

# YOUNG CHILDREN'S RESILIENCE IN THE WAKE OF THE COVID-19 PANDEMIC

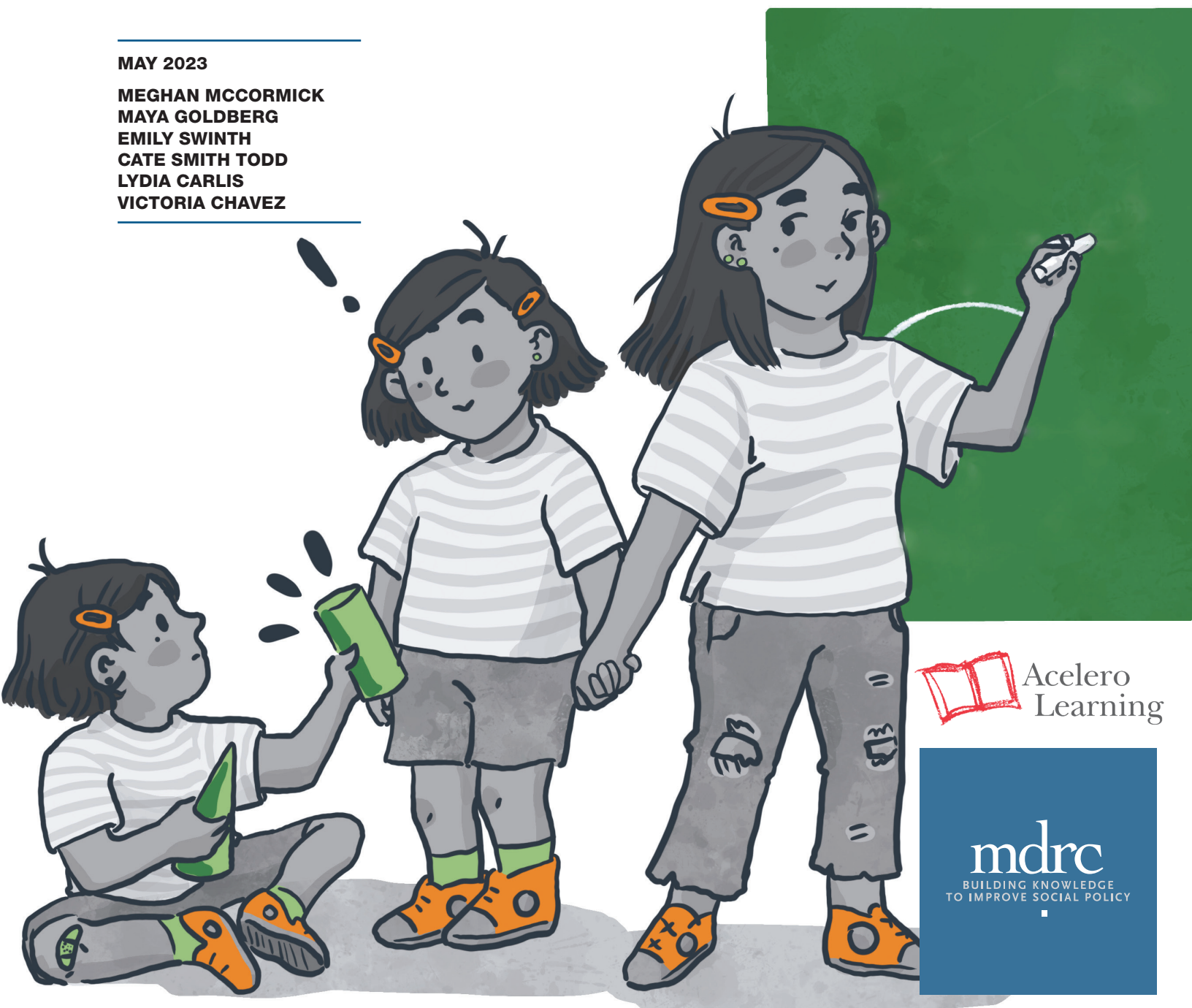
## Evidence from Acelero Learning Head Start Programs

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There is clear evidence that the COVID-19 pandemic had significant negative effects on the learning and development of school-age children in the United States, with disproportionate impacts on children from racially, ethnically, and socioeconomically marginalized groups.<sup>1</sup> There is less consistent evidence on the extent to which the pandemic affected younger, preschool-age children. Some studies have linked the stress and disruption caused by the pandemic to delays in language and cognitive development and increases in social-emotional difficulties among young children, while others have found little direct effect of the crisis on early skills.<sup>2</sup> It is difficult to reconcile these mixed research findings, however, because there has been very little systematic data collected on 3- and 4-year-olds' learning and development over the last three years.<sup>3</sup> There is a clear need for better information on the academic and cognitive development of the country's youngest learners—particularly those from marginalized groups—in the wake of the pandemic.

In 2021, MDRC and Head Start-grantee Acelero Learning began a research-practice partnership in part to address this need. Acelero Learning operates dozens of Head Start centers serving thousands of children in four delegate sites across the country: Camden, NJ/Philadelphia, PA; Monmouth/Middlesex Counties, NJ; Milwaukee/Racine, WI; and Clark County, NV.<sup>4</sup> The organization has received national recognition for its high-quality Head Start programs, which implement curricula to enhance school readiness supported by teacher coaching and training and data-informed decision-making.<sup>5</sup>

Acelero Learning wanted a better understanding of whether children in their programs were exhibiting *resilience* during the pandemic recovery. That is, were their scores on assessments across a variety of domains similar to or perhaps better than those of similar populations of children attending Head Start and Acelero Learning programs in the years before the crisis?<sup>6</sup> This report summarizes the initial results from a study led by MDRC that is examining post-pandemic language, literacy, math, and executive functioning skills for children enrolled in Acelero Learning programs. The study aims to answer two questions:

1. To what extent did 3- and 4-year-old children enrolled in Acelero Learning programs exhibit resilience two years after the start of the pandemic?
2. Did children's growth in academic and cognitive skills during this time vary by demographic group, including race and ethnicity, age, gender, and language background?

The initial findings show that two years after the onset of the pandemic, children enrolled in Acelero Learning programs were making statistically significant learning gains in language, literacy, and executive functioning skills—gains that were in line with or faster than those of children in Acelero Learning programs before the pandemic.<sup>7</sup> Overall math scores, on the other hand, were lower and growth was slower compared with pre-pandemic levels; this trend in math is similar to patterns observed in comparable data focusing on school-age children.<sup>8</sup> The findings also show that 4-year-old children generally had faster growth compared with their younger peers, and that boys and children from single parent families made larger gains in language skills than girls and children from two-parent families. Although the results are only descriptive, they

provide some needed evidence regarding the academic and cognitive skills of children in Head Start during the pandemic recovery and highlight the importance of conducting further research in order to support children’s development during this unprecedented time.

## STUDY DESIGN AND DATA COLLECTION

To create a generalizable study sample, the research team randomly selected 37 centers (from all Acelero Learning centers) in January 2022 to participate in the study. The sample included 79 classrooms and 475 children, split roughly evenly across the four delegate sites. (Instruction took place in-person for all children during the 2021–2022 school year.) In February and March, 2022, the field-based researchers, directed by Acelero Learning staff members, collected direct assessments of children’s skills in language, literacy (both print knowledge and phonological awareness), math, and executive functioning. (See Box 1 for a complete list of the assessments used). The team repeated this process in May and June, 2022. About three quarters of the original sample participated in the spring assessments, allowing the team to examine growth for a total of 343 children. The assessments employed are all widely used measures and have been used in other studies of Head Start programs in general and Acelero Learning programs in particular, allowing for comparisons with other research done both pre- and post-pandemic.

### Box 1. Assessments Collected in the Acelero Learning Study

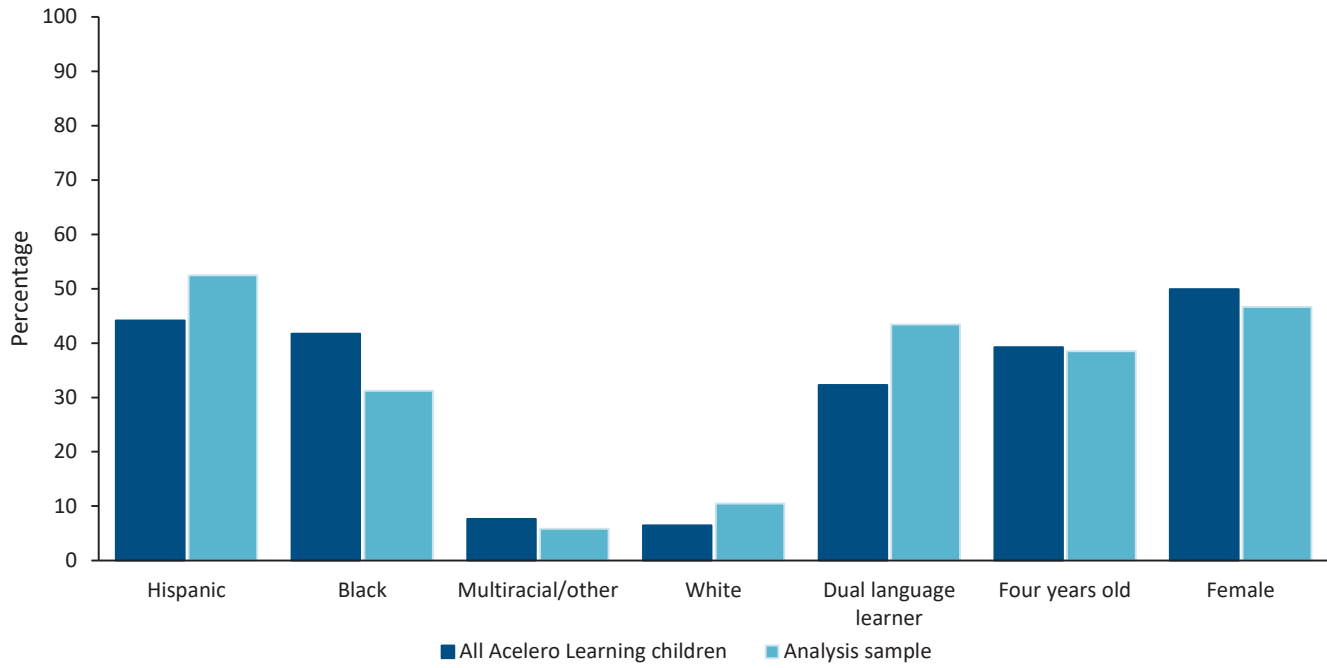
A range of children’s skills were measured in the winter and spring of 2022 using five widely used assessments:

1. [Peabody Picture Vocabulary Test – V \(PPVT-V\)](#) assesses children’s ability to understand and comprehend words in English. This assessment captures receptive vocabulary.
2. [Woodcock Johnson Applied Problems – IV \(WJAP-IV\)](#) measures children’s early numeracy and arithmetic skills. It is a broad measure of math skills.
3. [Test of Preschool Early Literacy – Print Knowledge \(TOPEL-PK\)](#) assesses children’s early literacy skills, primarily concepts of print, letter, and sound knowledge.
4. [Test of Preschool Early Literacy – Phonological Awareness \(TOPEL-PA\)](#) measures early phonological awareness, specifically elision and word blending.
5. [Minnesota Executive Functioning Scale \(MEFS\)](#) assesses children’s executive functioning, creating one score to capture inhibitory control, cognitive flexibility, and working memory.

## CHARACTERISTICS OF PARTICIPATING CHILDREN

The large majority of children in the current study were from families with lower incomes or who were experiencing poverty. As shown in Figure 1, children in the analysis sample were largely Hispanic or Black (52 percent and 31 percent, respectively), and a little less than half were dual language learners (DLLs). About 40 percent of children in the analysis sample were 4 years old at the beginning of the Head Start year in 2021 and about 60 percent were 3 years old or younger. Compared with the full sample of children enrolled in Acelero Learning in 2021–2022, children in the analysis sample were more likely to be Hispanic and DLLs and less likely to be Black. Children in the analysis sample were demographically similar to children in earlier studies of Acelero Learning programs. However, they were more likely to be Black or Hispanic and less likely to be White compared with children in *national* studies of Head Start before the pandemic.<sup>9</sup>

**Figure 1. Demographic Characteristics of All Children Enrolled in Acelero Learning Head Start Programs in 2021–2022 Compared with Children in the Analysis Sample**



SOURCE: Acelero Learning intake demographics data.

## ANALYSIS AND RESULTS

The research team used descriptive statistics to examine raw and standardized scores on measures of language, print knowledge, phonological awareness, math, and executive functioning. For each assessment, the raw score represents the total number of items that the child answered correctly. Because young children learn and develop rapidly, raw scores—or the overall amount of knowledge children have in a given domain—would be expected to improve in some way over time for all children. Examination of raw scores allowed researchers to describe children’s gains in terms of standard deviation units.<sup>10</sup>

In contrast, the standardized score indicates how well the child performed on the assessment relative to the pre-pandemic average for children of the same age. A standardized score of 100 represents the national average, 85 or lower (or 1 standard deviation below the mean) is below average, and 115 or higher (or 1 standard deviation above the mean) is above average.<sup>11</sup> By examining standardized scores, the research team was able to directly compare children in this study to earlier research samples and to examine whether children made meaningful growth in key learning domains during this period relative to pre-pandemic norms. Box 2 describes the other study samples to which the current findings are compared.

## Box 2. Summary of Comparison Samples

The research team compared the scores of children in the current Acelero Learning sample with three different studies conducted pre- and post-pandemic.

**1. Acelero Learning NIEER:**\* This sample includes children who were demographically similar to the current study sample and were enrolled in a representative group of Acelero Learning Head Start centers (including all four study sites) during the 2014–2015 school year. These students participated in an earlier study of Acelero Learning Head Start led by the National Institute for Early Education Research (NIEER).

**2. Head Start FACES:**† The team compared the current sample to a nationally representative sample participating in the Head Start Family and Child Experiences Survey (FACES) from 2014–2015. This sample included Head Start programs across the country, making it demographically different from the current study's sample. The FACES sample has similar gender demographics, but significantly more White children and significantly fewer Hispanic and non-Hispanic Black children than in the current sample. The current study sampled more 3-year-olds than the FACES study, which included more 4-year-olds.

**3. Acelero Learning Post-Pandemic:**‡ The team compared the current sample with a post-pandemic sample of Head Start centers during 2020–2021 studied by a different research team from the Annenberg Institute. Compared with the sample pulled post-pandemic, the current sample is equivalent in race demographics and in dual language learner status. However, the current study sampled significantly more 3-year-old students and significantly fewer 4-year-old students than the post-pandemic sample.

SOURCES: \*Steve Barnett and Kwanghee Jung, *Acelero Learning 2011-2012 Program Evaluation—Summary Report* (New Brunswick, NJ: National Institute for Early Education Research, Rutgers University, 2013).

†Nikki Aikens, Mikia Manley, Ashley Kopack Klein, Lizabeth Malone, Emily Knas, Louisa Tarullo, Jacob Hartog, and Serge Lukashanets, *Child and Family Outcomes During the Head Start Year: FACES 2014-2015 Data Tables and Study Design*. OPRE Report 2017-100 (Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, 2017).

‡Leiah Groom-Thomas, Demetra Kalogrides, Monica Lee, Susanna Loeb, and Kathleen Lynch, *Acelero Learning: Annual Report* (Providence, RI: Annenberg Institute at Brown University, 2021).

The following key findings emerged:

- **Learning gains were fastest for language and phonological awareness.**

Over a three-month period in the spring of 2022 (mean = 2.9 months, standard deviation = 0.4, representing the period between the winter and spring assessment), children in the current Acelero Learning sample made statistically significant gains in their overall language, print knowledge, phonological awareness, executive functioning, and math skills (see raw scores in Table 1). Children in the current sample also made statistically significant improvements in language and phonological awareness relative to pre-pandemic national norms (see standardized scores in Table 1).

The rate of growth was aligned with what would be expected in math and somewhat slower in print knowledge. The latter result may reflect children generally scoring relatively high on this domain and having less room to grow between winter and spring.



**Table 1. Gains by Children in the Analysis Sample in Raw and Standardized Scores on Academic and Cognitive Skills Assessments, Winter 2022–Spring 2022**

ASSESSMENT	STANDARDIZED SCORES			RAW SCORES			STD. DIFF.
	WINTER	SPRING	DIFF.	WINTER	SPRING	DIFF.	
Language (PPVT)	85.69	88.20	2.51 ***	61.13	69.34	8.21 ***	0.29
Math (WJAP)	83.84	85.22	1.38	7.03	8.24	1.21 ***	0.27
Print knowledge (TOPEL-PK)	94.88	95.27	0.39	12.33	14.37	2.04 ***	0.19
Phonological awareness (TOPEL-PA)	83.93	86.39	2.46 **	9.68	11.47	1.79 ***	0.30
Executive functioning (MEFS)	96.05	96.71	0.66	36.58	43.10	6.52 ***	
Sample size							343

NOTES: Table only summarizes scores for students assessed at both time points and with valid assessments. \*\*\* indicates significant difference in winter and spring scores at  $p < 0.001$ , \*\* indicates  $p < 0.01$ , \* indicates  $p < 0.05$ . P-values are from paired sample t-tests.

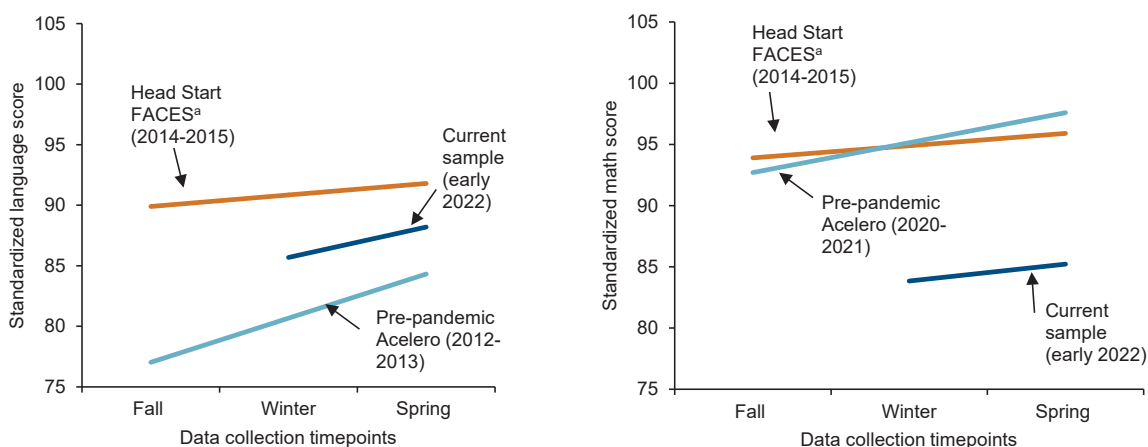
- **Overall scores and learning gains in language, literacy and executive functioning were comparable to pre-pandemic norms, while math scores were lower.**

In general, children in the current Acelero Learning sample (navy blue bar in the left panel of Figure 2) scored higher on assessments of language compared with the pre-pandemic Acelero Learning sample (light blue bar in the left panel of Figure 2). Compared with a pre-pandemic, nationally representative sample of children in Head Start (denoted by the orange bar in the left panel of Figure 2), overall language scores were lower in the current Acelero Learning sample, but literacy scores were similar (literacy not shown). Gains in language (that is, the rate of change indicated by the slopes of the lines in Figure 2) for the current sample were consistent with those observed in pre-pandemic samples. Patterns for literacy were similar (not shown).

Overall scores on math assessments for the current sample, relative to pre-pandemic norms, were lower than both the pre-pandemic national Head Start sample and the pre-pandemic Acelero Learning sample; *gains* in math were similar to the pre-pandemic national Head Start sample but slower than the comparable sample of pre-pandemic Acelero Learning students (shown in the right panel of Figure 2).<sup>12</sup>

It was also helpful to compare gains for children in the current sample (2021–2022) with those for children who were enrolled in Acelero Learning programs during the prior school year (2020–2021), when schools continued to experience significant disruptions and closures due to the pandemic. The current sample of children made comparable or faster gains in language and math skills from winter to spring 2022 compared with children who were assessed virtually during the prior (2020–2021) academic year.<sup>13</sup>

**Figure 2. Gains in Language and Math for Children in the Current Analysis Sample and Pre-Pandemic Comparison Groups**



SOURCES: Calculations using data from the Acelero Learning Annual Report done at the Annenberg Institute; the 2014-2015 data from the Family and Child Experiences Survey (FACES); and data from NIEER’s Acelero Learning 2014-2015 Program Evaluation.

- **There was variation in gains for children by age group, by gender, and for children living in single-parent households.**

Gains in early 2022 were generally similar for Head Start children across different demographic groups, including race, ethnicity, and DLL status. However, older children (those who were 4 years old at the start of the Head Start year) made faster gains in language, phonological awareness, and math skills than younger children (those under age 4), and boys made larger gains in language skills than girls during this period. Children from families with single parents also made larger gains in language than children living in two-parent households. Differences in gains across domains were substantial and ranged from about 1.5 months to 3 months of learning.<sup>14</sup>

## IMPLICATIONS AND NEXT STEPS

These findings provide some of the first evidence on learning by children in Head Start post-pandemic. There are a number of bright spots and reasons to be optimistic. Children in Acelero Learning programs were learning rapidly in all domains. In language, literacy, and executive functioning, their performance scores and gains were in line with (or faster than) those of similar children in pre-pandemic Acelero Learning programs.<sup>15</sup> However, there are areas for further work. Overall scores were lower and growth was slower in math post-pandemic compared with pre-pandemic levels, similar to performance data for school-age children.<sup>16</sup> Importantly, however, growth in math in the current sample was slightly faster compared with data collected during the 2021–2022 Head Start year with a similar population of children attending Acelero Learning programs.<sup>17</sup> Further investigation into how teachers are working to support math—a

domain that tends to be more influenced by in-school, direct instruction—may be important for continuing to strengthen Head Start programming.

There are also inklings from this study that the children perhaps most negatively affected by the pandemic are bouncing back. For example, previous studies have found that children who attend pre-K for two consecutive years—at ages 3 and 4—make bigger learning gains in their first year and then slow down as 4-year-olds.<sup>18</sup> In the current study, however, the team found that 4-year-olds made *faster* progress than their 3-year-old peers in key learning domains. This finding could reflect these children making the gains they missed out on in the prior two years due to pandemic-related disruptions. These children—43.2 percent of whom did not attend Acelero Learning programs as 3-year-olds—could also simply be making the gains they missed out on if they did not get a chance to attend formal early care and education as a 3-year-old. This catch-up pattern may explain why the research team also observed faster gains in language skills for boys and children from single-parent households during this time. For example, even using pre-pandemic data, some studies have found that young boys tend to score lower than girls on measures of vocabulary skills.<sup>19</sup> Pandemic-related disruptions could have been particularly challenging for boys and children from single-parent households, but evidence from the current study suggests that they may have made up on missed gains during this last Head Start year. Indeed, data from the prior academic year—2020–2021—showed that children from single parent households were scoring significantly *lower* and making slower gains than their peers on assessments.<sup>20</sup>

This study is descriptive and it is impossible to draw any causal conclusions from the findings. In addition, there are likely key, unobserved differences across pre- and post-pandemic samples that could in part explain the pattern of results. Despite these limitations, the data provide some hope that young children from marginalized groups who are enrolled in high-quality early care and education are exhibiting resilience in the wake of the pandemic. Future research by MDRC will report on children’s development across the full 2022–2023 school year, identify how key features of instructional environments are supporting children’s learning, and determine whether there are subgroups of children who are particularly resilient or who need further targeted intervention. Taken together, the findings also support the importance of investing in systematic data collection on young children’s skills prior to elementary school as a tool to build stronger early care and education systems.



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10. The team divided the gain score by the standard deviation of the raw score in the spring to describe the gain in standard deviation units. The team then used established pre-pandemic normative metrics for typical gains in reading and math skills. See Mark W. Lipsey, Kelly Puzio, Cathy Yun, Michael A. Hebert, Kasia Steinka-Fry, Mikel W. Cole, Megan Roberts, Karen S. Anthony, and Matthew D. Busick, *Translating the Statistical Representation of the Effects of Education Interventions Into More Readily Interpretable Forms* (Washington, DC: National Center for Special Education Research, Institute of Education Sciences, U.S. Department of

Education, 2012). The team compared those metrics with the actual amount of time between assessments (2.94 months, with a standard deviation = .39). This helped to determine whether gains were aligned with the typical speed of learning that would be expected in these domains.

11. The standard deviation for each standardized score is 15. This study considered children who scored within 1 standard deviation of the mean to be within the average range.
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