An Evaluation of the

JUMPSTART CALIFORNIA PROGRAM 2017-2018

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Acknowledgements

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About CCR Analytics ccr-analytics.com

Since 2006, CCR Analytics has consistently raised the bar on the quality of analysis conducted on the operational data of early education agencies. We believe in providing the early education sector with the information and analysis they need to accomplish their mission. We do this by supporting data collection efforts, providing top-notch analysis, and delivering trainings to all levels of the organization. CCR works with over 100 early education agencies, including some of the largest (and smallest) non-profits and school districts in the country. Our goal is to provide high quality, cost effective insight and analysis to the early education sector.

About Child Care Resource Center (CCRC) ccrcca.org

CCRC is a unique and distinctive leader in the early care and education industry whose mission is to cultivate child, family and community well-being. As a nonprofit organization, each month CCRC provides programs to almost 50,000 children and the adults who support them in the communities of the Antelope, San Fernando, and Santa Clarita Valleys as well as the entirety of San Bernardino County. This evaluation was supported by CCRC's Research and Evaluation team. This team includes 16 professionals skilled in data science that is both grounded in the community and has policy-level impact intended to positively affect the lives of all communities.

Executive Summary

Key Findings

- Children participating in the Jumpstart program were found to be making strong progress toward school readiness.

- The differences in developmental growth between Jumpstart children and children in the comparison group were not statistically significant.

- Given the Jumpstart-dosage target (100 hours in a program year), impact expectations should be low -- likely lower than 0.15. Finding effect sizes in that range requires finely tuned measurement tools and large sample sizes -- neither of which were available for this evaluation.

- A likely secondary outcome of Jumpstart is the support provided to teachers and other early education staff. The evaluation team recommends including data and analysis of those supports as an element of future evaluations.

Jumpstart is an early education organization with the vision that "every child in America enters kindergarten prepared to succeed." Their mission is to provide language, literacy, and social-emotional programming for preschool children from under-resourced communities across the nation and promote quality early learning for all. Jumpstart hopes to achieve this mission by partnering with adults, known as Jumpstart Corps members, from local colleges and universities as well as other local partners, who are trained in the Jumpstart curriculum to engage with preschool children during classroom sessions and Child Centered Time. Given the documented link between low adult literacy level and ill social and economic outcomes, programs that impact children's literacy development such as Jumpstart are critical to ensure children's future success.

An evaluation was conducted of the 2017-2018 program year to examine the effect of Jumpstart on children's language, literacy, and social-emotional development in preschool programs in California. The evaluation focused on two critical questions:

1. *Are Jumpstart participants making developmental gains that will make them more school ready?*

2. *Do Jumpstart participants demonstrate greater gains than comparison children over the program year on a developmental continuum measure (the Desired Results Developmental Profile (DRDP) (2015): Preschool View)?*

In answer to the first question, children participating in the Jumpstart program were found to be making strong progress toward school readiness. While few children were meeting age specific developmental expectations during the Pre-Assessment, the majority of children were meeting age expectations in each domain by the Post-Assessment. Jumpstart children are experiencing healthy growth and are either on-track to being school ready or are moving closer to that target.

Figure 2. Percentage of Jumpstart Participants Meeting Age Adjusted Developmental Expectations
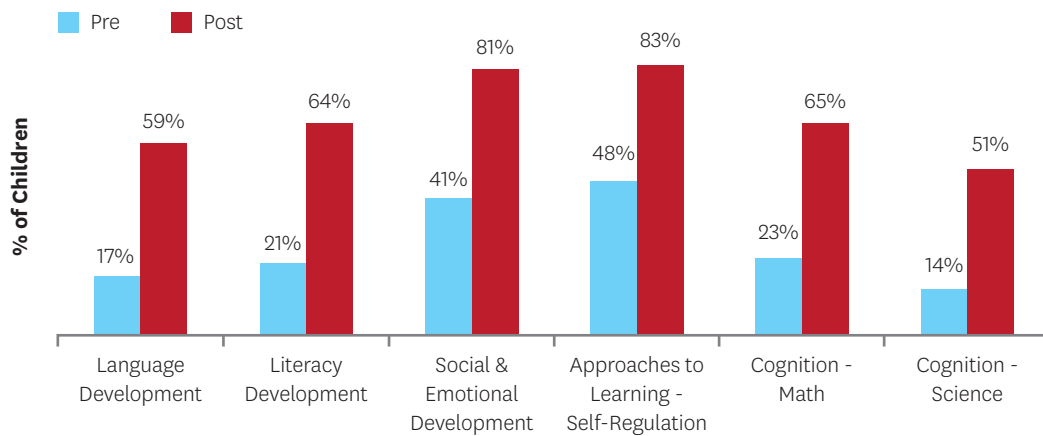
To answer the second question, a quasi-experimental design was used to examine whether Jumpstart participants demonstrated greater gains than a group of comparison participants using the DRDP (2015). The DRDP is widely recognized and used in California to measure children's early learning and development. Children's fall 2017 Pre-Assessment and spring 2018 Post-Assessment observations on the DRDP domains and subdomains of Language Development, Literacy Development, Social and Emotional Development, Approaches to Learning-Self-Regulation, Cognition-Math, and Cognition-Science were analyzed. Preschool settings for which DRDP data was available were included in the evaluation. Special needs classifications, Pre-Assessment scores, and child demographic data including child gender, home language, and ethnicity were first used to match Jumpstart classrooms with non-Jumpstart classrooms to identify the comparison group. The result was a sample size of 683 children (294 children in the Jumpstart program and 389 children in the comparison group), all in Head Start programs with Jumpstart services provided by Jumpstart members from seven colleges and universities.

Differences in growth on the DRDP domains and subdomains between Jumpstart children and the comparison group ranged from 0.1 to 1.3 points. However, the gains for children in the Jumpstart group were not significantly greater than the gains for children in the comparison group. Regression models were built for each DRDP domain and subdomain controlling for child and program variables including child age (in months) at the time of Pre-Assessment, number of days between Pre- and Post-Assessment, and full- versus part-day program participation among additional variables to test for effect of the intervention. While the pre-regression effect sizes for Language Development (0.11) and Cognition-Math (0.07) were at the expected level, the differences in growth between both groups of children were not statistically significant.

Figure 3. Side by Side Growth for Comparison and Jumpstart Groups
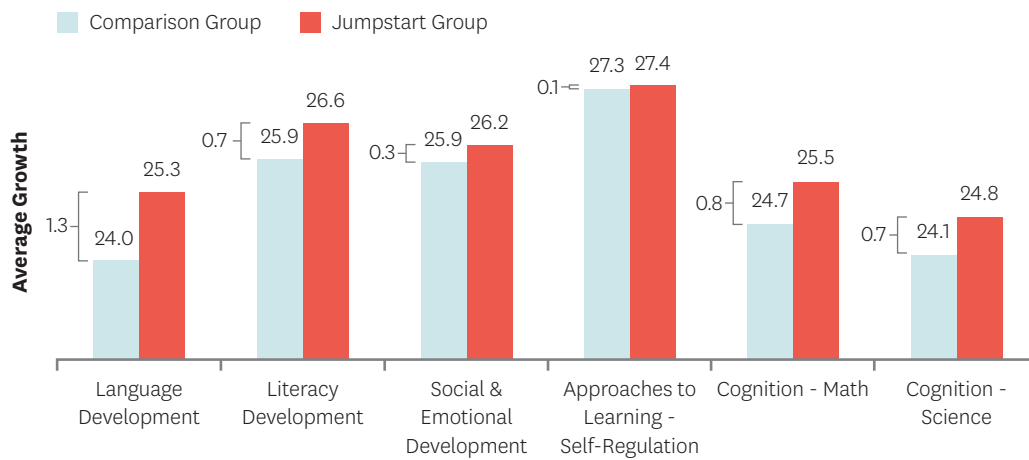
It is important to set reasonable expectations in evaluating programs like Jumpstart. A typical part-day preschool program provides over 600 hours of services in a program year. A quality preschool program might have an effect size of 0.5. CCR Analytics' 2014 analysis of nearly 50,000 California Head Start children found effect sizes in the range of 0.39 to 0.48 using the DRDP (2010). The 2010 National Head Start Impact Study found effect sizes in the range of 0.09 to 0.26. Within this context, expectations for a program that provides 100 hours of service should be modest. We would be surprised to see Jumpstart effect sizes much larger than 0.1 to 0.15. Finding effect sizes in that range requires a finely tuned measurement tool and a large sample size (CCR Analytics, 2014; Westat, 2010).

This evaluation had several limitations including lack of available data from the complete sample of settings delivering the Jumpstart curriculum. Various obstacles, including logistical challenges in accessing and extracting early education programs' DRDP data resulted in the inclusion of data for seven of the 14 campuses Jumpstart partnered with to deliver the curriculum. As a result, the data available was only for children in Head Start programs and was not inclusive of all early education settings such as state preschool programs also served by Jumpstart. Furthermore, lack of data on additional factors such as community context, familial income levels, and information on previous Jumpstart experience as well as a non-randomized study design and sample size made determining the intervention's true effect difficult.

Recommendations for future evaluation activities include exploring and utilizing child development tools more closely aligned to the intervention for measuring child outcomes and expanding the evaluation to include outcomes related to the classroom teachers' and Corp members' experiences. Greater alignment between a measurement tool and the Jumpstart program may allow for more precise measurement of child outcomes related to the intervention. Notably, the Language Development subdomain measured by the DRDP revealed the highest effect size. With language environment as a main focus of the Jumpstart curriculum, this may suggest a need for further exploration with this area of development. Examining the effects of Jumpstart on teacher outcomes such as well-being and Corp members' knowledge and work experience would contribute to a more holistic view of the impact of Jumpstart.

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INTRODUCTION

Jumpstart is an early education organization with the vision that "every child in America enters kindergarten prepared to succeed." Their mission is to provide language, literacy, and social-emotional programming for preschool children from under-resourced communities across the nation and promote quality early learning for all. Jumpstart aims to achieve this mission by partnering with Jumpstart Corps members, adult volunteers from local colleges and universities as well as other local partners. Jumpstart Corps members are trained in the Jumpstart curriculum to engage with preschool children during classroom sessions.

Jumpstart Sessions

To provide consistent delivery of the Jumpstart curriculum through purposeful learning activities, after extensive pre-service training, Corps members conduct two-hour sessions twice a week during the school year. During these sessions, each Corps member partners with a small group of three to five children to directly support them during the session. They also work with other Corps members and classroom teachers to support the entire classroom and to ensure collaboration in delivering the Jumpstart curriculum to children. At the time of this study, sessions supported children's language, literacy, and social-emotional development by building children's skills in three areas:

Oral Language with an emphasis on building **vocabulary** and **comprehension** through children learning new words and talking about the books during reading activities.

Book and Print with an emphasis on building **alphabet knowledge** and the **meaning and use of print** through children practicing letters and sounds as well as writing.

Phonological or Sound Awareness with an emphasis on **phonemic** and **rhyme awareness** through children listening to different words during circle time and reciting poems with Corps members.

Jumpstart utilizes a set of 20 children's books that have been selected based on their ability to support vocabulary and comprehension during sessions to aid in development of these skill areas. A Jumpstart classroom session typically follows this routine:

- **Welcome** – Transition into Jumpstart session from a previous activity.

- **Reading** – Corps members lead children in a reading activity and discussion of the story, prompting the learning of vocabulary words and comprehension.

- **Circle Time** – Corps members and children sing songs, play word and letter games, and read poems.

- **Center Time** – Activity centers are set up to support language and literacy development, depending on the type of story that was read with the aim of deepening children's understanding of the story.

- **Let's Find Out About It** – This activity is geared toward children's ability to learn new things and ask about how they work, with a focus on building vocabulary and concept knowledge.

- **Sharing and Goodbye** – In a larger group, Corps members and children talk about their favorite parts of the session.

In addition to the Jumpstart session, each Corps member provides 2-4 hours per week of additional service to children through Child Centered Time. This allows for additional support in strengthening skills that are specific needs for those individual children. Through these efforts, Jumpstart provides consistent programming with low adult-child ratios that elicit meaningful interactions in the hopes of positively influencing children's language and literacy development.

EVALUATION PLAN

Evaluation Questions

As a means of assessing the Jumpstart program's progress toward achieving its mission and in order to build upon past findings, an evaluation of the 2017-2018 program year was conducted. A child-level outcome tied to Jumpstart's theory of change was the focus of this evaluation - children from under-resourced communities are on-target with early literacy skills as an element of kindergarten readiness. The evaluation aimed to assess progress toward this outcome by answering the following questions:

1. *Are Jumpstart participants making developmental gains that will make them more school ready?*

2. *Do Jumpstart participants demonstrate greater gains than comparison children over the program year on a developmental continuum measure (the Desired Results Developmental Profile (DRDP) (2015): Preschool View)?*

In order to answer these questions, the evaluation made use of demographic data to first match Jumpstart classrooms with non-Jumpstart classrooms for comparison (matching procedures are described below). Classroom scores on the DRDP from the Pre-Assessment (conducted in the fall of 2017) and the Post-Assessment (conducted in the spring of 2018) were used to investigate differences in score gains between these groups and the effect of the Jumpstart intervention. The DRDP tool was used to build upon findings from previous evaluations of Jumpstart, as this tool is widely used in California to assess children's early learning and development during the years leading up to kindergarten transition.

Measure

The Desired Results Developmental Profile (DRDP) 2015, an observation-based assessment tool developed by the California Department of Education is used to document developmental milestones over time using written observations, photographs and samples of the child's work. The DRDP (2015) Preschool View is made up of eight domains of developmental constructs. However, only the four in bold were analyzed for this evaluation: **Approaches to Learning–Self-Regulation (ATL-REG), Social and Emotional Development (SED), Language and Literacy Development (LLD),** English-Language Development (ELD), **Cognition, Including Math and Science (COG),** Physical Development–Health (PD-HLTH), History-Social Science (HSS), Visual and Performing Arts (VPA). Each domain is composed of four to eleven measures. In total, the DRDP (2015) Preschool tool contains 56 measures. Teachers collect observations for participating children into portfolios that teachers then use to assess children on each measure individually. The DRDP assessment is completed 3 times a year (at pre, mid, and post) in Head Start programs and 2 times a year for California state funded programs. Only the Pre- and Post-Assessments conducted in the fall and spring, respectively, were used in the evaluation.

DRDP Domains

Language and Literacy Development - This domain assesses children's development in foundational language and literacy in any language or mode of communication. Language skills assessed in this domain include understanding of language (receptive), responsiveness to language, communication and use of language (expressive), and reciprocal communication and conversation. Literacy skills assessed in this domain include interest in literacy, comprehension of age-appropriate text, concepts about print, phonological awareness, letter and word knowledge, and emergent writing. The two subdomains, Language and Literacy, were analyzed separately as part of the evaluation.

Social and Emotional Development - This domain assesses children's ability to understand and interact with others as well as their ability to form relationships. Skill areas assessed in this domain include social and emotional understanding, identity of self in relation to others, relationships and social interactions with familiar adults, relationships and interactions with peers, and symbolic and sociodramatic play.

Approaches to Learning-Self-Regulation - This domain assesses children's learning and self-regulation as both are important to school readiness and success. Items that assess approaches to learning include curiosity and initiative, attention maintenance, engagement and persistence. Self-regulation skills measured include self-control of feelings and behavior, self-comforting, imitation, and shared use of space and materials.

Cognition, Including Math and Science - This domain assesses children's skills in observation, exploration of people and objects, and investigation of objects and concepts. Math skills assessed include spatial relationships, cause and effect, classification, number sense of quantity, number sense of math operations, measurement, patterning, and shapes. Science skills assessed include inquiry through observation and investigation, documentation and communication of inquiry, and knowledge of the natural world. The two subdomains Math and Science were analyzed separately as part of the evaluation.

DRDP Ratings - Developmental Levels

Children are rated on a developmental spectrum covering early infancy to kindergarten with up to nine developmental levels for each measure. The number of developmental levels in a measure varies depending on the competencies that are appropriate for that measure's developmental continuum. The levels are organized under four categories: Responding, Exploring, Building, and Integrating. Children are rated a particular developmental level once they demonstrate the skills, behaviors, and knowledge defined by that level consistently over time and in different situations or settings.

Responding (Earlier, Later) - Children rated as "responding" exhibit knowledge, skills, or behaviors that develop from basic responses (e.g., using senses) to differentiated responses. These responses are generally observed in back-and-forth interactions between children and familiar adults as well as through children using nonverbal messages.

Exploring (Earlier, Middle, Later) - Children rated as "exploring" exhibit knowledge, skills, or behaviors that include active exploration, such as manipulation of objects, and purposeful movements and communication. Typically, children move from nonverbal to verbal communication at this level.

Building (Earlier, Middle, Later) - Children rated as "building" exhibit knowledge, skills, or behaviors indicating their understanding of how things work, how people and objects relate to one another, and how to investigate ideas. Children rated at this level are using verbal communication to express thoughts and feelings, are developing literacy and numeracy skills, and are participating in small group interactions.

Integrating (Earlier) - Children rated as "integrating" exhibit knowledge, skills, or behaviors that show their ability to express complex thoughts and feelings, problem solve, and participate in a wide range of activities. Children rated at this level demonstrate their ability to engage in mutually supportive interactions.

DRDP Domain Scoring

Domain scores are based on a psychometric scoring model that takes into consideration the difficulty levels of different steps in the developmental continuum. The domain scores are centered on 200 and range between 100 (expected in early infancy) and 300 (expected at Kindergarten). In order to reach 300 at the age of five, a growth of 20 points every 6 month period of time would be expected between early infancy and reaching the top of the developmental spectrum on the tool by the age of five. The average time between the Pre- and Post-Assessments included in this evaluation is just over six months. As a result, children would be expected to increase in their developmental level by approximately 20 points between Pre- and Post-Assessment.

In order to meaningfully interpret the assessment results, CCR Analytics aligned the DRDP (2015) Preschool tool to the California Preschool Learning Foundations. The alignment allows us to understand a child's development within an age appropriate context and to meaningfully compare results across the DRDP domains and subdomains. The specifics of the alignment are available at ccr-analytics.com/presentations/ "Linking DRDP to Foundations." The California Early Learning Foundations are established for 5 different ages (8 months, 18 months, 36 months, 48 months, and 60 months). After CCR Analytics established the alignment between those ages and the DRDP (2015) Preschool, expectations were estimated for ages in between those age groups. This allows one to assess whether a child who is 54 months old is on track to meet the 60

month age expectations. This step is important because of the rapid growth typical of young children. Six months can make a big difference in development. You would not use a 54 month benchmark to assess a child 42 months old. As a result, as children age, the development expectations increase in the analysis reporting. The results are reported as the percentage of children at or above age expectations. Increases in group scores between two assessment periods indicate that children are developing faster than developmental expectations.

Data Collection

Jumpstart partners with 14 higher education universities and colleges across California to train Corp members and deliver the Jumpstart curriculum in early education settings. Data from seven (shown in bold in Table 1) of the 14 campuses and the early education programs in which the curriculum was delivered were available for inclusion in this evaluation. The early education programs are run by a variety of organizations -- nonprofits, school districts, county offices of education, and local governments. Teachers and staff from each early education program collect the DRDP data in one of five ways:

1. DRDPtech -- an online software developed by the California Department of Education, WestEd, and Berkeley's BEAR Center.

2. Learning Genie -- an application developed to help programs collect child portfolios and DRDP data.

3. CCR Scanning Services -- a service provided by CCR Analytics which collects data from DRDP rating records.

4. COCOA -- an online software to track attendance and child reporting, developed by the San Francisco Office of Early Care and Education.

5. ChildPlus Software-- software used by multiple Head Start programs to manage their child, family, and administrative data.

In late summer 2018, the California Department of Education unexpectedly shutdown DRDPtech forcing users to transition to a new software, DRDP Online. Unfortunately, many components of DRDP Online were not yet available. This resulted in early education programs that relied solely on DRDPtech to no longer have access to their DRDP data and could not make it available for this evaluation. The data available for inclusion consisted of DRDPtech users who had previously downloaded their data for external evaluation and programs that used Learning Genie, CCR Scanning Services, ChildPlus Software, or COCOA and still had access to their program's DRDP data at the time of the evaluation.

Table 1. Jumpstart Higher Education Partners

University/College	# of Classes Supported	# of Children Supported
California State University, Dominguez Hills	7	125
California State University, Fresno	15	313
California State University, Fullerton	7	142
California State University, Los Angeles	3	55
California State University, Northridge	7	114
Pepperdine University	11	234
Pitzer College	7	114
San Francisco State University	32	601
St. Mary's College	7	154
University of California, Berkeley	7	167
University of California, Irvine	14	314
University of California, Los Angeles	13	274
University of Southern California	10	173
Whittier College	7	125
TOTAL	**147**	**2905**

Participants

Data was available from 34 of the 147 classes supported by Jumpstart with 456 children who had both a Pre- and a Post-assessment. Data for children who did not receive a minimum of 100 hours of Jumpstart services were excluded from the evaluation. As a result, data from 162 children and 8 classes were dropped from the analysis. The final data set included data on 294 children receiving Jumpstart services[1] in 26 classes. All of the classes were in Head Start programs, programs which support children's growth and development through comprehensive services including services targeted towards early learning, health, and family well-being. In a majority of cases, children's families' income must fall below the poverty guidelines to qualify and receive Head Start services.

Comparison group classrooms were chosen one by one at each program by selecting a non-Jumpstart classroom with similar demographic characteristics to a Jumpstart classroom at that program (in one case, a match could not be found within the same program and a comparison group class was chosen from another program). The evaluation team matched classes first on Pre-assessment Language and Literacy DRDP domain scores, then by age, followed by gender, ethnicity and language demographic characteristics. The 26 classes in the matched comparison group contained 389 children with both Pre- and Post-Assessment data.

As Table 2 shows, the demographic characteristics of the Jumpstart and comparison group children indicate that they were roughly equivalent, although there were some difficulties in matching the groups. About half of the children in each group were female and about half were male. Both groups had a large percentage of Latino children. However, there were differences in the percentage of English- and Spanish-speakers. Due to the Jumpstart group having more children with their ethnicity and/or language being unknown (7%), the comparison group had a larger percentage of Latino Spanish speakers (51%) than the Jumpstart group (41%). Additionally, there was a rather large difference in the percentage of Asian children who speak an Asian language between the two groups. This difference is due to one agency having a few Jumpstart classrooms being comprised of predominantly Chinese children, whereas the classrooms available to match were not of the same ethnic makeup. All other ethnicity-language categories had roughly equivalent percentages of children represented in each group.

[1] Children considered as having fully received the Jumpstart intervention received 100 mentoring hours throughout the program year, including both session hours and Child Centered Time.

Table 2. Demographic Characteristics

Characteristics	Jumpstart Children (n=294)		Comparison Group Children (n=389)		Total (n=683)	
	Percent	N	Percent	N	Percent	N
Gender						
Male	46%	135	49%	191	48%	326
Female	54%	159	51%	198	52%	357
Ethnicity and Language						
Latino, English Speakers	22%	66	22%	87	22%	153
Latino, Spanish Speakers	41%	122	51%	200	47%	322
African-American, English Speakers	11%	33	16%	62	14%	95
Asian, English Speakers	3%	10	2%	7	3%	17
Asian, Asian Language Speakers	10%	30	4%	15	7%	45
Caucasian, English Speakers	4%	12	3%	10	3%	22
Other	7%	21	2%	8	4%	29
Other Child Characteristics						
Children with an Individualized Education Program (IEP)	10%	29	16%	61	13%	90
Children enrolled in Head Start in '16-'17	43%	126	39%	150	40%	276
Children enrolled in Full Day Classes	53%	156	41%	154	45%	310
Child Age						
	Jumpstart Children			Comparison Group Children		
Average age in months at Pre-Assessment	48.4			48.3		

Group Equivalence

Displayed in Table 3 are both Jumpstart and comparison group Pre-Assessment DRDP scores by domain, indicating that the groups were roughly similar in their Pre-Assessment scores.

Table 3. Average Pre-Assessment Domain Scores

| Domain	Jumpstart Children		Comparison Group Children	
	Score	N	Score	N
Language Development	204.4	294	207.2	388
Literacy Development	207.4	280	207.8	383
Social and Emotional Development	207.6	294	209.7	389
Approaches to Learning - Self-Regulation	205.8	293	207.6	389
Cognition - Math	206.7	294	208.9	385
Cognition - Science	203.7	287	204.6	324

Note: Sample sizes differ by domain due to some classrooms not conducting every item in the domain.

Findings

Data Quality

A data check to assess the validity of the DRDP data collected was conducted first. A common issue with the DRDP is that children receive unrealistically low assessment scores on the Pre-Assessment -- 3 and 4 year-olds being assessed at levels typical of infants or young toddlers. Due to this concern, the evaluation team flagged any rating that was three or more developmental levels lower than the age adjusted expectations based on an alignment of the DRDP with the California Early Learning Foundations. Classes with a high percentage of 'suspect' ratings generally indicates that the teacher is not conducting a reliable assessment using DRDP criteria -- often due to inexperience or insufficient training on the DRDP. Figure 1 shows the number of classes by the percentage of suspect ratings in each class. To account for this issue in the evaluation, the percentage of suspect ratings in a class was included as a variable in the regression models. Models were also built excluding classes with greater than 10% suspect ratings - although the results were the same and these secondary models are not included in the final report.

Figure 1. Number of Classes by Percentage of Suspect Ratings
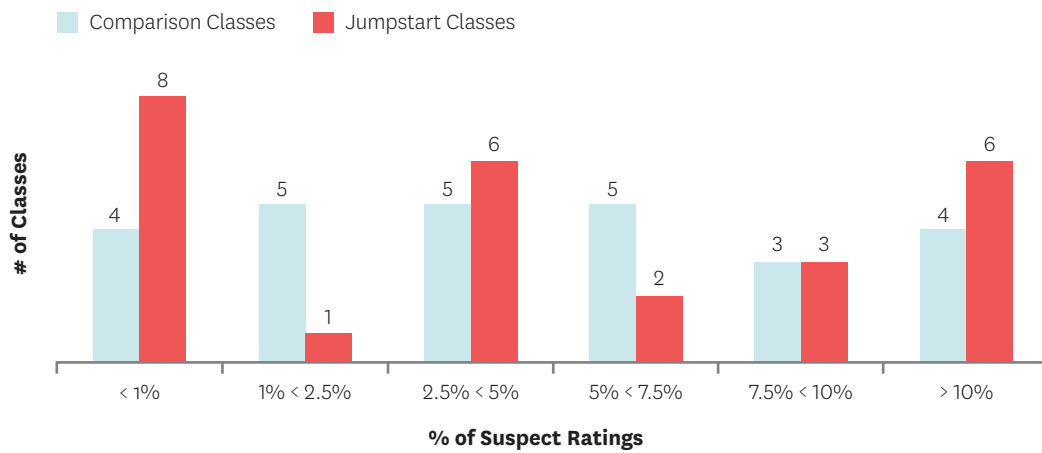
Evaluation Questions

1. Are Jumpstart participants making developmental gains that will make them more school ready?

In each domain, Jumpstart children showed meaningful improvements on their path to school readiness. In Language Development, only 17% of children met California Early Learning Foundation Age Expectations at the Pre-Assessment. By the Post-Assessment, 59% of children met age expectations in Language Development. Keep in mind that in this analysis, the developmental expectations increased with the children's age. Meaning that children grew faster than developmental expectations. To be concrete about the developmental expectations in Language Development, a 60 month old child is expected to "understand and use both simple and complex words that describe the relations between objects." For example, "After reading a story about the zoo, the teacher asks, 'What animals are smaller than an elephant?' The child correctly identifies a lion, a tiger, a bear, and a zebra." Of course, not all of the children were 60 months-old at the time of the Post-Assessment, but the analysis indicates that 59% of children were on-track to meet those age expectations by the time they reach 60 months (California Department of Education, 2008).

For Literacy Development, the percentage of children meeting California Early Learning Foundation Age Expectations increased from 21% to 64% between the Pre- and Post-Assessments. For Social and Emotional Development, the numbers increased from 41% to 81%. For Approaches to Learning-Self-Regulation, the numbers increased from 48% to 83%. For Cognition - Math, the numbers increased from 23% to 65%. And in Cognition - Science, the numbers increased from 14% to 51%.

The analysis clearly shows that Jumpstart children are experiencing healthy growth and are either on-track to being school ready or are moving closer to that target.

*Figure 2. Percentage of Jumpstart Participants Meeting Age Adjusted Developmental Expectations*
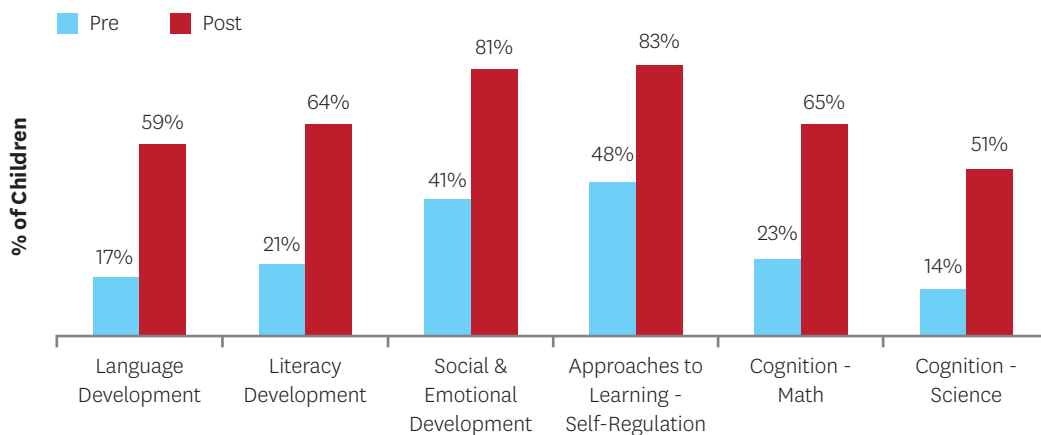
2. Do Jumpstart participants demonstrate greater gains than comparison children over the program year on a developmental continuum measure (the Desired Results Developmental Profile (DRDP) (2015): Preschool View)?

Findings from initial analyses indicate that Jumpstart children did not demonstrate statistically significant greater growth over the program year in the DRDP domains than the children in the comparison group. Straight average differences in growth (prior to any regression analyses) among the domains and subdomains between Jumpstart children and the comparison group ranged from 0.1 to 1.3 points (Figure 2). At first glance this looks promising, with Jumpstart children growing at modestly higher rates. The corresponding effect sizes[2] for Language Development (0.11) and Cognition - Math (0.07) were at the level we hypothesized to be most likely for a program with Jumpstart's dosage (100 hours over several months). However, none of the differences in growth were statistically significant.

[2] Effect sizes were calculated by dividing each difference in growth by the standard deviation of the comparison group. See Appendix A.

Figure 3. Side by Side Growth for Comparison and Jumpstart Groups
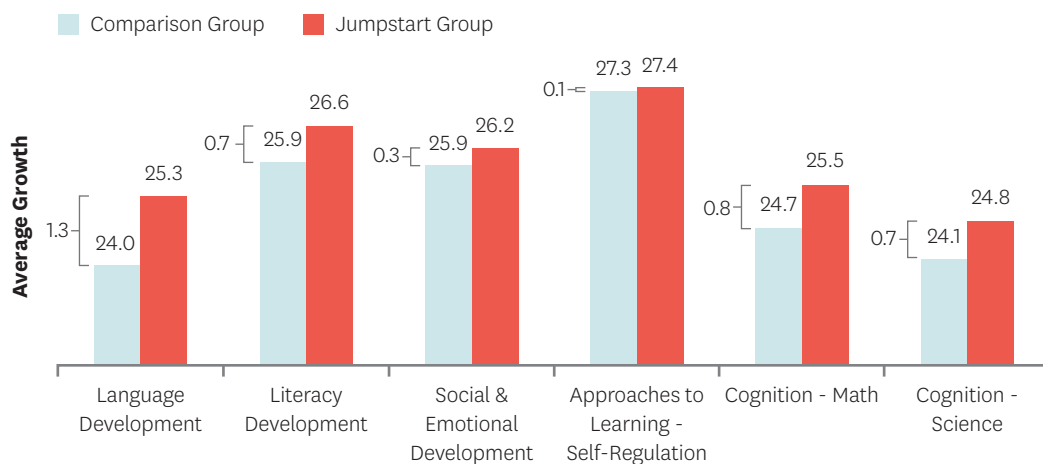
Regression Analysis

To further investigate whether the differences in domain score growth between Jumpstart and comparison group children were significant, a regression model was built for each DRDP domain and subdomain as reported in Tables 4-9. For each model, the growth in the domain or subdomain was used as the dependent variable. Each model also contained a binary variable "Jumpstart vs. Comparison Group" that was one for the Jumpstart group and zero for the comparison group. The coefficient and statistical significance of the Jumpstart vs. Comparison Group variable indicate the size and impact of the Jumpstart program controlling for the other variables in the model. If the p-value is less than or equal to 0.05, then the difference between the intervention and comparison is considered statistically significant and the coefficient shows how much higher the growth was for Jumpstart children -- adjusted for the differences between the two groups. If the p-value is greater than 0.05 then the coefficient (the adjusted difference in growth) is considered indistinguishable from zero. The Jumpstart vs. Comparison Group variable was not found to be statistically significant in any of the models.

The other variables controlled for in the regression models included age (in months) at the time of the Pre-assessment, the number of days between the Pre- and Post-assessments, the Pre-assessment domain score, gender, child ethnicity and language, which program the child attended, whether the child was enrolled in the program during the 2016-2017 school year, whether the child was enrolled in a full-day or part-day program, whether the child had an Individualized Education Plan (indicating a special need), and the percentage of suspect ratings for the class. Clustered Robust Standard Errors were calculated, clustering on the class for each child. This step is important as the observations are not fully independent. The practical effect of using Clustered Robust Standard Errors is that the reported p-values are higher, while the coefficients are unchanged. Full results for each regression model can be found in Appendix B.

Language Development

The regression model for the Language Development subdomain explains 43.81% of the variance in the difference in growth scores in the Language subdomain. Jumpstart participation did not significantly predict a larger growth in the Language Development subdomain score (t = -0.42, p = .68).

Table 4. Predicting Growth in Language Development Subdomain (N = 682)

Predictor	Coefficient	Robust Standard Error	t	p	95% CI
Jumpstart vs. Comparison Group	-0.63	1.49	-0.42	0.68	[-3.61, 2.36]

Literacy Development

The regression model for the Literacy Development subdomain explains 41.35% of the variance in growth, and Jumpstart participation did not significantly predict greater growth in the Literacy Development subdomain score (t = -0.4, p = .69).

Table 5. Predicting Growth in Literacy Development Subdomain (N = 663)

Predictor	Coefficient	Robust Standard Error	t	p	95% CI
Jumpstart vs. Comparison Group	-0.67	1.68	-0.4	0.69	[-4.05, 2.70]

Social and Emotional Development

The regression model for the Social and Emotional Development domain explains 44.13% of the variance in growth, and Jumpstart participation did not significantly predict growth in the Social and Emotional Development domain (t = -1.15, p = .26).

Table 6. Predicting Growth in Social and Emotional Development Domain (N = 683)

Predictor	Coefficient	Robust Standard Error	t	p	95% CI
Jumpstart vs. Comparison Group	-1.71	1.49	-1.15	0.26	[-4.70, 1.28]

Approaches to Learning - Self-Regulation

The regression model for the Approaches to Learning-Self-Regulation domain explains 44.03% of the variance in growth, and Jumpstart participation did not significantly predict larger growth in the Approaches to Learning-Self-Regulation domain ($t = -1.15$, $p = .25$).

Table 7. Predicting Growth in Approaches to Learning-Self-Regulation Domain (N = 682)

Predictor	Coefficient	Robust Standard Error	t	p	95% CI
Jumpstart vs. Comparison Group	-1.90	1.64	-1.15	0.25	[-5.20, 1.40]

Cognition - Math

The regression model for the Cognition-Math subdomain explains 41.58% of the variance in growth, and Jumpstart participation did not significantly predict greater growth in the Cognition-Math subdomain ($t = -0.64$, $p = 0.53$).

Table 8. Predicting Growth in Cognition-Math Subdomain (N = 679)

Predictor	Coefficient	Robust Standard Error	t	p	95% CI
Jumpstart vs. Comparison Group	-1.05	1.66	-0.64	0.53	[-4.38, 2.27]

Cognition - Science

The regression model for the Cognition-Science subdomain explains 39.64% of the variance in growth, and Jumpstart participation did not significantly predict greater growth in the Cognition-Science subdomain ($t = -0.31$, $p = 0.76$).

Table 9. Predicting Growth in Cognition-Science Subdomain (N = 611)

Predictor	Coefficient	Robust Standard Error	t	p	95% CI
Jumpstart vs. Comparison Group	-0.53	1.70	-0.31	0.76	[-3.94, 2.89]

Discussion

Reading and writing skills are fundamental to functioning as a productive adult in current American society. Research shows that adults with low levels of literacy are plagued by many social and economic ills including being paid lower wages, lower levels of engagement in employment, reduced likelihood of voting, being less informed about civic matters, reduced likelihood of being able to meet their family's health care needs, and being more likely to have an interaction with law enforcement, or other social challenges such as drug use, teen pregnancy, and violence (Bennett, Brown, Boyle, Racine, & Offord, 2003; Haigler, Harlow, O'Connor, & Campbell, 1994; Kellam & Anthony, 1998; Kirsch, Jungeblut, Jenkins, & Kolstad , 2002; Matson & Haglund, 2000; Sum, 1999). Programs like Jumpstart that set children on a better path to literacy development are critical to ensure future success.

Findings from this evaluation suggest that although developmental change scores were higher for Jumpstart children than comparison group children, Jumpstart participation did not result in statistically significantly greater growth than the comparison group between Pre- and Post-Assessments on the DRDP domains and subdomains analyzed. However, evidence suggests some modest effect of the program. The fact that the Language domain measured by the DRDP revealed the highest effect size and the language environment is a main focus of the Jumpstart curriculum may suggest a need for further exploration with this area of development.

This leads to opportunity for further investigation into Jumpstart's effects on both children and the adults who support them during Jumpstart sessions. By definition, all Jumpstart participants are already participating in an early education program. The Jumpstart intervention lowers the child to adult ratio and introduces the Jumpstart curriculum into supported classes. An intervention that seeks to enhance an existing early education environment is likely to have a lower impact than an intervention that moves a child into an early education environment. Jumpstart's supports are also likely to have positive effects for the staff, the impacts of which may not immediately accrue to the children. For example, higher teacher satisfaction may result in higher retention over time. The implications of these insights for understanding Jumpstart's impact shape the discussion and recommendations.

It is important to set reasonable expectations in evaluating programs like Jumpstart. A typical part-day preschool program provides over 600 hours of services. A quality preschool program might have an effect size of 0.5. CCR Analytics' 2014 analysis of nearly 50,000 California Head Start children found effect sizes in the range of 0.39 to 0.48 using the DRDP (2010). The 2010, national Head Start Impact Study found effect sizes in the range of 0.09 to 0.26. Within this context, expectations for a program that provides 100 hours of service should be modest. It would be surprising to see Jumpstart effect sizes much larger than 0.10 to 0.15. Finding effect sizes in that range requires a finely tuned measurement tool and a large sample size (CCR Analytics, 2014; Westat, 2010).

Understanding the uses and limitations of the DRDP also helps to put these findings into perspective. The DRDP tool has a variety of important uses. As a developmental assessment, it is an authentic measure of children's development (in natural settings and activities and over time). The tool is aligned with the California Early Learning Foundations, the Head Start Early Learning Outcomes Framework, and the Office of Special Education Programs Child Outcomes and is used by many early childhood programs throughout California. The tool allows for programs to report to their funders on how children are developing in their programs. Additionally, the tool provides for evidence-based planning for individual children as well as groups of children as educators plan their lessons and activities. Finally, the tool fosters parent engagement when used to provide parents with feedback on their child's development and activities are provided for the parent to engage their children in learning activities at home.

Any measure used to evaluate the effectiveness of an intervention should have a sensitivity level for measuring change that is well matched to the intervention. Developmental measures are generally expected to have scores that follow a child's developmental level, which is expected to increase over time. There is not sufficient research on the DRDP to know if it has the sensitivity level adequate to differentiate between intervention and comparison groups in the same way that more standardized and norm-referenced outcomes measures do. As a result, an intervention may need to have a very high level of dosage or intensity for a greater period of time in order for a developmental measure to pick up the differences between an intervention and comparison group.

Additionally, alignment between the domains of the DRDP and the key domains of the Jumpstart curriculum should be explored. Domains that are not aligned well may not need to be evaluated in the future. Alignment between the DRDP and the Jumpstart checklist that has been used in prior evaluations could also be considered. If domains on these two measures do not align well, this could explain differences between these results and those in prior evaluations. Initial review of these three resources (DRDP with Jumpstart curriculum and Jumpstart checklist) suggest that there may be challenges with alignment.

Limitations

This evaluation had several limitations, mostly due to lack of data. First, there was a limited amount of demographic and DRDP score data available. Although Jumpstart partners with about 14 universities and colleges in California, the evaluation team only had data from seven of those campuses to analyze, making it difficult to generalize findings to all Jumpstart efforts in California. The fact that the partnering early care and education programs employed different data systems for collecting their DRDP posed a challenge, particularly when DRDP data became unexpectedly unavailable to programs using DRDPtech to collect their data.

Additionally, data that was available was only for Head Start centers, not including the other early childhood education settings that Jumpstart serves. Therefore, findings can only speak to the effect of Jumpstart on Corps members from those campuses and children from the Head Start centers they supported. Based on eligibility for the program, most families enrolled in Head Start have incomes below the Federal Poverty Level or qualify for other serious criteria such as homelessness or status as a foster child. Many of the families in both the intervention and the comparison groups are likely to be living in poverty and from predominantly disadvantaged backgrounds. However, certain factors that could have helped explain the effectiveness of Jumpstart on this sample were not available, e.g., community context and familial income levels.

Another factor that could have potentially influenced the effect of the intervention and should be considered in future evaluations is prior exposure to the Jumpstart curriculum. Although previous Head Start experience was included in the regression models, having data on previous Jumpstart experience would have further contributed to knowledge of how the Jumpstart intervention from the program year 2017-2018 affected language and literacy development on sample children.

Lastly, as with any non-randomized study, it is difficult to determine the intervention's true effect on participants' gains because we can't know if the findings are due to the intervention or other factors that contributed to whether children participated in Jumpstart or not. Limitations on available data result in challenges with conducting specific types of analyses as well, such as nested design analyses. These generally require larger datasets and the ability to nest within different levels.

Recommendations

Recommendations for future evaluation activities include making use of other child development tools to measure developmental change, or evaluating the alignment between domains of the Jumpstart curriculum, Jumpstart checklist, and the DRDP as well as investigating the classroom teachers' experiences. If certain measures within the DRDP are not well-aligned with the Jumpstart curriculum or the Jumpstart checklist that resulted in positive results, there may be reason to focus on fewer measures within the DRDP that have optimal alignment with the curriculum.

Furthermore, Jumpstart may have had a positive impact on teachers. However, impact on the workforce was not measured as part of the current evaluation. Research Connections (2017) has compiled an extensive literature review showing that workplace stressors in the ECE workforce negatively affect the teacher-child relationship. Research shows that relationships between adults and children form the bases for learning in early childhood (Espinosa, 2002; Hamre & Pianta, 2005; National Research Council and Institute of Medicine 2000; Pianta, 1999). Given the ever-increasing demands on the ECE workforce, having additional assistance in the classroom may result in factors such as general stress reduction, release time for lesson preparation, etc. These aspects of overall stress and general classroom climate may be worth measuring as impacted by the Jumpstart program.

Finally, an additional measure of success of the Jumpstart program may be the impact that participation in the program has for the Corp members. Specifically, does participation in Jumpstart serve as a pipeline to the ECE workforce for the Corps members? And what kinds of gains in their knowledge and work experience do Corp members experience as a result of their participation in Jumpstart? From teachers, assistants, home visitors, to para-educators, the Corps members may be helping to build the future ECE workforce.

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Appendix A. DRDP Domain Scores and Growth

Table 10. DRDP Domain Scores and Growth

DOMAIN: LANGUAGE DEVELOPMENT

	Jumpstart Group	Comparison Group	Difference in Growth	Unadjusted Effect Size
Sample Size	294	388	--	--
Average Pre-Assessment Score	204.4	207.2	--	--
Average Post-Assessment Score	229.7	231.1	--	--
Average Growth	25.3	24.0	1.3	0.11
StdDev Growth	11.6	12.4	--	--

DOMAIN: LITERACY DEVELOPMENT

	Jumpstart Group	Comparison Group	Difference in Growth	Unadjusted Effect Size
Sample Size	280	383	--	--
Average Pre-Assessment Score	207.4	207.8	--	--
Average Post-Assessment Score	232.5	233.8	--	--
Average Growth	26.6	25.9	0.7	0.05
StdDev Growth	12.4	12.9	--	--

DOMAIN: SOCIAL & EMOTIONAL DEVELOPMENT

	Jumpstart Group	Comparison Group	Difference in Growth	Unadjusted Effect Size
Sample Size	294	389	--	--
Average Pre-Assessment Score	207.6	209.7	--	--
Average Post-Assessment Score	233.8	235.5	--	--
Average Growth	26.2	25.9	0.3	0.03
StdDev Growth	12.4	12.7	--	--

Appendix A. DRDP Domain Scores and Growth

Table 10. DRDP Domain Scores and Growth

DOMAIN: APPROACHES TO LEARNING -SELF-REGULATION

	Jumpstart Group	Comparison Group	Difference in Growth	Unadjusted Effect Size
Sample Size	293	389	--	--
Average Pre-Assessment Score	205.8	207.6	--	--
Average Post-Assessment Score	233.2	234.9	--	--
Average Growth	27.4	27.3	0.1	0.00
StdDev Growth	12.9	13.1	--	--

DOMAIN: COGNITION - MATH

	Jumpstart Group	Comparison Group	Difference in Growth	Unadjusted Effect Size
Sample Size	294	385	--	--
Average Pre-Assessment Score	206.7	208.9	--	--
Average Post-Assessment Score	232.2	233.6	--	--
Average Growth	25.5	24.7	0.8	0.07
StdDev Growth	12.0	12.0	--	--

DOMAIN: COGNITION - SCIENCE

	Jumpstart Group	Comparison Group	Difference in Growth	Unadjusted Effect Size
Sample Size	287	324	--	--
Average Pre-Assessment Score	203.7	204.6	--	--
Average Post-Assessment Score	228.4	229.0	--	--
Average Growth	24.8	24.1	0.7	0.06
StdDev Growth	11.5	12.1	--	--

Appendix B. Full Regression Models

The following tables contain results of the full Regression model for each domain or subdomain of the DRDP. The following variables were included in each domain and subdomain model:

- Child participation in Jumpstart or non-participation (Comparison Group)
- Child age at the time of assessment
- Child gender
- Full day or part day attendance in the Head Start program
- Child ethnicity and home language
- Whether the child was enrolled in Head Start during the year prior to the intervention (2016-2017 program year)
- Whether the child has an Individualized Education Plan (IEP); indicates a special need
- Percentage of suspect ratings in the classroom
- The agency the child is enrolled ("agency")
- Pre-assessment domain or subdomain score
- The number of days between Pre- and Post-Assessment

Table 11. Full Regression model predicting growth in Language Development subdomain (N = 682)

Predictor	Coefficient	Robust Standard Error	t	p	95 % Cl
Jumpstart vs. Comparison Group	-0.63	1.49	-0.42	0.68	[-3.61, 2.36]
*Age at Assessment	0.61	0.12	5.29	0.00	[0.38, 0.84]
Female vs. Male	1.48	0.80	1.84	0.07	[-0.13, 3.08]
Full-day vs. Part-day Program	0.87	1.88	0.46	0.65	[-2.90, 4.64]
*Latino-Spanish Language	1.86	0.88	2.12	0.04	[0.10, 3.62]
African-American-English Language	0.03	1.28	0.02	0.98	[-2.55, 2.61]
Asian-Asian Language	1.47	1.78	0.83	0.41	[-2.11, 5.05]
*Asian-English Language	4.20	2.01	2.09	0.04	[0.16, 8.23]
White-English Language	0.09	1.65	0.05	0.96	[-3.22, 3.40]
Ethnicity-Language Other or Missing	-0.58	1.39	-0.41	0.68	[-3.37, 2.22]
Enrolled in Prior Year vs. Not Enrolled in Prior Year	1.67	1.28	1.3	0.20	[-0.91, 4.24]
*Special Needs - Has an IEP vs. Does not have an IEP	-4.40	1.12	-3.92	0.00	[-6.66, -2.15]
Data Quality Issue	-6.39	7.65	-0.84	0.41	[-21.74, 8.95]
Agency 2	5.96	3.32	1.8	0.08	[-0.70, 12.63]
*Agency 3	16.92	3.67	4.61	0.00	[9.55, 24.29]
*Agency 4	7.73	3.15	2.45	0.02	[1.40, 14.05]
*Agency 5	7.96	2.36	3.38	0.00	[3.23, 12.69]
Agency 6	8.64	4.55	1.9	0.06	[-0.50, 17.78]
*Agency 7	7.26	2.87	2.53	0.02	[1.49, 13.02]
*Agency 8	7.50	2.42	3.1	0.00	[2.64, 12.37]
*Pre-Assessment Language Subdomain	-0.33	0.05	-6.88	0.00	[-0.43, -0.23]
Days between Pre- and Post-Assessment	0.04	0.05	0.68	0.50	[-0.07, 0.15]
Constant	44.56	12.58	3.54	0.00	[19.31, 69.80]

Individual predictors significant at p < .05 in the model.

Table 12. Full Regression model predicting growth in Literacy Development subdomain (N = 663)

Predictor	Coefficient	Robust Standard Error	t	p	95 % Cl
Jumpstart vs. Comparison Group	-0.67	1.68	-0.4	0.69	[-4.05, 2.70]
*Age at Assessment	0.65	0.13	5.17	0.00	[0.40, 0.91]
Female vs. Male	1.21	0.89	1.35	0.18	[-0.59, 3.00]
Full-day vs. Part-day Program	0.96	2.09	0.46	0.65	[-3.24, 5.15]
Latino-Spanish Language	1.61	0.87	1.86	0.07	[-0.13, 3.36]
African-American-English Language	-0.05	1.45	-0.03	0.97	[-2.97, 2.87]
Asian-Asian Language	2.77	1.64	1.69	0.10	[-0.53, 6.06]
Asian-English Language	4.67	2.83	1.65	0.11	[-1.00, 10.34]
White-English Language	-1.13	2.32	-0.49	0.63	[-5.79, 3.53]
Ethnicity-Language Other or Missing	-0.72	1.45	-0.5	0.62	[-3.63, 2.19]
Enrolled in Prior Year vs. Not Enrolled in Prior Year	1.43	1.46	0.98	0.33	[-1.50, 4.37]
*Special Needs - Has an IEP vs. Does not have an IEP	-3.90	1.16	-3.38	0.00	[-6.22, -1.58]
Data Quality Issue	-1.56	11.28	-0.14	0.89	[-24.21, 21.09]
Agency 2	5.81	3.34	1.74	0.09	[-0.89, 12.52]
*Agency 3	16.81	4.26	3.94	0.00	[8.25, 25.37]
Agency 4	5.43	3.16	1.72	0.09	[-0.92, 11.77]
*Agency 5	7.77	2.25	3.46	0.00	[3.26, 12.28]
Agency 6	8.76	4.57	1.92	0.06	[-0.42, 17.93]
*Agency 7	7.30	2.72	2.68	0.01	[1.84, 12.76]
*Agency 8	7.65	2.48	3.08	0.00	[2.66, 12.63]
*Pre-Assessment Literacy Development Subdomain	-0.35	0.05	-6.32	0.00	[-0.45, -0.24]
Days between Pre- and Post-Assessment	0.03	0.06	0.54	0.59	[-0.09, 0.15]
Constant	49.30	14.67	3.36	0.00	[19.85, 78.75]

Individual predictors significant at p < .05 in the model.

Table 13. Full Regression model predicting growth in Social & Emotional Development Domain (N = 683)

Predictor	Coefficient	Robust Standard Error	t	p	95 % Cl
Jumpstart vs. Comparison Group	-1.71	1.49	-1.15	0.26	[-4.70, 1.28]
*Age at Assessment	0.54	0.10	5.61	0.00	[0.35, 0.74]
Female vs. Male	1.49	0.78	1.9	0.06	[-0.08, 3.06]
Full-day vs. Part-day Program	0.26	1.87	0.14	0.89	[-3.50, 4.02]
*Latino-Spanish Language	2.50	0.84	2.99	0.00	[0.82, 4.19]
African-American-English Language	-0.57	1.21	-0.47	0.64	[-3.01, 1.87]
Asian-Asian Language	1.24	1.82	0.68	0.50	[-2.41, 4.89]
Asian-English Language	2.78	2.61	1.06	0.29	[-2.47, 8.03]
White-English Language	-2.04	2.33	-0.88	0.39	[-6.72, 2.64]
Ethnicity-Language Other or Missing	0.95	1.70	0.56	0.58	[-2.46, 4.36]
Enrolled in Prior Year vs. Not Enrolled in Prior Year	0.85	1.50	0.57	0.57	[-2.17, 3.87]
*Special Needs - Has an IEP vs. Does not have an IEP	-3.75	1.28	-2.93	0.01	[-6.32, -1.18]
Data Quality Issue	-10.07	6.82	-1.48	0.15	[-23.76, 3.61]
Agency 2	3.41	2.76	1.23	0.22	[-2.14, 8.95]
*Agency 3	13.26	3.52	3.77	0.00	[6.20, 20.32]
Agency 4	3.91	2.92	1.34	0.19	[-1.95, 9.77]
*Agency 5	5.30	2.28	2.33	0.02	[0.73, 9.87]
Agency 6	7.29	4.14	1.76	0.08	[-1.03, 15.60]
Agency 7	4.48	2.61	1.71	0.09	[-0.77, 9.73]
Agency 8	3.24	2.32	1.39	0.17	[-1.42, 7.90]
*Pre-Assessment Social & Emotional Development Domain	-0.33	0.05	-6.87	0.00	[-0.43, -0.24]
*Days between Pre- and Post-Assessment	0.13	0.05	2.72	0.01	[0.03, 0.23]
Constant	37.31	12.49	2.99	0.00	[12.23, 62.38]

Individual predictors significant at p < .05 in the model.

Table 14. Full Regression model predicting growth in Approaches to Learning-Self-Regulation Domain (N = 682)

Predictor	Coefficient	Robust Standard Error	t	p	95 % Cl
Jumpstart vs. Comparison Group	-1.90	1.64	-1.15	0.25	[-5.20, 1.40]
*Age at Assessment	0.59	0.11	5.57	0.00	[0.38, 0.81]
Female vs. Male	1.33	0.88	1.51	0.14	[-0.44, 3.10]
Full-day vs. Part-day Program	-0.62	2.12	-0.29	0.77	[-4.88, 3.65]
*Latino-Spanish Language	2.01	0.79	2.54	0.01	[0.42, 3.60]
African-American-English Language	-0.77	1.27	-0.61	0.55	[-3.31, 1.78]
Asian-Asian Language	2.02	1.91	1.06	0.30	[-1.81, 5.85]
Asian-English Language	3.91	2.50	1.57	0.12	[-1.10, 8.92]
White-English Language	-3.37	2.74	-1.23	0.22	[-8.86, 2.12]
Ethnicity-Language Other or Missing	0.99	1.54	0.64	0.52	[-2.10, 4.07]
Enrolled in Prior Year vs. Not Enrolled in Prior Year	0.98	1.59	0.61	0.54	[-2.22, 4.17]
*Special Needs - Has an IEP vs. Does not have an IEP	-3.98	1.35	-2.94	0.01	[-6.69, -1.26]
Data Quality Issue	-11.14	7.10	-1.57	0.12	[-25.40, 3.12]
Agency 2	4.96	2.98	1.66	0.10	[-1.03, 10.95]
*Agency 3	14.22	4.02	3.54	0.00	[6.16, 22.29]
Agency 4	4.57	3.28	1.39	0.17	[-2.01, 11.14]
*Agency 5	6.55	2.67	2.45	0.02	[1.19, 11.92]
Agency 6	7.61	4.71	1.61	0.11	[-1.85, 17.07]
*Agency 7	5.79	2.77	2.09	0.04	[0.22, 11.36]
Agency 8	4.06	2.79	1.45	0.15	[-1.54, 9.66]
*Pre-Assessment Approaches to Learning-Self-Regulation Domain	-0.35	0.05	-7.36	0.00	[-0.45, -0.26]
*Days between Pre- and Post-Assessment	0.13	0.05	2.63	0.01	[0.03, 0.22]
Constant	40.39	12.60	3.21	0.00	[15.10, 65.68]

Individual predictors significant at p < .05 in the model.

Table 15. Full Regression model predicting growth in Cognition- Math subdomain (N = 679)

Predictor	Coefficient	Robust Standard Error	t	p	95 % Cl
Jumpstart vs. Comparison Group	-1.05	1.66	-0.64	0.53	[-4.38, 2.27]
*Age at Assessment	0.58	0.12	5.03	0.00	[0.35, 0.82]
Female vs. Male	0.96	0.79	1.23	0.23	[-0.62, 2.55]
Full-day vs. Part-day Program	0.58	1.86	0.31	0.76	[-3.16, 4.32]
Latino-Spanish Language	1.48	0.85	1.75	0.09	[-0.22, 3.18]
African-American-English Language	-0.53	1.45	-0.37	0.72	[-3.45, 2.39]
Asian-Asian Language	1.65	1.65	1.00	0.32	[-1.66, 4.97]
Asian-English Language	3.50	2.60	1.34	0.19	[-1.73, 8.73]
White-English Language	-0.79	2.25	-0.35	0.73	[-5.31, 3.74]
Ethnicity-Language Other or Missing	0.39	1.33	0.29	0.77	[-2.28, 3.05]
Enrolled in Prior Year vs. Not Enrolled in Prior Year	1.41	1.27	1.11	0.27	[-1.14, 3.96]
*Special Needs - Has an IEP vs. Does not have an IEP	-4.26	1.12	-3.82	0.00	[-6.50, -2.02]
Data Quality Issue	-8.36	10.86	-0.77	0.45	[-30.16, 13.44]
Agency 2	6.68	3.43	1.95	0.06	[-0.20, 13.56]
*Agency 3	16.04	4.11	3.90	0.00	[7.79, 24.29]
*Agency 4	6.24	2.98	2.09	0.04	[0.26, 12.22]
*Agency 5	8.30	2.10	3.95	0.00	[4.09, 12.52]
*Agency 6	10.68	4.34	2.46	0.02	[1.96, 19.40]
*Agency 7	8.12	2.82	2.88	0.01	[2.46, 13.79]
*Agency 8	7.74	2.23	3.47	0.00	[3.26, 12.21]
*Pre-Assessment Cognition-Math Subdomain	-0.34	0.05	-7.19	0.00	[-0.44, -0.25]
Days between Pre- and Post-Assessment	0.05	0.06	0.84	0.41	[-0.07, 0.17]
Constant	48.39	14.52	3.33	0.00	[19.24, 77.53]

Individual predictors significant at p < .05 in the model.

Table 16. Full Regression model predicting growth in Cognition-Science subdomain (N = 611)

Predictor	Coefficient	Robust Standard Error	t	p	95 % Cl
Jumpstart vs. Comparison Group	-0.53	1.70	-0.31	0.76	[-3.94, 2.89]
*Age at Assessment	0.47	0.12	3.78	0.00	[0.22, 0.72]
*Female vs. Male	1.62	0.73	2.22	0.03	[0.15, 3.09]
Full-day vs. Part-day Program	0.66	2.08	0.32	0.75	[-3.52, 4.84]
Latino-Spanish Language	1.20	0.96	1.25	0.22	[-0.73, 3.14]
African-American-English Language	-1.09	1.63	-0.67	0.51	[-4.36, 2.19]
Asian-Asian Language	0.95	1.58	0.6	0.55	[-2.23, 4.12]
Asian-English Language	3.19	2.50	1.28	0.21	[-1.84, 8.23]
White-English Language	-1.05	1.87	-0.56	0.58	[-4.81, 2.72]
Ethnicity-Language Other or Missing	-0.70	1.50	-0.47	0.64	[-3.72, 2.31]
Enrolled in Prior Year vs. Not Enrolled in Prior Year	1.78	1.23	1.45	0.15	[-0.69, 4.25]
*Special Needs - Has an IEP vs. Does not have an IEP	-4.35	1.16	-3.75	0.00	[-6.68, -2.02]
Data Quality Issue	-7.68	10.49	-0.73	0.47	[-28.78, 13.42]
*Agency 2	7.57	3.41	2.22	0.03	[0.71, 14.43]
*Agency 3	16.89	3.93	4.3	0.00	[8.98, 24.79]
*Agency 4	8.00	2.98	2.68	0.01	[2.00, 14.01]
*Agency 5	9.22	2.37	3.9	0.00	[4.46, 13.98]
*Agency 6	11.16	4.64	2.41	0.02	[1.83, 20.50]
*Agency 7	9.67	3.05	3.17	0.00	[3.53, 15.80]
Agency 8	0.00	(OMITTED)			[3.26, 12.21]
*Pre-Assessment Cognition-Science Subdomain	-0.33	0.06	-5.41	0.00	[-0.45, -0.21]
Days between Pre- and Post-Assessment	0.01	0.06	0.23	0.82	[-0.11, 0.14]
Constant	54.50	14.50	3.76	0.00	[25.33, 83.68]

Individual predictors significant at p < .05 in the model.