused on the outcomes for children attending Georgia's Pre-K Program and the quality of their classrooms. The primary evaluation questions addressed by the 2011–2012 evaluation study included:

[1] Prior to the 2011–2012 year, Georgia's Pre-K Program operated for 180 days per year, but changed the schedule to 160 days due to budget reductions.

- What are the outcomes for children attending Georgia's Pre-K Program?
- What factors predict better outcomes for children?
- What is the quality of Georgia's Pre-K classrooms?

The 2011–2012 evaluation study included two components: observations of classroom quality in a random sample of 100 Georgia's Pre-K classrooms and individual assessments of the developmental skills of a sample of 509 children attending these classrooms over the pre-k year. Child outcomes data were gathered in the early fall and in the late spring to examine changes in children's developmental growth patterns over the course of the year. The battery of measures included a range of domains, including language and literacy skills, math skills, general knowledge, and behavioral skills. For Spanish-speaking dual language learners in the sample, assessments were conducted in both English and Spanish to examine their progress when measured in both languages. Observations of classroom practices were conducted to measure global quality and teacher-child instructional interactions. In addition, information about program, teacher, classroom, and child characteristics was gathered from teacher surveys and from existing data collected by DECAL.

Methods

Data were gathered from a random sample of classrooms and a random sample of children within classrooms to examine child outcomes and classroom quality in Georgia's Pre-K Program. Individual assessments of children's language and literacy skills, math skills, and general knowledge were conducted by researchers and teacher ratings of behavioral skills were gathered at the beginning (fall) and end (spring) of the program year. Researchers gathered classroom practices data using observational measures of global quality and teacher-child interactions. Program, classroom, teacher, and child demographic data were obtained from teacher surveys and existing data collected by DECAL from participating Georgia's Pre-K Program sites.

Participants

A sample of 100 classrooms was selected randomly from the 3,922 Georgia's Pre-K classrooms operating in August 2011. The only exclusion criterion applied was that 100 classrooms participating in the time-intensive intervention conditions for a separate DECAL-funded study of professional development models were excluded from selection for the evaluation study.

Table 1 contains information from DECAL data about teacher credentials for the sample of teachers included in the current study, as well as the entire population of teachers in Georgia's Pre-K Program in 2011–2012. The qualifications of teachers included in the sample were not significantly different from those of all teachers in the program, with approximately three-quarters of the teachers in both groups being certified, approximately17% having a four-year credential, about 5-6% with a two-year credential, and very few teachers with insufficient credentials (1% and 0% respectively in the program and in the sample).

Teachers in classrooms participating in the study were asked to complete a survey about their classrooms and their teaching experiences. Information from the teacher survey and DECAL data is presented in Table 2. The average class size for the sample was approximately 21 students, with about half boys and half girls. On average, 16% of the children in the classroom spoke languages other than English, although there was a wide range, from 0% to 82%. Teachers in the sample classrooms had an average of 6 years of experience teaching pre-k and more than 12 years of teaching experience overall. However, there was a wide range in teachers' experience; for example, experience teaching pre-k varied from less than one to 20 years. Almost all of the teachers in the sample classrooms had at least a bachelor's degree, and over 35% had a master's degree or higher. The sample classrooms represented about half local school system sites (46%) and half private sites (54%), similar to the entire program distribution (42% local school system sites; 57% private sites; and 1 % other public sites, such as programs operated at university or military sites).

In selected classrooms, teachers distributed opt-out forms to all parents of enrolled students, and 4.3% (94 of 2,179 eligible children) returned the forms indicating that they declined to allow their children to participate in the evaluation study, including all children in one of the 100 originally selected classrooms. Individual assessment data were collected from 569 children in 99 classrooms. Data were gathered from an average of 6 children per classroom (range=5-8), selected randomly from all those who did not have opt-out forms returned.

The analyses only include data from children who were assessed at both the fall and spring time points (n=509), including a subsample of Spanish-speaking dual language learners who were assessed in both English and Spanish (n=60). The average age of participating children, as of September 1, 2011, was 4.5 years (SD=0.3, range=4.0-5.4 years). Table 3 contains information from DECAL data about demographic characteristics of the sample of children as well as the entire population of children who participated in Georgia's Pre-K Program in 2011–2012. The demographic characteristics of children included in the sample generally were not significantly different from those of other children in the program. Both groups were approximately half male and half female, both were approximately 15% Latino, and the proportions of different racial groups were similar in almost all cases, except for a slightly higher proportion of Native Hawaiians/Pacific Islanders in the sample (2.2% vs. 0.9%). For the sample, similarly to the full population, approximately 60% of the children were from low-income families (as indicated by Category One[1] status), approximately 10% of the children had limited English language proficiency, and 4% had individualized education plans. Based on individual assessments of children's English language proficiency at the beginning of the program year (see measures below), 9% were categorized as non-English speakers (Level 1 n=45), 18% were categorized as limited English speakers (Level 2 n=39, Level 3 n=52), and 73% were fluent English speakers (Level 4 n=137, Level 5 n=233).

[1] Category One represents participation in one or more of the following programs: Temporary Assistance to Needy Families (TANF), Georgia's Child Care and Parent Services (CAPS), Peach Care for Kids.

Measures

The child assessment battery consisted of eight measures appropriate for pre-k children across three primary areas—language and literacy, math, and general knowledge. Children who were reported by their parents or teachers to speak Spanish also were assessed with the Spanish language versions of these same measures. See Table 4 for an overview of all measures, including the key constructs and scoring. When available, standard scores were used. Standard scores are used with norm-referenced assessments and take into account children's age, so that the mean score of 100 represents expected performance for an average child at any given age. However, for the Word Attack subtest, W scores (equal interval scale scores which are specific to this measure) were used because a substantial number of children did not meet the threshold for calculating a standard score.

Language and literacy skills were assessed with five measures. The Naming Letters task[iii] measures children's ability to recognize and name all 26 letters of the alphabet. The four remaining measures represent subtests from the Woodcock-Johnson III Tests of Achievement[iv] and Batería III Pruebas de Aprovechamiento[v]. The Letter-Word Identification subtest measures basic pre-reading and reading skills, including letter and word recognition and identification skills. The Picture Vocabulary subtest measures vocabulary skills, including aspects of both receptive and expressive language. The Sound Awareness subtest measures phonological awareness skills, including rhyming. The Word Attack subtest measures phonemic awareness skills, including knowledge of letter sounds and sound combinations.

Math skills were assessed with two measures. The Counting Task[vi] was used to measure children's ability to count in one-to-one correspondence and the Applied Problems subtest of the Woodcock-Johnson III Tests of Achievement[iv] and Batería III Pruebas de Aprovechamiento[v] was used to measure math problem-solving skills including simple comparisons, counting, addition, and subtraction.

General knowledge was assessed with the Social Awareness Scale[vii] which measures whether the child knows and is able to communicate basic self-knowledge (full name, age, birthday).

Classroom behavior was assessed with two subscales of the Social Skills Improvement System (SSIS)[viii] completed by teachers. The Social Skills subscale rates behaviors that promote positive interactions while discouraging negative interactions. The Problem Behaviors subscale rates behaviors that interfere with social behavior performance or acquisition.

In addition, the preLAS 2000[ix] was used to measure oral language proficiency for all children. Scores on this measure were used as covariates in the analyses in order to examine whether differences in children's growth on the various outcome measures was related to their level of language proficiency (1=Non-English speaker, 2-3=Limited English speaker, 4-5=Fluent English speaker).

Two aspects of classroom quality were measured. Global classroom quality was assessed using the Early Childhood Environment Rating Scale-Revised (ECERS-R)[x], an observational rating scale that measures the developmental appropriateness of classroom practices including the activities and materials provided, the interactions among teachers and children, the physical environment, and the daily organization of the program. The scale contains 43 items arranged into 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 ECERS-R and its predecessor, the ECERS, have been used in a wide range of early education research studies. The scales have been demonstrated to have good interrater reliability (total scale r = .92) and predictive validity[x, xi].

The second aspect of classroom quality, teacher-child instructional interactions, was assessed using the Classroom Assessment Scoring System (CLASS)[xii]. The CLASS is scored on a 7-point scale from low (1-2) to middle (3-5) to high (6-7), and includes ratings on 10 dimensions across three overarching 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). The first domain, Emotional Support, encompasses four dimensions: Positive climate (the emotional connection among children and teachers); Negative climate (expressed negativity such as anger and hostility); Teacher sensitivity (responsiveness to children's concerns); and Regard for student perspectives (accommodations for children's points of view). The second domain, Classroom Organization, includes three dimensions: Behavior management (how effectively behavior is monitored or redirected); Productivity (how well time is organized to maximize learning activities); and Instructional learning formats (how well teachers facilitate children's engagement to maximize learning opportunities). The third domain, Instructional Support, incorporates three dimensions: Concept development (how teachers foster higher-order thinking skills); Quality of feedback (how well teachers extend learning in their responses to children); and Language modeling (facilitation of language). The scale has demonstrated good interrater reliability[xii] (agreement within one point=87.1%, range=78.8% -96.9%).

Existing data gathered by DECAL from required submissions by Georgia's Pre-K Program sites provided additional information about characteristics of the children, classrooms, and teachers in the program. The current study includes data from four cycles of the 2011–2012 program year (September 2011, November 2011, January 2012, and March 2012).

Procedures

Two sources of child outcomes data were gathered: individual assessments of children's language and cognitive skills and teacher ratings of children's behavioral skills. Individual child assessments were conducted in the fall (10/14/11-12/09/11) and spring (3/26/12-5/29/12) of the pre-k program year. Child assessments were conducted on-site at each school or child care center by trained data collectors, and teachers were asked to complete rating scales following the assessments. All children were administered the child assessment measures in English, and children who spoke Spanish also were administered the same measures in Spanish at a later date during the same assessment period.

Observations of classroom quality were conducted during the middle of the year (12/7/11-3/21/12). Each measure was administered on a separate day, and each observation typically lasted 4-5 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 were calculated (ECERS-R total score=.69, CLASS Emotional Support=.82, Classroom Organization=.63, Instructional Support=.78).

Analysis Approach

Sample Comparisons

Comparisons between sample and population data were conducted to investigate the representativeness of the randomly-selected sample using available teacher and child data from DECAL. Chi-square tests were conducted to test whether teacher credentials or child characteristics (gender, ethnicity, race, income status, limited English language proficiency, IEP status) differed between the sample and the overall Georgia's Pre-K Program population. Significance testing was conducted only when there was a sufficient sample size ($n \geq 5$) for a given variable.

Child Outcomes

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. Children were nested within classrooms, and change scores (spring score minus fall score) were included as the dependent variables. Analyses were conducted for the full sample on English outcome measures and the Spanish-speaking subsample on Spanish outcome measures.

To examine predictors of child outcomes, a series of two-level HLM regression analyses were estimated for all outcome measures in English for the full sample. These models accounted for children being nested within classrooms, and included child age at baseline assessment as a covariate for non-standard scores. Change scores (spring score minus fall score) were used as the dependent variables. Predictors included child and family characteristics of family income (Category One or Two), child gender, and children's fall English language proficiency (*pre*LAS

proficiency score; 1=Non-English speaker, 2-3=Limited English speaker, 4-5=Fluent English speaker); classroom quality measures, including ECERS-R Total score and CLASS Emotional Support, Classroom Organization, and Instructional Support domain scores; and program, teacher and classroom characteristics, including the type of program (local school system vs. private), lead teacher certification (Georgia Professional Standards Commission [PSC] certified vs. not certified), lead teacher years of experience teaching pre-k; and percentage of non-English-speaking children in the classroom. Follow-up analyses were conducted to examine whether there were any differences in classroom or child characteristics between local school system and private providers. For classroom-level variables, t-test comparisons were conducted for continuous variables and chi-square tests were conducted for categorical variables. For child-level variables, generalized mixed-model comparisons were conducted with type of program as the sole predictor.

Classroom Quality

A series of linear regression models were conducted to test whether specific program, teacher, and classroom characteristics were associated with the various classroom quality measures. Separate models were estimated for each classroom quality measure, including ECERS-R Total score and CLASS Emotional Support, Classroom Organization, and Instructional Support. The predictors that were examined included the type of program (local school system vs private), lead teacher certification (Georgia PSC certified vs. not certified), lead teacher years of experience teaching pre-k, and percentage of non-English-speaking children in the classroom.

Table 1. Credentials of Lead Teachers in Georgia's Pre-K Program and 2011–2012 Sample

	Entire Program n=4,889	Sample n=100
Certification Status[1]	Percentage (Frequency)	Percentage (Frequency)
Certified[2]		
Georgia PSC Certified	74.9% (3,662)	78.0% (78)
Certified Temporary (out of state)	0.8% (41)	0.0% (0)
Four-Year Credential[3]		
Bachelor of Science/Arts	16.9% (828)	17.0% (17)
Two-Year Credential		
Associate of Science/Arts	4.0% (193)	4.0% (4)
Associate Technical Degree	1.8% (89)	1.0% (1)
Montessori Diploma	0.2% (9)	0.0% (0)
Insufficient	1.4% (67)	0.0% (0)

[1] Source of data: Bright from the Start: Georgia Department of Early Care and Learning (DECAL).
[2] Certified teachers hold a bachelor's degree or higher and have completed a state-approved educator program.
[3] Teachers at the four-year credential level hold a bachelor's degree or higher but lack completion of a state-approved educator program.

Table 2. Characteristics of Sample Classrooms and Teachers

Characteristic	N	Mean	(SD)	Range
Classroom Characteristics[1]				
Class size	100	21.4	(1.2)	16-22
Proportion of boys	98	51.9%	(9.2%)	25.0%-72.7%
Proportion of children speaking languages other than English[2]	93	16.0%	(20.3%)	0.0%-81.8%
Teacher Characteristics[1]				
Years of experience teaching pre-k	99	6.2	(5.1)	0.5-20
Years of experience teaching birth-kindergarten	99	9.0	(7.6)	0-40
Years of experience at this location	99	5.0	(5.9)	0.5-36
Total years of teaching experience	99	12.6	(9.9)	0.8-45
	N	Percent	Frequency	
Teacher Highest Degree Earned[1]				
PhD/EdD	98	2.0%	2	
MA/MS	98	33.7%	33	
BA/BS	98	60.2%	59	
AA/AAS	98	4.1%	4	
Program Type[3]				
Local school system	96	45.8%	44	
Private provider	96	54.2%	52	

[1] Source of data: Teacher survey.
[2] Other languages spoken: African languages, Arabic, Bulgarian, Chinese, French, German, Haitian, Hindi, Indic languages, Italian, Japanese, Korean, Romanian, Spanish, Turkmen, Ukrainian, Urdu, Vietnamese.
[3] Source of data: Bright from the Start: Georgia Department of Early Care and Learning (DECAL).

Table 3. Characteristics of Children in Georgia's Pre-K Program and 2011–2012 Sample

	Entire Program n=94,467[1]	Sample n=509
Characteristic[2]	Percentage (Frequency)	Percentage (Frequency)
Gender		
Male	50.8% (48,016)	47.9% (245)
Female	49.2% (46,451)	52.1% (264)
Ethnicity		
Hispanic/Latino	14.9% (14,063)	14.5% (74)
Race		
White/European American	49.2% (46,482)	49.5% (252)
Black/African American	41.3% (38,997)	39.3% (200)
Asian	3.2% (2,981)	4.3% (22)
Native American/Alaskan Native	1.8% (1,698)	1.4% (7)
Multi-racial	3.6% (3,378)	3.3% (17)
Native Hawaiian/Pacific Islander	0.9% (890)	2.2% (11)
Income[3]		
Category One	58.4% (55,207)	60.9% (310)
Category Two	41.6% (39,260)	39.1% (199)
Limited English language proficiency	10.7% (10,065)	10.2% (52)
Individualized Education Plan	3.5% (3,323)	3.9% (20)

[1] This total represents all children who were enrolled in Georgia's Pre-K Program at any time based on the four cycles of roster data.
[2] Source of data: Bright from the Start: Georgia Department of Early Care and Learning (DECAL).
[3] Category One represents participation in one or more of the following programs: TANF, CAPS, Peach Care for Kids.

Table 4. Child Outcome Measures

Measure	Scoring
Language and Literacy	
Letter knowledge[1]	
Naming Letters	Range=0–26
Letter-word identification[1]	
Woodcock-Johnson III Tests of Achievement Letter-Word Identification (Subtest 1)/Batería III Pruebas de Aprovechamiento Identificación de Letras y Palabras (Prueba 1)	Standard score, Mean=100, SD=15
Vocabulary[1]	
Woodcock-Johnson III Tests of Achievement Picture Vocabulary (Subtest 14) / Batería III Pruebas de Aprovechamiento Vocabulario sobre Dibujos (Prueba 14)	Standard score, Mean=100, SD=15
Phonological awareness[1]	
Woodcock-Johnson III Tests of Achievement Sound Awareness (Subtest 21)/Batería III Pruebas de Aprovechamiento Discernimiento de sonidos (Prueba 21)	Standard score, Mean=100, SD=15
Phonemic awareness[1]	
Woodcock-Johnson III Tests of Achievement Word Attack (Subtest 13) /Batería III Pruebas de Aprovechamiento Análisis de Palabras (Prueba 13)	W score, Range≈360–545
Math	
Math problem-solving[1]	
Woodcock-Johnson III Tests of Achievement Applied Problems (Subest 10)/Batería III Pruebas de Aprovechamiento Problemas Aplicados (Prueba 10)	Standard score, Mean=100, SD=15
Counting[1]	
Counting Task	Range=0–40
General Knowledge	
Basic self-knowledge[1]	
Social Awareness Task	Range=0–6
Classroom Behavior	
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

[1] Both English and Spanish language versions of these measures were used.

Results

Child Outcomes

Children's growth in key areas for school readiness, including language/literacy, math, general knowledge, and behavioral skills, as well as factors associated with greater growth, were examined during their participation in Georgia's Pre-K Program. Individual child assessments were conducted for a sample of 509 children attending 99 randomly-selected Georgia's Pre-K classrooms across the state during the 2011–2012 program year, including 60 Spanish-speaking dual language learners. The child assessments included measures of children's language and literacy skills (vocabulary, letter knowledge, letter-word identification, phonological awareness, phonemic awareness), math skills (math problem solving, counting), general knowledge (basic self-knowledge), and behavioral skills (social skills, problem behaviors). For Spanish-speaking children, assessments were administered in both English and Spanish. (See Methods section for further information about the sample and measures.)

Growth over Time

A set of longitudinal regression analyses were conducted to examine children's growth over time on the various outcome measures from entry into Georgia's Pre-K Program through the end of the school year (see analysis approach section for further details). As seen in Table 5, these results indicated that children exhibited significant growth during their pre-k year across all of the domains: language and literacy skills (letter knowledge, letter-word identification, vocabulary, phonological awareness, and phonemic awareness), math skills (math problem solving, counting), general knowledge (basic self-knowledge), and behavioral skills (social skills, problem behaviors). (Note that higher scores indicate more positive outcomes for all measures except problem behaviors; for the latter, lower scores indicate more positive outcomes.) Many of these skills were measured using standard scores (letter-word identification, vocabulary, phonological awareness, 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 Georgia's Pre-K Program than would be expected for normal developmental growth. Children made especially large gains in phonological awareness, which has been shown in other research to be a predictor of later reading success[xiii]. However, without a comparison group, it is not possible to establish a clear causal link between outcomes and program participation.

Spanish-speaking Subsample

The amount of growth exhibited by the subsample of children who were Spanish-speaking dual language learners over the pre-k year was examined. The same set of language/literacy, math, and general knowledge skills were assessed in both English and Spanish using corresponding measures. As shown in Table 6, children exhibited significant growth on both English and

Spanish measures across all domains. For the English measures, similar to the full sample, they exhibited significant growth on all measures. For the Spanish measures, they exhibited growth in some areas of language/literacy skills (phonological awareness and phonemic awareness) and in math (math problem-solving, counting). They exhibited no change in two areas (letter knowledge and basic self-knowledge), and decreases in two areas (letter-word identification and vocabulary). Although children's gains tended to be greater overall in English than in Spanish, the gains in phonological awareness were strong in both languages. Moreover, for some skills (math problem-solving, basic self-knowledge), their spring scores at the end of pre-k were similar in both languages. Given that the primary language of instruction in these classrooms was most likely English, it is not surprising that there were stronger effects for measures in English, and no changes or even declines in some areas in Spanish.

Predictors of Child Outcomes

The influence of factors that might be associated with differences in children's outcomes were examined for the full sample, including child and family characteristics (family income—Category One vs. Two, child gender, and children's English language proficiency), classroom quality (global quality and teacher-child interactions), and teacher and classroom characteristics (lead teacher certification and experience teaching pre-k, percentage of non-English-speaking children in the classroom, and local school system vs. private provider).

The results of these HLM regression analyses are presented in Table 7 for language and literacy outcomes and in Table 8 for math, general knowledge, and behavioral outcomes. In general, English proficiency was a consistent predictor of children's growth. Figures 1-7 show the estimated fall to spring growth for children at different levels of English proficiency for each of the significant outcomes, adjusted for all other variables in the models. Children with lower levels of English proficiency evidenced greater growth over the pre-k year on some measures of language and literacy skills (letter knowledge, letter-word identification, vocabulary), math skills (math problem-solving), and general knowledge (basic self-knowledge) compared to children who were more fluent in English. This pattern was reversed for measures of language and literacy skills related to phonological awareness skills (phonological awareness, phonemic awareness), with children who were less proficient in English making less progress than their more proficient peers. Although children at all levels of English proficiency made gains in this area, children with higher levels of English proficiency made greater gains than those with lower levels of English proficiency. These types of phonological awareness skills represent higher-order abilities and thus, may require more advanced levels of language proficiency in order to learn many of these skills.

Having a higher proportion of non-English-speaking children in the classroom also was related to significantly greater gains for children in several language and literacy skills (letter knowledge, letter-word identification, phonemic awareness). In other words, children who attended classrooms that had a larger percentage of non-English-speaking children showed higher rates of growth on some language and literacy skills. Children who attended programs in local school systems, as opposed to those offered by private providers, also made greater

gains in some language and literacy skills (letter-word identification, phonemic awareness) and general knowledge (basic self-knowledge). In addition, for letter-word identification skills, girls made greater gains than boys, and children from lower-income families (Category One) made greater gains than children from higher income families (Category Two). Neither of these factors were significant predictors for any other measures. Further, none of these factors were significant predictors of the amount of growth over the pre-k year for three of the measures, one related to math (counting) and the two related to behavioral skills (social skills and problem behaviors).

In order to further explore the findings related to greater gains being associated with attending programs in local school systems, follow-up analyses were conducted to examine the distribution of various child and classroom characteristics by program type. As seen in Table 9, local school system programs had a significantly higher proportion of certified teachers and served a significantly higher proportion of White students compared to private sites. There were no differences on other variables examined, including proportion of children by gender, ethnicity, or family income; class size, proportion of non-English-speaking children in the classroom, or teacher experience teaching pre-k.

Classroom Practices

The quality of educational practices in a random sample of 100 Georgia's Pre-K classrooms was examined during the 2011–2012 program year. The global quality of classroom practices was measured using the ECERS-R, and teacher-child instructional interactions were measured using the CLASS. (See Methods section for further information about the sample and measures.)

Global Quality

As seen in Table 10, the global quality of classroom practices, based on ECERS-R scores, tended to be in the medium quality range. The mean Total score was 3.6, which represents medium quality, although the range for individual classroom scores spanned low to high quality. As seen in Figure 8, the majority of classrooms had ECERS-R total scores in the medium quality range, with few in the low or high quality range (Low=13%, Medium=85%, High=2%).

All of the mean subscale scores were also in the medium quality range, with the exception of Personal Care Routines which was in the low quality range, as seen in Figure 8. In general, scores tended to be relatively higher for aspects of quality related to Language-Reasoning (4.6), Interaction (4.6), and Parents/Staff (4.8). Scores tended to be relatively lower for aspects of the classroom environment related to Space/Furnishings (3.4), Activities (3.4), and Program Structure (3.5), as well as Personal Care Routines (1.8). Some specific areas of strength across the program, with average scores in the high quality range, include encouraging children to communicate, staff-child interactions, interactions among children, provisions for parents, staff interaction, and staff supervision. In addition to the items related to Personal Care Routines, a

few other areas that scored in the low quality range on average included space for gross motor play; gross motor equipment; use of TV, video, and computers; schedule; and provisions for staff personal needs.

Teacher-Child Interactions

As seen in Table 11, and Figure 9, Figure 10, and Figure 11, scores were higher on Emotional Support and Classroom Organization than on Instructional Support. The average score was in the middle to high quality range on Emotional Support (5.5), with 61% of the classrooms scoring 5.5 or above; in the upper end of the middle range on Classroom Organization (5.2), with 41% of classrooms scoring 5.5 or above; and in the low to middle range on Instructional Support (2.8), with one classroom scoring 5.5 or above. In looking at the dimensions within each domain, scores were consistently high for Emotional Support, including the provision of a Positive climate and absence of a Negative climate (lower scores on Negative climate represent greater emotional support), as well as Teacher sensitivity and Regard for student perspectives. For Classroom Organization, the scores were somewhat higher for dimensions related to Behavior management (classroom management) and Productivity (maximizing learning time) than for the quality of Instructional learning formats (learning opportunities). Scores were consistently lower for the dimensions related to Instructional Support than for the other dimensions, although scores were relatively higher for Quality of feedback and Language modeling than for quality of Concept development. This pattern of results, with relatively lower scores on Instructional Support than on the other domains, is consistent with that typically found in other studies of early care and education programs.[xiv,xv,xvi]

Predictors of Classroom Quality

Whether teacher, classroom, and program characteristics were related to higher quality pre-k classrooms was examined for two dimensions of classroom practices: 1) global classroom quality as measured by the total score on the ECERS-R; and 2) teacher-child instructional interactions as measured by the CLASS Emotional Support, Classroom Organization, and Instructional Support domains. The characteristics that were examined included the type of program (local school system vs. private), lead teacher certification (Georgia PSC certified vs. not certified), lead teacher years of experience teaching pre-k, and percentage of non-English-speaking children in the classroom.

The results of these regression analyses are shown in Table 12. The overall models were not significant for any of the classroom quality measures, indicating that as a set, these teacher, classroom, and program factors did not predict the quality of Georgia's Pre-K classrooms. However, one factor, years of experience teaching pre-k, was a significant predictor for the ECERS-R Total, indicating that teachers who had greater experience had classrooms with higher quality. Because the overall model was not significant, these results should be interpreted cautiously but do suggest an area that may be worth further exploration in relation to pre-k classroom quality. For the three domains of the CLASS, none of these factors were significant predictors of the quality of teacher-child interactions.

Conclusions

Based on this random sample of classrooms from the 2011–2012 Georgia's Pre-K Program, children made significant gains across all domains of learning during their time in pre-k. For measures with standard scores, the results indicate that children made even greater than expected progress during their participation in Georgia's Pre-K Program. Children who were Spanish-speaking dual language learners showed growth in skills in both English and Spanish, even though the primary language of instruction in these classrooms was most likely English. Further, children's individual levels of English language proficiency and higher proportions of non-English-speaking children in the classroom were significant predictors of greater growth in English language skills for children. These findings suggest that the addition of bilingual supports during children's classroom experiences may be a useful strategy for further enhancing children's acquisition of the skills and knowledge being taught in pre-k and better prepare them for kindergarten. Further, children with different characteristics (boys and girls, different family income levels) generally showed similar gains during the pre-k year.

Classroom practices tended to be in the medium quality range, however, below the high quality level. Compared to a study[i] involving a 2008-2009 sample of Georgia's Pre-K classrooms, the 2011–2012 sample scored lower on average on the measure of global quality (ECERS-R) and slightly lower on the measure of teacher-child interactions (CLASS) on Emotional Support and Classroom Organization, but slightly higher on Instructional Support. The gains in Instructional Support are consistent with the emphasis of professional development efforts for quality improvement by DECAL in the intervening years. Further, of the factors examined (program type, teacher certification and experience, percentage of non-English-speaking children in the classroom), there were no consistent predictors of quality. Thus, none of these areas offers a clear recommendation in terms of additional areas to focus on with regard to quality improvement. Although it was not predictive of the quality of classroom practices, participation in a program in a local school system was associated with greater growth for children in some skills. From the data that were available, it appears that programs in local school systems were more likely to have certified teachers and may have served a somewhat different population of children. Given these findings, it is worth further exploration to determine other such differentiating factors that are associated with greater gains for children as well as better classroom quality, both in terms of the resources available and the populations served, in considering future directions for quality improvement.

One aspect that may be useful to consider as a potential avenue for improving quality is reducing the class size requirement of 20-22 children and adult:child ratios of 1:11. National quality standards in this area recommend class sizes of 20 or lower for 4-year-olds, with adult:child ratios of 1:10[xvii]. Compared to a number of other state and federal pre-k programs, the class size and ratio guidelines for Georgia's Pre-K Program are at the high end for 4-year-olds. For example, the guidelines for Head Start limit class sizes to 17-20 children[xviii]. Almost all state programs have class size limits of 20 or below, with corresponding adult:child ratios of 1:10 or better; some have even lower limits in the 16-18 range, including both universal

programs (e.g., Florida Voluntary Prekindergarten, New Jersey Abbott and Non-Abbott Early Childhood Program Aid) and programs serving at-risk children (e.g., Colorado Preschool Program, Michigan School Readiness Program, North Carolina Pre-Kindergarten Program, Virginia Preschool Initiative)[xvii]. Further, research has shown that lower class sizes and better adult:child ratios are associated with higher quality classrooms[xix,xiv] and better language and cognitive outcomes for children[xx,xxi ,xxii].

In sum, despite the medium levels of quality, children showed significant growth across all domains of learning during their pre-k year. These findings suggest that as a universal program, Georgia's Pre-K Program can offer a beneficial experience for all children.

Table 5. Child Outcomes for Full Sample

Measure	N	Fall Mean (SD) Range	Spring Mean (SD) Range	Gains Over Time[1]
Language and Literacy				
Letter knowledge (Naming Letters[2])	509	14.1 (10.3) 0-26	19.8 (8.0) 0-26	5.7***
Letter-word identification (WJ III Letter-Word Identification[3,4])	509	100.1 (13.8) 61-161	102.2 (12.4) 68-161	2.1***
Vocabulary (WJ III Picture Vocabulary[3,4])	506	98.8 (14.1) 27-132	99.7 (11.7) 48-138	0.9*
Phonological awareness (WJ III Sound Awareness[3,4])	493	93.4 (17.6) 63-141	101.3 (18.8) 53-142	8.0***
Phonemic Awareness (WJ III Word Attack[4,5])	507	386.3 (22.6) 364-505	401.6 (26.7) 364-520	15.3***
Math				
Math problem-solving (WJ III Applied Problems[3,4])	498	100.9 (13.8) 56-150	103.6 (12.2) 53-143	2.7***
Counting (Counting Task[6])	496	18.5 (11.3) 1-40	26.1 (11.7) 1-40	7.6***
General Knowledge				
Basic self-knowledge (Social Awareness Task[7])	498	4.2 (1.5) 0-6	4.8 (1.3) 0-6	0.6***
Classroom Behavior				
Social skills (SSIS)	501	97.3 (14.4) 55-128	100.2 (14.7) 59-130	2.8***
Problem behaviors (SSIS)	501	101.7 (15.3) 82-160	100.3 (15.8) 82-160	-1.3*

[1] *=p<.05, **=p<.01, ***=p<.001

[2] Possible range=0–26.

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

[4] Scores reflect use of updated normative tables (2007).

[5] W scores were used for this measure. Possible range≈360–545.

[6] Possible range=0–40.

[7] Possible range=0–6.

Table 6. Child Outcomes for Spanish-Speaking Subsample

	English Outcomes				Spanish Outcomes			
Measure	N	Fall Mean (SD) Range	Spring Mean (SD) Range	Gains over Time[1]	N	Fall Mean (SD) Range	Spring Mean (SD) Range	Gains over Time[1]
Language and Literacy								
Letter knowledge (Naming Letters[2])	60	6.4 (8.2) 0-26	15.9 (9.1) 0-26	9.5***	54	1.0 (1.5) 0-7	1.7 (3.6) 0-17	0.7[NS]
Letter-word identification (WJ III / WM III Letter-Word Identification[3,4])	49	89.1 (12.7) 64-117	96.4 (11.9) 72-121	7.3***	49	90.8 (6.5) 76-102	85.4 (9.4) 67-108	-5.4***
Vocabulary (WJ III / WM III Picture Vocabulary[3,4])	52	76.1 (17.8) 27-103	82.5 (13.6) 48-107	6.4***	52	70.0 (19.8) 12-102	66.9 (21.6) 28-111	-3.0*
Phonological awareness (WJ III / WM III Sound Awareness [3,4])	51	78.4 (11.9) 63-119	86.0 (16.5) 57-139	7.6**	51	79.8 (10.8) 62-105	90.5 (19.8) 55-136	10.9**
Phonemic Awareness (WJ III / WM III Word Attack[3,5])	50	376.1 (15.8) 364-423	391.1 (21.0) 364-468	15.0***	50	375.9 (12.0) 360-401	380.2 (14.1) 360-418	4.3*
Math								
Math problem-solving (WJ III/ WM III Applied Problems[3,4])	27	86.6 (14.4) 56-109	96.0 (10.2) 68-111	9.5**	28	88.4 (13.3) 49-109	95.3 (13.9) 63-122	7.6**
Counting (Counting Task[6])	58	13.3 (9.8) 1-40	19.9 (10.4) 1-40	6.6***	55	8.0 (5.8) 1-40	9.4 (6.1) 2-40	1.5*
General knowledge								
Basic self-knowledge (Social Awareness Task[7])	59	2.5 (1.5) 0-6	3.6 (1.4) 1-6	1.1***	55	3.3 (1.3) 1-6	3.5 (1.2) 0-6	0.2[NS]

[1] NS=non-significant, *=p<.05, **=p<.01, ***=p<.001

[2] Possible range=0–26.

[3] Scores reflect use of updated normative tables (2007).

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

[5] W scores were used for this measure. Possible range≈360–545

[6] Possible range=0–40.

[7] Possible range=0–6.

Table 7. Child Outcomes Regression Results–Language & Literacy

	Letter Knowledge (Naming Letters) n=469		Letter-Word Identification (WJ III Letter-Word ID) n=469		Vocabulary (WJ III Picture Vocabulary) n=466		Phonological Awareness (WJ III Sound Awareness) n=454		Phonemic Awareness (WJ III Word Attack) n=467	
	Est[1]	(SE)	Est[1]	(SE)	Est[1]	(SE)	Est[1]	(SE)	Est[1]	(SE)
Intercept	9.36	(5.89)	-0.56	(4.24)	4.82	(3.50)	8.54	(6.85)	-7.46	(9.32)
Gender[2]	-0.76	(0.59)	-2.28**	(0.75)	-0.53	(0.70)	-0.32	(1.24)	-0.04	(1.71)
Age at fall assessment	-0.90	(1.0)	--	--	--	--	--	--	--	--
Child and Family Characteristics										
Income[2]	0.92	(0.66)	2.02*	(0.84)	0.05	(0.76)	0.71	(1.38)	0.76	(1.9)
English Proficiency[3]										
Level 2	-0.72	(1.40)	-2.63	(1.80)	-5.50**	(1.67)	7.01*	(2.99)	5.84	(4.09)
Level 3	0.80	(1.33)	-1.10	(1.70)	-7.37***	(1.57)	7.19*	(2.79)	8.50*	(3.86)
Level 4	-1.21	(1.17)	-3.38*	(1.49)	-7.51***	(1.37)	6.45**	(2.44)	4.36	(3.38)
Level 5	-2.53*	(1.12)	-3.67*	(1.42)	-8.10***	(1.32)	6.06*	(2.34)	8.80**	(3.24)
Classroom Quality										
ECERS-R Total Score	0.64	(0.76)	0.28	(0.87)	-0.06	(0.71)	0.25	(1.41)	2.10	(1.91)
CLASS Emotional Support	-0.78	(0.91)	0.22	(1.06)	0.97	(0.86)	-1.10	(1.70)	0.46	(2.31)
CLASS Classroom Organization	0.01	(0.91)	-0.28	(1.05)	-0.65	(0.86)	-1.65	(1.70)	0.40	(2.31)
CLASS Instructional Support	0.62	(0.78)	0.37	(0.91)	0.71	(0.74)	2.50	(1.46)	-0.12	(1.99)
Teacher and Classroom Characteristics										
Program Type[2]	1.54	(0.78)	2.29*	(0.91)	-0.53	(0.74)	1.09	(1.45)	5.54**	(1.99)
Experience teaching pre-k	0.07	(0.08)	0.12	(0.09)	0.03	(0.07)	-0.01	(0.15)	-0.11	(0.20)
Teacher Certification[2]	0.24	(1.01)	1.36	(1.18)	-1.05	(0.97)	-0.76	(1.89)	0.86	(2.58)
% Non-English Speakers	4.20*	(1.91)	5.02*	(2.22)	2.59	(1.81)	0.67	(3.57)	10.13*	(4.87)

[1] *p< .05, **p< .01, ***p< .001.

[2] These were coded as binary variables. Gender: 0=female, 1=male. Income: 0=Category 2, 1=Category 1. Program Type: 0=private program, 1=local school system. Teacher Certification: 0=not certified, 1=Georgia PSC certified.

[3] Level 1 was the reference cell. Post-hoc tests for English proficiency showed the following significant group differences: Naming Letters (1,3>5), Letter-Word ID (1>4,5; 3>5), Vocabulary (1>2,3,4,5), Phonological Awareness (1<2,3,4,5) and Word Attack (1<3,5; 4<5).

Table 8. Child Outcomes Regression Results–Math, General Knowledge, and Classroom Behavior

	Math				General Knowledge		Classroom Behavior			
	Math Problem Solving (WJ III Applied Problems) n=459		Counting (Counting Task) n=457		Basic Self Knowledge (Social Awareness) n=459		Social Skills (SSIS) n=462		Problem Behaviors (SSIS) n=462	
	Est[1]	(SE)	Est[1]	(SE)	Est[1]	(SE)	Est[1]	(SE)	Est[1]	(SE)
Intercept	6.10	(4.25)	3.59	(9.93)	1.43	(1.09)	0.92	(7.64)	-5.35	(7.00)
Gender[2]	-0.67	(0.84)	-1.01	(1.02)	0.00	(0.12)	-1.51	(1.02)	1.35	(0.96)
Age at fall assessment	--	--	0.29	(1.73)	-0.21	(0.20)	--	--	--	--
Child and Family Characteristics										
Income[2]	0.63	(0.92)	-0.07	(1.14)	-0.05	(0.13)	-1.25	(1.18)	0.30	(1.11)
English Proficiency[3]										
Level 2	-4.58*	(2.04)	0.20	(2.49)	0.31	(0.28)	-0.71	(2.41)	2.27	(2.28)
Level 3	-4.78*	(1.89)	1.03	(2.36)	-0.29	(0.26)	0.99	(2.31)	-0.39	(2.19)
Level 4	-8.54***	(1.66)	0.12	(2.07)	-0.60**	(0.23)	-1.45	(2.02)	0.84	(1.90)
Level 5	-9.57***	(1.60)	1.95	(2.00)	-0.68**	(0.22)	-1.99	(1.93)	1.07	(1.82)
Classroom Quality										
ECERS-R Total Score	0.68	(0.85)	0.49	(1.17)	-0.05	(0.12)	-0.33	(1.62)	-1.77	(1.48)
CLASS Emotional Support	0.69	(1.03)	0.20	(1.41)	0.25	(0.14)	-0.64	(1.95)	0.85	(1.78)
CLASS Classroom Organization	-0.39	(1.03)	-0.38	(1.41)	-0.11	(0.14)	1.50	(1.96)	0.56	(1.79)
CLASS Instructional Support	-0.22	(0.89)	0.69	(1.22)	-0.05	(0.12)	0.71	(1.67)	-0.82	(1.53)
Teacher and Classroom Characteristics										
Program Type[2]	1.04	(0.89)	-0.76	(1.21)	0.31*	(0.12)	1.38	(1.68)	1.90	(1.54)
Experience teaching pre-k	-0.15	(0.09)	0.01	(0.12)	0.00	(0.01)	-0.22	(0.17)	0.17	(0.15)
Teacher Certification[2]	0.57	(1.16)	0.53	(1.58)	0.02	(0.16)	-0.36	(2.14)	1.51	(1.96)
% Non-English Speakers	3.05	(2.18)	-5.38	(2.97)	0.08	(0.30)	5.12	(4.08)	3.04	(3.74)

[1] *p< .05, **p< .01, ***p< .001.

[2] These were coded as binary variables. Gender: 0=female, 1=male. Income: 0=Category 2, 1=Category 1. Program Type: 0=private program, 1=local school system. Teacher Certification: 0=not certified, 1=Georgia PSC certified.

[3] Level 1 was the reference cell. Post-hoc tests for English Proficiency showed the following significant group differences: Applied Problems (1>2,3,4,5; 2,3>4,5), Social Awareness (1>4,5; 2>3,4,5).

Figure 1. Growth in Letter Knowledge by English Proficiency
n=469

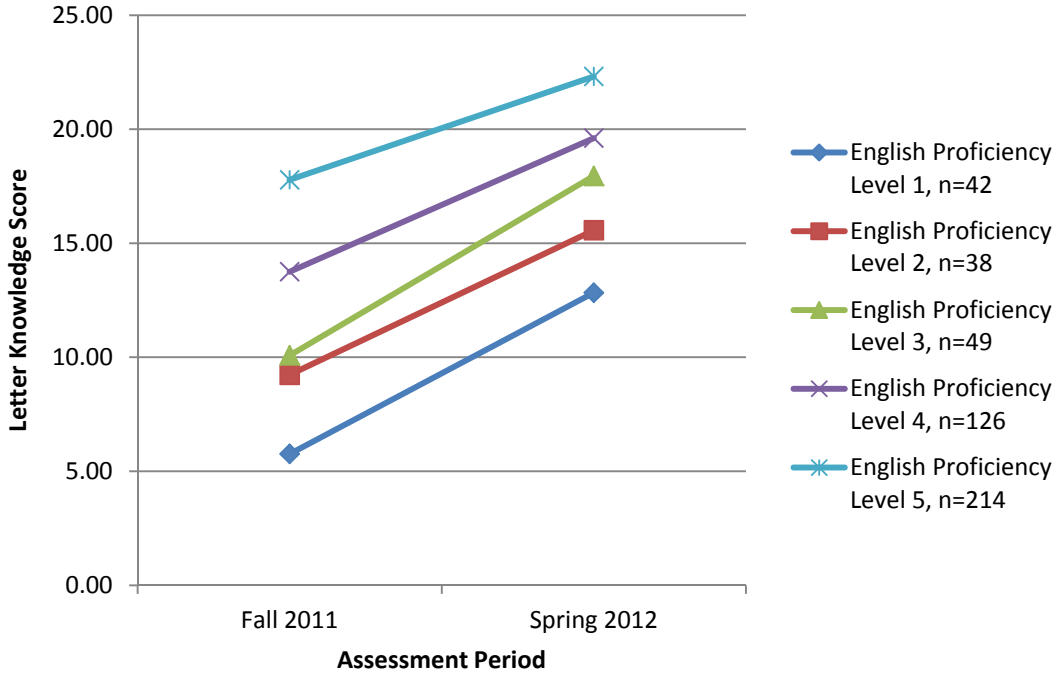

Figure 2. Growth in Letter-Word Identification (WJ III) by English Proficiency
n=469

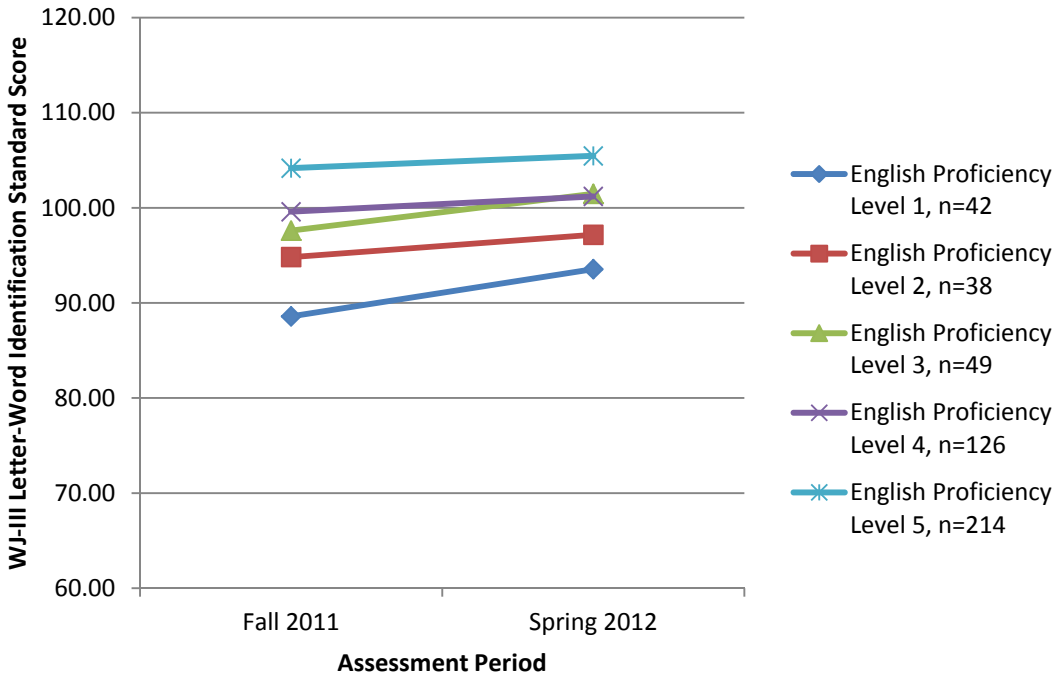

Figure 3. Growth in Vocabulary (WJ III) by English Proficiency
n=466

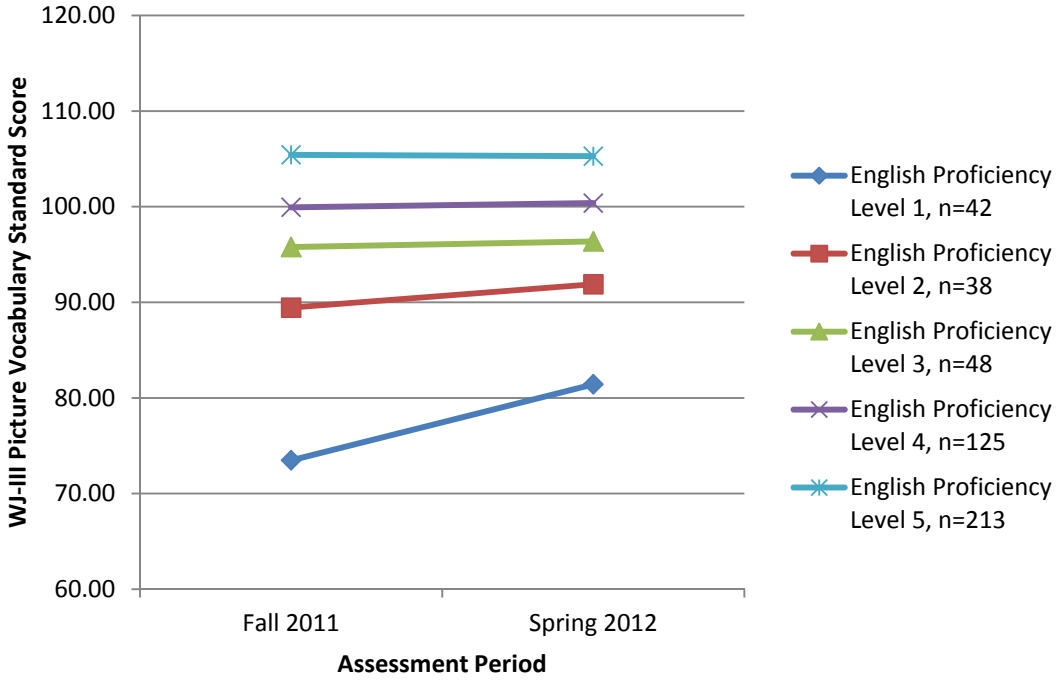

Figure 4. Growth in Phonological Awareness (WJ III) by English Proficiency
n=454

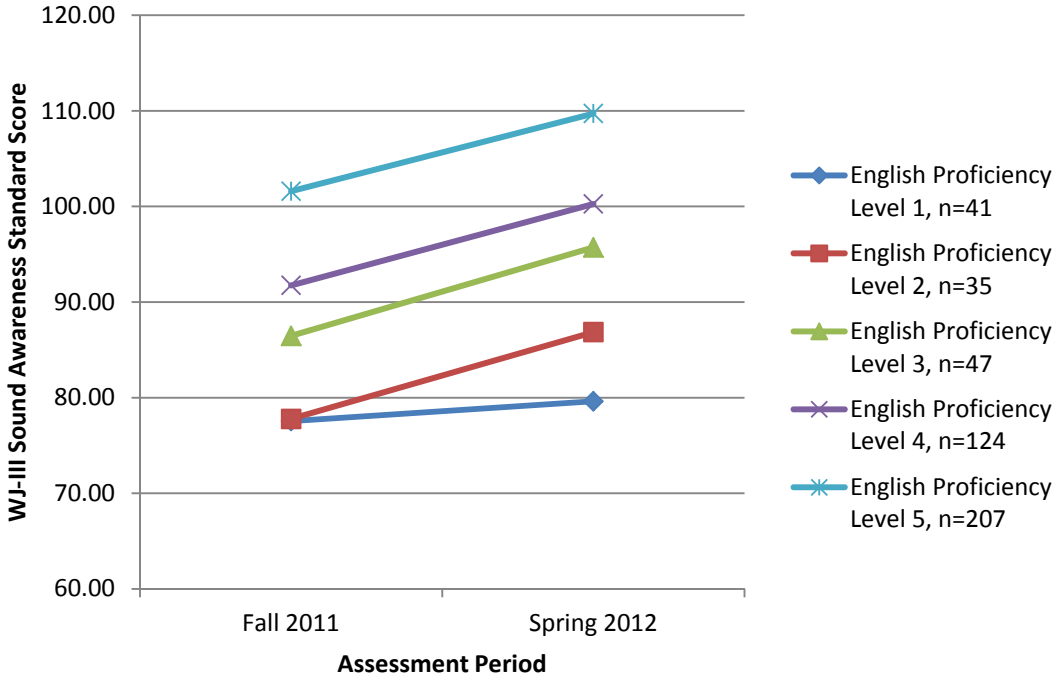

Figure 5. Growth in Phonemic Awareness (WJ III) by English Proficiency n=467

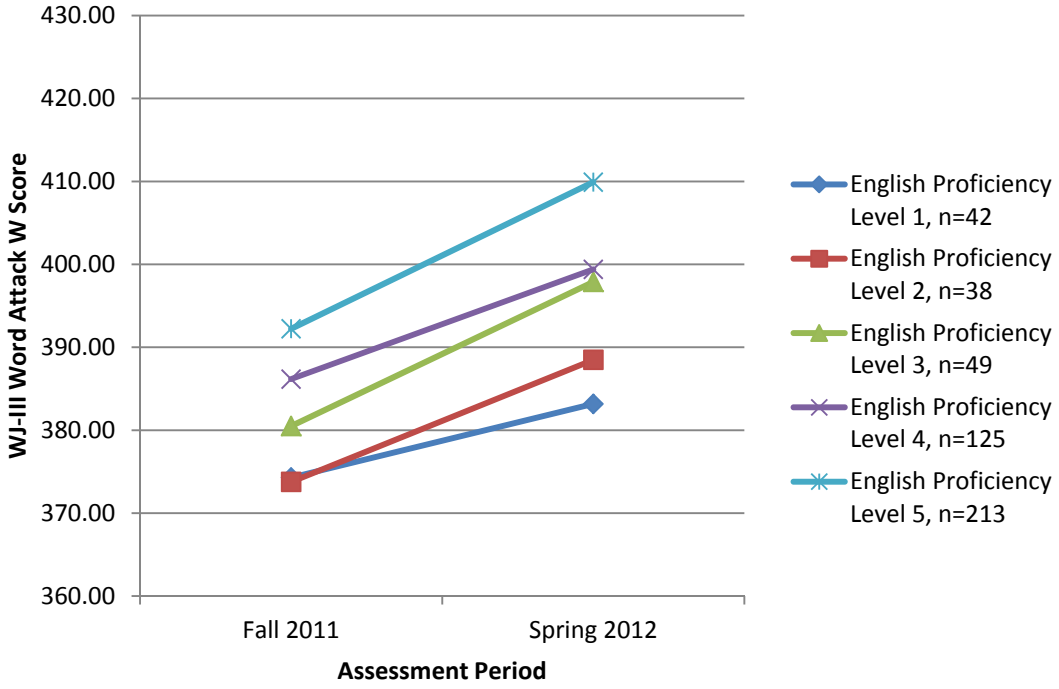

Figure 6. Growth in Math Problem Solving (WJ III) by English Proficiency n=459

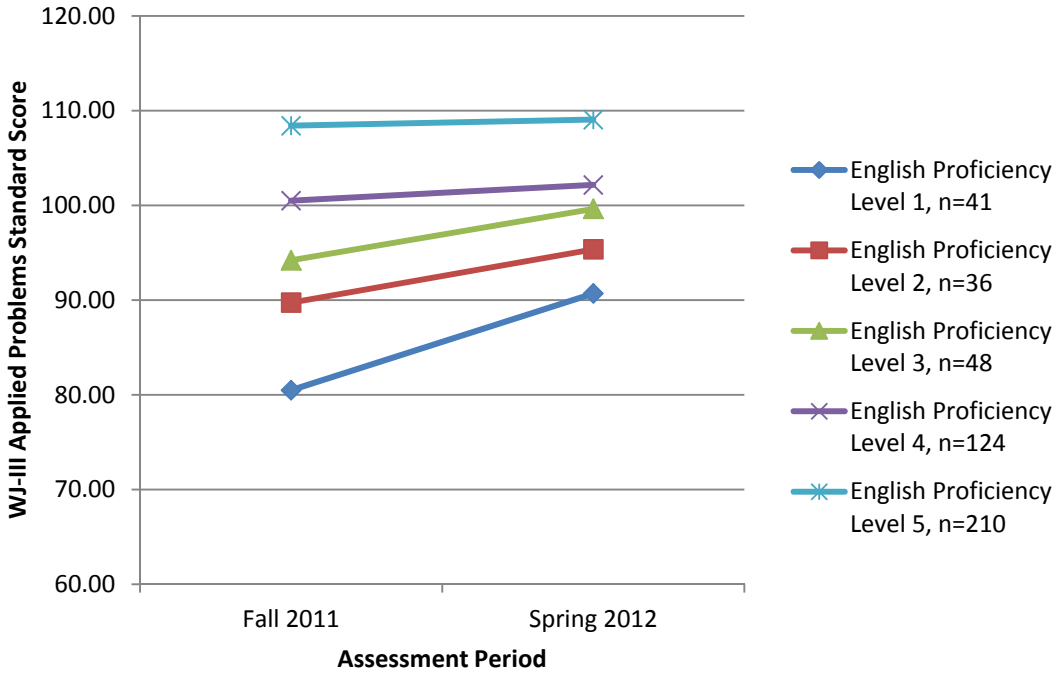

Figure 7. Growth in Basic Self-Knowledge (Social Awareness) by English Proficiency n=459

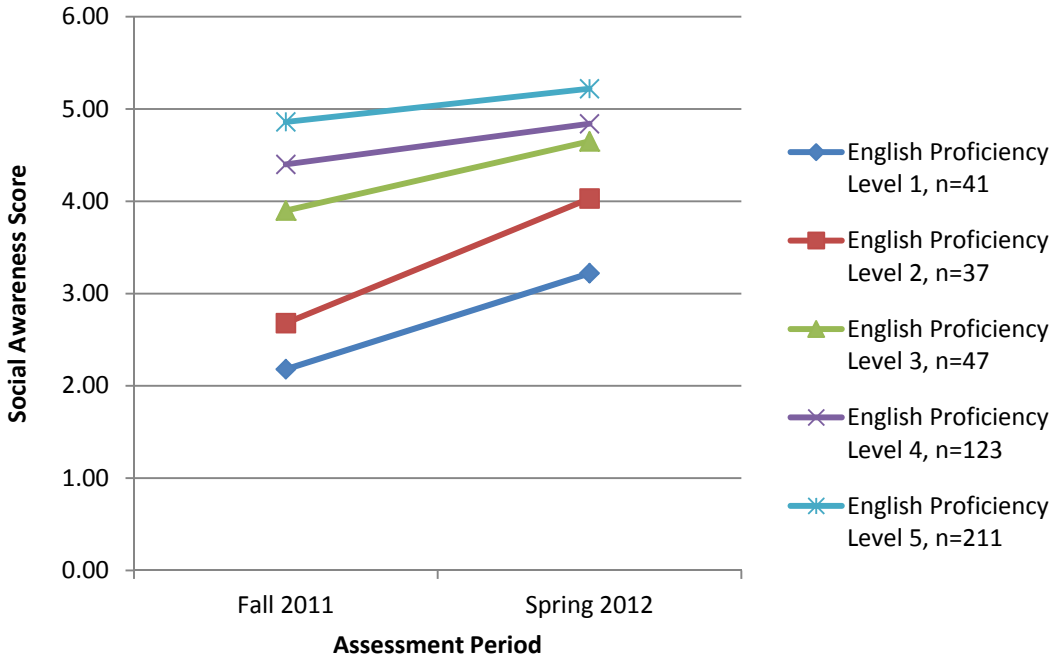

Table 9. Child and Program Characteristics by Program Type

	N	Local School Systems	Private Sites	Differences by Program Type[1]
		Percentage (Frequency)	Percentage (Frequency)	
Child Characteristics	509			
Male		46.8% (108)	49.3% (137)	NS
Female		53.3% (123)	50.7% (141)	NS
Hispanic/Latino Ethnicity		12.6% (29)	16.2% (45)	NS
Race				
White/European American		56.7% (131)	43.5% (121)	*
Black/African American		35.1% (81)	42.8% (119)	NS
Asian		3.0% (7)	5.4% (15)	NS
Native American/Alaskan Native		2.2% (5)	0.7% (2)	--[2]
Multi-Racial		2.6% (6)	4.0% (11)	NS
Native Hawaiian/Pacific Islander		0.4% (1)	3.6% (10)	--[2]
Family Income				
Category One[3]		59.7% (138)	61.9% (172)	NS
Category Two		40.3% (93)	38.1% (106)	NS
Classroom Characteristics	99			
Georgia PSC Certified Teachers		93.2% (41)	66.1% (37)	**
		Mean (SD)	Mean (SD)	
Class size		21.6 (1.0)	21.3 (1.4)	NS
Proportion of children speaking languages other than English[4]		11.4% (17.1%)	19.2% (22.1%)	NS
Teacher years of experience teaching pre-k		6.1 (5.9)	6.4 (4.3)	NS

[1] NS=not significant, *p< .05, **p< .01, ***p< .001.

[2] Sample size was too small for significance testing.

[3] Category One represents participation in one or more of the following programs: TANF, CAPS, Peach Care for Kids.

[4] Other languages spoken: African languages, Arabic, Bulgarian, Chinese, French, German, Haitian, Hindi, Indic languages, Italian, Japanese, Korean, Romanian, Spanish, Turkmen, Ukrainian, Urdu, Vietnamese.

Table 10. Early Childhood Environment Rating Scale-Revised (ECERS-R) Scores

n=100

ECERS-R Item	Mean	(SD)	Range
Total Score	3.6	(0.6)	2.3-5.0
Space and Furnishings Subscale	3.4	(0.7)	1.8-5.4
Indoor space	3.6	(2.1)	1-7
Furniture for routine care, play, and learning	4.9	(2.3)	1-7
Furnishings for relaxation and comfort	3.7	(0.9)	2-7
Room arrangement for play	3.9	(1.8)	1-7
Space for privacy	3.4	(1.1)	1-7
Child-related display	4.4	(1.2)	2-7
Space for gross motor play	1.4	(0.7)	1-6
Gross motor equipment	1.9	(1.2)	1-7
Personal Care Routines Subscale	1.8	(0.5)	1.0-3.2
Greeting/departing	3.7	(1.8)	1-7
Meals/snacks	1.4	(0.6)	1-5
Nap/rest	1.3	(0.5)	1-2
Toileting/diapering	1.4	(0.5)	1-2
Health practices	1.7	(0.5)	1-4
Safety practices	1.3	(1.0)	1-7
Language-Reasoning Subscale	4.6	(1.0)	1.8-6.3
Books and pictures	3.6	(0.8)	1-7
Encouraging children to communicate	5.8	(1.5)	2-7
Using language to develop reasoning skills	4.2	(1.7)	1-7
Informal use of language	4.6	(1.4)	1-7
Activities Subscale	3.4	(0.6)	1.8-4.6
Fine motor	3.8	(0.8)	2-7
Art	3.7	(0.7)	2-4
Music/movement	3.4	(1.3)	1-7
Blocks	3.5	(1.0)	1-4
Sand/water	3.0	(1.6)	1-7
Dramatic play	3.7	(0.7)	1-4

ECERS-R Item	Mean	(SD)	Range
Nature/science	3.5	(0.9)	1-4
Math/number	3.7	(0.8)	1-7
Use of TV, video, and/or computers	2.0	(1.0)	1-7
Promoting acceptance of diversity	3.4	(1.3)	1-7
Interaction Subscale	4.6	(1.6)	1.2-7.0
Supervision of gross motor activities	3.8	(2.0)	1-7
General supervision of children	4.4	(2.3)	1-7
Discipline	4.5	(2.0)	1-7
Staff-child interactions	5.1	(2.1)	1-7
Interactions among children	5.3	(2.0)	1-7
Program Structure Subscale	3.5	(1.1)	1.3-5.7
Schedule	2.9	(1.0)	2-6
Free play	3.1	(1.1)	1-6
Group time	4.3	(2.1)	1-7
Provisions for children with disabilities	3.8	(2.2)	1-7
Parents and Staff Subscale	4.8	(1.0)	2.5-7.0
Provisions for parents	5.5	(1.1)	2-7
Provisions for staff personal needs	2.6	(1.5)	1-7
Provisions for staff professional needs	4.3	(2.5)	1-7
Staff interaction	5.8	(1.8)	1-7
Staff supervision	5.5	(1.7)	1-7
Professional growth	4.8	(1.9)	1-7

Figure 8. Global Classroom Quality Total Scores (ECERS-R)

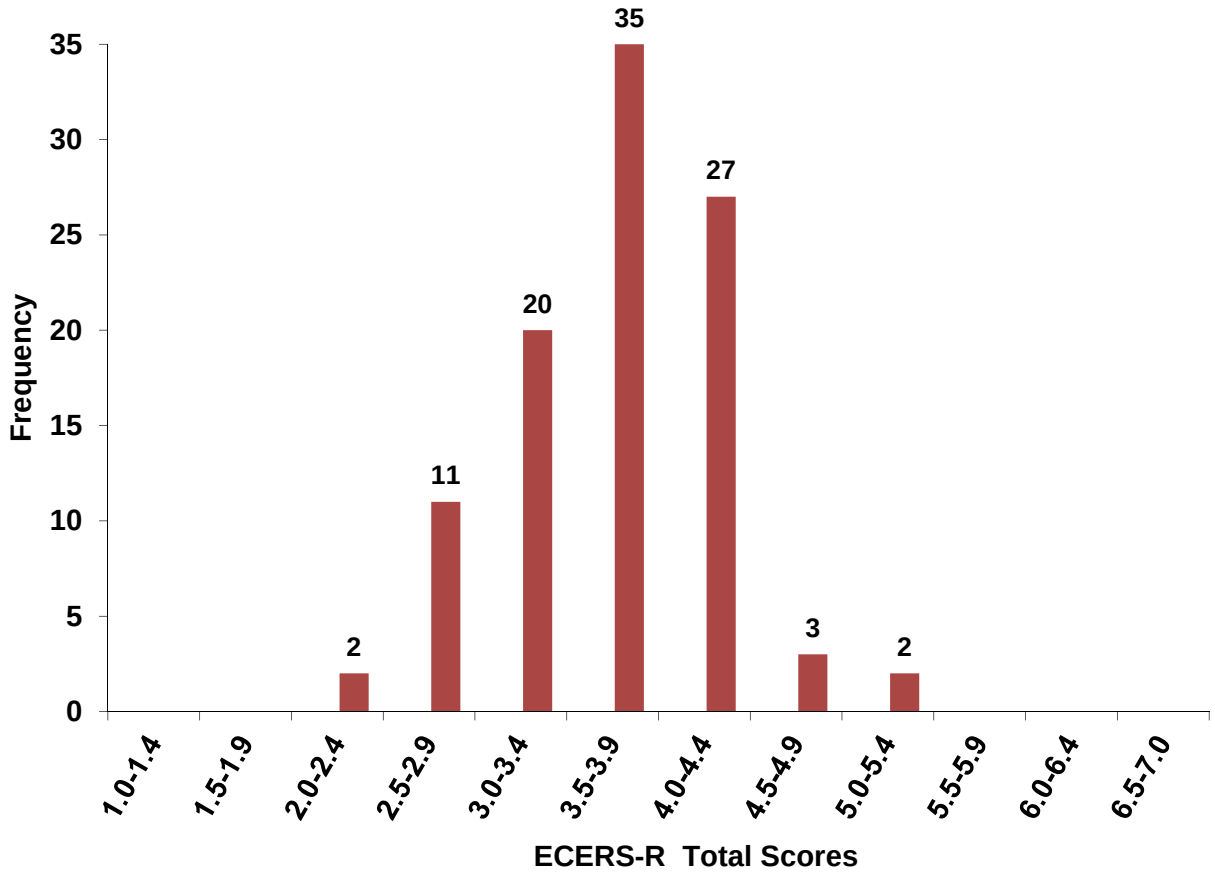

Table 11. Classroom Assessment Scoring System (CLASS) Scores

n=100

CLASS Dimension	Mean	(SD)	Range[1]
Emotional Support Domain	5.5	(0.8)	2.8-7.0
Positive climate	5.3	(1.1)	1.2-7.0
Negative climate[2]	1.4	(0.5)	1.0-4.0
Teacher sensitivity	5.2	(1.1)	2.0-7.0
Regard for student perspectives	5.0	(0.9)	2.3-6.8
Classroom Organization Domain	5.2	(0.8)	3.5-6.7
Behavior management	5.4	(0.9)	2.7-7.0
Productivity	5.4	(0.7)	3.8-7.0
Instructional learning formats	4.7	(0.9)	2.3-6.3
Instructional Support Domain	2.8	(0.8)	1.3-5.7
Concept development	2.3	(0.7)	1.0-4.7
Quality of feedback	2.9	(1.0)	1.0-6.3
Language modeling	3.2	(0.9)	1.3-6.0

[1] Domain scores could range from 1.0-7.0; dimension scores could range from 1-7.

[2] Scoring is reversed for the Negative climate dimension before it is averaged into the Emotional Support domain.

Figure 9. Teacher-Child Interaction Emotional Support Scores (CLASS)

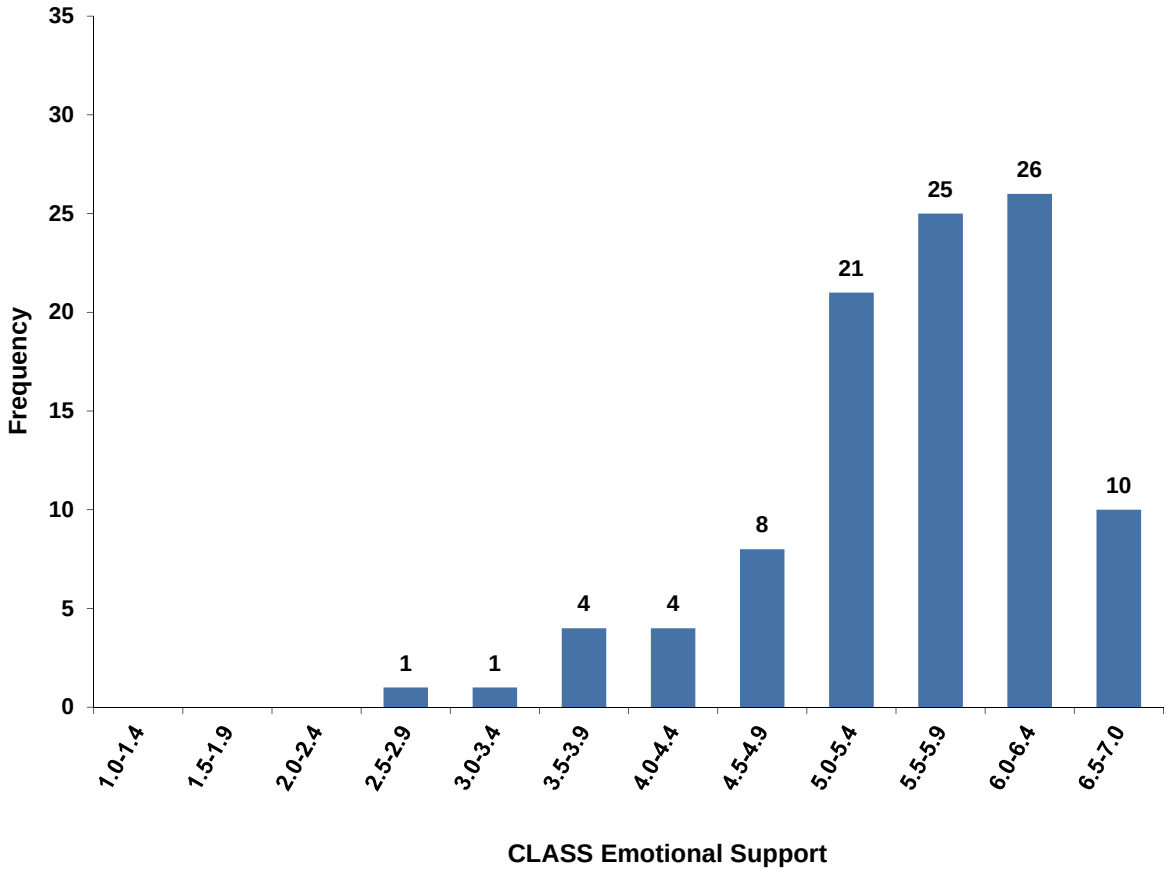

Figure 10. Teacher-Child Interaction Classroom Organization Scores (CLASS)

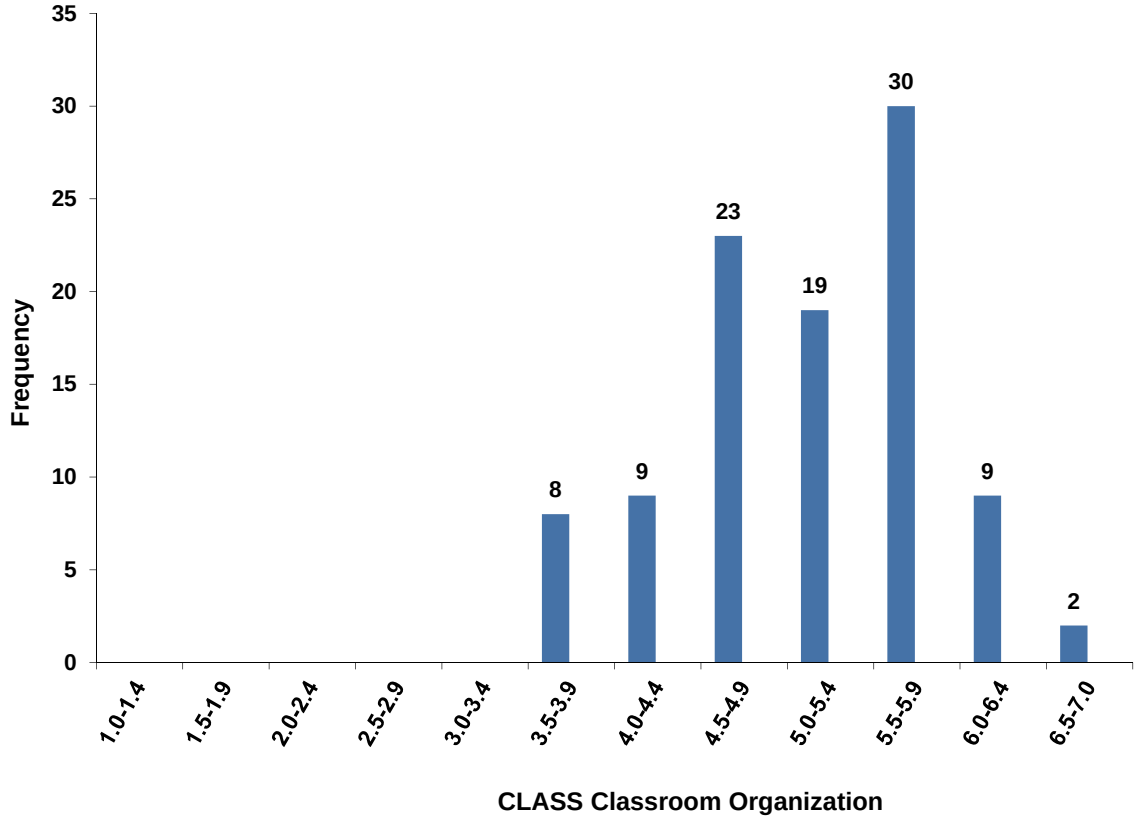

Figure 11. Teacher-Child Interaction Instructional Support Scores (CLASS)

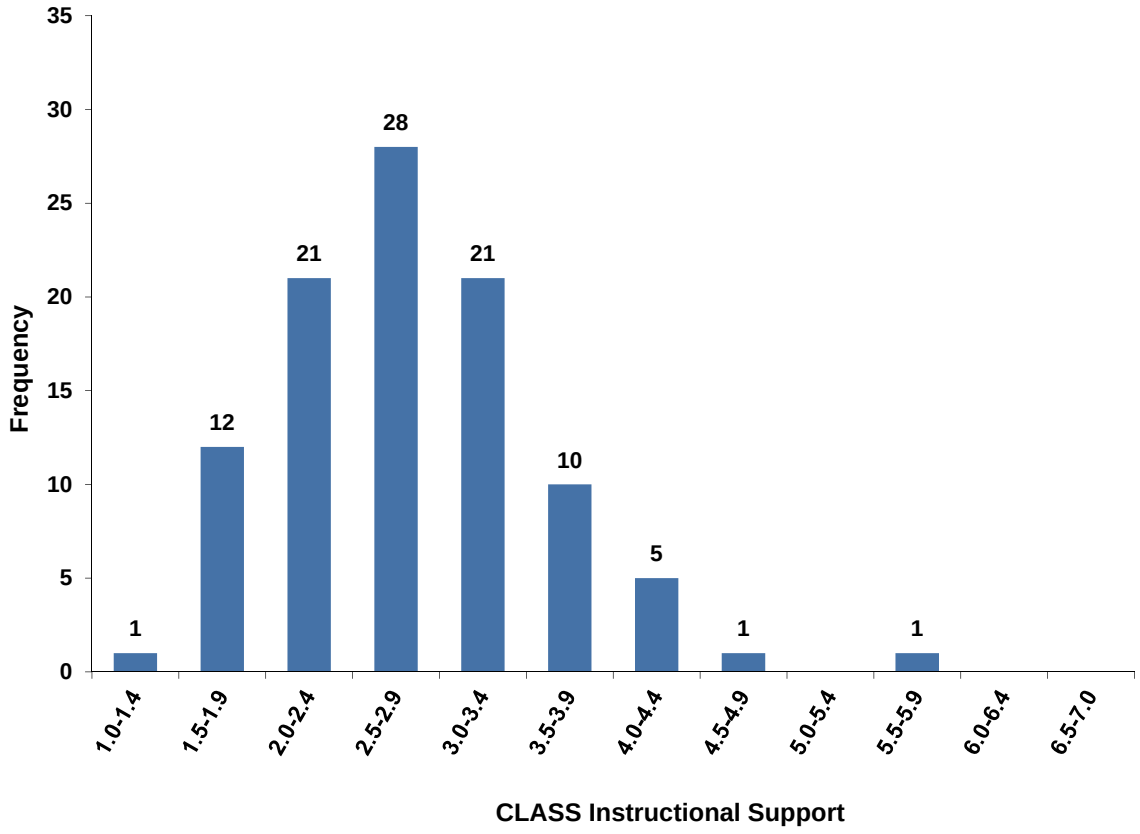

Table 12. Classroom Quality Regression Results

	ECERS-R	CLASS		
	Total Score n=92	Emotional Support n=92	Classroom Organization n=92	Instructional Support n=92
	Est[1] (SE)	Est[1] (SE)	Est[1] (SE)	Est[1] (SE)
Intercept	3.48 (0.18)	5.55 (0.26)	4.90 (0.23)	2.51 (0.25)
Program Type[2]	0.02 (0.13)	0.00 (0.18)	0.12 (0.17)	-0.30 (0.17)
Experience teaching pre-k	0.03* (0.01)	0.00 (0.02)	0.01 (0.02)	0.02 (0.02)
Teacher certification[3]	-0.03 (0.15)	-0.20 (0.22)	0.06 (0.21)	0.08 (0.22)
% Non-English speaking students in class	-0.01 (0.30)	0.53 (0.43)	0.42 (0.40)	0.81 (0.41)

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

[2] 0=private program, 1=public school program.

[3] 0=not certified, 1=Georgia PSC certified.

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