Georgia's Pre-K Program Evaluation Project

Children's Outcomes through First Grade:

Findings from Year 3 of Georgia's Pre-K Longitudinal Study

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Purpose of the Evaluation Study

In 2011-2012, the Georgia legislature funded a series of ongoing studies to evaluate Georgia's Pre-K Program. The first study, conducted in 2011-2012, was designed to examine children's learning outcomes during pre-k, the factors that predict better outcomes, and the quality of children's experiences in Georgia's Pre-K classrooms based on a random sample of 100 classrooms and 509 children within those classrooms. The second study, conducted in 2012-2013, was designed to investigate the effects of participation in Georgia's Pre-K on children's school readiness skills, and whether those effects are similar for different groups of children. This study utilized a regression discontinuity design (RDD) to compare children who had and had not attended the program, and included 1,181 children (611 treated and 570 untreated). The third study, occurring from 2013-2018, involves a longitudinal design to follow a sample of 1,169 children from pre-k through third grade, in order to examine the short- and long-term learning outcomes for children who attended Georgia's Pre-K as well as the quality of their preschool and school experiences.

The 2015–2016 Georgia's Pre-K Program Evaluation focuses on the results of the third year of this longitudinal study, through first grade. The purpose of this evaluation study was to examine longitudinal outcomes for children related to key academic skills as well as the quality of their classrooms from pre-k through first-grade. The primary evaluation questions included: 1) What are the learning outcomes through first grade for children who attended Georgia's Pre-K Program?,
2) What factors predict better learning outcomes for children?, and 3) What is the quality of children's instructional experiences from pre-k through first grade?

To address these questions, the evaluation study included a sample of 1,169 children (139 Spanish-speaking dual language learners/DLLs) attending a random sample of 199 Georgia's Pre-K classrooms in year 1. Of the original sample of children, 1,034 were followed into kindergarten in year 2 (118 Spanish-speaking DLLs), and 969 (119 Spanish-speaking DLLs) were followed into first grade in year 3. Researchers conducted individual child assessments near the beginning and end of each year to examine growth in children's skills. The assessment measures covered multiple domains of learning, including language, literacy, math, executive function, and teacher ratings of behavior skills. For the DLL subsample, parallel assessments were conducted in both English and Spanish. Researchers also conducted observations of the quality of teacher-child instructional interactions using the CLASS each year in pre-k, kindergarten, and first-grade classrooms attended by this sample. In addition, information about characteristics of the classrooms, teachers, and children was gathered from teacher and parent surveys and from existing statewide pre-k program data. Child/family characteristics, classroom/teacher characteristics, and classroom quality were examined as moderators of children's growth in skills.

Overview of Georgia's Pre-K Program

Georgia's Pre-K Program is a state-funded universal pre-kindergarten program for 4-year-olds. The program serves children from all income levels, with no fees charged to families for program participation. Georgia's Pre-K Program was established in 1992, and became one of the first states to offer a universal program in 1995. The program serves over 80,000 children each year in a variety of settings across the state, including public school systems, private providers, and blended Head Start/pre-k classrooms. Georgia's Pre-K is based on a school-year model with instruction for 180 days/year and 6.5 hours/day[a]. Class sizes are limited to 20–22 children with a lead and assistant teacher, and 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) or a bachelor's degree in any field along with an approved early childhood education credential. Assistant teachers are required to have at least a Child Development Associate (CDA) credential. In addition, program guidelines provide minimum salary requirements for lead teachers based on credentials, with funding provided by the state, as well as minimum salary requirements for assistant teachers meeting the credential requirements.

Guidelines for classroom instruction are provided through the *Georgia Early Learning and Development Standards (GELDS)*[i], which are aligned with *Georgia's Performance Standards for First Grade*[ii]. The program standards also require Georgia's Pre-K sites to use an approved curriculum; provide written lesson plans which include educational experiences in language and literacy, math, science, social studies, creative arts (music, art, and drama), social and emotional, and health and physical development; implement individual child assessments using the *Georgia's Pre-K Child Assessment—Work Sampling Online*[iii], which is based on the *Work Sampling System*[iv]; offer meals, rest time, and both indoor and outdoor play time; and provide support services or referrals to families as needed. Bright from the Start: Georgia Department of Early Care and Learning (DECAL) oversees the program, and staff provide consultation, technical assistance, and monitoring visits throughout the year. (See 2016–2017 Georgia's Pre-K Program Operating Guidelines[v] for further information.)

[a] Prior to 2011-2012, Georgia's Pre-K Program provided 180 instruction days per year, but budget restrictions led to a reduction to 160 days in 2011-2012. In 2012–2013, the program year was increased to 170 days and in 2013–2014, it was returned to 180 days.

Methods

In year 1 of the longitudinal study, data were gathered from a random sample of classrooms and children within classrooms to examine child outcomes and classroom quality in Georgia's Pre-K Program (2013-2014). This random sample of children was then followed into kindergarten (2014-2015) during year 2, and first grade (2015-2016) during year 3. At the beginning (fall) and end (spring) of each year, researchers conducted individual assessments of children's language and academic skills and gathered teacher ratings of behavior skills. Researchers also conducted classroom observations of teacher-child instructional interactions each year. Program and classroom characteristics, as well as teacher and child demographic data, were obtained from annual teacher and parent surveys and existing statewide administrative data collected by DECAL.

Participants

Classrooms

Children in the study sample initially attended 199 Georgia's Pre-K classrooms in 2013–2014 (year 1), 822 kindergarten classrooms in 2014–2015 (year 2), and 777 first-grade classrooms in 2015-2016 (year 3). About half of the Georgia's Pre-K Programs attended by children in the study sample were in public school settings (49%) and about half were in private sites (51%). The kindergarten classrooms attended by children in the study primarily were located in public school settings (97%), with a few in charter schools (2%) and private schools (1%). Similarly, the first-grade classrooms attended by children in the study primarily were located in public school settings (98%), with a few in charter schools (1%) and private schools (1%).

Information on characteristics of the classrooms and teachers included in the sample each year based on teacher surveys, as well as state administrative data from DECAL in pre-k, is presented in Table 1. In pre-k (year 1), the average class size was 21 children, with half boys and half girls. Almost two-thirds (64%) of the teachers had a bachelor's degree and about one-third (34%) had a master's degree or higher. The majority (82%) were Georgia PSC Certified or Certified Temporary. Teachers reported having an average of 11 years of teaching experience, including 6 years teaching pre-k. Approximately 70% of the teachers were White, 3% were of Latino ethnicity, and almost all were female.

In kindergarten (year 2), the average class size was about 20 children, with half boys and half girls. Approximately 38% of kindergarten classroom teachers had a bachelor's degree and 62% had a master's degree or higher. Teachers reported an average of 14.5 years of teaching experience, including 8.5 years teaching kindergarten. Nearly 80% of the teachers were White, 2% were of Latino ethnicity, and almost all were female.

In first grade (year 3), the average class size was about 21 children, with about half boys and half girls. About one-third (35%) of first-grade classroom teachers had a bachelor's degree and almost two-thirds (65%) had a master's degree or higher. Teachers reported an average of 14 years of teaching experience including 7 years teaching first grade. Nearly 74% of the teachers were White, 2% were of Latino ethnicity, and almost all were female.

Children

The study sample included 1,169 children in year 1 (pre-k), 1,034 children in year 2 (88% of the original sample in kindergarten), and 969 children in year 3 (83% of the original sample in first grade). These children included a subsample of Spanish-speaking dual-language learners (DLL subsample)—139 children in year 1 (pre-k), 118 children (85% of the original sample) in year 2 (kindergarten), and 119 children (86% of the original sample) in year 3 (first grade). Parent permission forms were distributed to all children in each randomly-selected pre-k classroom, with an overall permission rate of 73% (3,136 of 4,270 eligible children). An average of 6 children with parent permission per classroom were randomly selected for inclusion in the study in year 1. Children were excluded from year 2 of the study for the following reasons: parent withdrew permission (n=4), child attended an ineligible site (n=6), the research team was not able to locate the child in a school during kindergarten (n=30), child had moved out of state (n=33), or the school district or school was unwilling to participate in the study (n=62). Children were excluded from year 3 of the study for the following reasons: parent withdrew permission (n=19), child attended an ineligible site (n=3), the child was held back/retained during pre-k (n=6) or kindergarten (n=32), behavioral issues prevented assessment (n=1), the research team was not able to locate the child in a school during first grade (n=47), child had moved out of state (n=59), or the school district or school was unwilling to participate in the study (n=33).

Information about child and family characteristics for the study sample was obtained from DECAL data and parent survey data (see Table 2). The children in the sample in year 3 were about half boys (49%) and half girls (51%); from varied racial backgrounds, including about half White (53%), over one-third African-American (38%), and the remainder from other or multiracial backgrounds (9%); in addition, about 16% of these children were of Latino ethnicity. Slightly over half (54%) of the children were from low-income families, as indicated by Pre-K Category One status (which represented participation in one or more programs including SNAP, TANF, SSI, CAPS, Medicaid, and free or reduced-price meals); approximately 10% of the children had limited English language proficiency; and 3% had an individualized education program (IEP). The education level for the majority of children's primary caregivers (62%) was between a high school diploma and less than a bachelor's degree, with slightly over one-quarter (28%) having a bachelor's degree or above. Comparisons based on the original sample between those included and not included in the year 3 sample showed that there were no significant differences between the two groups across these various child characteristics.

Measures and Procedures

Child Assessments

Individual assessments to measure children's growth in skills were conducted in their pre-k, kindergarten, and first-grade settings. Children were assessed at six time points, in the fall and spring near the beginning and end of each year during pre-k, kindergarten, and first grade. Assessments were conducted by data collectors trained by the research team, and children's verbal assent was obtained prior to the assessment. All children received assessments in English. Children who were reported by their parents or teachers to speak Spanish received a second set of parallel assessments using Spanish language versions of these measures. The Spanish assessments were conducted by a different, bilingual data collector on a separate day, approximately two weeks after the English assessments. The average time between fall and spring assessments was 181 days, and the average time between English and Spanish assessments was 13 days.

A battery of measures of language, literacy, and math skills was used from pre-k through first grade. In first grade, more developmentally advanced measures of mathematical computation, reading comprehension, and executive function were added. All of the child assessment measures were available in both English and Spanish versions. Most of the measures used were norm-referenced, so standard scores could be used for these measures. These scores take into account children's age, so that the standardized mean score of 100 represents the expected performance for an average child at a given age. (See Table 3 for a list of measures used in the study.)

Language skills were assessed with two subtests from the Woodcock-Johnson III Tests of Achievement[vi] (WJ-III) / Batería III Woodcock-Muñoz Pruebas de Aprovechamiento[vii] (Bat-III). The Picture Vocabulary subtest measured vocabulary skills, including aspects of both receptive and expressive language. The Sound Awareness subtest measured phonological awareness skills, including rhyming and abilty to delete, substitute, and reverse sounds or word parts. Both of these measures were gathered from pre-k through first grade.

Five measures of literacy skills were used, including three WJ-III/Bat-III subtests and two composite measures based on these subtests. The Letter-Word Identification subtest measured basic pre-reading and reading skills, including letter and word recognition and identification skills. The Passage Comprehension subtest measured symbolic learning and basic written comprehension skills. The Word Attack subtest measured phonemic awareness and decoding skills, including knowledge of letter sounds and sound combinations. In addition, two composite measures were included based on combinations of specific subtests – Basic Reading Skills composite (Letter-Word Identification and Word Attack) and Brief Reading composite (Letter-Word Identification and Passage Comprehension). Passage Comprehension and the Brief

Reading composite were added in first grade; all other measures were gathered from pre-k through first grade.

Three measures of math skills were used, including two WJ-III/Bat-III subtests and one composite measure based on these subtests. The Applied Problems subtest measured children's ability to analyze and solve math problems using various operations (e.g., simple comparisons, counting, addition, subtraction). The Calculation subtest measured written mathematical computational skills using numerical operations (e.g., writing numbers, addition, subtraction, multiplication, division). In addition, the Brief Math composite, a composite measure based on these two subtests was used. Applied Problems was gathered from pre-k through first grade, whereas Calculation and the Brief Math composite were added in first grade.

Executive function was assessed using two measures, Forward Digit Span and Backward Digit Span.[viii] The Digit Span measures assess different components of children's working memory. Forward Digit Span tests the phonological loop component of working memory and Backward Digit Span tests the central executive function component of working memory.

Behavior skills were measured based on teacher ratings using two subscales of the Social Skills Improvement System[ix] (SSiS). 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[x] was used to measure oral language proficiency in English for all children as well as in Spanish for the DLL subsample in fall pre-k. 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 were related to their initial level of language proficiency (1=Non-English/Spanish speaker, 2–3=Limited English/Spanish speaker, 4–5=Fluent English/Spanish speaker). (See Table 4.)

Classroom Observations

Observations of classroom practices were conducted in classrooms attended by children in the sample each year. In year 1, observations were conducted in all 199 randomly-selected pre-k classrooms attended by the children in the sample. A random sample of classrooms was selected for observation in year 2 (kindergarten). In subsequent years, the classroom observation sample consisted of the classrooms attended by the study children who were in the observed kindergarten classrooms, in order to obtain a longitudinal sample associated with the classroom observations. In year 2, observations were conducted in 296 kindergarten classrooms of the 807 attended by children in the sample (representing 434 children in the sample). In year 3, observations were conducted in 296 first-grade classrooms of the 777 attended by children in the sample (representing 447 children in the sample).

Classroom observations were conducted during the second half of the school year in pre-k, kindergarten, and first grade. Observations typically lasted about 3 hours. Data collectors completed standard training procedures offered by the developers, along with additional field practice, and had to meet established reliability criteria prior to gathering data (i.e., 85% agreement within one point). Inter-rater reliability data were collected for approximately 20% of the observations (PK n=43, K n=59, 1st n=59), and intra-class correlations indicated that reliability was acceptable each year (Emotional Support=.78-.91, Classroom Organization=.68-.83, Instructional Support=.43-.80). (Intra-class correlations of .40–.59 are considered in the fair range, .60–.74 good, and .75–1.0 excellent.[xi])

The classroom observations used the same measure each year to examine the quality of teacher-child instructional interactions, with appropriate versions for the age range of children (see Table 3 for an overview, including subscales and scoring). The Classroom Assessment Scoring System[xii] (CLASS) was used in pre-k and the CLASS K-3[xiii] in kindergarten and first-grade. The CLASS/CLASS K-3 measures teachers' interactions with children in the areas of social and emotional functioning, classroom organization and management, and curriculum implementation to support cognitive and language development. The CLASS/CLASS K-3 includes 10 dimensions organized into three domains, with separate scores calculated for each domain. The scale has demonstrated good interrater reliability (mean agreement within one point=87.1%, range=78.8%–96.9%)[xii, xiii].

Parent and Teacher Surveys

Parents completed demographic surveys and teachers completed online surveys each year that included information about their classrooms and demographic information. Each year, parents completed demographic surveys about their family and household. Information about parent education was used in the current study, coded as a three-level variable (1=less than high school, 2=high school to less than Bachelor's degree, 3=Bachelor's degree or above). Parent surveys were distributed to families through the classrooms and returned in sealed envelopes to teachers for retrieval by the research team. Parent surveys were received from 91% (1,067/1,169) of participating families in year 1, 86% (888/1,034) of participating families in year 2, and 85% (821/969) of participating families in year 3. Teachers completed online surveys about characteristics of the classroom and their background, including classroom composition (number of boys and girls in class), length of teaching experience, and degrees earned. Teachers were asked to complete the online surveys via email requests with follow up as needed, with a completion rate of 95% (189/199) in year 1, 96% (777/807) in year 2, and 91% (707/777) in year 3.

Analysis Approach

Sample Description and Comparison

Descriptive analyses were conducted on classroom characteristics (class size, percentage of boys/girls, percentage of children with home language other than English), teacher

characteristics (teaching experience, teacher gender, ethnicity, race, education level, and Georgia PSC certification in Pre-K), children's outcomes, and classroom quality for each study year. For children's outcomes, three sets of descriptive analyses were conducted: for the full sample of children, for the DLL subsample of children assessed in English, and for the DLL subsample assessed in Spanish. Additionally, the amount of missing data and zero-order correlations among the study variables were examined. T-test comparisons were conducted for child and family variables included in the regression models (child age, gender, ethnicity, race, English language proficiency status, IEP status, family income status) for those remaining in the sample and not in the sample during year 3 to examine potential selection bias and to estimate the size of attrition. A separate set of t-test comparisons were conducted to examine demographic and classroom characteristics of white vs non-white children to further interpret the significant moderator effects for race. For purposes of analysis, race was categorized as white and non-white.

Child Outcomes

Changes over Time

To investigate whether significant levels of growth occurred in children's outcomes from pre-k through first grade, a series of three-level hierarchical linear models (HLM) were estimated, with separate models conducted for each outcome. Each of the outcome scores, collected in fall and spring each year during pre-k, kindergarten, and first grade (or during first grade only for some outcomes), served as the dependent variables. Children were nested within pre-k classrooms, and repeated measures outcomes nested within child, represented as the Time variable (coded as 0, 1, 2, 3, 4, 5 for the six time points from fall pre-k to spring first grade for longitudinal outcomes and 0, 1 for first-grade only outcomes) to indicate children's growth on each outcome over time. The base model included the following covariates: child gender (F=0, M=1), child race (Non-White=0, White=1), child ethnicity (Non-Latino=0, Latino=1), child IEP status (No=0, Yes=1), child English/Spanish language proficiency level assessed at fall of pre-k (1–5), family income (Category Two=0, Category One=1), provider type at pre-k (private setting=0, public school system=1), lead pre-k teacher certification (Teacher not certified=0, Teacher certified=1), and pre-k class size. Fall preLAS English language proficiency level was included for English outcome measures for the full sample and the DLL subsample English language outcomes, and Spanish language proficiency level for the DLL subsample Spanish language outcomes. All continuous covariates were mean centered. A FIML (Full Information Maximum Likelihood) procedure was used to estimate missing values for the regression analyses.

The first set of models tested longitudinal growth for outcomes that were assessed from pre-k through first grade, with a separate model estimated for each outcome: WJ-III Picture Vocabulary, WJ-III Sound Awareness, WJ-III Letter-Word Identification, WJ-III Word Attack, WJ-III Basic Reading Composite, WJ-III Applied Problems, SSiS Social Skills, and SSiS Problem Behaviors. Additionally, a series of successive pairwise comparisons using t-tests compared the

rate of change between years (pre-k, kindergarten, first) for each outcome, based on the full sample.

The second set of models tested the rate of change for outcomes that were assessed from fall to spring during first grade, with a separate model estimated for each outcome: WJ-III Passage Comprehension, WJ-III Brief Reading Composite, WJ-III Calculation, WJ-III Brief Math Composite, Forward Digit Span, and Backward Digit Span. Both sets of models were conducted separately for the full sample, for the DLL subsample on English outcome measures, and the DLL subsample on Spanish outcome measures.

Moderators of Growth

To examine child/family and teacher/classroom moderators of growth in children's outcomes over the three years of the study, the second series of three-level HLM models were conducted building upon the base model described above, using the full sample. Separate models were conducted for each outcome of interest, with particular child/family and teacher/classroom characteristics tested as potential moderators of children's growth, after accounting for the covariates presented in the base model. These moderators included: 1) child/family characteristics-child race, child English proficiency level, family income; and 2) pre-k teacher/classroom characteristics-teacher certification, class size, and provider type.

A third series of three-level HLM models was conducted to examine pre-k classroom quality as a potential moderator of growth. These models built upon the second series of models and included the main effects of CLASS Emotional Support, Classroom Organization, and Instructional Support domain scores, and the interactions of each of these quality domains with Time. For the child outcomes that were assessed longitudinally from pre-k, six additional covariates were added to adjust for kindergarten and first-grade classroom quality experiences: CLASS K-3 Emotional Support, Classroom Organization, and Instructional Support domain scores in kindergarten and CLASS K-3 Emotional Support, Classroom Organization, and Instructional Support domain scores in first grade. It is worth noting that the estimates for these covariates are not directly interpretable, and that only the estimates for CLASS domains at pre-k can be interpreted in these models. A FIML procedure was used to estimate missing values for the regression analyses.

After all interaction models were completed, Benjamini-Hochberg adjustments were used to account for multiple tests and to correct for the potential false discovery rate. Post-hoc analyses were conducted for the remaining significant interactions after the adjustments, and those estimates were used in the interpretation of results and for graphing the interactions.

Quality of Classroom Practices

Analyses were conducted to examine the quality of instructional practices in pre-k, kindergarten, and first-grade classrooms for the observed samples of classrooms attended by children in the

study. Descriptive analyses were conducted for pre-k CLASS and kindergarten and first-grade CLASS K-3 scores, including means and frequency distributions. A series of pairwise comparisons were conducted using t-tests to compare CLASS domain scores between years for the pre-k, kindergarten, and first-grade classrooms.

Results

Children's Growth over Time

Full Sample

Children who attended Georgia's Pre-K Program made significant gains on most norm-referenced measures from entry into pre-k through the end of first grade. They demonstrated significant growth across all domains of learning, including language, literacy, math, and behavior skills (based on regression results). Significant growth was seen for phonological awareness skills (WJ-III Sound Awareness), basic reading and decoding skills (WJ-III Letter-Word Identification, WJ-III Word Attack, WJ-III Basic Reading Composite), math problem-solving skills (WJ-III Applied Problems), and social skills (SSiS Social Skills). In contrast, ratings of problem behaviors (SSiS Problem Behaviors) showed no changes over this time period and vocabulary skills (WJ-III Picture Vocabulary) showed a slight, significant decrease during this period; however, scores were around the population mean at each time point for both measures.

For measures assessed in first grade only (because of the developmental level required), scores remained constant from the beginning to the end of the year for the composite measure of literacy skills (WJ-III Brief Reading Composite) and both measures of math skills (WJ-III Calculation, WJ-III Brief Math Composite). For one measure of literacy skills, reading comprehension (WJ-III Passage Comprehension), there was a slight, significant decrease in scores. In contrast, for measures of Executive Function (Forward Digit Span, Backward Digit Span), there were significant increases in scores, although these were not standard scores. (See Table 5, Table 6, and Table 7.)

In general, for the norm-referenced measures examined longitudinally, the average standard scores were at or slightly below the population mean of 100 at the beginning of pre-k and slightly to somewhat above the mean (from about 0.2 to almost 1 SD higher) at the end of kindergarten and first grade. The one exception was vocabulary, which had scores near or slightly below the mean. Growth on these measures indicates that children progressed at an even greater rate from their entry into Georgia's Pre-K through the end of first grade than would be expected for typical developmental growth. However, without a comparison group, it is not possible to establish a clear causal link between outcomes and program participation. For norm-referenced measures where the scores remained constant, as was the case for most norm-referenced measures gathered only in first grade, this indicates that children progressed at the rate expected for typical developmental growth. For these measures, average scores generally ranged from around the population mean to about 0.5 to 0.75 SD above the mean.

T-test comparisons of children's growth during each year (pre-k, kindergarten, first grade), after adjusting for other factors in the growth models, showed different patterns across the various measures. In general, however, children rates of growth tended to be relatively lower in first

grade compared to pre-k and/or kindergarten. For some measures of language, literacy, and math skills (WJ-III Sound Awareness, WJ-III Basic Reading, WJ-III Applied Problems), children exhibited a significantly greater rate of gain in pre-k and kindergarten than in first grade (PK, K>1st). For these language and literacy measures, children showed significant gains in scores in pre-k and kindergarten, but not in first grade. For the math measure, children showed significant gains in scores in pre-k and kindergarten and a slight significant decrease in scores in first grade. For the other two measures of literacy skills (WJ-III Letter Word Identification and WJ-III Word Attack), children exhibited a different pattern of the greatest gains in kindergarten and the least in first grade (K>PK>1st). However, for WJ-III Letter-Word Identification, children showed significant gains in scores in pre-k and kindergarten but not in first grade, whereas for WJ-III Word Attack, children showed significant gains each year. For the other measure of language skills (WJ-III Picture Vocabulary), there were no differences in the rate of gain between years (PK=K=1st), with no significant gains in scores in pre-k and first grade and a slight significant decrease in scores in kindergarten. For the teacher rating of social skills (SSiS Social Skills), children showed greater gains in pre-k than in subsequent years (PK>K, 1st), with significant gains in scores in pre-k, but not in kindergarten or first grade. In contrast, teacher ratings of problem behaviors showed no differences in the rate of gain among years (PK=K=1st), with no significant gains in scores each year. (See Table 8.)

DLL Subsample

For the subsample of Spanish-speaking DLLs who attended Georgia's Pre-K Program, growth in skills in both English and Spanish was examined from entry into pre-k through the end of first grade. Children in the DLL subsample made significant gains for all skills measured in English from pre-k through first grade (based on regression results): Language skills (WJ-III Sound Awareness, WJ-III Picture Vocabulary), Literacy skills (WJ-III Letter-Word Identification, WJ-III Word Attack, WJ-III Basic Reading), and Math skills (WJ-III Applied Problems).

For skills measured in English in first grade only (because of the developmental level required), scores remained constant from the beginning to the end of the year for both measures of literacy skills (WJ-III Passage Comprehension, WJ-III Brief Reading Composite), math skills (WJ-III Calculation, WJ-III Brief Math Composite), and one measure of Executive Function (Forward Digit Span). In contrast, for one measure of Executive Function (Backward Digit Span), there were significant increases in scores, although these were not standard scores. (See Table 9, Table 10, and Table 11.)

In general, children exhibited continued gains throughout this time period, with scores on norm-referenced measures slightly below the mean at the beginning of pre-k and near to somewhat above the mean by the end of kindergarten and first grade. The one area where scores tended to be consistently lower was vocabulary, with scores still about 1 SD below the population mean by the end of kindergarten and first grade. As described previously, growth on norm-referenced

measures indicates that children progressed at an even greater rate from entry into Georgia's Pre-K through first grade than would be expected for typical developmental growth.

Children in the DLL subsample also showed significant gains throughout this time period for many of the same skills measured from pre-k through first grade in Spanish, including language (Bat-III Sound Awareness), literacy (Bat-III Word Attack, Bat-III Basic Reading), and math (Bat-III Applied Problems). As described previously, growth on these norm-referenced measures indicates that children progressed at an even greater rate from entry into Georgia's Pre-K through first grade than would be expected for typical developmental growth. For two measures of language/literacy skills (Bat-III Letter-Word Identification, Bat-III Picture Vocabulary), children showed significant decreases in Spanish scores from pre-k through kindergarten, suggesting that they were making less progress than expected in their home language for typical developmental growth.

For skills measured in Spanish in first grade only (because of the developmental level required), scores remained constant from the beginning to the end of the year for most measures of literacy skills (Bat-III Passage Comprehension, Bat-III Brief Reading Composite), math skills (Bat-III Calculation, Bat-III Brief Math Composite), and executive function (Forward Digit Span). In contrast, for one measure of executive function (Backward Digit Span), there were significant increases in scores, although these were not standard scores. (See Table 12, Table 13, and Table 14.)

In general, for skills measured in Spanish from pre-k through first grade, the average scores on norm-referenced measures were well below the mean (1-2 SD) at the beginning of pre-k and still remained somewhat below the mean by the end of first grade. Scores tended to be lower for most language and literacy skills than for math skills, with especially low scores for vocabulary, where children showed consistent patterns of decrease in scores over time.

Moderators of Children's Growth

Child/Family Characteristics

Specific child and family characteristics were examined as potential moderators of children's rates of skill growth from entry into Georgia's Pre-K through the end of first grade for the full sample. These included children's level of English language proficiency, children's race (white vs non-white), and family income (Category 1 vs Category 2). Note that for purposes of analysis, race was categorized as white and non-white. (See Table 15 and Table 16.) Stronger moderating effects were found for language proficiency and race than for family income. In general, the pattern of moderating effects showed that children who entered pre-k with lower skill levels made greater gains through first grade than children who entered pre-k with higher skill levels.

Children with lower levels of English proficiency made greater gains compared to children with higher levels of language proficiency across various language, literacy, math, and behavior skills measures. In the area of language skills, moderating effects were found on two measures. On WJ-III Picture Vocabulary, children at the two lowest proficiency levels exhibited greater growth from pre-k through first grade than children at higher levels (1>2>3,4,5). Further, there were differences in the patterns of growth over time, with significant gains for children at the lowest level (1), no significant gains for children at the second lowest level (2), and significant decreases for children at higher levels (3-5). (See Figure 1.) On WJ-III Sound Awareness, children at lower proficiency levels exhibited greater growth from pre-k through first grade than children at the highest proficiency level (1,2,>5); however, children exhibited significant growth over time at all proficiency levels (see Figure 2). For literacy skills, there also were effects for two measures. On WJ-III Letter-Word Identification, children at lower proficiency levels exhibited greater growth from pre-k through first grade than children at the highest level (1,2,3,4>5); however, children exhibited significant growth over time at all proficiency levels (see Figure 3). A similar pattern was found on WJ-III Basic Reading, where children at lower proficiency levels exhibited greater growth from pre-k through first grade than children at the highest level (1,2,3,4>5); however, children at all proficiency levels exhibited significant growth over time (see Figure 4).

There also were moderating effects of English language proficiency for one measure of math skills. On WJ-III Applied Problems, children at lower proficiency levels exhibited greater growth from pre-k through first grade than children at higher levels (1>2>3,4,5). In addition, children exhibited different patterns of growth, with significant gains for children at lower levels (1-3) and no significant gains for those at the two highest levels (4-5). (See Figure 5.)

Moderating effects of English language proficiency also were found for teacher ratings of behavior skills. On the SSiS Social Skills measure, children at the lowest proficiency level showed greater growth than their peers at higher proficiency levels (1>3,4,5; 2>5). The patterns of growth varied by proficiency level, with significant growth for those at lower levels (1,2, 4) compared to no growth at higher levels (3,5). (See Figure 6.)

Moderating effects of race were found for most language and literacy skills, with relatively greater gains for white children than non-white children, although scores were lower at entry into pre-k for white children for most measures. On language skills, there were moderating effects for vocabulary skills, with a somewhat different pattern than for other measures. Although WJ-III Picture Vocabulary scores were similar at the beginning of pre-k, scores remained constant through first grade for white children, while scores showed significant decreases for non-white children (see Figure 7). For literacy skills, there were moderating effects for all five measures. On WJ-III Letter-Word Identification, white children showed greater growth than non-white children, although both groups exhibited significant gains from pre-k through first grade (see Figure 8). A similar pattern was found on WJ-III Word Attack, where white children showed slightly greater growth than non-white children, although both groups

exhibited significant gains from pre-k through first grade (see Figure 9). For WJ-III Passage Comprehension, scores remained constant for white children and showed significant decreases for non-white children, with similar scores by the end of first grade (see Figure 10). For both of the composite literacy skills measures, white children made greater gains than non-white children, although the patterns were slightly different. For WJ-III Basic Reading, both groups exhibited significant growth over time, whereas for WJ-III Brief Reading, scores for white children showed significant gains and scores for non-white children remained constant (see Figure 11 and Figure 12).

There was one moderating effect of family income on children's literacy skills through first grade. Children who attended Georgia's Pre-K from lower-income families (Category 1) made greater gains on the WJ-III Basic Reading Composite than children from higher-income families (Category 2), although both groups exhibited growth from pre-k through first grade (see Figure 13).

Classroom/Teacher Characteristics

Specific classroom and teacher characteristics also were examined as potential moderators of children's rates of growth in skills from entry into Georgia's Pre-K through first grade for the full sample. These included pre-k provider type (public school system vs private program), pre-k teacher Georgia PSC certification, and class size in pre-k. (See Table 15 and Table 16.)

There was one moderating effect for pre-k provider type on children's math skills. Scores on WJ-III Calculation showed significant gains for children who attended public Georgia's Pre-K settings, while scores remained constant for children who attended private Georgia's Pre-K settings, with similar scores for both groups by the end of first grade (see Figure 14). There were no significant moderating effects on children's rates of growth for pre-k teacher certification or class size.

Classroom Quality Moderators

Measures of the quality of classroom instructional practices in pre-k, after adjusting for the quality of kindergarten and first-grade practices, were examined as potential moderators of children's growth in skills from entry into Georgia's Pre-K through first grade for the full sample. Three measures of teacher-child instructional interactions were examined, the CLASS Emotional Support, Classroom Organization, and Instructional Support domains (see Table 17 and Table 18).

Some positive moderating effects were found for CLASS Classroom Organization on children's language and math skills. Children who attended pre-k classrooms that scored higher in Classroom Organization exhibited lesser decreases in WJ-III Picture Vocabulary compared to classrooms that scored lower in Classroom Organization (see Figure 15). Similarly, children who attended pre-k classrooms that scored higher in Classroom Organization exhibited greater

increases in WJ-III Calculation compared to classrooms that scored lower in Classroom Organization (see Figure 16).

Quality of Classroom Practices in Pre-K, Kindergarten, and First Grade

The quality of teacher-child instructional interactions in pre-k, kindergarten, and first grade was examined using the CLASS (see Table 19). Scores varied across the different domains, with similar patterns across the years. Classroom practices were stronger in Emotional Support (Pre-K=5.7, K=5.2, 1st=5.1) and Classroom Organization (Pre-K=5.5, K=5.3, 1st=5.1), with average scores in the middle to high quality range, than in Instructional Support (Pre-K=2.6, K=2.5, 1st=2.4), with average scores in the low to middle range. Average scores on the individual dimensions within each domain generally were in the same range as the overall domain scores.

Although the general pattern was similar for the average scores across grades, the distribution of scores on the three domains shows a decreasing proportion of classrooms scoring higher on the scale and an increasing proportion scoring lower on the scale as children move from pre-k to kindergarten to first grade. Most pre-k (72%), about half of kindergarten (47%), and about one-third (29%) of first-grade classrooms scored in the high range (5.5–7.0) on Emotional Support, with most of the remainder (29% Pre-K, 52% K, 71% 1st) scoring in the middle range (2.5–5.4). (See Figure 17.) On Classroom Organization, over half of all classrooms in pre-k and kindergarten (59% pre-k, 51% kindergarten) scored in the high range (5.5–7.0) and about one-third in first grade (29% 1st), and the remainder (41% Pre-K, 49% K, 71% 1st) scored in the middle range (2.5–5.4). (See Figure 18.) In contrast, about half of the classrooms (45% Pre-K, 53% K, 61% 1st) scored in the low range (1–2.4) on Instructional Support and about half (54% Pre-K, 47% K, 39% 1st) scored in the middle range (2.5–5.4). (See Figure 19.)

T-test comparisons indicated that the CLASS scores were generally slightly higher in the Georgia's Pre-K classrooms than in the subsequent sample of kindergarten and first grade classrooms attended by children in the study. Scores were significantly higher in the Georgia's Pre-K classrooms than in the kindergarten classrooms for two of the three domains – Emotional Support [$t(493)=7.30$, $p<.001$] and Classroom Organization [$t(493)=2.14$, $p<.05$]. Scores were significantly higher in the Georgia's Pre-K than first-grade classrooms for all three domains – Emotional Support [$t(493)=9.03$, $p<.001$], Classroom Organization [$t(493)=5.53$, $p<.001$], and Instructional Support [$t(493)=3.11$, $p<.01$]. In contrast, CLASS scores for kindergarten classrooms were higher than first-grade classrooms on one domain – Classroom Organization [$t(590)=3.72$, $p<.001$].

Conclusions

This longitudinal study includes findings through first grade (year 3) for a sample of over 1,000 children who attended Georgia's Pre-K Program. For outcomes that were measured longitudinally from pre-k through first grade, children showed significant growth on norm-refenced measures across all domains of learning, including language (phonological awareness skills), literacy (letter-word recognition, decoding, basic reading skills), math (problem-solving skills), and behavior skills (social skills). In most cases, children showed lower rates of gain in first grade than in earlier years, with scores generally remaining constant, while scores increased significantly from fall to spring during pre-k and kindergarten. Growth on these measures indicates that children were progressing at an even greater rate than would be expected for typical developmental growth, whereas no change indicates progress at the expected rate. In contrast, for most reading and math skills measured in first grade only (brief reading, calculation, brief math), scores remained constant, indicating growth at the expected level for children's age. However, children did show gains during first grade on measures of executive function focused on aspects of working memory.

For a few measures (math problem-solving, vocabulary, reading comprehension), scores decreased slightly over the first-grade year, indicating that children were making less than the expected rate of progress for their age in these areas. For vocabulary skills, there was an overall decrease in scores longitudinally from pre-k through first grade; however, scores remained constant during pre-k and kindergarten. In contrast, teachers' ratings for problem behaviors remained constant across all three years – around the expected level for children's ages on average.

The subsample of Spanish-speaking DLLs showed a pattern of longitudinal growth from pre-k through first grade on all language, literacy, and math measures in English and most in Spanish, even though the language of instruction in these classrooms was solely or primarily in English in nearly all cases. For literacy and math skills measured during first-grade only, children's scores remained constant, indicating growth at the expected rate for their age. In the area of executive function, they showed gains in both English and Spanish on one measure related to central executive function, which is consistent with a bilingual advantage in inhibitory control. Their skills tended to be more advanced in English than in Spanish, although scores were substantially lower in vocabulary in both languages (1-2 SD below the mean). Further, in two areas, vocabulary and letter and word recognition skills, children showed decreases in Spanish. Given these findings, it may be worth focusing on instructional practices to support reading and vocabulary development for DLLs that consider their skills both in English and their home language.

Examination of factors that predict better learning outcomes primarily showed significant effects of children's English language proficiency level and race for several measures. In contrast, there

was one moderating effect for family income, with greater gains on basic reading skills for children from lower-income families.

Compared to their peers with higher levels of English proficiency, children at lower levels of English proficiency made greater gains on most measures of language (vocabulary, phonological awareness), literacy (letter-word recognition, basic reading), math (problem-solving), and behavior (social skills) from pre-k through first grade. It is important to note that children at all proficiency levels exhibited significant growth over time for most measures. However, although children at lower English proficiency levels entered Georgia's Pre-K with lower skills, they learned at a faster rate to catch up to their more proficient peers by the end of first grade in many cases. Notably, this pattern was different for children at higher proficiency levels in two areas; they showed decreases in vocabulary scores and no changes in math scores over time.

Children's race also was a significant moderator of growth for most language (vocabulary) and literacy skills (letter-word recognition, decoding, reading comprehension, basic reading, brief reading), with relatively greater gains for white children than non-white children. For most skills, initial scores were lower for white children, who exhibited significant gains in skills to catch up to their non-white peers. In two areas, vocabulary and reading comprehension, white children showed no change in scores over time, while scores decreased for non-white children. There were some differences among this sample of white and non-white children who attended Georgia's Pre-K that may be associated with these effects. When examining other characteristics, white children were more likely to be of Latino ethnicity and to have lower English proficiency levels, but less likely to be from low-income (Category 1) families compared to non-white children. In addition, white children were more likely to have attended a public school setting in pre-k and to have experienced higher quality classrooms in both pre-k and first grade. This set of child/family characteristics may help to explain the generally lower level of skills at entry into pre-k for white compared to non-white children, but higher vocabulary skills associated with families of higher income levels. The greater gains over time mirror, to some extent, the findings for children at lower English proficiency levels. However, the differences in pre-k and later school experiences may offer possible suggestions for the sustained gains over time within the domain of language and literacy skills.

Overall, there were fewer moderating effects of teacher and classroom characteristics on children's rates of growth. There were no effects for teacher certification or class size in pre-k. There was one effect of pre-k provider type in the area of math. Similarly to previous patterns, children who attended public-school settings scored lower initially, but made greater gains in calculation skills than children who attended private settings. Children who attended Georgia's Pre-K classrooms that were better organized for instructional practices (higher CLASS Classroom Organization scores) made greater gains in both calculation and vocabulary skills compared to peers who attended less well-organized classrooms, after adjusting for the quality of their kindergarten and first-grade classrooms in the case of longitudinal outcomes.

The quality of teacher-child instructional interactions, as measured by the CLASS, showed a similar pattern across the randomly-selected pre-k and subsequent kindergarten and first-grade classrooms attended by children in the study. Scores generally were in the middle to high range for Emotional Support and Classroom Organization, and in the low to middle range for Instructional Support. Although the overall pattern was similar, there were slight but significant decreases over time, with higher scores in pre-k than in kindergarten and first-grade classrooms. It is important to recognize potential differences in the relevance of this measure across various aspects of classroom practices at different ages; however, these results can be examined in conjunction with the results on child outcomes, which generally showed more restricted patterns of skill growth in first grade compared to earlier ages. Taken together, these findings suggest that although there may be some continuity in the teaching and learning opportunities available to children from pre-k through first grade, these may not be at optimal levels for sustaining and enhancing children's early gains from their pre-k experiences. Overall, however, the findings from this longitudinal study suggest that children who attended Georgia's Pre-K Program continue to exhibit positive outcomes through the end of first grade, growing at expected or greater than expected rates across all domains of language, literacy, math, executive function, and behavior skills.

Table 1. Characteristics of Classroom and Teachers (2013-2016)

Measure	Pre-K			Kindergarten			First-grade		
	n	Mean/ %	Range	n	Mean/ %	Range	n	Mean/ %	Range
Classroom Characteristics									
Class size	189	21.1	14-23	772	20.1	4-27	694	20.7	7-30
Percentage of boys	189	50.1%	18.2%-81.8%	768	51.3%	0.0%-100%	695	51.0%	0.0%-80%
Percentage of children with home language other than English	199	11.2%	0.0%-100.0%	770	14.7%	0.0%-100.0%	687	12.0%	0.0%-100.0%
Teacher Characteristics									
Years teaching current grade level	184	5.8	0-23	777	8.5	0-39	695	6.8	0-41
Years teaching at current school	184	5.1	0-21	774	8.8	0-33	693	8.5	0.5-37
Total years teaching	179	11.1	1-38	777	14.5	0-46	688	14.2	0.5-46
Female	186	98.4%		762	98.1%		688	99.1%	
Hispanic/Latino Ethnicity	5	2.7%		13	1.7%		16	2.3%	
White	132	69.8%		621	79.9%		510	73.5%	
Non-White	57	30.2%		156	20.1%		184	26.5%	
Georgia PSC Certification	162	81.8%		-	-		-	-	
Highest Degree Earned	184			777			694		
Associate's Degree	4	2.2%		1	0.1%		2	0.3%	
Bachelor's Degree	118	64.1%		293	37.8%		245	35.3%	
Master's Degree	52	28.3%		338	43.5%		300	43.2%	
Education Specialist	9	4.9%		135	17.4%		138	19.9%	
PhD/EdD/PsyD	1	0.5%		10	1.2%		9	1.3%	

Table 2. Characteristics of Children in the Sample

	Original Year 1 Sample			
	In Year 3 Sample n=969		Not in Year 3 Sample n=200	
Characteristics[a]	Mean/%	n	Mean/%	n
Child Characteristics				
Child's age on 9/1 of first grade year	6.5	969	6.5	200
Gender				
Male	49.3%	478	45.0%	90
Female	50.7%	491	55.0%	110
Hispanic/Latino Ethnicity	15.5%	150	10.0%	20
Race				
White	53.0%	514	51.0%	102
Black/African American	38.1%	369	39.5%	79
Multi-racial	4.6%	45	5.0%	10
Asian	2.3%	22	3.5%	7
Native American/Alaskan Native	1.8%	17	1.0%	2
Native Hawaiian/Pacific Islander	0.2%	2	0.0%	0
Limited English language proficiency	10.4%	101	7.5%	15
Individualized Education Program (IEP)	3.1%	30	2.0%	4
Family Characteristics				
Income[b]				
Category One	53.9%	522	57.0%	114
Category Two	46.1%	447	43.0%	86
Primary caregiver education[c]				
< High School	10.8%	101	9.8%	19
High School - < BA/BS	61.7%	579	67.0%	130
BA/BS or above	27.5%	258	23.2%	45

[a] Source of data: Bright from the Start: Georgia Department of Early Care and Learning (DECAL) for all characteristics except parent education, which was obtained from parent surveys.

[b] Category One represents participation in one or more of the following programs: SNAP, TANF, SSI, CAPS, Medicaid, free or reduced-price meals.

[c] Data were not reported for 37 children.

Table 3. Child Outcome and Classroom Quality Measures

Measure	Scoring
Language Skills	
Vocabulary[a]	
Woodcock-Johnson III Tests of Achievement Picture Vocabulary (Subtest 14) / Batería III Woodcock-Muñoz Pruebas de Aprovechamiento Vocabulario sobre Dibujos (Prueba 14)	Standard score Mean=100, SD=15
Phonological Awareness[a]	
Woodcock-Johnson III Tests of Achievement Sound Awareness (Subtest 21) / Batería III Woodcock-Muñoz Pruebas de Aprovechamiento Discernimiento de Sonidos (Prueba 21)	Standard score Mean=100, SD=15
Literacy Skills	
Letter-Word Identification[a]	
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
Comprehension[a]	
Woodcock-Johnson III Tests of Achievement Passage Comprehension (Subtest 9) / Batería III Woodcock-Muñoz Pruebas de Aprovechamiento Comprension de Textos (Prueba 9)	Standard score Mean=100, SD=15
Phonemic Awareness[a]	
Woodcock-Johnson III Tests of Achievement Word Attack (Subtest 13) / Batería III Woodcock-Muñoz Pruebas de Aprovechamiento Análisis de Palabras (Prueba 13)	W-score Range 360-545
Math Skills	
Basic Calculations[a]	
Woodcock-Johnson III Tests of Achievement Calculation (Subtest 5) / Batería III Woodcock-Muñoz Pruebas de Aprovechamiento Cálculo (Prueba 5)	Standard score Mean=100, SD=15
Math Problem-Solving[a]	
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
Executive Function	
Working Memory[a]	Raw score
Forward Digit Span and Backward Digit Span (English/Spanish)	Range=1-8
Behavior Skills	
Social skills[b]	Standard score
Social Skills Improvement System (SSiS) Social Skills subscale	Mean=100, SD=15
Problem behaviors[b]	Standard score
Social Skills Improvement System (SSiS) Problem Behaviors subscale	Mean=100, SD=15
Classroom Quality	
Teacher-child instructional interactions	
Classroom Assessment Scoring System (CLASS)	Domain score range=1.0–7.0
Emotional Support, Classroom Organization, Instructional Support	low (1–2); middle (3–5); high (6–7)

[a] These measures are individually administered to children by the researchers. Both English and Spanish language versions of these measures were used with the Spanish-speaking dual-language learner subsample.

[b] These measures are teacher ratings of individual children's skills.

Table 4. Child Language Proficiency Levels at Pre-K Entry

	English Language Proficiency				Spanish Language Proficiency	
	Full Sample		DLL Subsample		DLL Subsample	
*pre*LAS Proficiency Level	%	n	%	n	%	n
Level 1 (Non-Speakers)	7.9	91	47.1	65	34.1	46
Level 2 (Limited Speakers)	4.1	48	13.8	19	7.4	10
Level 3 (Limited Speakers)	14.3	166	18.1	25	17.0	23
Level 4 (Fluent Speakers)	26.2	303	11.6	16	21.5	29
Level 5 (Fluent Speakers)	47.5	551	9.4	13	20.0	27
Total	100.0	1159	100.0	138	100.0	135

Table 5. Child Outcomes for Full Sample (2013-2016)

	Pre-K				Kindergarten				1st Grade			
	Fall		Spring		Fall		Spring		Fall		Spring	
Measure	n	Mean (SD) Range	n	Mean (SD) Range	n	Mean (SD) Range	n	Mean (SD) Range	n	Mean (SD) Range	n	Mean (SD) Range
Language												
WJ-III Picture Vocabulary[a,b]	1,160	99.9 (13.6) 31-134	1,052	99.8 (11.8) 39-141	1,024	99.3 (10.6) 48-131	1,007	98.8 (10.2) 44-133	964	98.1 (10.4) 49-136	942	97.6 (10.5) 60-135
WJ-III Sound Awareness[a,b]	1,137	95.9 (17.4) 58-166	1,044	102.3 (18.8) 56-163	1,022	106.9 (19.0) 48-163	1,001	114.4 (19.7) 47-200	964	116.5 (18.3) 30-169	937	116.8 (18.2) 31-184
Literacy												
WJ-III Letter-Word Identification[a,b]	1,156	100.7 (13.8) 60-183	1,051	103.2 (12.7) 61-184	1,024	107.3 (12.7) 69-178	1,007	113.9 (13.2) 62-182	963	112.0 (12.9) 73-168	942	112.2 (11.8) 69-155
WJ-III Word Attack[b,c]	1,159	386.2 (23.5) 364-510	1,052	403.5 (26.7) 364-510	1,025	430.0 (28.4) 364-520	1,008	459.2 (26.4) 364-545	964	471.1 (21.8) 398-545	942	483.0 (20.5) 364-538
WJ-III Passage Comprehension[a,b]	-	-	-	-	-	-	-	-	962	102.3 (13.4) 48-136	941	101.1 (11.3) 38-143
WJ-III Basic Reading Composite[a,b]	1,147	101.6 (15.9) 68-196	1,047	105.8 (14.4) 66-188	1,024	109.9 (13.4) 71-180	1,005	114.7 (12.6) 67-153	963	111.6 (11.5) 69-161	942	111.2 (10.9) 66-148
WJ-III Brief Reading Composite[a,b]	-	-	-	-	-	-	-	-	961	107.9 (12.6) 66-149	941	107.9 (11.2) 65-149
Math												
WJ-III Calculation[a,b]	-	-	-	-	-	-	-	-	964	107.2 (15.5) 51-152	941	107.8 (14.1) 35-154
WJ-III Applied Problems[a,b]	1,150	102.8 (13.2) 56-143	1,052	103.7 (11.7) 53-141	1,025	104.7 (11.2) 71-143	1,006	106.5 (12.0) 62-149	960	105.8 (11.9) 54-148	937	104.7 (12.4) 54-146
WJ-III Brief Math Composite[a,b]	-	-	-	-	-	-	-	-	960	107.8 (15.5) 51-162	937	107.5 (14.6) 47-158
Executive Function												
Forward Digit Span[d]	-	-	-	-	-	-	-	-	963	4.3 (0.8) 1-8	942	4.5 (0.8) 1-8
Backward Digit Span[d]	-	-	-	-	-	-	-	-	962	2.2 (0.6) 1-4	942	2.3 (0.6) 1-6
Behavior Skills												
SSiS Social Skiils[a]	1,088	96.4 (16.0) 40-130	949	100.0 (14.9) 50-129	865	100.7 (14.4) 52-131	851	102.4 (15.1) 49-131	809	100.6 (14.8) 45-129	870	100.6 (15.3) 53-131
SSiS Problem Behaviors[a]	1,093	100.8 (15.5) 82-160	953	100.8 (15.3) 82-160	873	99.0 (13.7) 83-151	853	99.5 (14.4) 83-158	809	99.3 (14.4) 83-155	876	100.2 (14.5) 83-157

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

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

[c] Indicates W scores were used. Possible range=360-545.

[d] Possible range=1-8.

Table 6. Full Sample First-Grade Regression Results—Language and Literacy

	Language				Literacy									
	WJ-III Picture Vocabulary		WJ-III Sound Awareness		WJ-III Letter-Word Identification		WJ-III Word Attack		WJ-III Passage Compre-hension		WJ-III Basic Reading Composite		WJ-III Brief Reading Composite	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Intercept	100.05	(0.27)	97.68	(0.51)	101.81	(0.42)	387.55	(0.76)	102.29	(0.44)	104.12	(0.48)	108.05	(0.42)
Time	-0.48***	(0.07)	4.38***	(0.13)	2.57***	(0.10)	20.40***	(0.19)	-0.94**	(0.30)	1.99***	(0.12)	0.22	(0.21)
Child/Family Characteristics														
Gender[b]	1.73***	(0.49)	-0.47	(0.82)	-1.19	(0.71)	-0.83	(1.19)	-1.75*	(0.80)	-1.55*	(0.77)	-1.10	(0.79)
Race[c]	1.16*	(0.54)	1.91*	(0.94)	-4.01***	(0.80)	-2.11	(1.36)	-1.14	(0.87)	-3.62***	(0.88)	-1.41	(0.85)
Latino Ethnicity[d]	-8.07***	(0.83)	-1.75	(1.42)	-0.04	(1.22)	2.42	(2.06)	1.29	(1.31)	0.21	(1.33)	1.46	(1.29)
IEP[e]	-0.87	(1.48)	-7.85**	(2.51)	-3.52	(2.16)	-2.98	(3.63)	-3.74	(2.42)	-3.81	(2.35)	-4.28	(2.38)
English Proficiency	4.80***	(0.24)	7.20***	(0.40)	3.05***	(0.35)	6.46***	(0.59)	2.54***	(0.39)	3.49***	(0.38)	2.41***	(0.38)
Family Income[f]	-2.34***	(0.53)	-4.22***	(0.91)	-3.96***	(0.77)	-5.02***	(1.31)	-3.50***	(0.86)	-4.22***	(0.85)	-3.75***	(0.85)
Pre-K Setting														
Provider Type[g]	-0.32	(0.59)	-1.77	(1.09)	-1.15	(0.91)	-1.45	(1.58)	-1.58	(0.91)	-1.07	(1.04)	-1.64	(0.89)
Teacher Certified[h]	0.30	(0.77)	1.95	(1.43)	-1.08	(1.19)	-0.37	(2.07)	0.38	(1.22)	-0.62	(1.35)	-0.35	(1.19)
Class Size	-0.03	(0.20)	0.41	(0.37)	0.44	(0.31)	0.90	(0.53)	0.55	(0.30)	0.55	(0.35)	0.50	(0.30)

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

[b] Female=0, Male=1.

[c] Non-White=0, White = 1.

[d] Non-Latino=0, Latino=1.

[e] No IEP=0, IEP=1.

[f] Category Two=0, Category One=1.

[g] Private site=0, Public school site=1.

[h] Teacher not certified=0, Teacher certified=1.

Table 7. Full Sample First-Grade Regression Results—Math, Executive Function, and Behavior Skills

	Math						Executive Function				Behavior Skills			
	WJ-III Calculation		WJ-III Applied Problems		WJ-III Brief Math Composite		Forward Digit Span		Backward Digit Span		SSiS Social Skills		SSiS Problem Behaviors	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Intercept	107.19	(0.55)	103.59	(0.33)	107.84	(0.55)	4.24	(0.03)	2.16	(0.02)	98.25	(0.53)	100.08	(0.57)
Time	0.90	(0.52)	0.43***	(0.08)	-0.29	(0.42)	0.27***	(0.03)	0.17***	(0.03)	0.64***	(0.15)	-0.05	(0.16)
Child/Family Characteristics														
Age	-	-	-	-	-	-	-0.07	(0.09)	0.06	(0.06)	-	-	-	-
Gender[b]	-0.43	(0.92)	0.15	(0.54)	0.79	(0.96)	-0.00	(0.05)	0.01	(0.04)	0.87	(0.72)	0.07	(0.71)
Race[c]	-1.43	(1.01)	3.62***	(0.61)	1.25	(1.06)	-0.16**	(0.06)	0.03	(0.04)	2.04*	(0.86)	-0.26	(0.86)
Latino Ethnicity[d]	5.82***	(1.51)	-0.40	(0.93)	4.32**	(1.58)	0.00	(0.08)	0.09	(0.06)	5.16***	(1.27)	-6.76***	(1.27)
IEP[e]	-10.47***	(2.78)	-5.02**	(1.64)	-11.59***	(2.89)	-0.29	(0.15)	-0.20	(0.11)	-7.12**	(2.22)	6.11**	(2.18)
English Proficiency	2.61***	(0.45)	4.85***	(0.26)	3.81***	(0.47)	0.17***	(0.02)	0.09***	(0.02)	2.97***	(0.36)	-1.66***	(0.36)
Family Income[f]	-4.14***	(1.00)	-2.64***	(0.59)	-4.18***	(1.04)	-0.08	(0.05)	-0.07	(0.04)	-1.80*	(0.81)	2.06*	(0.81)
Pre-K Setting														
Provider Type[g]	-2.01	(1.10)	-1.30	(0.69)	-2.52*	(1.16)	0.03	(0.06)	-0.02	(0.04)	0.33	(1.14)	-1.45	(1.23)
Teacher Certified[h]	1.81	(1.47)	0.66	(0.91)	1.94	(1.56)	-0.01	(0.08)	0.02	(0.05)	-3.22*	(1.48)	3.48*	(1.60)
Class Size	0.05	(0.37)	0.23	(0.23)	-0.03	(0.39)	-0.02	(0.02)	-0.00	(0.01)	0.56	(0.38)	-0.54	(0.40)

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

[b] Female=0, Male=1.

[c] Non-White=0, White = 1.

[d] Non-Latino=0, Latino=1.

[e] No IEP=0, IEP=1.

[f] Category Two=0, Category One=1.

[g] Private site=0, Public school site=1.

[h] Teacher not certified=0, Teacher certified=1.

Table 8. Comparisons of Children's Growth in Pre-K, Kindergarten, and First Grade

	Pre-K vs Kindergarten					Pre-K vs 1st Grade					Kindergarten vs 1st Grade				
	Estimate	(SE)	DF	*t*	*p*[a]	Estimate	(SE)	DF	*t*	*p*[a]	Estimate	(SE)	DF	*t*	*p*[a]
Language															
WJ-III Picture Vocabulary	0.83	(0.42)	927	1.95	ns	0.47	(0.43)	927	1.10	ns	-0.36	(0.44)	927	-0.81	ns
WJ-III Sound Awareness	-0.36	(0.81)	926	-0.44	ns	6.16	(0.81)	926	7.57	***	6.52	(0.83)	926	7.85	***
Literacy															
WJ-III Letter-Word Identification	-3.95	(0.55)	927	-7.25	***	2.27	(0.55)	927	4.13	***	6.22	(0.56)	927	11.09	***
WJ-III Word Attack	-11.84	(1.38)	927	-8.61	***	5.27	(1.39)	927	3.80	***	17.12	(1.42)	927	12.09	***
WJ-III Basic Reading Composite	-0.51	(0.63)	927	-0.82	ns	4.67	(0.63)	927	7.40	***	5.18	(0.64)	927	8.05	***
Math															
WJ-III Applied Problems	-0.89	(0.52)	927	-1.71	ns	2.02	(0.53)	927	3.84	***	2.90	(0.54)	927	5.40	***
Behavior Skills															
SSiS Social Skills	2.14	(1.03)	902	2.08	*	3.27	(1.03)	902	3.19	**	1.13	(1.06)	902	1.07	ns
SSiS Problem Behaviors	-0.66	(0.99)	901	-0.67	ns	-0.95	(0.99)	901	-0.96	ns	-0.28	(1.01)	901	-0.28	ns

[a] Significance levels are *p< .05, **p< .01, ***p< .001, ns=not significant.

Table 9. English Outcome Scores for DLL Subsample (2013-2016)

	Pre-K				Kindergarten				1st Grade			
	Fall		Spring		Fall		Spring		Fall		Spring	
Measure	n	Mean (SD) Range	n	Mean (SD) Range	n	Mean (SD) Range	n	Mean (SD) Range	n	Mean (SD) Range	n	Mean (SD) Range
Language												
WJ-III Picture Vocabulary[a,b]	135	77.3 (19.3) 31-120	126	82.4 (13.7) 39-112	118	84.5 (11.4) 48-117	114	86.0 (9.3) 59-110	118	86.0 (9.7) 49-118	118	85.8 (9.8) 60-116
WJ-III Sound Awareness[a,b]	129	82.1 (10.9) 61-123	126	85.0 (15.8) 56-142	117	90.1 (17.3) 55-136	116	99.5 (19.4) 47-148	118	104.2 (18.7) 55-142	118	106.6 (18.4) 53-143
Literacy												
WJ-III Letter-Word Identification[a,b]	133	91.2 (14.2) 60-133	126	97.8 (12.8) 63-148	118	102.8 (13.2) 71-154	116	109.9 (12.6) 77-148	117	108.0 (12.9) 80-140	118	109.2 (12.0) 79-133
WJ-III Word Attack[b,c]	132	374.6 (16.7) 364-468	125	391.3 (24.3) 364-493	118	422.3 (28.0) 364-508	116	452.7 (25.4) 377-508	118	466.3 (22.2) 398-513	118	479.5 (20.0) 423-517
WJ-III Passage Comprehension[a,b]	-	-	-	-	-	-	-	-	118	97.8 (14.1) 57-122	118	96.9 (10.3) 54-119
WJ-III Basic Reading Composite[a,b]	126	91.6 (14.5) 68-147	125	99.3 (14.5) 67-157	118	105.4 (13.7) 72-153	116	111.4 (12.5) 74-144	117	108.4 (12.0) 76-133	118	108.9 (11.1) 77-129
WJ-III Brief Reading Composite[a,b]	-	-	-	-	-	-	-	-	117	103.7 (13.0) 70-132	118	104.4 (10.9) 71-123
Math												
WJ-III Calculation[a,b]	-	-	-	-	-	-	-	-	118	106.2 (15.0) 63-134	118	107.7 (11.5) 69-132
WJ-III Applied Problems[a,b]	131	90.3 (13.7) 59-122	125	96.4 (11.3) 53-127	118	99.6 (10.5) 71-129	116	103.0 (11.7) 63-130	118	102.1 (10.9) 67-128	118	101.3 (11.1) 75-131
WJ-III Brief Math Composite[a,b]	-	-	-	-	-	-	-	-	118	104.6 (14.1) 68-133	118	105.0 (12.5) 73-134
Executive Function												
Forward Digit Span[d]	-	-	-	-	-	-	-	-	118	3.9 (0.7) 3-6	118	4.1 (0.8) 1-7
Backward Digit Span[d]	-	-	-	-	-	-	-	-	118	2.1 (0.6) 1-4	118	2.2 (0.6) 1-4

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

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

[c] Indicates W scores were used. Possible range=360-545.

[d] Possible range=1-8.

Table 10. DLL Subsample English First-Grade Regression Results—Language and Literacy

	Language				Literacy									
	WJ-III Picture Vocabulary		WJ-III Sound Awareness		WJ-III Letter-Word Identification		WJ-III Word Attack		WJ-III Passage Compre-hension		WJ-III Basic Reading Composite		WJ-III Brief Reading Composite	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Intercept	92.13	(1.60)	90.44	(1.72)	98.10	(2.01)	383.00	(3.11)	101.39	(1.89)	100.27	(2.19)	107.04	(1.92)
Time	1.54***	(0.27)	5.69***	(0.34)	3.66***	(0.24)	22.04***	(0.49)	-1.11	(0.99)	3.27	(0.26)	0.42	(0.69)
Child/Family Characteristics														
Gender[b]	0.44	(1.75)	-2.30	(1.93)	0.38	(2.08)	2.71	(3.17)	-0.59	(2.17)	0.51	(2.20)	1.23	(2.21)
Race[c]	1.56	(2.57)	4.73	(2.80)	1.03	(3.09)	1.54	(4.68)	-0.69	(3.11)	0.02	(3.38)	-0.07	(3.19)
IEP[d]	1.14	(5.54)	-7.25	(6.12)	-3.22	(6.51)	-5.05	(9.89)	-9.44	(6.62)	-9.74	(6.62)	-12.37	(6.72)
English Proficiency	7.13***	(0.70)	6.23***	(0.76)	2.74**	(0.85)	4.56***	(1.29)	2.30**	(0.84)	2.80	(0.91)	2.35**	(0.86)
Family Income[e]	0.07	(2.28)	1.11	(2.49)	1.12	(2.77)	6.06	(4.19)	3.06	(2.81)	3.13	(3.02)	3.49	(2.88)
Pre-K Setting														
Provider Type[f]	-1.29	(2.32)	-2.62	(2.44)	-0.09	(3.03)	5.61	(4.52)	-3.18	(2.67)	1.54	(3.39)	-3.19	(2.81)
Teacher Certified[g]	1.17	(2.63)	0.94	(2.75)	-3.58	(3.44)	-5.89	(5.14)	-1.54	(2.94)	-4.75	(3.76)	-2.96	(3.10)
Class Size	-1.01	(0.70)	-0.06	(0.75)	0.73	(0.89)	1.74	(1.33)	-0.11	(0.78)	0.71	(0.93)	0.14	(0.81)

[a] Significance levels are *p< .05, **p< .01, ***p< .001.
[b] Female=0, Male=1.
[c] Non-White=0, White = 1.
[d] No IEP=0, IEP=1.
[e] Category Two=0, Category One=1.
[f] Private site=0, Public school site=1.
[g] Teacher not certified=0, Teacher certified=1.

Table 11. DLL Subsample English First-Grade Regression Results—Math and Executive Function

	Math						Executive Function			
	WJ-III Calculation		WJ-III Applied Problems		WJ-III Brief Math Composite		Forward Digit Span		Backward Digit Span	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Intercept	109.76	(1.97)	100.01	(1.44)	108.83	(2.14)	4.25	(0.12)	2.17	(0.09)
Time	1.90	(1.44)	2.23***	(0.24)	0.78	(1.05)	0.14	(0.08)	0.19*	(0.08)
Child/Family Characteristics										
Age	-	-	-	-	-	-	-0.13	(0.25)	-0.01	(0.18)
Gender[b]	0.62	(2.11)	-0.60	(1.68)	1.53	(2.34)	0.19	(0.13)	0.05	(0.10)
Race[c]	-2.23	(3.08)	2.33	(2.41)	-0.37	(3.47)	0.18	(0.19)	-0.07	(0.14)
IEP[d]	-19.79**	(6.57)	-3.92	(5.30)	-19.86**	(7.20)	-0.62	(0.43)	-0.37	(0.31)
English Proficiency	1.83*	(0.83)	4.94***	(0.65)	2.95**	(0.94)	0.21***	(0.05)	0.05	(0.04)
Family Income[e]	4.30	(2.77)	2.82	(2.12)	5.62	(3.12)	-0.08	(0.17)	0.14	(0.13)
Pre-K Setting										
Provider Type[f]	-5.12	(2.78)	0.22	(1.95)	-3.80	(3.23)	0.11	(0.17)	-0.02	(0.12)
Teacher Certified[g]	-0.30	(3.07)	-4.21	(2.20)	-3.40	(3.58)	-0.13	(0.19)	-0.12	(0.13)
Class Size	-0.77	(0.78)	0.23	(0.62)	-0.56	(0.91)	-0.03	(0.05)	0.04	(0.03)

[a] Significance levels are *p< .05, **p< .01, ***p< .001.
[b] Female=0, Male=1.
[c] Non-White=0, White = 1.
[d] No IEP=0, IEP=1.
[e] Category Two=0, Category One=1.
[f] Private site=0, Public school site=1.
[g] Teacher not certified=0, Teacher certified=1.

Table 12. Spanish Outcome Scores for DLL Subsample (2013-2016)

	Pre-K				Kindergarten				1st Grade			
	Fall		Spring		Fall		Spring		Fall		Spring	
Measure	n	Mean (SD) Range	n	Mean (SD) Range	n	Mean (SD) Range	n	Mean (SD) Range	n	Mean (SD) Range	n	Mean (SD) Range
Language												
Bat-III Picture Vocabulary[a,b]	137	71.0 (20.2) 22-121	122	66.4 (21.6) 10-111	117	60.6 (24.9) 1-112	106	57.1 (24.9) 1-112	116	54.9 (24.9) 1-126	116	53.3 (24.0) 1-108
Bat-III Sound Awareness[a,b]	135	74.1 (9.8) 59-106	122	77.6 (13.9) 50-119	115	76.1 (16.9) 47-114	106	82.9 (20.8) 39-130	116	89.4 (19.5) 34-127	114	89.6 (17.4) 37-124
Literacy												
Bat-III Letter-Word Identification[a,b]	136	90.3 (10.7) 69-134	123	86.5 (11.7) 65-137	118	85.6 (12.9) 55-123	107	81.7 (14.1) 58-109	116	81.1 (16.8) 45-126	115	78.6 (19.4) 44-133
Bat-III Word Attack[b,c]	132	373.1 (13.0) 360-426	123	381.0 (15.9) 360-447	118	396.8 (15.9) 360-467	107	406.6 (20.8) 360-462	117	419.9 (24.0) 372-492	116	432.7 (30.4) 372-526
Bat-III Passage Comprehension[a,b]	-	-	-	-	-	-	-	-	116	73.7 (24.5) 1-111	116	71.6 (24.1) 1-102
Bat-III Basic Reading Composite[a,b]	130	89.8 (10.9) 73-128	122	88.8 (11.4) 70-138	117	89.2 (11.3) 64-127	107	84.7 (12.8) 57-113	116	82.7 (14.8) 55-120	114	80.2 (17.5) 47-132
Bat-III Brief Reading Composite[a,b]	-	-	-	-	-	-	-	-	115	67.9 (25.7) 0-99	114	67.3 (25.7) 0-99
Math												
Bat-III Calculation[a,b]	-	-	-	-	-	-	-	-	115	97.3 (22.4) 10-140	117	99.3 (19.3) 1-133
Bat-III Applied Problems[a,b]	131	87.1 (12.8) 50-119	122	90.9 (15.0) 38-122	117	89.6 (17.8) 12-125	107	92.8 (18.6) 1-127	115	92.5 (15.7) 17-122	117	91.3 (14.8) 24-130
Bat-III Brief Math Composite[a,b]	-	-	-	-	-	-	-	-	114	92.7 (19.8) 3-132	117	93.7 (16.8) 27-134
Executive Function												
Forward Digit Span[d]	-	-	-	-	-	-	-	-	117	3.7 (0.8) 2-6	117	3.9 (0.8) 1-5
Backward Digit Span[d]	-	-	-	-	-	-	-	-	117	2.0 (0.5) 1-3	115	2.1 (0.5) 1-4

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

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

[c] Indicates W scores were used. Possible range=360-545.

[d] Possible range=1-8.

Table 13. DLL Subsample Spanish First-Grade Regression Results—Language and Literacy

	Language				Literacy									
	Bat-III Picture Vocabulary		Bat-III Sound Awareness		Bat-III Letter-Word Identification		Bat-III Word Attack		Bat-III Passage Compre-hension		Bat-III Basic Reading Composite		Bat-III Brief Reading Composite	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Intercept	63.62	(1.96)	72.66	(1.54)	89.41	(1.37)	373.46	(1.79)	71.32	(3.55)	69.97	(15.96)	64.10	(3.75)
Time	-3.98***	(0.28)	3.08***	(0.44)	-2.22***	(0.35)	12.11***	(0.62)	-3.43	(2.27)	-1.97***	(0.33)	-2.90	(3.30)
Child/Family Characteristics														
Gender[b]	-1.79	(2.70)	-3.26	(2.01)	-1.98	(1.77)	2.87	(2.23)	-5.39	(4.03)	-1.97	(1.84)	-6.89	(4.60)
Race[c]	9.18*	(3.77)	3.84	(2.83)	0.51	(2.52)	-4.88	(3.20)	3.62	(5.82)	0.64	(2.75)	4.71	(6.58)
IEP[d]	-18.80*	(8.36)	-3.14	(6.35)	-4.25	(5.59)	-1.12	(7.09)	-38.70**	(12.38)	-7.70	(5.89)	-22.30	(14.05)
Spanish Proficiency	8.60***	(0.86)	1.45*	(0.64)	2.59***	(0.57)	2.84***	(0.71)	-1.42	(1.58)	1.34	(0.74)	1.43	(1.52)
Family Income[e]	6.02	(3.12)	-2.01	(2.35)	-3.10	(2.08)	-2.17	(2.67)	1.92	(5.31)	-0.51	(2.40)	12.83*	(5.58)
Pre-K Setting														
Provider Type[f]	5.10	(3.07)	1.00	(2.40)	-0.89	(2.21)	-0.87	(2.87)	-4.06	(4.98)	1.32	(2.40)	-18.58**	(5.81)
Teacher Certified[g]	-9.90**	(3.44)	-0.25	(2.69)	-1.24	(2.47)	-1.42	(3.21)	-2.29	(5.47)	-4.87	(2.70)	11.43	(6.37)
Class Size	2.34*	(0.95)	0.18	(0.73)	0.58	(0.66)	1.76*	(0.86)	-1.14	(1.44)	1.00	(0.73)	-1.38	(1.65)

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

[b] Female=0, Male=1.

[c] Non-White=0, White = 1.

[d] No IEP=0, IEP=1.

[e] Category Two=0, Category One=1.

[f] Private site=0, Public school site=1.

[g] Teacher not certified=0, Teacher certified=1.

Table 14. DLL Subsample Spanish First-Grade Regression Results—Math and Executive Function

	Math						Executive Function			
	Bat-III Calculation		Bat-III Applied Problems		Bat-III Brief Math Composite		Forward Digit Span		Backward Digit Span	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Intercept	98.52	(3.19)	85.50	(1.55)	89.44	(2.91)	3.75	(0.12)	2.00	(0.08)
Time	2.16	(2.39)	0.61*	(0.28)	0.67	(1.66)	0.14	(0.08)	0.15*	(0.07)
Child/Family Characteristics										
Age	-	-	-	-	-	-	0.14	(0.28)	0.11	(0.16)
Gender[b]	2.76	(3.67)	-3.15	(2.11)	0.41	(3.13)	0.04	(0.15)	0.06	(0.09)
Race[c]	-0.70	(5.40)	4.15	(2.94)	5.47	(4.91)	0.12	(0.22)	-0.13	(0.13)
IEP[d]	-16.65	(11.19)	-7.75	(6.53)	-19.32*	(9.42)	-0.45	(0.48)	-0.57*	(0.27)
Spanish Proficiency	1.41	(1.22)	4.80***	(0.67)	3.34**	(1.05)	0.11*	(0.05)	0.02	(0.03)
Family Income[e]	-0.98	(4.50)	2.80	(2.44)	4.51	(3.98)	-0.36	(0.18)	0.13	(0.11)
Pre-K Setting										
Provider Type[f]	-5.59	(4.97)	2.80	(2.42)	-0.03	(4.62)	0.15	(0.19)	-0.03	(0.12)
Teacher Certified[g]	-2.67	(5.51)	-6.22*	(2.71)	-9.10	(5.16)	-0.28	(0.21)	-0.10	(0.14)
Class Size	-1.38	(1.39)	0.88	(0.75)	-0.27	(1.27)	-0.04	(0.05)	-0.06	(0.03)

[a] Significance levels are *p< .05, **p< .01, ***p< .001.
[b] Female=0, Male=1.
[c] Non-White=0, White = 1.
[d] No IEP=0, IEP=1.
[e] Category Two=0, Category One=1.
[f] Private site=0, Public school site=1.
[g] Teacher not certified=0, Teacher certified=1.

Table 15. Child/Family Moderators of First-Grade Outcomes–Language and Literacy

	Language				Literacy									
	WJ-III Picture Vocabulary		WJ-III Sound Awareness		WJ-III Letter-Word Identification		WJ-III Word Attack		WJ-III Passage Compre-hension		WJ-III Basic Reading Composite		WJ-III Brief Reading Composite	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Intercept	100.04	(0.26)	97.67	(0.51)	101.82	(0.42)	387.62	(0.74)	102.32	(0.44)	104.13	(0.47)	108.06	(0.42)
Time	-0.47***	(0.06)	4.39***	(0.12)	2.57***	(0.10)	20.37***	(0.18)	-1.01***	(0.30)	1.98***	(0.10)	0.17	(0.21)
Child/Family Characteristics														
Gender[b]	1.77***	(0.48)	-0.47	(0.82)	-1.18	(0.71)	-0.81	(1.19)	-1.74*	(0.80)	-1.53*	(0.76)	-1.09	(0.79)
Race[c]	0.64	(0.55)	1.83	(0.98)	-4.66***	(0.81)	-5.70***	(1.46)	-2.33*	(0.92)	-4.69***	(0.89)	-2.31**	(0.88)
Latino Ethnicity[d]	-7.79***	(0.81)	-1.73	(1.42)	0.03	(1.21)	2.49	(2.04)	1.25	(1.31)	0.29	(1.32)	1.43	(1.29)
IEP[e]	-1.03	(1.45)	-7.89**	(2.51)	-3.56	(2.15)	-3.04	(3.61)	-3.75	(2.42)	-3.87	(2.33)	-4.29	(2.38)
English Proficiency	5.51***	(0.24)	7.54***	(0.42)	3.31***	(0.35)	6.60***	(0.63)	2.33***	(0.41)	3.92***	(0.38)	2.33***	(0.39)
Family Income[f]	-2.52***	(0.54)	-4.28***	(0.95)	-4.18***	(0.79)	-6.31***	(1.43)	-4.03***	(0.92)	-4.74***	(0.86)	-4.25***	(0.88)
Pre-K Setting														
Provider Type[g]	-0.38	(0.58)	-2.02	(1.11)	-1.13	(0.91)	-1.88	(1.63)	-1.98*	(0.97)	-1.11	(1.02)	-1.73	(0.92)
Teacher Certified[h]	0.39	(0.75)	2.50	(1.46)	-1.19	(1.19)	0.73	(2.14)	0.40	(1.31)	-0.62	(1.34)	-0.20	(1.24)
Class Size	-0.08	(0.20)	0.32	(0.38)	0.40	(0.31)	0.88	(0.55)	0.47	(0.33)	0.54	(0.34)	0.47	(0.31)
Child/Family Moderators														
Time x Race	0.41**	(0.11)	0.07	(0.23)	0.72**	(0.17)	2.25**	(0.35)	2.26**	(0.63)	1.05***	(0.18)	1.73**	(0.43)
Time x English Proficiency	-0.56**	(0.05)	-0.29*	(0.09)	-0.27***	(0.07)	-0.10	(0.14)	0.40	(0.26)	-0.41***	(0.07)	0.13	(0.18)
Time x Income	0.11	(0.11)	0.05	(0.23)	0.22	(0.17)	0.74	(0.35)	1.00	(0.64)	0.47**	(0.18)	0.93	(0.44)
Time x Provider Type	0.13	(0.13)	0.29	(0.27)	0.00	(0.21)	0.42	(0.40)	0.73	(0.65)	0.16	(0.23)	0.14	(0.45)
Time x Teacher Certification	-0.18	(0.17)	-0.66	(0.36)	0.19	(0.28)	-0.84	(0.53)	-0.04	(0.89)	-0.05	(0.30)	-0.30	(0.62)
Time x Class Size	0.05	(0.04)	0.10	(0.09)	0.06	(0.07)	0.01	(0.13)	0.12	(0.22)	0.00	(0.08)	0.03	(0.15)

[a] Significance levels are *p< .05, **p< .01, ***p< .001.
[b] Female=0, Male=1.
[c] Non-White=0, White = 1.
[d] Non-Latino=0, Latino=1.
[e] No IEP=0, IEP=1.
[f] Category Two=0, Category One=1.
[g] Private site=0, Public school site=1.
[h] Teacher not certified=0, Teacher certified=1.

Table 16. Child/Family Moderators of First-Grade Outcomes–Math, Executive Function, and Behavior Skills

	Math						Executive Function				Behavior Skills			
	WJ-III Calculation		WJ-III Applied Problems		WJ-III Brief Math Composite		Forward Digit Span		Backward Digit Span		SSiS Social Skills		SSiS Problem Behaviors	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Intercept	107.21	(0.55)	103.56	(0.32)	107.87	(0.55)	4.24	(0.03)	2.16	(0.02)	98.28	(0.53)	100.07	(0.57)
Time	0.85	(0.50)	0.45***	(0.08)	-0.32	(0.40)	0.27***	(0.03)	0.17***	(0.03)	0.62***	(0.15)	-0.04	(0.16)
Child/Family Characteristics														
Age	-	-	-	-	-	-	-0.07	(0.09)	0.06	(0.06)	-	-	-	-
Gender[b]	-0.40	(0.92)	0.18	(0.54)	0.80	(0.96)	-0.00	(0.05)	0.01	(0.04)	0.87	(0.72)	0.07	(0.71)
Race[c]	-2.09	(1.13)	3.93***	(0.64)	0.78	(1.12)	-0.15*	(0.06)	-0.00	(0.05)	1.50	(0.93)	-0.06	(0.92)
Latino Ethnicity[d]	5.82***	(1.51)	-0.23	(0.93)	4.33**	(1.58)	0.00	(0.08)	0.09	(0.06)	5.24***	(1.27)	-6.82***	(1.27)
IEP[e]	-10.51***	(2.78)	-5.10**	(1.64)	-11.63***	(2.89)	-0.29	(0.15)	-0.20	(0.11)	-7.20**	(2.22)	6.16**	(2.18)
English Proficiency	2.40***	(0.50)	5.60***	(0.27)	3.71***	(0.50)	0.17***	(0.03)	0.09***	(0.02)	3.49***	(0.39)	-1.95***	(0.38)
Family Income[f]	-3.92***	(1.13)	-2.76***	(0.62)	-3.99***	(1.11)	-0.07	(0.06)	-0.13**	(0.05)	-1.66	(0.88)	1.78*	(0.87)
Pre-K Setting														
Provider Type[g]	-3.98**	(1.22)	-1.20	(0.71)	-3.50**	(1.22)	-0.02	(0.07)	-0.02	(0.05)	0.10	(1.16)	-1.40	(1.25)
Teacher Certified[h]	2.52	(1.64)	0.44	(0.93)	1.97	(1.64)	0.03	(0.09)	0.06	(0.06)	-3.85*	(1.52)	4.09*	(1.62)
Class Size	-0.30	(0.41)	0.21	(0.24)	-0.33	(0.41)	-0.02	(0.02)	-0.00	(0.02)	0.63	(0.39)	-0.59	(0.41)
Child/Family Moderators														
Time x Race	1.29	(1.03)	-0.32	(0.15)	0.96	(0.79)	-0.01	(0.06)	0.09	(0.06)	0.40	(0.25)	-0.15	(0.23)
Time x English Proficiency	0.44	(0.42)	-0.63**	(0.06)	0.23	(0.32)	0.02	(0.02)	0.00	(0.02)	-0.37**	(0.10)	0.20	(0.09)
Time x Income	-0.40	(1.04)	0.10	(0.15)	-0.37	(0.79)	-0.01	(0.06)	0.14	(0.06)	-0.09	(0.24)	0.18	(0.22)
Time x Provider Type	4.34**	(1.10)	-0.10	(0.16)	2.46	(0.88)	0.10	(0.06)	-0.01	(0.06)	0.32	(0.33)	-0.09	(0.35)
Time x Teacher Certification	-1.56	(1.50)	0.20	(0.22)	-0.09	(1.20)	-0.08	(0.09)	-0.08	(0.08)	0.76	(0.43)	-1.00	(0.45)
Time x Class Size	0.70	(0.37)	0.02	(0.06)	0.69	(0.30)	0.00	(0.02)	-0.00	(0.02)	-0.06	(0.11)	0.06	(0.11)

[a] Significance levels are *p< .05, **p< .01, ***p< .001.
[b] Female=0, Male=1.
[c] Non-White=0, White = 1.
[d] Non-Latino=0, Latino=1.
[e] No IEP=0, IEP=1.
[f] Category Two=0, Category One=1.
[g] Private site=0, Public school site=1.
[h] Teacher not certified=0, Teacher certified=1.

Table 17. Classroom Quality Moderators of First-Grade Outcomes–Language and Literacy

	Language				Literacy									
	WJ-III Picture Vocabulary		WJ-III Sound Awareness		WJ-III Letter-Word Identification		WJ-III Word Attack		WJ-III Passage Compre-hension		WJ-III Basic Reading Composite		WJ-III Brief Reading Composite	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Intercept	99.89	(0.28)	96.62	(0.53)	100.92	(0.42)	385.68	(0.78)	102.96	(0.65)	102.78	(0.49)	108.47	(0.61)
Time	-0.36***	(0.10)	5.06***	(0.21)	2.86***	(0.15)	20.81***	(0.33)	-1.68***	(0.46)	2.75***	(0.18)	-0.20	(0.33)
Child/Family Characteristics														
Gender[b]	1.61**	(0.52)	-0.71	(0.84)	-1.26	(0.72)	-1.83	(1.29)	-2.49*	(1.15)	-1.77*	(0.81)	-1.63	(1.13)
Race[c]	0.81	(0.59)	2.23*	(1.01)	-4.27***	(0.83)	-4.86**	(1.54)	-4.86***	(1.43)	-4.39***	(0.95)	-4.26**	(1.35)
Latino Ethnicity[d]	-8.89***	(0.88)	-2.35	(1.46)	-0.64	(1.24)	0.63	(2.22)	2.73	(1.97)	-0.39	(1.41)	2.36	(1.94)
IEP[e]	-0.39	(1.59)	-7.91**	(2.58)	-3.75	(2.20)	-3.65	(3.93)	-7.47*	(3.19)	-4.04	(2.48)	-7.90*	(3.12)
English Proficiency	5.74***	(0.26)	7.29***	(0.43)	3.25***	(0.36)	5.86***	(0.67)	1.60**	(0.60)	3.87***	(0.41)	1.64**	(0.57)
Family Income[f]	-2.59***	(0.58)	-4.38***	(0.97)	-4.33***	(0.81)	-6.63***	(1.50)	-4.86***	(1.38)	-5.02***	(0.92)	-4.56***	(1.29)
Pre-K Setting														
Provider Type[g]	-0.16	(0.66)	-1.96	(1.22)	-2.06*	(0.98)	-3.06	(1.81)	-2.18	(1.57)	-2.16	(1.14)	-1.70	(1.48)
Teacher Certified[h]	0.14	(0.82)	2.35	(1.52)	-0.88	(1.23)	1.61	(2.26)	1.13	(2.06)	-0.17	(1.42)	0.31	(1.93)
Class Size	-0.11	(0.21)	0.38	(0.39)	0.47	(0.32)	1.04	(0.58)	1.43**	(0.45)	0.64	(0.36)	1.45***	(0.42)
Pre-K CLASS Emotional Support	1.11	(0.75)	-0.51	(1.42)	-2.06	(1.14)	-1.36	(2.09)	-0.93	(1.72)	-1.90	(1.32)	-1.14	(1.61)
Pre-K CLASS Class Organization	-0.72	(0.70)	0.72	(1.30)	2.07*	(1.05)	1.24	(1.92)	1.78	(1.62)	2.08	(1.21)	2.37	(1.53)
Pre-K CLASS Instructional Support	-0.69	(0.48)	0.49	(0.89)	0.51	(0.72)	1.95	(1.31)	1.74	(0.95)	0.54	(0.83)	1.41	(0.89)
K CLASS Emotional Support	0.02	(0.60)	-2.10	(1.14)	-2.63***	(0.78)	-1.44	(1.86)	-	-	-2.77**	(0.91)	-	-
K CLASS Class Organization	-0.42	(0.65)	3.09*	(1.24)	3.02***	(0.85)	5.19*	(2.02)	-	-	3.51***	(0.99)	-	-
K CLASS Instructional Support	0.57	(0.42)	0.33	(0.80)	0.32	(0.55)	-2.01	(1.31)	-	-	-0.56	(0.64)	-	-

[a] Significance levels are *p< .05, **p< .01, ***p< .001.
[b] Female=0, Male=1.
[c] Non-White=0, White = 1.
[d] Non-Latino=0, Latino=1.
[e] No IEP=0, IEP=1.
[f] Category Two=0, Category One=1.
[g] Private site=0, Public school site=1.
[h] Teacher not certified=0, Teacher certified=1.

Table 17. Classroom Quality Moderators of First-Grade Outcomes—Language and Literacy (con't)

	Language				Literacy									
	WJ-III Picture Vocabulary		WJ-III Sound Awareness		WJ-III Letter-Word Identification		WJ-III Word Attack		WJ-III Passage Compre-hension		WJ-III Basic Reading Composite		WJ-III Brief Reading Composite	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
1st CLASS Emotional Support	-0.14	(0.77)	-0.88	(1.46)	0.25	(0.99)	-1.25	(2.43)	0.27	(1.30)	0.47	(1.15)	0.15	(1.26)
1st CLASS Class Organization	0.51	(0.69)	1.30	(1.30)	0.55	(0.88)	3.07	(2.17)	1.35	(1.07)	0.76	(1.02)	1.24	(0.99)
1st CLASS Instructional Support	0.38	(0.63)	0.07	(1.19)	0.43	(0.80)	-0.88	(1.97)	0.09	(1.00)	-0.31	(0.93)	0.15	(0.98)
Time x Race	0.29	(0.20)	-0.21	(0.40)	0.65	(0.29)	1.82*	(0.64)	2.37	(0.98)	0.85*	(0.33)	1.76*	(0.68)
Time x English Proficiency	-0.81***	(0.08)	-0.24	(0.16)	-0.23	(0.11)	0.34	(0.25)	0.86	(0.38)	-0.26*	(0.13)	0.38	(0.26)
Time x Income	0.12	(0.20)	0.16	(0.39)	0.55	(0.28)	1.23	(0.62)	1.95	(0.97)	0.82**	(0.32)	1.17	(0.67)
Time x Provider Type	-0.33	(0.23)	-0.38	(0.49)	0.62	(0.35)	1.20	(0.78)	0.53	(1.10)	0.94*	(0.43)	-0.03	(0.80)
Time x Teacher Certification	0.02	(0.30)	-0.63	(0.62)	-0.34	(0.44)	-1.23	(0.99)	0.38	(1.46)	-0.52	(0.54)	-0.21	(1.05)
Time x Class Size	0.11	(0.07)	0.16	(0.15)	0.07	(0.11)	0.07	(0.24)	-0.24	(0.32)	-0.00	(0.13)	-0.37	(0.24)
Classroom Quality Moderators														
Time x CLASS Emotional Support	-0.52	(0.27)	-0.16	(0.57)	0.71	(0.41)	-0.25	(0.90)	0.31	(1.25)	0.64	(0.50)	0.60	(0.91)
Time x CLASS Class Organization	0.63*	(0.24)	1.06	(0.52)	-0.41	(0.37)	0.25	(0.82)	0.66	(1.16)	-0.65	(0.46)	0.24	(0.84)
Time x CLASS Instructional Support	0.09	(0.15)	-0.01	(0.32)	-0.07	(0.23)	-0.30	(0.51)	-1.42	(0.66)	0.01	(0.29)	-1.28	(0.49)

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

Table 18. Classroom Quality Moderators of First-Grade Outcomes–Math, Executive Function, and Behavior Skills

	Math						Executive Function				Behavior Skills			
	WJ-III Calculation		WJ-III Applied Problems		WJ-III Brief Math Composite		Forward Digit Span		Backward Digit Span		SSiS Social Skills		SSiS Problem Behaviors	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
Intercept	106.71	(0.82)	103.12	(0.34)	107.69	(0.78)	4.20	(0.04)	2.17	(0.03)	97.73	(0.59)	100.24	(0.63)
Time	0.88	(0.78)	0.69***	(0.13)	-0.52	(0.59)	0.30***	(0.04)	0.13**	(0.04)	0.90***	(0.21)	-0.02	(0.22)
Child/Family Characteristics														
Age	-	-	-	-	-	-	-0.15	(0.12)	0.13	(0.09)	-	-	-	-
Gender[b]	-1.17	(1.35)	-0.02	(0.55)	-0.52	(1.34)	-0.02	(0.07)	0.03	(0.05)	1.28	(0.78)	0.52	(0.77)
Race[c]	-5.61**	(1.80)	4.08***	(0.66)	-2.39	(1.70)	-0.14	(0.09)	-0.10	(0.07)	1.63	(0.99)	-0.27	(0.98)
Latino Ethnicity[d]	8.26***	(2.30)	-0.93	(0.96)	6.19**	(2.30)	0.08	(0.12)	0.15	(0.08)	5.89***	(1.40)	-7.15***	(1.38)
IEP[e]	-14.41***	(3.77)	-4.73**	(1.69)	-14.54***	(3.72)	-0.43*	(0.20)	-0.38**	(0.14)	-7.67**	(2.46)	6.85**	(2.40)
English Proficiency	1.82*	(0.74)	5.73***	(0.29)	2.68***	(0.71)	0.18***	(0.04)	0.08**	(0.03)	3.81***	(0.41)	-1.99***	(0.41)
Family Income[f]	-4.03*	(1.74)	-2.80***	(0.64)	-4.40**	(1.63)	-0.04	(0.09)	-0.17*	(0.07)	-1.59	(0.94)	1.50	(0.92)
Pre-K Setting														
Provider Type[g]	-1.86	(1.99)	-0.90	(0.79)	-2.68	(1.90)	-0.04	(0.10)	0.08	(0.08)	-0.14	(1.37)	-0.55	(1.45)
Teacher Certified[h]	4.38	(2.61)	0.19	(0.99)	4.58	(2.48)	0.13	(0.13)	0.07	(0.10)	-3.94*	(1.70)	4.39*	(1.79)
Class Size	-0.94	(0.57)	0.20	(0.25)	-0.66	(0.54)	0.01	(0.03)	0.02	(0.02)	0.67	(0.43)	-0.65	(0.45)
Pre-K CLASS Emotional Support	2.20	(2.20)	0.14	(0.92)	-0.09	(2.09)	-0.17	(0.11)	-0.07	(0.09)	0.52	(1.59)	1.71	(1.69)
Pre-K CLASS Class Organization	-1.03	(2.04)	-0.05	(0.84)	1.28	(1.96)	0.22*	(0.10)	0.05	(0.08)	1.50	(1.46)	-2.07	(1.55)
Pre-K CLASS Instructional Support	0.15	(1.20)	0.47	(0.58)	0.79	(1.15)	0.05	(0.06)	0.06	(0.05)	-2.70**	(1.00)	0.20	(1.06)
K CLASS Emotional Support	-	-	-0.04	(0.75)	-	-	-	-	-	-	-2.86*	(1.20)	2.66*	(1.13)
K CLASS Class Organization	-	-	0.25	(0.81)	-	-	-	-	-	-	3.82**	(1.30)	-3.33**	(1.23)
K CLASS Instructional Support	-	-	0.07	(0.52)	-	-	-	-	-	-	-0.48	(0.85)	1.69*	(0.81)

[a] Significance levels are *p< .05, **p< .01, ***p< .001.
[b] Female=0, Male=1.
[c] Non-White=0, White = 1.
[d] Non-Latino=0, Latino=1.
[e] No IEP=0, IEP=1.
[f] Category Two=0, Category One=1.
[g] Private site=0, Public school site=1.
[h] Teacher not certified=0, Teacher certified=1.

Table 18. Classroom Quality Moderators of First-Grade Outcomes—Math, Executive Function, and Behavior Skills (con't)

	Math						Executive Function				Behavior Skills			
	WJ-III Calculation		WJ-III Applied Problems		WJ-III Brief Math Composite		Forward Digit Span		Backward Digit Span		SSiS Social Skills		SSiS Problem Behaviors	
Effect	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)	Est[a]	(SE)
1st CLASS Emotional Support	-0.38	(1.55)	0.07	(0.97)	-0.08	(1.54)	-0.08	(0.08)	0.10	(0.06)	-0.71	(1.55)	-0.28	(1.44)
1st CLASS Class Organization	3.53**	(1.30)	0.65	(0.86)	3.23*	(1.27)	-0.02	(0.07)	-0.01	(0.05)	1.16	(1.39)	-0.47	(1.29)
1st CLASS Instructional Support	-0.56	(1.18)	-0.14	(0.79)	0.40	(1.18)	0.13*	(0.06)	0.03	(0.04)	0.66	(1.26)	-0.57	(1.17)
Time x Race	1.91	(1.66)	-0.54	(0.26)	2.05	(1.27)	-0.03	(0.09)	0.18	(0.09)	-0.01	(0.42)	-0.22	(0.41)
Time x English Proficiency	-0.05	(0.64)	-0.77***	(0.10)	0.79	(0.49)	0.01	(0.03)	0.01	(0.04)	-0.65**	(0.17)	0.36	(0.16)
Time x Income	-0.59	(1.65)	0.11	(0.25)	0.20	(1.25)	0.01	(0.09)	0.24	(0.09)	0.05	(0.41)	0.21	(0.39)
Time x Provider Type	3.09	(1.87)	-0.58	(0.30)	1.53	(1.42)	0.12	(0.10)	-0.04	(0.10)	0.53	(0.51)	-0.22	(0.53)
Time x Teacher Certification	-1.25	(2.49)	0.48	(0.38)	-0.81	(1.89)	-0.17	(0.14)	-0.10	(0.14)	0.29	(0.65)	-1.11	(0.67)
Time x Class Size	1.48*	(0.55)	0.09	(0.09)	1.03	(0.42)	-0.03	(0.03)	-0.04	(0.03)	-0.07	(0.16)	-0.01	(0.16)
Classroom Quality Moderators														
Time x CLASS Emotional Support	-5.03	(2.12)	-0.62	(0.35)	-2.53	(1.62)	-0.01	(0.12)	0.13	(0.12)	-0.00	(0.60)	-0.64	(0.63)
Time x CLASS Class Organization	5.66*	(1.96)	0.70	(0.32)	3.38	(1.49)	0.03	(0.11)	-0.09	(0.11)	-0.62	(0.54)	0.30	(0.57)
Time x CLASS Instructional Support	-0.26	(1.12)	-0.12	(0.19)	-0.87	(0.85)	-0.02	(0.06)	-0.02	(0.06)	0.67	(0.33)	0.12	(0.36)

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

Table 19. Classroom Assessment Scoring System (CLASS) Scores

	Pre-K n=199			Kindergarten n=296			1st Grade n=296		
CLASS Domain / Dimension	Mean	(SD)	Range[a]	Mean	(SD)	Range[a]	Mean	(SD)	Range[a]
Emotional Support	5.7	(0.7)	3.6–6.9	5.2	(0.8)	1.7–6.9	5.1	(0.7)	2.7-6.9
Positive climate	5.9	(0.9)	3.0–7.0	5.3	(1.1)	1.8–7.0	5.1	(1.0)	1.8-7.0
Negative climate[b]	1.2	(0.4)	1.0–3.4	1.4	(0.7)	1.0–5.8	1.3	(0.5)	1.0-4.8
Teacher sensitivity	5.5	(1.0)	2.2–7.0	5.1	(1.1)	1.3–7.0	4.9	(1.1)	1.4-7.0
Regard for student perspectives	4.7	(1.0)	1.6–6.8	3.7	(1.0)	1.5–6.4	3.8	(0.9)	1.0-6.4
Classroom Organization	5.5	(0.8)	3.1–6.9	5.3	(0.8)	2.7–6.9	5.1	(0.8)	1.3-6.9
Behavior management	5.8	(1.0)	2.8–7.0	5.6	(1.0)	1.6–7.0	5.4	(1.0)	1.2-7.0
Productivity	5.9	(0.7)	3.4–7.0	5.6	(0.9)	2.6–7.0	5.3	(0.9)	1.4-7.0
Instructional learning formats	4.7	(0.9)	2.0–6.8	4.8	(1.0)	2.0–7.0	4.5	(0.9)	1.2-6.8
Instructional Support	2.6	(0.7)	1.1–5.9	2.5	(0.8)	1.0–4.9	2.4	(0.7)	1.0-5.2
Concept development	2.5	(0.8)	1.0–5.6	2.4	(0.8)	1.0–4.6	2.2	(0.7)	1.0-5.4
Quality of feedback	2.6	(0.9)	1.0–6.0	2.6	(1.0)	1.0–5.8	2.5	(0.9)	1.0-5.4
Language modeling	2.6	(0.8)	1.0–6.2	2.5	(0.9)	1.0–5.4	2.4	(0.8)	1.0-5.2

[a] Domain scores could range from 1.0–7.0; Dimension scores could range from 1–7.

[b] Scoring is reversed for the Negative climate dimension before it is included in the calculation of the Emotional Support domain score.

Figure 1. Growth in WJ-III Picture Vocabulary by English Proficiency

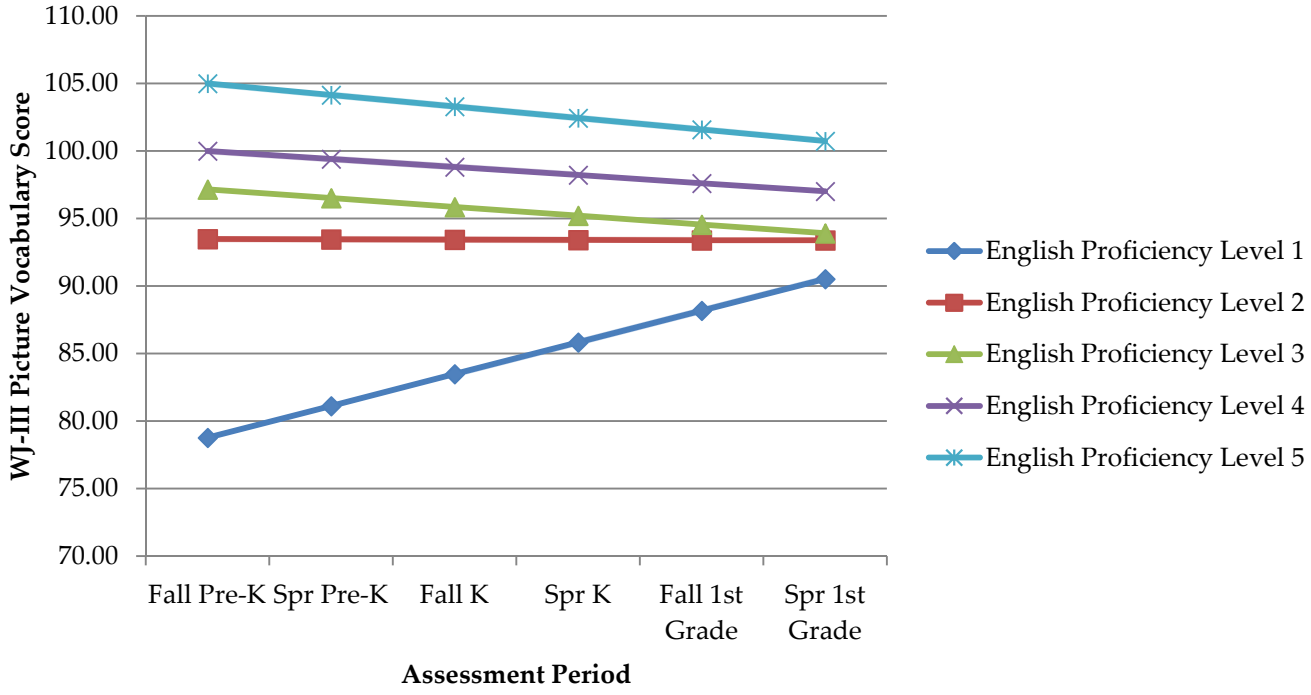


Figure 2. Growth in WJ-III Sound Awareness by English Proficiency

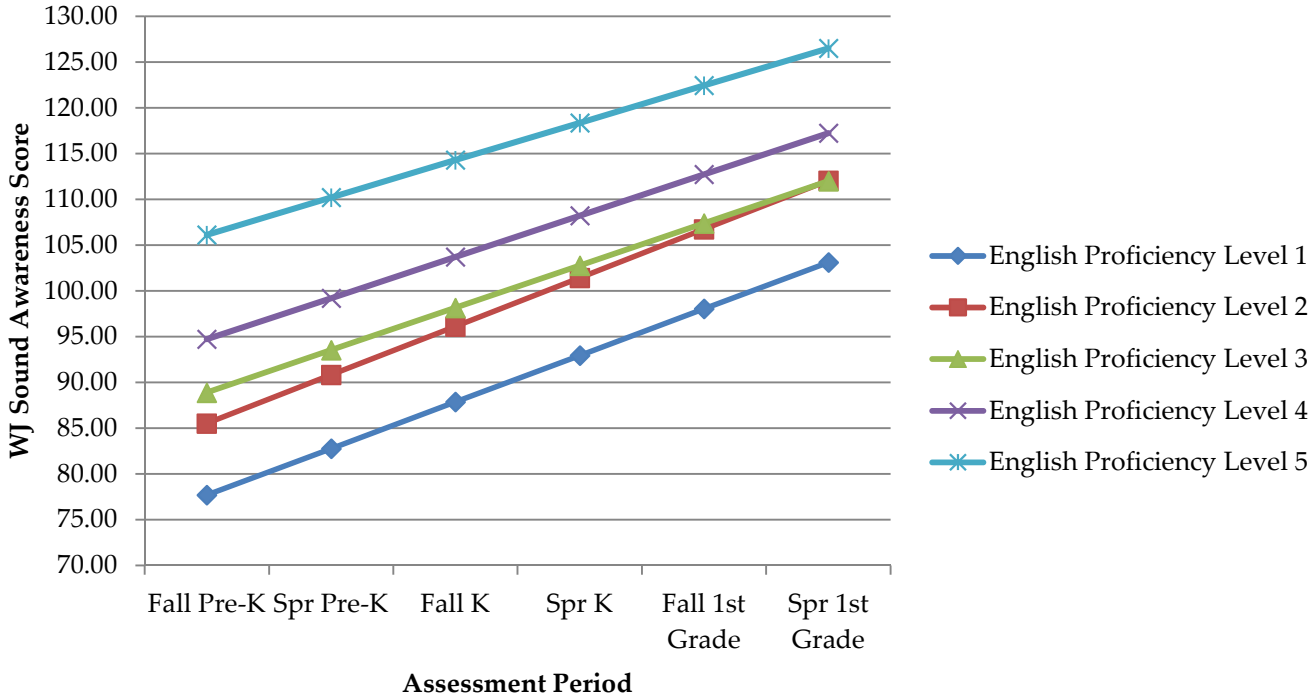


Figure 3. Growth in WJ-III Letter-Word Identification by English Proficiency

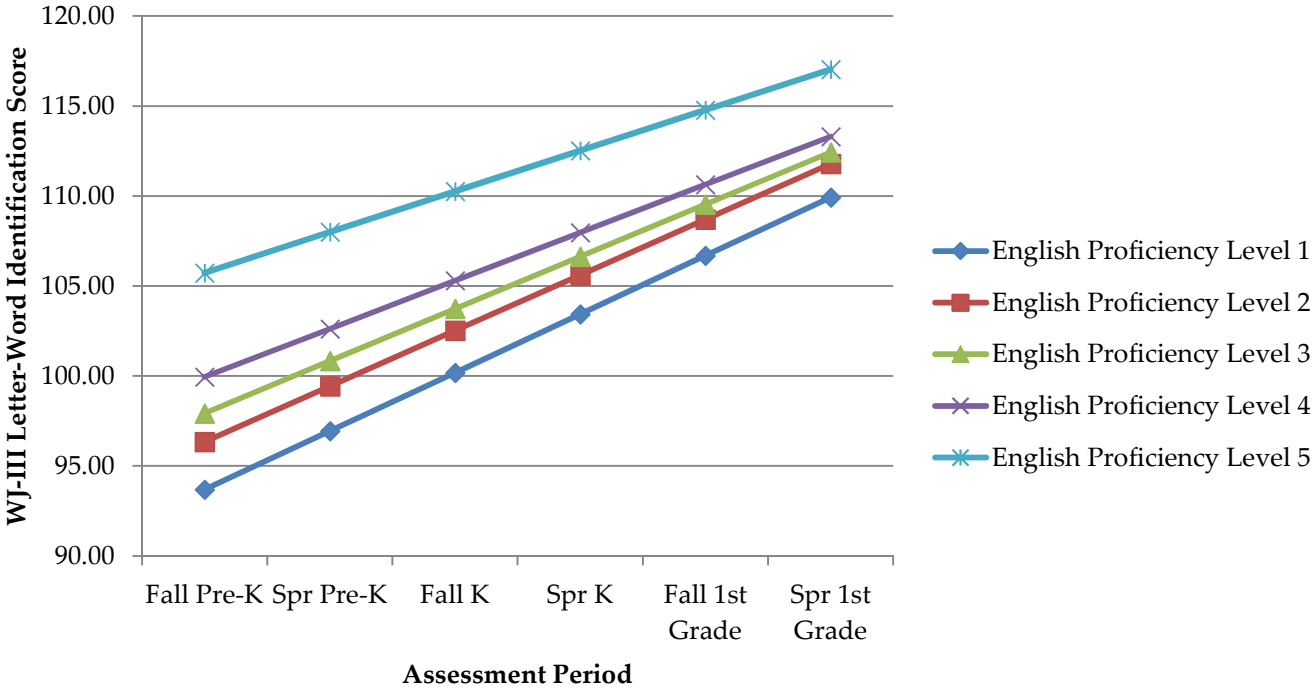


Figure 4. Growth in WJ-III Basic Reading Composite by English Proficiency

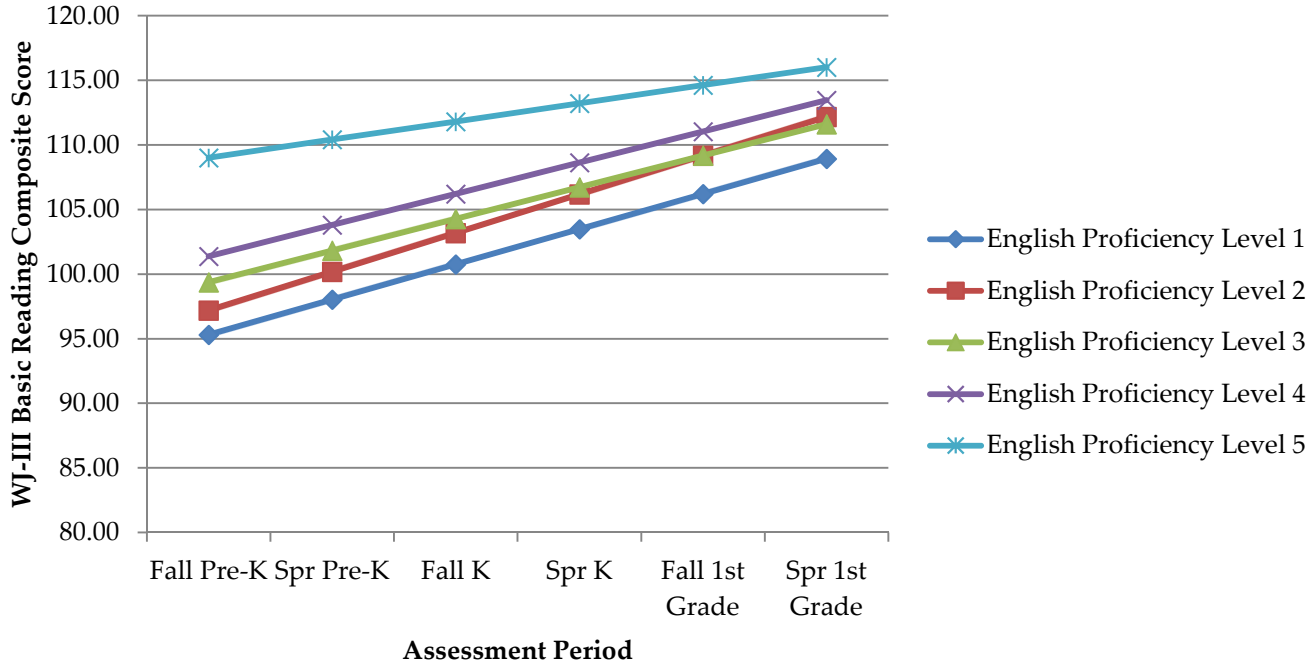


Figure 5. Growth in WJ-III Applied Problems by English Proficiency

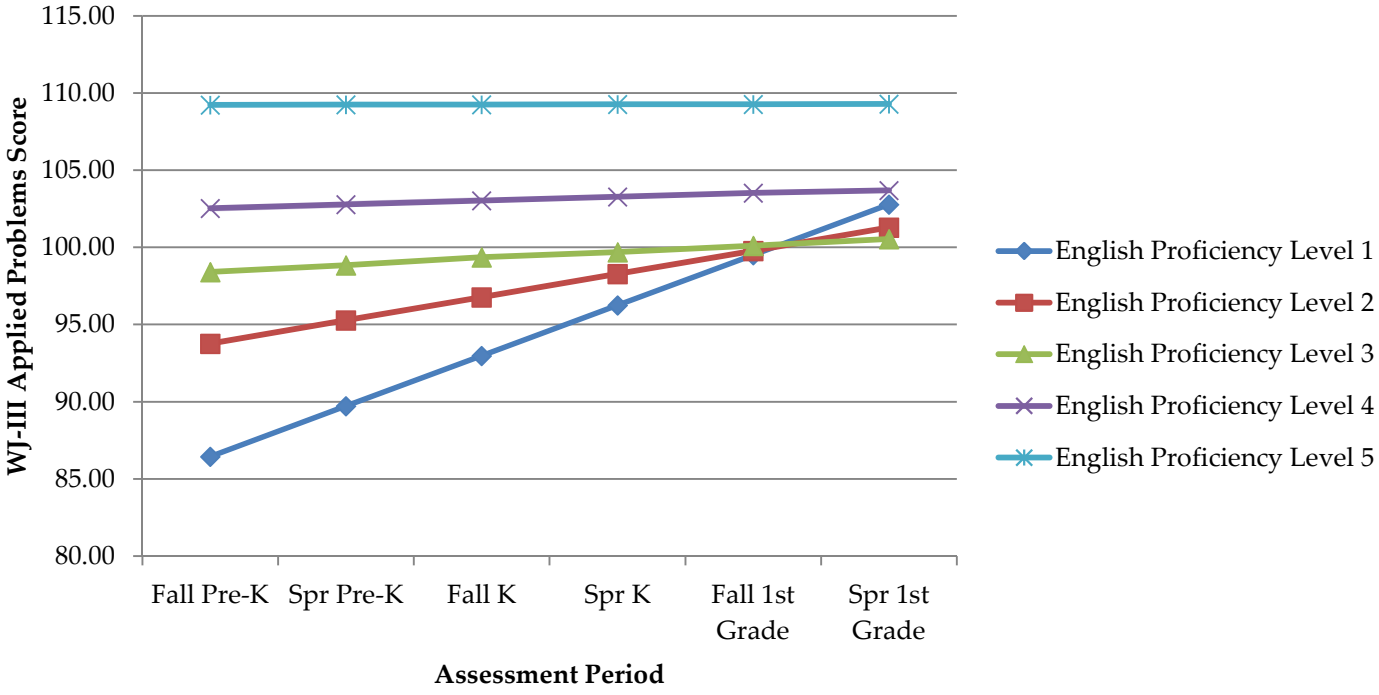


Figure 6. Growth in SSiS Social Skills by English Proficiency

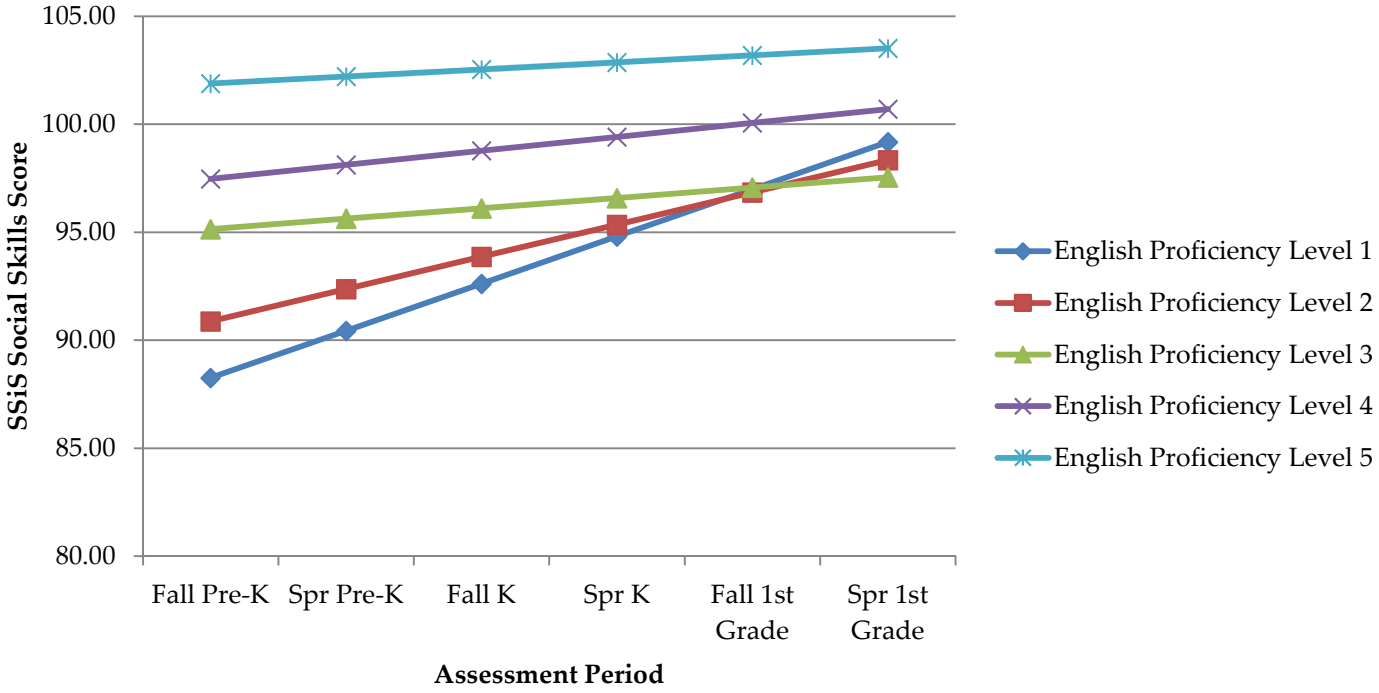


Figure 7. Growth in WJ-III Picture Vocabulary by Race

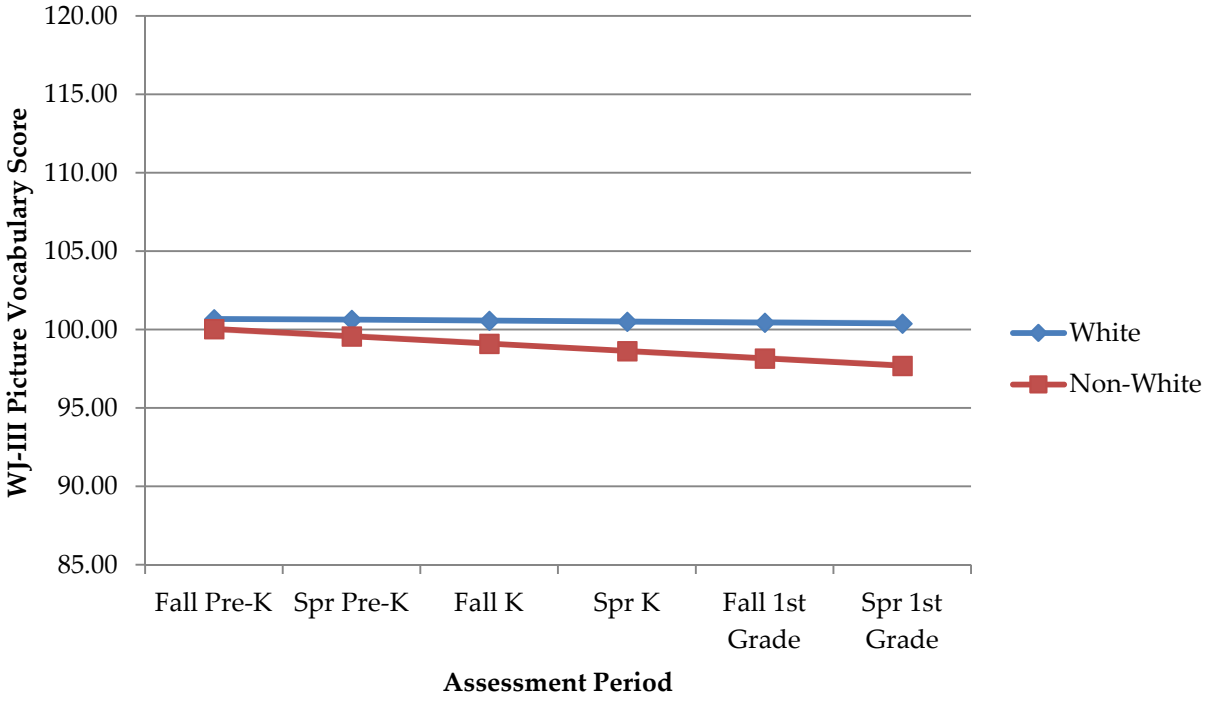


Figure 8. Growth in WJ-III Letter-Word Identification by Race

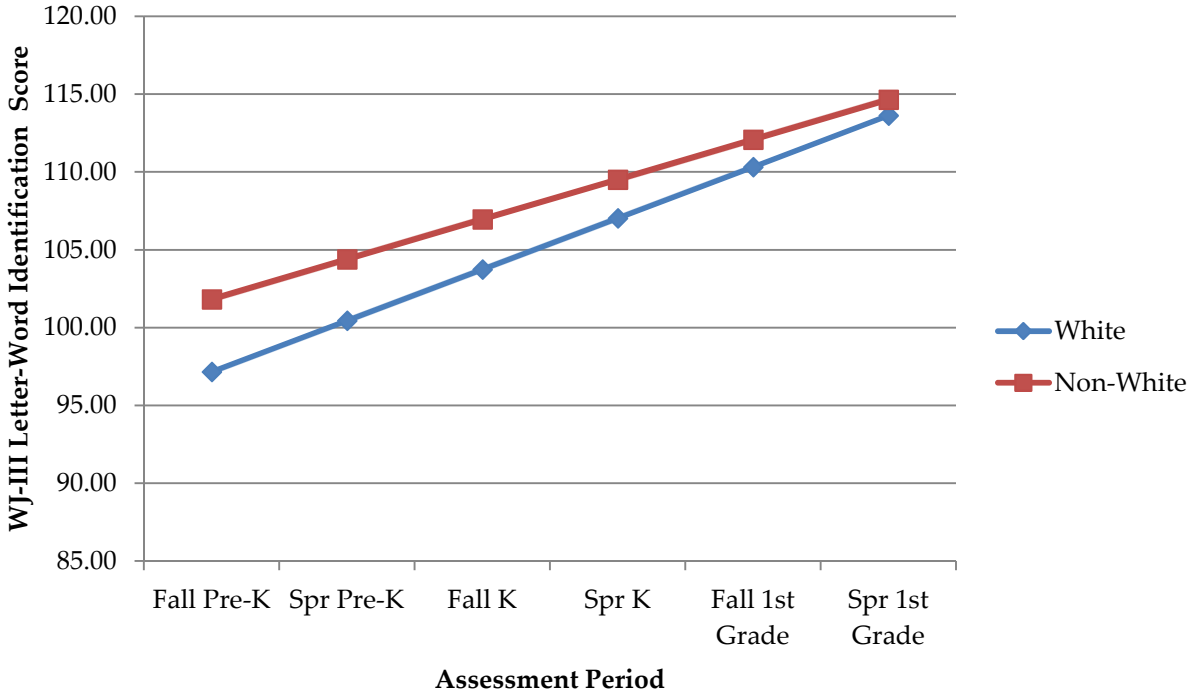


Figure 9. Growth in WJ-III Word Attack by Race

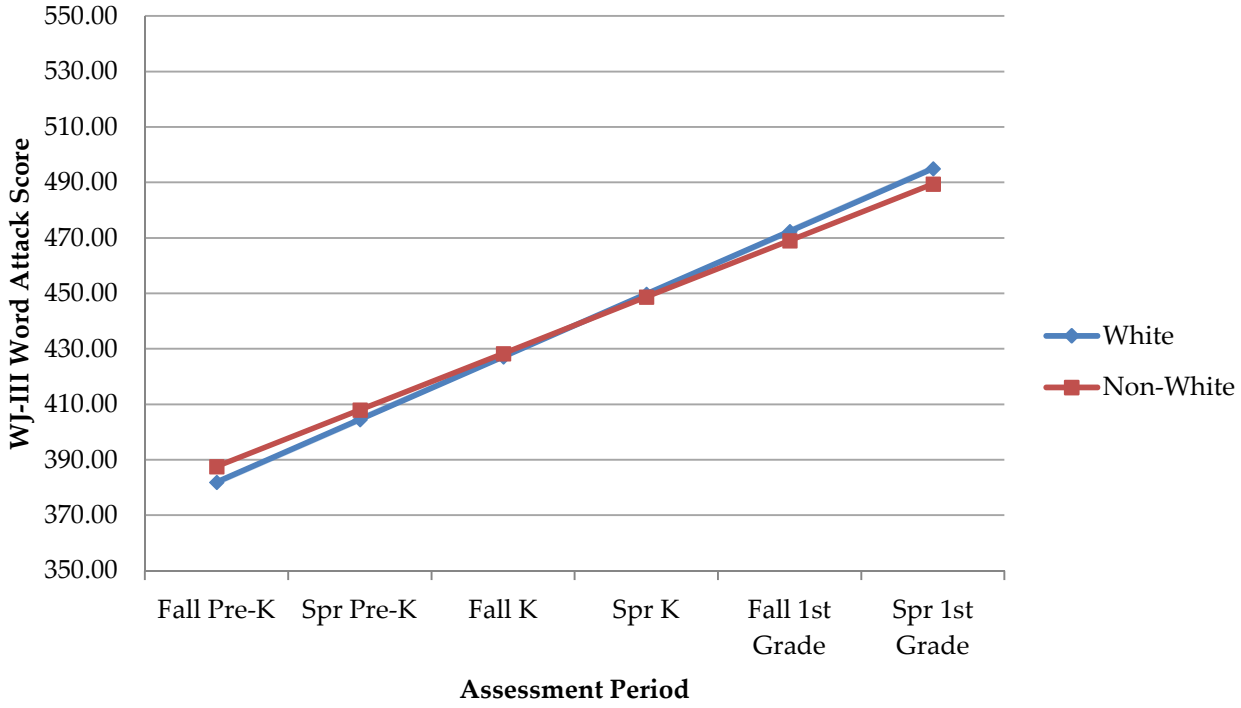


Figure 10. Gains in WJ-III Passage Comprehension by Race

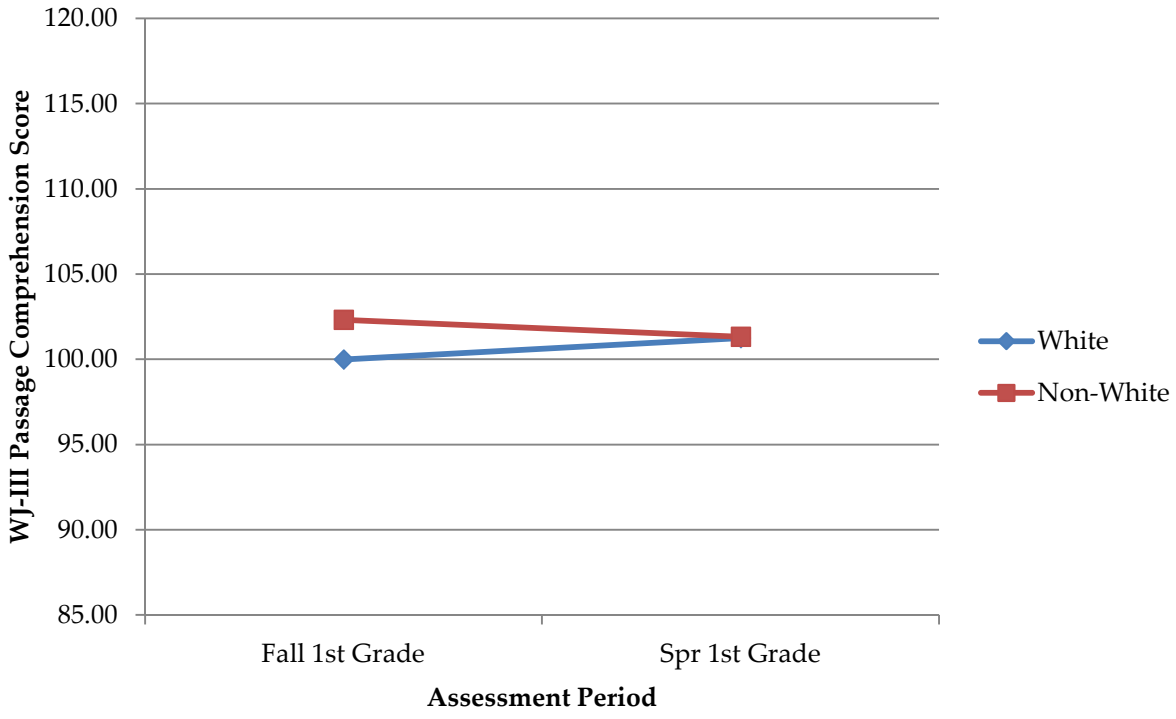


Figure 11. Growth in WJ-III Basic Reading Composite by Race

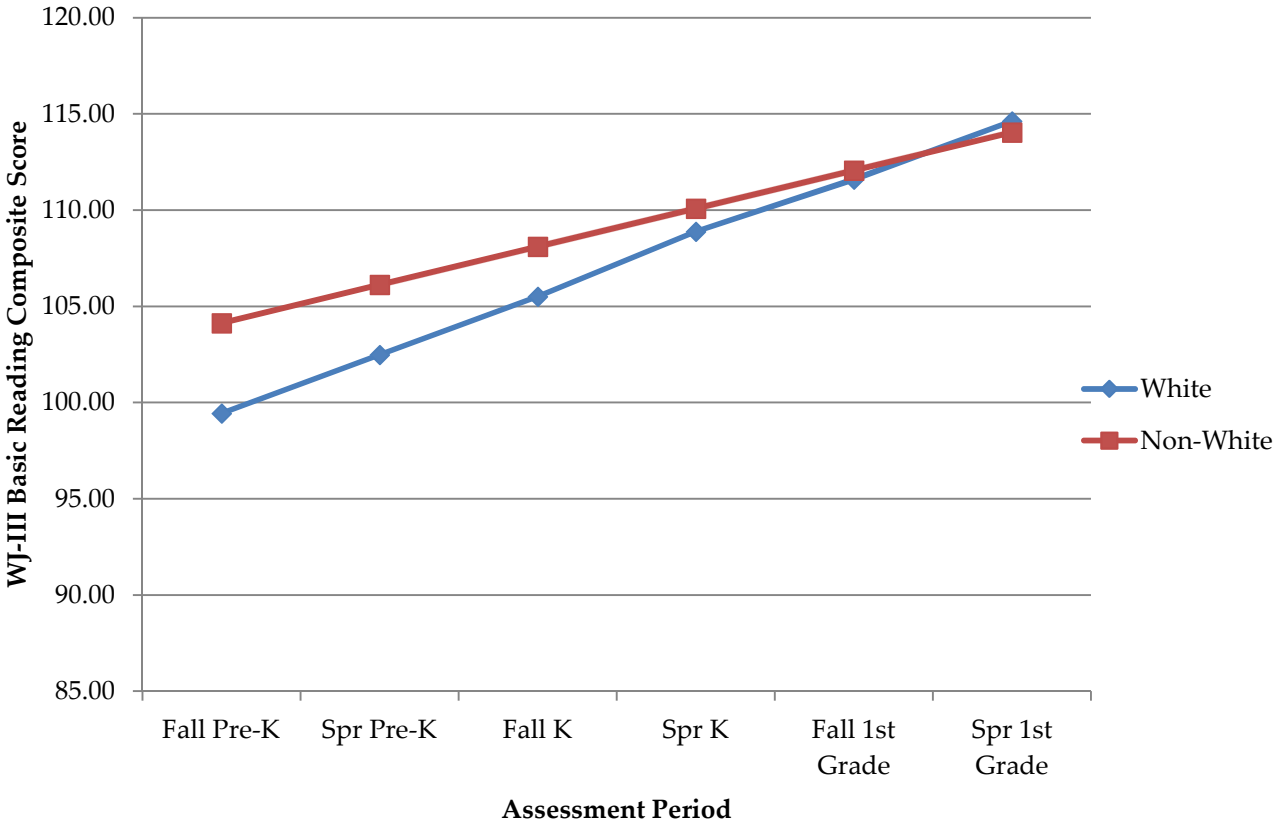


Figure 12. Gains in WJ-III Brief Reading Composite by Race

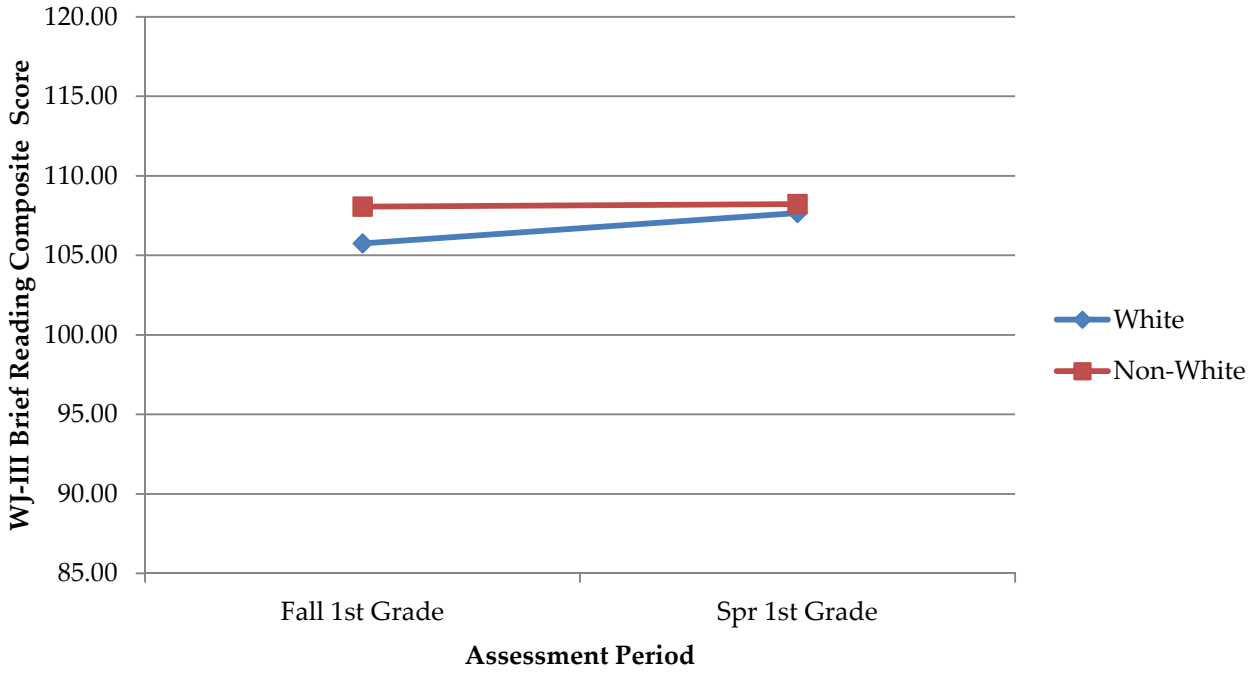


Figure 13. Growth in WJ-III Basic Reading Composite by Income

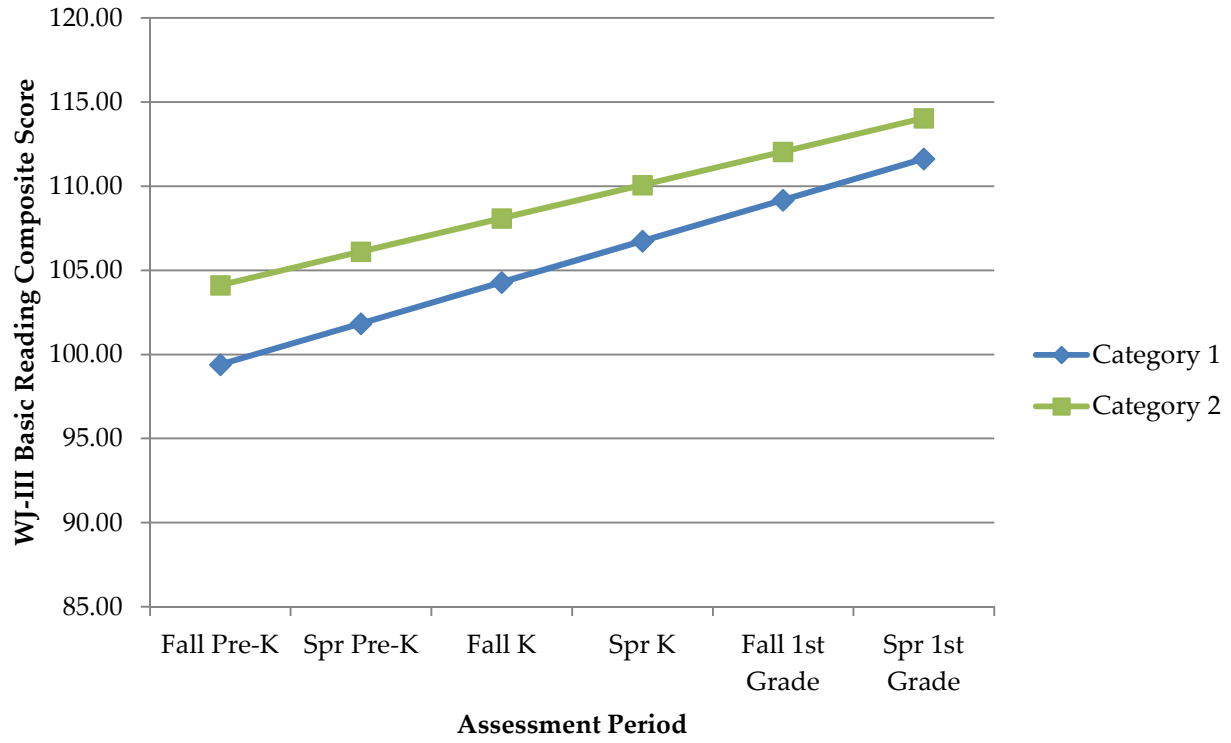


Figure 14. Gains in WJ-III Calculation by Program Type

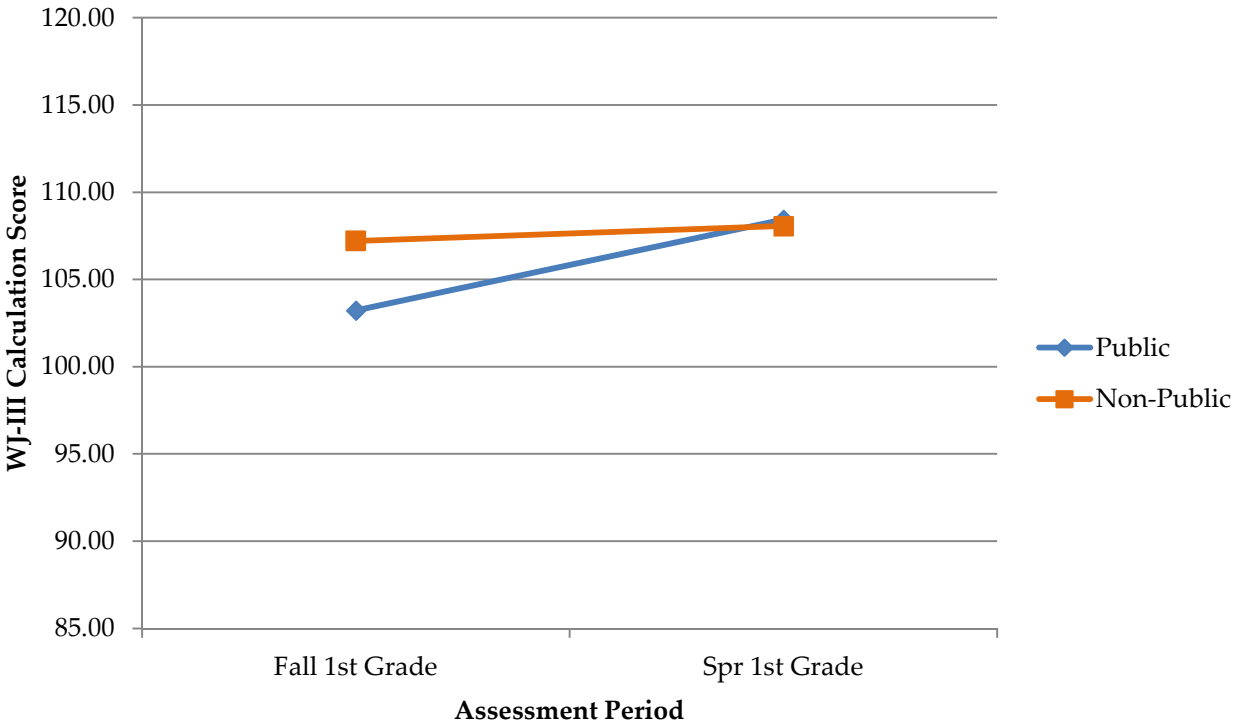


Figure 15. Growth in WJ-III Picture Vocabulary by CLASS Classroom Organization

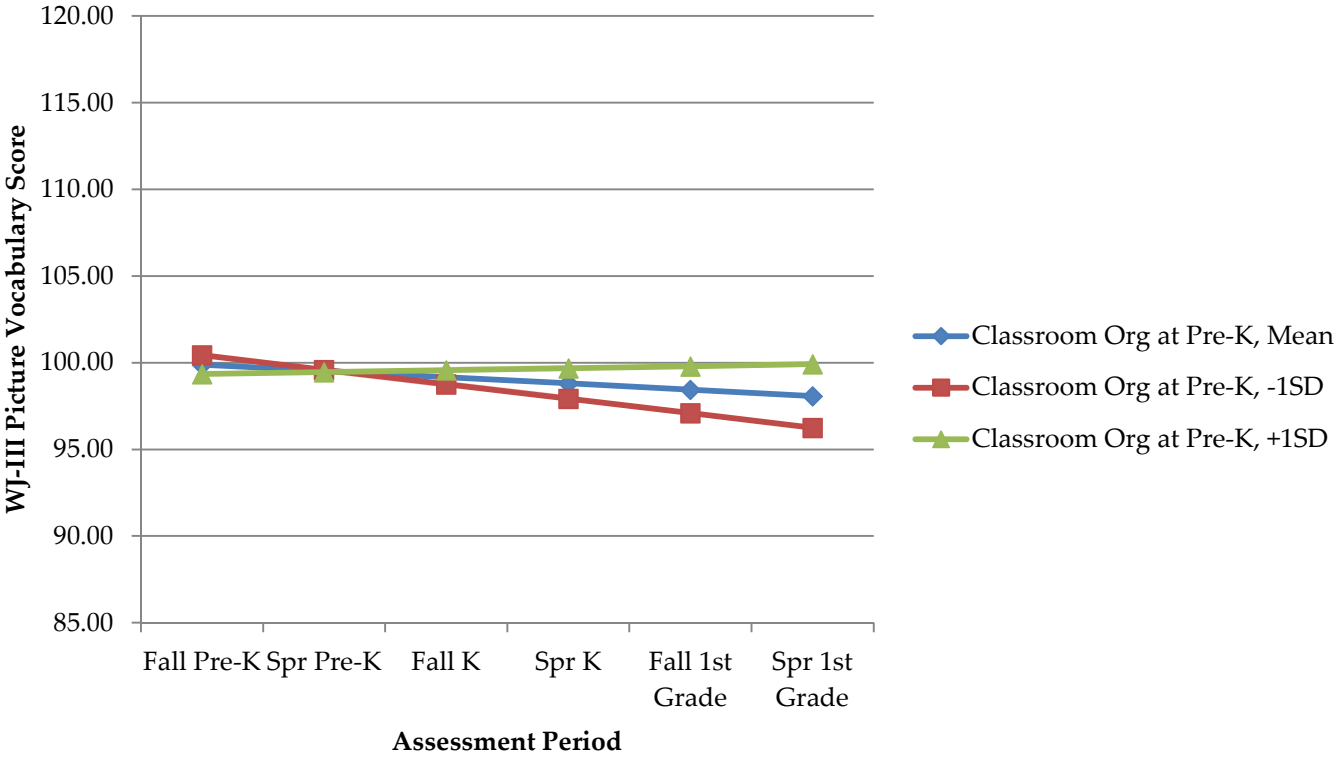


Figure 16. Gains in WJ-III Calculation by CLASS Classroom Organization

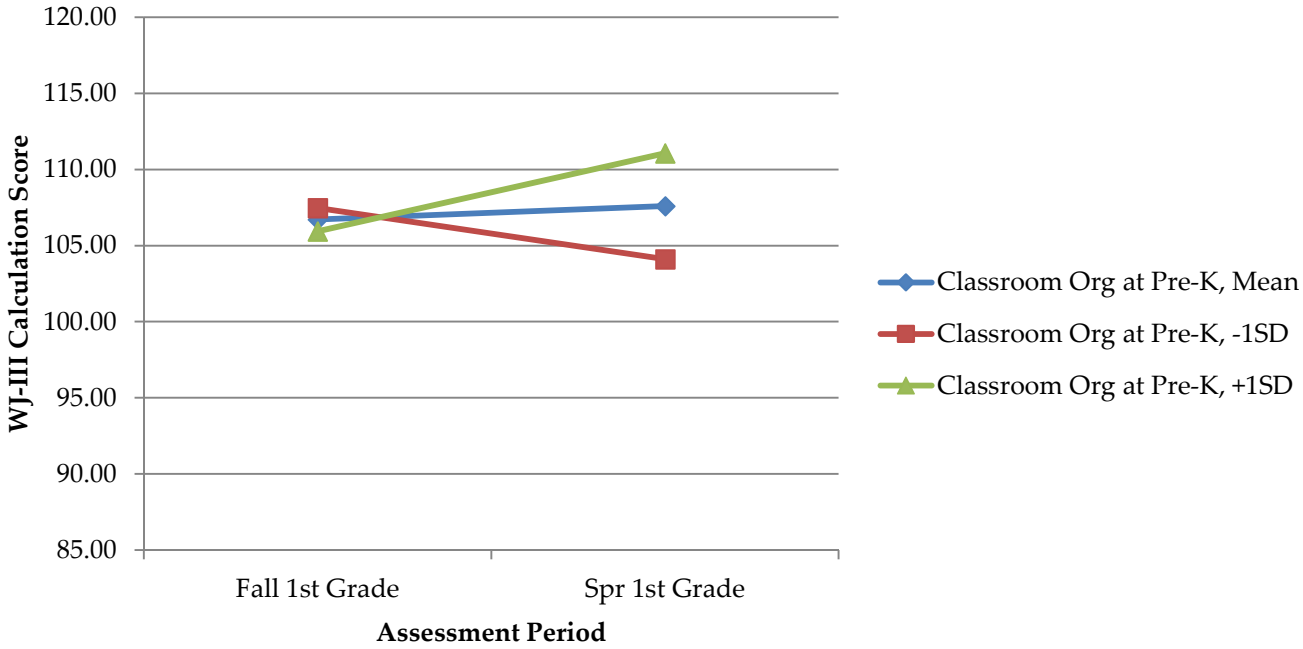


Figure 17. CLASS Emotional Support Scores in Pre-K (n=199), Kindergarten (n=296), and First Grade (n=296)

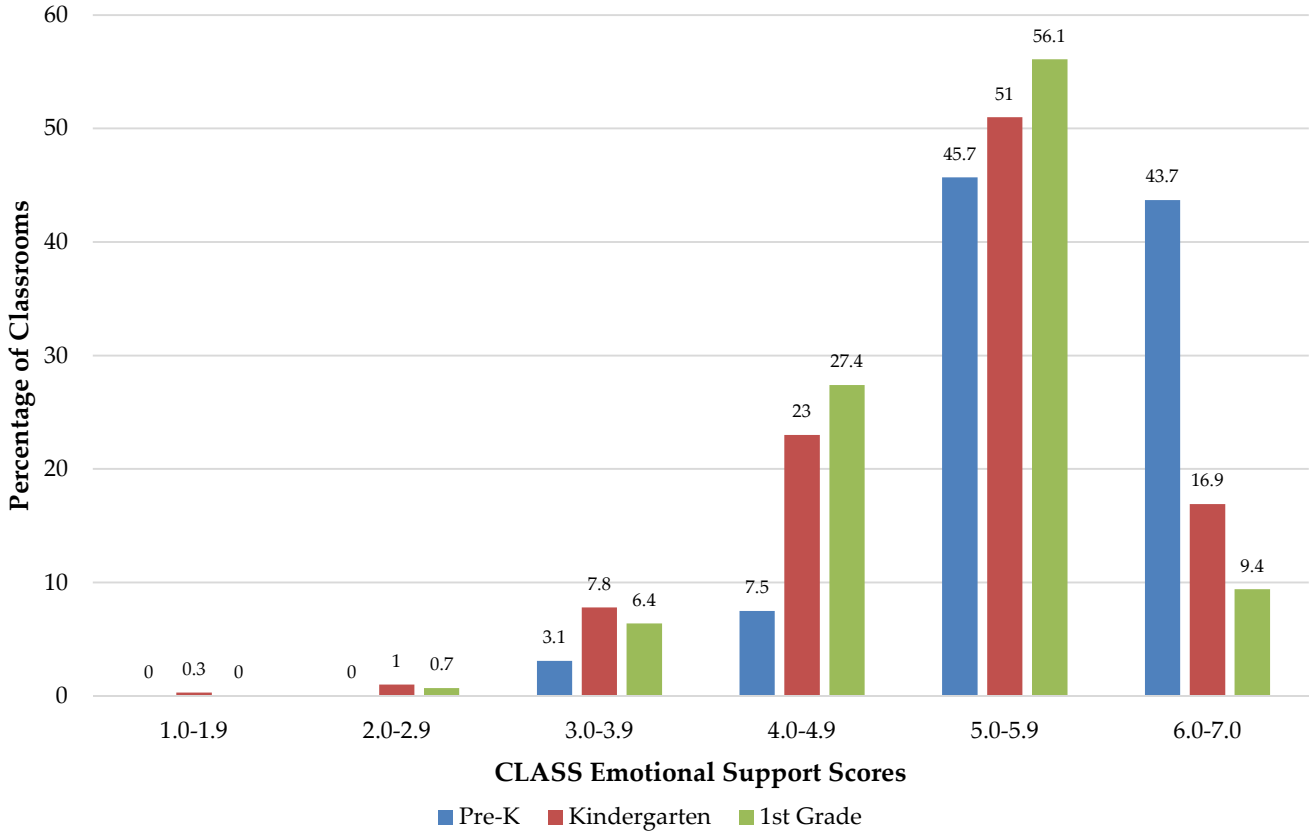


Figure 18. CLASS Classroom Organization Scores in Pre-K (n=199), Kindergarten (n=296), and First Grade (n=296)

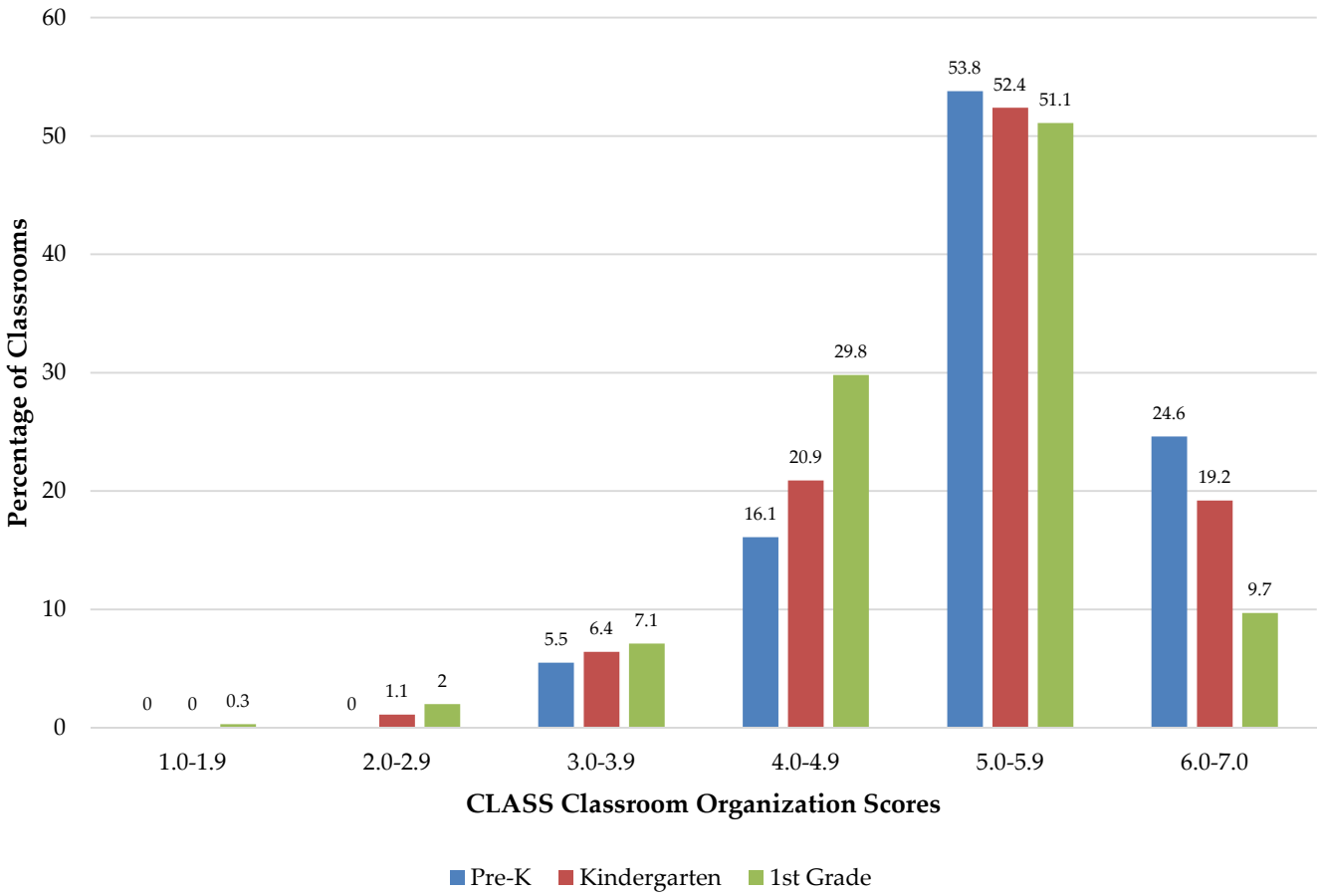
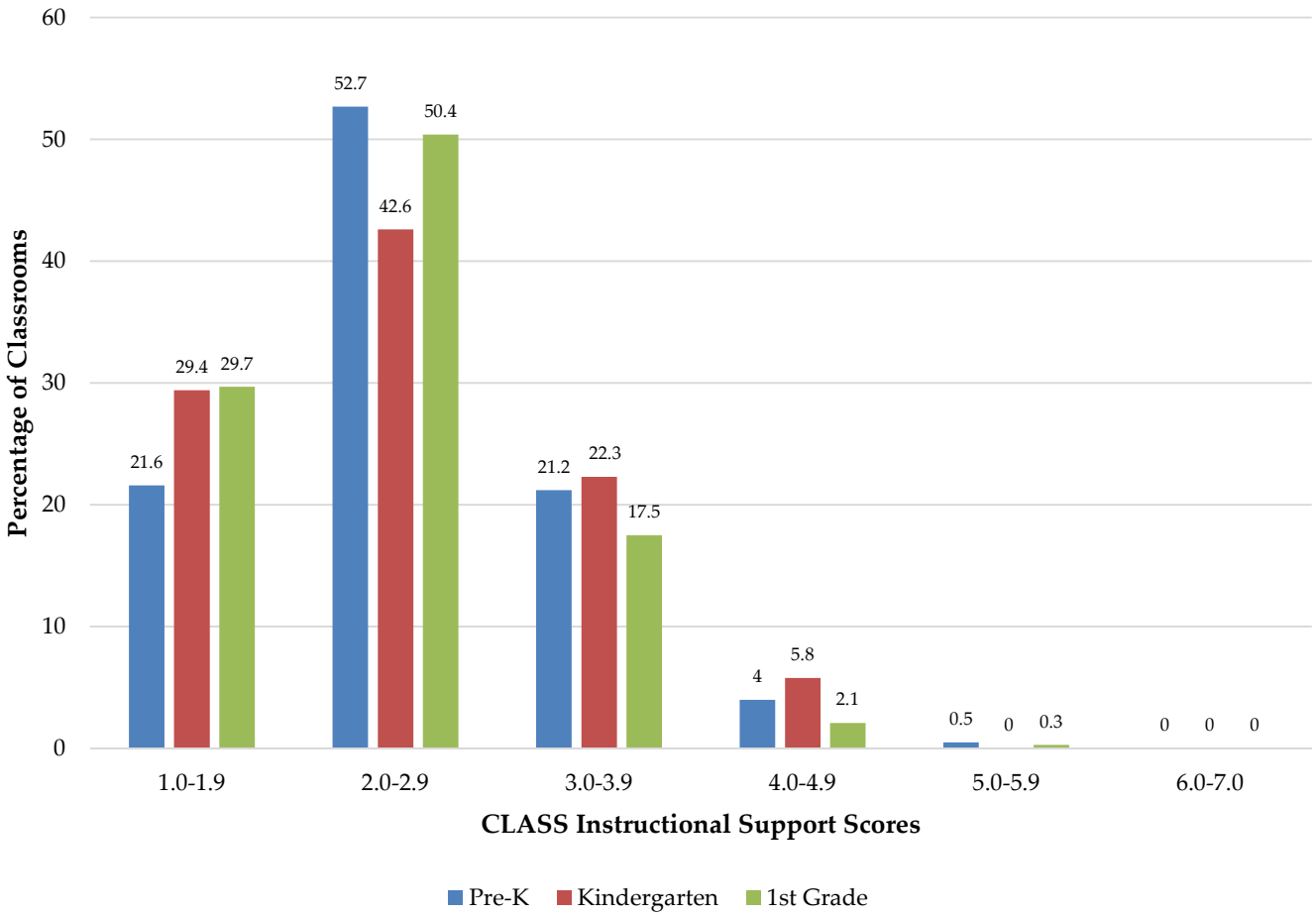


Figure 19. CLASS Instructional Support Scores in Pre-K (n=199), Kindergarten (n=296), and First Grade (n=296)



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