

**Informing the Performance-Based  
Contract Between First 5 LA and  
LAUP – Volume 1: Child Progress  
in the 2012–2013 Program Year**

Final Report

October 24, 2013

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**MATHEMATICA**  
**Policy Research**



Champions For Our Children



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## EXECUTIVE SUMMARY

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### Key Findings

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Children in LAUP ended the year performing at or above the national average in expressive Spanish-bilingual language skills; fine motor and literacy skills (among those assessed in English), particularly early writing; mathematics skills (among those assessed in English); and social-emotional development and approaches to learning. Their progress in these areas kept pace with that of the national sample of same-age peers.

For children in LAUP who took the English assessment, mathematics abilities were similar to those of a national sample of English-speaking peers, and these children maintained their skills relative to peers over the program year.

Children's English vocabulary continued to lag behind national peers, though children who primarily speak English at home made significant progress in English vocabulary development. Children who spoke only English at home did not make significant progress in vocabulary, suggesting a need for additional attention to increasing the sophistication of words presented.

Mathematics continues to be an area needing greater support for children taking the assessment in Spanish. They scored more than one standard deviation below the national mean.

Targets are reasonable and achievable in LAUP; children's progress met or exceeded the targets set for the 2012–2013 year.

Targets continue to be valid and meaningful. For children whose scores met or exceeded targets, scores increased on average relative to a national sample of same-age peers. Among children whose scores fell below targets, scores declined on average relative to a national sample of peers.

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In February 2004, First 5 LA adopted a 10-year universal preschool master plan to increase the availability of high quality preschool spaces in Los Angeles County and created Los Angeles Universal Preschool (LAUP) to implement the plan. A shared objective of First 5 LA and LAUP is to support early learning and development for the four-year-old children that have an opportunity to participate in LAUP programs. To meet this objective, First 5 LA and LAUP have begun to track the progress of children during their year in LAUP programs as an element of the performance-based contract between the two organizations. Beginning in the 2009–2010 program year, Mathematica Policy Research worked with First 5 LA and LAUP to identify the domains of development they sought to track, identify appropriate measures, and set targets for progress across the year. Those targets were applied for the first time in the 2011–2012 program year based on data collected by Mathematica as part of the fifth phase of the Universal Preschool Child Outcomes Study (UPCOS).

Because LAUP has a new population of children every year, First 5 LA and LAUP have agreed to revisit the targets each year to consider whether the most recent data regarding LAUP children signal a need to change the targets, or whether there are any factors within or external to LAUP that might influence what First 5 LA and LAUP want prioritized within the targets. Thus, the targets were revised for the 2012–2013 program year in a collaborative process between First 5 LA and LAUP that was facilitated by Mathematica. As part of UPCOS-6, Mathematica conducted direct child assessments to determine whether the agreed-upon targets for 2012–2013 were met. In this report, we describe children's progress from fall to spring of the program year and whether targets were met.

## A. Domains of Child Development and Selected Measures

In designing the study of child progress, Mathematica worked with First 5 LA and LAUP to identify the domains of development to address and the associated outcome measures. The team agreed that, while a brief assessment cannot encompass all the elements of school readiness, the assessment tools should collectively tap the important developmental domains, including those identified by the National Education Goals Panel (Kagan et al. 1995), which are similar to those in the California Preschool Learning Foundations (California Department of Education 2008). These key domains are language and literacy, cognition (mathematics, thinking, and reasoning), social-emotional development, approaches to learning, and motor development. With these domains in mind, we sought assessments with strong measurement properties that were appropriate for use with this sample. Table ES.1 outlines the measures selected and domains addressed.

## B. Sample and Methods

UPCOS-6 includes a stratified random sample of center-based programs and family child care homes (FCCs). The total number of FCCs and centers in the sample is proportional to their overall numbers in LAUP. We randomly selected one classroom from each sampled program. We then selected all children from each classroom; thus, when weighted, the sample of children is representative of all LAUP children. There were 53 programs in the original sample, and the goal was to recruit 40 programs (proportionally allocated between center-based programs and FCCs—28 and 12, respectively). In the fall, the sample included 40 programs (27 centers and 13 FCCs), reflecting a response rate of 76 percent. In the fall, there were 641 eligible children in the 40 programs; 627 were assessed, reflecting a response rate of 98 percent. In the spring, 573 children were assessed in the 40 programs—96 percent of the children still eligible to participate.<sup>1</sup>

**Table ES.1. Child Outcomes Measures and Developmental Domains Addressed in the First 5 LA-LAUP Study of Child Progress**

Measure	Domains Addressed
Expressive One-Word Picture Vocabulary Test (EOWPVT), English Edition and Spanish Bilingual Edition (EOWPVT-SBE) (Brownell 2000)	Language development: vocabulary
Rapid Letter Naming (RLN) (Atkins-Burnett et al. 2007)	Literacy development
Woodcock-Johnson III (WJ-III) Spelling and Woodcock-Muñoz III (WM-III) Ortografía <sup>a</sup> (Woodcock et al. 2001/2007; Woodcock et al. 2004/2007)	Fine motor skills and literacy development
Woodcock-Johnson III (WJ-III) Applied Problems and Woodcock-Muñoz Bateria III (WM-III) Problemas Aplicados (Woodcock et al. 2001/2007; Woodcock et al. 2004/2007)	Mathematics development
Leiter Examiner Rating Scale – Revised (Leiter-R), Attention, Activity Level, and Sociability subscales (Roid and Miller 1997) <sup>b</sup>	Social-emotional development and approaches to learning

<sup>a</sup>The WM-III Ortografía is used to measure child progress but is not included in targets for the performance-based contract between First 5 LA and LAUP (as of 2012–2013).

<sup>b</sup>Estimates of social-emotional development and approaches to learning are based on ratings by the assessor at the end of the 15-minute assessment rather than classroom behavior and functioning.

To minimize the burden on children, they were randomly assigned to complete one of two versions of the assessment, each of which included only half of the measures in the battery. For

<sup>1</sup> By the spring, 46 additional children became ineligible by merit of having left the sampled program or classroom. The total eligible sample in the spring included 595 children.

language-specific measures, children were routed to the appropriate language of assessment (Spanish or English) based on a combination of parent reports of home language and performance on an English language screener at the start of the assessment. Note that for the EOWPVT, EOWPVT-SBE, RLN, and Leiter-R, the content of the measures is the same regardless of whether the child completed the assessment in Spanish or English; thus, scores for the total sample reflect performance of all children who were assessed with that measure. For the WJ-III and WM-III subtests, the English and Spanish versions of the measures have different items; thus, WJ-III scores reflect performance of children who followed the English path and WM-III scores reflect performance of children who followed the Spanish path.

### C. Analysis

All analyses are at the child level, account for clustering of children within programs,<sup>2</sup> and are weighted to be representative of the programs and children in LAUP. For some of the measures—the EOWPVT and EOWPVT-SBE, the WJ-III Spelling and WM-III Ortografía subtests, and the WJ-III Applied Problems and WM-III Problemas Aplicados subtests—we examined absolute progress as well as progress relative to a national sample of same-age peers (progress relative to peers is captured in “standard scores”). For the RLN task, we examined absolute progress (standard scores are not available). For the Leiter-R, we calculated the percentage of children scoring in the expected range, which is based on performance of a national sample of same-age peers; children scoring in this range are unlikely to be experiencing difficulties with social-emotional development and approaches to learning.

### D. Average Progress in LAUP

**Fall to Spring Progress.** On average, 5.7 months passed between the two assessments (range of 4.1 to 6.3 months). Between the fall and spring, children’s absolute progress was statistically significant in all areas. In mathematics, children assessed in Spanish (WM-III Problemas Aplicados) also made significant progress as measured by standard scores (relative to a national sample of same-age peers). Standard scores also show that LAUP children kept pace with but did not make significant progress relative to a national sample of peers in English expressive vocabulary (EOWPVT), Spanish-bilingual expressive vocabulary (EOWPVT-SBE), fine-motor/literacy measured in both English and Spanish (WJ-III Spelling and WM-III Ortografía, respectively), or mathematics in English (WJ-III Applied Problems). Scores on the RLN task indicate that, on average, children made statistically significant progress in their letter-naming skills; the results were comparable to other preschool studies using similar measures (Early et al. 2005; Mashburn et al. 2008).

**Comparison to National Samples.** For Spanish-bilingual vocabulary (EOWPVT-SBE), fine-motor/literacy in English (WJ-III Spelling), and social-emotional development and approaches to

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<sup>2</sup> Children within a classroom are generally more similar than children from different classrooms. The estimates of children’s progress within a classroom are not independent of one another, violating assumptions for some statistical tests of significance. We used standard statistical methods to account for this clustering (or grouping) of children within classrooms. These procedures account for the design of the sample (multiple children from the same classroom in each program) in the data analysis to ensure that standard errors are correctly estimated and thus, that any statistical tests based on those standard errors are accurate.

learning (Leiter-R), LAUP children scored above the national average in both the fall and spring.<sup>3</sup> By the spring, LAUP children's average English expressive vocabulary skills (EOWPVT) remained approximately half of a standard deviation below that of their English-speaking peers nationally, and fine motor/literacy skills in Spanish (WM-III Ortografía) were one-third of a standard deviation below the national mean. For mathematics, in both the fall and spring, LAUP children assessed in English (WJ-III Applied Problems) scored at the national average; LAUP children assessed in Spanish (WM-III Problemas Aplicados) scored a standard deviation or more below the average.

### **E. Progress Relative to Targets for the 2012–2013 Program Year**

The child progress targets for the 2012–2013 program year were set in a collaborative process between First 5 LA and LAUP, facilitated by Mathematica. To inform the discussion (particularly for selecting the appropriate magnitude for targets), the team examined the distribution of the scores for each of the measures in a prior round of UPCOS.

Targets specify the percentage of children meeting two different levels of progress or performance (referred to as Level 1 and Level 2).<sup>4</sup> For targets based on all measures except the RLN, LAUP is expected to meet both levels of the targets. For the RLN, LAUP is expected to meet at least one of the two levels. Targets based on the EOWPVT, WJ-III, and WM-III measures are based entirely on children's absolute progress over the year. For the RLN, the target addresses both absolute progress and the level of knowledge (number of letters named) in the spring. For the Leiter-R, targets are based on the percentage of children scoring in the expected range in the spring.

Table ES.2 outlines the targets associated with each measure as well as actual performance during the 2012–2013 program year. Both Level 1 and Level 2 targets were attained in language, fine motor/literacy, mathematics, and social-emotional development and approaches to learning. For literacy as measured by the RLN task, LAUP met Level 1 of the target but not Level 2 (as a reminder, this target is considered met if either Level 1 or Level 2 is met).

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<sup>3</sup> For the Leiter-R, we calculated the percentage of children scoring in the expected range; children scoring in this range are unlikely to be experiencing difficulties with social-emotional development and approaches to learning. In the national sample, 84 percent of children score in this range.

<sup>4</sup> Children who enter programs with strong skills (above average) may not make as much progress as those entering with weaker skills. However, LAUP and First 5 LA are interested in seeing progress for all children. Thus, for each of the measures (with the exception of the RLN and the Leiter-R), targets were selected at two levels of difficulty. At the first level, the target indicates that 70 percent of children are to make a particular gain. At the second, more difficult level, the target indicates that 45 percent of children are to make a larger gain. The magnitude of the gains is specific to each measure (and the scale in that measure).

**Table ES.2. Summary of Child Progress in 2012–2013 in a Representative Sample of LAUP Programs and Children Relative to Performance-Based Contract Targets**

Domain: Measure	Level 1		Level 2
<b>Language: EOWPVT (N = 262)</b>			
Target	70% gain 2 points or more	<u>AND</u>	45% gain 5 points or more
Actual	70% gained 2 points or more		48% gained 5 points or more
<i>Target reached? Yes</i>			
<b>Literacy: RLN (N = 262)</b>			
Target	45% gain 7 points or more	<u>OR</u>	70% name 14 letters or more in the spring
Actual	50% gained 7 points or more		63% named 14 letters or more in the spring
<i>Target reached? Yes</i>			
<b>Fine Motor/Literacy: WJ-III Spelling (N = 198)</b>			
Target	70% gain 7 points or more	<u>AND</u>	45% gain 17 points or more
Actual	81% gained 7 points or more		47% gained 17 points or more
<i>Target reached? Yes</i>			
<b>Mathematics: WJ-III Applied Problems (N = 198)</b>			
Target	70% gain 4 points or more	<u>AND</u>	45% gain 13 points or more
Actual	73% gained 4 points or more		47% gained 13 points or more
<i>Target reached? Yes</i>			
<b>Mathematics: WM-III Problemas Aplicados (N = 53)</b>			
Target	70% gain 4 points or more	<u>AND</u>	45% gain 13 points or more
Actual	80% gained 4 points or more		65% gained 13 points or more
<i>Target reached? Yes</i>			
<b>Social-Emotional and Approaches to Learning: Leiter-R (N = 262)</b>			
Target	85% score in expected range in spring		
Attention			
Actual	98%		
Activity Level			
Actual	99%		
Sociability			
Actual	97%		
<i>Target reached? Yes</i>			

Source: UPCOS-6 Fall 2012 and Spring 2013 Direct Child Assessments.

Notes: Targets for all measures except the Leiter-R and RLN were based on W or item response theory (IRT) scores. Leiter-R targets refer to the proportion of children scoring in the expected range, which was based on standardized scaled scores. The Level 2 target for the RLN was based on raw scores.

All analyses are weighted to represent children attending LAUP in the 2012–2013 program year.

To assess the validity of the targets—whether they successfully identify children who make significant gains during the year—we examined average change in standard scores among the group of children whose scores exceeded Level 1 of the targets and the group whose scores did not exceed Level 1 of the targets; we would expect greater progress where scores exceeded targets.<sup>5</sup> Standard scores were available for four of the measures: EOWPVT, WJ-III Spelling, WJ-III Applied Problems, and WM-III Applied Problems. For children whose scores met or exceeded targets based on these measures, on average, standard scores increased. Among children whose scores fell below targets, on average, standard scores declined. For the RLN task, raw scores indicate that children whose scores met targets learned an average of 12 letters, while children whose scores did not meet targets learned an average of one letter. Thus, the targets appear to be successfully differentiating the children who make significant gains during the year and the group of children who would have benefited from additional support.

## F. Implications

Both average progress over the course of the 2012–2013 program year and performance relative to the selected targets provide insights about strengths and areas for growth. Strengths include the following:

- Children ended the year performing at or above the national average in Spanish-bilingual expressive language skills;<sup>6</sup> fine motor and literacy skills (assessed in English), particularly early writing; and social-emotional development and approaches to learning. On average, children kept pace with their national peers.
- For children in LAUP who took the English assessment, mathematics abilities were similar to those of a national sample of English-speaking peers.
- LAUP met the child progress targets. For the RLN target, the target was met based on performance relative to the progress standard included in the target (the second standard based on proficiency was not met). Overall, this indicates that these targets are reasonable and achievable in LAUP.

Despite meeting the targets, additional attention is warranted in two areas:

- LAUP children’s English vocabulary skills (based on the EOWPVT) lag behind those of a national sample of English-speaking peers. The growth across the year is consistent with what would be expected based on their earlier scores; that is, the fall and spring EOWPVT standard scores were not significantly different. This lack of change in EOWPVT standard scores was true for both the overall sample and the subgroup of children whose parents reported they speak only English. Children who entered with stronger skills lost ground relative to peers, suggesting that the level of vocabulary introduced in many classrooms is not challenging. The vocabulary assessed on the

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<sup>5</sup> We excluded the Leiter-R from this analysis. Because scores are truncated, we cannot assess the full range of progress among children whose scores met targets. In addition, virtually all children scored in the expected range in the spring. Scores on social-emotional measures for preschool children often are skewed, with most children rated positively by teachers and parents.

<sup>6</sup> Because the EOWPVT-SBE norms were based on a sample that, on average, has more limited maternal educational attainment, scores calculated relative to bilingual norms were likely to be higher than scores calculated relative to English norms.

EOWPVT includes concepts important for children's success in school (for example, categories and part-whole relationships). In general, vocabulary is an indicator of the extent of background knowledge that children can draw upon in understanding what they hear and read, and is critical for reading comprehension. Increased exposure to literature, particularly non-fiction, and teachers' intentional introduction and reinforcement of more sophisticated vocabulary words will support the development of vocabulary.

- Spanish-speaking children with limited English proficiency need more targeted and intensive support in mathematics and reasoning. Children who took the Spanish mathematics assessment (WM-III Problemas Aplicados) at both time points scored more than a standard deviation below their peers nationally. This assessment draws on children's number sense and their ability to use language for reasoning. They would benefit from the opportunity to build both in their LAUP program.



## **I. INTRODUCTION AND STUDY OVERVIEW**

In February 2004, First 5 LA adopted a 10-year universal preschool master plan to increase the availability of high quality preschool spaces in Los Angeles County and created Los Angeles Universal Preschool (LAUP) to implement the plan. A shared objective of First 5 LA and LAUP is to support early learning and development for the four-year-old children that have an opportunity to participate in LAUP programs. To meet this objective, First 5 LA and LAUP track the progress of children during their year in LAUP programs as an element of the performance-based contract between the two organizations. Beginning in the 2009–2010 program year, Mathematica Policy Research worked with First 5 LA and LAUP to identify the domains of development First 5 LA and LAUP sought to track, identify appropriate measures, and set targets for progress across the year.

Because LAUP has a new population of children every year, First 5 LA and LAUP have agreed to revisit the targets each year to consider whether the most recent data regarding LAUP children signal a need to change the targets, or whether there are any factors within or external to LAUP that might influence what First 5 LA and LAUP want prioritized within the targets. Thus, the targets were revised for the 2012–2013 program year in a collaborative process between First 5 LA and LAUP that was facilitated by Mathematica. As part of UPCOS-6, Mathematica conducted direct child assessments to determine whether the agreed-upon targets for 2012–2013 were met.

In this report, we describe children’s progress from fall to spring of the program year and whether targets were met. Findings are presented in two volumes. In Volume I, we address the central goals of the study: to document child progress, to assess whether targets were met, and to provide an introduction to the families that participated in LAUP in 2012–2013 to help us better understand patterns of progress. In Volume 2, we present additional detail on study measures and procedures, and subgroup analyses related both to the analysis of child progress and performance relevant to targets. To support interpretation of results, some information about study methods is included in both volumes.

### **A. Domains of Child Development and Selected Measures**

In designing the study of child progress, Mathematica worked with First 5 LA and LAUP to identify the domains of development to address and the associated outcome measures. The team agreed that, while a brief assessment cannot encompass all the elements of school readiness, the assessment tools should collectively tap the important developmental domains, including those identified by the National Education Goals Panel (Kagan et al. 1995), which are similar to those in the California Preschool Learning Foundations (California Department of Education 2008). These key domains are language and literacy, cognition (mathematics, thinking, and reasoning), social-emotional development, approaches to learning, and motor development. With these domains in mind, we sought assessments with strong measurement properties that were appropriate for use with this sample.

Table I.1 summarizes the child outcome measures agreed upon by First 5 LA and LAUP for the purpose of assessing child progress and informing the performance-based contract. Extensive detail on each of these measures and scoring procedures is included in Chapter III of the second volume of this report.

In addition to the measures identified in Table I.1, we integrated a measure of children’s height and weight into the UPCOS-6 assessment battery. With data on height and weight, we were able to calculate children’s Body Mass Index (BMI). BMI serves as an indicator of children’s general health

status and physical well-being, and provides information relevant to a central goal in First 5 LA’s strategic plan: children will maintain a healthy weight to support better health outcomes over their lives (First 5 LA 2009).

**Table I.1. Child Outcomes Measures and Developmental Domains Addressed in the First 5 LA-LAUP Study of Child Progress and Performance-Based Contract**

Measure	Purpose	Brief Description
Expressive One-Word Picture Vocabulary Test (EOWPVT) and Expressive One-Word Picture Vocabulary Test—Spanish Bilingual Edition (EOWPVT-SBE) (Brownell 2000)	Language development: vocabulary	Standardized measure; children required to name pictures; Spanish version conceptually scored <sup>b</sup>
Rapid Letter Naming (RLN) (Atkins-Burnett et al. 2007)	Literacy development	Children must name upper- and lowercase letters; conceptually scored <sup>b</sup>
Woodcock-Johnson III (WJ-III) Spelling and Woodcock-Muñoz III (WM-III) Ortografía (Woodcock et al. 2001/2007; Woodcock et al. 2004/2007)	Fine motor skills and literacy development	Standardized measure; children required to copy shapes and letters, and write orally presented letters
Woodcock-Johnson III (WJ-III) Applied Problems and Woodcock-Muñoz Bateria III (WM-III) Problemas Aplicados (Woodcock et al. 2001/2007; Woodcock et al. 2004/2007)	Mathematics development	Standardized measure; children must perform simple counting, solve brief story problems involving numbers; conceptually scored <sup>b</sup>
Leiter Examiner Rating Scale, Revised (Leiter-R)—Attention, Activity Level, and Sociability subscales (Roid and Miller 1997)	Social-emotional development and approaches to learning	Standardized measure; assessor completes ratings based on observations made during assessment administration

<sup>a</sup>The WM-III Ortografía is used to measure child progress but is not included in targets for the performance-based contract between First 5 LA and LAUP (as of 2012–2013).

<sup>b</sup>In a measure that is conceptually scored, respondents receive credit for a correct response regardless of the language in which the response is given.

## B. Documenting Family Backgrounds

To provide context for what we learned about child progress, in the fall we implemented a brief, self-administered questionnaire for parents. The 20-item questionnaire included questions on household routines (reading/looking at books with the child) and parents’ demographic and background characteristics (for example, race-ethnicity, education, household income, and family structure).

## C. Sample

UPCOS-6 includes a stratified random sample of center-based programs and family child care homes (FCCs). The total number of FCCs and centers in the sample is proportional to their overall numbers in LAUP. We randomly selected one classroom from each sampled program. We then selected all children from each classroom; thus, when weighted, the sample of children is representative of all LAUP children. There were 53 programs in the original sample; the goal was to recruit 40 programs (proportionally allocated between center-based programs and FCCs—28 and 12, respectively). In the fall, the sample included 40 programs (27 centers and 13 FCCs), reflecting a response rate of 76 percent. In the fall, there were 641 eligible children in the 40 programs; 627 were assessed, reflecting a response rate of 98 percent. In the spring, 573 children were assessed in the

40 programs—96 percent of the children still eligible to participate.<sup>7</sup> In the fall, 564 parents completed the brief parent questionnaire, a response rate of 88 percent. Among those who completed the questionnaire, 501 had children who were assessed in both the fall and spring. The distribution of children across parent-reported language groups is shown in Table I.2.

**Table I.2. Children Assessed in Fall 2012 and Spring 2013, by Language Group (N = 573)**

Language Group <sup>a</sup>	Percentage
English only	36.93
English primarily	32.69
Spanish only	7.77
Spanish primarily	16.56
Other language only or primarily	6.05

Note: Analyses are weighted to represent children attending LAUP in the 2012–2013 program year.

## D. Procedures

**Child Assessments.** For all children, the assessment began with two subtests of the Preschool Language Assessment Survey 2000 (*preLAS* 2000; Duncan and DeAvila 2002)—Simon Says and Art Show—as both a warm-up and for routing to the appropriate language of assessment. Simon Says assesses a child’s listening comprehension of basic instructions. Art Show is a picture vocabulary test that measures a child’s expressive vocabulary. Children who spoke or were spoken to in Spanish at home (based on the parent report on the consent form) also received the *preLAS* Spanish Exposición de Arte, both as a warm-up and to communicate to children that we valued both languages. All children in the English-only group based on parent report on the consent form were assessed in English regardless of performance on the screener. Children in all other language groups who responded correctly to at least 15 of the 20 items in the English *preLAS* subtests completed the assessment in English. Children from Spanish-speaking homes who made six or more errors (a score of 14 or less) on the English *preLAS* subtests were routed to the Spanish assessment path. Any children from homes in which a language other than English or Spanish was spoken were routed out of the assessment entirely if they did not pass the English screener.<sup>8</sup>

To minimize the burden on children, we designed two versions of the child assessment battery to measure child progress. As a result, no children were assessed in all domains of development. Each child within a program (classroom) was randomly assigned to either Version 1 or Version 2. Thus, we have estimates of progress for each domain for every classroom. The portions of each version devoted to cognitive outcomes were each approximately 15 minutes in length. The inclusion of height and weight measures added another 10 minutes to both versions (3 to 4 minutes for the actual measurements and 5 to 6 minutes for helping children take their shoes off, move to the scale, and put their shoes back on).

<sup>7</sup> By the spring, 46 additional children became ineligible by merit of having left the sampled program or classroom. The total eligible sample in the spring included 595 children.

<sup>8</sup> Those who were routed out of the assessment received only the RLN task and the height and weight measurement. The RLN is a two-minute task based on the English alphabet and has only a single prompt that was stated in English for this group. These children were not included in the calculation of whether targets were met.

**Version 1:**

1. WJ-III Applied Problems/WM-III Problemas Aplicados
2. WJ-III Spelling/WM-III Ortografía
3. Height and weight

**Version 2:**

1. EOWPVT/EOWPVT-SBE
2. RLN
3. Height and weight
4. Leiter-R

Note that for the EOWPVT/EOWPVT-SBE,<sup>9</sup> RLN, and Leiter-R, the content of the measures is the same regardless of whether the child completed the assessment in Spanish or English; thus, scores for the total sample reflect performance of all children regardless of the language of assessment. Note that standard scores for the English version of the EOWPVT are only calculated for children who followed the English path through the assessment. For the WJ-III and WM-III subtests, the English and Spanish versions of the measures have different items; thus, WJ-III scores reflect the performance of children who followed the English path and WM-III scores reflect the performance of children who followed the Spanish path.

**Brief Parent Questionnaire.** The questionnaire was distributed to parents with the consent form during the consent process. We distributed English and Spanish versions of the questionnaire. If requested by parents, a study representative who was on site at the program assisted parents in completing the questionnaire. Parents could choose to return the questionnaire at the time they returned the consent form or complete and mail it in at a later time (postage-paid envelope provided).

## **E. Maintaining Confidentiality of Study Data**

To protect the confidential information of children, parents, teachers, and programs participating in this study, we followed standard Mathematica policies, procedures, and technical safeguards designed to guard data from unauthorized disclosure, use, or alteration. Our approach is consistent with federal standards. All staff members are required to comply with the Mathematica Confidentiality Pledge and complete security awareness training, as well as training on the use of specific security measures. We use standard safeguards, including data encryption methods consistent with federal standards, removing identifiers from data as soon as practicable, and controlling access to information on a need-to-know basis.

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<sup>9</sup> The EOWPVT and EOWPVT-SBE are based on responses to the same set of items, with only a few exceptions; that is, a few items are skipped on the SBE version. What differs is the norming sample used when calculating standard scores for each measure (for the EOWPVT, the norming sample includes a national sample of English-speaking peers; for the SBE version, the norming sample includes a national sample of Spanish-bilingual peers).

## **F. Report Roadmap**

In the rest of this report, we present results based on the child assessments and brief parent questionnaire. In Chapter II, we include child progress during the 2012–2013 program year. In Chapter III, we describe performance relative to the targets. In Chapter IV, we present information on family backgrounds in this LAUP sample and examine child progress according to the level of family risk. In the second volume of this report, we include additional detail on study measures, procedures, and subgroup analyses related both to the analysis of child progress and performance relevant to targets.



## II. CHILD PROGRESS IN THE 2012–2013 PROGRAM YEAR

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### Key Findings

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Children in LAUP ended the year performing at or above the national average in expressive Spanish-bilingual language skills; fine motor and literacy skills (among those assessed in English), particularly early writing; mathematics skills (among those assessed in English); and social-emotional development and approaches to learning. Their progress in these areas kept pace with that of the national sample of same-age peers.

On average, children named the equivalent of 16 uppercase and 14 lowercase letters. Combined with average performance on the English assessment of spelling, this suggests that the average child in LAUP is well positioned for success in learning to read.

According to the English language screener *preLAS* scores, children's skills in both receptive (listening comprehension) and expressive (oral vocabulary) skills increased significantly from fall to spring. Spanish expressive vocabulary skills did not change significantly.

Children's English vocabulary continued to lag approximately one-half of a standard deviation behind national peers, though children who speak English primarily but sometimes use another language at home made significant progress in English vocabulary development. Children who spoke English only at home (more than one-third of the LAUP sample) did not make significant progress in vocabulary, suggesting a need for additional attention to increasing the sophistication of words presented.

For children in LAUP who took the English assessment, mathematics abilities were similar to those of a national sample of English-speaking peers, and these children maintained their skills relative to peers over the program year.

Mathematics skills among Spanish-speaking children continue to be an area needing more support. LAUP children continue to score approximately one standard deviation below the national mean in the spring of the year.

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A shared objective of First 5 LA and LAUP is to support early learning and development for the four-year-old children that have an opportunity to participate in LAUP programs. In this chapter, we present analyses of child progress from fall to spring in 2012–2103 for the overall sample of children. In Chapter IV of the second volume of this report, we present an analysis of progress among subgroups of children based on parent-reported home language. When important for explaining the overall pattern of results, we also discuss in this chapter the subgroup results presented in Volume 2. On average, 5.7 months passed between the two assessments (range of 4.1 to 6.3 months).<sup>10</sup>

### A. Approach to Analysis

We examined the mean of spring scores in our sample relative to the fall baseline and tested the statistical significance of the difference between fall and spring scores. We tested whether progress between the fall and spring was significant, using *t*-tests. In addition, we conducted analysis of variance (ANOVA, *F*-tests) to determine whether progress differed across subgroups. We report *p* levels at the .05, .01, and .001 levels, and consider  $p < .05$  to indicate statistical significance.<sup>11</sup> For any test resulting in  $p > .05$ , we consider this as evidence of no change.

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<sup>10</sup> The majority (98 percent) of the children had 5.0 to 6.0 months between assessments. Only 12 children had fewer than 5.0 months between assessments.

<sup>11</sup> *p* is the probability of making an error in the inference about the change. If  $p < .05$ , the likelihood of finding a difference by chance is less than 5 percent.

Note that the present sample was designed for the purpose of understanding patterns of progress in LAUP as a whole, not for particular subgroups. Thus, patterns of progress in subgroups were estimated with less precision than for the sample as a whole; estimates of fall and spring performance and change across the program year in the subgroups were likely to have large standard errors relative to those for the whole sample and, as a consequence, larger confidence intervals with lower likelihood of detecting significant change.

We examined fall-spring differences for each type of score available (raw, standard, and/or IRT or W score). Because raw and IRT/W scores address children’s absolute progress along a continuum of skill, whereas standard scores are adjusted for the developmental progress children are expected to make compared to their same-age peers, it is possible to identify significant change for raw and IRT/W scores, but not for standard scores for the same measure.

As a reminder, for the WJ-III and WM-III subtests, the English and Spanish versions of the measures have different items; thus, WJ-III scores reflect performance of children who followed the English path, and WM-III scores reflect performance of children who followed the Spanish path. For the WJ-III and WM-III measures, scores of children who switched from the Spanish assessment in the fall to the English assessment in the spring (43 percent of children who completed the Spanish assessment in the fall) are not reflected in the means presented in this chapter (or in the targets presented in Chapter III).<sup>12</sup>

All analyses discussed in this chapter were at the child level and weighted to represent LAUP children as a whole. Analyses were conducted using statistical survey procedures that address the clustering of children within programs and classrooms. Specifically, the survey procedures account for the design of the sample (multiple children from the same classroom in each program) in the data analysis to ensure that standard errors were correctly estimated and thus, that any statistical tests based on those standard errors are accurate.

## **B. Child Progress in LAUP**

### **1. Language Screener and Warm-Up: English and Spanish *preLAS***

The first section of Table II.1 shows average *preLAS* scores in fall 2012 and spring 2013, as well as change scores, for the full sample of children. Children’s skills on the portions of the English *preLAS* measuring both receptive (listening comprehension) and expressive (oral language) skills increased significantly from fall to spring, from 6.3 to 7.8 for Simon Says and from 7.5 to 8.5 for Art Show. The total score across the two subscales also increased significantly. However, children did not make significant progress in Spanish expressive skills; the fall and spring mean scores were not statistically different.

### **2. Language: EOWPVT**

The second section of Table II.1 presents IRT scores as well as standard scores for the English and SBE versions of the conceptually scored EOWPVT. IRT scores capture absolute progress. Standard scores capture progress relative to a sample of same-age peers. For the English version,

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<sup>12</sup> For an analysis of *preLAS*, WJ-III, and WM-III scores among children who completed the assessment in Spanish in the fall but passed the English-language screener in the spring, see Chapter V in Volume 2 of this report.

**Table II.1. Means and Standard Errors for UPCOS-6 Language, Literacy, and Math Measures: Fall 2012 and Spring 2013**

Outcome	N	Fall 2012		Spring 2013		Fall-Spring Change	
		Mean	Standard Error	Mean	Standard Error	Mean	Standard Error
<b>preLAS</b>							
preLAS English Total Language Screener Score	573	13.75***	0.54	16.33	0.34	2.58	0.29
Simon Says	573	6.30***	0.29	7.83	0.2	1.52	0.17
Art Show	573	7.45***	0.27	8.5	0.17	1.06	0.14
preLAS Spanish							
Exposición de Arte	148	5.05	0.31	5.15	0.3	0.1	0.27
<b>Language: EOWPVT</b>							
IRT Score	262	46.13***	1.04	50.77	1.19	4.63	0.6
English Edition Standard Score <sup>a, b</sup>	176	90.14	1.43	92.45	1.66	2.31	1.14
Spanish Bilingual Edition Standard Score <sup>a, b</sup>	262	108.50	2.29	109.96	2.26	1.46	1.14
<b>Literacy: RLN</b>							
Raw Score	262	9.96***	0.84	16.45	0.81	6.48	0.63
IRT Score	262	19.73***	1.05	27.4	0.93	7.67	0.72
<b>Fine Motor and Literacy: WJ-III Spelling</b>							
W Score	198	382.22***	2.16	400.03	2.29	17.81	1.74
Standard Score <sup>a</sup>	198	105.07	1.06	106.84	1.16	1.77	0.93
<b>Fine Motor and Literacy: WM-III Ortografía</b>							
W Score	53	357.27***	3.51	378.69	3.86	21.42	2.78
Standard Score <sup>a</sup>	53	92.24	1.87	95.37	2.05	3.14	1.59
<b>Mathematics: WJ-III Applied Problems</b>							
W Score	198	396.54***	2.2	408.95	1.99	12.41	1.1
Standard Score <sup>a</sup>	198	100.32	1.21	101.5	1.09	1.18	0.6
<b>Mathematics: WM-III Problemas Aplicados</b>							
W Score	53	350.47***	4.67	373.3	2.98	22.83	3.83
Standard Score <sup>a</sup>	53	78.80*	1.95	83.67	1.3	4.87	1.74

Sources: UPCOS-6 Fall 2012 and Spring 2013 Direct Child Assessments.

Note: Analyses are weighted to represent children attending LAUP in the 2012–2013 program year.

<sup>a</sup>National mean for standard scores is 100, with a standard deviation of 15.

<sup>b</sup>This measure was conceptually scored. For the English edition, the standard score was generated only for children assessed in English. For the Spanish bilingual edition, the standard score was generated for all children in the sample.

\* Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

\*\*\*Significantly different from zero at the .001 level, two-tailed test.

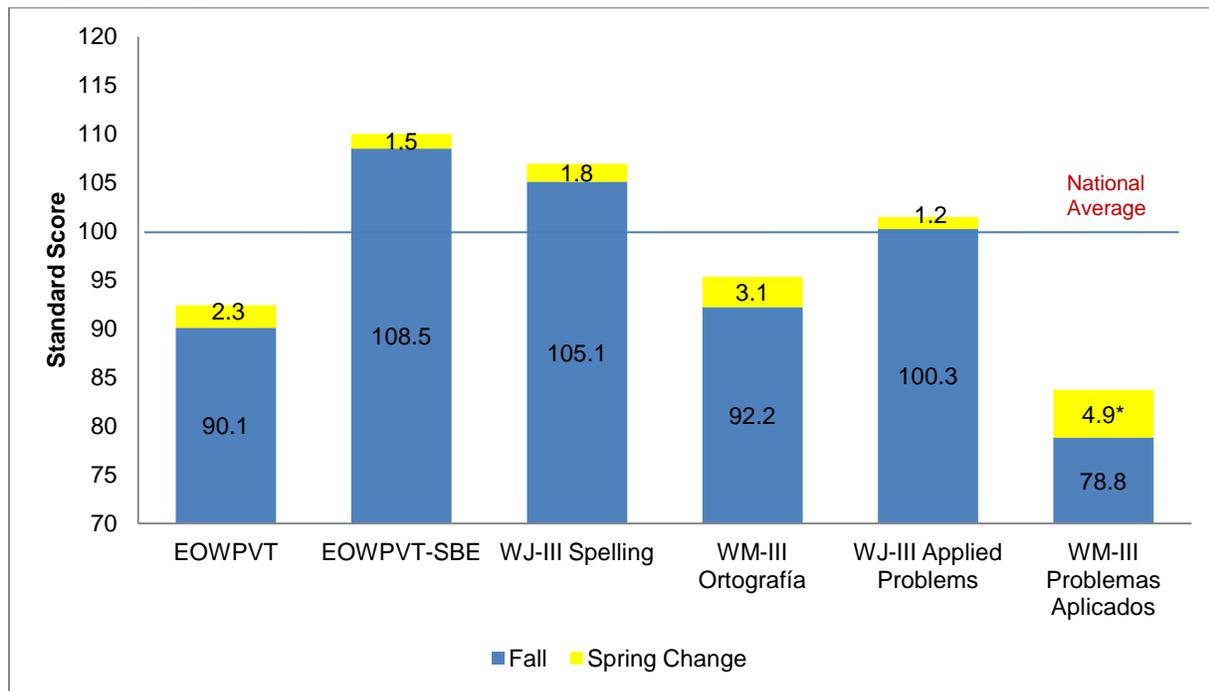
scores are calculated relative to a sample of English-speaking peers. For the SBE version, scores are calculated relative to a sample of Spanish-bilingual peers.

Beginning with the IRT scores, absolute progress in expressive skills is statistically significant. Mean scores increased from 46.1 in the fall to 50.8 in the spring, an increase of 4.6 points.

The mean English standard scores (Figure II.1) indicated that, on average, LAUP children who followed the English path in the assessment lagged behind the national norms in both the fall (mean English standard score [SS] = 90.1) and spring (mean English SS = 92.5) in expressive vocabulary concepts. The mean scores on expressive language skills based on the English norms were not significantly different in the fall and spring, suggesting that the children in LAUP made progress similar to their national peers. However, further analysis indicated that significant progress was made by children in the English-primarily group but not in the English-only group (see Chapter IV of Volume 2 of this report for additional detail on results by parent-reported language group). Although the English-only group entered with stronger English vocabulary skills compared with the other children in LAUP, their skills continue to lag more than one-half of a standard deviation behind English-speaking children nationally.

The mean SBE standard scores (Figure II.1) indicate that, on average, children in LAUP performed better than their same-age Spanish-bilingual peers nationally in expressive vocabulary at preschool entry (mean SBE SS = 108.5) and were even stronger relative to peers in the spring (mean SBE SS = 110.0). However, their progress between the fall and spring was not statistically significant relative to a national sample of bilingual peers. We estimated the SBE norms for all language groups and note that only the Spanish-primarily group made significant progress between fall and spring compared with same age peers (see Chapter IV Volume 2).

**Figure II.1. Mean Standard Scores for Language, Literacy, and Mathematics Assessments: Fall 2012 and Change to Spring 2013**



Sources: UPCOS-6 Fall 2012 and Spring 2013 Direct Child Assessments.

Notes: All analyses are weighted to represent children attending LAUP in the 2012–2013 program year. Asterisks indicate that the change from fall to spring is statistically significant (\*p < .05).

### 3. Literacy: RLN

Children in LAUP made statistically detectable progress in literacy on the RLN, based on raw and IRT scores (Table II.1, section 3; Figure II.2). Between the fall and spring, children progressed from being able to name 10.0 letters to being able to name 16.5, a statistically significant change (mean change = 6.5 letters). Similarly, IRT scores increased from 19.7 in the fall to 27.4 in the spring, also a statistically significant change of 7.7 points.

We also calculated the number of uppercase and lowercase letters that children named. Because some letters differ only in size between uppercase and lowercase versions, we gave credit for both versions, even if the letter appeared only one in the assessment (for example, “O,” “X,” “S”). On average, in the spring, LAUP children were able to name the equivalent of 16 uppercase and 14 lowercase letters.<sup>13</sup> This is slightly less than the 18 uppercase and 14 lowercase letters that recent research found predictive of success in first grade reading in an English-speaking sample (Piasta et al. 2012).

### 4. Fine Motor and Literacy: WJ-III Spelling

Based on the WJ-III Spelling subtest, fine motor skills and written literacy are strengths for children in LAUP when they enter the program, and they continue to maintain that advantage (Table II.1, section 4). Beginning with absolute progress (Figure II.3), W scores showed a statistically significant increase, from 382.2 points in the fall to 400.0 in the spring. Standard scores (Figure II.1) show that children scored about one-third of a standard deviation above a national sample of peers in the fall (SS = 105.1) as well as in the spring (SS = 106.8).<sup>14</sup> Although children made significant progress in this area in absolute terms, their progress as measured by the standard scores is similar to their same-age peers nationally.

### 5. Fine Motor and Literacy: WM-III Ortografía

Spanish-speaking children who did not pass the English-language screener completed the Spanish version of the spelling assessment—the WM-III Ortografía. As shown in the fifth section of Table II.1, children completing the WM-III Ortografía made statistically significant progress between the fall and spring in absolute terms; however, the progress relative to a national sample of Spanish-speaking peers was not statistically significant.<sup>15</sup> W scores (Figure II.3) increased from 357.3 in the fall to 378.7 in the spring, a gain of 21.4 points. Focusing on the standard scores (Figure II.1), children assessed in Spanish scored more than about one-half of a standard deviation below the national mean in the fall (SS = 92.2) but had closed the gap slightly by the spring, to less than one-third of a standard deviation (SS = 95.4).

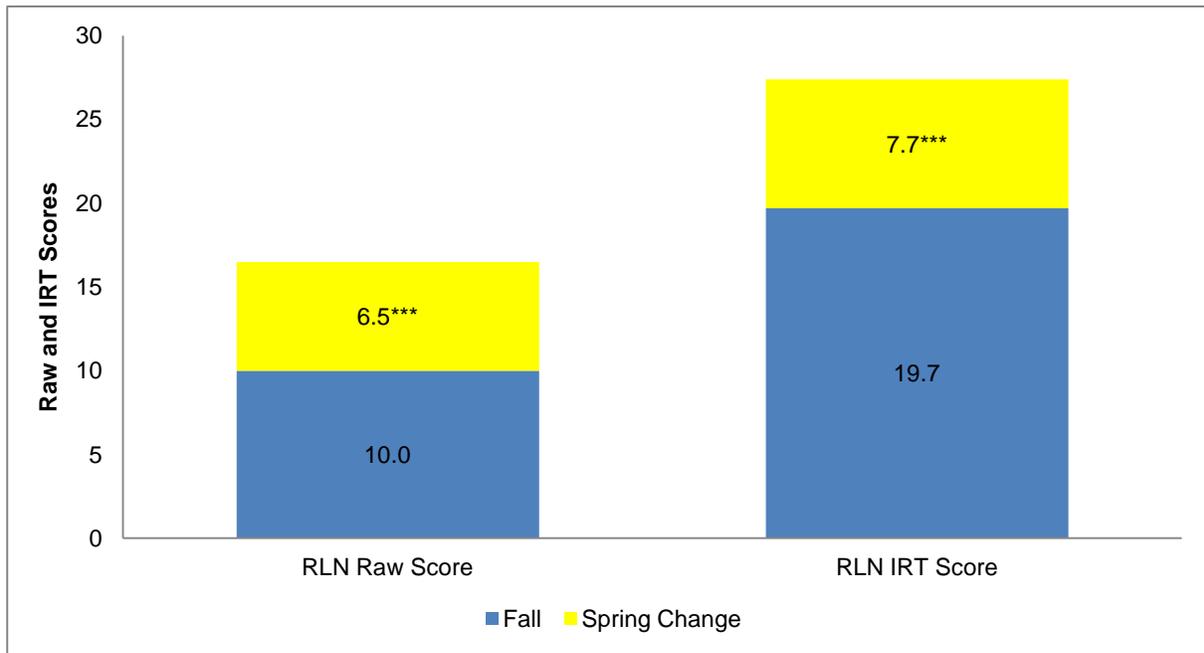
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<sup>13</sup> By comparison, in UPCOS-5, children were able to name the equivalent of 18 uppercase and 14 lowercase letters.

<sup>14</sup> Any slight differences in values shown in the figures and table are due to rounding.

<sup>15</sup> It is important to note that we veered slightly from standard administration of the WM-III Ortografía in both fall and spring in UPCOS-6. In the standard administration, the names of the letters are presented only in Spanish. Because many of the children in LAUP learned the names of the letters only in English, we determined that naming the letters only in Spanish was not a fair representation of their ability to write a letter from memory. Therefore, when children reached the items asking them to write a letter, we presented the names of letters in both Spanish and English.

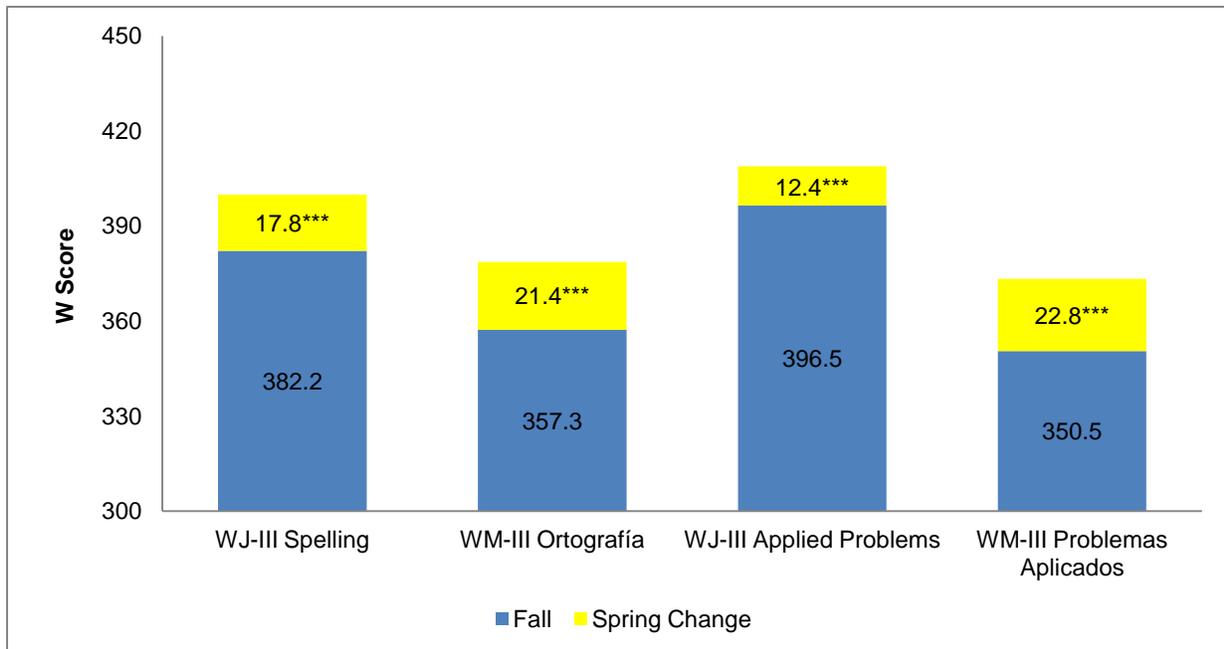
**Figure II.2. Mean Raw and IRT Scores for Literacy Assessment (Rapid Letter Naming): Fall 2012 and Change to Spring 2013**



Sources: UPCOS-6 Fall 2012 and Spring 2013 Direct Child Assessments.

Notes: All analyses are weighted to represent children attending LAUP in the 2012–2013 program year. Asterisks indicate that the change from fall to spring is statistically significant (\*\*p < .01, \*\*\*p < .001).

**Figure II.3. Mean W Scores for Literacy and Mathematics Assessments: Fall 2012 and Change to Spring 2013**



Sources: UPCOS-6 Fall 2012 and Spring 2013 Direct Child Assessments.

Notes: All analyses are weighted to represent children attending LAUP in the 2012–2013 program year. Asterisks indicate that the change from fall to spring is statistically significant (\*\*p < .01, \*\*\*p < .001).

## 6. Mathematics: WJ-III Applied Problems

For children who took the mathematics assessment in English, average skill level and progress across the year were similar to that of same-age peers. As measured by the WJ-III Applied Problems subtest, children's *W* scores (second to last section of Table II.1; Figure II.3) increased significantly, from 396.5 in the fall to 409.0 in the spring, an increase of 12.4 points. However, the mean standard scores (adjusted for age) were similar between the fall (100.3) and spring (101.5) and about the same as the mean in the normative sample, indicating that children's progress kept pace with that of same-age peers nationally (Figure II.1).

## 7. Mathematics: WM-III Problemas Aplicados

Children who were routed into the Spanish assessments in both fall and spring made significant progress in mathematics, both in absolute terms and relative to a national sample of Spanish-speaking peers, but the mean standard score continued to lag well behind the national mean (Table II.1). *W* scores (last section of Table II.1, Figure II.3) showed a statistically significant increase between the fall and spring, from 350.5 to 373.3. Standard scores increased (Figure II.1) significantly from 78.8 in the fall to 83.7 in the spring; however, the means remained more than one standard deviation below the normative mean at both time points.

## 8. Social-Emotional and Approaches to Learning: Leiter-R

The Leiter-R is a screening measure designed to identify children who may be at risk for social-emotional problems and need additional evaluation.<sup>16</sup> In Table II.2, we report the percentage of children scoring in the expected range; children who score in this range are not likely to be at risk for problems in this area. In the national sample, 84 percent of children score in the expected range. In LAUP, the percentage of children scoring in the expected range for Attention, Activity Level, and Sociability was already high in the fall and exceeded the national average for all three subtests. By the spring, 97 to 99 percent of LAUP children scored in the expected range for each subtest (Figure II.4). The fall-spring increase was statistically significant for Activity Level only.

## 9. BMI

According to CDC criteria for obese and overweight (CDC 2011), 17 percent of LAUP children were obese and 16 percent were overweight in fall 2012 (33 percent total with a weight problem; Table II.2; Figure II.5). The percentage of children who were obese or overweight did not change significantly in spring 2013 in any category (34 percent overall: 17 percent obese and another 17 percent overweight). By comparison, in UPCOS-2, slightly more children had weight problems in the fall of the year (37 percent with a problem: 22 percent of children were obese and 15 percent overweight), with a similar proportion (34 percent) with weight problems in the spring, though the level of obesity appeared greater in UPCOS-2.

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<sup>16</sup> The Leiter-R ratings typically are completed following observations of children in a more extensive assessment. The UPCOS assessment is only 25 minutes long and does not involve children handling materials. Thus, children's ratings on the Leiter-R in UPCOS are likely greater than they would be in a different context. However, the Leiter-R ratings are used in other large-scale preschool studies.

**Table II.2. Percentage of Children Scoring in the Expected Range for Social-Emotional and Approaches to Learning and in Overweight or Obese Groups for Physical Health: Fall 2012 and Spring 2013**

Outcome	N	Fall 2012		Spring 2013		Fall-Spring Change	
		Percentage	Standard Error	Percentage	Standard Error	Percentage	Standard Error
<b>Social-Emotional and Approaches to Learning: Leiter-R Examiner Ratings Scaled Score in the Expected Range<sup>a</sup></b>							
Attention	262	97.66	1.56	98.47	0.90	0.81	1.79
Activity Level	262	96.60*	1.16	99.14	0.61	2.54	1.05
Sociability	262	94.25	1.67	97.18	1.40	2.93	1.90
<b>BMI</b>							
Child is overweight <sup>b</sup>	567	15.96	1.38	16.57	1.44	0.62	1.20
Child is obese <sup>c</sup>	567	16.77	1.85	16.93	2.59	0.16	1.91

Sources: UPCOS-6 Fall 2012 and Spring 2013 Examiner Rating.

Note: All analyses are weighted to represent children attending LAUP in the 2012–2013 program year.

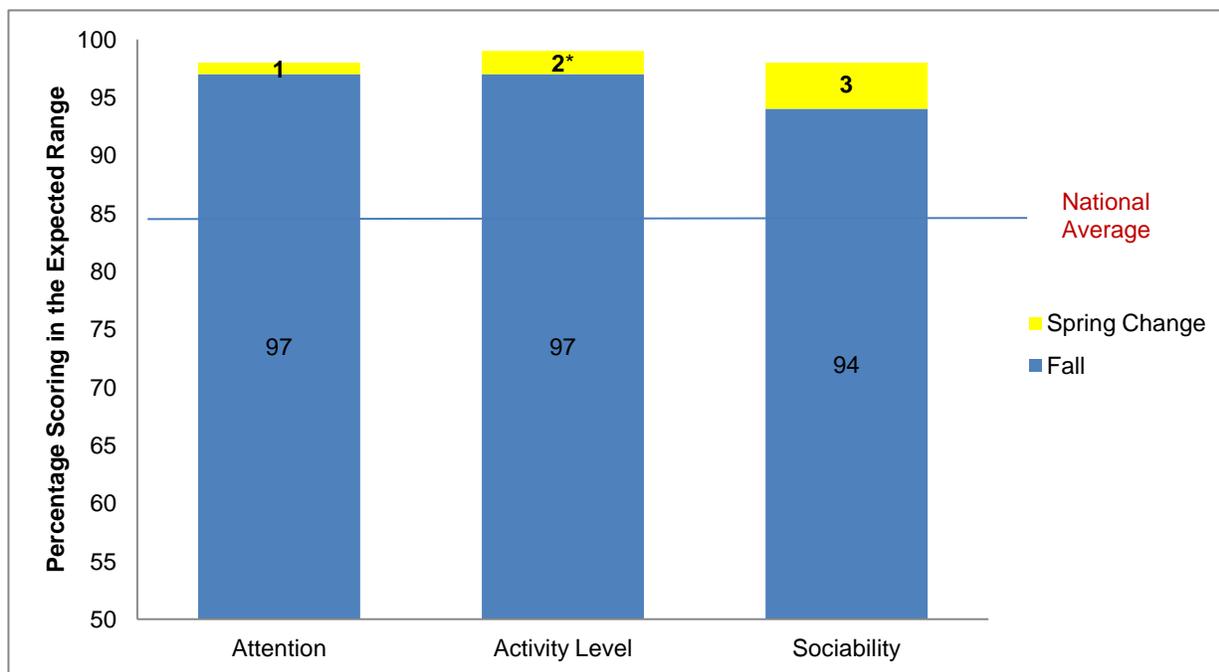
<sup>a</sup>Scores of 7 or greater out of 10.

<sup>b</sup>When child’s gender-specific BMI-for-age is between the 85th and 94th percentiles.

<sup>c</sup>When child’s gender-specific BMI-for-age is at or above the 95th percentile.

\*Significantly different from zero at the .05 level, two-tailed test.

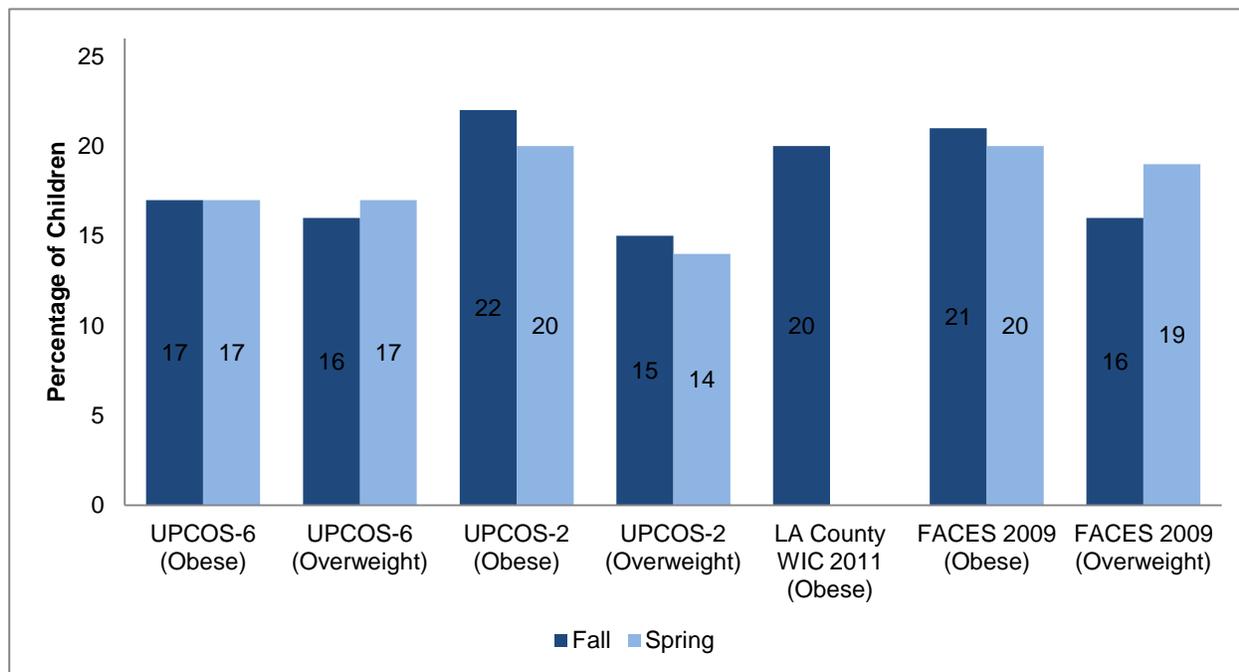
**Figure II.4. Percentage of Children Scoring in Expected Range for Social-Emotional and Approaches to Learning Assessments: Fall 2012 and Change to Spring 2013**



Sources: UPCOS-6 Fall 2012 and Spring 2013 Direct Child Assessments.

Notes: All analyses are weighted to represent children attending LAUP in the 2012–2013 program year. Asterisks indicate that the change from fall to spring is statistically significant ( $p < .05$ ).

**Figure II.5. Children’s BMI Status in LAUP in Fall 2012 and Spring 2013, and Other Samples**



Sources: UPCOS-2 (2007–2008) and UPCOS-6 (2012–2013) Fall and Spring Direct Child Assessments; UPCOS-2 data can be found in Love et al. 2009; LA County WIC data can be found in CDC 2013; FACES 2009 data can be found in Aikens et al. 2012.

Note: Analyses are weighted to represent children attending LAUP in the 2012–2013 program year. The Institute of Medicine of the National Academies considers children to be overweight when their gender-specific BMI-for-age is between the 85th and 94th percentiles, and obese when their BMI is at or above the 95th percentile for their age and gender (CDC 2011).

The most recent estimate of obesity among four-year-olds enrolled in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) in Los Angeles County—20 percent for 2011 (CDC 2013)—indicates a greater prevalence than we found in UPCOS-6. These rates can be compared to those for four-year-olds entering Head Start for the first time in fall 2009. Data from the Head Start Family and Child Experiences Survey (FACES, a nationally representative study of Head Start) indicate that 21 percent were obese and 16 percent were overweight in the fall, and 20 percent were obese and 19 percent were overweight in the spring (Aikens et al. 2012).

### C. Summary and Implications

**Fall to Spring Progress.** On average, 5.7 months passed between the two assessments (range of 4.1 to 6.3 months). Between the fall and spring, children’s absolute progress was statistically significant in all areas. In mathematics, children assessed in Spanish (WM-III Problemas Aplicados) also made significant progress as measured by standard scores (relative to a national sample of same-age peers). Standard scores also show that LAUP children kept pace with but did not make significant progress relative to a national sample of peers in English expressive vocabulary (EOWPVT), Spanish-bilingual expressive vocabulary (EOWPVT-SBE), fine-motor/literacy measured in both English and Spanish (WJ-III Spelling and WM-III Ortografía, respectively), or mathematics in English (WJ-III Applied Problems). Regarding English mathematics scores, this is consistent with the findings from the 2011–2012 program year and represents an improvement compared to 2010–2011, when children lost ground relative to a national sample of peers. Scores on the RLN task indicate that, on average, children made statistically significant progress in their letter-

naming skills; the results were comparable to other preschool studies using similar measures (Early et al. 2005; Mashburn et al. 2008).

**Comparison to National Samples.** For Spanish-bilingual vocabulary (EOWPVT-SBE), fine motor/literacy in English (WJ-III Spelling), and social-emotional development and approaches to learning (Leiter-R), LAUP children scored above the national average in both the fall and spring.<sup>17</sup> By the spring, LAUP children’s average English expressive vocabulary skills (EOWPVT) remained approximately half of a standard deviation below that of their English-speaking peers nationally, and fine motor/literacy skills in Spanish (WM-III Ortografía) were one-third of a standard deviation below the national mean. For mathematics, in both the fall and spring, LAUP children assessed in English (WJ-III Applied Problems) scored at the national average; LAUP children assessed in Spanish (WM-III Problemas Aplicados) scored a standard deviation or more below the national average.

**Implications.** Although children made progress in most areas, there is still room to grow. First, LAUP children’s progress in expressive vocabulary relative to a national sample of English-speaking peers kept pace with that of peers during the program year, but their mean score in the spring remained about half of a standard deviation below that of their English-speaking peers nationally.

Knowledge of vocabulary and concepts reflects the background knowledge that children are able to use and apply to future learning. Children draw on their background knowledge as they read and comprehend text and other educational opportunities in school. Children with more limited knowledge of the world and the words used to describe it are at a disadvantage when trying to comprehend. They are limited in their ability to draw on background knowledge and make connections among ideas. For example, analyses of multiple longitudinal studies (Grissmer et al. 2010) indicate that general knowledge when entering kindergarten is the strongest predictor of later “science and reading” and also contributes significantly to predicting later mathematics. (p. 1,008). The researchers concluded, “Together, attention, fine motor skills, and general knowledge are much stronger overall predictors of later math, reading, and science scores than early math and reading scores alone” (p. 1,008).

More frequent reading to children and talking about books is one of the most widely used means of increasing vocabulary and exposure to world knowledge (De Temple and Snow 2003; Hargrave and Sénéchal 2000; Justice et al. 2009). Exposure in preschool to challenging words (Dickinson et al. 2011) and more frequent exposure to print (Mol and Bus 2011) predicts success in oral language skills at least as far as fourth grade. Print exposure (that is, more frequent book sharing and book reading) also is related to reading comprehension and other academic outcomes (Mol and Bus 2011).

Second, mathematics abilities of children as measured by the WM-III Problemas Aplicados (Spanish version) were below those of their Spanish-speaking peers. Despite the fact that children assessed in Spanish made enough progress so as to not lose additional ground relative to a national sample of similarly achieving peers, their scores were more than one standard deviation below the national mean in both the fall and spring. In addition to assessing number concepts and reasoning,

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<sup>17</sup> For the Leiter-R, we calculated the percentage of children scoring in the expected range; children scoring in this range are unlikely to be experiencing difficulties with social-emotional development and approaches to learning. In the national sample, 84 percent of children score in this range.

this subtest also serves as an indicator of children’s language comprehension because it uses more complex language (for example, if-then statements).

Mathematics is an important area of cognition and a strong predictor of success in school in both reading and mathematics (Claessens et al. 2009; Duncan et al. 2007). These children needed greater support in building language comprehension, number sense, and reasoning to be ready to enter kindergarten with skills similar to their peers. Recent analyses suggest benefits of instruction in Spanish. Preschool Spanish-speaking children had greater gains in reading and mathematics when they received instruction in Spanish (Burchinal et al. 2013; Burchinal et al. 2011).

At the same time, LAUP teachers should continue to support literacy and fine motor development. Fluent letter naming is the strongest predictor of kindergarten reading (beyond IQ, vocabulary, and home socioeconomic status) (Foulin 2005; Puranik et al. 2011). The ability to write letters easily is predictive of later skill in spelling and writing (Puranik et al. 2011).



### III. PERFORMANCE RELATIVE TO 2012–2013 CHILD PROGRESS TARGETS

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#### Key Findings

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LAUP is expected to meet targets in multiple domains: language, literacy, mathematics, fine motor development, and social-emotional development and approaches to learning. LAUP is expected to meet targets at two levels of progress based on measures of language, mathematics, and fine motor and literacy development. For the literacy target based on RLN measure, the target is considered met if one of the two levels is achieved. A single target addresses social-emotional development and approaches to learning.

Targets are reasonable and achievable in LAUP. Children's progress met or exceeded the targets set for the 2012–2013 year. The literacy target based on the RLN measure was met based on achieving one of the two levels in the target.

Targets continue to be valid and meaningful. For children whose scores met or exceeded targets, scores increased relative to a national sample of same-age peers. Among children whose scores fell below targets, scores declined relative to a national sample of peers.

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In this chapter, we present child progress in LAUP during the 2012–2013 program year relative to the targets set in a collaborative process between First 5 LA and LAUP. Table III.1 presents the 2012–2013 targets and the key decisions underlying the targets; additional detail on the target-setting process can be found in Chapter II of the second volume of this report. In this chapter, we begin with a discussion of the analysis and then provide an overview of performance relative to targets in all domains, including an analysis of children's average performance by whether targets were met. We then present additional detail about children's performance in each domain to better understand the pattern of results and assess the validity of the targets. Sensitivity analyses relevant to the validity of the targets can be found in Chapter VI of the second volume.

#### A. Approach to Analysis

We first calculated the percentage of children whose scores exceeded or fell below Level 1 and Level 2 targets for the overall sample (Table III.2) and by fall quartile (Table III.3).<sup>18</sup> For each measure, we also examined the mean and range of change scores (Table III.4) for the group of children whose scores exceeded the Level 1 target and the group whose scores did not for five of the six measures: EOWPVT, RLN, WJ-III Spelling, WJ-III Applied Problems, and WM-III Applied Problems.<sup>19</sup> We conducted this analysis regardless of whether the overall target was met. We excluded the Leiter-R from this analysis because virtually all children scored at a level required by the targets. The analysis was specific to each measure (a child could be in the group whose scores exceeded targets for one measure but in the group whose scores fell below targets for another measure).

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<sup>18</sup> For the quartile analysis, groups were based on fall scores in the full sample of children; thus, whether children fall in the bottom quartile, the middle 50 percent, or the top quartile was based on performance relative to all children in the sample, not just those with scores that did or did not exceed targets.

<sup>19</sup> For these five measures, we also conducted a sensitivity analysis, calculating fall and spring scores by language group and quartile for the group of children whose scores exceeded the Level 1 target and the group whose scores did not; those scores are presented in Chapter VI of the second volume of this report.



For all of the conceptually scored measures (EOWPVT, RLN, Leiter-R), the calculation of whether the targets were met is based on the performance of all children, regardless of whether they completed the assessment in Spanish or English. For the measures not conceptually scored—WJ-III Applied Problems, WM-III Problemas Aplicados, WJ-III Spelling—the analysis of whether targets were met is based on the sample of children who took the assessment in the same language in the fall and spring (English for WJ-III subtests and Spanish for the WM-III subtest). Children who switched from a Spanish assessment in the fall to English in the spring based on screener scores are not reflected in targets for these three subtests.

In some instances, a particular subgroup fell below 10 observations; we excluded these results from the table because they were likely to produce imprecise estimates of children’s performance. Note that we did not conduct statistical tests comparing fall and spring scores for these groups. The data are presented for the purpose of determining whether the pattern of scores can help us understand the validity of the targets and which children were (or were not) meeting targets.

Analyses in this chapter follow the same procedures as the analyses of child progress presented in Chapter II—they were at the child level, weighted, and conducted using survey procedures that address the clustering of children within programs and classrooms.

## **B. Progress Relative to Targets**

Table III.2 outlines children’s performance relative to targets set for the 2012–2013 program year. Based on children’s progress, LAUP met all of the targets.<sup>20</sup> We now present additional detail on each target.

### **1. Language: EOWPVT**

The first section of Table III.2 presents performance relative to Levels 1 and 2 of the language target; LAUP’s performance met the target at both levels. Beginning with Level 1, 70 percent of children gained 2 points or more on the EOWPVT, compared to the target of 70 percent of children. For the Level 2 target, 48 percent of children gained 5 points or more, compared to a target of 45 percent.

### **2. Literacy: RLN**

The second section of Table III.2 presents performance relative to the target for literacy development as measured by the RLN. LAUP’s performance exceeded only Level 1 of the target: 50 percent of children gained 7 points or more on the RLN, exceeding the 45 percent required in the target. The Level 2 target calls for 70 percent of children to name 14 letters or more in the spring; 63 percent of children did so in spring 2013. As a reminder, this is the only target that is considered met if one of the two levels is achieved.

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<sup>20</sup> For the EOWPVT, WJ-III, and WM-III measures, we repeated the target analysis, excluding children who scored more than two standard deviations below the mean for that particular measure as a proxy for identifying children who might have special needs. Because the RLN is not a standardized measure (and does not have national norms), we based the exclusion on the EOWPVT. The pattern of results did not change when instituting this exclusion.

**Table III.2. Summary of Child Progress in 2012–2013 in a Representative Sample of LAUP Programs and Children Relative to Performance-Based Contract Targets**

Domain: Measure	Level 1		Level 2
<b>Language: EOWPVT (N = 262)</b>			
Target	70% gain 2 points or more	<u>AND</u>	45% gain 5 points or more
Actual	70% gained 2 points or more		48% gained 5 points or more
<i>Target reached? Yes</i>			
<b>Literacy: RLN (N = 262)</b>			
Target	45% gain 7 points or more	<u>OR</u>	70% name 14 letters or more in the spring
Actual	50% gained 7 points or more		63% named 14 letters or more in the spring
<i>Target reached? Yes</i>			
<b>Fine Motor/Literacy: WJ-III Spelling (N = 198)</b>			
Target	70% gain 7 points or more	<u>AND</u>	45% gain 17 points or more
Actual	81% gained 7 points or more		47% gained 17 points or more
<i>Target reached? Yes</i>			
<b>Mathematics: WJ-III Applied Problems (N = 198)</b>			
Target	70% gain 4 points or more	<u>AND</u>	45% gain 13 points or more
Actual	73% gained 4 points or more		47% gained 13 points or more
<i>Target reached? Yes</i>			
<b>Mathematics: WM-III Problemas Aplicados (N = 53)</b>			
Target	70% gain 4 points or more	<u>AND</u>	45% gain 13 points or more
Actual	80% gained 4 points or more		65% gained 13 points or more
<i>Target reached? Yes</i>			
<b>Social-Emotional and Approaches to Learning: Leiter-R (N = 262)</b>			
Target	85% score in expected range in spring		
Attention			
Actual	98%		
Activity Level			
Actual	99%		
Sociability			
Actual	97%		
<i>Target reached? Yes</i>			

Sources: UPCOS-6 Fall 2012 and Spring 2013 Direct Child Assessments.

Notes: Targets for all measures except the Leiter-R and RLN were based on W or IRT scores. Leiter-R targets refer to the proportion of children scoring in the expected range, which was based on standardized scaled scores. The Level 2 target for the RLN was based on raw scores.

All analyses are weighted to represent children attending LAUP in the 2012–2013 program year.

### 3. Fine Motor and Literacy: WJ-III Spelling

The third section of Table III.2 summarizes performance relative to the target for fine motor and literacy development as measured by the WJ-III Spelling subtest (completed by children assessed in English in the fall and spring). LAUP surpassed both Levels 1 and 2 of this target. At Level 1, the target calls for 70 percent of children to gain 7 points or more, and 81 percent achieved a gain of this magnitude. At Level 2, the target calls for 45 percent of children to gain 17 points or more, and 47 percent achieved a gain of this magnitude.

### 4. Mathematics: WJ-III Applied Problems

The fourth section of Table III.2 summarizes performance relative to the target for mathematics development as measured by the WJ-III Applied Problems subtest (completed by children assessed in English in the fall and spring). LAUP met both levels of this target. At Level 1, the target called for 70 percent of children to gain 4 points or more, and 73 percent achieved a gain of this magnitude. At Level 2, the target called for 45 percent of children to gain 13 points or more, and 47 percent achieved a gain of this magnitude.

### 5. Mathematics: WM-III Problemas Aplicados

The fifth section of Table III.2 summarizes performance relative to targets for mathematics development as measured by the WM-III Problemas Aplicados subtest (completed by children assessed in Spanish in the fall and spring). LAUP surpassed both levels of this target. At Level 1, the target calls for 70 percent of children to gain 4 points or more, and 80 percent achieved a gain of this magnitude. At Level 2, the target calls for 45 percent of children to gain 13 points or more, and 65 percent achieved a gain of this magnitude.

### 6. Social-Emotional and Approaches to Learning: Leiter-R

The final section of Table III.2 summarizes performance relative to the target for social-emotional development and approaches to learning as measured by the Leiter-R subtests for Attention, Activity Level, and Sociability. LAUP achieved the target for all subtests. The target calls for 85 percent of children to score in the expected range in the spring on each of the three subtests; 97 to 99 percent did so across the subtests.

## C. Performance Relative to Targets by Quartile

Table III.3 and Figure III.1 present the percentage of children whose progress exceeded the Level 1 targets, by fall quartile. (We excluded the Leiter-R from this analysis because the approach to scoring—percentage of children in the expected range—does not lend itself to quartile analysis.) For four of the five measures shown—the EOWPVT (language), RLN (literacy), the WJ-III Spelling (fine motor and literacy in English), and the WJ-III Applied Problems (mathematics in English)—children whose fall scores were in the bottom or middle quartiles were more likely to have made progress that exceeded the Level 1 target than were children in the top quartile. The opposite was true for the WM-III Applied Problems (mathematics in Spanish)—children in the top quartile and middle 50 percent were more likely to make the progress that met the Level 1 target than children in the bottom quartile.

**Table III.3. Percentage of Children Whose Progress Exceeded Level 1 Targets, by Fall Quartile**

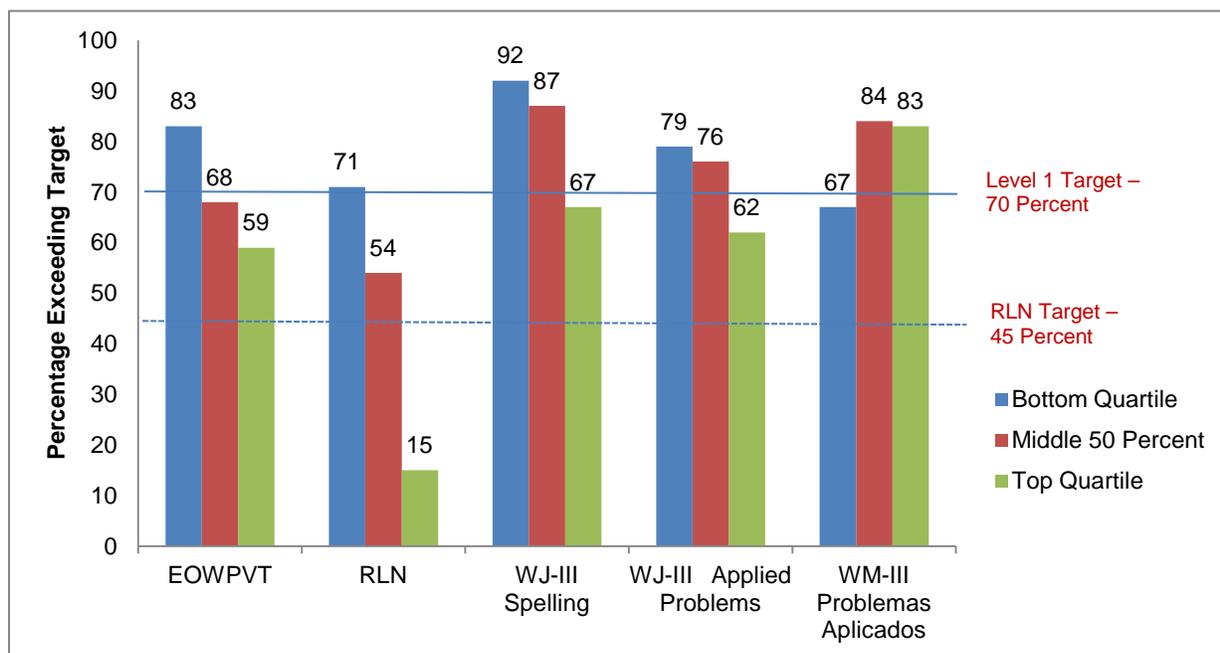
Domain: Measure	Bottom Quartile	Middle 50 Percent	Top Quartile
Language: EOWPVT	83.16	67.60	58.60
Literacy: RLN	71.33	54.52	14.86
Fine Motor/Literacy: WJ-III Spelling	92.17	86.89	66.64
Mathematics: WJ-III Applied Problems	79.47	76.49	62.35
Mathematics: WM-III Problemas Aplicados	65.65	84.35	83.35

Sources: UPCOS-6 Fall 2012 and Spring 2013 Direct Child Assessments.

Notes: Targets for all measures were based on W or IRT scores. Level 1 targets specify that 70 percent of children are to make a particular gain for all measures in the table except the RLN, for which the Level 1 target indicates that 45 percent of children are to gain 7 points or more.

All analyses are weighted to represent children attending LAUP in the 2012–2013 program year.

**Figure III.1. Percentage of Children Whose Progress Exceeded Level 1 Targets, by Fall Quartile**



Sources: UPCOS-6 Fall 2012 and Spring 2013 Direct Child Assessments.

Notes: Targets for all measures were based on W or IRT scores. Level 1 targets specify that 70 percent of children are to make a particular gain for all measures in the figure (the solid blue line) except the RLN, for which the Level 1 target indicates that 45 percent of children are to gain 7 points or more (the dashed blue line).

All analyses are weighted to represent children attending LAUP in the 2012–2013 program year.

### D. Progress by Whether Level 1 of the Target Was Met: Evidence of Validity

In the remainder of this chapter, we provide additional detail on children’s performance in each domain of development addressed so as to better indicate the pattern of children’s progress and validity of the targets. Table III.4 presents the mean change and the range of change scores by whether the Level 1 target was met.

### 1. Language: EOWPVT

Turning to the first section of Table III.4, we see that for children whose scores met the target, because the target was based on the IRT score, by definition all children in this group made positive, absolute change (mean = 8.0, range = 2.2 to 25.1). For this group, average standard scores for the English edition and SBE increased; that is, the expressive vocabulary of children in this group generally improved relative to samples of same-age peers. Note, however, that ranges for both editions include negative minimum values (English: range = -9 to 37; SBE: range = -11 to 50), indicating that although all children whose scores met targets made progress in an absolute sense, some lost ground relative to a national sample of same-age peers. Among children whose score did not meet targets, most lost ground relative to same-age peers in English and bilingual expressive skills (English: mean = -10.0, range = -48 to 10; SBE: mean = -12.7, range = -71 to 10), and the mean change (loss) was equivalent to two-thirds of a standard deviation or more for the national sample.

### 2. Literacy: RLN

Consistent with the finding that progress in the overall sample was positive (Table II.1), average progress in literacy as measured by the RLN task was positive for the group whose scores met the target based on raw or IRT scores (Table III.4). However, for the group whose scores did not meet targets, average progress was only about one point for both raw and IRT scores, and ranges indicate that some children lost ground during the year (raw score: range = -21 to 8; IRT score: range = -19.6 to 6.9).

### 3. Fine Motor and Literacy: WJ-III Spelling

Children whose progress exceeded targets also made progress relative to a nationally representative sample of peers (mean standard score change = 4.7) (Table III.4), although children who made the smallest amount of absolute progress lost some ground relative to peers (range = -4 to 65). The mean standard score change is equivalent to nearly one-third of a standard deviation increase in the national sample. For children whose scores did not meet the Level 1 target, the change in the mean W and standard scores indicates large declines both in absolute terms and relative to same-age peers (mean change = -5.0 and -10.8, respectively); all of these children lost ground relative to peers (range = -27 to -2).

### 4. Mathematics: WJ-III Applied Problems

The fourth section of Table III.4 presents means and ranges of change scores for the English mathematics assessment. On average, children whose progress exceeded targets made progress both in absolute terms and relative to peers (mean change = 19.3 and 5.1, respectively), although children who made the smallest amount of absolute progress lost some ground relative to peers (range = -5 to 39). For children whose scores did not meet the Level 1 target, scores indicate declines both in absolute terms (mean W score change = -6.1) and relative to peers (mean SS change = -9.2); all of these children lost ground relative to peers (range = -35 to -4). The mean decrease in standard scores was equivalent to nearly two-thirds of a standard deviation for the national sample.

**Table III.4. Means, Standard Errors, and Ranges for UPCOS-6 Language, Literacy, and Math Measures Change Scores, Child Level, by Whether Level 1 Target Was Met**

Outcome	Change Scores that Reached Target					Change Scores that Did Not Meet Target				
	N	Mean	Std Error	Min	Max	N	Mean	Std Error	Min	Max
<b>Language: EOWPVT</b>										
IRT Score	185	7.99	0.35	2.15	25.05	77	-3.06	0.87	-38.88	1.67
English Edition Standard Score <sup>a</sup>	126	7.26	0.99	-9	37	50	-10.01	1.55	-48	10
Spanish Bilingual Edition Standard Score <sup>a, b</sup>	185	7.62	0.88	-11	50	77	-12.65	1.54	-71	10
<b>Literacy: RLN</b>										
Raw Score	130	11.58	0.61	2	28	132	1.44	0.36	-21	8
IRT Score	130	14.26	0.53	7.07	39.29	132	1.15	0.51	-19.64	6.92
<b>Fine Motor and Literacy: WJ-III Spelling</b>										
W Score	160	23.09	1.69	7	135	38	-5.02	1.62	-34	6
Standard Score <sup>a</sup>	160	4.67	0.89	-4	65	38	-10.75	0.85	-27	-2
<b>Mathematics: WJ-III Applied Problems</b>										
W Score	144	19.34	1.61	4	93	54	-6.14	1.45	-59	0
Standard Score <sup>a</sup>	144	5.06	0.88	-5	39	54	-9.17	0.83	-35	-4
<b>Mathematics: WM-III Problemas Aplicados</b>										
W Score	42	30.93	3.79	6	94	11	-9.56	4.15	-38	0
Standard Score <sup>a</sup>	42	8.62	1.73	-3	35	11	-10.15	1.8	-26	-5

Sources: UPCOS-6 Fall 2012 and Spring 2013 Direct Child Assessments.

Note: All analyses are weighted to represent children attending LAUP in the 2012–2013 program year.

<sup>a</sup>National mean for standard scores is 100, with a standard deviation of 15.

<sup>b</sup>This measure was conceptually scored; the standard score was generated for all children in the sample.

## 5. Mathematics: WM-III Problemas Aplicados

The final section of Table III.4 presents means and ranges of change scores for the Spanish mathematics assessment. On average, children whose progress exceeded targets made progress relative to a national sample of similarly achieving peers on the WM-III Problemas Aplicados test (mean SS change = 8.6), although children who made the smallest amount of absolute progress lost some ground relative to peers (range = -3 to 35). Similar to the pattern for other measures, children whose scores did not meet the Level 1 target had score declines both in absolute terms (mean W score change = -9.7) and relative to peers (mean SS change = -10.2); all of these children lost ground relative to peers (range = -26 to -5). The mean decrease in standard scores was equivalent to two-thirds of a standard deviation for the national sample.

### Summary of Validity Evidence for Level 1 Targets

These analyses provide strong support for the importance and meaningfulness of most of the targets. On average, children who met the targets made gains relative to national samples of peers on each of the measures, and large gains for most of them. It is very unusual for groups of children to make progress that increases standard scores equivalent to half of a standard deviation in the national sample. Alternatively, those children who did not meet the targets lost considerable ground relative to national samples of peers, suggesting that the targets were not set unreasonably high. This pattern of findings—large gains among children whose progress met targets and declines among children whose progress fell below targets—was found in the overall sample and in subgroups defined by fall quartile and language group (subgroup analyses are presented in Chapter VI of Volume 2). If children did not make the specified level of change, they fell further behind relative to other children across the nation, so it is important to continue striving to help children make the specified levels of change.

## E. Summary and Implications

During the 2012–2013 program year, the targets were met for all domains of development: language, literacy, fine motor/literacy, mathematics, and social-emotional development and approaches to learning. This indicates that these targets are reasonable and achievable in LAUP.

**Meaningfulness of the Targets.** The targets appear to be successfully differentiating the children who make significant gains during the year from the group of children who need additional support. We examined average change scores among the group of children whose scores exceeded Level 1 targets and the group whose scores did not.<sup>21</sup> Standard scores (scores relative to a national sample of peers, adjusted for child age) were available for four of the measures: EOWPVT, WJ-III Spelling, WJ-III Applied Problems, and WM-III Problemas Aplicados. For children whose scores met or exceeded targets, scores increased, on average, relative to a national sample of same-age peers. Among children whose scores fell below targets, scores declined, on average, relative to a national sample of peers. For the RLN task, raw scores indicate that children whose scores met targets learned an average of 12 letters, whereas children whose scores did not meet targets learned an average of one letter.

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<sup>21</sup> We excluded the Leiter-R from this analysis. Because scores are truncated, we cannot assess the full range of progress among children whose scores met targets.

**Patterns of Progress Relative to Targets.** A key question for LAUP is: who was and who was not making progress and meeting the targeted change? Additional examination of performance by fall quartile indicated that children who began the year with lower scores (in the bottom or middle quartiles) were more likely than children beginning the year with strong skills to have change scores that met the targets for the measures of language, fine motor/literacy, literacy, and mathematics assessed in English. For mathematics assessed in Spanish, the opposite pattern emerged—children who began the year with the lowest scores were less likely to meet the targets.

We also conducted a series of subgroup analyses to shed further light on this issue, and found that the greatest progress occurred for children who began the year with the lowest scores (presented in Volume 2). For the groups in the quartile analysis (top, middle, bottom), there was some indication that children whose fall scores were at the lower end of the distribution within their own group were more likely to meet targets (for example, among children in the lowest quartile, average fall scores were lower for those whose progress did meet targets than for children whose progress did not). Similarly, within each language group, children whose progress met the level identified in the targets started the year with lower average scores than children whose progress did not.

Note that this pattern of progress—in which children who initially had the lowest scores made the greatest gains—is not surprising. It typically is easier for teachers to support progress for the lowest-performing children (assuming developmental disabilities are not present) than to maintain or raise the scores of children who enter programs performing above average. Children who performed at or above the national average in the fall and maintained their position relative to the national mean nonetheless were making absolute progress. For children who fall further behind peers of the same age, additional support and/or challenge may be needed to maintain and increase skills and knowledge. This is particularly true for vocabulary. Previous UPCOS analyses indicated that the variation in ability predicts the amount of progress, suggesting that children with the strongest vocabulary skills support the vocabulary growth of their peers (Xue et al. 2010a).

## IV. THE FAMILIES OF LAUP

To provide context for what we learned about child progress, we implemented a brief, self-administered questionnaire for parents in the fall. The 20-item questionnaire included questions on household routines (reading/looking at books with the child,) and parents' demographic and background characteristics (for example, race-ethnicity, education, household income, family structure). In this chapter, we provide an introduction to the families of LAUP (Table IV.1 and IV.2, Figures IV.1, IV.2, and IV.3). We follow this by an examination of child progress according to the number of economic and demographic risks a family faces (Tables IV.3 and IV.4). Among those who completed the questionnaire, 501 have children who were assessed in both the fall and spring; analyses in this chapter are based on that group. Analyses follow the same procedures as those presented in Chapter II—they were at the child level, weighted, and conducted using survey procedures that address the clustering of children within programs and classrooms. We also conducted statistical tests (for example, t-tests and ANOVAs) on the estimates of child progress according to the number of risks families face to illustrate whether there are fall-spring changes for each group and differences in the amount of fall-spring change between the two groups.

### A. An Introduction to LAUP Families

**Child and Parent Characteristics.** Children in LAUP are on average 53 months (4 years, 4 months) of age at the beginning of the program year.<sup>22</sup> The split between boys (48 percent) and girls (52 percent) in the program is roughly even. Parents reported on both children's home language use and what languages are spoken in the home. In terms of languages spoken in the home, eighty-two percent of children live in households in which a language other than English is spoken. Spanish is by far the most prevalent non-English language; 64 percent of children live in homes where Spanish is spoken. A language other than English or Spanish is used in the home for 18 percent of children. While households are highly likely to have members who speak a non-English language, parents reported that most children speak English only (37 percent) or primarily (33 percent). Eight percent of children speak Spanish only, and 17 percent speak Spanish primarily. Six percent of children speak a language other than English or Spanish.

Many LAUP children have parents<sup>23</sup> who were born outside of the United States; less than half have parents (40 percent of mothers and 38 percent of fathers) who were born in the country (Table IV.1). The majority of the children's parents are Hispanic/Latino (71 percent). Sixteen percent of children have parents who are Asian or Pacific Islander, 8 percent are African American, and 5 percent are white. Few LAUP children were born to a teenage mother (5 percent). On average, children were born to mothers who were age 29 at their birth and fathers who were 33 at their birth.

A sizable percentage of children's parents have education or training beyond high school (Table IV.1). Twenty-two percent of children's mothers have attended at least some college or technical school, 10 percent have an associate's or technical school degree, and 23 percent hold at least a bachelor's degree. There are similar patterns for children's fathers—18 percent have attended

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<sup>22</sup> Age at the start of the program year is based on the parent report of the child's date of birth and September 1, 2012, which we designate as the start of the program year.

<sup>23</sup> The vast majority of respondents to the questionnaire—96 percent—described themselves as the LAUP child's mother or father. Responses from those with some other relationship to the child are excluded from the descriptive statistics on parent characteristics.

at least some college or technical school, 12 percent have an associate’s or technical school degree, and 25 percent hold at least a bachelor’s degree.

**Table IV.1. Parent Characteristics**

	Mean (SD) or Percent
Mother’s age at focus child’s birth (n=397)	
Mean	29.07 (0.58)
Range	16–61
Teen mother at focus child’s birth (percent) (n=397)	4.98
Father’s age at focus child’s birth <sup>b</sup> (n=70)	
Mean	33.12 (0.77)
Range	18–50
Maternal education (percent in each category) (n=463)	
8th grade or less	9.81
Grades 9 to 11	12.19
12th grade/high school diploma/GED	22.02
Some technical school or college/associate’s degree	22.05
Technical school graduate or associate’s degree	10.45
Bachelor’s degree or more	23.47
Paternal education (percent in each category) (n=370)	
8th grade or less	10.25
Grades 9 to 11	16.04
12th grade/high school diploma/GED	19.53
Some technical school or college/associate’s degree	17.86
Technical school graduate or associate’s degree	11.50
Bachelor’s degree or more	24.82
Mother born in the United States (n=468)	40.47
Father born in the United States (n=366)	38.14
Race/ethnicity of parent respondents (percent in each category) (n=471)	
White, non-Latino	4.99
African American, non-Latino	7.66
Hispanic/Latino	71.29
Asian/Pacific Islander	15.86
Multiple race/other	0.20

Sources: UPCOS-6 Consent Form and Fall 2012 Brief Parent Questionnaire.

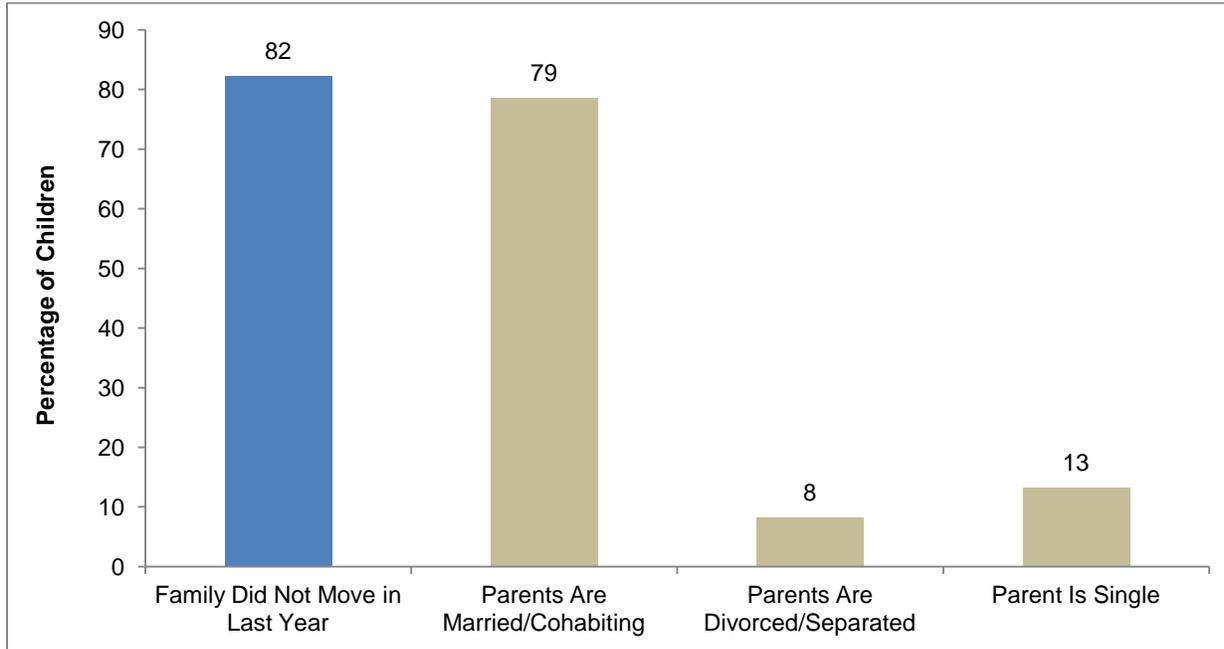
Notes: Based on respondent reports of the relationship to the LAUP child and gender, we categorized respondents as the mother (n=472) or father (n=85), or as having some other relationship with the child (n=22). Responses from those with some other relationship to the child are excluded from the descriptive statistics on parent characteristics. Respondents answered questions about education and country of origin for themselves and a spouse or cohabiting partner. The analysis shown in this table assumes that any mother or father who reported she or he was married or living with a partner was married or living with the LAUP child’s other parent. Because the sample size varies for parent characteristics depending on who responded and their marital status, the sample size is shown in the table for each parent characteristic.

**Household Routines and Characteristics.** On average, someone in the household reads or looks at books with the LAUP child 4.7 days (range 0 to 7) in a typical week. Most children (74 percent) are read to or look at books with someone four days a week or more. Twenty percent of children are read to or look at books with someone every day.

Most LAUP children live in stable households with married or cohabiting parents (Figure IV.2). Most have not moved within the last year (82 percent). Sixteen percent have moved once in the past year, and only 2 percent have moved two or more times. Seventy-nine percent of children have

parents who are married or cohabiting. Eight percent have divorced or separated parents, and 13 percent have parents who are single. On average, LAUP children live in households with 2.5 adults and 2.6 children, and almost half of children (44 percent) live in households with a total income below \$25,000 (Table IV.2). Approximately one-quarter have household incomes between \$25,000 and \$44,999; 16 percent have household incomes between \$45,000 and \$74,999; and 14 percent have household incomes greater than \$75,000.

**Figure IV.1. Household Stability and Composition**



Sources: UPCOS-6 Consent Form and Fall 2012 Brief Parent Questionnaire.

Note: All analyses are weighted to represent children attending LAUP in the 2012–2013 program year.

**Table IV.2. Household Characteristics**

	Mean (SD) or Percent
<b>Household Size</b>	
Mean number of adults and children	5.00 (0.15)
Mean number of adults (18 and older)	2.50 (0.07)
Mean number of children (17 and younger)	
0–5 years old	1.52 (0.04)
6–12 years old	0.70 (0.06)
13–17 years old	0.34 (0.06)
<b>Moves in Last Year (percent in each category)</b>	
None	82.20
1	16.05
2 or more	1.75
<b>Annual Household Income from All Sources (percent in each category)</b>	
Less than \$24,999	43.99
\$25,000 to \$44,999	26.36
\$45,000 to \$74,999	16.05
\$75,000 and above	13.61

Source: UPCOS-6 Brief Parent Questionnaire.

Notes: This table reflects all respondents, including mothers, fathers, and those who reported having some other relationship with the child. Data are missing for between 7 and 35 respondents for each variable shown in the table.

All analyses are weighted to represent children attending LAUP in the 2012–2013 program year.

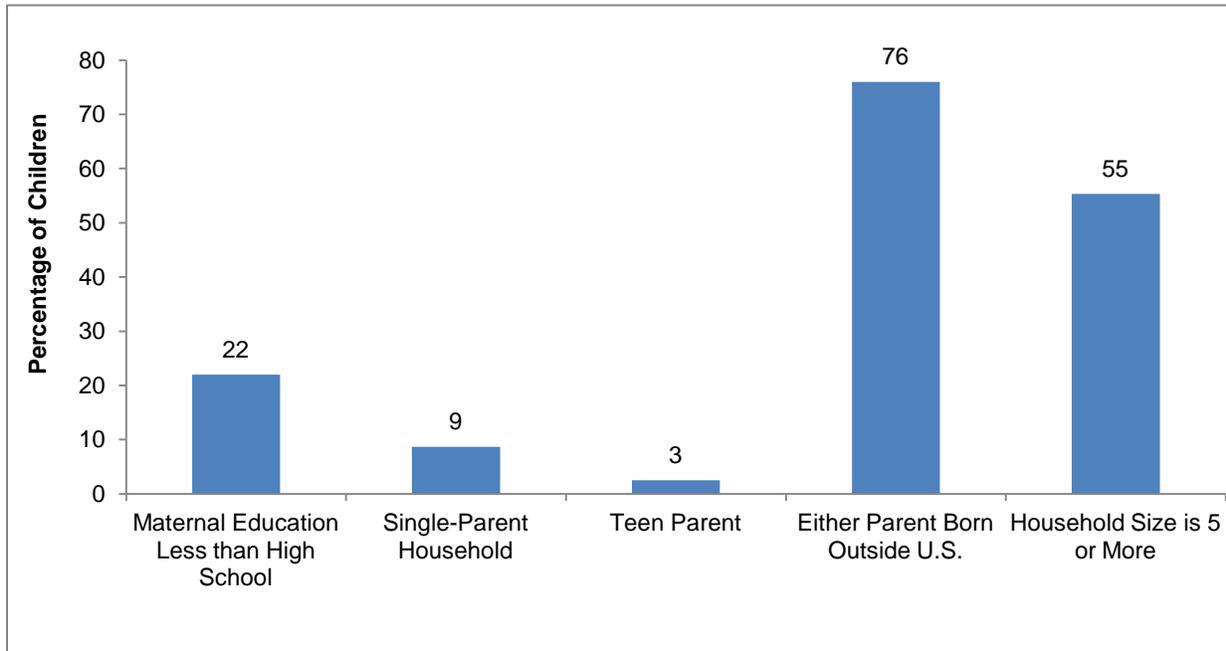
**Family Risk Factors.** Risk factors for poor development and educational outcomes include, but are not limited to, membership in a low-income family, residing in a single-parent household, and having a mother who did not complete high school (Croninger and Lee 2001; Pallas et al. 1989; Rathbun and West 2004; Zill and West 2001). Children with these risk factors are more likely to exhibit other risk factors, and research has shown that the accumulation of risks can have negative consequences for children’s development and school readiness (Downey et al. 2004; Rathbun and West 2004). We created an indicator of cumulative socioeconomic risk, using the following family risk factors: maternal education less than high school, single-parent household, teen parent household, either parent born outside of the United States, and household size of five or more.

Figure IV.2 shows the percentage of LAUP families that have each of the risks included in the family risk index; note that the figure is limited to the sample that responded to questions on all of the risk factors—385 of the 501 respondents whose children were assessed in both the fall and spring (77 percent). On average, LAUP children have close to two of these factors (mean = 1.7). Ten percent have none of the family risk factors; 71 percent have one or two risk factors, and 19 percent have three or more risk factors. The most common risk factors among families of LAUP children are having at least one parent born outside of the United States (76 percent) and household size of five or greater (55 percent). Other risks are less common.

## B. Child Progress by Family Risk

For the analysis of child progress by family risk, we sorted children in two groups: (1) zero, one, or two family risks; and (2) three, four, or five family risks. We refer to the former group of children as those with fewer family risks and children in the latter group as those with a high level of risks. Table IV.3 presents fall, spring, and fall-spring change scores for the language, literacy, and mathematics assessments, by family risk. Table IV.4 presents the same information for the assessments of social-emotional development and approaches to learning and physical well-being.

**Figure IV.2. Socioeconomic Risks of LAUP Families**



Source: Fall 2012 UPCOS-6 Brief Parent Questionnaire.

Notes: This figure is limited to parents who responded to questions on all of the risk factors and whose children also participated in fall and spring child assessments—385 of 501 respondents (77 percent).

All analyses are weighted to represent children attending LAUP in the 2012–2013 program year.

The mean number of reported family risks is 1.7, out of a possible 5.

Note that because some respondents to the parent questionnaire skipped questions on which family risk indicators are based, sample sizes are small in both risk groups for the WM-III subtests and in the high-risk group for the WJ-III subtest. Findings should be interpreted with these small sample sizes in mind.

**1. Language: EOWPVT**

Looking first at LAUP children’s language skills in an absolute sense (based on EOWPVT IRT scores), children with fewer family risks had higher scores in both the fall and the spring than those with more family risks. There was no difference in the amount of change the two groups made during the program year, however. Children in both family risk groups made progress in an absolute sense between the fall and spring.

**Table IV.3. Means and Standard Errors for UPCOS-6 Language, Literacy, and Math Measures, by Family Risk: Fall 2012–Spring 2013**

	0, 1, or 2 Risks						3 or More Risks							
	Fall 2012		Spring 2013		Fall-Spring Change		Fall 2012		Spring 2013		Fall-Spring Change			
	N	Mean	SE	Mean	SE	Mean	SE	N	Mean	SE	Mean	SE	Mean	SE
<b>Language: EOWPVT</b>														
IRT Score	137	48.53***	1.19	52.94	1.45	4.41	0.79	37	38.93***	1.58	43.57	1.88	4.65	1.06
English Edition Standard Score <sup>a,b</sup>	98	93.15	2.08	94.36	2.6	1.21*	1.65	13	79.91**	1.97	86.77	2.79	6.85	1.98
Spanish Bilingual Edition Standard Score <sup>a,b</sup>	137	113.27	2.48	113.66	2.52	0.39	1.45	37	91.66	3.23	94.35	4.03	2.7	2.44
<b>Literacy: RLN</b>														
Raw Score	137	11.67***	1.04	18.29	0.87	6.62	0.74	37	6.24***	1.05	12.92	1.61	6.69	1.28
IRT score	137	21.85***	1.3	29.7	0.97	7.85	0.88	37	14.84***	1.4	23.19	1.82	8.35	1.62
<b>Fine Motor and Literacy: WJ-III Spelling</b>														
W Score	111	383.80***	3.34	401.75	3.02	17.94*	2.13	14	374.89***	3.06	402.48	2.81	27.59	3.61
Standard Score <sup>a</sup>	111	106.44	1.55	108.22	1.57	1.78*	1.12	14	97.92**	2.84	105.03	1.8	7.11	2.00
<b>Fine Motor and Literacy: WM-III Ortografía</b>														
W Score	19	363.43**	4.89	383.95	7.25	20.52	6.45	19	358.32***	5.91	376.82	7.06	18.5	4.09
Standard Score <sup>a</sup>	19	96.47	2.45	99.34	3.38	2.87	3.6	19	92.87	3.4	94.06	4.2	1.19	2.33
<b>Mathematics: WJ-III Applied Problems</b>														
W Score	111	398.16***	3.01	410.81	2.69	12.64	1.58	14	392.11***	4.42	409.17	3.49	17.06	3.38
Standard Score <sup>a</sup>	111	101.85	1.65	102.99	1.51	1.14	0.94	14	95.26*	2.42	98.76	2.00	3.5	1.49
<b>Mathematics: WM-III Problemas Aplicados</b>														
W Score	19	365.20***	7.99	385.32	7.72	20.12	5.07	19	335.20**	8.52	359.5	6.02	24.3	6.29
Standard Score <sup>a</sup>	19	85.90	3.39	89.76	3.25	3.86	2.23	19	72.14	3.73	77.16	2.84	5.02	2.87

Sources: UPCOS-6 Fall 2012 and Spring 2013 Direct Child Assessments and Fall 2012 Brief Parent Questionnaire.

Note: The risk index is made up of the following indicators (one point is added for each one that characterizes a child's family): maternal education less than high school, single/divorced/separated parent, a teen parent, a parent not born in U.S., and a household size of five or more. Data are missing for between 7 and 92 of the 501 respondents to the brief parent questionnaire whose children participated in the direct assessments in the fall and spring for each of the indicators included in the risk index. We calculated the risk index only for parent respondents with data for all of the indicators—a total of 385 parents.

All analyses are weighted to represent children attending LAUP in the 2012–2013 program year. Asterisks on fall scores indicate statistically significant progress from fall to spring. Asterisks on a fall-spring change score indicate progress differs for the two groups.

<sup>a</sup>National mean for standard scores is 100, with a standard deviation of 15.

<sup>b</sup>This measure was conceptually scored. For the English edition, the standard score was generated only for children assessed in English. For the Spanish bilingual edition, the standard score was generated for all children in the sample.

\* Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

\*\*\*Significantly different from zero at the .001 level, two-tailed test.

Shifting to standard scores, neither group made progress relative to bilingual peers during the year, and only the high-risk group made progress relative to English peers. The mean English standard scores indicated that children in both groups were scoring below the mean of a national sample of same-age English-speaking peers in the fall and spring. In the fall, children with fewer family risks scored higher than those with more family risks on this measure. This pattern did not continue into the spring, when both groups scored similarly relative to English-speaking peers. Children with fewer family risks made less progress than a national sample of same-age peers during the program year on this measure, while those with more family risks made more progress than same-age peers nationally (with an average change of 1.2 and 6.9 points, respectively). SBE standard scores, estimated for all children, indicated that children with fewer family risks outperformed their same-age peers in the national bilingual sample in both the fall and spring. Children with a greater number of risks scored below the national sample of bilingual peers at both time points.

## **2. Literacy: RLN**

Children in both family risk groups made progress from fall to spring on the RLN, based on both raw scores (the number of letters) and IRT scores. There were no differences in the amount of change children made during the year on either score, with children in both groups making similar amounts of progress.

## **3. Fine Motor and Literacy: WJ-III Spelling**

For fine motor and literacy development as measured by the WJ-III Spelling subtest, children in both family risk groups made absolute progress from fall to spring (with an average change of 17.9 and 27.6, respectively, based on *W* scores). The progress of children with fewer family risks was similar to that of a national sample of same-age peers (with an average change of 1.8 standard score points). In both fall and spring, children in this group scored above the national average on the English Spelling subtest. Meanwhile, children with more family risks made more progress on this measure than same-age peers nationally (with an average change of 7.1 points), scoring above the national average by the spring.

## **4. Fine Motor and Literacy: WM-III Ortografía**

Shifting to the Spanish measure of fine motor and literacy (WM-III Ortografía<sup>24</sup>), absolute gains were significant for children in both family risk groups. Neither group of children made significant progress relative to a national sample of same-age Spanish-speaking peers. In both fall and spring, on average, the performance of children in both family risk groups was below that of their peers, although that of children with fewer family risks was close to norms in the spring. Those with fewer family risks made more progress than a national sample of peers on this measure, while those with more family risks made similar progress (with an average change of 2.9 and 1.2 points, respectively).

## **5. Mathematics: WJ-III Applied Problems**

For mathematics development as measured by the WJ-III Applied Problems subtest, children in both family risk groups made significant progress in absolute terms (12.6 and 17.1, respectively). The progress of children with fewer family risks kept pace with that of a national sample of same-age

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<sup>24</sup> It is important to remember that WM-III scores reflect the progress and status of children who took the assessment in Spanish in both fall and spring. Forty-three percent of the children assessed in Spanish in the fall who completed the WM-III switched to English in the spring.

peers, and their standard scores were around the national average of 100 in both fall and spring. Children with more family risks progressed more than same-age peers during the program year and scored close to norms in the spring.

## **6. Mathematics: WM-III Problemas Aplicados**

Shifting to the Spanish-language measure of mathematics (WM-III Problemas Aplicados<sup>25</sup>), absolute gains were significant for both groups of children. Neither group of children made significant progress relative to a national sample of same-age Spanish-speaking peers (although, on average, children had one-third of a standard deviation increase in standard scores, the estimates have greater error). The scores for both groups were below the national mean in both the fall and spring. Children with fewer family risks scored closer to same-age peers than those with more family risks on this measure in both the fall and the spring.

## **7. Social-Emotional and Approaches to Learning: Leiter-R**

In Table IV.4, we report the percentage of children scoring in the expected range for each of the Leiter-R subscales. In the national sample, 84 percent of children score in the expected range. In LAUP, the percentage of children scoring in the expected range for Attention, Activity Level, and Sociability was already high in the fall and exceeded the national average for all three subtests in both risk groups. By the spring, 97 to 100 percent of LAUP children in both risk groups scored in the expected range for each subtest. Changes from the fall to spring were not statistically significant.

## **8. BMI**

While rates of overweight were similar for children in both risk groups in the fall and spring, the rate of obesity was higher among children in families with more socioeconomic risks (Table IV.4). By the spring, 17 percent of children with two or fewer family risks were overweight and 18 percent of those with three or more risks were overweight. While 13 percent of children with two or fewer risks were obese in the spring, 27 percent of those in the higher risk group were obese. The fall-spring changes in obesity and overweight were not statistically significant for either group.

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<sup>25</sup> Ibid, 24.

**Table IV.4. Percentage of Children Scoring in the Expected Range for Social-Emotional and Approaches to Learning Measures and Overweight or Obese for Physical Health Measure: Fall 2012 and Spring 2013**

	0, 1, or 2 Risks <sup>a</sup>								3 or More Risks <sup>a</sup>							
	Fall 2012			Spring 2013			Fall-Spring Change		Fall 2012			Spring 2013			Fall-Spring Change	
	N	Percentage	SE	Percentage	SE	Percentage	SE	N	Percentage	SE	Percentage	SE	Percentage	SE		
<b>Social-Emotional and Approaches to Learning: Leiter-R Examiner Ratings Scaled Score in the Expected Range<sup>a</sup></b>																
Attention	137	96.69	2.24	98.49	1.03	1.80	2.39	37	100.00	0	97.34	2.65	-2.66	2.65		
Activity	137	96.07	1.84	99.07	0.93	3.00	1.64	37	91.85	4.1	97.34	2.65	5.49	3.49		
Sociability	137	92.84	2.43	97.77	1.58	4.93	2.76	37	91.39	4.28	100.00	0	8.61	4.28		
<b>BMI</b>																
Child is overweight <sup>b</sup>	300	15.09	1.83	17.44	2.05	2.35	1.83	79	14.02	3.90	17.54	4.42	3.53	3.83		
Child is obese <sup>c</sup>	300	13.93	2.09	13.07	2.43	-0.86	1.74	79	27.12	4.74	26.99	5.11	-0.13	4.43		

Source: UPCOS-6 Fall 2012 and Spring 2013 Direct Child Assessment and Fall 2012 Brief Parent Questionnaire.

Note: All analyses are weighted to represent children attending LAUP in the 2012–2013 program year.

<sup>a</sup>Scores of 7 or greater out of 10.

<sup>b</sup>When child's gender-specific BMI-for-age is between the 85th and 94th percentiles.

<sup>c</sup>When child's gender-specific BMI-for-age is at or above the 95th percentile.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

\*\*\*Significantly different from zero at the .001 level, two-tailed test.

### **C. Summary**

LAUP families and households are diverse in the resources available to them and the risks that they face. In terms resources, approximately three-quarters of mothers and fathers have a 12<sup>th</sup>-grade education or higher, and almost one-third have a technical or associate's degree or more. More than three-quarters of families also appear relatively stable; they did not move in the prior year, and the parents were married or cohabiting.

Regarding risk, we examined cumulative socioeconomic risk because research has shown that the accumulation of risks can have negative consequences for children's development and school readiness (Downey et al. 2004; Rathbun and West 2004). Using five family risk factors (maternal education less than high school, single-parent household, teen parent household, either parent born outside of the United States, and household size of five or more), we found that, on average, LAUP children have close to two of these factors. Nineteen percent of families have three or more risks.

In examining patterns of progress in 2012–2013 by the level of family risk (two or fewer risks versus three or more), there were no consistent patterns across measures as to which group made (greater) gains or had higher spring scores. It does appear that children with fewer family risks have stronger expressive vocabulary and letter naming scores in the spring and, for children assessed in Spanish, stronger mathematics skills. Social-emotional development is a strength of children in both groups. Rates of obesity are higher among those with three or more risks. Results should be interpreted with caution in light of the small sample sizes.

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