Human Capital Research Collaborative[1]

University of Minnesota and the Federal Reserve Bank of Minneapolis

Final Report:

Minnesota Head Start Assessment 2011

Prepared for

Minnesota Head Start Association

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Overview

Head Start was established in 1965 as a way to help low-income children ages 3 to 5 years old enter Kindergarten ready to learn by enhancing children's social and cognitive development through services provided to enrolled children and their families[2]. Comprehensive services are provided in the areas of education, nutrition/health, and social services. Head Start grants are provided by the Federal Government to local public and private non-profit and for-profit agencies; Federal statute requires that at least 20% of the cost of running Head Start programs must be contributed by the local community[3]. In addition, 90% of the children in Head Start programs must be from families with incomes at or below the federal poverty level, and 10% of the space in Head Start programs must be reserved for children with disabilities. At the Federal level, the Office of Head Start, Administration for Children and Families, Department of Health and Human Services administers the Head Start Program.

Minnesota Head Start programs have received general funds from the State of Minnesota since 1988[4]. Head Start was administered by the Minnesota Department of Economic Opportunity until 2002, at which time the Minnesota Department of Education took over the administration of Head Start programs in the state. In 2009, $74,447,456 in Federal grants was appropriated to Minnesota, and 10,142 children were enrolled in Minnesota Head Start programs[5]. There are currently 35 Minnesota Head Start grantees, offering Head Start programs in all 87 counties in Minnesota and including 7 Tribal Head Start programs and 1 Migrant Head Start program.

The Minnesota Head Start Association was established in 1987 by Head Start grantees in Minnesota. The Association is a representative organization with the intent of advocating on the grantees behalf on issues of importance to low-income families and gathering information regarding delivery of Head Start programs in Minnesota in order to improve grantee programs.[6] The Minnesota Head Start Association contracted with the Human Capital Research Collaborative to prepare this report.

The overall purpose of this report is to provide information to assist the Minnesota Head Start Association in making decisions regarding gathering and using data from Head Start programs to inform child progress and the development of school readiness goals. The report includes findings on five major questions:

1. How does each of the assessment instruments used across programs correspond to one another and the Head Start Child Development and Early Learning Framework?

2. What is the quality of the data currently available?

3. Are sample children attending Head Start making progress from fall to spring of the school year? Is this similar across the assessment instruments and across the individual programs?

4. What are the sample child and family characteristics that contribute to gains from fall to spring?

5. What are the sample classroom and school characteristics that contribute to gains?

Recommendations are provided for collecting and entering data, coding data, inter-rater reliability, and indicators that are similar across assessment instruments and the strongest predictors of outcomes that could be used as important indicators of progress in order to develop school readiness goals.

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[2] Early Childhood Learning & Knowledge Center website, Office of Head Start, Administration for Children & Families, U.S. Department of Health & Human Services; http://eclkc.ohs.acf.hhs.gov/hslc

[3] Minnesota Head Start Association; http://www.mnheadstart.org/programs.html

[4] Ibid.

[5] Head Start Program Fact Sheet Fiscal Year 2010, Early Childhood Learning & Knowledge Center website, OHS, ACF, DHHS; ; http://eclkc.ohs.acf.hhs.gov/hslc

[6] Minnesota Head Start Association; http://www.mnheadstart.org/programs.html

1. How does each of the assessment instruments used across programs correspond to one another and the Head Start Child Development and Early Learning Framework?

Overview of the Head Start Program Performance Standards

The Head Start Program Performance Standards were originally established in 1975 and require federal monitoring of Head Start programs every three years.[7] The Federal Improving Head Start School Readiness Act of 2007 authorized the use of scientifically based measures to assess children's school readiness skills and to improve overall program performance; grantees are continuing to be monitored and a full review is required at least once every 3 years[8]. Additionally, grantees are required to conduct annually a comprehensive self-assessment of program effectiveness and progress in meeting program goals and objectives.[9]

The Act also requires Head Start program goals and child specific school readiness goals to align with the Head Start Child Development and Early Learning Framework.[10] The Head Start Child Development and Early Learning Framework is a December, 2010 revision of the original Head Start Child Outcomes Framework published in 2000. The Framework specifies essential areas of development and learning that all Head Start programs are to use in establishing child goals and monitoring progress toward those goals as well as curriculum and program development. There are 11 domains (physical development and health, social and emotional development, approaches to learning, language development, literacy knowledge and skills, mathematics knowledge and skills, science knowledge and skills, creative arts expression, logic and reasoning, social studies knowledge and skills, and English language development) and 37 domain elements that provide more specific explanations of the components of each domain.

On November 9, 2011, the U.S. Department of Health and Human Services, Administration for Children and Families, finalized rules for the Head Start Program (45 CFR Part 1307)[11]; the regulations became effective on December 9, 2011. Included as part of these rules, program goals are required to align with (a) the Head Start Child Development and Early Learning Framework, (b) early learning guidelines established by the state, and (c) school requirements and expectations. In addition, the goals must, at a minimum, include the domains of language and literacy, cognition and general knowledge, approaches toward learning, physical development, and social and emotional development. Furthermore, the rules require the analysis of aggregate child-level assessment data collected at least three times per year and individual child-level assessment data for all participating children. The analysis of these data are to be used to (a) determine grantees' progress in meeting program goals, (b) improve programs, (c) inform parents and the community at large, and (d) identify individual children's development and progress in order to individualize instruction and services for each child.[12] Head Start agencies not meeting the rules specified in 45 CFR Part 1307 will be required to compete for funding in the next 5 year funding cycle following official review.

All Head Start children in Minnesota are assessed based on the Head Start Child Development and Early Learning Framework on the domains of language and literacy, mathematics, science, creative arts, social and emotional development, approaches to learning, and physical health.[13] The three most commonly used assessment tools in Minnesota that gather data in a variety of domains of development are the Teaching Strategies Gold Assessment

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[7] Ibid.

[8] Improving Head Start for School Readiness Act of 2007 (Pub. L. 110-134); DOCID: f:pub1134.110, Page 121, Stat 1386-1388.

[9] Ibid, Stat. 1390-1391.

[10] http://eclkc.ohs.acf.hhs.gov/hslc/tta-system/teaching/eecd/Assessment/Child%20Outcomes/HS_Revised_Child_Outcomes_Framework%28rev-Sept2011%29.pdf

[11] Federal Register/Vol. 76, No. 217, Wednesday, November 9, 2011/Rules and Regulations, pp. 70010-70032.

[12] Ibid.

[13] Minnesota Head Start Association; http://www.mnheadstart.org/programs.html

System, the Work Sampling System Development Checklist for Head Start, and the Preschool Child Observation Record.

Minnesota Head Start Assessments

Teaching Strategies GOLD

The Teaching Strategies GOLD (GOLD) Assessment System is an authentic observation-based assessment system designed for children from birth through kindergarten. GOLD may be implemented with any developmentally appropriate curriculum and blends observational assessments with a few targeted performance tasks in the area of literacy and numeracy. The assessment can be used for all children, including English-language learners. The tool has 38 objectives with 66 indicators organized into nine areas of development: social-emotional, physical, language, cognitive, literacy, mathematics, science and technology, arts, and English language acquisition[14]. The Minnesota Head Start programs in the analyzed sample collected data using 53 indicators from 25 objectives, which were categorized into seven of the nine areas of development: social-emotional, physical, language, cognitive, literacy, mathematics, and English language acquisition.

TSGOLD is rated using color bands which correspond to different developmental stages. The mean for each scale score occurs at around age 36 months, which is the middle age range for the assessment tool. Scale scores correlate moderately strongly with the age of the child. This indicates that teachers generally give higher scores to older children and lower scores to younger children, which aligns with the intent of the TSGOLD to measure advancement across skills that follow a developmental progression. The red color band indicates the expected range of score for a child who is age birth to 1 year; orange indicates the expected range for age 1 to 2 years; yellow is 2 to 3 years; green shows the expected range for children in a preschool 3 class; Blue is for pre-K 4; and purple is the expected score range for a child in kindergarten[15].

Statistical analyses of a nationally representative sample of children ages 0 to 71 months indicate that the Teaching Strategies Gold is both a valid and reliable tool for measuring early childhood development. A six-factor model assessing each item within six key areas of development measured by the TSGOLD (social-emotional, physical, language, cognitive, literacy, and mathematics) confirmed that the assessment reliably measures each of these areas. In addition, Rasch scaling was used to determine that the six main areas of TSGOLD and the items within those areas measure only one factor. With the exception of one item each in the literacy and the mathematics domains, Rasch scaling showed the areas to be unidimensional and distinct from one another. Reliability estimates were high: item reliabilities were .99 for all six scales, person reliabilities ranged from .95 to .98, internal consistency estimates ranged from .96 to .98, and interrater reliabilities were at or above .80. Through differential item analysis it was also concluded that the TSGOLD assessment is equally valid and reliable for children within special populations, including children with special needs and English Language Learners[16].

Work Sampling System

The Work Sampling System (WSS) is a curriculum-embedded, continuous progress performance assessment system designed to measure children, preschool through 5th grade, on 62 indicators of development in eight domains: social and emotional development, approaches to learning, language development, literacy, mathematics, science, creative arts, and physical health and development. Developmental guidelines are presented for performance indicators (specific skills, behaviors, or accomplishments) in each domain, together with a rationale and specific examples for each performance indicator. Teachers observe children and rate them as

[14] Teaching Strategies, Inc., 2011. *Teaching Strategies GOLD Assessment System: Technical Summary*. Summary Findings of a Study Conducted by The Center for Educational Measurement & Evaluation, University of North Carolina at Charlotte.
[15] Ibid.
[16] Ibid.

"Proficient", "In Process", or "Not Yet" on each performance indicator using the WSS Developmental Checklist.[17]

The WSS has been found to be a valid and reliable assessment instrument. Meisels et al. found children's WSS scores were moderately to highly correlated with children's scores on the Woodcock-Johnson Psycho-educational Battery-Revised (WJ-R; r =.75 for fall and r = .66 for spring) indicating concurrent validity. Predictive validity was determined by comparing the fall and winter checklists to spring assessments where high correlations were found between the fall and winter checklists and the spring WJ-R assessments (r =.76). Correlations between the fall, winter, and spring checklists indicated good test-retest reliability (r = .89 between both fall and winter and winter and spring, and r = .69 between the fall and spring). Internal consistency was good, with Cronbach alphas ranging from .87 to .94 among items for the five domains of the WSS checklist at all three time points[18].

Preschool Child Observation Record

The Preschool Child Observation Record (COR) is an observation based instrument used to assess young children's knowledge and abilities in many areas of development. The instrument corresponds with the HighScope Curriculum, but can be used as an assessment tool by any program, not just programs using the HighScope Curriculum. COR is appropriate for assessing children from ages 2 ½ to 6 years old. The COR has 32 items which are organized into six categories of child development: initiative, social relations, creative representation, movement and music, language and literacy, and mathematics and science.[19]

The COR is a reliable and valid assessment instrument for preschool children. Two studies with Head Start children specifically looked at psychometric properties of COR. For the purposes of analyses, initiative was combined with social relations and creative representation was combined with movement and music. Confirmatory factor analysis indicated that there were four factors, representing the four developmental domains. COR was moderately correlated with the Cognitive Skills Assessment Battery (r = .46 - .62) and age (r = .31 for total COR); but there were no significant gender differences. Cronbach's alpha for all items ranged from .91 to .94 across the two studies, and interrater agreement (Pearson product-moment correlation) for the total assessment was .73.[20]

Teacher Training on Assessment Instruments

Head Start teachers are trained on the relevant assessment tool as a means of assessing children's development on identified domains. Training varies by the instrument. For instance, this past year (2010-11) staff using TS GOLD received two full days of training and coaching from their education coordinators who have multiple years of experience with this assessment tool. The WSS programs generally provide one full day of training for new teachers and, in conjunction with this, provide on-going mentoring. Many of the Head Start programs use webinars and on-line training tools as a follow-up to help teachers master the assessment tools. The Minnesota Head Start Association has organized a Quality Assessment Group since 2006 to improve the quality of data collected through the assessment tools and to help teachers use assessments to inform classroom instruction and individualize curriculum. Teachers and assistants trained in the applicable assessment tool observe children in their classroom across each of three checkpoint periods (Fall—start of school to November 10, 2011, Winter—November 17, 2011 to February 17, 2012, and Spring—February 24, 2012 to May 31, 2012), making observational remarks on-line continuously during each period. The lead teacher in each classroom reviews all the information collected in each child's portfolio in order to rate each child and finalize the data by the end of the checkpoint period.

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[17] Meisels, S. J., Dichtelmiller, M. L., Jablon, J. R., & Marsden, D. B. (2001). *Work sampling for Head Start: Developmental guidelines for four year olds*. Pearson: New York.

[18] Meisels, S. J., Liaw, F., Dorfman, A., Nelson, R.F. (1995). The Work Sampling System: Reliability and validity of a performance assessment for young children. *Early Childhood Research Quarterly, 10,* 277-296.

[19] HighScope Education Research Foundation (2003). *COR: Preschool Child Observation Record, 2nd Ed.*,HighScope Press: Ypsilanti, MI.

[20] The High/Scope Preschool Educational Approach: A prospectus for Pre-Kindergarten programs; http://www.highscope.org/file/EducationalPrograms/EarlyChildhood/UPKfullReport.pdf.

Alignment of Head Start Child Development and Early Learning Framework with Minnesota Head Start Assessments

As indicated above, Head Start program goals and child specific school readiness goals are required to align with the Head Start Child Development and Early Learning Framework, and include the following domains: language and literacy, cognition and general knowledge, approaches toward learning, physical development, and social and emotional development. In order to assist the Minnesota Head Start Association in the development of both program goals and child specific school readiness goals that meet these requirements, we have aligned the three assessment systems (TS GOLD, WSS, and COR) with the Head Start Child Development and Early Learning Framework.

Table 1(see Appendix) shows the alignment of the Head Start Child Development and Early Learning Framework (HSCDELF) with the TS GOLD, WSS, and COR assessment systems. The HSCDELF was used as the basis on which to align items within the three assessment systems. Specific items for each of the assessments are categorized by HSCDELF elements within domains. Both the TS GOLD[21] and COR[22] items were aligned with the HSCDELF elements based on documentation on their assessment websites. WSS[23] indicators were matched only on the domain level using the assessment developer's report. Based on information provided in the WSS report the HCRC team matched WSS indicators to Head Start elements. Of particular note is that each of the three assessments has items that are categorized within the minimal required domains of language and literacy, cognition and general knowledge, approaches toward learning, physical development, and social and emotional development.

Some of the items match across all three assessments (see Table 1 in appendix), and should be considered when developing program and school readiness goals. These items include the following:

A. **Domain: Physical Development & Health.** ***Element: Health Knowledge & Practice.*** Item: Takes care of own personal needs/performs some **self-care tasks** independently/takes care of own needs appropriately.

B. **Domain: Physical Development & Health.** ***Element: Fine Motor Skills.*** Item: **eye-hand coordination**/uses fingers & hands/uses writing and drawing tools/control of writing, drawing, & art tools/drawing & painting pictures/making and building models.

C. **Domain: Social & Emotional Development.** ***Element: Social Relationships.*** Item: **forms relationships with adults**/interacts with adults/relates to adults

D. **Domain: Social & Emotional Development.** ***Element: Social Relationships***. Item: **understanding & expressing feelings**/shows empathy for others/responds to emotional cues.

E. **Domain: Social & Emotional Development.** ***Element: Social Relationships.*** Item: **interacts with peers**/makes friends/interacts easily with children/relating to other children.

F. **Domain: Social & Emotional Development.** ***Element: Social Relationships***. Item: **resolving interpersonal conflict**/seeks adult help needed to resolve conflicts/balances needs and rights of self & others.

G. **Domain: Approaches to Learning.** Element: ***Initiative & Curiosity.*** Item: **Shows flexibility and inventiveness in thinking**/approaches tasks with flexibility and inventiveness/solving problems with materials.

H. **Domain: Language Development.** ***Element: Receptive Language.*** Item: **Comprehends language**/gains meaning by listening/listening to and understanding speech.

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[21] http://www.teachingstrategies.com/content/pageDocs/Head-Start-GOLD-Alignment-Early-Learning-Framework-2011.pdf
[22] http://www.highscope.org/file/Assessment/Head%20Start%20to%20COR_Jan2011.pdf
[23] Meisels, S.J., Dichtelmiller, M.L., Jablon, J.R., & Marsden, D.B. (2001). *Work Sampling for Head Start: Developmental guidelines for four year olds.* Pearson: New York.

I. **Domain: Language Development.** ***Element: Expressive Language.*** Item: **Uses an expanding expressive vocabulary**/develops increasing ability to understand and use language/uses expanded vocabulary & language for a variety of purposes/uses increasingly complex and varied spoken language/uses vocabulary/using complex patterns of speech.

J. **Domain: Literacy Knowledge & Skills.** ***Element: Book Appreciation & Knowledge.*** Item: **Uses and appreciates books**/shows appreciation for books and reading/demonstrating knowledge about books.

K. **Domain: Literacy Knowledge & Skills.** ***Element: Alphabet Knowledge.*** Item: **identifies and names letters**/uses letter-sound knowledge/identifies at least 10 letters of the alphabet/begins to development knowledge about letters/using letter names and sounds.

L. **Domain: Literacy Knowledge & Skills.** ***Element: Print Concepts & Conventions.*** Item: **uses print concepts**/shows beginning understanding about concepts about print/demonstrating knowledge about books.

M. **Domain: Literacy Knowledge & Skills.** ***Element: Early Writing.*** Item: **writes to convey meaning**/uses letter-like shapes, symbols and letters to convey meaning/writing.

N. **Domain: Mathematics Knowledge & Skills.** ***Element: Number Concepts & Quantities.*** Item: **counts**/connects numerals with their quantities/shows beginning understanding of numbers and quantity/demonstrates increasing interest & awareness of numbers & counting/counting.

O. **Domain: Mathematics Knowledge & Skills.** ***Element: Patterns.*** Item: **demonstrates knowledge of patterns**/recognizes simple patterns and duplicates them/identifying patterns.

P. **Domain: Mathematics Knowledge & Skills.** ***Element: Patterns.*** Item: uses classification skills/ sorts objects into subgroups that vary by one or two characteristics/**sorting objects**.

Q. **Domain: Mathematics Knowledge & Skills.** ***Element: Measurement & Comparison.*** Item: **Compares & measures**/participates in measuring activities/orders, compares, & describes objects according to size, length, height, & weight/comparing properties.

R. **Domain: Science Knowledge & Skills.** ***Element: Conceptual Knowledge of the Natural & Physical World.*** Item: Demonstrates knowledge of the characteristics of living things/asks questions about the natural world and seeks answers through active exploration/**identifying natural and living things.**

S. **Domain: Creative Arts Expression.** ***Element: Music.*** Item: **explores musical concepts and expression**/participates in group music experiences/feeling & expressing steady beat/moving to music/singing.

T. **Domain: Creative Arts Expression.** ***Element: Creative Movement & Dance.*** Item: **explores dance & movement concepts/**participates in creative movement & dance/feeling and expressing steady beat/moving to music.

U. **Domain: Creative Arts Expression.** ***Element: Art.*** Item: **explores the visual arts**/uses a variety of art materials for tactile exploration & expression/drawing & painting pictures.

V. **Domain: Creative Arts Expression.** ***Element: Drama.*** Item: explores drama through actions & language/**engages in dramatic play**/pretending.

2. What is the quality of the data currently available?

An important question guiding this report focuses on examining the quality of the data that is available in order to improve data collection efforts. High quality representative data with little or no missing information is essential for the interpretation of data analysis and the ability to use data to inform practice.

Available Data

Data for this report were obtained from the Minnesota Head Start Association. These data include information from 11 programs using the TS GOLD Assessment System (Child Care Resource & Referral Head Start, Heartland Community Action Agency Head Start, Kootasca Community Action Head Start, Minnesota Valley Action Council, Northwest Community Action Head Start, Prairie Five Community Action Council Head Start, Reach-Up Head Start, Scott-Carver-Dakota CAP Agency Head Start, Semcac Head Start, Tri-Valley Opportunity Council Head Start, West Central Minnesota Communities Action Head Start); three programs using the HighScope COR Assessment System (Arrowhead Economic Opportunity Agency Head Start, Lakes & Prairies Community Action Partnership Head Start; Southwestern Minnesota Opportunity Council Head Start); and four programs using the Work Sampling System Assessment (Community Action Partnership of Ramsey & Washington Counties Head Start, Inter-County Community Action Council Head Start, Otter Tail-Wadena Community Action Council Head Start, Tri-County Community Action Council Head Start). Data are for the 2010-2011 school year.

Missing Data

Table 2 (see appendix) presents a summary of data missing from the current dataset. At least some data were obtained for 2,431 children in Head Start programs using the TS GOLD assessment, 918 children using the WSS assessment, and 517 children using the COR assessment. When considering just items on the assessment systems, if we were to examine only participants with no missing data on any of the items across the three assessment time points, we would have a sample of 1,201 participants for the TS GOLD, 394 participants for the WSS, and no participants for the COR (see overview of missing item ratings on table 2). For the majority of the data analyses conducted for this report, however, we calculated proficiency rates for children who were missing less than 50% of the items in a given domain based on their available items using the same proficiency criteria. The number of children included in each assessment sample is as follows: TS GOLD = 1,651 for fall, 1,871 for winter, 1,964 for spring, and 1,385 across the three time points; WSS = 918 for all time points; and COR = 160 for fall, 221 for winter, 233 for spring, and 142 across the three time points. This sample is referred to throughout the report as the "analyzed sample".

Following the overview of missing item ratings, a missing item analysis is presented for each assessment by item level, indicating the percentage of missing ratings based on the full file sample for each assessment.

For the Head Start programs using TS GOLD assessments, based on 2,431 participants, the highest percentage of missing data was in the English Language Acquisition domain at 85.8% for the fall assessment period, 84.2% for the winter assessment period, and 84.5% for the spring assessment period. The large amount of missing data on these items is due to the nature of the data collection on these two items; these data are only collected on non-English first language speakers, children whose first language is English do not have a code on these items. These items are not included in further analyses. Besides these two items, the next highest amount of missing data is in the domains of literacy and math. For the fall assessment period, each of 12 items in these two domains was missing between 30.4% and 34.3% of data. The lowest level of missing data for the fall assessment period was 16.2% for "demonstrates traveling skills" in the physical development domain. For the winter assessment period, each of 17 items in the domains of literacy and math were missing between 20.0% and 21.5% of data. The lowest level of missing data for the winter assessment period was 16.0% for "follows limits and expectations" in the social-emotional development domain. The spring assessment period had the lowest levels of missing data; no items were missing more than 19.0% of the data. However, all items were missing between 15.3% and 19.0% of the data in the spring assessment period.

Overall, for the Head Start programs using WSS assessments, based on 918 participants, very little data were missing across the three assessment periods. The highest amount of missing data was in the fall and winter assessment periods for the items "follows two-step directions" (17.4% missing data in the fall, and 18.4% missing data in the winter) and "shows phonological awareness" (15.3% missing data in the fall, and 15.0% missing data in the winter) in the language domain. Only 3 items for the fall assessment period and two items for the winter assessment period were missing more than 10% of the data. The highest level of missing data for the spring assessment period was 0.8% for the item "comprehends stories" in the literacy domain. Missing data ranged from 0.0% to 17.4% for the fall assessment period, 0.0% to 18.4% for the winter assessment period, and 0.0% to 0.8%

for the spring assessment period. The low levels of missing data for the WSS assessments allowed us to include all 918 participants we received data on in the analyzed sample.

For the Head Start programs using COR, based on 517 participants. The highest percentage of missing data was for the item "identifying materials and properties" in the mathematics and science domain with 77.2% missing at the fall assessment period, 65.0% missing at the winter assessment period, and 59.6% missing at the spring assessment period. The item with the lowest percentage of missing data was "moving with objects" in the movement and music domain in the fall (12.8% missing) and winter (9.1% missing) assessment periods, and "making choices and plans" in the spring (6.0% missing) assessment period. For both the fall and winter assessment periods, 16 items were missing over 50% of the data, and for the spring assessment period 11 items were missing over 50% of the data. One program was dropped entirely from additional analyses due to no participants having enough data to calculate proficiency based on the above criteria.

Following each assessment systems individual missing data item level analyses, a summary of missing child, family, and program characteristics by assessment type is provided. TS GOLD has the most variables identified in the dataset, with missing data ranging from 0.0% for a number of variables to 94.9% for the "early head start participation" variable. TS GOLD programs are missing more than 50% of the data for each of 9 variables that they collected data on. WSS programs did not collect data on 20 of the variables that TS GOLD programs did have data on. For those variables that WSS programs did collect data on, missing data ranged from 0.0% to 100% for "child in IEP (y/n)" and "hours of parent in-kind)". WSS programs were missing more than 50% of the data for each of 9 variables that they collected data on. COR programs did not collect data on 25 variables that TS GOLD programs did have data on. For those variables that COR programs did collect data on, missing data ranged from 0.0% to 89.7% for "IEP disability type". COR programs were missing more than 50% of the data for each of 8 variables that they collected data on.

Representativeness

An important issue when collecting data on only a portion of the larger population is obtaining a representative sample. Given that the Head Start programs providing data for this report were voluntary, and do not necessarily represent the larger Minnesota Head Start population, data from this report cannot be generalized to the larger Head Start population at either the state or the national level. In addition, since data are available for only one year of the available programs, it is not clear if the results generated from analyses with these data would apply across additional years in the same programs or if they are an anomaly. In order to provide a comparison of the sample with state and national data, Table 3 (see Appendix) provides information about Head Start children demographics for 2009 at the national and the state level, as well as the current sample. Percentages for the current Head Start sample were calculated based on valid data only, missing data were excluded from analyses (see table 2 for missing data on the identified demographic variables).

Sample Demographics

Table 4 (see Appendix) provides additional information on the sample characteristics broken down by assessment type, and includes information on missing data. Percentages are calculated based on the analyzed samples. Of particular note is that the COR programs dataset is missing 100% of the data for the number of years in head start and parent education variables, as well as 54% of the data for the following variables: race/ethnicity, attendance, family size, family type, family income, WIC participation, TANF participation, primary adult's age at child's birth, and basis for head start eligibility. In addition, the TS GOLD sample is missing 80% of the data for the number of years in Head Start, 73% of the family size, and 60% of the parent education level variables. The WSS sample is missing 100% of the IEP status, and 64% of the attendance and basis for head start eligibility data. Across all three programs, very little if any data are missing for the following variables: child's gender, language, child's age in months, and program location.

3. Are children attending Head Start making progress from fall to spring of the school year? Is this similar across the three assessment instruments and across the individual programs?

The question of the progress of Head Start children from fall to spring of the school year was examined in a number of different ways. In order to identify proficiency rates across the three assessment systems, some recoding of the data was necessary.

Recode

The Work Sampling Assessment yields proficiency categories of "not yet", "in progress", or "proficient". For each item, children were assigned a 0 for a score of "not yet", a 1 for a score of "in progress", and a 2 for a score of "proficient".

The Teaching Strategies GOLD Assessment System is administered by rating items on a 9-point scale. For each item the 0-9 ratings are divided into color categories which indicate expectations for ages and for classes/grades. Red is the expected level on an item for a child aged birth to 1 year; orange is 1-2 years; yellow is 2-3 years; green is expected for a child in a preschool 3 year old class; blue is for preschool 4 year old class; and purple is the level a child is expected to be at 5 years old, in kindergarten. Although each item is given a color based on the 9 point scale, the color varies across the scales for each item, and, therefore, specific points on the scale may indicate, for instance, that a child is at the 2-3 year level (yellow) for one item, but at the preschool 3 class (green) for another item. We, therefore, recoded each item based on a 3 point scale. We used the color codes to determine our recoding scheme. On our 0-2 scale, any child who was rated red, orange or yellow on an item, but not green was given a 0 for that item, or "not yet". If a child was rated green or blue, but not purple the child was scored a 1 for that item, or "in process". If a child was rated purple on an item, they were scored a 2 or "proficient". This coding scheme produced proficiency rates similar to rates we have seen on other measures across Minnesota for children of the same age, with proficiency rates on the final spring assessment, the assessment as children near kindergarten, looking similar to rates seen for children at fall kindergarten entry.

For the HighScope Preschool Child Observation Record we attempted to recode the items into a similar 0-2 scale. However, the results produced proficiency rates that were much higher than we would expect to see when compared with proficiency rates on other measures. Therefore, we decided to leave these items on their original 5-point scale.

Finding Proficiency Rates

Based on an earlier report for the Minnesota Department of Education[24] it was determined that an overall proficiency rate of 75% proficient based on the total number of points for the entire assessment was an appropriate measure of proficiency. For each assessment, we defined proficient as scoring 75% or higher of the total points available on a given assessment. On the TS GOLD assessment, we used recoded scores when finding proficiency rates. There were 51 items with a possible total score of 102 points, 75% proficiency on the TS GOLD assessment was, therefore, 77 points on the total assessment. For TS GOLD we did not factor in the two English-language learner items. The Work Sampling System included 62 items with a possible 124 points; 75% proficiency was 93 points on the total assessment. There are 32 items on the COR with a total possible 160 points on a 5-point scale; 75% proficiency was 120 points on the total assessment. In addition to obtaining a75% proficiency on the total score for each assessment, we also calculated total domain proficiency based on 75% proficiency of the total score within each domain on a given assessment.

Item Correlations with Proficiency Levels

Tables 5, 6, and 7 (see Appendix) provide correlations of items on each of the assessments by 75% domain proficiency. Table 5 provides correlations for the TS GOLD items and 75% domain proficiency, Table 6 provides correlations for the WSS items and 75% domain proficiency, and Table 7 provides correlations for the COR items

[24] Assessing the Validity of Minnesota School Readiness Indicators: Summary Report (2011). Human Capital Research Collaborative. http://humancapitalrc.org/mn_school_readiness_indicators.pdf

and 75% domain proficiency. On Table 5 and Table 6 the correlations are provided for both the analyzed sample and the non-missing sample. Since there were no items that were not missing any data on the COR, Table 7 only provides correlations for the analyzed sample. For each table, the first column shows the correlation of the fall scores for each item by the 75% domain proficiency rate for fall; the second column shows the correlation of the winter scores for each item by the 75% domain proficiency rate for winter; the third column shows the correlations of the spring scores for each item by the 75% domain proficiency rate for spring. The first three columns provide information on the concurrent correlation between the item and the domain proficiency at each time point, illustrating concurrent validity of the items to each specific domain. The fourth column on each table shows the fall score on each item correlated with the 75% domain proficiency rate for spring. This column provides information on the correlation between each item in the fall and the related domain proficiency in the spring, providing a measure of predictive validity from the fall to the spring.

Items with high correlations between the fall score and the spring domain proficiencies indicate that those individuals who have higher scores on a specific item in the fall are more likely to be proficient in the spring. Items that have higher correlations for this column indicates that fall scores on those items are the most salient in predicting how well a student will do in the spring in that particular domain. Therefore, an examination of Tables 5, 6, and 7 focusing on the fall score x the spring domain proficiency at the 75% level, and looking across assessment systems, yields potential items within each domain that would be important to consider when developing program and school readiness goals. The items that are deemed more likely to predict from fall to spring that cut across assessment systems are:

A. Social-Emotional (TS GOLD)/Social & Emotional Development (WSS)/Social Relations (COR)

a. Peer relationships (interacts with peers/shows empathy & caring for others/relating to other children)

b. Conflict resolution (solves social problems/seeks adult help when needed to resolve conflicts/resolving interpersonal conflicts)

c. Emotional control/appropriate expression of emotions (manages feelings/understanding & expressing feelings)

B. Physical (TS GOLD)/Physical Development & Health (WSS)

a. Gross motor skills/balance (demonstrates balancing skills/demonstrates gross-motor manipulative skills/moves with balance & control)

b. Fine motor skills/eye-hand coordination (uses fingers & hands/uses eye-hand coordination to perform tasks)

C. Language (TS GOLD & WSS)/Language & Literacy (COR)

a. Expressive language (uses an expanding expressive vocabulary/develops increasing abilities to understand and use language to communicate/uses expanded vocabulary & language/using complex patterns of speech/using vocabulary)

D. Literacy (TS GOLD & WSS)/Language & Literacy (COR)

a. Letter knowledge (identifies & names letters/begins to develop knowledge about letters/knows that the letters of the alphabet are a special category of visual graphics that can be individually named/identifies at least 10 letters of the alphabet/using letter names & sounds)

E. Mathematics (TS GOLD)/Mathematical Thinking (WSS)/Math & Science (COR)

a. Counting (Counts/Connects numerals with their quantities/shows beginning understanding of number & quantity/counting)

F. Cognitive (TS GOLD)/Approaches to Learning (WSS)/Initiative (COR)

a. Problem-solving (Solves problems/attend to tasks & seeks help when encountering a problem)

b. Self-direction (Persists/shows some self-direction/making choices & plans)

G. Science (WSS)/Math & Science (COR)

a. Exploration (Asks questions about the natural world & seeks answers through active exploration)

H. The Arts (WSS)/Creative Representations & Movement & Music (COR)

a. Music (Participates in group music experiences/singing)

b. Dramatic Play (Engages in dramatic play/pretending)

Tables 8, 9, and 10 (see Appendix) provide correlations of each item by the overall proficiency at the 75% level for the total score and the % gain from fall to spring on each assessment. Table 8 provides correlations for the TS Gold items, Table 9 provides correlations for the WSS items, and Table 10 provides correlations for the COR items. On Tables 8 and 9 the correlations are provided for both the analyzed sample and the non-missing sample. Again, there were no items that were not missing any data on the COR, so Table 10 provides correlations for the analyzed sample only. For each table, the first column shows the correlations of the fall scores for each item by the 75% overall proficiency for fall; the second column shows the correlation of the winter scores for each item by the 75% overall proficiency rate for winter; the third column shows the correlations of the spring scores for each item by the 75% overall proficiency rate for spring. The first three columns provide information on the concurrent correlation between the item and the overall proficiency at the 75% level for the total score at each time point, illustrating concurrent validity of the items to the overall proficiency rate. The fourth column on each table shows the fall score on each item correlated with the 75% overall proficiency rate for spring. This column provides information on the correlation between each item in the fall and the related overall proficiency in the spring, providing a measure of predictive validity from the fall to the spring. The fifth column on each table shows the fall scores on each item correlated with the percentage of gains from fall to spring (i.e., change from fall to spring). Note that these correlations are negative. This indicates that higher scores in the fall correlate with smaller gains on the assessment from fall to spring, and, that lower scores in the fall correlate with larger gains on the assessment from fall to spring. Those children who had lower scores in the fall made larger gains from fall to spring compared to those children who had higher scores in the fall. Children at the higher end of the scale do not have as much opportunity to make gains on the items; if a child is proficient on an item in the fall, they cannot become "more" proficient, but can only remain proficient or lose ground.

Items with high correlations between the fall score and the spring overall proficiencies indicate that those individuals who have higher scores on a specific item in the fall are more likely to be proficient at 75% proficient overall in the spring. Items that have higher correlations for this column indicates that fall scores on those items are the most salient in predicting how well a student will do in the spring on overall proficiency. Therefore, an examination of Tables 8, 9, and 10 focusing on the fall score x the spring overall proficiency at the 75% level, and looking across assessment systems, yields potential items within each domain that would be important to consider when developing program and school readiness goals. Many of these items overlap with the items identified above that predict proficiency within domains. This provides further confirmation that these are important items to consider when developing program and school readiness goals. The items that are more likely to predict from fall to spring that cut across assessment systems are:

A. Social-Emotional (TS GOLD)/Social & Emotional Development (WSS)/Social Relations (COR)

a. Conflict resolution (solves social problems/seeks adult help when needed to resolve conflicts/resolving interpersonal conflicts)

b. Relationships with adults (interacts easily with familiar adults/relating to adults).

B. Physical (TS GOLD)/Physical Development & Health (WSS)

a. Fine motor skills/eye-hand coordination (uses fingers & hands/uses fingers and hands/uses eye-hand coordination to perform tasks)

C. Language (TS GOLD & WSS)/Language & Literacy (COR)

a. Expressive language (uses an expanding expressive vocabulary/speaks clearly/uses social rules of language/develops increasing abilities to understand and use language to communicate/uses expanded vocabulary & language/using complex patterns of speech/using vocabulary)

D. Literacy (TS GOLD & WSS)/Language & Literacy (COR)

a. Letter knowledge (identifies & names letters/begins to develop knowledge about letters/knows that the letters of the alphabet are a special category of visual graphics that can be individually named/identifies at least 10 letters of the alphabet/using letter names & sounds)

b. Phonological awareness (demonstrates phonological awareness/demonstrates knowledge about books)

E. Mathematics (TS GOLD)/Mathematical Thinking (WSS)/Math & Science (COR)

a. Counting (Counts/Connects numerals with their quantities/shows beginning understanding of number & quantity/counting)

b. Pattern knowledge (demonstrates knowledge of patterns/identifying patterns)

F. Cognitive (TS GOLD)/Approaches to Learning (WSS)/Initiative (COR)

a. Problem-solving (Solves problems/attend to tasks & seeks help when encountering a problem)

b. Self-direction (Persists/shows some self-direction/making choices & plans)

c. Curiosity & motivation (shows curiosity & motivation/shows eagerness and curiosity as a learner)

G. Science (WSS)/Math & Science (COR)

a. Exploration (Asks questions about the natural world & seeks answers through active exploration)

H. The Arts (WSS)/Creative Representations & Movement & Music (COR)

a. Music (Participates in group music experiences/singing)

b. Dramatic Play (Engages in dramatic play/pretending)

Items across domains showing the five highest correlations from fall to 75% overall proficiency in the spring by assessment are highlighted in Tables 8, 9, and 10. These include the following:

A. Language & Literacy

a. TS Gold: Uses an expanding expressive vocabulary; speaks clearly; uses social rules of language; interacts during read-alouds and book conversations; retells stories.

b. WSS: develops increasing abilities to understand and use language to communicate information, experiences, ideas, feelings, opinions, needs, questions, and or other varied purposes; uses expanded vocabulary & language for a variety of purposes; begins to develop knowledge about letters; knows that the letters of the alphabet are a special category of visual graphics that can be individually named

c. COR: listening to and understanding speech; using complex patterns of speech; demonstrating knowledge about books

B. Mathematical Thinking

a. WSS: Begins to use simple strategies to solve mathematical problems

C. Initiative

a. COR: Making choices & plans

D. Social Relations

a. COR: Relating to adults

Examining these items in totality, the domain that identifies the highest number of items that are predictive from fall assessments to spring overall 75% proficiency are in the area of language and literacy. Items in this category, therefore, are important to consider when developing program and school readiness goals.

Those children with the highest scores in the fall on the above identified items (pp. 13-16) are those who are more likely to be proficient in the spring, either by domain or overall. Children who are doing poorly on the above identified items (pp. 13-16) in the fall are more likely to not be proficient in the spring. Children who are doing poorly on these items in the fall are those who would benefit most from close monitoring and individualized attention in these areas across the school year.

Rates of Proficiency from Fall to Spring

Table 11 shows the rate of proficiency for each assessment sample across time. For each assessment sample, the 75% overall proficiency as well as the 75% domain proficiency rates are provided for each assessment and for the TS GOLD and the WSS assessments the non-missing sample data is provided. This table indicates that the percentage of Head Start children in this sample that are proficient at 75% proficiency across domains and overall proficiency increases substantially from fall to winter to spring. For instance, for the TS Gold analyzed sample, the 75% overall proficiency increased from 11.3% in the fall to 42.5% in the winter to 73.9% in the spring; for the WSS analyzed sample, the 75% overall proficiency increased from 16.9% in the fall to 29.2% in the winter to 76.6% in the spring; for the COR analyzed sample, the overall proficiency increased from 3.7% in the fall to 32.4% in the winter to 81.3% in the spring.

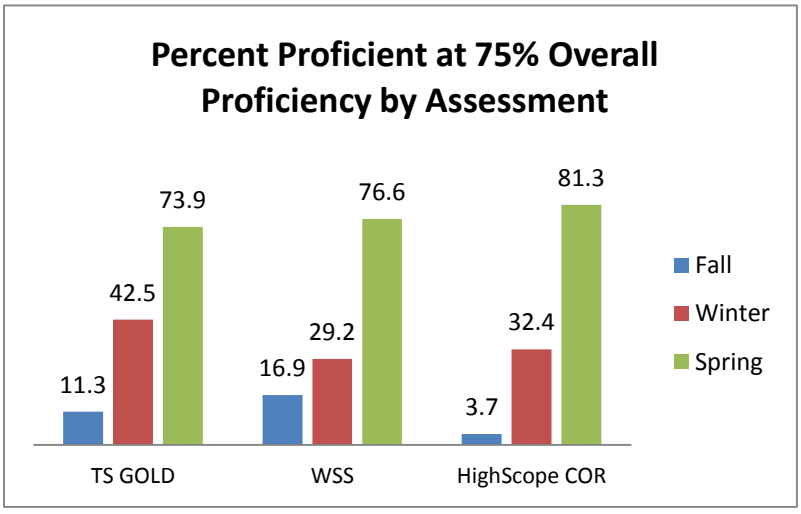
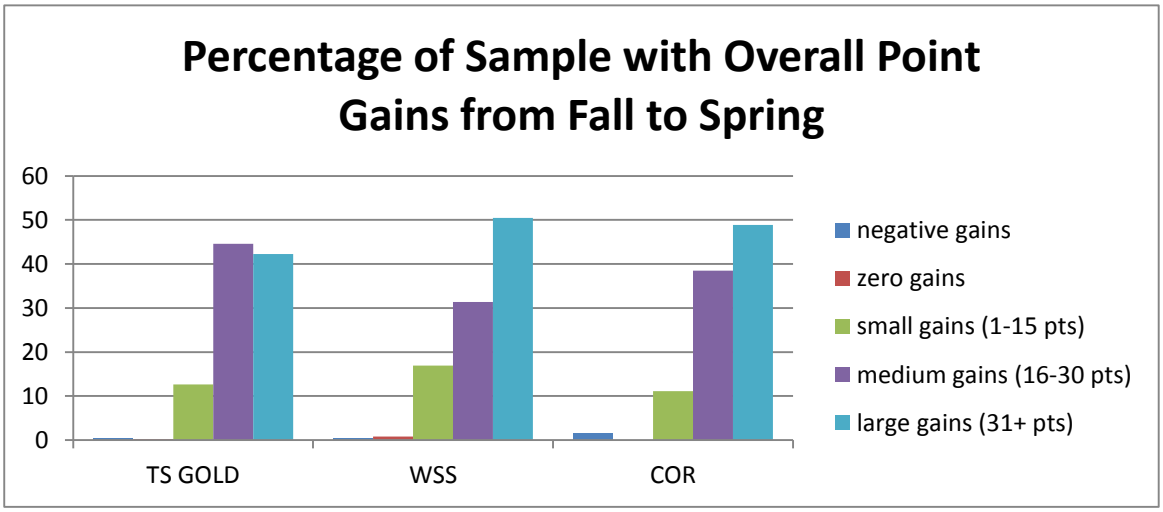


Table 12 (see Appendix) shows the percentage point gains from fall to spring based on selected categories of gains (negative gains; zero gains; small gains—1 to 15 percentage points; medium gains—16 to 30 percentage points; and large gains—31 percentage points or more) within each assessment system. This table breaks the percentage point gains down by overall points as well as each domain with each assessment system. In addition to showing the percentage of the sample that falls within each category of gains, it also indicates the average fall percentage score and the average spring percentage score for individuals falling within each category. Note that the average fall score was the lowest for those individuals making the largest gains from fall to spring, and that the average fall score was the highest for those individuals with zero gains from fall to spring. These results correspond to Tables 8, 9, and 10 wherein there were negative correlations for the fall score on each item with the percentage of gains from fall to spring. Table 12 illustrates similar findings by each domain score and total score. In addition, the percentages of participants that fall into each category are generally highest for the medium and large gains groups.



Based on the above findings, the children in the Head Start sample made significant progress from the fall to the spring of the school year. These results are shown in overall proficiency based on proficient at 75% of the total score, in domain proficiency based on proficient at 75% of the total domain score, and in the percentage of children making medium to large gains from fall to spring across domains and overall. In addition, this pattern of results is also indicated in each program included in the sample.

4. What are the child and family characteristics that contribute to gains from fall to spring?

Table 13 (see Appendix) shows a series of regressions predicting proficiency from child and family characteristics for the TS GOLD sample only. We only examined the TS GOLD sample due to a large amount of missing data in the WSS and the COR samples for child and family variables. The child and family characteristics we examined were: age in months on October 1, sex (female vs. male), IEP status (IEP vs. no IEP), Primary language (English vs. not English), Race/ethnicity (White vs. Black, Asian/Pacific Islander, Hispanic). Table 13 shows (a) child and family characteristics predicting fall overall 75% proficiency, (b) child and family characteristics predicting spring overall 75% proficiency, (c) child and family characteristics predicting large (31 or more points) gains from fall to spring, and (d) child and family characteristics predicting the spring percent score (this is the percentage of the total score that children received in the spring). Older children, girls, and white children compared to black children and Hispanic children were more likely to be proficient in the fall at 75% overall proficiency. Children who were proficient at 75% proficiency on the overall scale in the fall, older children, girls, children without an IEP, and children whose primary language was English were more likely to be proficient in the spring at 75% overall proficiency. In examining the prediction of children who made large gains from fall to spring on the assessments, children who had lower scores in the fall, were older, and did not have an IEP were more likely to make larger gains by the spring of the year. Children who had a higher percentage score in the fall, were older, were girls, and did not have an IEP were more likely to have a higher percentage score in the spring.

Given the results from these regressions, children who will need the most individualized attention and close monitoring to reach 75% proficiency by spring are those children who had lower overall scores in the fall, are younger, are boys, have an IEP. And whose primary language is not English.

5. What are the classroom and school characteristics that contribute to gains from fall to spring?

Table 14 (see Appendix) shows a series of regressions predicting proficiency from program characteristics for the TS GOLD sample only controlling for child and family characteristics identified above. Since we were missing a large amount of data in the WSS and the COR samples for child, family, and program characteristics, we only examined the TS GOLD sample. In addition to the above indicated child and family characteristics, we also included the following program characteristics in the regressions: teacher level of education (Bachelor's degree or higher vs. less than a Bachelor's degree), teachers experience in education (4 or more years vs. less than 4 years), teacher training on creative curriculum (0-2 hours vs. more than 2 hours), collaborative classroom (collaborative vs. not), days per year of instruction, hours per week of instruction, number of children in classroom, number of paid staff in classroom, percentage of eligible days child attended, and Twin Cities Metro Area program (program is in the Twin Cities Metro area vs. not). This table shows (a) program characteristics predicting fall overall 75% proficiency, (b) program characteristics predicting spring overall 75% proficiency, (c) program characteristics predicting large (31 or more points) gains from fall to spring, and (d) program characteristics predicting the spring percent score (this is the percentage of the total score that children received in the spring).

Controlling for child and family characteristics in the regression predicting fall proficiency at the 75% overall proficiency level, we find that children were more likely to have higher levels of proficiency in classrooms where teachers had 0 to 2 hours of Creative Curriculum training compared to higher levels of training on Creative Curriculum, they were in collaborative classrooms compared to non-collaborative classrooms, children had more days of instruction, and children had lower number of hours per week of instruction. When examining the spring proficiency at the 75% overall proficiency level, findings indicate that when controlling for child and family characteristics, children were more likely to have higher levels of proficiency in classrooms where the teachers did not have a bachelor's degree compared to those with a bachelor's degree or higher, and when children attended more that they were eligible to attend. When controlling for child and family characteristics, the following program characteristics predicted children making large gains from the fall to the spring: not being in a collaborative classroom, having a higher number of paid staff in the classroom, and children attending a higher percentage of eligible days. Children who had a higher percentage score in the spring were more likely to have teachers with less than a bachelor's degree, not be in collaborative classroom, have a higher number of paid staff in the class, and attend a higher percentage of eligible days, when controlling for child and family characteristics.

These regressions also indicate that children who had higher scores in the social emotional, language, and literacy domains in the fall were more likely to be reaching 75% proficiency in the spring. This indicates that those children who are doing poorly in each of these domains (social emotional, language, and literacy) in the fall would likely benefit the most from close monitoring and individualized attention to improve their skills in these areas.

Recommendations

1. **Standardize teacher training prior to fall assessments.** All teachers should receive training in the child assessment measures prior to the fall assessment period. This training should be standardized across each of the sites in a particular assessment system and should provide enough training time so that teachers can reliably use the assessment system in their classrooms to make judgments about individual children's level of proficiency on each item in each domain. Consideration should be given to training Head Start teachers with local Kindergarten teachers when they are using the same assessment system.

2. **Provide additional training and/or reliability checks prior to winter and spring assessment periods.** To assist teachers in maintaining their abilities to assess children using their site's assessment system, it is

important to continue to provide professional development and training not only prior to the fall assessment period, but also prior to the winter and spring assessment periods. This would provide a refresher to teachers on the use of the assessment system, and would allow for uniform assessments of children across the school year. Reliability checks could also be provided where either an outside evaluator or a second individual within the Head Start site could rate the same child. Another option here is to use a system of viewing video tapes of children and having multiple teachers evaluate the same child as a way to check reliability across raters. The Colorado Department of Education has a video series called "Results Matter[25]" that was developed as a way to help providers better observe, document, and assess preschool children. Exploration of this model may be helpful to set up a system of both training and reliability checks.

3. **Incorporate standards for child assessment data into on-going record keeping and administrative quality assurance protocols.** In each of the assessment systems, there were missing data by item level. Teachers should make every effort to rate all items in the assessment systems for each child at each assessment period. Head Start administrators could make efforts to check data entry and make data management and assessment part of any feedback process with teachers. Any current administrative quality assurance protocols should include data quality.

4. **Standardize data collection, data coding, and entry.** In addition to missing data in the assessments themselves, not all of the child, family, and program data that were collected in each of the assessment systems were also collected in the other assessment systems. Regression analyses predicting to child proficiency level from child, family and program goals could only be conducted on the TS GOLD sample due to missing data in the other systems. A key set of child, family, and program characteristics that are considered important for future analyses purposes should be developed and these data should be collected across all three assessment systems in all sites. This set of characteristics should include data on the site and program characteristics (e.g., location, teacher training/education, teacher-child ratios), child characteristics (e.g., gender, race, ethnicity, IEP status, attendance, # of years in head start), and family characteristics (e.g., income level, parent education level, family size, family type).

   Data coding and entry need to be standardized. For instance, data fields should be the same in the data entry system from one system to another within consideration of local program differences. For example, race and disability categories should be standardized across all sites, and race should be separated from ethnicity. "No" responses should be filled in as "no" rather than just left blank to clarify whether these are actual "no" responses or if they are missing (blank).

5. **Develop school readiness goals based on key indicators that are the strongest predictors from fall to spring assessments and that align across the three assessment systems as well as the Head Start Child Development and Early Learning Framework.** Indicators are identified earlier that both cut across the three assessment systems and that are the strongest predictors of spring proficiency. Briefly, these include items in the following areas: Physical Development & Health (gross motor skills/balance, fine motor skills/eye-hand coordination); Social & Emotional Development (peer relationships, conflict resolution, emotional control); Approaches to Learning/Cognition & General Knowledge (problem-solving, self-direction, exploration); Language Development & Literacy (expressive language, letter knowledge); Mathematics Knowledge (counting); Creative Expression (music, dramatic play). Developing school readiness goals based on indicators within each of these areas would provide a strong foundation for focusing curriculum in areas that predict how well students are doing in the spring based on where they were at in the fall.

6. **Programs should closely monitor and provide individual attention to children who have lower scores on the fall assessment specifically in the domains of social-emotional development and language and literacy.** These domains are indicated as important in various analyses, including correlations identifying fall scores to spring proficiency levels for the overall 75% proficiency, and in the regression analyses. Children who are doing poorly in these domains, especially on items dealing with

[25] See http://www.cde.state.co.us/resultsmatter/RMVideoSeries.htm for further information.

conflict resolution, peer and adult relationships, and emotional regulation in the social-emotional domain, and on items focused on expressive language, letter knowledge, and phonological awareness in the domains of language and literacy should be closely monitored for progress in these areas and provided individualized attention to increase their skills in these areas.

7. **Continue to evaluate the differences in growth by child, family, and program characteristics and identify goals and strategies for promoting kindergarten readiness.** It is important to continue to evaluate differences in growth across the school year on an on-going basis. Since this is the first year that data were evaluated, and there are a number of missing data issues with the data collected across the assessment systems. Data on child, family, and program characteristics need to be evaluated for all three assessment systems to determine whether the same characteristics that predict for TS GOLD this past year continue to apply to students in future years in not only TS GOLD assessment classrooms, but for the WSS and COR assessment classrooms as well. As indicated earlier, data results can not be generalized to a larger population than the current sample nor can we generalize to years beyond the current year. Collected information in the future is important to examine both the generalizability of the analyses to future years in the same programs and to examine the effects of program changes on student progress.

8. **Consider following Head Start children from preschool to third grade in order to examine the predictive validity of each of the assessment systems through 3rd grade.** It is not clear whether the Head Start assessment systems have predictive validity to scores on the Minnesota Comprehensive Assessment. Following individual children across time would provide a basis in establishing the validity of the three assessment systems to future assessments of children. Following these children across time would also assist in the identification of important school readiness goals that predict to children's future achievement, thereby providing further support for identified goals.

Appendix

Table 1: Matched Assessment Items by Head Start Domains[26]

Head Start Child Development and Early Learning Framework Domains and Domain Elements	TS GOLD[27]	WSS[28]	High Scope - COR[29]
Domain: Physical Development and Health			
Element: Physical Health Status			
			L. Moving in various ways (Move./Mus.)
			M. Moving with physical objects (Move./Mus.)
	** 29. Demonstrates knowledge about self (Soc. Stud.)*		
	** 30. Shows basic understanding of people and how they live (Soc. Stud.)*		
Element: Health Knowledge & Practice			
	1c. Takes care of own needs appropriately (S/E)	VIII.C1. performs some self-care tasks independently (Phys.)	D. Taking care of personal needs (Initiative)
			L. Moving in various ways (Move./Mus.)
			M. Moving with physical objects (Move./Mus.)
		VIII.C2. Follows basic health and safety rules (Phys.)	
	** 29. Demonstrates knowledge about self (Soc. Stud.)*		
Element: Gross Motor Skills			
	4. demonstrates traveling skills (Phys.)	VIII.A2. Coordinates movements to perform simple tasks (Phys.)	
	6. Demonstrates gross-motor manipulative skills (Phys.)		
	5. Demonstrates balancing skills (Phys.)		

[26] TS GOLD and COR indicators were matched to Head Start elements using reports from the assessment publishers. WSS indicators were matched only on the domain level using the assessment developer's report. Based on information provided in the WSS report the HCRC team matched WSS indicators to Head Start elements.
[27] http://www.teachingstrategies.com/content/pageDocs/Head-Start-GOLD-Alignment-Early-Learning-Framework-2011.pdf
[28] Meisels, S.J., Dichtelmiller, M.L., Jablon, J.R., & Marsden, D.B. (2001). *Work Sampling for Head Start: Developmental guidelines for four year olds.* Pearson: New York.
[29] http://www.highscope.org/file/Assessment/Head%20Start%20to%20COR_Jan2011.pdf

Head Start Child Development and Early Learning Framework Domains and Domain Elements	TS GOLD[27]	WSS[28]	High Scope - COR[29]
	5. Demonstrates balancing skills (Phys.)	VIII.A1. Moves with balance and control (Phys.)	
			L. Moving in various ways (Move./Mus.)
			M. Moving with physical objects (Move./Mus.)
			N. Feeling and expressing steady beat (Move./Mus.)
Element: Fine Motor Skills			
	7a. uses fingers and hands (Phys.)	VIII.B2. Uses eye-hand coordination to perform tasks (Phys.)	
	7b. uses writing and drawing tools (Phys.)		J. Drawing and painting pictures (Creative)
			I. Making and building models (Creative)
	7b. uses writing and drawing tools (Phys.)	VIII.B3. Shows beginning control of writing, drawing, and art tools (Phys.)	
			D. Taking care of personal needs (Initiative)
			M. Moving with physical objects (Move./Mus.)
		VIII.B1. Uses strength and control to perform certain tasks (Phys.)	
Domain: Social & Emotional Development			
Element: Social Relationships			
	2a. Forms relationships with adults (S/E)	I.D2. Interacts easily with familiar adults (S/E)	E. Relating to adults (Soc. Rel.)
	2b. Responds to emotional cues (S/E)	I.D3. Shows empathy for others (S/E)	H. understanding and expressing feelings (Soc. Rel.)
	2c. Interacts with peers (S/E)	I.D1. Interacts easily with one or more children (S/E)	F. Relating to other children (Soc. Rel.)
	2d. Makes friends (S/E)		
	3a. Balances needs and rights of self and others (S/E)	I.C1. Seeks adult help needed to resolve conflicts (S/E)	G. Resolving interpersonal conflict (Soc. Rel.)
		I.C2. Participates in the group life of the class (S/E)	
		I. E1. Identifies similarities and differences in personal and family characteristics (S/E)	

Head Start Child Development and Early Learning Framework Domains and Domain Elements	TS GOLD[27]	WSS[28]	High Scope - COR[29]
		I.E2. Begins to understand family needs, roles, and relationships (S/E)	
		I.E3. Describes some people's jobs and what it means to perform them (S/E)	
		I.E4. Describes the location of things in their environment (S/E)	
Element: Self-Concept & Self-Efficacy			
	1c. Takes care of own needs appropriately (S/E)		
			A. Making choices and plans (Initiative)
			H. understanding and expressing feelings (Soc. Rel.)
		I.A1. Demonstrates self-confidence (S/E)	
	** 29. Demonstrates knowledge about self (Soc. Stud.)*		
Element: Self-Regulation			
	1a. Manages feelings (S/E)		H. understanding and expressing feelings (Soc. Rel.)
	1b. Follows limits and expectations (S/E)	I.B1. Follows simple classroom rules and routines (S/E)	
			G. Resolving interpersonal conflict (Soc. Rel.)
		I.B2. Uses classroom materials carefully (S/E)	
		I. B3. Manages transitions (S/E)	
Element: Emotional & Behavioral Health			
	3b. Solves social problems (S/E)		G. Resolving interpersonal conflict (Soc. Rel.)
			H. understanding and expressing feelings (Soc. Rel.)
Domain: Approaches to Learning			
Element: Initiative & Curiosity			
	11d. Shows curiosity and motivation (Cogn.)	II.A1. Shows eagerness and curiosity as a learner (Ap. To Lrn.)	
	11e. Shows flexbility and inventiveness in thinking (Cogn.)	II.C1. Approaches tasks with flexibility and inventiveness (Ap. To Lrn.)	B. Solving problems with materials (Initiative)

Head Start Child Development and Early Learning Framework Domains and Domain Elements	TS GOLD[27]	WSS[28]	High Scope - COR[29]
			C. Initiating play (Initiative)
			Q. Listening to and understanding speech (Lang./Lit.)
		II.A2. Shows some self-direction (Ap. To Lrn.)	
		II.C2. Begins to be aware of technology and how it affects our lives (Ap. To Lrn.)	
Element: Persistence & Attentiveness			
	11a. Attends and engages (Cogn.)	II.B1. Attends to tasks and seeks help when encountering a problem (Ap. To Lrn.)	
	11b. Persists (Cogn.)		
			A. Making choices and plans (Initiative)
			B. Solving problems with materials (Initiative)
Element: Cooperation			
	2c. Interacts with peers (S/E)		
	3a. Balances needs and rights of self and others (S/E)		
			A. Making choices and plans (Initiative)
			C. Initating play (Initiative)
			F. Relating to other children (Soc. Rel.)
Domain: Logic & Reasoning			
Element: Reasoning & Problem Solving			
	11c. Solves problems (Cogn.)		B. Solving problems with materials (Initiative)
	12a. Recognizes and recalls (Cogn.)		
	12b. Makes connections (Cogn.)		
	13. Uses classification skills (Cogn.)		Y. Sorting objects (Math/Sci.)
			AA. Comparing properties (Math/Sci.)
			DD. Identifying sequence, change, and causality (Math/Sci.)

Head Start Child Development and Early Learning Framework Domains and Domain Elements	TS GOLD[27]	WSS[28]	High Scope - COR[29]
			EE. Identifying materials and properties (Math/Sci.)
Element: Symbolic Representation			
	14a. Thinks symbolically (Cogn.)		
			I. Making and building models (Creative)
			J. Drawing and painting pictures (Creative)
			K. Pretending (Creative)
Domain: Language Development			
Element: Receptive Language			
	8a. Comprehends language (Lang.)	III.A1. Gains meaning by listening (Lang.)	Q. Listening to and understanding speech (Lang./Lit.)
	8b. Follows directions (Lang.)	III.A2. Follows two or three-step directions (Lang.)	
			R. Using vocabulary (Lang./Lit.)
			S. Using complex patterns of speech (Lang./Lit.)
		III.A1a. Understands an increasingly complex and varied vocabulary (Lang.)	
		III.A3. Demonstrates phonological Awareness (Lang.)	
		III.A1b. For non-English speaking children, progressing in listening and understanding English (Lang.)	
Element: Expressive Language			
			R. Using vocabulary (Lang./Lit.)
	9a. Uses an expanding expressive vocabulary (Lang.)	III.B1a. Develops increasing ability to understand and use language to communicate information, experiences, ideas, feelings, opinions, needs, questions, and or other varied purposes (Lang.)	
		III.B2. Uses expanded vocabulary and language for a variety of purposes (Lang.)	

Head Start Child Development and Early Learning Framework Domains and Domain Elements	TS GOLD[27]	WSS[28]	High Scope - COR[29]
		III.B2a. Uses increasingly complex and varied spoken language (Lang.)	S. Using complex patterns of speech (Lang./Lit.)
	9b. Speaks clearly (Lang.)	III.B1. Speaks clearly enough to be understood without contextual clues (Lang.)	
	9c. Uses conventional grammar (Lang.)		
	9d. Tells about another time or place (Lang.)		
	10a. Engages in conversations (Lang.)		
	10b. Uses social rules of language (Lang.)		
			E. Relating to adults (Soc. Rel.)
			F. Relating to other children (Soc. Rel.)
			Q. Listening to and understanding speech (Lang./Lit.)
			T. Showing awareness of sounds in words (Lang./Lit.)
		III.B1b. For non-English speaking children, progresses in speaking English (Lang.)	
Domain: Literacy Knowledge & Skills			
Element: Book Appreciation & Knowledge			
	17a. Uses and appreciates books (Lit.)	IV.A1. Shows appreciation for books and reading (Lit.)	U. Demonstrating knowledge about books (Lang./Lit.)
	18a. Interacts during read-alouds and book conversations (Lit.)	IV.A2. Comprehends and responds to stories read aloud (Lit.)	
	18b. Uses emergent reading skills (Lit.)		
	18c. Retells stories (Lit.)		
			I. Making and building models (Creative)
			J. Drawing and painting pictures (Creative)
			K. Pretending (Creative)
			Q. Listening to and understanding speech (Lang./Lit.)
Element: Phonological Awareness			
	15a. Notices and discriminates rhyme (Lit.)		
	15b. Notices and discriminates alliteration (Lit.)		

Head Start Child Development and Early Learning Framework Domains and Domain Elements	TS GOLD[27]	WSS[28]	High Scope - COR[29]
	15c. Notices and discriminates smaller and smaller units of sound (Lit.)		T. Showing awareness of sounds in words (Lang./Lit.)
			V. Using letter names and sounds (Lang./Lit.)
			U. Demonstrating knowledge about books (Lang./Lit.)
Element: Alphabet Knowledge			
	16a. Identifies and names letters (Lit.)	IV.B2a. Identifies at least 10 letters of the alphabet, especially those in their own name (Lit.)	V. Using letter names and sounds (Lang./Lit.)
	16b. Uses letter-sound knowledge (Lit.)	IV.B2. Begins to develop knowledge about letters (Lit.)	
		IV.B2b. Knows that the letters of the alphabet are a special category of visual graphics that can be individually named (Lit.)	
Element: Print Concepts and Conventions			
	17b. Uses print concepts (Lit.)	IV.B1. Shows beginning understanding about concepts about print (Lit.)	U. Demonstrating knowledge about books (Lang./Lit.)
		IV.B1a. Recognizes a word as a unit of print (Lit.)	
			W. Reading (Lang./Lit.)
Element: Early Writing			
	19a. Writes names (Lit.)		X. Writing (Lang./Lit.)
	19b. Writes to convey meaning (Lit.)	IV.C2. Uses letter-like shapes, symbols and letters to convey meaning (Lit.)	
			J. Drawing and painting pictures (Creative)
		IV.C1. Represents ideas and stories through pictures, dictation and play (Lit.)	
		IV.C2. Understands purposes for writing (Lit.)	

Head Start Child Development and Early Learning Framework Domains and Domain Elements	TS GOLD[27]	WSS[28]	High Scope - COR[29]
Domain: Mathematics Knowledge & Skills			
		V.A1. Begins to use simple strategies to solve mathematical problems (Math)	
Element: Number Concepts & Quantities			
	20a. Counts (Math)	V.B1. Shows beginning understanding of numbers and quantity (Math)	BB. Counting (Math/Sci.)
	20b. Quantifies (Math)	V.A1a. Demonstrates an increasing interest and awareness of numbers and counting as a means solving problems and determining quantity (Math)	
	20c. Connects numerals with their quantities (Math)		
Element: Number Relationships & Operations			
	20b. Quantifies (Math)		
			AA. Comparing properties (Math/Sci.)
Element: Geometry & Spatial Sense			
	21a. Understands spatial relationships (Math)		AA. Comparing properties (Math/Sci.)
			CC. Identifying position and direction (Math/Sci.)
	21b. Understands shapes (Math)	V.C1. Begins to recognize and describe the characteristics of shape (Math)	
			EE. Identifying materials and properties (Math/Sci.)
		V.C2. Shows understanding of and uses several positional words (Math)	
Element: Patterns			
	23. Demonstrates knowledge of patterns (Math)	V.D2. Recognizes simple patterns and duplicates them (Math)	Z. Identifying patterns (Math/Sci.)
	13. Uses classification skills (Cogn.)	V.D1. Sorts objects into subgroups that vary by one or two characteristics (Math)	Y. Sorting objects (Math/Sci.)
Element: Measurement & Comparison			
	22. Compares and measures (Math)	V.E2. Participates in measuring activities (Math)	AA. Comparing properties (Math/Sci.)

Head Start Child Development and Early Learning Framework Domains and Domain Elements	TS GOLD[27]	WSS[28]	High Scope - COR[29]
		V.E1. Orders, compares and describes objects according to size, length, height, and weight (Math)	
			Z. Identifying patterns (Math/Sci.)
Domain: Science Knowledge & Skills			
Element: Scientific Skills & Method			
	** 24. Uses scientific inquiry skills (Sci.)*	VI.A2. Performs descriptive investigations using simple tools and equipment (Sci.)	
	** 28. Uses tools and other technology to perform tasks (Sci.)*		
			AA. Comparing properties (Math/Sci.)
			EE. Identifying materials and properties (Math/Sci.)
		VI.A1. Uses senses to observe and explore classroom materials and natural phenomena (Sci.)	
Element: Conceptual Knowledge of the Natural & Physical World			
	** 25. Demonstrates knowledge of the characteristics of living things (Sci.)*	VI.A3. Asks questions about the natural world and seeks answers through active exploration (Sci.)	FF. Identifying natural and living things (Math/Sci.)
	** 26. Demonstrates knowledge of the physical properties of objects and materials (Sci.)*	VI.B1. Begins to describe and compare materials, living things, natural resources, and processes (Sci.)	
	** 27. Demonstrates knowledge of Earth's environment (Sci.)*	VI.B2. Shows awareness of the environment (Sci.)	
			DD. Identifying sequence, change, and causality (Math/Sci.)
			EE. Identifying materials and properties (Math/Sci.)
Domain: Creative Arts Expression			
Element: Music			
	** 34. Explores musical concepts and expression (Arts)*	VII. A1. Participates in group music experiences (Arts)	N. Feeling and expressing steady beat (Move./Mus.)
			O. Moving to music (Move./Mus.)
			W. Singing (Move./Mus.)
Element: Creative Movement & Dance			

Head Start Child Development and Early Learning Framework Domains and Domain Elements	TS GOLD[27]	WSS[28]	High Scope - COR[29]
	** 35. Explores dance and movement concepts (Arts)*	VII.C1. Participates in creative movement and dance (Arts)	N. Feeling and expressing steady beat (Move./Mus.)
			O. Moving to music (Move./Mus.)
			P. Singing (Move./Mus.)
Element: Art			
	** 33. Explores the visual arts (Arts)*	VII.B1. Uses a variety of art materials for tactile exploration and expression (Arts)	J. Drawing and painting pictures (Creative)
		VII.E1. Responds to artistic creations or events (Arts)	
Element: Drama			
	** 36. Explores drama through actions and language (Arts)*	VII.D1. Engages in dramatic play (Arts)	K. Pretending (Creative)
Domain: Social Studies Knowledge & Skills			
Element: Self, Family & Community			
	** 29. Demonstrates knowledge about self (Soc. Stud.)*		
	** 30. Shows basic understanding of people and how they live (Soc. Stud.)*		
Element: People & the Environment			
	** 32. Demonstrates simple geographic knowledge (Soc. Stud.)*		
			FF. Identifying natural and living things (Math/Sci.)
Element: History & Events			
	** 31. Explores change related to familiar people or places (Soc. Stud.)*		
Domain: English Language Development			
Element: Receptive English Language Skills			
	*** 37. Demonstrates progress in listening to and expressing English (English)*		
Element: Expressive English Language Skills			
	*** 38. Demonstrates progress in speaking English (English)*		

* Data on items not recorded in present study
** Data recorded, but not used in analyses of present study due to limited recorded data

Table 2: Summary of Missing Data

Overview of Missing Item Ratings

Data	TS GOLD				WSS				COR			
	F	W	S	All year	F	W	S	All year	F	W	S	All year
Full file sample	2431	2431	2431	2431	918	918	918	918	517	517	517	517
Mean # missing ratings	*18.9*	*18.7*	*18.4*	-	*.70*	*.58*	*.12*	-	*13.8*	*12.1*	*10.7*	-
Range of missing ratings	*0-53*	*0-53*	*0-53*	-	*0-2*	*0-2*	*0-2*	-	*0-32*	*0-32*	*0-32*	-
% with only Fall data	4%				0%				<1%			
% with only Winter data	<1%				0%				0%			
% with only Spring data	3%				0%				2%			
% with only Fall & Winter data	3%				0%				1%			
% with only Fall & Spring data	1%				0%				<1%			
% with only Winter & Spring	5%				0%				<1%			
Analyzed sample	1651	1871	1964	1385	918	918	918	918	160	221	233	142
Mean # missing ratings	*0.47*	*0.06*	*0.02*	-	*.70*	*.58*	*.12*	-	*4.22*	*1.12*	*0.94*	-
Range of missing ratings	*0-14*	*0-7*	*0-4*	-	*0-2*	*0-2*	*0-2*	-	*1-13*	*0-13*	*0-11*	-
Non-missing sample	1443	1808	1922	1201	444	541	831	394	22	108	135	0

Sample descriptions:
Full file – Data on all 4 year olds received from original Head Start files.
Analyzed sample – Cases must have had at least half of the ratings in each domain at each time point.
Non-missing sample – Cases must have had no missing ratings at any time point.

TS GOLD Missing Items Analysis				
Domain	**Item**	**% Missing ratings (N=2,431)**		
		F	**W**	**S**
Social-emotional	MANAGES FEELINGS	17.8	16.1	15.5
	FOLLOWS LIMITS AND EXPECTATIONS	17.0	16.0	15.3
	TAKES CARE OF OWN NEEDS APPROPRIATELY	16.9	16.3	15.3
	FORMS RELATIONSHIPS WITH ADULTS	17.4	16.2	15.3
	RESPONDS TO EMOTIONAL CUES	19.1	17.3	15.5
	INTERACTS WITH PEERS	17.0	16.0	15.3
	MAKES FRIENDS	18.1	16.4	15.8
	BALANCES NEEDS AND RIGHTS OF SELF AND OTHERS	17.5	16.5	15.3
	SOLVES SOCIAL PROBLEMS	18.6	17.5	15.5
Physical	DEMONSTRATES TRAVELING SKILLS	16.2	16.9	15.5
	DEMONSTRATES BALANCING SKILLS	17.7	16.8	15.5
	DEMONSTRATES GROSS-MOTOR MANIPULATIVE SKILLS	19.8	17.4	15.6
	USES FINGERS AND HANDS	16.4	16.1	15.4
	USES WRITING AND DRAWING TOOLS	16.3	16.3	15.4
Language	COMPREHENDS LANGUAGE	17.5	16.6	15.5
	FOLLOWS DIRECTIONS	17.4	16.2	15.3
	USES AN EXPANDING EXPRESSIVE VOCAB	17.6	16.6	15.6
	SPEAKS CLEARLY	17.0	16.5	15.4
	USES CONVENTIONAL GRAMMAR	17.2	17.2	15.4
	TELLS ABOUT ANOTHER TIME OR PLACE	19.5	16.5	16.0
	ENGAGES IN CONVERSATIONS	17.2	16.8	15.5
	USES SOCIAL RULES OF LANGUAGE	17.7	16.7	15.4
Cognitive	ATTENDS AND ENGAGES	17.4	17.3	15.5
	PERSISTS	18.3	17.3	15.6
	SOLVES PROBLEMS	19.5	17.2	15.6
	SHOWS CURIOSITY AND MOTIVATION	18.1	17.2	15.6
	SHOWS FLEXIBILITY AND INVENTIVENESS IN THINKING	18.6	17.3	15.7
	RECOGNIZES AND RECALLS	18.8	17.3	15.7
	MAKES CONNECTIONS	17.9	17.1	15.9
	USES CLASSIFICATION SKILLS	20.0	17.9	16.1
	THINKS SYMBOLICALLY	18.3	17.4	15.8
	ENGAGES IN SOCIODRAMATIC PLAY	18.3	17.3	18.3

Literacy	NOTICES AND DISCRIMINATES RHYME	30.4	21.0	18.5
	NOTICES AND DISCRIMINATES ALLITERATION	31.8	21.2	17.9
	NOTICES AND DISCRIMINATES SMALLER UNITS OF SOUND	31.3	21.3	18.0
	IDENTIFIES NAMES AND LETTERS	29.5	20.6	17.7
	USES LETTER-SOUND KNOWLEDGE	29.7	21.1	17.9
	USES AND APPRECIATES BOOKS	29.7	21.1	17.9
	USES PRINT CONCEPTS	30.7	21.2	17.9
	INTERACTS DURING READ-ALOUDS AND BOOK CONVERS.	29.9	21.5	19.0
	USES EMERGENT READING SKILLS	31.4	21.3	17.8
	RETELLS STORIES	31.1	21.7	17.9
	WRITES NAME	28.8	20.8	17.9
	WRITES TO CONVEY MEANING	31.1	21.4	18.3
Math	COUNTS	29.7	19.8	17.9
	QUANTIFIES	31.7	20.0	18.5
	CONNECTS NUMERALS WITH THEIR QUANTITIES	31.6	20.6	17.9
	UNDERSTANDS SPATIAL RELATIONSHIPS	30.8	20.6	19.0
	UNDERSTANDS SHAPES	29.5	19.7	18.3
	COMPARES AND MEASURES	31.4	20.5	19.0
	DEMONSTRATES KNOWLEDGE OF PATTERNS	34.3	20.1	18.3
Eng. Lang. Acquis.	DEMON. PROGRESS IN LISTENING AND UNDERS. ENGLISH	85.8	84.2	84.5
	DEMONSTRATES PROGRESS IN SPEAKING ENGLISH	85.8	84.2	84.5

WSS Missing Items Analysis				
Domain	**Item**	**% Missing ratings (N=918)**		
		F	**W**	**S**
Social-emotional	Demons Self Confidence	-	-	0.1
	Follows Simple Rules	-	-	-
	Begins Use Classroom Materials	-	-	-
	Manages Transitions	0.2	0.3	0.1
	Seeks Adult Help	-	-	.03
	Participates In The Group	-	-	0.5
	Interacts With Children	-	-	0.2
	Interacts With Adults	-	-	0.2
	Shows Empathy	0.1	-	0.3
	Recognizes Own Physical Characters	-	0.1	0.2
	Begins To Understand Family Structure	-	-	0.1
	Describes Jobs	-	-	-
	Describes Location In Environment	-	-	0.2
Approaches to Learning	Shows Eagerness And Curiosity	-	0.2	-
	Shows Self-Direction	-	0.3	-
	Attends To Tasks	-	-	0.1
	Approaches Play With Purpose	-	-	-
	Aware Of Technology	-	-	0.5
Language	Gains Meaning By Listening	-	0.1	0.2
	Understands An Increasingly Complex And	0.8	0.1	0.2
	Follows Two-Step Directions	17.4	18.4	-
	Shows Phonological Awareness	15.3	15.0	0.1
	For Non-English-Speaking Children, Progresses	0.1	0.1	0.1
	In Listening To And Understanding English.	-	-	-
	Develops Increasing Abilities To	8.4	9.8	0.4
	Uses Expanded Vocabulary	9.3	7.4	0.2
	Increasingly Complex Language	3.8	3.2	-
Literacy	Shows Appreciation For Books	0.1	0.1	0.3
	Comprehends Stories	-	-	0.8
	Undersands Concepts About Print	-	-	0.1
	Recognizes A Word As A Unit Of Print	12.0	1.4	-
	Begins To Develop Knowledge About Letters	-	-	0.3
	Identifies At Least 10 Letters	-	-	0.2
	Knows That The Letters Of The Alphabet Are A	0.1	-	0.1
	Represents Ideas And Stories	-	-	-
	Understands Purposes For Writing	-	-	0.2
	Uses Letter-Like Shapes, Symbols, And Letters	0.2	0.4	-
Math	Begins To Use Simple Strategies To Solve Math	-	-	0.3
	Shows Beginning Understanding Of Number	0.1	-	0.4
	Begins To Recognize And Describe Shapes	-	-	0.1
	Understands Postional Words	-	-	0.3
	Sorts Objects	-	0.1	0.1
	Recognizes Patterns	-	0.1	0.4
	Orders Compares And Describes Objects	-	-	-
	Participates In Measuring Activities	0.3	0.7	-
Science	Uses Senses To Observe	-	-	0.1
	Performs Descriptive Investigations	-	-	-
	Asks Questions About Natural World	-	-	0.1
	Begins To Describe Materials	0.1	-	0.3
	Shows Awareness Of Environment	-	0.2	0.5
Art	Participates In Group Music	-	-	0.2
	Uses Variety Of Materials	-	0.1	0.3
	Participates In Creative Movement	-	-	0.3
	Engages In Dramatic Play	-	-	-
	Repsonds To Art	-	-	0.3
Physical Development	Moves With Balance And Control	-	-	-
	Coordinates Movement	-	-	-
	Uses Strength And Control In Simple Tasks	-	-	0.4
	Uses Hand-Eye Coordination	-	-	-
	Shows Beginning Control Of Writing	.01	0.1	0.5
	Performs Self-Care	-	-	0.1
	Follows Basic Health And Safety Rules	.09	0.4	0.3

HighScope COR Missing Items Analysis				
Domain	**Item**	**% Missing ratings (Full file sample, N=517)**		
		F	**W**	**S**
Initiative	A. Making choices and plans	13.0	9.9	6.0
	B. Solving problems with materials	64.5	54.5	51.8
	C. Initiating play	54.2	52.2	48.0
	D. Taking care of personal needs	48.4	46.8	46.4
Social Relations	E. Relating to adults	55.9	55.5	48.2
	F. Relating to other children	13.7	11.8	7.7
	G. Resolving interpersonal conflict	31.1	25.5	15.1
	H. Understanding and expressing feelings	62.9	56.9	51.5
Creative Rep.	I. Making and building models	54.2	54.0	51.6
	J. Drawing and painting pictures	58.0	55.9	47.8
	K. Pretending	21.1	16.2	10.3
Move & Music	L. Moving in various ways	50.3	53.4	48.5
	M. Moving with objects	12.8	9.1	6.8
	N. Feeling and expressing steady beat	63.6	55.5	50.1
	O. Moving to music	57.8	54.0	52.8
	P. Singing	57.3	57.6	49.3
Lang & Lit	Q. Listening to and understanding speech	17.2	13.7	9.1
	R. Using vocabulary	20.9	13.3	13.2
	S. Using complex patterns of speech	17.0	10.4	11.2
	T. Showing awareness of sounds in words	31.1	18.8	14.3
	U. Demonstrating knowledge about books	14.7	16.1	9.5
	V. Using letter names and sounds	24.0	12.8	11.8
	W. Reading	20.9	15.5	8.9
	X. Writing	48.9	47.7	44.3
Math & Sci	Y. Sorting objects	23.2	18.8	12.6
	Z. Identifying patterns	60.9	57.3	53.0
	AA. Comparing properties	75.4	59.0	53.6
	BB. Counting	16.6	10.3	6.6
	CC. Identifying position and direction	62.2	57.3	51.6
	DD. Identifying sequence, change, and causality	71.4	59.8	58.6
	EE. Identifying materials and properties	77.2	65.0	59.6
	FF. Identifying natural and living things	71.4	62.4	56.9

Summary of Missing Child, Family, and Program Characteristics			
	Full File Sample		
Variable Description/label	**TS GOLD (n=2431)**	**WSS (n=918)**	**COR (n=517)**
	% Missing	*% Missing*	*% Missing*
child's birthdate	0.0	0.0	0.0
child age as of sept 1, 2010	0.0	-	-
Program ID	0.0	0.0	-
Program name	0.0	0.0	0.0
Site ID	0.0	0.0	-
Site name	0.0	0.0	0.0
Classroom ID	0.0	0.0	-
Classroom name	0.0	0.0	0.0
Level of teacher education	25.1	-	-
Number of years experience in education	30.9	-	-
Number of years experience working with children	30.0	-	-
Number of years experience using Creative Curriculum	30.2	-	-
Number of years in current organization	29.5	-	-
Number of hours training on Creative Curriculum	30.2	-	-
Child's gender	0.1	0.0	0.0
Child's primary language	0.0	1.1	0.0
Child's ethnicity as Hispanic/Non-Hispanic	0.0	-	-
Child's race/ethnicity	16.9	7.3	39.5
Source of funding	20.7	-	66.0
Child in IEP (Y/N)	0.0	100	35.8
Date child enrolled in program	70.3	90.7	81.0
Number of eligible attendance days	25.6	64.1	37.7
Number of days attended	25.6	64.1	81.0
Family Income	26.1	26.4	38.9
Eligibility basis	34.6	63.9	37.7
Years in HS	81.0	4.8	56.7
Family Type	23.5	6.6	38.3
Family Size	76.1	4.7	81.0
Birthdate of Primary Adult	40.4	18.4	81.4
TANF Services	36.9	4.7	37.7
WIC Use	25.1	4.7	37.9
IEP disability Type	94.0	98.6	89.7
Education of Primary Adult	61.8	6.2	58.8
EHS Participation	94.9	82.4	-
number of home visits	88.8	64.3	-
Hours of Parent In-kind	87.6	100	56.7
Attendance at Parent Conferences	20.2	73.4	-
Classroom type	29.7	-	-
Classroom has Reading Corps volunteer	21.9	-	-
Number of hours per week of class time	21.9	-	-
Number of days per year of class time	21.9	-	-
Average monthly attendance of the classroom	24.8	-	-
Number of paid staff in the classroom	22.3	-	-
Mixed 3 and 4-year-olds or 4-year-olds only	73.2	-	-
Number of children in the classroom	21.9	-	-
Collaborative classroom (Y/N)	26.5	-	-
Number of meals served daily in classroom	23.9	-	-
Classroom has coaching grant (Y/N)	24.9	-	-

Note: If cell contains a " – " , then the file did not contain the variable.

Table 3: Demographic Comparisons between 2009 National, Statewide MN Head Start Data and the Present Head Start Sample

	2009 National Head Start Data[30]	2009 Statewide – MN - Head Start Data[31]	Head Start Sample
Total	906,992	17,043	3,866*
TANF (%)			
Family Receives TANF	N/A	23	21
Race/Ethnicity (%)**			
American Indian or Alaska Native	4	8	2
Asian or Pacific Islander	3	3	6
Black or African American	29	20	19
Hispanic or Latino Origin	36	24	4
White	39	76	61
Other or Multiracial	25	11	9
Unspecified		6	0
Primary Language (%)			
English	N/A	69	73
Non-English	N/A	30	27
Total Years Enrolled (%)			
First Year	N/A	63	50
Second or Third Year	N/A	37	50

*Percentages for Head Start Sample were calculated using only valid data, missing data was excluded for each demographic category

**National and State Race/Ethnicity categories are not mutually exclusive; percentages total exceed 100%

[30] .http://eclkc.ohs.acf.hhs.gov

[31] http://www.mnheadstart.org/facts.html

Table 4: Sample Characteristics

Sample Characteristic	TS GOLD Analyzed Sample (n=1,385)	WSS Analyzed Sample (n=918)	COR Analyzed Sample (n=142)
Gender			
Females	50%	49%	44%
Males	50%	51%	56%
Missing	*0.1%*	*0%*	*0%*
Race/ethnicity			
American Indian	1%	1%	0%
Asian/Pacific Islander	2%	16%	1%
Black/African-American	15%	25%	1%
Hispanic/Latino	20%	13%	0%
White	50%	31%	13%
Other or Multi-racial	2%	6%	31%
Missing	*10%*	*7%*	*54%*
Language			
English	75%	61%	50%
Spanish	10%	12%	25%
Hmong	0%	11%	0%
Somali	3%	6%	0%
Other	8%	10%	26%
Missing	*0%*	*1%*	*0%*
Age in Months			
Average age at Oct. 1	55	55	54
Missing	*0%*	*0%*	*0%*
Years in Head Start			
1 year	11%	41%	-
2 years	10%	54%	-
3 years	<1%	<1%	-
Missing	*80%*	*5%*	*100%*
Attendance			
% days attended based on eligible days	89%	85%	92%
Missing	*17%*	*64%*	*54%*
IEP Status			
Child has IEP	14%	-	9%
Missing	*0%*	*100%*	*49%*
Program Location			
Twin Cities Metro	13%	59%	0%
Outstate Minnesota	87%	41%	100%
Missing	*0%*	*0%*	*0%*
Parent Education Level			
Less than high school	11%	31%	-
HS diploma or GED	16%	36%	-
Some College	9%	28%	-
Associate's Degree	4%	0%	-
Bachelor's Degree or higher	1%	0%	-
Missing	*60%*	*6%*	*100%*
Family Size			
Average family size	4.2	4.4	5.1

Sample Characteristic	TS GOLD Analyzed Sample (n=1,385)	WSS Analyzed Sample (n=918)	COR Analyzed Sample (n=142)
Missing	*73%*	*5%*	*54%*
Family Type			
Single parent	38%	41%	12%
Two parent	46%	52%	35%
Foster	<1%	<1%	0%
Missing	*16%*	*7%*	*54%*
Family Income			
Average annual income	$10,987	$10,960	$11,933
Missing	*20%*	*26%*	*54%*
Social Program Participation			
WIC	56%	64%	37%
Missing	*20%*	5%	54%
TANF	55%	24%	2%
Missing	*32%*	*5%*	*54%*
Primary Adult's Age			
Average age at child's birth	27	26	27
Missing	*38%*	*18%*	*54%*
Basis for Head Start Eligibility			
Income	56%	30%	42%
Disability	2%	1%	3%
Categorically (Foster, Homeless, SSI)	5%	1%	7%
Public Assistance	7%	4%	1%
Missing	*30%*	*64%*	*54%*

Table 5: Correlation of Individual Items on TS GOLD to 75% Domain Proficiency[32]

	Analyzed Sample[33] (n=1385)				Non-missing Sample[34] (n=1203)			
	Fall - Domain Prof 75%	**Winter - Domain Prof 75%**	**Spring - Domain Prof 75%**	Fall Score x Spring Domain Prof 75%	**Fall - Domain Prof 75%**	**Winter - Domain Prof 75%**	**Spring - Domain Prof 75%**	Fall Score x Spring Domain Prof 75%
Social-Emotional								
Manages feelings	.713**	.689**	.700**	.442**	.716**	.697**	.715**	.447**
Follows limits and expectations	.687**	.668**	.642**	.507**	.706**	.680**	.657**	.521**
Takes care of own needs appropriately	.706**	.695**	.719**	.439**	.712**	.698**	.727**	.439**
Forms relationships with adults	.696**	.678**	.664**	.370**	.704**	.684**	.677**	.384**
Responds to emotional cues	.717**	.726**	.732**	.403**	.722**	.743**	.743**	.413**
Interacts with peers	.679**	.724**	.728**	.436**	.689**	.743**	.737**	.436**
Makes friends	.646**	.721**	.721**	.420**	.661**	.726**	.723**	.409**
Balances needs and rights of self and others	.695**	.717**	.739**	.427**	.697**	.720**	.748**	.427**
Solves social problems	.676**	.685**	.743**	.426**	.686**	.685**	.753**	.433**
Physical								
Demonstrates traveling skills	.735**	.769**	.744**	.350**	.739**	.770**	.750**	.346**
Demonstrates balancing skills	.784**	.760**	.756**	.361**	.784**	.767**	.772**	.355**
Demonstrates gross-motor manipulative skills	.738**	.745**	.760**	.360**	.754**	.768**	.774**	.366**
Uses fingers and hands	.736**	.767**	.752**	.349**	.738**	.767**	.761**	.347**
Uses writing and drawing tools	.653*	.672**	.696**	.300**	.673**	.676**	.702**	.293**
Language								
Comprehends language	.763**	.773**	.763**	.503**	.762**	.770**	.756**	.492**
Follows directions	.595**	.655**	.673**	.377**	.593**	.667**	.677**	.378**
Uses an expanding expressive vocabulary	.792**	.754**	.729**	.561**	.795**	.753**	.730**	.560**
Speaks clearly	.707**	.655**	.599**	.535**	.698**	.653**	.588**	.520**

[32] Table interpretation –Correlation coefficients show the relationship from one variable to another variable. Correlation coefficients can range from -1.00 to 1.00 (a coefficient of 1.00 is called "perfectly correlated" and means that for each unit increase in the first item, there is exactly a one unit increase in the second item). Positive coefficients indicate that the two items move together in the same direction. For example, a child's rating on the item "manages feelings" in the fall is positively correlated to their proficiency in the Socio-Emotional domain in the fall (.713).

[33] Analyzed sample – Cases in the analyzed sample had at least half of the items rated in each domain at each time point (fall, winter, and spring).

[34] Non-missing sample – Cases in the non-missing sample had all items rated at each time point (fall, winter, and spring).

* Correlation is at the p<.05 significance level (two-tailed); ** Correlation is at the p<.01 significance level (two-tailed); n.s. Not statistically significant

	Analyzed Sample[33] (n=1385)				Non-missing Sample[34] (n=1203)			
	Fall - Domain Prof 75%	Winter - Domain Prof 75%	Spring - Domain Prof 75%	Fall Score x Spring Domain Prof 75%	Fall - Domain Prof 75%	Winter - Domain Prof 75%	Spring - Domain Prof 75%	Fall Score x Spring Domain Prof 75%
Uses conventional grammar	.667**	.723**	.769**	.442**	.663**	.724**	.775**	.438**
Tells about another time or place	.751**	.751**	.774**	.548**	.739**	.755**	.779**	.537**
Engages in conversations	.755**	.798**	.819**	.514**	.751**	.793**	.814**	.510**
Uses social rules of language	.722**	.740**	.761**	.527**	.715**	.745**	.757**	.528**
Cognitive								
Attends and engages	.711**	.698**	.668**	.424**	.725**	.697**	.669**	.427**
Persists	.757**	.773**	.772**	.479**	.755**	.776**	.775**	.489**
Solves problems	.768**	.773**	.754**	.490**	.772**	.773**	.763**	.505**
Shows curiosity and motivation	.758**	.753**	.722**	.473**	.772**	.767**	.725**	.472**
Shows flexibility and inventiveness in thinking	.683**	.641**	.598**	.442**	.699**	.640**	.590**	.456**
Recognizes and recalls	.724**	.728**	.725**	.476**	.728**	.733**	.727**	.493**
Makes connections	.752**	.742**	.730**	.448**	.756**	.744**	.736**	.449**
Uses classification skills	.618**	.607**	.645**	.337**	.618**	.610**	.649**	.353**
Thinks symbolically	.608**	.653**	.708**	.347**	.627**	.653**	.713**	.361**
Engages in sociodramatic play	.645**	.625**	.684**	.421**	.660**	.637**	.700**	.430**
Literacy								
Notices and discriminates rhyme	.624**	.703**	.719**	.415**	.618**	.698**	.717**	.427**
Notices and discriminates alliteration	.701**	.699**	.714**	.442**	.703**	.701**	.712**	.436**
Notices and discriminates smaller and smaller units of sound	.540**	.651**	.633**	.370**	.555**	.653**	.645**	.361**
Identifies and names letters	.660**	.685**	.672**	.527**	.669**	.698**	.678**	.530**
Uses letter–sound knowledge	.665**	.664**	.627**	.396**	.649**	.665**	.631**	.381**
Uses and appreciates books	.582**	.546**	.591**	.364**	.580**	.550**	.594**	.381**
Uses print concepts	.717**	.707**	.675**	.506**	.733**	.707**	.681**	.519**
Interacts during read-alouds and book conversations	.718**	.697**	.597**	.529**	.723**	.697**	.589**	.535**
Uses emergent reading skills	.660**	.648**	.701**	.440**	.660**	.654**	.711**	.447**
Retells stories	.733**	.697**	.694**	.526**	.748**	.691**	.690**	.535**
Writes name	.574**	.543**	.532**	.472**	.583**	.540**	.532**	.459**
Writes to convey meaning	.434**	.481**	.521**	.315**	.434**	.477**	.523**	.306**
Mathematics								
Counts	.695**	.727**	.714**	.525**	.712**	.718**	.715**	.524**
Quantifies	.763**	.747**	.746**	.506**	.762**	.748**	.744**	.517**

	Analyzed Sample[33] (n=1385)				Non-missing Sample[34] (n=1203)			
	Fall - Domain Prof 75%	**Winter - Domain Prof 75%**	**Spring - Domain Prof 75%**	Fall Score x Spring Domain Prof 75%	**Fall - Domain Prof 75%**	**Winter - Domain Prof 75%**	**Spring - Domain Prof 75%**	Fall Score x Spring Domain Prof 75%
Connects numerals with their quantities	.708**	.739**	.710**	.536**	.724**	.733**	.712**	.533**
Understands spatial relationships	.722**	.750**	.737**	.433**	.717**	.760**	.740**	.455**
Understands shapes	.621**	.660**	.722**	.412**	.633**	.661**	.727**	.411**
Compares and measures	.556**	.523**	.627**	.297**	.542**	.513**	.629**	.324**
Demonstrates knowledge of patterns	.697**	.706**	.701**	.465**	.692**	.725**	.719**	.454**

Table 6: Correlations of Individual Items on WSS to 75% Domain Proficiency[35]

	Analyzed Sample[36] (n=918)				Non-missing Sample[37] (n=394)			
	Fall - Domain Prof 75%	**Winter - Domain Prof 75%**	**Spring - Domain Prof 75%**	Fall Score x Spring Domain Prof 75%	**Fall - Domain Prof 75%**	**Winter - Domain Prof 75%**	**Spring - Domain Prof 75%**	Fall Score x Spring Domain Prof 75%
Social and Emotional Development								
Demonstrates self-confidence	.548**	.575**	.534**	.293**	.562**	.562**	.620**	.362**
Follows simple classroom rules and routines	.526**	.525**	.528**	.292**	.509**	.509**	.488**	.327**
Uses classroom materials carefully	.532**	.536**	.486**	.283**	.522**	.522**	.425**	.280**
Manages transitions	.544**	.570**	.521**	.287**	.500**	.500**	.482**	.357**
Seeks adult help when needed to resolve conflicts	.593**	.673**	.597**	.333**	.704**	.704**	.643**	.401**
Participates in the group life of the class	.556**	.630**	.607**	.298**	.612**	.612**	.625**	.350**
Interacts easily with one or more children	.577**	.609**	.571**	.297**	.618**	.618**	.530**	.319**
Interacts easily with familiar adults	.572**	.623**	.613**	.316**	.634**	.634**	.623**	.322**
Shows empathy and caring for others	.567**	.613**	.577**	.330**	.612**	.612**	.574**	.387**
Identifies similarities and differences in personal and family characteristics	.573**	.635**	.630**	.312**	.581**	.581**	.645**	.336**
Begins to understand family needs, roles, and relationships	.565**	.617**	.599**	.303**	.553**	.553**	.641**	.361**
Describes some people's jobs and what is required to perform them	.568**	.589**	.574**	.309**	.532**	.532**	.591**	.302**
Describes the location of things in their environment	.597**	.676**	.569**	.322**	.627**	.627**	.597**	.340**
Approaches to Learning								
Shows eagerness and curiosity as a learner	.625**	.318**	.664**	.316**	.038, n.s.	.126*	.692**	.355**
Shows some self-direction	.653**	.347**	.709**	.321**	.056, n.s.	.173**	.713**	.332**
Attend to tasks and seeks help when encountering a problem	.638**	.679**	.711**	.353**	.663**	.631**	.734**	.395**

[35] Table interpretation –Correlation coefficients show the relationship from one variable to another variable. Correlation coefficients can range from -1.00 to 1.00 (a coefficient of 1.00 is called "perfectly correlated" and means that for each unit increase in the first item, there is exactly a one unit increase in the second item). Positive coefficients indicate that the two items move together in the same direction. For example, a child's rating on the item "demonstrates self-confidence" is positively correlated to their proficiency in the Social and Emotional Development domain in the fall (.548).

[36] Analyzed sample – Cases in the analyzed sample had at least half of the items rated in each domain at each time point (fall, winter, and spring).

[37] Non-missing sample – Cases in the non-missing sample had all items rated at each time point (fall, winter, and spring).

* Correlation is at the p<.05 significance level (two-tailed); ** Correlation is at the p<.01 significance level (two-tailed); n.s. Not statistically significant

	Analyzed Sample[36] (n=918)				Non-missing Sample[37] (n=394)			
	Fall - Domain Prof 75%	Winter - Domain Prof 75%	Spring - Domain Prof 75%	Fall Score x Spring Domain Prof 75%	Fall - Domain Prof 75%	Winter - Domain Prof 75%	Spring - Domain Prof 75%	Fall Score x Spring Domain Prof 75%
Approaches tasks with flexibility and inventiveness	.626**	.645**	.732**	.294**	.646**	.593**	.724**	.387**
Begins to be aware of technology and how it affects their lives	.536**	.662**	.591**	.295**	.504**	.586**	.646**	.324**
Language								
Gains meaning by listening	.474**	.588**	.554**	.323**	.537**	.560**	.533**	.390**
Understand and increasingly complex and varied vocabulary	.571**	.615**	.741**	.421**	.613**	.578**	.700**	.485**
Follows two or three step directions	.492**	.587**	.511**	.337**	.461**	.484**	.445**	.331**
Demonstrates phonological awareness	.475**	.597**	.624**	.439**	.510**	.494**	-.018, n.s.	.454**
Associates sounds with written words	.468**	.602**	.637**	.423**	.463**	.512**	.593**	.391**
Speaks clearly enough to be understood w/o contextual clues	.517**	.599**	.616**	.384**	.526**	.502**	.635**	.402**
Develops increasing abilities to understand and use language to communicate information, experiences, ideas, feelings, opinions, needs, questions, and or other varied purposes	.607**	.649**	.751**	.491**	.608**	.602**	.765**	.547**
Uses expanded vocabulary & language for a variety of purposes	.575**	.613**	.752**	.456**	.625**	.615**	.756**	.493**
Uses increasingly complex and varied spoken language	.572**	.632**	.765**	.436**	.665**	.670**	.773**	.515**
Literacy								
Shows appreciation for books and reading	.446**	.512**	.511**	.238**	.446	.440**	.439**	.285**
Comprehends and responds to stories read aloud	.553**	.647**	.633**	.372**	.551	.565**	.581**	.367**
Shows beginning understanding of concepts about print	.593**	.676**	.707**	.389**	.590	.605**	.691**	.403**
Recognizes a word as a unit of print	.518**	.568**	.680**	.275**	.376	.395**	.624**	.292**
Begins to develop knowledge about letters	.577**	.657**	.746**	.464**	.540	.545**	.727**	.524**
Identifies at least 10 letters of the alphabet, especially those in their own name	.518**	.554**	.711**	.468**	.510	.477**	.053, n.s.	.468**
Knows that the letters of the alphabet are a special category of visual graphics that can be individually named	.560**	.609**	.718**	.472**	.579	.555**	.738**	.521**
Represents ideas and stories through pictures, dictation, & play	.596**	.657**	.656**	.340**	.565	.622**	.634**	.330**

	Analyzed Sample[36] (n=918)				Non-missing Sample[37] (n=394)			
	Fall - Domain Prof 75%	Winter - Domain Prof 75%	Spring - Domain Prof 75%	Fall Score x Spring Domain Prof 75%	Fall - Domain Prof 75%	Winter - Domain Prof 75%	Spring - Domain Prof 75%	Fall Score x Spring Domain Prof 75%
Understand purposes for writing	.607**	.682**	.709**	.396**	.616	.629**	.704**	.464**
Uses letter-like shapes, symbols, and letters to convey meaning	.598**	.680**	.667**	.332**	.567	.627**	.623**	.382**
Mathematical Thinking								
Begins to use simple strategies to solve mathematical probs.	.552**	.639**	.638**	.477**	.555**	.558**	.650**	.460**
Shows beginning understanding of number & quantity	.502**	.621**	.703**	.433**	.500**	.557**	.711**	.490**
Begins to recognize & describe attributes of shapes	.485**	.637**	.624**	.349**	.466**	.536**	.658**	.390**
Shows understanding of & uses positional words	.516**	.678**	.710**	.405**	.536**	.584**	.678**	.409**
Sorts objects into subgroups that vary by one or two characteristics	.521**	.627**	.703**	.344**	.528**	.543**	.683**	.443**
Recognizes simple patterns and duplicates them	.524**	.620**	.677**	.324**	.535**	.569**	.656**	.377**
Orders, compares, and describes objects according to size, length, height, and weight	.553**	.610**	.722**	.453**	.492**	.498*	.742**	.487**
Participates in measuring activities	.498**	.588**	.571**	.358**	.447**	.463**	.529**	.384**
Science								
Uses senses to observe and explore classroom materials and natural phenomena	.571**	.634**	.647**	.351**	.574**	.589**	.623**	.370**
Performs descriptive investigations using simple tools and equipment	.553**	.660**	.740**	.347**	.587**	.598**	.738**	.372**
Asks questions about the natural world and seeks answers through active exploration	.549**	.626**	.764**	.431**	.604**	.539**	.756**	.431**
Begins to describe and compare materials, living things, natural resources, and processes	.531**	.634**	.752**	.407**	.564**	.567**	.762**	.448**
Shows awareness of environment	.555**	.616**	.719**	.310**	.524**	.580**	.733**	.368**
The Arts								
Participates in group music experiences	.722**	.755**	.755**	.358**	.741**	.770**	.765**	.396**
Uses a variety of art materials for tactile exprnc. & exploration	.695**	.707**	.602**	.322**	.610**	.645**	.613**	.350**
Participates in creative movement, dance, & drama	.657**	.680**	.766**	.297**	.750**	.741**	.726**	.411**
Engages in dramatic play	.663**	.656**	.638**	.308**	.628**	.655**	.724**	.380**
Responds to artistic creations or events	.640**	.657**	.589**	.302**	.629**	.632**	.639**	.331**
Physical Development and Health								
Moves with balance and control	.781**	.771**	.706**	.311**	.797**	.800**	.727**	.331**

	Analyzed Sample[36] (n=918)				Non-missing Sample[37] (n=394)			
	Fall - Domain Prof 75%	**Winter - Domain Prof 75%**	**Spring - Domain Prof 75%**	Fall Score x Spring Domain Prof 75%	**Fall - Domain Prof 75%**	**Winter - Domain Prof 75%**	**Spring - Domain Prof 75%**	Fall Score x Spring Domain Prof 75%
Coordinates movements to perform simple tasks	.802**	.737**	.780**	.272**	.809**	.721**	.829**	.305**
Uses strength and control to perform simple tasks	.793**	.726**	.724**	.274**	.837**	.716**	.755*	.293**
Uses eye-hand coordination to perform tasks	.763**	.725**	.732**	.291**	.805**	.709**	.755**	.276**
Shows beginning control of writing, drawing, and art tools	.620**	.664**	.711**	.218**	.717**	.733**	.680**	.231**
Performs some self-care tasks independently	.656**	.655**	.600**	.254**	.664**	.664**	.598**	277**
Follows basic health and safety rules	.691**	.664**	.464**	.290**	.648**	.642**	.533**	.259**

Table 7: Correlations of Individual Items on COR to 75% Domain Proficiency[38]

	Analyzed Sample[39] (n=142)			
	Fall - Domain Prof 75%	Winter - Domain Prof 75%	Spring - Domain Prof 75%	Fall Score x Spring Domain Prof 75%
Initiative				
A. Making choices and plans	.410**	.618**	.565**	.204**
B. Solving problems with materials	.316**	.604**	.651**	.152, n.s.
C. Initiating play	.431**	.551**	.606**	.164, n.s.
D. Taking care of personal needs	.399**	.450**	.286**	-.126, n.s.
Social Relations				
E. Relating to adults	.308**	.478**	.479**	.179*
F. Relating to other children	.368**	.556**	.572**	.283**
G. Resolving interpersonal conflict	.563**	.572**	.500**	.214*
H. Understanding and expressing feelings	.462**	.558**	.572**	.215*
Creative Representations				
I. Making and building models	.265**	.604**	.632**	.178*
J. Drawing and painting pictures	.347**	.526**	.653**	.188*
K. Pretending	.306**	.481**	.409**	.284**
Movement and Music				
L. Moving in various ways	.270**	.505**	.321**	-.091, n.s.
M. Moving with objects	.289**	.478**	.064, n.s.	.129, n.s.
N. Feeling and expressing steady beat	.484**	.657**	.460**	.155, n.s.
O. Moving to music	.511**	.723**	.555**	.151, n.s.
P. Singing	.310**	.611**	.594**	.311**
Language and Literacy				
Q. Listening to and understanding speech	.319**	.445**	.559**	.252**
R. Using vocabulary	.280**	.440**	.512**	.293**
S. Using complex patterns of speech	.265**	.611**	.578**	.456**
T. Showing awareness of sounds in words	.462**	.615**	.693**	.294**
U. Demonstrating knowledge about books	.289**	.360**	.514**	.111, n.s.
V. Using letter names and sounds	.496**	.672**	.619**	.332**
W. Reading	.266**	.346**	.290**	.053, n.s.
X. Writing	.244**	.392**	.518**	.253**
Math and Science				
Y. Sorting objects	.381**	.525**	.402**	.278**
Z. Identifying patterns	.567**	.576**	.454**	.352**
AA. Comparing properties	.408**	.546**	.481**	.173, n.s.
BB. Counting	.251**	.505**	.495**	.420**

[38] Table interpretation –Correlation coefficients show the relationship from one variable to another variable. Correlation coefficients can range from -1.00 to 1.00 (a coefficient of 1.00 is called "perfectly correlated" and means that for each unit increase in the first item, there is exactly a one unit increase in the second item). Positive coefficients indicate that the two items move together in the same direction. For example, a child's fall rating on the item "making choices and plans" is positively correlated to their domain proficiency in the fall (.410).

[39] Analyzed sample – Cases in the analyzed sample had at least half of the items rated in each domain at each time point (fall, winter, and spring). There were no cases that had all ratings at all time points, therefore, there is no "non-missing sample" reported here.

* Correlation is at the p<.05 significance level (two-tailed); ** Correlation is at the p<.01 significance level (two-tailed); n.s. Not statistically significant

	Analyzed Sample[39] (n=142)			
	Fall - Domain Prof 75%	**Winter - Domain Prof 75%**	**Spring - Domain Prof 75%**	Fall Score x Spring Domain Prof 75%
CC. Identifying position and direction	.555**	.566**	.530**	.309**
DD. Identifying sequence, change, and causality	.480**	.659**	.568**	.333**
EE. Identifying materials and properties	.592**	.577**	.586**	.236**
FF. Identifying natural and living things	.444**	.557**	.719**	.295**

Table 8: Correlations of TS GOLD Items by Overall Proficiency (75%) and Gains from Fall to Spring[40]

	Analyzed Sample[41] (n=1385)					Non-missing Sample[42] (n=1201)				
	Within Season Corr			Fall to Spring Corr		Within Season Corr			Fall to Spring Corr	
	Fall Score x Fall Prof	Winter Score x Winter Prof	Spring Score x Spring Prof	Fall Score X Spring Prof	Fall Score x % Gain	Fall Score x Fall Prof	Winter Score x Winter Prof	Spring Score x Spring Prof	Fall Score X Spring Prof	Fall Score x % Gain
Social-Emotional										
Manages feelings	.354**	.494**	.465**	.310**	-.291**	.347**	.504**	.465**	.308**	-.283**
Follows limits and expectations	.272**	.354**	.383**	.377**	-.233**	.289**	.374**	.388**	.385**	-.236**
Takes care of own needs appropriately	.417**	.502**	.498**	.376**	-.301**	.417**	.513**	.504**	.376**	-.303**
Forms relationships with adults	.351**	.409**	.434**	.297**	-.322**	.362**	.411**	.454**	.304**	-.317**
Responds to emotional cues	.473**	.556**	.584**	.306**	-.381**	.486**	.574**	.585**	.311**	-.373**
Interacts with peers	.376**	.476**	.530**	.335**	-.281**	.403**	.498**	.537**	.339**	-.287**
Makes friends	.367**	.510**	.493**	.346**	-.285**	.379**	.523**	.508**	.345**	-.289**
Balances needs and rights of self and others	.429**	.527**	.537**	.318**	-.308**	.432**	.536**	.538**	.316**	-.300**
Solves social problems	.394**	.497**	.560**	.349**	-.296**	.418**	.508**	.578**	.356**	-.289**
Physical										
Demonstrates traveling skills	.326**	.455**	.396**	.213**	-.318**	.322**	.459**	.423**	.218**	-.306**
Demonstrates balancing skills	.300**	.430**	.418**	.246**	-.306**	.301**	.425**	.456**	.270**	-.289**
Demonstrates gross-motor manipulative skills	.337**	.434**	.434**	.245**	-.282**	.336**	.460**	.453**	.251**	-.286**
Uses fingers and hands	.358**	.518**	.460**	.269**	-.338**	.365**	.520**	.455**	.261**	-.321**
Uses writing and drawing tools	.342**	.494**	.466**	.253**	-.267**	.333**	.503**	.489**	.252**	-.266**

[40] Table interpretation –Correlation coefficients show the relationship from one variable to another variable. Correlation coefficients can range from -1.00 to 1.00 (a coefficient of 1.00 is called "perfectly correlated" and means that for each unit increase in the first item, there is exactly a one unit increase in the second item). Positive coefficients indicate that the two items move together in the same direction. For example, a child's rating on the item "manages feelings" is positively correlated to their overall proficiency in the fall (.354). Negative coefficients indicate that the two items move in opposite directions. For example, the higher the score on "manages feelings", then the fewer gains that child made from fall to spring. This negative relationship makes sense because a high score on an item in the fall means there is not room to make gains on the assessment instrument over the course of the year.

[41] Analyzed sample – Cases in the analyzed sample had at least half of the items rated in each domain at each time point (fall, winter, and spring).

[42] Non-missing sample – Cases in the non-missing sample had all items rated at each time point (fall, winter, and spring).

* Correlation is at the p<.05 significance level (two-tailed); ** Correlation is at the p<.01 significance level (two-tailed); n.s. Not statistically significant

Note: Dark-shaded cells indicate the five most highly correlated items.

	Analyzed Sample[41] (n=1385)					Non-missing Sample[42] (n=1201)				
	Within Season Corr			Fall to Spring Corr		Within Season Corr			Fall to Spring Corr	
	Fall Score x Fall Prof	Winter Score x Winter Prof	Spring Score x Spring Prof	Fall Score X Spring Prof	Fall Score x % Gain	Fall Score x Fall Prof	Winter Score x Winter Prof	Spring Score x Spring Prof	Fall Score X Spring Prof	Fall Score x % Gain
Language										
Comprehends language	.434**	.605**	.589**	.390**	-.377**	.442**	.610**	.590**	.387**	-.384**
Follows directions	.436**	.561**	.531**	.277**	-.326**	.429**	.570**	.524**	.274**	-.317**
Uses an expanding expressive vocabulary	.384**	.472**	.574**	.449**	-.329**	.395**	.479**	.574**	.448**	-.327**
Speaks clearly	.209**	.329**	.411**	.404**	-.240**	.207**	.329**	.394**	.391**	-.235**
Uses conventional grammar	.418**	.540**	.540**	.292**	-.316**	.422**	.545**	.551**	.292**	-.302**
Tells about another time or place	.443**	.510**	.615**	.401**	-.323**	.453**	.517**	.620**	.396**	-.310**
Engages in conversations	.403**	.567**	.574**	.366**	-.334**	.410**	.564**	.580**	.365**	-.321**
Uses social rules of language	.364**	.571**	.548**	.405**	-.318**	.374**	.574**	.549**	.410**	-.300**
Cognitive										
Attends and engages	.413**	.532**	.533**	.319**	-.365**	.434**	.529**	.521**	.321**	-.356**
Persists	.435**	.585**	.592**	.370**	-.343**	.450**	.580**	.609**	.381**	-.317**
Solves problems	.439**	.615**	.588**	.377**	-.370**	.448**	.610**	.603**	.398**	-.343**
Shows curiosity and motivation	.445**	.548**	.604**	.379**	-.348**	.467**	.560**	.615**	.394**	-.346**
Shows flexibility and inventiveness in thinking	.410**	.461**	.458**	.340**	-.324**	.418**	.457**	.452**	.351**	-.318**
Recognizes and recalls	.470**	.559**	.562**	.358**	-.347**	.490**	.567**	.559**	.370**	-.336**
Makes connections	.469**	.572**	.613**	.353**	-.388**	.481**	.562**	.617**	.359**	-.385**
Uses classification skills	.453**	.508**	.485**	.250**	-.368**	.474**	.539**	.511**	.275**	-.329**
Thinks symbolically	.447**	.525**	.529**	.243**	-.340**	.467**	.526**	.549**	.259**	-.342**
Engages in sociodramatic play	.420**	.520**	.623**	.321**	-.305**	.414**	.535**	.645**	.323**	-.298**
Literacy										
Notices and discriminates rhyme	.305**	.500**	.504**	.322**	-.229**	.301**	.497**	.490**	.333**	-.215**
Notices and discriminates alliteration	.364**	.525**	.600**	.348**	-.316*	.364**	.538**	.601**	.338**	-.314**
Notices and discriminates smaller and smaller units of sound	.312**	.458**	.459**	.255**	-.270**	.328**	.452**	.463**	.237**	-.277**
Identifies and names letters	.303**	.455**	.429**	.355**	-.227**	.312**	.469**	.435**	.359**	-.198**
Uses letter–sound knowledge	.294**	.418**	.431**	.272**	-.303**	.293**	.426**	.445**	.255**	-.301**
Uses and appreciates books	.340**	.439**	.425**	.281**	-.293**	.336**	.433**	.431**	.289**	-.272**
Uses print concepts	.382**	.479**	.523**	.395**	-.309**	.391**	.470**	.524**	.410**	-.292**
Interacts during read-alouds and book conversations	.277**	.401**	.455**	.454**	-.285**	.280**	.408**	.445**	.458**	-.277**
Uses emergent reading skills	.332**	.484**	.557**	.354**	-.289**	.340**	.484**	.563**	.356**	-.274**

	Analyzed Sample[41] (n=1385)					Non-missing Sample[42] (n=1201)				
	Within Season Corr			Fall to Spring Corr		Within Season Corr			Fall to Spring Corr	
	Fall Score x Fall Prof	Winter Score x Winter Prof	Spring Score x Spring Prof	Fall Score X Spring Prof	Fall Score x % Gain	Fall Score x Fall Prof	Winter Score x Winter Prof	Spring Score x Spring Prof	Fall Score X Spring Prof	Fall Score x % Gain
Retells stories	.325**	.434**	.579**	.442**	-.271**	.337**	.431**	.579**	.451**	-.269**
Writes name	.257**	.341**	.372**	.364**	-.193**	.267**	.347**	.376**	.349**	-.188**
Writes to convey meaning	.246**	.350**	.337**	.212**	-.190**	.243**	.344**	.334**	.205**	-.180**
Mathematics										
Counts	.333**	.468**	.444**	.373**	-.229**	.339**	.467**	.445**	.368**	-.219**
Quantifies	.318**	.434**	.407**	.342**	-.290**	.313**	.445**	.415**	.351**	-.266**
Connects numerals with their quantities	.339**	.455**	.410**	.341**	-.253**	.330**	.443**	.409**	.340**	-.227**
Understands spatial relationships	.391**	.542**	.577**	.320**	-.335**	.378**	.563**	.581**	.342**	-.307**
Understands shapes	.346**	.466**	.456**	.268**	-.320**	.351**	.474**	.457**	.265**	-.318**
Compares and measures	.242**	.308**	.341**	.240**	-.290**	.234**	.294**	.350**	.253**	-.263**
Demonstrates knowledge of patterns	.356**	.495**	.479**	.349**	-.319**	.363**	.510**	.479**	.342**	-.323**

Table 9: Correlations of WSS Items by Overall Proficiency (75%) and Gains from Fall to Spring[43]

	Analyzed Sample[44] (n=918)					Non-missing Sample[45] (n=394)				
	Within Season Corr			Fall to Spring Corr		Within Season Corr			Fall to Spring Corr	
	Fall Score x Fall Prof	Winter Score x Winter Prof	Spring Score x Spring Prof	Fall Score X Spring Prof	Fall Score x % Gain	Fall Score x Fall Prof	Winter Score x Winter Prof	Spring Score x Spring Prof	Fall Score X Spring Prof	Fall Score x % Gain
Social and Emotional Development										
Demonstrates self-confidence	.484**	.526**	.467**	.341**	-.443**	.455**	.499**	.560**	.378**	-.442**
Follows simple classroom rules and routines	.385**	.428**	.348**	.251**	-.413**	.351**	.370**	.335**	.268**	-.420**
Uses classroom materials carefully	.408**	.436**	.344**	.239**	-.427**	.398**	.391**	.312**	.258**	-.493**
Manages transitions	.403**	.439**	.380**	.253**	-.435**	.334**	.375**	.342**	.321**	-.386**
Seeks adult help when needed to resolve conflicts	.498**	.547**	.510**	.352**	-.444**	.513**	.545**	.552**	.409**	-.417**
Participates in the group life of the class	.446**	.539**	.498**	.285**	-.452**	.410**	.454**	.550**	.329**	-.426**
Interacts easily with one or more children	.447**	.475**	.446**	.277**	-.464**	.424**	.464**	.422**	.277**	-.482**
Interacts easily with familiar adults	.437**	.500**	.463**	.292**	-.453**	.448**	.474**	.479**	.264**	-.494**
Shows empathy and caring for others	.446**	.506**	.488**	.346**	-.443**	.489**	.482**	.503**	.367**	-.478**
Identifies similarities and differences in personal and family characteristics	.529**	.582**	.647**	.360**	-.482**	.570**	.573**	.674**	.383**	-.514**
Begins to understand family needs, roles, and relationships	.523**	.562**	.619**	.356**	-.451**	.517**	.522**	.657**	.401**	-.448**
Describes some people's jobs and what is required to perform them	.555**	.606**	.610**	.362**	-.461**	.560**	.506**	.657**	.356**	-.503**
Describes the location of things in their environment	.524**	.640**	.562**	.347**	-.503**	.556**	.559**	.627**	.336**	-.562**

[43] Table interpretation –Correlation coefficients show the relationship from one variable to another variable. Correlation coefficients can range from -1.00 to 1.00 (a coefficient of 1.00 is called "perfectly correlated" and means that for each unit increase in the first item, there is exactly a one unit increase in the second item). Positive coefficients indicate that the two items move together in the same direction. For example, a child's rating on the item "demonstrates self-confidence" is positively correlated to their overall proficiency in the fall (.484). Negative coefficients indicate that the two items move in opposite directions. For example, the higher the score on "demonstrates self-confidence" the fewer gains that child made from fall to spring. This negative relationship makes sense because a high score on an item in the fall means there is not room to make gains on the assessment instrument over the course of the year.

[44] Analyzed sample – Cases in the analyzed sample had at least half of the items rated in each domain at each time point (fall, winter, and spring).

[45] Non-missing sample – Cases in the non-missing sample had all items rated at each time point (fall, winter, and spring).

* Correlation is at the p<.05 significance level (two-tailed); ** Correlation is at the p<.01 significance level (two-tailed); n.s. Not statistically significant

Note: Dark-shaded cells indicate the five most highly correlated items to overall proficiency.

	Analyzed Sample[44] (n=918)					Non-missing Sample[45] (n=394)				
	Within Season Corr			Fall to Spring Corr		Within Season Corr			Fall to Spring Corr	
	Fall Score x Fall Prof	Winter Score x Winter Prof	Spring Score x Spring Prof	Fall Score X Spring Prof	Fall Score x % Gain	Fall Score x Fall Prof	Winter Score x Winter Prof	Spring Score x Spring Prof	Fall Score X Spring Prof	Fall Score x % Gain
Approaches to Learning										
Shows eagerness and curiosity as a learner	.474**	.161**	.527**	.342**	-.437**	.449**	-.061, n.s	.548**	.379**	-.420**
Shows some self-direction	.504**	.228**	.555**	.324**	-.461**	.492**	.072, n.s.	.533**	.341**	-.462**
Attend to tasks and seeks help when encountering a problem	.551**	.596**	.584**	.362**	-.466**	.527**	.541**	.617**	.395**	-.449**
Approaches tasks with flexibility and inventiveness	.501**	.560**	.553**	.321**	-.473**	.531**	.524**	.543**	.404**	-.442**
Begins to be aware of technology and how it affects their lives	.474**	.547**	.537**	.327**	-.409**	.429**	.439**	.599**	.359**	-.375**
Language										
Gains meaning by listening	.479**	.579**	.579**	.280**	-.427**	.518**	.543**	.591**	.323**	-.462**
Understand and increasingly complex and varied vocabulary	.552**	.590**	.580**	.337**	-.472**	.519**	.507**	.544**	.373**	-.477**
Follows two or three step directions	.518**	.607**	.535**	.343**	-.450**	.480**	.482**	.515**	.336**	-.477**
Demonstrates phonological awareness	.450**	.602**	.530**	.361**	-.400**	.499**	.445**	.528**	.398**	-.402**
Associates sounds with written words	.446**	.610**	.505**	.344**	-.337**	.454**	.505**	.577**	.338**	-.373**
Speaks clearly enough to be understood w/o contextual clues	.471**	.519**	.568**	.342**	-.403**	.460**	.427**	.638**	.349**	-.432**
Develops increasing abilities to understand and use language to communicate information, experiences, ideas, feelings, opinions, needs, questions, and or other varied purposes	.536**	.601**	.611**	.392**	-.442**	.535**	.517**	.635**	.426**	-.458**
Uses expanded vocabulary & language for a variety of purposes	.480**	.557**	.604**	.391**	-.412**	.525**	.509**	.616**	.417**	-.486**
Uses increasingly complex and varied spoken language	.480**	.562**	.563**	.358**	-.444**	.544**	.549**	.596**	.401**	-.496**
Literacy										
Shows appreciation for books and reading	.401**	.464**	.550**	.259**	-.413**	.473**	.448**	.503**	.291**	-.464**
Comprehends and responds to stories read aloud	.495**	.575**	.601**	.350**	-.429**	.534**	.522**	.631**	.396**	-.435**
Shows beginning understanding of concepts about print	.512**	.604**	.630**	.373**	-.421**	.505**	.486**	.616**	.411**	-.424**
Recognizes a word as a unit of print	.482**	.529**	.640**	.300**	-.418**	.431**	.437**	.626**	.345**	-.387**
Begins to develop knowledge about letters	.469**	.545**	.573**	.380**	-.336**	.399**	.426**	.560**	.424**	-.226**
Identifies at least 10 letters of the alphabet, especially	.390**	.467**	.545**	.353**	-.267**	.288**	.305**	.586**	.356**	-.198**

	Analyzed Sample[44] (n=918)					Non-missing Sample[45] (n=394)				
	Within Season Corr			Fall to Spring Corr		Within Season Corr			Fall to Spring Corr	
	Fall Score x Fall Prof	Winter Score x Winter Prof	Spring Score x Spring Prof	Fall Score X Spring Prof	Fall Score x % Gain	Fall Score x Fall Prof	Winter Score x Winter Prof	Spring Score x Spring Prof	Fall Score X Spring Prof	Fall Score x % Gain
those in their own name										
Knows that the letters of the alphabet are a special category of visual graphics that can be individually named	.443**	.543**	.576**	.393**	-.325**	.408**	.423**	.599**	.429**	-.262**
Represents ideas and stories through pictures, dictation, & play	.508**	.602**	.607**	.311**	-.466**	.478**	.503**	.564**	.359**	-.425**
Understand purposes for writing	.544**	.601**	.628**	.375**	-.433**	.504**	.515**	.618**	.430**	-.380**
Uses letter-like shapes, symbols, and letters to convey meaning	.512**	.594**	.561**	.284**	-.393**	.446**	.468**	.500**	.337**	-.290**
Mathematical Thinking										
Begins to use simple strategies to solve mathematical probs.	.525**	.596**	.560**	.384**	-.364**	.519**	.485**	.564**	.396**	-.363**
Shows beginning understanding of number & quantity	.504**	.569**	.551**	.356**	-.405**	.466**	.447**	.547**	.391**	-.350**
Begins to recognize & describe attributes of shapes	.381**	.546**	.520**	.299**	-.364**	.413**	.446**	.552**	.342**	-.357**
Shows understanding of & uses positional words	.413**	.589**	.572**	.350**	-.381**	.494**	.486**	.545**	.371**	-.417**
Sorts objects into subgroups that vary by one or two characteristics	.458**	.542**	.541**	.269**	-.415**	.527**	.536**	.507**	.313**	-.425**
Recognizes simple patterns and duplicates them	.440**	.539**	.547**	.269**	-.418**	.512**	.514**	.542**	.321**	-.460**
Orders, compares, and describes objects according to size, length, height, and weight	.441**	.546**	.546**	.367**	-.349**	.458**	.442**	.559**	.408**	-.328**
Participates in measuring activities	.384**	.513**	.502**	.293**	-.348**	.411**	.414**	.453**	.292**	-.343**
Science										
Uses senses to observe and explore classroom materials and natural phenomena	.501**	.562**	.565**	.281**	-.391**	.488**	.472**	.542**	.295**	-.412**
Performs descriptive investigations using simple tools and equipment	.473**	.549**	.546**	.274**	-.434**	.509**	.495**	.595**	.290**	-.475**
Asks questions about the natural world and seeks answers through active exploration	.542**	.599**	.585**	.346**	-.405**	.567**	.518**	.636**	.364**	-.428**
Begins to describe and compare materials, living things, natural resources, and processes	.452**	.601**	.583**	.359**	-.370**	.455**	.504**	.612**	.381**	-.374**
Shows awareness of environment	.498**	.557**	.611**	.287**	-.476**	.469**	.495**	.682**	.368**	-.462**
The Arts										
Participates in group music experiences	.475**	.505**	.424**	.312**	-.444**	.467**	.445**	.481**	.359**	-.448**

	Analyzed Sample[44] (n=918)					Non-missing Sample[45] (n=394)				
	Within Season Corr			Fall to Spring Corr		Within Season Corr			Fall to Spring Corr	
	Fall Score x Fall Prof	Winter Score x Winter Prof	Spring Score x Spring Prof	Fall Score X Spring Prof	Fall Score x % Gain	Fall Score x Fall Prof	Winter Score x Winter Prof	Spring Score x Spring Prof	Fall Score X Spring Prof	Fall Score x % Gain
Uses a variety of art materials for tactile exprnc. & exploration	.513**	.516**	.484**	.324**	-.447**	.490**	.482**	.463**	.342**	-.447**
Participates in creative movement, dance, & drama	.477**	.475**	.455**	.197**	-.460**	.496**	.467**	.504**	.330**	-.416**
Engages in dramatic play	.472**	.445**	.410**	.214**	-.492**	.432**	.413**	.433**	.267**	-.492**
Responds to artistic creations or events	.505**	.575**	.446**	.290**	-.458**	.476**	.505**	.433**	.249**	-.472**
Physical Development and Health										
Moves with balance and control	.444**	.424**	.395**	.250**	-.396**	.430**	.408**	.413**	.260**	-.479**
Coordinates movements to perform simple tasks	.470**	.424**	.449**	.271**	-.433**	.437**	.391**	.433**	.251**	-.494**
Uses strength and control to perform simple tasks	.438**	.419**	.476**	.286**	-.402**	.440**	.357**	.441**	.250**	-.485**
Uses eye-hand coordination to perform tasks	.433**	.410**	.470**	.306**	-.378**	.430**	.365**	.470**	.254**	-.465**
Shows beginning control of writing, drawing, and art tools	.392**	.447**	.472**	.264**	-.384**	.415**	.374**	.447**	.244**	-.427**
Performs some self-care tasks independently	.332**	.346**	.358**	.247**	-.379**	.302**	.301**	.258**	.264**	-.415**
Follows basic health and safety rules	.430**	.395**	.357**	.245**	-.407**	.343**	.309**	.328**	.224**	-.444**

Table 10: Correlations of COR Items by Overall Proficiency (75%) and Gains from Fall to Spring[46]

	Analyzed Sample[47] (n=142)				
	Within Season Corr			Fall to Spring Corr	
	Fall Score x Fall Prof	Winter Score x Winter Prof	Spring Score x Spring Prof	Fall Score X Spring Prof	Fall Score x % Gain
Initiative					
A. Making choices and plans	.209*	.450**	.619**	.367**	-.254**
B. Solving problems with materials	.124*	.303**	.499**	.224*	-.480**
C. Initiating play	.314**	.508**	.543**	.290**	-.383**
D. Taking care of personal needs	.090, n.s.	.323**	.334**	.043, n.s.	-.319**
Social Relations					
E. Relating to adults	.234**	.377**	.474**	.346*	-.289**
F. Relating to other children	.115, n.s.	.367**	.423**	.194*	-.242**
G. Resolving interpersonal conflict	.334**	.461**	.473**	.324**	-.551**
H. Understanding and expressing feelings	.210*	.508**	.370**	.250**	-.378**
Creative Representations					
I. Making and building models	.271**	.366**	.549**	.141, n.s.	-.499**
J. Drawing and painting pictures	.223**	.362**	.512**	.238*	-.481**
K. Pretending	.200*	.424*	.447**	.299**	-.389**
Movement and Music					
L. Moving in various ways	.231**	.353**	.113, n.s.	-.078, n.s.	-.580**
M. Moving with objects	.295**	.280**	.008, n.s.	.094, n.s.	-.527**
N. Feeling and expressing steady beat	.391**	.476**	.522**	.103, n.s.	-.376**
O. Moving to music	.431**	.607**	.382**	.185*	-.375**
P. Singing	.332**	.489**	.427**	.224*	-.137, n.s.
Language and Literacy					
Q. Listening to and understanding speech	.304**	.475**	.616**	.338**	-.509**
R. Using vocabulary	.281**	.392**	.619**	.240**	-.418**
S. Using complex patterns of speech	.218*	.590**	.505**	.421**	-.134, n.s.
T. Showing awareness of sounds in words	.445**	.588**	.555**	.229*	-.261**
U. Demonstrating knowledge about books	.307**	.313**	.504**	.336**	-.374**
V. Using letter names and sounds	.482**	.564**	.433**	.220*	-.343**
W. Reading	.248**	.277**	.285**	.011, n.s.	-.644**
X. Writing	.213*	.358**	.393**	.171*	-.261**
Math and Science					
Y. Sorting objects	.313**	.552**	.464**	.160, n.s.	-.558**
Z. Identifying patterns	.287**	.540**	.288**	.239**	-.495**
AA. Comparing properties	.165, n.s.	.554**	.439**	.134, n.s.	-.533**
BB. Counting	.220*	.475**	.464**	.335**	-.246**
CC. Identifying position and direction	.156, n.s.	.595**	.586**	.334**	-.371**
DD. Identifying sequence, change, and causality	.173, n.s.	.566**	.511**	.316**	-.430**
EE. Identifying materials and properties	.165, n.s.	.522**	.429**	.162, n.s.	-.609**

[46] Table interpretation –Correlation coefficients show the relationship from one variable to another variable. Correlation coefficients can range from -1.00 to 1.00 (a coefficient of 1.00 is called "perfectly correlated" and means that for each unit increase in the first item, there is exactly a one unit increase in the second item). Positive coefficients indicate that the two items move together in the same direction. For example, a child's rating on the item "demonstrates self-confidence" is positively correlated to their overall proficiency in the fall (.484). Negative coefficients indicate that the two items move in opposite directions. For example, the higher the score on "demonstrates self-confidence" the fewer gains that child made from fall to spring. This negative relationship makes sense because a high score on an item in the fall means there is not room to make gains on the assessment instrument over the course of the year.

[47] Analyzed sample – Cases in the analyzed sample had at least half of the items rated in each domain at each time point (fall, winter, and spring). No cases have all ratings at all time points.

* Correlation is at the p<.05 significance level (two-tailed); ** Correlation is at the p<.01 significance level (two-tailed); n.s. Not statistically significant

Note: Dark-shaded items indicate the five most highly correlated items with proficiency.

	Analyzed Sample[47] (n=142)				
	Within Season Corr			Fall to Spring Corr	
	Fall Score x Fall Prof	Winter Score x Winter Prof	Spring Score x Spring Prof	Fall Score X Spring Prof	Fall Score x % Gain
FF. Identifying natural and living things	.135, n.s.	.503**	.553**	.270**	-.508**

Table 11: Rates of Proficiency by Overall Proficiency (75%) and Domain Proficiency (75%)[48]

	Analyzed Sample[49]			Non-missing Sample[50]		
	Fall % Prof	Winter % Prof	Spring % Prof	Fall % Prof	Winter % Prof	Spring % Prof
TS GOLD		N=1385			N=1201	
Overall Proficiency (75%)	11.3	42.5	73.9	11.9	42.9	73.8
Social-Emotional	20.4	54.5	78.9	20.8	54.8	78.3
Physical	19.1	47.2	76.6	19.0	47.0	76.9
Language	17.0	43.2	71.1	17.0	43.3	71.5
Cognitive	17.0	48.2	77.3	17.6	49.1	78.1
Literacy	19.6	55.6	79.4	20.0	55.0	79.4
Mathematics	3.4	20.3	46.1	3.0	20.7	46.6
WSS		N=918			N=394	
Overall Proficiency (75%)	16.9	29.2	76.6	13.5	15.5	70.3
Social and Emotional Development	22.8	34.3	79.6	21.6	22.3	76.4
Approaches to Learning	20.4	32.0	77.3	19.8	21.1	75.4
Language Development	14.8	24.7	61.4	13.2	14.2	51.3
Literacy	19.0	30.1	71.9	14.7	17.0	64.2
Mathematics	14.7	28.3	67.2	10.2	13.2	54.1
Science	12.2	23.0	65.4	10.9	11.4	58.1
Creative Arts	26.8	38.2	79.7	23.6	27.4	77.7
Physical Health and Development	37.5	51.9	90.3	35.8	40.9	90.6
HighScope COR		N=142			N=0	
Overall Proficiency (75%)	3.7	32.4	81.3	n.a.	n.a.	n.a.
Initiative	9.9	59.9	88.7	n.a.	n.a.	n.a.
Social Relations	11.3	47.9	81.7	n.a.	n.a.	n.a.
Creative Representation	4.9	43.7	80.3	n.a.	n.a.	n.a.
Movement and Music	4.9	32.4	85.2	n.a.	n.a.	n.a.
Language and Literacy	4.2	31.0	70.0	n.a.	n.a.	n.a.
Mathematics and Science	12.8	31.0	69.8	n.a.	n.a.	n.a.

[48] Table interpretation—"In the Fall, 16.9 percent of children in the WSS analyzed sample were proficient on the overall scale. In this same sample, 90.3 percent of children were proficient in Physical Health and Development by the spring."
[49] Analyzed sample – Cases in the analyzed sample had at least half of the items rated in each domain at each time point (fall, winter, and spring).
[50] Non-missing sample – Cases in the non-missing sample had all items rated at each time point (fall, winter, and spring).

Table 12: Percentage Point Gains from Fall to Spring in Categories

Teaching Strategies GOLD (Analyzed sample[51], N= 1,385)

	Negative Gains			Zero Gains			Small Gains (1-15 pct pts)			Medium Gains (16-30 pct pts)			Large Gains (31+ pct pts)		
Domain	%	Avg Fall Pct Score	Avg Spring Pct Score	%	Avg Fall Pct Score	Avg Spring Pct Score	%	Avg Fall Pct Score	Avg Spring Pct Score	%	Avg Fall Pct Score	Avg Spring Pct Score	%	Avg Fall Pct Score	Avg Spring Pct Score
All domains	**0.4**	73	69	**0.2**	91	91	**12.6**	68	78	**44.6**	57	81	**42.3**	47	86
Social emotional	**1.2**	75	67	**4.5**	87	87	**14.6**	74	82	**35.6**	61	64	**44.1**	48	91
Physical	**1.9**	83	64	**12.3**	78	78	**15.7**	70	80	**23.6**	58	79	**46.4**	47	94
Language	**0.8**	76	66	**5.6**	77	77	**16.5**	64	74	**28.4**	57	79	**48.7**	47	87
Cognitive	**0.5**	80	70	**5.0**	87	87	**16.8**	66	75	**30.0**	55	79	**47.8**	47	91
Literacy	**0.8**	81	75	**1.5**	81	81	**15.1**	73	82	**39.8**	60	84	**42.8**	43	85
Math	**0.2**	60	52	**4.3**	57	57	**21.4**	51	62	**34.3**	44	69	**39.8**	39	82

Work Sampling System (Analyzed Sample[52], N= 918)

	Negative Gains			Zero Gains			Small Gains (1-15 pct pts)			Medium Gains (16-30 pct pts)			Large Gains (31+ pct pts)		
Domain	%	Avg Fall Pct Score	Avg Spring Pct Score	%	Avg Fall Pct Score	Avg Spring Pct Score	%	Avg Fall Pct Score	Avg Spring Pct Score	%	Avg Fall Pct Score	Avg Spring Pct Score	%	Avg Fall Pct Score	Avg Spring Pct Score
All domains	**0.4**	67	57	**0.8**	75	75	**16.9**	73	82	**31.4**	58	81	**50.5**	43	87
Social emotional	**1.8**	59	57	**0.3**	100	100	**17.3**	72	80	**24.1**	64	84	**56.3**	46	89
App. to Learning	**1.2**	84	68	**15.5**	79	79	**15.8**	70	80	**16.7**	53	75	**50.7**	42	93
Language	**1.1**	67	55	**6.6**	71	71	**14.6**	63	72	**26.4**	53	75	**51.3**	37	85
Literacy	**1.4**	44	37	**6.9**	85	85	**12.8**	59	68	**21.1**	53	77	**57.8**	39	88
Math	**0.8**	55	51	**6.0**	70	70	**12.6**	64	74	**19.3**	55	77	**61.3**	36	83
Science	**0.7**	68	57	**13.1**	69	69	**10.8**	60	70	**19.5**	46	69	**55.8**	37	89
Art	**1.1**	82	68	**21.1**	86	86	**14.7**	73	83	**16.2**	54	76	**46.9**	42	93
Physical Development	**0.7**	85	69	**23.1**	93	93	**18.0**	78	89	**15.7**	67	93	**42.6**	50	97

[51] Analyzed sample – Cases in the analyzed sample had at least half of the items rated in each domain at each time point (fall, winter, and spring).
[52] Ibid.

HighScope COR (Analyzed Sample[53], N= 142)															
	Negative Gains			Zero Gains			Small Gains (1-15 pct pts)			Medium Gains (16-30 pct pts)			Large Gains (31+ pct pts)		
Domain	%	Avg Fall Pct Score	Avg Spring Pct Score	%	Avg Fall Pct Score	Avg Spring Pct Score	%	Avg Fall Pct Score	Avg Spring Pct Score	%	Avg Fall Pct Score	Avg Spring Pct Score	%	Avg Fall Pct Score	Avg Spring Pct Score
All domains	**1.5**	57	56	**0.0**	-	-	**11.1**	60	74	**38.5**	60	83	**48.9**	43	84
Initiative	**1.5**	77	65	**1.5**	60	60	**9.2**	63	7	**26.9**	65	89	**60.8**	48	92
Social relations	**4.7**	86	78	**2.3**	53	53	**17.8**	66	75	**32.6**	60	84	**42.6**	44	87
Creative Rep.	**1.4**	75	63	**1.4**	70	70	**10.7**	66	76	**27.9**	61	84	**58.6**	42	86
Movement and Music	**0.7**	67	64	**1.4**	74	74	**10.1**	69	77	**28.8**	59	82	**59.0**	47	88
Language and Literacy	**2.2**	51	46	**0.0**	-	-	**11.2**	61	70	**32.1**	54	77	**54.5**	40	81
Science and Math	**2.9**	93	86	**1.5**	68	68	**21.3**	65	73	**30.9**	57	80	**43.4**	38	82

[53] Ibid.

Table 13: Regressions—Child and Family Characteristics Predicting Proficiency

Child and Family Characteristics Predicting Fall Proficiency (75%) Overall Scale			
	Unstandardized		Standardized
Child/Family Characteristic	β	S.E.	β
Age in months on Oct. 1	.153***	.029	.260***
Female	.642**	.194	.160**
IEP	-.583	.323	-.101
Primary language is not English	-.169	.333	-.037
Race/ethnicity is Black	-.712*	.352	-.131*
Race/ethnicity is Asian/Pacific Islander	-.271	.635	-.020
Race/ethnicity is Hispanic	-1.239**	.364	-.256**

Notes: Analyzed Sample, N=1,234.
Reference category for race/ethnicity is White children.
Pseudo R^2 = .085.

Child and Family Characteristics Predicting Spring Proficiency (75%) Overall Scale			
	Unstandardized		Standardized
Child/Family Characteristic	β	S.E.	B
Fall Proficiency on Overall Scale	3.799***	1.0112	.502***
Age in months on Oct. 1	.123***	.021	.177***
Female	.457**	.143	.096**
IEP	-1.462***	.187	-.213***
Primary language is not English	-.731***	.201	-.136***
Race/ethnicity is Black	.051	.234	.008
Race/ethnicity is Asian/Pacific Islander	-.706	.439	-.044
Race/ethnicity is Hispanic	-.042	.209	-.007

Notes: Analyzed Sample, N=1,223.
Reference category for race/ethnicity is White children.
Pseudo R^2 = .148.

Child and Family Characteristics Predicting Large Gains from Fall to Spring			
	Unstandardized		Standardized
Child/Family Characteristic	β	S.E.	β
Fall % Score	-7.293***	.553	-.563***
Age in months on Oct. 1	.065**	.020	.104**
Female	.152	.134	.045
IEP	-1.261***	.210	-.204***
Primary language is not English	-.304	.194	-.063
Race/ethnicity is Black	-.056	.218	-.010
Race/ethnicity is Asian/Pacific Islander	-.453	.465	-.032
Race/ethnicity is Hispanic	-.047	.193	.009

Notes: Analyzed Sample, N=1,178.
Reference category for race/ethnicity is White children.
Pseudo R^2 = .162.

Child and Family Characteristics Predicting Spring Percent Score			
	Unstandardized		Standardized
Child/Family Characteristic	β	S.E.	β
Fall % Score	.599***	.018	.680***
Age in months on Oct. 1	.003***	.001	.080***
Female	.017**	.006	.060**
IEP	-.055***	.008	-.132***
Primary language is not English	-.009	.008	-.028
Race/ethnicity is Black	.007	.009	.018
Race/ethnicity is Asian/Pacific Islander	-.021	.019	-.021
Race/ethnicity is Hispanic	.004	.008	.012

Notes: Analyzed Sample, N=1,241.
Reference category for race/ethnicity is White children.
AdjustedR^2 = .558.

Table 14: Regressions—Program Characteristics Predicting Proficiency

Program Characteristics Predicting Fall Proficiency (75%) Overall Scale			
	Unstandardized		Standardized
Characteristic	β	S.E.	β
Age in months on Oct. 1	.137**	.040	.216**
Female	.936***	.265	.218***
IEP	-.043	.375	-.007
Primary language is not English	-.094	.483	-.012
Race/ethnicity is Black	-.856	.519	-.153
Race/ethnicity is Asian/Pacific Islander	-1.023	1.069	-.074
Race/ethnicity is Hispanic	-.182*	.523	-.229*
Teacher level of educ is Bachelors or higher	-.481	.333	-.092
Teacher experience in education is 4+ years	.157	.359	.030
Teacher trained in Creative Curr 0-2 hours	.760*	.314	.146*
Collaborative Classroom	.772*	.367	.144*
Days per year of instruction	.041**	.013	.268**
Hours per week of instruction	-.083*	.036	-.202*
Number of children in classroom	-.049	.058	-.058
Number of paid staff in classroom	.014	.266	-.004
Percentage of eligible days attended	2.476	1.862	.096
Program is in Twin Cities Metro Area	-.517	.453	-.090

Notes: Analyzed Sample, N=782.
Reference category for race/ethnicity is White children.
Pseudo R^2 = .144.

Program Characteristics Predicting Spring Proficiency (75%) Overall Scale			
	Unstandardized		Standardized
Characteristic	β	S.E.	β
Fall Proficiency on Overall Scale	3.210**	1.026	.426**
Age in months on Oct. 1	.095**	.028	.137**
Female	.328	.189	.070
IEP	-1.233***	.251	-.184***
Primary language is not English	-1.024***	.274	-.199***
Race/ethnicity is Black	-.225	.336	-.037
Race/ethnicity is Asian/Pacific Islander	-.473	.575	-.032
Race/ethnicity is Hispanic	-.197	.296	-.035
Teacher level of educ is Bachelors or higher	-.760**	.273	-.133**
Teacher experience in education is 4+ years	.181	.247	.032
Teacher trained in Creative Curr. 0-2 hours	.334	.282	.059
Collaborative Classroom	-.531	.279	-.090
Days per year of instruction	.001	.008	.003
Hours per week of instruction	-.025	.021	-.056
Number of children in classroom	.021	.041	.022
Number of paid staff in classroom	.259	.213	.068
Percentage of eligible days attended	2.554*	1.085	.091*
Program is in Twin Cities Metro Area	.150	.285	.023

Notes: Analyzed Sample, N=773.
Reference category for race/ethnicity is White children.
Pseudo R^2 = .163

Program Characteristics Predicting Large Gains from Fall to Spring			
	Unstandardized		Standardized
Characteristic	β	S.E.	β
Fall % Score	-8.649***	.784	-.607***
Age in months on Oct. 1	.049	.026	.069
Female	.123	.175	.027
IEP	-1.334***	.282	-.198***
Primary language is not English	-.406	.263	-.079
Race/ethnicity is Black	-.089	.310	-.015
Race/ethnicity is Asian/Pacific Islander	-.284	.551	-.019
Race/ethnicity is Hispanic	.117	.269	.021
Teacher level of educ. is Bach. or higher	-.195	.225	-.034
Teacher experience in educ. is 4+ years	.056	.242	.010
Teacher trained in Creative Curr 0-2 hours	.430	.249	.076
Collaborative Classroom	-.732**	.278	-.124**
Days per year of instruction	-.008	.008	-.049
Hours per week of instruction	.041	.021	.092
Number of children in classroom	-.007	.041	-.007
Number of paid staff in classroom	.624**	.195	.164**
Percentage of eligible days attended	3.621**	1.103	.130**
Program is in Twin Cities Metro Area	-.336	.270	-.053

Notes: Analyzed Sample, N=754.
Reference category for race/ethnicity is White children.
Pseudo R^2 = .223

Program Characteristics Predicting Spring Percent Score			
	Unstandardized		Standardized
Characteristic	β	S.E.	β
Fall % Score	.571***	.002	.675***
Age in months on Oct. 1	.002*	.001	.055
Female	.009	.007	.034
IEP	-.051***	.010	-.129***
Primary language is not English	-.013	.010	-.044
Race/ethnicity is Black	.011	.012	.030
Race/ethnicity is Asian/Pacific Islander	-.020	.022	-.022
Race/ethnicity is Hispanic	-.005	.011	-.015
Teacher level of educ. is Bachelors or higher	-.026**	.009	-.076**
Teacher experience in education is 4+ years	.003	.009	.009
Teacher trained in Creative Curr 0-2 hours	.003	.009	.010
Collaborative Classroom	-.035**	.010	-.101**
Days per year of instruction	-.001	.001	-.055
Hours per week of instruction	.001	.001	.024
Number of children in classroom	.001	.002	.017
Number of paid staff in classroom	.015*	.007	.067*
Percentage of eligible days attended	.184***	.041	.111***
Program is in Twin Cities Metro Area	-.007	.010	-.018

Notes: Analyzed Sample, N=787.
Reference category for race/ethnicity is White children.
Pseudo R^2 = .563

Table 17: Regressions Predicting Spring Proficiency Controlling for Fall Scores

Child and Family Characteristics Predicting Spring Proficiency (75%) Overall Scale, Controlling for Fall Domain Pct Scores			
	Unstandardized		Standardized
Characteristic	β	S.E.	β
Fall pct score, Social Emotional	3.156***	.751	.220***
Fall pct score, Physical Development	.018	.624	.001
Fall pct score, Language	3.056***	.770	.223***
Fall pct score, Cognitive	.679	.983	.043
Fall pct score, Literature	4.143***	.751	.291***
Fall pct score, Math	.581	.776	.035
Age in months on Oct. 1	.063*	.026	.075*
Female	.328	.175	.057
IEP	-1.170***	.229	-.142***
Primary language is not English	-.162	.252	-.025
Race/ethnicity is Black	.565	.290	.073
Race/ethnicity is Asian/Pacific Islander	-.595	.563	-.031
Race/ethnicity is Hispanic	.182	.252	.026

Notes: Analyzed Sample, N=1,230. Reference category for race/ethnicity is White children. Pseudo R^2 = .389

Program Characteristics Predicting Spring Proficiency (75%) Overall Scale, Controlling for Fall Pct Scores			
	Unstandardized		Standardized
Characteristic	β	S.E.	β
Fall pct score, Social Emotional	3.912***	1.056	.253***
Fall pct score, Physical Development	.180	.903	.011
Fall pct score, Language	3.895***	1.061	.260***
Fall pct score, Cognitive	-.486	1.349	-.028
Fall pct score, Literature	4.525***	1.093	.299***
Fall pct score, Math	.830	1.133	.047
Age in months on Oct. 1	.022	.036	.024
Female	.239	.235	.039
IEP	-.979**	.319	-.111**
Primary language is not English	-.142	.344	-.021
Race/ethnicity is Black	.470	.414	.059
Race/ethnicity is Asian/Pacific Islander	-.361	.777	-.078
Race/ethnicity is Hispanic	-.175	.357	-.024
Teacher level of educ is Bachelors or higher	-.828*	.345	-.111*
Teacher experience in education is 4+ years	-.276	.309	-.037
Teacher trained in Creative Curr 0-2 hours	-.392	.346	-.053
Collaborative Classroom	-.732*	.343	-.095*
Days per year of instruction	-.011	.010	-.051
Hours per week of instruction	-.006	.027	-.011
Number of children in classroom	.066	.050	.054
Number of paid staff in classroom	.513	.282	.103
Percentage of eligible days attended	3.744**	1.315	.102**
Program is in Twin Cities Metro Area	-.322	.373	-.039

Notes: Analyzed Sample, N=778. Reference category for race/ethnicity is White children. Pseudo R^2 = .423

Child and Family Characteristics Predicting Spring Proficiency (75%) Overall Scale, Controlling for Fall Domain Proficiency			
	Unstandardized		Standardized
Characteristic	β	S.E.	β
Fall Proficient, Social Emotional	1.410**	.453	.189**
Fall Proficient, Physical Development	1.042**	.335	.136**
Fall Proficient, Language	1.770*	.742	.218*
Fall Proficient, Cognitive	1.847*	.750	.224*
Fall Proficient, Literature	1.042**	.347	.136**
Fall Proficient, Math	(omitted)		
Age in months on Oct. 1	.097***	.022	.097**
Female	.401**	.150	.017**
IEP	-1.356***	.197	.048***
Primary language is not English	-.759***	.211	-.209***
Race/ethnicity is Black	.173	.244	-.099
Race/ethnicity is Asian/Pacific Islander	-.965	.495	.009
Race/ethnicity is Hispanic	.090	.219	-.134

Notes: Analyzed Sample, N=1,192. Reference category for race/ethnicity is White children. Pseudo R^2 = .216
Fall Proficient in Math was omitted by the software, because none of the cases in this sample were proficient in math in the fall.

Program Characteristics Predicting Spring Proficiency (75%) Overall Scale, Controlling for Fall Domain Proficiency			
	Unstandardized		Standardized
Characteristic	β	S.E.	β
Fall Proficient, Social Emotional	2.087**	.752	.087**
Fall Proficient, Physical Development	.675	.430	.027
Fall Proficient, Language	1.776	1.018	.067
Fall Proficient, Cognitive	1.770	1.069	.064
Fall Proficient, Literature	1.076*	.450	.045*
Fall Proficient, Math	(omitted)		
Age in months on Oct. 1	.064*	.030	.003
Female	.315	.197	.012***
IEP	-1.14***	.265	-.055***
Primary language is not English	-1.05***	.284	-.043
Race/ethnicity is Black	.065	.350	.001
Race/ethnicity is Asian/Pacific Islander	-.636	.665	-.028
Race/ethnicity is Hispanic	-.071	.307	-.003*
Teacher level of educ is Bach. or higher	-.607*	.289	-.027
Teacher experience in educ is 4+ years	.129	.253	.006
Teacher trained in Creative Curr 0-2 hours	.228	.291	.010*
Collaborative Classroom	-.631*	.294	-.947*
Days per year of instruction	-.004	.009	-.002
Hours per week of instruction	-.013	.003	-.003
Number of children in classroom	.048	.043	.003
Number of paid staff in classroom	.219	.230	.002
Percentage of eligible days attended	2.747*	1.154	.108*
Program is in Twin Cities Metro Area	.172	.293	.172

Notes: Analyzed Sample, N=759. Reference category for race/ethnicity is White children. Pseudo R^2 = .232
Fall Proficient in Math was omitted by the software, because none of the cases in this sample were proficient in math in the fall.