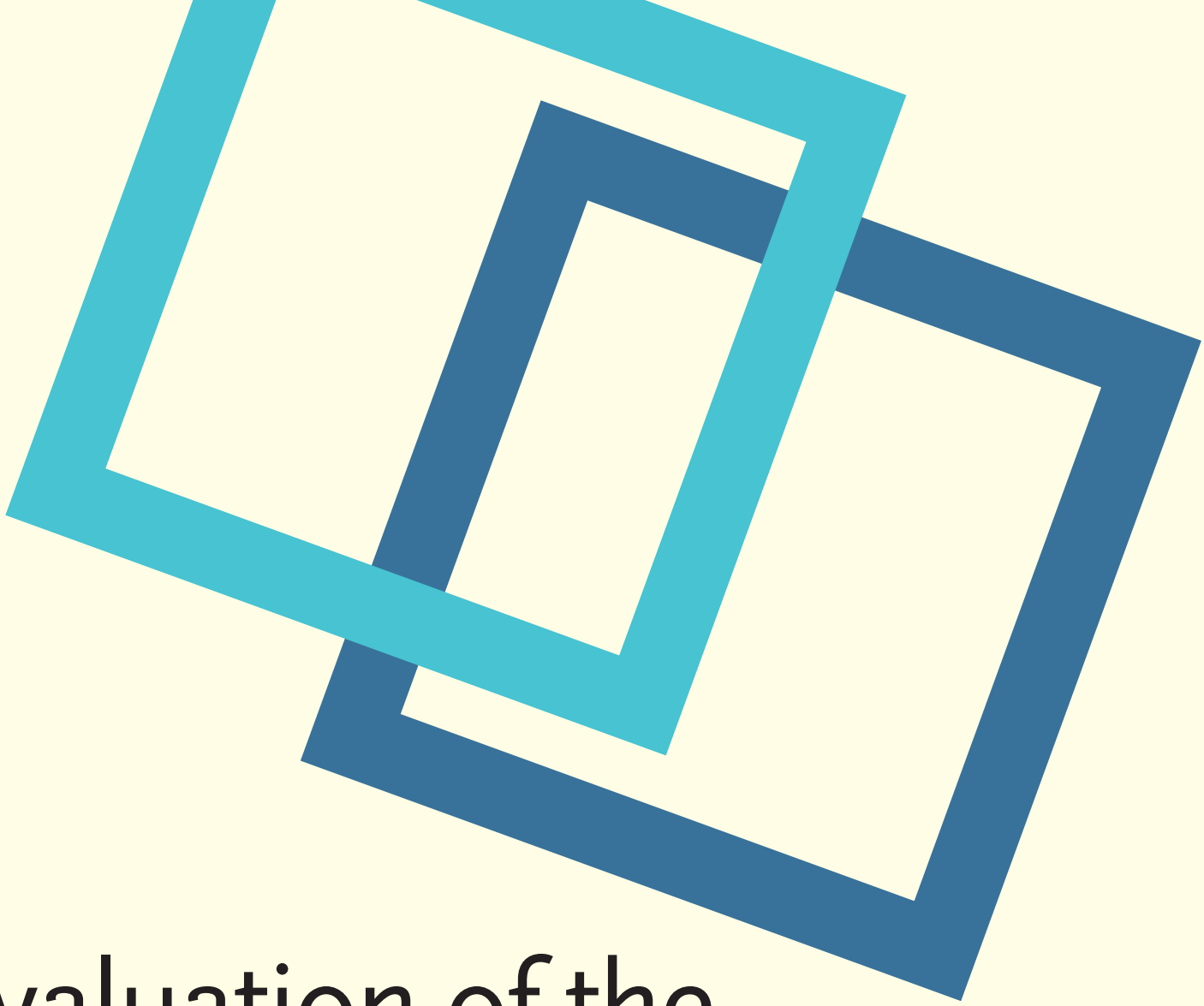

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December 2019

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BUILDING KNOWLEDGE TO IMPROVE SOCIAL POLICY

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This report is funded by the Corporation for National and Community Service (CNCS), Grant No. 16SFPCA001. The contents of this publication do not necessarily reflect the official position of, or a position that is endorsed by, CNCS or other MDRC funders.

Dissemination of MDRC publications is supported by the following organizations and individuals that help finance MDRC's public policy outreach and expanding efforts to communicate the results and implications of our work to policymakers, practitioners, and others: The Annie E. Casey Foundation, Arnold Ventures, Charles and Lynn Schusterman Family Foundation, The Edna McConnell Clark Foundation, Ford Foundation, The George Gund Foundation, Daniel and Corinne Goldman, The Harry and Jeanette Weinberg Foundation, Inc., The JPB Foundation, The Joyce Foundation, The Kresge Foundation, and Sandler Foundation.

In addition, earnings from the MDRC Endowment help sustain our dissemination efforts. Contributors to the MDRC Endowment include Alcoa Foundation, The Ambrose Monell Foundation, Anheuser-Busch Foundation, Bristol-Myers Squibb Foundation, Charles Stewart Mott Foundation, Ford Foundation, The George Gund Foundation, The Grable Foundation, The Lizabeth and Frank Newman Charitable Foundation, The New York Times Company Foundation, Jan Nicholson, Paul H. O'Neill Charitable Foundation, John S. Reed, Sandler Foundation, and The Stupski Family Fund, as well as other individual contributors.

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Overview

Children's school readiness as they enter kindergarten is an important predictor of their academic success and ultimately their long-term health and economic outcomes. Research shows that participation in high-quality early childhood education helps preschoolers gain the foundational language and literacy skills as well as the social-emotional competencies they need to be ready for kindergarten. Even so, free or affordable high-quality preschool options remain limited for families in many underserved communities, and children growing up in poverty often have less access to the kinds of early learning opportunities that contribute to school readiness.

Jumpstart is a nonprofit organization that aims to address the school readiness gap. It partners with early childhood education centers across the country to increase their capacity to provide high-quality language and literacy instruction to children in underserved communities. Jumpstart's program model, delivered by volunteers, includes weekly curriculum-based sessions focused on children's language and literacy development, as well as increased opportunities for volunteers to interact with children one-on-one and contribute to their language and social-emotional development in a less-structured format called child-centered time (CCT).

With support from the Corporation for National and Community Service (CNCS), MDRC evaluated Jumpstart's Foster Grandparent Program (JFG) in Los Angeles and Compton, California, where Jumpstart's services were delivered by older adults from the community (Community Corps members or "Foster Grandparents"). The evaluation examines whether the JFG program, which operated from fall 2011 to summer 2019, was implemented as intended and in what ways the volunteers enhanced children's educational and developmental experience in the classroom. Using a child-level, random assignment research design, this evaluation also explores whether the JFG program model shows promise for improving children's language and literacy and social-emotional development.

Key Findings

This evaluation found that:

- The Foster Grandparents had consistently high attendance at training sessions and reported feeling adequately prepared to provide services to children.
- The Foster Grandparents demonstrated a strong commitment to the program, and children experienced an increased number of adults in the classroom.
- The Foster Grandparents implemented the curriculum-based sessions regularly and as intended. While implementing the sessions, volunteers used various instructional practices aimed at improving children's language and literacy development, but the frequency with which these practices were used in the classroom varied across centers.
- The Foster Grandparents devoted a high number of hours to CCT. However, it is not possible to determine how much of that time was spent one-on-one with partner children versus providing general classroom support.
- Children who received services from volunteers made gains in language and literacy development, but the gains were not greater than those made by children who did not receive services from volunteers.

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This report and the study upon which it is based are funded by the Corporation for National and Community Service (CNCS). The authors would like to thank the Senior Corps and Office of Research and Evaluation teams at CNCS, including Robin Corindo, Robert Cox, Deborah Cox Roush, Mary Greusel, Jill Sears, Colin White, Mary Hyde, Anthony Nerino, and Lily Zandniapour; and Fred Doolittle, Barbara Condliffe, and Michelle Maier from MDRC for their guidance and feedback on this work.

The study benefited greatly from the support and cooperation from key members of the Jumpstart organization: Abby Weiss, Christine Patton, Ashley Bushell, Hillary Roselund, Keuna Cho, and Truyen Tran, who provided helpful feedback on the report. A special thank you to Christine Patton and Christine Manley Martinez, who met with the MDRC team members regularly and responded to requests for data promptly, and to the former Los Angeles Community Corps site managers Ayleen Dimailig, Deisy Barajas, and Kayla Weems, who supported the work.

Finally, this study would not have been possible without the help of our MDRC colleagues. Kate Gualtieri and Emma Alterman provided fiscal oversight. Margaret Bald, Ali Tufel, and Joshua Malbin reviewed earlier drafts of the report and provided valuable comments, and Jill Kirschenbaum edited the report. Ann Kottner prepared it for publication.

The Authors

Executive Summary

Children's school readiness as they enter kindergarten is an important predictor of their academic success and ultimately their long-term health and economic outcomes.[1] Research shows that participation in high-quality early childhood education helps preschoolers gain the foundational language and literacy skills as well as the social-emotional competencies they need to be ready for kindergarten.[2] Even so, free or affordable high-quality preschool options remain limited for families in many underserved communities, and children growing up in poverty often have less access to the kinds of early learning opportunities that contribute to school readiness.[3] Gaps in language and literacy skills begin early and widen over time.[4]

Jumpstart is a nonprofit organization that aims to address the school readiness gap. It partners with early childhood education centers across the country to increase their capacity to provide high-quality language and literacy instruction to children in underserved communities.[5] Jumpstart's program model, delivered by volunteers, includes weekly curriculum-based sessions focused on children's language and literacy development ("Jumpstart sessions"), as well as one-on-one time outside of those sessions ("child-centered time" or CCT). Most of Jumpstart's volunteers are college-age students ("College Corps"), but some volunteers are older adults from the community (Community Corps members or "Foster Grandparents").[6]

This report presents the findings from an evaluation of Jumpstart's Foster Grandparent Program (JFG) in Los Angeles and Compton, California, which operated from fall 2011 to summer 2019, where Jumpstart's services were delivered by older adults. The evaluation, which focuses on the 2017-2018 academic year, examines whether the JFG program was implemented as intended and to what extent the presence of volunteers enhanced children's educational and developmental experience in the classroom. The evaluation also explores whether the JFG program

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[1]Christopher Blodgett and Myah Houghten, *Every Child School Ready: Community, School, and Student Predictors of Kindergarten Readiness and Academic Progress* (Olympia, Washington: Education Research & Data Center, 2018); Amy Pace, Rufan Luo, Kathy Hirsh-Pasek, and Roberta Golinkoff, "Identifying Pathways Between Socioeconomic Status and Language Development," *Annual Review of Linguistics* 3 (2017): 285-308.

[2]Amie Bettencourt, Deborah Gross, and Grace Ho, *The Costly Consequences of Not Being Socially and Behaviorally Ready by Kindergarten: Associations with Grade Retention, Receipt of Academic Support Services, and Suspensions/Expulsions* (Baltimore: Baltimore Education Research Consortium, 2016); Carmen Shery Brown, "Language and Literacy Development in the Early Years: Foundational Skills that Support Emergent Readers," *Language and Literacy Spectrum* 24 (2014): 35-49; Pre-Kindergarten Task Force, *The Current State of Scientific Knowledge on Pre-Kindergarten Effects* (Washington, DC: Brookings Institute, 2017).

[3]U.S. Department of Education, *A Matter of Equity: Preschool in America* (Washington, DC: U.S. Department of Education, 2015).

[4]Anne Fernald, Virginia A. Marchman, and Adriana Weisleder, "SES Differences in Language Processing Skill and Vocabulary are Evident at 18 Months." *Developmental Science* 16, 2 (2013): 234-248.

[5]Jumpstart partners with higher education institutions, community organizations, Head Start programs, community-based preschools, and school districts.

[6] According to Jumpstart yearly reports, 4,054 Jumpstart volunteers served a total of 13,035 preschool children across the country in 2017-2018 (Jumpstart, *National Evaluation of Jumpstart: 2017-2018 Program Year* [Boston: Jumpstart, 2019]).

model shows promise for improving children's language and literacy and social-emotional development, which includes children's expression and management of emotions, as well as the ability to establish positive and rewarding relationships with others (that is, interpersonal skills). The Corporation for National and Community Service (CNCS) funded the evaluation.

Jumpstart Foster Grandparent Program Overview

Jumpstart is a national organization that works with early childhood education centers across the country. Jumpstart's national office is in Boston and the organization's national staff provides support and broad oversight related to curriculum design, volunteer recruitment, and evaluation and monitoring. Jumpstart also has offices nationwide (including in Los Angeles), where staff members support the implementation of the programs. This includes site managers who are responsible for overseeing the implementation of the model in several preschool classrooms at one or more centers.

Jumpstart offered Foster Grandparents several types of pre-service and in-service training to prepare and support them as they delivered the Jumpstart model. Volunteers were expected to participate in eight weeks of pre-service training (three days a week, six hours a day, totaling more than 138 hours). The pre-service training included an orientation about the Jumpstart curriculum, early childhood education, classroom management, and other relevant topics. The volunteers were also expected to attend monthly in-service trainings (four hours each), which were facilitated by site managers.

Each early childhood education center was assigned a team of four to seven Foster Grandparents who supported it for the entire school year.[7] Each volunteer team was overseen and supported by the Jumpstart site manager for that center, who observed and provided regular feedback to the volunteers. On days when volunteers were on-site, they were expected to meet after lunch for 1 to 1.5 hours to prepare and practice their delivery of the Jumpstart session plan for that week. On Fridays, the site managers also led a Team Leadership Meeting at a central location, where they reviewed and demonstrated the following week's session plan to the volunteer teams.

The overall goal of the JFG program was to place more trained adults in early childhood education classrooms so the children could receive more individualized attention, with a focus on their language, literacy, and social-emotional development. The Foster Grandparents provided this attention in two ways: Jumpstart sessions and child-centered time (CCT):

- **Jumpstart sessions** are based on a language and literacy curriculum designed to supplement existing preschool curricula.[8] The sessions are intended to create opportunities for the volunteers to interact with children in a more structured format. At the time of the study, the Jumpstart sessions targeted the development of three areas of foundational language and literacy skills in

[7]The number of volunteers in each center was based on the goal of having one volunteer for every three children during the Jumpstart session.

[8]Jumpstart's curriculum was adapted from the Opening the World of Learning (OWL, v. 2005) curriculum.

children: oral language (vocabulary, comprehension); book and print awareness (alphabet knowledge and use of print); and phonological awareness (phonemic and rhyme). The content of the curriculum, as well as the supportive interactions between children and the Foster Grandparents as they engaged in curriculum-based activities, were also intended to support children's social-emotional development. As part of the JFG program, the Jumpstart sessions were offered in one designated classroom in each early childhood education center. (This classroom will be referred to as the "Jumpstart classroom.") Two mornings a week, the volunteers led a structured two-hour session with the children in that classroom. The Jumpstart sessions took place during regularly scheduled classroom time and were led by the volunteers.

- While Jumpstart sessions were intended to provide a structured format for volunteer-child interactions, the second component of the JFG model — **child-centered time (CCT)** — consisted of time outside of the formal sessions, where volunteers interacted with children one-on-one in a less-structured format. As an integral part of service, CCT gave volunteers opportunities to interact with their partner children and contribute to their language and social-emotional development within the setting of teacher-led instructional time. Foster Grandparents in the JFG program played important roles in the classroom by building strong relationships with children; by increasing the number of adults and thereby increasing opportunities for children to receive individualized attention (from both volunteers and teaching staff); and by supporting children's participation and learning during activities planned by classroom teachers. Foster Grandparents were also expected to build collaborative relationships with teachers and supported teachers in the classroom.

The implementation of the JFG program components (and the resulting increase in the adult-to-child ratio) was intended to increase the amount of one-on-one attention that children received and, in turn, to lead to improvements in their language and literacy development and their social-emotional development.

Overview of the Evaluation

The purpose of this evaluation is to expand the body of research on the Jumpstart model, focusing on how the model was delivered by Foster Grandparents. Many interventions rely on volunteers to provide services to children and youth; this study also aims to build broader knowledge about the implementation and potential effects of educational interventions that mobilize volunteers, especially programs like JFG, which required a relatively large time commitment. The findings from this study can also inform policy and practice about the potential benefits of intergenerational programs.

The evaluation of Jumpstart includes an implementation study and an impact study. The goal of the implementation study is to describe the content, quantity, quality, and structure of

services that the Foster Grandparents provided to children in the study centers. The goal of the impact study is to explore whether the full Jumpstart model and its components, as delivered by the Foster Grandparents, show promise for improving children's outcomes. Eleven early childhood centers in Los Angeles were included in the implementation study. The effect of the Jumpstart model was examined using a child-level random assignment research design in five of the eleven centers that were a part of the implementation study. In each of the five centers, children were randomly assigned to one of three types of classroom: (1) a *Jumpstart classroom* that received the full JFG model, and where all children received the Jumpstart sessions *and* child-centered time outside of the Jumpstart sessions; (2) a *CCT-only classroom,* where children did not receive the Jumpstart sessions but where some children received child-centered time; or (3) a "*business as usual*" *classroom* that did not receive services from the volunteers. The impact of the Jumpstart model can be estimated by comparing the spring outcomes of children in the classrooms served by the volunteers to the spring outcomes of children in the business as usual classrooms.

The implementation and impact studies in this evaluation are based on several data sources. For the impact study, children's outcomes were measured using a teacher-reported assessment called the Desired Results Developmental Profile – Preschool. The DRDP-PS is an observational tool that can be used to rate children's development in several domains. Early childhood education centers in California that receive state funding (including all 11 study centers) must use the DRDP-PS to assess each child's development in the fall and spring. For the implementation study, the study team used data collected by Jumpstart to internally monitor the program, including data on child attendance during the Jumpstart session; training attendance records and volunteer timesheets; a pre-service and a post-service volunteer survey; and an observation checklist used by Jumpstart site managers when they observed volunteers in the Jumpstart sessions. The study team also conducted interviews with volunteers and administered a survey to all lead teachers in the study centers. Because teachers were present while volunteers worked with children, the survey asked teachers to report on volunteers' use of different instructional practices aimed at promoting children's language and literacy development, as well as their own use of these strategies.[9]

Implementation and Service Contrast

To better understand the context in which the JFG program was executed, the implementation study examined the content, quantity, quality, and structure of services that the Foster Grandparents provided to children in the study centers. It also examined the extent to which the presence of the volunteers changed children's learning environment relative to what they would have experienced otherwise (the service contrast created by the Jumpstart model).

Although the study was able to examine whether certain features of the model were implemented as intended, there were three key data limitations to consider. First, while it was

[9]The items in the survey were adapted from the Early Language and Literacy Classroom Observation (ELLCO) Pre-K Tool.

possible to measure the amount of time that volunteers spent serving classrooms outside of Jumpstart session time, it was not possible to measure how much of the volunteers' time was spent engaging with their partner children one-on-one during CCT (as opposed to providing support to all children in the class). Second, volunteers' use of teaching strategies focused on language and literacy development, as reported by teachers, may be biased. For example, given the nature of self-reporting, teachers may have overreported the extent to which they used these teaching strategies and underreported how often volunteers used them. Finally, the response rate for the Jumpstart post-service survey — which was used to measure volunteers' impressions of the program — was only 45 percent, which is below the 70 to 80 percent range that is recommended for generalizing results to a broad population.

Overall, the findings from this study indicate that the components of the Jumpstart model were generally implemented as intended, although limitations in the data make it challenging to assess whether that was accomplished with the expected level of quality:

- **Preparation and Training:** The Foster Grandparents had consistently high attendance at both the pre-service and in-service trainings and reported feeling adequately prepared for providing services to children.

- **Center-Based Volunteer Teams:** Teams of four to seven Foster Grandparents were successfully assigned to each center as expected, and the volunteers demonstrated a strong commitment to the program. Foster Grandparents had consistently high attendance rates and most remained in the program for the entire year. Not all site managers offered regular feedback meetings as intended by the model; nonetheless, volunteers consistently said that their teams were effectively supported by the site managers and center staff.

- **Jumpstart Sessions:** The Foster Grandparents implemented the Jumpstart sessions regularly and structured their delivery of the lesson plans as intended. The volunteers were also observed using various instructional practices aimed at improving children's language and literacy development. The frequency with which these practices were used in the classroom varied across centers, with some practices used more consistently than others.

- **Child-Centered Time (CCT):** The Foster Grandparents devoted a high number of hours to CCT, more than the four to five hours a week expected in the Jumpstart model. However, it is not possible to determine how much of that time was spent one-on-one with partner children. More generally, the volunteers were observed using recommended language and literacy strategies during one-on-one CCT, but strategies were not used consistently in all classrooms.

- **Service Contrast:** Because the Foster Grandparents dedicated a large amount of time to the Jumpstart program, children experienced an increased number of adults in these classrooms for a substantial portion of the week. During the

sessions, teachers reported that the volunteers used language and literacy practices almost as often as they did. This suggests that the teachers positively viewed the volunteers' contributions, though it is not possible to determine whether this translated into more individualized adult-child interactions. During CCT, while language and literacy instructional strategies were not used consistently across classrooms, teachers did report that volunteers engaged in a variety of one-on-one activities with children, providing individualized attention the children might not have received otherwise.

Effects on Children's Development

Given the goals of the Jumpstart model, the impact study focused on two children's outcomes: English Language and Literacy Development, and Social-Emotional Development. These outcomes were measured in the fall and in the spring, based on composite scores created from teachers' ratings using the DRDP-PS.

Even though a random assignment research design was used, the study has three important limitations that make its findings challenging to interpret. First, teachers were not randomly assigned to classrooms, which means that the effect of Jumpstart could be confounded with differences in teacher characteristics or the instruction provided by teachers across classrooms. Second, the number of children included in the analysis is small (105). Given this sample size, the estimated effect of the JFG model would have to be much larger than effects found in prior studies of the Jumpstart model — and larger than the effect of most educational interventions — to be statistically significant. Thus, the impact study is not powered to statistically detect effects of a reasonable magnitude. Third, because the DRDP-PS is used for purposes other than evaluation, child ratings from this tool may not accurately measure children's true level of development. Given these limitations, the study's findings should be considered exploratory and not used to make definitive conclusions about the Jumpstart model's effect.

Nonetheless, the potential for effects can still be explored by examining whether the findings are in the right direction and their magnitude. In this regard, the findings suggest that children in classrooms served by the Foster Grandparents did make gains during the year in their language and literacy skills and their social-emotional competencies. However, they did not make greater gains than children in the business as usual classrooms.

Table ES.1 presents the average spring DRDP-PS scores of children in the Jumpstart classrooms and the business as usual classrooms. As shown in this table, children in the Jumpstart classroom had a spring DRDP score of about 6 points on their English language and literacy development, while children in the business as usual classroom had a score of 6.5 points. Thus, the estimated effect of the full Jumpstart model on children's English language and literacy scores is numerically negative but small in magnitude and not statistically significant (effect size = -0.24,

Table ES-1

Estimated Effect of the Full Jumpstart Model on Children's Outcomes, Impact Sample

Outcome	Jumpstart Group	Business as Usual Group	Estimated Difference	Effect Size	P-Value for Estimated Difference
English Language and Literacy Development (IRT scale)[a]	-0.11	0.10	-0.21	-0.24	0.133
Developmental scale (9-point)	6.0	6.5			
Social-Emotional Development (IRT scale)[b]	0.08	0.07	0.01	0.01	0.951
Developmental scale (9-point)	7.7	7.7			
Self-Regulation Subscale (IRT scale)	-0.06	0.01	-0.07	-0.08	0.706
Developmental scale (9-point)	7.5	7.6			
Interpersonal Skills Subscale (IRT scale)	0.20	0.08	0.12	0.15	0.503
Developmental scale (9-point)	7.9	7.8			
Number of children	30	33			

SOURCE: Teacher ratings based on the Desired Results Developmental Profile – Preschool (DRDP-PS) in spring 2018.

NOTES: The analyses reported in this table are based on children whose parents consented to their participation in the study and who were assessed by their teachers using the DRDP-PS in fall 2017 and spring 2018. The sample includes children who were randomly assigned to classrooms that received the full Jumpstart model from the volunteers (Jumpstart group) or to classrooms that were not supported by the volunteers (business as usual group).

Estimated effects are regression-adjusted using ordinary least squares, controlling for random assignment or matching blocks, as well as any remaining differences between the Jumpstart and comparison group with respect to children's fall 2017 scores on the DRDP-PS assessments, whether the child was a dual language learner (DLL), whether the child had an individualized education plan, their gender, their age, language spoken at home, parent education, family size, whether a child's family received food stamps, and the number of times the family had moved in the last five years.The values in the column labeled “Jumpstart Group” are the observed means for children who were randomly assigned to a classroom that received the full Jumpstart model. The "Business as Usual Group” values in the next column are the regression-adjusted means children who were randomly assigned to a classroom that did not receive services from the Jumpstart volunteers.

[a]For English language learners, this scale is based on four items measuring children's English-language development. For children whose primary language was English, this scale is based on 10 items measuring children's language and literacy development. A partial credit IRT model was used to create a composite scale based on these items.

[b]The Social-Emotional Development scale includes nine items (four items measuring self-regulation and five items measuring interpersonal skills). A partial credit IRT model was used to create a composite scale based on these items.

Because IRT scores do not have a meaningful interpretation, group means for children's simple average score across the relevant items are also shown, based on the original nine-point developmental scale.

p-value = 0.133). For social-emotional development, the average spring score of both groups of children was 7.7. Thus, the estimated effect on social-emotional scores is numerically positive but small in size and not statistically significant (effect size = 0.01, p-value of 0.951).

Lessons About Implementing Volunteer-Based Intergenerational Programs

The findings from this study of the Jumpstart Foster Grandparent model highlight several lessons about the implementation of volunteer-based educational interventions:

- **It is possible to build a corps of senior volunteers who will commit significant amounts of time and energy to providing services to children.** Even though the volunteers were older adults — many of whom faced transportation, health, and social barriers — the Foster Grandparents attended many hours of pre-service and in-service training and they also met, and sometimes exceeded, their service hour requirement of 15 hours a week.

- **Some instructional practices and strategies are more challenging for volunteers to implement than others**. The findings from this study suggest that although the JFG volunteers implemented the language and literacy strategies that they learned in training, the frequency with which they were used varied across strategies and across centers.

- **High child mobility and sporadic attendance in early childhood education settings can make it challenging for staff to build relationships with children, which highlights the programmatic importance of child-centered strategies.** In this study, many children left the centers part-way through the academic year and were not assessed in the spring. Children with inconsistent or unstable school attendance in preschool miss out on instruction and supports that will prepare them for kindergarten. Child mobility also makes it more challenging for adults in early childhood education centers to build relationships with children. Thus, organizations like Jumpstart that focus on relationships need to work especially hard to make sure that one-on-one time with children (like CCT) is maximized during the short time that children might be enrolled at the center.

Looking Forward

In summer 2019, Jumpstart decided to discontinue its Foster Grandparent program, which represented about 4 percent of its total volunteer corps. This shift will allow Jumpstart to refocus its resources on the College Corps, a group that is better aligned with Jumpstart's goal of training volunteers who will later become educators and teachers in the country's educational workforce.

Jumpstart has made several enhancements to CCT and to the Jumpstart sessions, which its College Corps implemented in fall 2019. The goal of these enhancements is to help the

volunteers provide more intentional and focused language and literacy and social-emotional supports to children. Volunteers are now trained on a modified version of CCT called Individual Classroom Service (ICS), to help them provide their partner children with higher-quality individualized classroom time. ICS focuses on more intentional activities to promote language and literacy development. Volunteers receive training and support in the use of specific strategies for engaging children in conversations during one-on-one time, as well as activities for building vocabulary and comprehension skills. During ICS, volunteers continue supporting the general classroom by providing assistance to children during teacher-led activities, but there are guidelines that emphasize how much time to dedicate to partner children. With respect to the Jumpstart sessions, the curriculum has been adapted to more strongly emphasize oral language and social-emotional skill-building. The sessions previously focused on phonological awareness, books and print knowledge, and oral language. Now the main focus is on oral language skills of vocabulary and comprehension, and the curriculum incorporates a new emphasis on supporting children's ability to recognize, label, and understand emotions in themselves and others. These modifications, which are intended to help the volunteers provide children with a substantially different instructional and supportive experience, have the potential to further strengthen the Jumpstart model and lead to better outcomes for children in the communities served by the program.

Chapter 1

Introduction

Children's school readiness as they enter kindergarten is an important predictor of their academic success and ultimately their long-term health and economic outcomes.[1] Research shows that participation in high-quality early childhood education helps preschoolers gain the foundational language and literacy skills as well as the social-emotional competencies they need to be ready for kindergarten.[2] In recent years, there have been efforts at the local, state, and federal levels to increase investment in publicly funded early education. Even so, free or affordable high-quality preschool options remain limited for families in many underserved communities, and children growing up in poverty often have less access to the kinds of early learning opportunities that contribute to school readiness.[3] Gaps in language and literacy skills begin early and widen over time.[4] Furthermore, a significant number of kindergarten teachers report that at least half of the children in their classes have problems with the social skills they need to succeed in school;[5] this is especially true in low-income communities.[6]

Jumpstart is a nonprofit organization that aims to address this readiness gap. It partners with early childhood education centers across the country to increase their capacity to provide high-quality language and literacy instruction to children in underserved communities.[7] Jumpstart's program model, delivered by volunteers, includes weekly curriculum-based sessions focused on children's language and literacy development ("Jumpstart sessions"), as well as one-on-one time outside of those sessions ("child-centered time" or CCT). Most Jumpstart volunteers are college-age students ("College Corps"), but in some cities the volunteers have been older adults from the community ("Community Corps" or "Foster Grandparents," depending on the city).[8]

This report presents the findings from an evaluation of Jumpstart's Foster Grandparent Program (JFG) in Los Angeles and Compton, California, which operated from fall 2011 to summer 2019, where Jumpstart's services were delivered by older adults. The evaluation, which focuses on the 2017-2018 academic year, examines whether the JFG program was implemented as intended and to what extent the volunteers enhanced children's educational and developmental experience in the classroom. The evaluation also explores whether the JFG program model shows

[1]Blodgett and Houghten (2018); Pace, Luo, Hirsh-Pasek, and Golinkoff (2017).

[2]Bettencourt, Gross, and Ho (2016); Brown (2014); Pre-Kindergarten Task Force (2017).

[3]U.S. Department of Education (2015).

[4]Fernald, Marchman, and Weisleder (2013).

[5]Raver (2002).

[6]Manz and McWayne (2004).

[7]Jumpstart partners with higher education institutions, community organizations, Head Start programs, community-based preschools, and school districts.

[8]According to Jumpstart yearly reports, 4,054 Jumpstart volunteers served a total of 13,035 preschool children across the country in 2017-2018 (Jumpstart, 2019).

promise for improving children's language and literacy and social-emotional development, which includes children's expression and management of emotions as well as the ability to establish positive and rewarding relationships with others (that is, interpersonal skills). The Corporation for National and Community Service (CNCS) funded the evaluation.

This evaluation aims to build evidence about programs like Jumpstart that mobilize volunteers to provide services in their communities. Many programs across the country use volunteers. For instance, through its Senior Corps program, CNCS supports organizations that connect seniors with opportunities to volunteer.[9] The findings and lessons from this study may be helpful to policymakers and practitioners who work with volunteer-based programs, and to foundations and agencies like CNCS that provide such groups with financial support. This study also aims to inform policy and practice related to early childhood education.

This chapter begins by providing an overview of the JFG program: its components, its delivery, and findings from prior studies about its effectiveness. The chapter then describes the study design and the data that were used in this evaluation to examine its implementation and its potential for improving children's outcomes. Chapter 2 examines whether the Jumpstart model was implemented as intended, and to what extent the presence of volunteers enhanced the educational experience of children in the centers. Chapter 3 explores whether the Jumpstart model as delivered by the Foster Grandparents shows promise for further improving children's language and literacy and social-emotional development. Chapter 4 concludes by summarizing the main findings and discussing their implications for early childhood education programming and research.

Jumpstart Foster Grandparent Program Overview

Jumpstart is a national organization that works with early childhood education centers across the country. Jumpstart's national office is in Boston and the organization's national staff provides support and broad oversight related to curriculum design, volunteer recruitment, and evaluation and monitoring. Jumpstart also has offices across the country (including in Los Angeles) where staff members support the implementation of the programs. This includes site managers who are responsible for overseeing the implementation of the model in several preschool classrooms at one or more centers. In the Foster Grandparent program, three Jumpstart site managers oversaw volunteer placements and program delivery in 13 preschool classrooms in California.

Jumpstart site managers recruited Foster Grandparents each summer by giving presentations at senior centers, groups that work with seniors, and other sources such as faith-based and community organizations. During this recruitment period, Jumpstart staff also contacted seniors

[9]The Senior Corps currently includes two programs: the RSVP program, where seniors can use their skills in a variety of settings, including teaching English to immigrants and helping communities rebuild after national disasters; and Senior Companions, where volunteers help adult clients live independently in their own homes. The Foster Grandparent program focused on recruiting senior volunteers to work with children with exceptional needs (Corporation for National and Community Service, n.d.).

who had reached out to the organization during the year to inquire about volunteering. Jumpstart conducted an initial screening to determine eligibility for the JFG program. In order to become volunteers, interested seniors were asked to submit an application and an income eligibility form.[10] Eligible seniors who met the income and commitment requirements (at least 15 hours per week) were invited to an interview with Jumpstart staff.[11] The organization used the interview process to assess applicants' ability to work in teams, their commitment to early childhood education, and their dedication to community service. Volunteers who had served in previous years were also invited to complete an abbreviated application and, if they met program expectations (for example, displayed professionalism and a commitment to early childhood education), were invited to volunteer for another year.

Jumpstart offered Foster Grandparents several types of pre-service and in-service training to prepare and support them as they delivered the Jumpstart model. Volunteers were expected to participate in eight weeks of pre-service training (three days a week, six hours a day, totaling more than 138 hours). The pre-service training included an orientation about the Jumpstart curriculum, early childhood education, classroom management, and other relevant topics. The volunteers were also expected to attend monthly in-service trainings (four hours each), which the site managers facilitated. The managers covered areas that they had identified as needing additional focus based on their observations of the volunteers in the classroom, such as teamwork, meaningful conversations, and guided play with children.

Each early childhood education center was assigned a team of four to seven Foster Grandparents who supported it for the entire school year.[12] Jumpstart strategically structured teams so they had a balance of new recruits and returning Foster Grandparents with varying levels of educational attainment and experience in early childhood education. Each volunteer team was overseen and supported by the Jumpstart site manager for that center, who observed and provided regular feedback to the volunteers. On days when volunteers were on-site, they were expected to meet after lunch for 1 to 1.5 hours to prepare and practice their delivery of the Jumpstart session plan for that week. On Fridays, the site managers also led a Team Leadership Meeting at a central location, where they reviewed and demonstrated the following week's session plan to the volunteer teams. At least two representatives from each team had to be present, but often the entire team attended the meeting.

The overall goal of the JFG program was to place more trained adults in early childhood education classrooms so the children could receive more individualized attention, with a focus on

[10]This application was several pages long and included questions about biographical information, availability and transportation needs, references, and placement requests. It also included open-ended questions about volunteers' personal interests and goals, their experiences with and interest in children's literacy, and their ability to work on diverse teams. The income eligibility form was shorter and included detailed questions about applicants' recent and projected income.

[11]Income could not exceed 200 percent of the poverty level to conform to the Edward M. Kennedy Serve America Act of 2009 (Jumpstart Senior Corps Income Guidelines, 2019).

[12]The number of volunteers in each center was based on the goal of having one volunteer for every three children during the Jumpstart session.

their language, literacy, and social-emotional development. The Foster Grandparents provided this attention in two ways: Jumpstart sessions and CCT.

Jumpstart sessions are based on a language and literacy curriculum designed to supplement existing preschool curricula.[13] The sessions are intended to create opportunities for the volunteers to interact with children in a more structured format. At the time of the study, the Jumpstart sessions targeted the development of three areas of foundational language and literacy skills in children: oral language (vocabulary, comprehension); book and print awareness (alphabet knowledge and use of print); and phonological awareness (phonemic and rhyme). The content of the curriculum, as well as the supportive interactions between children and the Foster Grandparents as they engaged in curriculum-based activities, were also intended to support children's social-emotional development.

For the JFG program, Jumpstart sessions were offered in a designated classroom in each early childhood education center.[14] (This classroom will be referred to as the "Jumpstart classroom" throughout this report). Two mornings a week, the volunteers led a structured, two-hour session with the children in that classroom. The Jumpstart sessions took place during regularly scheduled classroom time and were led by the volunteers. The lead preschool classroom teacher and the teaching assistants were also present; their role was to monitor behavior, encourage children to take part, and participate along with the children and volunteers. As a result, the number of adults in the Jumpstart classroom was significantly increased during session time.

The Jumpstart curriculum was delivered in 40 sessions designed to provide children with a balance of individual and group learning activities that facilitated interactions with the volunteers and enhanced the individualized attention the children received. Each session followed the same routine to support the participation of children and adults during Jumpstart time. Those session elements were: Welcome, Reading, Circle Time, Center Time, Let's Find Out About It, and Sharing and Goodbye (see Table 1.1 for a detailed description of session segments). Each session revolved around a core storybook that connected to an overall unit theme and served as the focus for many of the learning activities included in the session.[15] Each storybook also included social-emotional content that supported children's development of interpersonal skills. During Jumpstart session time, volunteer interactions were individualized and further promoted by pairing each Foster Grandparent with three to four partner children whom they supported during small group activities throughout the entire year (during the Welcome and Reading segments

[13]Jumpstart's curriculum was adapted from the Opening the World of Learning (OWL, v. 2005) curriculum.

[14]In a center, sessions were scheduled for the same two days every week, either Monday and Wednesday or Tuesday and Thursday. Although most centers have more than one classroom, JFG sessions were delivered in only one classroom. This classroom did not change throughout the year.

[15]There were six units: The Family; Friends; Wind and Water; The World of Color; Shadows and Reflections; and Things that Grow.

Table 1.1

Jumpstart Session Segments

Segment	Format	Overview	Duration (minutes)
Welcome	Small group	The volunteers transition children to the Jumpstart session by involving them in alphabet knowledge and phonemic awareness activities with their names.	2-5
Reading	Small group	Volunteers present and read the book of the day to introduce vocabulary and engage children in discussions that support comprehension. There are two parts to the reading: (1) reading for enjoyment, and (2) reading to reconstruct (interspersing the reading with questions about the text).	15
Circle Time	Full group	The children and volunteers join together in four group activities such as singing songs or playing games that support skill development.	15
Center Time	Small group	The team leader introduces the activities at five activity centers. Volunteers disperse to each center and interact with children in a variety of activities. The centers are: • Writing • Books • Puzzles and manipulatives • Dramatic play • Art or science Children choose which center they want to attend first, then circulate through the others as much as they want. They don't have to participate in all centers.	50-55 (including 5-minute introduction)
Let's Find Out About It	Small group	There is also a "Let's Find Out About It" activity facilitated at the beginning of Center Time. This activity allows children to dive deeper into a concept from the book of the day or from the unit theme. Only half of the children participate in this activity; the other half gets to do it in the second session implementation. After the small group finishes this activity, they can join and circulate through the centers of their choice.	15
Sharing and Goodbye	Full group	Volunteers ask four children to share what they learned during the day and reflect on the lesson. Volunteers then share a summary of the next session and say goodbye.	5

of the sessions).[16] The assignment of children to volunteers for Jumpstart sessions was intended to remain consistent throughout the year.

The volunteers were provided with a series of 20 session plans, along with the materials needed for the activities. Each session plan provided detailed information about activities to engage the children, how to implement those activities, and why they were important. Foster Grandparents were expected to deliver Jumpstart sessions twice a week for 20 weeks (each storybook was covered twice), for a total of 40 sessions during the school year. During the second implementation of each session plan, children continued to develop an interest in and enjoyment of the stories, while also deepening their understanding of target vocabulary, story events and their causes (comprehension), and related content knowledge. During each session, one volunteer served as the activity leader, guiding the classroom through the plan and facilitating transitions between activities. Some teams rotated the role of activity leader, while in other teams the role was assumed by the Foster Grandparent who felt most comfortable taking on that responsibility.

While the Jumpstart sessions were intended to provide a structured format for volunteer-child interactions, the second component of the JFG model — **child-centered time** — consisted of time outside of the formal sessions, where volunteers interacted with children one-on-one in a less-structured format. As an integral part of service, CCT gave volunteers opportunities to interact with their partner children and contribute to their language and social-emotional development within the setting of teacher-led instructional time. A Foster Grandparent might support partner children during class circle time, for example, or they might help facilitate learning during child-initiated activities.[17] The nature of these interactions between Foster Grandparents and partner children varied from classroom to classroom and from volunteer to volunteer. Some teachers provided suggestions and directions to volunteers on how to support partner children, while other teachers allowed Foster Grandparents more flexibility and encouraged them to introduce new concepts and activities that were related to Jumpstart's language and literacy domains.[18] Nonetheless, an integral part of the CCT model was that it be completely adaptable to the classroom's usual routine. Each volunteer was expected to provide four to five hours of CCT throughout the week, according to their availability and classroom teachers' preferences. Foster Grandparents played important roles in the classroom: by building strong relationships with children; increasing

[16]The strategy for grouping and assigning children to volunteers was often left to the discretion of classroom teachers and center staff and hence varied across centers. For example, some centers allowed volunteers to work with all the children in the classroom where Foster Grandparents delivered services and the teacher later assigned children to volunteers based on bonds that formed organically. In other centers the teachers made assignments based on the needs of the children.

[17]In child-initiated activities, children were free to move from one activity to another as they felt motivated. They were encouraged to make their own activity choices, take out the appropriate materials, and put them away when they were done. In a Jumpstart classroom, the teacher's role was to arrange the environment and provide ideas and materials for children to choose their own activities.

[18]Prior to the start of the program year, Jumpstart staff and teachers participated in an orientation to build a shared understanding about each other's roles and establish systems and processes for a successful school year, including CCT schedules, attendance policies, and requirements and expectations for implementing Jumpstart. Throughout the year, teachers received week-by-week curriculum highlights.

the number of adults and thereby increasing opportunities for children to receive individualized attention (from both volunteers and teaching staff); and by supporting children's participation and learning during activities planned by classroom teachers. Foster Grandparents were also expected to build collaborative relationships with teachers and support teachers in the classroom.

The Foster Grandparents provided CCT in the Jumpstart classroom *and* other classrooms at the early childhood education centers. In the Jumpstart classroom, the volunteers provided CCT to their partner children outside of session time; in the other classrooms at the center (CCT-only classrooms), a subset of Foster Grandparents also provided CCT to an assigned group of one to three children.[19] The criteria used by teachers to select which children got CCT in these classrooms differed across centers but could include: a child's developmental needs (children who required extra help); a child's age (younger children, because they needed additional support transitioning from home to preschool, or older children, because they could benefit from more support as they prepared to transition to kindergarten); or a child's attachment (volunteers were paired with the children who formed a bond with them). The assignment of partner children to volunteers was intended to stay relatively stable throughout the year.

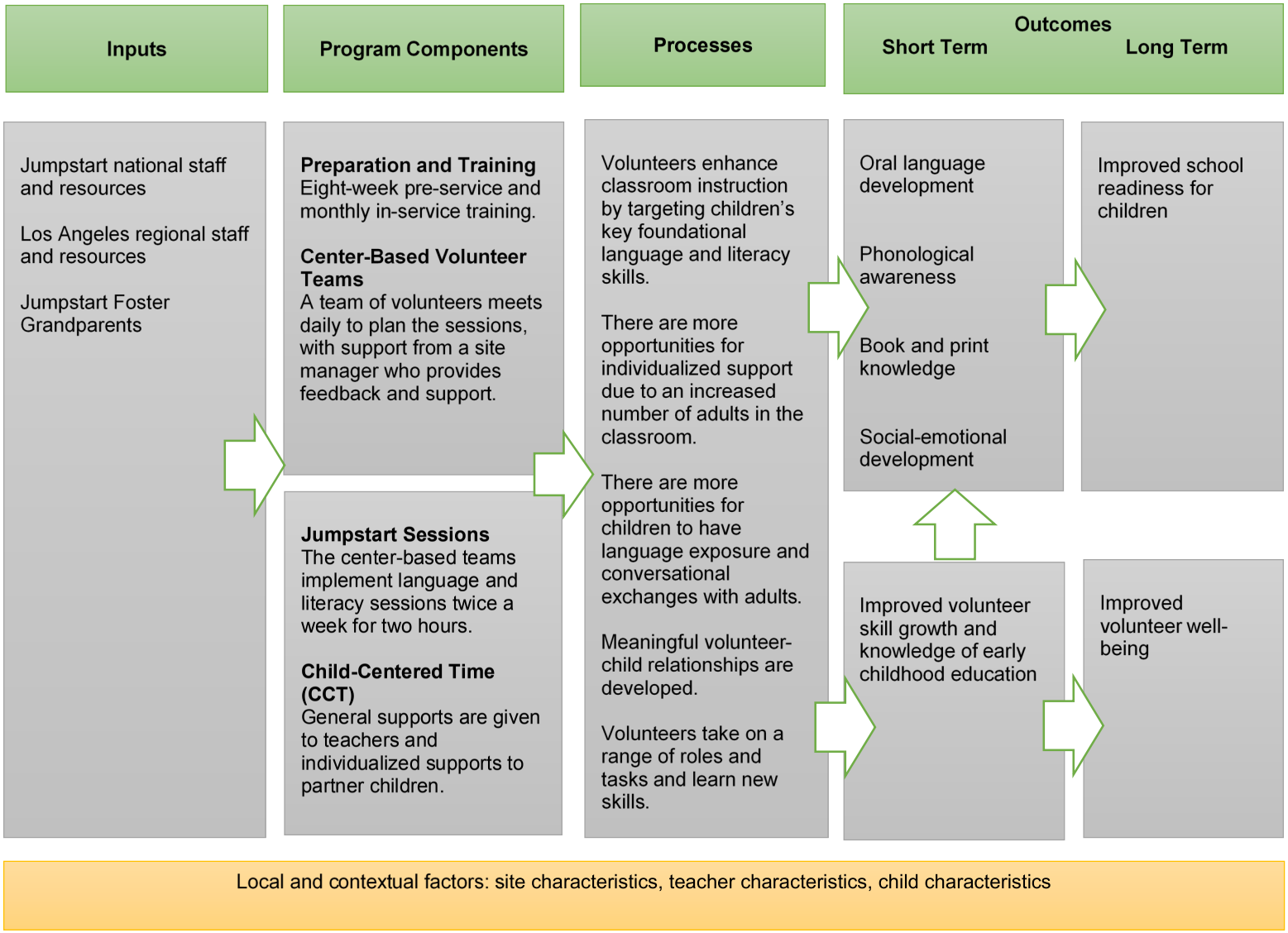
The volunteer teams typically provided CCT from early October to the end of May or mid-June, whereas the Jumpstart sessions began a bit later, in mid- to late October, and ended in mid-May. As already noted, Jumpstart sessions were offered two mornings a week for two hours and CCT took place outside of session time. CCT occurred throughout the week, sometimes directly before the Jumpstart sessions, but also on days when Jumpstart sessions were not conducted. Children in Jumpstart classrooms were expected to receive CCT for at least three hours a week outside of session time. In the CCT-only classrooms at centers, Foster Grandparents were also assigned to a group of one to three partner children who were expected to receive three hours of CCT a week.

Figure 1.1 summarizes the key components of the Jumpstart model and its theory of change. As shown in this figure, the implementation of the JFG program components (and the resulting addition of trained adults in the classroom) was expected to set in motion several processes: (1) Volunteers enhanced classroom instruction by targeting children's key foundational language and literacy skills (oral language, phonological awareness, and book and print knowledge); (2) volunteers provided one-on-one attention and support to children so that meaningful relationships between volunteers and children could develop; (3) there would be more opportunities for children to be exposed to language and more opportunities for conversational exchanges between children and volunteers; and (4) the volunteers would get to learn more about early childhood education and develop and practice new skills. This, in turn, would lead to improvements in children's language and literacy and social-emotional development. The specific

[19]The volunteers were required to provide CCT in other classrooms (and not just the Jumpstart classroom) for two logistical reasons: (1) During "regular" classroom time, if all volunteers provided CCT in the same classroom at the same time, there would be too many adults in the classroom; and by extension (2) Foster Grandparents had to provide CCT in other classrooms to meet their time commitment.

Figure 1.1

Theory of Change



program components (Jumpstart sessions and CCT) were theorized to have an impact on children in the following ways:

- **Effect of the Jumpstart sessions:** The Jumpstart sessions were expected to have a positive effect on the language and literacy development of children in the classroom — more specifically, their oral language, phonological awareness, and book and print knowledge. Because the Jumpstart curriculum is in English, program effects were mainly expected on English-language development. In addition, the Jumpstart sessions might also improve children's social-emotional development through the content of stories and activities and the increased opportunity to participate in structured group activities. Through ongoing support and more frequent, high-quality interactions with the volunteers, children were also developing secure relationships with adults that could enhance their emotional development.

- **Effect of CCT:** Providing CCT in a classroom during nonsession time was expected to have a positive effect on the language and literacy and social-emotional development of children through two pathways. First, children's language and literacy development and their social-emotional development would be enhanced through the one-on-one attention that they received from the volunteers. (In non-Jumpstart classrooms, this direct effect of CCT applied to the subset of children who were partnered with a volunteer.) Second, children's development might also be improved through the benefits of having more adults in the classroom during nonsession time. More adults in the classroom could create more opportunities for teachers and teaching assistants to provide one-on-one attention to all children in the classroom. This indirect or secondary effect of CCT could benefit all children in the classroom, including those who were not directly paired with a volunteer. Because it could affect all children in the classroom, CCT could therefore be considered a classroom-level intervention component.

- **Effect of the full Jumpstart model:** Finally, it was expected that the combination of Jumpstart sessions with CCT (the full Jumpstart model) would produce even greater benefits than offering these services in isolation. In the full Jumpstart model (which was provided in the Jumpstart classroom), there were multiple opportunities for volunteers to build a strong relationship with their partner children: during the small group activities that took place during the session, and again though one-on-one CCT. The stronger relationships that were created through these two types of activities might increase the effect of CCT as well as the effect of the sessions, beyond what would be if they were offered in isolation.

Although the effect of the Jumpstart model as implemented by senior volunteers has not previously been externally evaluated, prior studies of the model as implemented by the College

Corps found promising effects on children's outcomes. These studies found that children who received services from Jumpstart volunteers outperformed comparison children on measures of early literacy (expressive vocabulary, target vocabulary, and oral literacy), school readiness, and social-emotional skills.[20] Moreover, a substantial body of research suggests that intergenerational models have the potential to positively affect the outcomes of the children involved, including their mental health (reduced anxiety, improved self-worth) and their attitudes toward older adults.[21] Recent studies have also shown that educational interventions delivered by volunteers of varying ages can improve the educational outcomes of children from low-income families. For example, a recent study of Reading Partners — a tutoring program that mobilizes volunteers who are not certified teachers — found that it had a positive and statistically significant impact on the reading achievement of elementary school students.[22]

It was further expected that the volunteers themselves would benefit from participating in Jumpstart. Volunteers would learn more about early childhood education and develop new skills in a wide range of areas, such as working in teams, communication, and problem-solving. They would also create meaningful connections with children and watch them grow. This could help the volunteers to be more effective in their role of improving children's development, while at the same time, improving their own well-being, including better overall physical health and lower levels of depression and isolation. Findings from a recent independent study showed that first-time volunteers in the Foster Grandparent and Senior Companion programs (both funded by CNCS) reported improvements in physical and mental health after two years of service.[23] Ultimately, intergenerational programs appear promising for both children and older adults, with wide-ranging effects.

Overview of the Evaluation

The purpose of this evaluation is to expand the body of research on the Jumpstart model, focusing on how the model was delivered by Foster Grandparents. Many interventions rely on volunteers to provide services to children and youth, so this study also aims to build broader knowledge about the implementation and potential effects of educational interventions that mobilize volunteers to provide services to children, especially ones like Jumpstart that require a relatively large time commitment. The findings from this study can also inform policy and practice about the potential benefits of intergenerational programs.

This evaluation of Jumpstart includes an implementation study and an impact study. The goal of the implementation study is to describe the content, quantity, quality, and structure of services that the Foster Grandparents provided to children in the centers in this study.

[20]Harris and Berk (2011); Dwyer (2012); Grant and Shannon (2015). Two of these studies used a quasi-experimental research design and one used a child-level random assignment research design.

[21]Park (2015).

[22]Jacob, Armstrong, and Willard (2015).

[23]Georges et al. (2018).

Accordingly, the study examines the following questions related to the implementation of the JFG program:

- To what extent were the key Jumpstart program components (volunteer trainings, center-based volunteer teams, Jumpstart sessions, and CCT) put in place and implemented with the intended frequency, intensity, and duration?
- How many hours of Jumpstart sessions and CCT did children receive on average during the academic year?
- To what extent did the training and the program materials prepare the volunteers to implement the program?

In addition to how well the program was implemented, another important driver of Jumpstart's effects on children is the extent to which the presence of the volunteers affected the classrooms. The implementation study examines questions related to the service contrast created by the Jumpstart model:

- To what extent were there more adults in classrooms served by the volunteers than in classrooms not served by the volunteers?
- Did children in classrooms served by the volunteers experience more individualized interactions promoting their language and literacy development than children in classrooms not served by the volunteers?

This evaluation of Jumpstart also includes an impact study. The goal of the impact study is to explore whether the full Jumpstart model and its components, as delivered by the Foster Grandparents, show promise for improving children's outcomes:

- What was the effect of providing the full Jumpstart model (sessions and CCT) on children's language and literacy development and their social-emotional development?
- What was the classroom-level effect of providing CCT on children's language and literacy development and their social-emotional development?

As will be described in greater detail in this section, the effect of the Jumpstart model was examined by randomly assigning children to classrooms that received different levels of services from the volunteers (full Jumpstart model, CCT-only, or no services). The remainder of this chapter describes the implementation and impact studies in greater detail, including the centers that participated in the evaluation, the random assignment of children to classrooms, and the data sources and measures that were used to measure implementation and child outcomes. The limitations of the evaluation are also discussed.

Recruitment of Study Centers

Thirteen early childhood education centers in Los Angeles and Compton, California, implemented the JFG model in 2017-2018, and all of them were approached about participating in the study. To do so, they had to be willing to: (1) share data that they already collect about enrolled children (for example, teacher reports, daily attendance, etc.); (2) help with obtaining parental consent for children to take part in evaluation activities and for the study team to view the children's records; and (3) allow the study team to randomly assign all or a subset of children to classrooms in the 2017-2018 academic year. Eleven centers agreed to the first two criteria and are included in the implementation study (these centers will be referred to as the "study centers" in this report). Of these eleven, five centers agreed to the random assignment of children to classrooms and are included in the impact study (these centers will be referred to as the "impact study centers" in this report).

The centers in the study are operated by a total of six umbrella organizations or agencies that offer a variety of social services in their local communities. Most of them are Head Start centers where children can attend all day. One center offers half-day classes, which means it serves different groups of children in the morning and afternoon. All serve children from low-income families, which reflects the population served by Jumpstart in the Los Angeles area.[24] Four centers have only one classroom of preschool-age children, while the others have more than one classroom (see Table 1.2). All classrooms included in the study were mixed-age classrooms (3- and 4-year-olds).

Random Assignment and Recruitment of Children

In this study, the impact of the JFG model on children's development is explored using a three-group random assignment research design. In each of the five centers in the impact study, children were randomly assigned to one of three types of classrooms:

- **Jumpstart classroom:** A classroom that received the full JFG model, where all children received the Jumpstart sessions *and* child-centered time outside of the Jumpstart sessions;
- **"CCT-only" classroom:** A classroom where children did not receive the Jumpstart sessions but where some children received child-centered time; and
- **"Business as usual" classroom:** A classroom where children did not receive any Jumpstart services from the volunteers.

[24]In 2017-2018, children served by the Jumpstart Foster Grandparent program in Los Angeles had the following characteristics: About 96 percent were 3 or 4 years old (the remainder were 2 or 5 years old or older); 75 percent were Latino and 15 percent were black; 52 percent were boys (48 percent girls); 82 percent were dual language learners; 59 percent were most comfortable speaking English; and 38 percent were most comfortable with Spanish.

Table 1.2

Jumpstart Foster Grandparent Study Agencies

Agency	# of centers	# of classrooms
Agency 1	Center 1	3
	Center 2	3
	Center 3	3
Agency 2	Center 1	3
	Center 2	4
	Center 3	1
Agency 3	Center 1	8
Agency 4	Center 1	1
Agency 5	Center 1	1
	Center 2	1
Agency 6	Center 1	3

Only children who were new to the centers were randomly assigned to classrooms, because centers preferred that returning children stay with their teachers from the previous year. Random assignment was conducted separately for each center, and in some places also by special needs, by age, and/or by gender. This "blocking" of random assignment helped ensure that classrooms in each center were similar in terms of age distribution, gender, and needs.[25] Random assignment was conducted in summer 2017.

Using this study design, the impact of the full JFG model could be estimated by comparing the spring outcomes of children in the Jumpstart and business as usual classrooms. Similarly, the classroom-level impact of CCT could be estimated by comparing the spring outcomes of children in the CCT-only and the business as usual classrooms.

An important advantage of this study design is that the random assignment of children to classrooms ensured that children in the three types of classrooms were at similar development levels in the fall before the Jumpstart program was delivered. This means that any observed differences in children's outcomes in the spring were not confounded with preexisting differences between the three groups. However, as will be discussed later in this chapter, teachers were not randomly assigned to classrooms.

Data Sources

Several types of data were used in this evaluation (see Table 1.3). For the implementation study, various sources of information were used or collected to assess the delivery of the Jumpstart

[25]Centers expressed that this balance is important to them. In addition, blocking can also improve the precision of impact estimates and statistical power.

Table 1.3

Overview of Data Sources

Data Source	Data Collection Timing	Domains
Implementation Study		
Session attendance logs	Throughout program year	Consistency of Jumpstart sessions offered
		Attendance during Jumpstart sessions
Jumpstart session and team planning checklists	A couple of times per program year	Implementation of structured session components
Training attendance records	Pre-service and monthly in-service during program year	Participation in trainings
Volunteer timesheets	Throughout program year	Volunteer team participation in program and overall retention rate
		Volunteer presence during Jumpstart sessions and CCT
		Hours of Jumpstart sessions and CCT offered
Volunteer pre-service survey	Fall	Volunteer characteristics
Volunteer post-service survey	Spring	Volunteer preparation for service after training
		Usefulness of supervision, feedback, and meetings
		Relationship between volunteer and pre-school staff
Volunteer interviews	Spring	Training quality
		Volunteer team quality
		CCT quality
		Volunteer knowledge and skill gains
Teacher survey	Spring	Language and literacy instruction observed during Jumpstart sessions
		Language and literacy instruction observed during CCT
		Classroom management
		Teacher characteristics
Impact Study		
Parental consent form	Fall	Child and family characteristics
DRDP-PS ratings	Fall and spring	English Language and Literacy Development
		Interpersonal Skills
		Self-Regulation

model in the study centers. To begin, the study team relied on data sources collected by Jumpstart to internally monitor program implementation during the 2017-2018 academic year:

- **Session attendance logs:** As part of Jumpstart's internal monitoring system, the volunteers collect data on the attendance of children during the Jumpstart session. The study team used these data to measure the amount of services (session dosage) the children received and to assess the amount of time volunteers committed to the program and the children.

- **Session and Team Planning Checklist:** Jumpstart site managers regularly use an observational tool that helps them keep track of whether the volunteers are using the specified plan activities. The study team used data from the checklists to examine whether the volunteers implemented the Jumpstart sessions as intended.

- **Training attendance records and volunteer timesheets:** Jumpstart records the attendance of volunteers at the pre-service trainings and tracks the volunteers' hours served using monthly timesheets. The timesheets capture training time, the number of hours the volunteers spend at the centers each day across the entire year, and whether they are providing sessions, participating in team planning meetings, or providing nonsession support. Given the volume and complexity of the timesheet data, the study team randomly sampled 16 volunteers and analyzed their monthly timesheets for the 20 weeks in 2017-2018 that Jumpstart sessions were implemented in the study centers.[26] These data were used to measure the amount of time volunteers spent on-site and what they did during that time.

- **Volunteer survey:** Jumpstart administers a pre-service and a post-service survey to its volunteers. Data from Jumpstart's fall 2017 volunteer survey were used to examine the characteristics of the volunteers in the study centers, and data from the spring 2018 survey were used to examine volunteers' perceptions of the training and the program.

To supplement these existing data sources, the study team also collected additional data on implementation specifically for the purposes of the study:

- **Volunteer interviews:** During the JFG program's final team leadership meeting (May 2018), the study team conducted one-on-one interviews with 12 volunteers. (One participant was randomly selected from each volunteer team.[27]) Volunteers were asked about the training provided by Jumpstart, the

[26]The timesheets contained extensive amounts of data that were heavily formatted, which made extracting information from the timesheets challenging.

[27]All volunteers in all 11 study centers were present for this training and everyone had an equal opportunity to be chosen for an interview. The duration of these interviews was 15-20 minutes.

functioning of their center-based team, their day-to-day practices, and how they benefitted from being a volunteer.

- **Teacher survey:** Lead teachers were given a survey to assess the level at which high-quality language and literacy practices were used in their classrooms — by themselves or the volunteers.[28] Some questions in the survey were adapted from the Early Language and Literacy Classroom Observation (ELLCO) Pre-K Tool, a well-established observational tool designed to capture the quality of language and literacy instruction in preschool classrooms.[29] All teachers[30] responded to the survey.

Two data sources were used for the impact study. The first was a short intake survey that parents and guardians were asked to complete during the parental consent process.[31] The survey included several items about the characteristics of their children and their families, and the information was used as covariates in the impact analysis.

Also for the impact study, the study team measured children's outcomes with a teacher-reported assessment tool that is used by all the study centers called the Desired Results Developmental Profile – Preschool. The DRDP-PS is an observational tool developed by the California Department of Education with support from researchers at University of California, Berkeley, that can be used by teachers to rate children's development in several areas. Early childhood education centers in California that receive state funding (including all 11 study centers) must use the DRDP-PS to assess each child's development in the first 60 days of enrollment and then again after six months. Children's skills are rated in eight domains and each domain includes several items.[32] For each item, there is a well-defined, nine-point scale representing different levels of development.[33] To improve rating consistency across teachers, each item is accompanied by a description of the behaviors and skills that children at each level exhibit on that item, and specific illustrative examples. When used correctly, domain-specific scales from the DRDP-PS are highly correlated with other established developmental measures, and its scales have been shown to have high internal consistency and inter-rater reliability.[34]

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[28]The teacher survey instrument can be found in Appendix A.

[29]Polk (2013).

[30]This number includes 27 lead teachers and 8 assistant teachers. Only lead teacher survey responses were analyzed.

[31]In all study centers, children's parents were asked for consent for the center to share information with the study team about their children. The consent process took place between August 2017 and mid-October 2017; 73 percent of parents agreed to their child's participation in the study (see Appendix B, Figure B.1).

[32]These domains are: Approaches to Learning--Self-Regulation; Social and Emotional Development (which measures children's interpersonal skills); Language and Literacy Development (which rates children's development in their main language); English-Language Development (for Dual Language Learners only); Cognition; Physical Development-Health; History-Social Science; Visual and Performing Arts.

[33]The nine levels are: Responding (earlier and later), Exploring (earlier, middle, later), Building (earlier, middle, later), and Integrating (earlier).

[34]DRDP Collaborative Research Group (2018).

For the purposes of the evaluation, the study centers provided DRDP scores for fall 2017 and spring 2018 for all children whose parents agreed to the release of these data. The impact study focused on children's scores in four domains measured by the DRDP that are highly aligned with Jumpstart's theory of change: Language and Literacy, English-Language Development, Interpersonal Skills,[35] and Self-Regulation. The two former domains were used to create an English Language and Literacy Development measure.[36] The two latter scores were combined into an overall measure of social-emotional development for the purpose of this study. (See Appendix C for more information on the items in each domain).[37]

Limitations

Both the implementation study and the impact study have limitations that make it challenging to interpret their results and to draw definitive conclusions about the potential effects and implementation of the Jumpstart model in the study centers. These limitations are discussed below.

Implementation Study

The main limitations of the implementation study are related to its data sources. The first limitation is that the study was not able to measure the amount of time the volunteers devoted to specific children during CCT. The volunteer timesheets tracked the number of hours that volunteers spent serving classrooms, but do not drill down to reflect which children the members were supporting throughout different aspects of their service. The study team worked with Jumpstart staff to identify a set of assumptions to best estimate how many hours volunteers spent in sessions and in CCT across classrooms. However, because they rely on assumptions, any findings based on the timesheets should be interpreted with caution. Furthermore, as mentioned earlier, the research team did not analyze the timesheets of all volunteers (16 volunteers' timesheets were randomly sampled for the analysis).[38]

A second limitation of the implementation study relates to the difficulty of determining whether the presence of the volunteers in the classrooms increased the individualized attention the children received and improved the quality of adult-child interactions. Because lead teachers

[35]In the DRDP, the Interpersonal Skills domain is referred to as the Social and Emotional Development domain. The research team renamed it for the purpose of this report. Social-Emotional Development is used in the report to refer to a composite measure of DRDP domains.

[36]The English Language and Literacy Development outcome that is used in this evaluation is based on children's scores on two DRDP domains: For children who were *not* dual language learners, their English Language and Literacy Development score was based on their ratings on items in the DRDP's **Language and Literacy Development** (LLD) domain. For children who *were* dual language learners, their score for the DRDP's **English-Language and Literacy Development** domain was used instead, because this assesses their progress toward learning to communicate in English (whereas the LLD score may reflect language and literacy development in a child's home language).

[37]Three of the seven measures in the Self-Regulation domain are conditional measures that were only scored when a child had an individualized education plan or was a dual language learner. These conditional measures were not included in the composite social-emotional learning measure.

[38]The study team received timesheets for all 71 Foster Grandparents who volunteered at the study centers.

were present in the classroom at most times, a survey was used to ask them to report on the extent to which they and the volunteers used teaching strategies aimed at promoting children's language and literacy development, as well as the types of activities that volunteers engaged in with children during one-on-one time. However, because this was based on self-reporting — as opposed to a report from an independent observer — it is possible that teachers overreported the extent to which they used these strategies or that they underreported how often volunteers were using these strategies. Thus, the teacher survey provides an imperfect picture of the instructional experience of children in the study classrooms.

Finally, the response rate for the Jumpstart post-service survey — used to measure volunteers' impressions of the program — was only 45 percent, below the 70 to 80 percent range that is recommended for generalizing results to a broad population. This means that findings related to volunteers' perceptions of Jumpstart trainings and the program, which will be discussed in Chapter 2, should be interpreted with some caution.

Impact Study

A key limitation of the impact study is its design. As mentioned earlier, teachers were not randomly assigned to classrooms (or, viewed otherwise, Jumpstart services were not randomly assigned to classrooms). Instead, since centers affiliated with the JFG program could choose which classroom would implement the Jumpstart sessions, that means there could be systemic differences in teacher characteristics or quality across the three types of classrooms, and these differences could be confounded with the effect of Jumpstart on children.[39] In the lead teacher survey mentioned earlier, teachers were asked about their characteristics, experience, and education. On average across classrooms, the lead teachers in this evaluation were highly experienced educators, with 14 years or more of early education teaching experience, and they all had at least some college education. There were also notable differences across the three classroom types (Jumpstart, CCT-only, and business as usual) with respect to teachers' ages and their likelihood of having a bachelor's degree.[40] These differences, and other unmeasured differences, may have led to variation in the instruction received by children across classroom types (or, alternatively, variation in how these teachers rated children's development on the DRDP).

A second limitation of the impact study is its small sample size. The analysis sample for the impact study included children enrolled in the five impact study centers whose parents consented to their participation, and who had both fall and spring data on the DRDP-PS. The resulting analysis sample includes 105 children. Given this sample size, the estimated effect of the JFG model would have to be much larger than effects found in prior studies of the model — and larger than the effect of most educational interventions — to be able to conclude that Jumpstart's effects

[39]Centers make decisions about the Jumpstart classroom based on a range of factors. In some centers, the director asks for a volunteer; in others, the director chooses the classroom based on which teacher would most benefit from the help or, conversely, is skilled enough to integrate the sessions in his or her classroom. In another center, the Jumpstart session rotates across teachers each year.

[40]See Appendix F, Table F.1 and F.2.

were statistically significant.[41] Thus, the impact study is not powered to statistically detect effects of a reasonable magnitude.[42]

A third limitation of the impact study is that children's outcomes were measured using an existing source of data (the DRDP-PS) instead of collecting child data specifically for the purposes of the study. This made it possible to measure children's outcomes at a lower cost and lower burden for the study centers. However, the pattern of DRDP-PS scores for children in the study centers indicates that teachers may not have been using the tool as intended. For instance, as will be discussed in Chapter 3 of this report, the pattern of differences in DRDP-PS scores across classrooms suggests that teachers might have been interpreting the scales and ratings in different ways. This indicates that inter-rater reliability may be low for teachers in the study, which in turn could make it more difficult to produce effects on this measure in the study.

For these reasons, the findings from the impact study should be considered exploratory and should not be used to make definitive conclusions about the impact of the Jumpstart Foster Grandparent model.

Despite these limitations, the results from this evaluation can still provide a general picture of how the Jumpstart model was implemented by Foster Grandparents in the study centers. The results can also be used to generate a set of lessons that may be useful to volunteer-based intergenerational programs that, like Jumpstart, aim to improve the outcomes of children from traditionally underserved communities.

Report Roadmap

The remainder of this report is structured as follows: Chapter 2 examines whether the Jumpstart model was implemented as intended and to what extent the presence of volunteers enhanced the educational experience of children in the centers. Chapter 3 explores whether the Jumpstart model, as delivered by the Foster Grandparents, shows promise for further improving children's language and literacy and social-emotional development. Chapter 4 concludes by summarizing the main findings and discussing their implications for early childhood education programming and research.

[41]The minimum detectable effect size (MDES) for this study is between 0.39 and 0.54. As a reference point, the effect of the Reading Partners intervention (which uses volunteers to tutor children) mentioned earlier in this chapter was 0.11 (Jacob, Armstrong, and Willard, 2015).

[42]Because of the small sample size in the impact study, the research team conducted an additional exploratory analysis to bolster the analytic sample. In this analysis, children in Jumpstart and CCT-only classrooms in study centers where random assignment did not happen were matched to similar children in business as usual classrooms. This quasi-experimental sample of children was added to the sample of randomized children. The pattern of findings based on this larger sample is similar to those from the randomized experiment and also inconclusive. (See Appendix E for details).

Chapter 2

Implementation and Service Contrast

This chapter examines the implementation of the Jumpstart Foster Grandparent program in the study centers during the 2017-2018 academic year. Four components of the program will be discussed: volunteer preparation and training; the structure and deployment of center-based volunteer teams; the Jumpstart sessions; and child-centered time (CCT). As explained in the previous chapter, several types of data were collected to explore whether these components were implemented as intended and to what extent the presence of the volunteers enhanced the experiences of children compared to what the children would have experienced otherwise. The key findings from the implementation study are:

- **Preparation and Training:** The Foster Grandparents had consistently high attendance at both the pre-service and in-service training sessions and reported feeling adequately prepared for providing services to children.
- **Center-Based Volunteer Teams:** Teams of four to seven Foster Grandparents were successfully assigned to each center as expected, and the volunteers demonstrated a strong commitment to the program. Foster Grandparents were consistently present in classrooms and most of them remained in the program for the entire year.
- **Jumpstart Sessions:** The Foster Grandparents implemented the Jumpstart sessions regularly and structured their delivery of the session plans as intended. The volunteers were also observed using various instructional practices aimed at improving children's language and literacy development. The frequency with which these practices were used in the classroom varied across centers, with some practices used more consistently than others.
- **Child-Centered Time (CCT):** The Foster Grandparents devoted a high number of hours to CCT, more than the four to five hours a week expected in the Jumpstart model. However, it is not possible to determine how much of that time was spent one-on-one with partner children. More generally, the volunteers were observed using recommended language and literacy strategies during one-on-one CCT, but strategies were not used consistently in all classrooms.
- **Service Contrast:** Because the Foster Grandparents dedicated a large amount of time to the Jumpstart program, children experienced an increased number of adults in the classroom for a substantial portion of the week. During the sessions, teachers reported that the volunteers used language and literacy practices almost as often as they did. This suggests that the teachers positively viewed the volunteers' contributions, though it is not possible to determine

whether this translated into more individualized adult-child interactions. During CCT, although language and literacy instructional strategies were not used consistently across classrooms, teachers did report that volunteers engaged in a variety of one-on-one activities with children, providing individualized attention the children might not have received otherwise.

Overall, these findings indicate that the components of the Jumpstart model were generally delivered as intended, but limitations in the data make it challenging to assess to what extent the content and format of CCT was implemented, and whether the increased number of adults in the classroom consistently created more opportunities for high-quality, one-on-one interactions between children and adults. These implementation findings are discussed in greater detail in the remainder of this chapter.

Volunteer Characteristics

As described in the previous chapter, to become Foster Grandparents, seniors had to complete an application form and be willing to commit to 15 hours of services a week. Applicants were also interviewed by Jumpstart staff to gauge their interest and dedication to early childhood education. A total of 71 Foster Grandparents volunteered in the 11 participating study centers in the 2017-2018 academic year. The average age of the Foster Grandparents during the program year was 74 years old. As shown in Table 2.1, most volunteers were women (87 percent) and most of them identified as either Asian (38 percent) or black (49 percent).[1]

The Foster Grandparents differed demographically from the children they served. Children in the centers served by Jumpstart across Los Angeles were predominately Latino, with a much lower percentage who identified as Asian or black.[2] Furthermore, many children were identified as being dual language learners and were from a Spanish-speaking home. Given these differences, Jumpstart offered training sessions that provided strategies for volunteers from different backgrounds to teach and connect with dual language learners.

Volunteer Preparation and Training

The Foster Grandparents were expected to complete a series of pre-service training sessions in the months of August and September to prepare for the upcoming academic year. Of the 30 training topics covered during pre-service training, Jumpstart identified 19 that were considered

[1]Information on volunteer characteristics is from the volunteer survey administered by Jumpstart at the beginning of the year.

[2]In 2017-2018, children served by the Jumpstart Foster Grandparent program in Los Angeles had the following characteristics: About 96 percent were 3 or 4 years old (the remainder were 2 or 5 years old or older); 75 percent were Latino and 15 percent were black; 52 percent were boys (48 percent girls); 82 percent were dual language learners; 59 percent were most comfortable speaking English; and 38 percent were most comfortable with Spanish. The children in the 11 study centers were similar on average to the children served by Jumpstart across the city.

Table 2.1

Jumpstart Volunteer Characteristics

Characteristic	Percentage
Age (years)	73.7
Female	87.0
Race	
Asian	38.2
Black	48.5
Other	13.2
Highest education level	
Some high school or high school graduate	19.4
Some college	26.9
Associate's degree/certification	14.9
Bachelor's degree	25.4
Graduate degree	13.4
Employment status	
Part time/full time	10.6
Retired	74.2
Other	15.2
Primary language (English)	81.2
Previous work experience with children	94.3
Infants (3 months to 3 yrs)	16.7
Preschool (3-5 yrs)	39.4
Older youth (6-10 yrs)	6.1
Non-specfified	56.1
Sample size	71

SOURCE: MDRC calculations based on Jumpstart volunteer pre-surveys distributed and collected in fall 2017.

NOTES: Findings in this table are based on data for 71 volunteer respondents, representing a 100 percent response rate. Sample size for individual items varies due to nonresponse or skipped questions. Responses may add to more than 100 percent as volunteers "checked all that applied" for certain questions.

"essential" for volunteers to complete prior to entering the classroom. On average, even though these training sessions required a significant time commitment, Foster Grandparents attended 18 of the 19 essential sessions.[3] Furthermore, only two volunteers in the study started but did not complete the pre-service sessions, choosing to take a leave of absence.

The Foster Grandparents also consistently attended the monthly in-service training provided during the year. The average volunteer attended almost all (95 percent) of the sessions.[4] This sustained level of attendance is noteworthy given the extensive amount of time required for monthly training. The Foster Grandparents were not only willing to put in the time for pre-service training, but they were also very committed to their ongoing professional development and were able to meet Jumpstart's expectations for participation.

The Foster Grandparents also reported that the training was useful and prepared them to work in the classroom. Of the 32 Foster Grandparents who completed Jumpstart's post-service survey, almost all (97 percent) agreed or strongly agreed that the Jumpstart training offered effective preparation and guidance for service and program implementation. In addition, Foster Grandparents interviewed by the study team overwhelmingly praised the training as very helpful preparation for their work. Many of these volunteers made positive remarks about the structure of the training sessions, the supportive environment created by the facilitators, and the breadth of information they received:

> *"I'm going to tell you the training was tremendously a big help and it was really well done…. they did a demonstration on every aspect of the sessions with what to do, how to do it, what the purpose of that session is — the vocabulary words were stressed."*

Center-Based Volunteer Teams

As intended, each study center was supported by a team of four to seven Foster Grandparents, and most of these volunteers stayed on for the entire year. Of the 71 volunteers who joined the program in the study centers, only 11 (15 percent) left during the program year. In fact, the 85 percent Foster Grandparent retention rate in this study is higher than that reported for Jumpstart's College Corps, exhibiting the commitment displayed by older volunteers.[5] The 11 Foster Grandparents in the study who left did so early in the year, all during the first three months. No team had fewer than four members and only two center teams lost more than one volunteer during the program year. Furthermore, Foster Grandparents' commitment to Jumpstart often extended beyond just one program year. Of the 71 volunteers who participated in the program, 69 were returning participants, meaning the overwhelming majority had dedicated multiple years to the program.

[3]These findings are based on sign-in sheets from the training sessions.

[4]These findings are based on the timesheets of 16 randomly sampled volunteers.

[5]In 2017-2018, 75 percent of College Corps volunteers completed a full term of service.

Importantly, the Foster Grandparents also maintained a consistent presence at their centers. The Jumpstart Foster Grandparent model had high expectations for volunteers to commit to serving at least three days a week for a total of at least 15 hours. On average, all volunteers whose timesheets were analyzed met this high threshold.[6]

While on-site, Foster Grandparents were supported by the Jumpstart site manager, who periodically observed them and provided feedback. The number of observation and feedback sessions provided by site managers in the study varied by center. While all teams were observed at least twice, several received less than the five sessions recommended per year.[7] However, the volunteers had positive perceptions of the support received from site managers during these sessions. For instance, in the post-service survey, 97 percent of volunteers agreed or strongly agreed that observation and feedback from Jumpstart staff helped them focus on relevant domains and skills and engage more effectively with children. Most volunteer interviews also highlighted the sustained support they received from Jumpstart staff and teachers throughout the year:

> *"They're very supportive. The teachers and the site manager, they're very supportive because they can see what you are doing or working hard to help the children."*

There does appear to have been some variation across centers with respect to volunteers' perceptions of their fellow team members and team cohesiveness. A few volunteers described divisions within teams and an unwillingness to work together. Nonetheless, some volunteers did specify that their teams never let disagreements affect their work with the children.

Jumpstart Sessions

Overall, the Foster Grandparents successfully implemented the Jumpstart sessions as intended. As explained in Chapter 1, Jumpstart sessions should occur twice a week for 20 weeks, culminating in a total of 40 sessions. In almost every Jumpstart study classroom, the expected 40 sessions were implemented, with one center offering 39 sessions. Additionally, every session had a sequence of six structural components or segments of activities that Foster Grandparents were expected to implement (see Table 1.1). Site managers observed volunteers implementing the six session components in addition to general classroom management strategies in the Jumpstart classroom.[8] In both the fall and spring, over 90 percent of classrooms implemented *all* of these components (see Table 2.2). This suggests that the Foster Grandparents offered the sessions regularly and consistently, and that their administration of structural session elements was well aligned with the model.

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[6]These findings are based on the timesheets of 16 randomly sampled volunteers.

[7]These findings are based on a list of dates when Observation and Feedback sessions took place at each center, which was provided by Jumpstart.

[8]These findings are based on data from the Session and Team Planning Checklist, an observational tool that site managers use to assess implementation during the sessions.

Table 2.2

Percentage of Classrooms Where Foster Grandparents Implemented Specific Jumpstart Session Components

Jumpstart Session Components	Fall Percentage of Classrooms	Spring Percentage of Classrooms
Welcome		
Consistent meeting space for small groups was arranged and communicated	100.0	100.0
Name cards were utilized	90.9	100.0
Reading		
Volunteers worked with assigned small groups	100.0	100.0
Volunteers used core storybook from session plan	100.0	100.0
Read for Enjoyment or Read to Reconstruct strategy was used	91.7	100.0
Reading included active effort to build children's vocabulary	91.7	100.0
Circle Time		
Materials were prepared and organized	91.7	90.9
There was an appropriate display and use of materials	100.0	100.0
Activites were done as outlined in session plan (no additional activities)	90.9	83.3
Introduction of Center Time		
There was a display and demonstration of center time activites	80.0	100.0
Introduction included full explanations, without starting discussions	100.0	100.0
Let's Find Out About It		
Materials were prepared and organized	100.0	91.7
Team leader provided clear, accurate information to aid understanding	72.7	83.3
Team leader used rich language throughout discussion	83.3	100.0
Center Time		
Correct center time activities were included	100.0	100.0
Adequate materials were available	100.0	100.0
Adult was available to support each center	91.7	100.0
Sharing and Goodbye		
Team leader asked children to share opinions and/or work at closing	100.0	100.0
Information about next session was shared	100.0	90.9
Team leader encouraged children to sing or chant goodbye song	100.0	100.0
Classroom Management		
Volunteers verbally communicated session routine	83.3	100.0
Volunteers used positive strategies to set limits and articulate expectations	70.0	75.0
Classrooms that implemented all components	92.4	96.1

SOURCE: MDRC calcuations based on Jumpstart session checklists completed by site managers in fall 2017 and spring 2018.

NOTES: Findings in this table are based on data for 12 Jumpstart group classrooms. Sample size for individual items varies due to nonresponse or skipped questions.

Throughout the Jumpstart sessions, Foster Grandparents were also expected to use instructional practices to promote children's language and literacy development in three key domains: oral language, book and print knowledge, and phonological awareness. Information on volunteers' use of these practices was obtained from a survey administered to the lead teachers in the Jumpstart classrooms. Teachers were asked to rate the frequency with which the volunteers used 10 instructional practices that one would expect to see during the sessions (such as creating opportunities for children to interact in one-on-one conversations, giving age-appropriate definitions of words, and helping children connect letters and sounds). As explained in Chapter 1, many of these items were adapted from the Early Language and Literacy Classroom Observation (ELLCO) Pre-K Tool, a well-established observational tool designed to capture the quality of language and literacy instruction in preschool classrooms.[9]

As shown in Table 2.3, teachers reported that they did observe Foster Grandparents using these language and literacy practices during the sessions. One practice in particular — "used songs, chants, nursery rhymes, and poems" — was observed at a high frequency (often or almost always) in almost all the classrooms (92 percent). Other practices were observed at a high frequency in around 50 percent of Jumpstart classrooms, such as "initiated conversations that maximized talk and built on oral language skills" or "played games that got children to listen for beginning and ending sounds." Findings in Table 2.3 also indicate that certain strategies may have been easier than others to integrate into the Jumpstart sessions. For example, while volunteers in 73 percent of classrooms frequently "created opportunities for children to interact in small group conversations," volunteers "initiated conversations that maximized talk and built on oral language skills" at a high frequency in only 50 percent of classrooms. While volunteers frequently "used songs, chants, nursery rhymes, and poems" in 92 percent of classrooms, they only frequently "used song and word games to isolate sounds in words" in 50 percent of classrooms. This suggests that some practices that target more specific language and literacy skills may require more instructional experience to be consistently employed.

Another important factor in making sure children benefit from the sessions is attendance. The more sessions children attend, the more opportunities they have to interact with the volunteers. Jumpstart's goal is that children attend at least 32 of the 40 sessions offered. In 5 of the 11 study centers, less than 80 percent of children in the Jumpstart classroom met that benchmark due to mobility, attrition, sporadic school attendance, and other factors outside of Jumpstart's control.

Child-Centered Time

As discussed in Chapter 1, CCT happens outside of the Jumpstart session during regular class time. The goal of CCT is for the volunteers to engage with and provide their partner children with individualized support, focusing on their language and literacy skills and their social-emotional development. All children in the Jumpstart classrooms should receive CCT for at least three hours a week; and a subset of children in the CCT-only classrooms receive it as well. In addition to

[9]Polk (2013).

Table 2.3

Percentage of Jumpstart Classrooms with High-Quality Language and Literacy Instruction Frequently Provided During Sessions

Practices	Percentage*
Created opportunities for children to interact in one-on-one conversations	41.7
Created opportunities for children to interact in small group conversations	72.7
Initiated conversations that maximized talk and built on oral language skills	50.0
Asked open-ended questions that would encourage children to talk about their thinking	58.3
Talked to children using words slightly beyond their understanding to broaden knowledge of words	58.3
Gave age-appropriate definitions of words	66.7
Used songs, chants, nursery rhymes, and poems	91.7
Played games that got children to listen for beginning and ending sounds	41.7
Used expressions, tone of voice, gestures, or references to illustrations to support understanding during reading	58.3
Used song and word games to isolate sounds in words	50.0
Helped children connect letters and sounds	58.3
Sample size	12

SOURCE: MDRC calculations based on teacher surveys distributed and collected in spring 2018.

NOTES: Findings in this table are based on data for 12 Jumpstart group teachers. Sample size for individual items varies due to nonresponse or skipped questions.

All items use a 5-point frequency scale: 1 (never), 2 (seldom), 3 (sometimes), 4 (often), and 5 (almost always). An item was considered to be implemented frequently (high quality) if teachers responded with either a 4 (often) or 5 (almost always).

*Percentage includes the classrooms whose lead teachers responded to the item with either a 4 or a 5.

benefitting volunteers' partner children, CCT is also expected to improve outcomes at the classroom level because it increases the number of adults in the classroom. That creates more opportunities for adults and children to interact one-on-one to support foundational language skills.

In the study centers, the Foster Grandparents spent more time providing CCT than the four to five hours that was expected of them. On average, volunteers logged 14 hours of CCT a week, demonstrating their commitment to the program and the children.[10] The volunteers who split their time between two classrooms (Jumpstart and CCT-only) reported spending an average of four and a half hours of CCT in the Jumpstart classroom each week. Thus, children in the Jumpstart classroom generally received a minimum of three hours of CCT a week, as intended by the model.[11]

The time spent during CCT is unstructured by design so that the volunteers can tailor their support based on whatever activities are happening in the classroom on a given day. Still, the expectation is that the volunteers will work with their assigned partner children on language and literacy development. Given the available data, however, it is challenging to assess precisely how much one-on-one time each child received from the volunteers during nonsession time.[12] In interviews, volunteers described working with other children in the classroom in addition to working with their partner children. This suggests that it may have been challenging for the Foster Grandparents to provide one-on-one time to their partner children and give them their undivided attention, because all children may have seen them as "grandparents" and wanted to engage with them.

One source of information about volunteers' practices during CCT comes from the teacher survey. Lead teachers in the study centers were asked to report on whether the volunteers were ever observed using language and literacy instructional strategies during one-on-one activities in CCT.[13] Foster Grandparents in all classrooms were observed using at least one of the recommended strategies. On average, teachers reported that the Foster Grandparents used these language and literacy strategies during one-on-one CCT in 35 to 70 percent of classrooms depending on the strategy (see Table 2.4). For this evaluation, Jumpstart had identified a goal of having volunteers use five or more strategies during one-on-one CCT; this happened in a little over half (55 percent) of the study classrooms.[14]

[10]These findings are based on the timesheets of 16 randomly sampled volunteers.

[11]There were three volunteers who logged an average of slightly under three hours of CCT a week in the Jumpstart classroom.

[12]In their timesheets, volunteers track the amount of time spent in classrooms outside of the Jumpstart sessions but not the number of hours they specifically spend with their partner children during nonsession time.

[13]MDRC and Jumpstart worked in partnership to identify certain key language and literacy strategies that Foster Grandparents could potentially use to engage children one-on-one during CCT.

[14]Additionally, the survey did not ask about the frequency at which these strategies were employed, so it is not possible to determine what portion of CCT was devoted to employing the recommended language and literacy instructional strategies.

Table 2.4

Percentage of Classrooms Where Foster Grandparents Employed Specific Language and Literacy Strategies during One-on-One CCT

Strategies	Percentage
Directly taught new words to children	55.0
Connected a new word to a word children already know	55.0
Had children repeat new words	55.0
Asked comprehension questions about a story	70.0
Helped children say sounds in unfamiliar words	60.0
Embedded use of new words in children's daily experiences	45.0
Noted specific features of print and letters	60.0
Asked children where to start reading	40.0
Counted words in text	35.0
Pointed out print within pictures	60.0
Classrooms with 50% or more of the strategies employed by Foster Grandparents*	55.0
Sample size	20

SOURCE: MDRC calculations based on teacher surveys distributed and collected in spring 2018.

NOTES: Findings in this table are based on data for 20 teachers (Jumpstart and CCT-only) who had Foster Grandparents assigned to their classrooms. Sample size for individual items varies due to nonresponse or skipped questions.

*Jumpstart considers a classroom as having implemented CCT-time with high quality if 50 percent or more of the strategies were implemented by the Foster Grandparents.

Overall, the Foster Grandparents did devote many hours to CCT, more than expected, but it is not possible to determine the amount of time volunteers specifically devoted to working one-on-one with their designated partner children during that time. Based on teacher reports, it appears that the Foster Grandparents used language and literacy instructional strategies during one-on-one nonsession time, though not as consistently as intended by the Jumpstart model. It is worth noting that the volunteers could have been employing other practices that were not captured, such as strategies focused on social-emotional development.

Service Contrast

An important driver of Jumpstart's effect on children's development is the extent to which the presence of the volunteers substantially changed the learning environment compared to what children would have experienced otherwise. The bigger the "service contrast" or service differential created by the volunteers, the bigger the effect one might expect the model to have on children's development.[15] In the study centers, the service contrast could be explored by considering whether and how the experience of children in the classrooms served by the volunteers differed from the experience of children in the business as usual classrooms.

As discussed in Chapter 1, the Jumpstart model primarily intends to enhance the learning environment by increasing the number of adults in the classroom, so that children will have opportunities for individualized attention that teachers might otherwise not have the capacity to provide. In the study centers, the presence of the volunteers did substantially increase the number of adults in the classroom for a large portion of the week. Each center was supported by a team of four to seven Foster Grandparents, most of whom stayed for the full year. Volunteers spent an average of 3.7 days in center classrooms, logging an average of 22 hours a week. During the 20 weeks of Jumpstart session implementation, only two volunteers were absent for more than three weeks.[16]

It is not possible to determine whether the increased number of adults in the classroom led to more one-on-one attention for children during Jumpstart session time. However, the lead teacher survey did provide information on the extent to which the volunteers used different language and literacy practices, including those that one would expect to see more often in an environment where instruction is more individualized (for example, initiating conversations with children that maximize talk). Teachers were asked to report on volunteers' use of language and literacy practices in the classroom during session time, as well as their own use of these practices. Teachers' reports of their own instructional practices may have overrepresented the extent to which they actually used them. However, comparing teachers' self-ratings against their ratings of the Jumpstart volunteers' practices provides useful information about how trained and experienced educators (lead teachers) viewed the volunteers' role in the classroom during the Jumpstart sessions.

The findings suggest that during sessions, teachers perceived the volunteers as contributing to language and literacy instruction almost at a similar level as a trained classroom teacher. As for their own instruction, the lead teachers consistently self-reported that they used key language and literacy instructional practices "often" or "almost always," suggesting that teachers in the study centers viewed themselves as consistently engaging children with these practices outside of session time.[17] This was true across all three classroom types (Jumpstart, CCT-only, and

[15]The service contrast findings in this section are for all 11 study centers. Please refer to Appendix D for the service contrast findings for the five centers in the impact study.

[16]These findings are based on the timesheets of 16 randomly sampled volunteers.

[17]Frequency of use was calculated using the mean of a five-point scale: 1 (never), 2 (seldom), 3 (sometimes), 4 (often), and 5 (almost always). Teachers in Jumpstart classrooms also reported spending an average of 4.4 days

business as usual). Teachers also reported that during the Jumpstart sessions, the volunteers used key language and literacy instructional practices at slightly lower but similar frequencies as they themselves did (Table 2.5). This, in turn, suggests that the presence of additional trained volunteers in the center classrooms during sessions may have potentially created more opportunities for positive one-on-one interactions between children and adults. However, given the available data, it is not possible to determine whether these opportunities translated into more individualized attention for children in the Jumpstart sessions.

The time Foster Grandparents spent in center classrooms was not limited to leading Jumpstart sessions. They also spent many hours focused on CCT in both the Jumpstart and CCT-only classrooms, which is specifically designed for volunteers to provide individualized attention to children during teacher-led instruction time. Teachers were asked to report on the kinds of one-on-one activities that Foster Grandparents engaged in with children during CCT. As seen in Table 2.6, teachers observed volunteers using each one-on-one activity in 45 percent or more of classrooms. Though teachers were not asked to self-report on how often they engaged children in one-on-one activities during class time, the activities during CCT occurred in addition to regular teacher-led instruction. This suggests that the addition of Foster Grandparents in the classroom during CCT did result in more one-on-one interactions between children and adults. Still, the survey did not ask how often the one-on-one interactions occurred, so it is not possible to determine what proportion of CCT was spent focused on individual interactions. Additionally, as described in the CCT section above, the use of focused language and literacy strategies during the additional one-on-one time may not always have been as consistent as intended by the Jumpstart model.

Overall, Foster Grandparents' presence during Jumpstart sessions and CCT contributed to an increased number of adults in the classroom. During sessions, Foster Grandparents offered language and literacy instruction generally comparable to that of the teachers, but it is not possible to determine if their instructional practices led to more individualized interactions between children and adults. During CCT, volunteers were observed engaging children in one-on-one activities (though the frequency of those activities was not measured) and employing language and literacy strategies during that one-on-one time (although strategies were not always used as consistently as intended by the Jumpstart model). Nonetheless, volunteers did take advantage of CCT to interact with children in their classrooms one-on-one, allowing these children to experience more individualized interactions than children in business as usual classrooms.

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a week on language and literacy instruction *outside* of the Jumpstart sessions. In several of the study centers, teachers used a curriculum to support language and literacy and the social-emotional development of children, which may explain this pattern of results. This included the DLM Early Childhood Express curriculum, which provides additional STEM resources and materials, and High Scope, a comprehensive curriculum that includes language and literacy and social-emotional learning.

Table 2.5

Comparing Teacher and Foster Grandparent Use of Language and Literacy Instructional Practices in Jumpstart Classrooms

Practices (5-point scale)[a]	Foster Grandparent	Teacher
Created opportunities for children to interact in one-on-one conversations	3.6	4.3
Created opportunities for children to interact in small group conversations	4.2	4.2
Initiated conversations that maximized talk and built on oral language skills	3.4	4.2
Asked open-ended questions that would encourage children to talk about their thinking	3.6	4.2
Talked to children using words slightly beyond their understanding to broaden knowledge of words	3.9	4.1
Gave age-appropriate definitions of words	3.8	4.3
Used songs, chants, nursery rhymes, and poems	4.3	4.4
Played games that got children to listen for beginning and ending sounds	3.7	3.9
Used expressions, tone of voice, gestures, or references to illustrations to support understanding during reading	3.8	4.3
Used song and word games to isolate sounds in words	3.8	4.3
Helped children connect letters and sounds	3.8	4.2

SOURCE: MDRC calculations based on teacher surveys distributed and collected in spring 2018.

NOTES: Findings in this table are based on data for 12 Jumpstart group teachers. Sample size for individual items varies due to nonresponse or skipped questions.

[a]The values presented in this table are calculated from the mean of a 5-point scale: 1 (never), 2 (seldom), 3 (sometimes), 4 (often), and 5 (almost always).

Table 2.6

Percentage of Classrooms Where Foster Grandparents Employed Specific One-on-One Activities during CCT

Activites	Percentage
Read a book	70.0
Practiced recognizing letters	80.0
Practiced recognizing numbers	45.0
Completed arts and crafts projects	50.0
Sang songs or made music	60.0
Used building blocks	55.0
Played dress-up	50.0
Played with dolls or toys	55.0
Supported children during transitions	75.0
Engaged children during snack or meals	75.0
Sample size	20

SOURCE: MDRC calculations based on teacher surveys distributed and collected in spring 2018.

NOTES: Findings in this table are based on data for 12 Jumpstart group teachers and 8 CCT-only group teachers. Sample size for individual items varies due to nonresponse or skipped questions.

Chapter 3

Impacts on Children's Language and Literacy and Social-Emotional Development

This chapter examines whether the Jumpstart Foster Grandparent (JFG) model shows promise for improving children's language and literacy development and their social-emotional outcomes. As explained in Chapter 1, this analysis is based on 5 of the 11 study centers. In each one, newly enrolled children were randomly assigned to one of three types of classrooms: a Jumpstart classroom, where the full Jumpstart model was provided by the volunteers (sessions and child-centered time or CCT); a CCT-only classroom, where some children were partnered with a volunteer to receive one-on-one attention; and a business as usual classroom, where the volunteers did not provide services. The impact of the full Jumpstart model can be estimated by comparing the spring outcomes of children in the Jumpstart and business as usual classrooms. Similarly, the classroom-level impact of CCT can be estimated by comparing the spring outcomes of children in the CCT-only and business as usual classrooms.

As discussed in Chapter 1, the findings from this analysis should be considered exploratory and not used to make definitive conclusions about the Jumpstart model's effect, for two reasons. First, although children were randomly assigned to classrooms, teachers were not, so the estimated effects reported in this chapter could be confounded with differences in teacher quality across the three types of classrooms. (As will be discussed in this chapter, the pattern of findings suggests that this might be the case.) Second, because the analysis is based on a small number of children, the margin of error is large. In practice, this means that the effects of the Jumpstart model would have to be very large — greater than those of most educational interventions — to be able to conclude that they are statistically significant. However, even though the findings are unlikely to be statistically significant, the potential for positive effects can still be explored by examining their magnitude and whether they are going in the right direction.

The overall finding from the analysis is that the children in the Jumpstart and CCT-only classrooms did not make greater gains than children in the business as usual classrooms. Children in all three types of classrooms (Jumpstart, CCT-only, and business as usual) made similar gains during the year on their language and literacy skills and their social-emotional competencies. The remainder of this chapter provides further information on the characteristics of the children in the analysis sample and a more detailed discussion of the impact findings.[1]

[1]Because of the small sample size in the impact study, the research team conducted an additional exploratory analysis to bolster the analytic sample. In this exploratory analysis, children in Jumpstart and CCT-only classrooms in study centers where random assignment did not happen were matched to similar children in business as usual classrooms. This combined study sample of children was added to the sample of randomized children. The pattern of findings based on this larger sample are similar to those from the randomized experiment and also inconclusive. (See Appendix E for details).

Baseline Characteristics of Children

As explained in Chapter 1, children's fall and spring outcomes in this study were measured using the Desired Results Developmental Profile – Preschool. The DRDP-PS is an observational tool used by early childhood education teachers in California to rate children's development in different domains. The key outcomes of interest for this study were scores in three domains that are best aligned with Jumpstart's theory of change: English Language and Literacy Development, Interpersonal Skills, and Self-Regulation. Each domain score was based on several items, and a partial credit Rasch model was used to create composite scores as recommended by the DRDP developers. However, the scale of these scores does not have an interpretable metric, so in this chapter, children's average scores are discussed based on the nine-point scale that teachers use when rating children. In addition, differences in child outcomes between classrooms (Jumpstart, CCT-only, and business as usual) were scaled as an "effect size," a metric that is widely used for gauging whether the magnitude of a program's effect is large or small. It is defined as the between-group difference for an outcome expressed as a proportion of the standard deviation for that outcome.[2]

Table 3.1 shows the fall DRDP-PS scores and other characteristics of children in the Jumpstart classrooms and the business as usual classrooms in the analysis sample. Before the Jumpstart program started, children in the Jumpstart classroom had an average English language and literacy score of 5.3 and a social-emotional score of 6.4 points on a 9-point scale. Importantly, children in the Jumpstart classrooms and the business as usual classrooms had similar scores at baseline (the latter group had average scores of 5.2 and 6.3 on the two main outcomes). On average, children in the Jumpstart and business as usual classrooms were also similar with respect to their age (3 or 4 years old), gender (about 40 percent were boys), race/ethnicity (about 75 percent of children were Hispanic), and language (about 45 percent of children had English as their second language). Many of the differences between the groups' baseline characteristics, including children's scores on the fall DRDP-PS, were small in magnitude (less than 0.25 as an effect size).[3] This indicates that random assignment was successful at creating groups of children with similar outcomes and characteristics at baseline. Children in the CCT-only classrooms and the business as usual classrooms were also similar with respect to many baseline characteristics, although there is a statistically significant difference in children's baseline social-emotional development scores (Table 3.2).

Effect of the Jumpstart Foster Grandparent Model

Table 3.3 presents the average spring DRDP scores of children in the Jumpstart classrooms and the business as usual classrooms. As shown in this table, children in the Jumpstart classroom had

[2]Effect sizes are based on the standard deviation of the Rasch-scaled version of the DRDP score, for the pooled analysis sample.

[3]The What Works Clearinghouse considers that baseline equivalence is achieved when differences are less than 0.25 on baseline measures of the outcome.

Table 3.1

Baseline Characteristics of Randomly Assigned Children in Jumpstart vs. Business as Usual Group

Characteristic	Jumpstart Group	Business as Usual Group	Estimated Difference	Effect Size	P-Value for Estimated Difference
DRDP-PS					
English Language and Literacy Development (IRT scale)[a]	0.1	0.0	0.2	0.149	0.534
Developmental scale (9-point)	5.3	5.2			
Social-Emotional Development (IRT scale)[b]	0.2	0.1	0.1	0.109	0.690
Developmental scale (9-point)	6.4	6.3			
Self-Regulation (IRT scale)	0.2	0.1	0.2	0.198	0.492
Developmental scale (9-point)	6.4	6.3			
Interpersonal Skills (IRT scale)	0.1	0.1	0.0	0.039	0.883
Developmental scale (9-point)	6.3	6.3			
Age	3.7	3.7	0.0	-0.019	0.938
Male (%)	40.3	39.4	0.9	0.019	0.937
Race/ethnicity (%)					
Hispanic	74.6	75.8	-1.2	-0.029	0.906
Black, non-Hispanic	10.7	15.2	-4.4	-0.140	0.573
White, non-Hispanic	4.8	3.0	1.8	0.100	0.738
Asian	4.7	0.0	4.7	0.376	0.192
Other	5.2	6.1	-0.9	-0.041	0.883
Individualized Education Plan (%)	6.1	9.1	-3.0	-0.120	0.646
English as a second language (%)	44.4	45.5	-1.0	-0.020	0.924
Language predominantly spoken at home (%)					
English	60.0	46.9	13.1	0.259	0.361

(continued)

Table 3.1 (continued)

Characteristic	Jumpstart Group	Business as Usual Group	Estimated Difference	Effect Size		P-Value for Estimated Difference
Spanish	34.1	50.0	-15.9	-0.316		0.280
Other	5.9	3.1	2.8	0.145		0.604
Food stamp recipients (%)	28.5	53.1	-24.6	-0.498	*	0.051
Parent educational attainment (%)						
Not a high school graduate	38.2	20.0	18.2	0.399		0.134
High school graduate or GED recipient	16.0	33.3	-17.3	-0.379		0.119
Some college	27.8	33.3	-5.6	-0.122		0.650
College graduate or higher	18.0	13.3	4.7	0.135		0.629
Number of children	30	33				

SOURCE: Teacher ratings based on the Desired Results Developmental Profile – Preschool (DRDP-PS) in fall 2017.

NOTE: The analyses reported in this table are based on children whose parents consented to their participation in the study and who were assessed by their teachers using the DRDP-PS in fall 2017 and spring 2018. The sample includes children who were randomly assigned to classrooms that received the full Jumpstart model from the volunteers (Jumpstart group) or to classrooms that were not supported by the volunteers (business as usual group).

Estimated differences are regression-adjusted using ordinary least squares, controlling for random assignment blocks. The values in the column labeled "Jumpstart Group" are the observed means for children who were randomly assigned to a classroom that received the full Jumpstart model. The "Business as Usual Group" values in the next column are the regression-adjusted means for children who were randomly assigned to a classroom that did not receive services from the Jumpstart volunteers.

[a]For English language learners, this scale is based on four items measuring children's English-language development. For children whose primary language was English, this scale is based on 10 items measuring children's language and literacy development. A partial-credit IRT model was used to create a composite scale based on these items.

[b]The Social-Emotional Development scale includes nine items (four items measuring self-regulation and five items measuring interpersonal skills). A partial-credit IRT model was used to create a composite scale based on these items.

A t-test was used to assess the statistical significance of each estimated difference with significance levels as follows: ***=1 percent, **=5 percent, and *=10 percent.

Because IRT scores do not have a meaningful interpretation, group means for children's simple average score across the relevant items are also shown, based on the original nine-point developmental scale.

Table 3.2

Baseline Characteristics of Randomly Assigned Children in CCT-Only vs. Business as Usual Group

Characteristic	CCT-Only Group	Business as Usual Group	Estimated Difference	Effect Size	P-Value for Estimated Difference
DRDP-PS					
English Language and Literacy Development (IRT scale)[a]	-0.1	0.0	-0.1	-0.104	0.657
Developmental scale (9-point)	5.0	5.2			
Social-Emotional Development (IRT scale)[b]	-0.3	0.1	-0.4	-0.459 *	0.052
Developmental scale (9-point)	5.8	6.3			
Self-Regulation (IRT scale)	-0.3	0.1	-0.3	-0.438 *	0.056
Developmental scale (9-point)	5.9	6.3			
Interpersonal Skills (IRT scale)	-0.4	0.1	-0.4	-0.455 *	0.056
Developmental scale (9-point)	5.8	6.3			
Age	3.6	3.7	-0.1	-0.150	0.556
Male (%)	46.7	39.4	7.3	0.146	0.535
Race/ethnicity (%)					
Hispanic	65.4	75.8	-10.3	-0.226	0.280
Black, non-Hispanic	22.6	15.2	7.5	0.186	0.403
White, non-Hispanic	0.4	3.0	-2.7	-0.232	0.345
Asian	4.0	0.0	4.0	0.348	0.186
Other	7.6	6.1	1.5	0.061	0.828
Individualized Education Plan (%)	6.4	9.1	-2.7	-0.118	0.345
English as a second language (%)	52.4	45.5	6.9	0.138	0.498
Language predominantly spoken at home (%)					
English	60.9	46.9	14.1	0.281	0.232

(continued)

Table 3.2 (continued)

Characteristic	CCT-Only Group	Business as Usual Group	Estimated Difference	Effect Size	P-Value for Estimated Difference
Spanish	34.0	50.0	-16.0	-0.323	0.163
Other	5.1	3.1	2.0	0.112	0.656
Food stamp recipients (%)	46.0	53.1	-7.2	-0.142	0.566
Parent educational attainment (%)					
Not a high school graduate	12.7	20.0	-7.3	-0.196	0.433
High school graduate or GED recipient	35.0	33.3	1.7	0.035	0.894
Some college	25.7	33.3	-7.7	-0.169	0.554
College graduate or higher	26.6	13.3	13.3	0.334	0.158
Number of children	42	33			

SOURCE: Teacher ratings based on the Desired Results Developmental Profile – Preschool (DRDP-PS) in fall 2017.

NOTE: The analyses reported in this table are based on children whose parents consented to their participation in the study and who were assessed by their teachers using the DRDP-PS in fall 2017 and spring 2018. The sample includes children who were assigned to classrooms that received the child-centered time model from the volunteers (CCT-only group) or to classrooms that were not supported by the volunteers (business as usual group).

Estimated differences are regression-adjusted using ordinary least squares, controlling for random assignment blocks. The values in the column labeled “CCT-Only Group” are the observed means for children who were randomly assigned to a classroom that received the child-centered time (CCT) model. The "Business as Usual Group” values in the next column are the regression-adjusted means for children who were randomly assigned to a classroom that did not receive services from the Jumpstart volunteers.

[a]For English language learners, this scale is based on four items measuring children's English-language development. For children whose primary language was English, this scale is based on 10 items measuring children's language and literacy development. A partial-credit IRT model was used to create a composite scale based on these items.

[b]The Social-Emotional Development scale includes nine items (four items measuring self-regulation and five items measuring interpersonal skills). A partial-credit IRT model was used to create a composite scale based on these items.

A t-test was used to assess the statistical significance of each estimated difference with significance levels as follows: ***=1 percent, **=5 percent, and *=10 percent.

Because IRT scores do not have a meaningful interpretation, group means for children's simple average score across the relevant items are also shown, based on the original nine-point developmental scale.

Table 3.3

Estimated Effect of the Full Jumpstart Model on Children's Outcomes, Impact Sample

Outcome	Jumpstart Group	Business as Usual Group	Estimated Difference	Effect Size	P-Value for Estimated Difference
English Language and Literacy Development (IRT scale)[a]	-0.11	0.10	-0.21	-0.24	0.133
Developmental scale (9-point)	6.0	6.5			
Social-Emotional Development (IRT scale)[b]	0.08	0.07	0.01	0.01	0.951
Developmental scale (9-point)	7.7	7.7			
Self-Regulation (IRT scale)	-0.06	0.01	-0.07	-0.08	0.706
Developmental scale (9-point)	7.5	7.6			
Interpersonal Skills (IRT scale)	0.20	0.08	0.12	0.15	0.503
Int Developmental scale (9-point)	7.9	7.8			
Number of children	30	33			

SOURCE: Teacher ratings based on the Desired Results Developmental Profile – Preschool (DRDP-PS) in spring 2018.

NOTES: The analyses reported in this table are based on children whose parents consented to their participation in the study and who were assessed by their teachers using the DRDP-PS in fall 2017 and spring 2018. The sample includes children who were randomly assigned to classrooms that received the full Jumpstart model from the volunteers (Jumpstart group) or to classrooms that were not supported by the volunteers (business as usual group).

Estimated effects are regression-adjusted using ordinary least squares, controlling for random assignment blocks, as well as any remaining differences between the Jumpstart and comparison group with respect to children's fall 2017 scores on the DRDP-PS assessments, whether the child was a dual language learner (DLL), whether the child had an individualized education plan, their gender, their age, language spoken at home, parent education, family size, whether a child's family received food stamps, and the number of times the family had moved in the last five years. The values in the column labeled “Jumpstart Group” are the observed means for children who were randomly assigned to a classroom that received the full Jumpstart model. The "business as usual group” values in the next column are the regression-adjusted means children who were randomly assigned to a classroom that did not receive services from the Jumpstart volunteers.

[a]For English language learners, this scale is based on four items measuring children's English-language development. For children whose primary language was English, this scale is based on 10 items measuring children's language and literacy development. A partial-credit IRT model was used to create a composite scale based on these items.

[b]The Social-Emotional Development scale includes nine items (four items measuring self-regulation and five items measuring interpersonal skills). A partial-credit IRT model was used to create a composite scale based on these items.

A t-test was used to assess the statistical significance of each estimated difference with significance levels as follows: ***=1 percent, **=5 percent, and *=10 percent.

Because IRT scores do not have a meaningful interpretation, group means for children's simple average score across the relevant items are also shown, based on the original nine-point developmental scale.

a spring DRDP score of about 6 points on their English language and literacy development, while children in the business as usual classroom had a score of 6.5 points. Thus, the estimated effect of the full Jumpstart model on children's English language and literacy scores was numerically negative, but small in magnitude and not statistically significant (effect size = -0.24, p-value = 0.133). For social-emotional development, the average spring score of both groups of children was 7.7. Thus, the estimated effect on social-emotional scores was numerically positive but small in size and not statistically significant (effect size = 0.01, p-value of 0.951).

Although these estimated effects are small, it is important to note that children still made positive gains during the year. As discussed above, in fall 2017, children in the Jumpstart classrooms had an average English language and literacy score of 5.3 and a social-emotional score of 6.4 on a 9-point scale. When children were assessed again in spring 2018, their language and literacy scores increased, on average, by 0.7 points, and their social-emotional scores increased, on average, by 1.3 points. Children in the business as usual classrooms made similar gains, which suggests that the Jumpstart model may not have improved children's scores beyond the gains that children would have made otherwise.[4]

Table 3.4 presents the average spring DRDP scores of children in the CCT-only classrooms and the business as usual classrooms. The estimated classroom-level effect of CCT on children's English language and literacy scores was positive and moderate in magnitude, but not statistically significant (effect size = 0.11, p-value = 0.658). The estimated effect on the social-emotional development score was also positive and moderate in magnitude but not statistically significant (effect size = 0.32, p-value = 0.127). Children in the CCT-only classrooms made numerically larger (though not statistically significant) gains during the year than children in the business as usual classrooms on these outcomes.[5]

This pattern of findings suggests that the estimated effect of providing CCT-only was numerically larger than the effect of providing the full Jumpstart model. However, the reverse should have been true and the effect of the full Jumpstart model should have been larger than the effect of classroom-level CCT: In Jumpstart classrooms, all children received sessions and all children received CCT (full Jumpstart model); in CCT-only classrooms, only a subset of children received CCT.

This unlikely pattern of results suggests that there may have been differences in teachers across classrooms, and that these differences may have been confounded with the effect of Jumpstart. As discussed in Chapter 1, generally across classrooms, teachers were highly experienced educators, with an average of 14 years or more of early education teaching experience, and

[4]In the fall, the children had an average score of 5.2 on the English language and literacy development scale and 6.3 on the social-emotional development scale. By the spring their language and literacy scores had increased, on average, by 1.3 points, and their social-emotional scores had increased, on average, by 1.4 points.

[5]The average English language and literacy and social-emotional scores of children in CCT-only classrooms in the fall were 5.0 and 5.8, respectively. By the spring, their language and literacy scores increased, on average, by 1.5 points, and their social-emotional scores increased, on average, by 2.2 points.

Table 3.4

Estimated Effect of Child-Centered Time (CCT) on Children's Outcomes, Impact Sample

Outcome	CCT-Only Group	Business as Usual Group	Estimated Difference	Effect Size		P-Value for Estimated Difference
English Language and Literacy Development (IRT scale)[a]	0.20	0.10	0.10	0.11		0.658
Developmental scale (9-point)	6.5	6.5				
Social-Emotional Development (IRT scale)[b]	0.36	0.07	0.29	0.32		0.127
Developmental scale (9-point)	8.0	7.7				
Self-Regulation (IRT scale)	0.37	0.01	0.35	0.40	*	0.071
Developmental scale (9-point)	8.0	7.6				
Interpersonal Skills (IRT scale)	0.28	0.08	0.19	0.22		0.360
Developmental scale (9-point)	8.0	7.8				
Number of children	42	33				

SOURCE: Teacher ratings based on the Desired Results Developmental Profile – Preschool (DRDP-PS) in spring 2018.

NOTES: The analyses reported in this table are based on children whose parents consented to their participation in the study and who were assessed by their teachers using the DRDP-PS in fall 2017 and spring 2018. The sample includes children who were randomly assigned to classrooms that received only CCT from the volunteers (CCT-only group) and to classrooms that were not supported by the volunteers (business as usual group).

Estimated effects are regression-adjusted using ordinary least squares, controlling for random assignment blocks, as well as any remaining differences between the CCT-only and comparison group with respect to children's fall 2017 scores on the DRDP-PS assessments, whether the child was a dual language learner, whether the child had an individualized education plan, their gender, their age, language spoken at home, parent education, family size, whether a child's family received food stamps, and the number of times the family had moved in the last five years. The values in the column labeled “CCT-Only Group” are the observed means for children who were randomly assigned to a classroom that received the CCT-only model. The "Business as Usual Group” values in the next column are the regression-adjusted means for randomly assigned children who were assigned to a classroom that did not receive services from the Jumpstart volunteers.

[a]For English language learners, this scale is based on four items measuring children's English-language development. For children whose primary language was English, this scale is based on 10 items measuring children's language and literacy development. A partial-credit IRT model was used to create a composite scale based on these items.

[b]The Social-Emotional Development scale includes nine items (four items measuring self-regulation and five items measuring interpersonal skills). A partial-credit IRT model was used to create a composite scale based on these items.

A t-test was used to assess the statistical significance of each estimated difference with significance levels as follows: ***=1 percent, **=5 percent, and *=10 percent.

Because IRT scores do not have a meaningful interpretation, group means for children's simple average score across the relevant items are also shown, based on the original nine-point developmental scale.

all had at least some college education. However, teachers in CCT-only classrooms were slightly younger and more educated (for example, more likely to have a bachelor's degree).[6] These differences, and other unmeasured differences, might affect the quality of language and literacy instruction received by children across classrooms (alternatively, it could affect how these teachers rated children's development on the DRDP). Therefore, some of the between-classroom differences in Tables 3.3 and 3.4 may be due to differences in *teachers* across classrooms, as opposed to the effect of Jumpstart.[7]

Overall, the findings from this analysis suggest that children in the Jumpstart classrooms did make gains, but they were not greater than the gains made by children in the business as usual classrooms. To what extent this can be attributed to the Jumpstart model is difficult to determine given the study's limitations.

[6]See Appendix F, Table F.1 and F.2.

[7]Another potential factor affecting the findings is a possible ceiling effect on the DRDP scores. The spring scores of children in the analysis sample were clustered between 7 and 9 (on a 9-point scale), with a larger proportion of children at a score of 9. This suggests a possible ceiling effect that may have dampened Jumpstart's potential to have an impact on children's DRDP scores.

Chapter 4

Conclusion

The Jumpstart Foster Grandparent (JFG) program aimed to provide language and literacy instruction and supports for preschool children from underserved communities using an intergenerational volunteer model. That mission required a significant investment in understanding community needs. It also called for a substantial amount of training to effectively prepare a corps of seniors to provide high-quality instruction and foster meaningful relationships with children.

The findings from this study of the JFG model highlight several important lessons about the implementation of volunteer-based educational interventions and how to conduct evaluations of programs in early childhood education settings. These lessons are discussed in this chapter.

After the time period covered by this study (2017-2018), Jumpstart made several changes to its model and training that are well aligned with this study's recommendations; these changes are discussed at the end of this chapter. In summer 2019, Jumpstart also decided to discontinue its Foster Grandparent program, which represented about 4 percent of its total volunteer corps.[1] This shift will allow the organization to focus its resources on the College Corps, a group that is better aligned with Jumpstart's goal of training volunteers who will go on to become part of the workforce as educators and teachers. Some of the lessons from this study may help inform the delivery of the Jumpstart model as the organization commits to delivering its model exclusively through the College Corps.

Lessons About Implementing Volunteer-Based Intergenerational Programs

- **It is possible to build a corps of senior volunteers who will commit significant amounts of time and energy to providing services to children.**

One of the most notable findings from this evaluation was the volunteers' high level of commitment to the Jumpstart program. Even though many of the JFG volunteers faced transportation, health, and social barriers, the Foster Grandparents attended many hours of pre-service and in-service trainings; they also met, and sometimes exceeded, the service requirement of 15 hours a week. In interviews, volunteers expressed appreciation for the JFG Program, describing it as a reason to get out of bed each week, a way to stay healthy, and a way to get joy from children while giving back to the community. The JFG program demonstrates that a committed corps of senior volunteers is possible, and that the volunteers derive significant personal benefits from volunteering.

[1] Jumpstart (2019).

- **Some instructional practices are more challenging for volunteers to implement than others.**

Several instructional practices are considered by the field of early childhood education to be effective in supporting children's language and literacy development. The findings from this study suggest that although the volunteers implemented the language and literacy practices they learned in training, the frequency with which those practices were used varied from center to center. During the Jumpstart sessions, the Foster Grandparents were more likely to use practices that were easier to implement, such as songs and chants, than ones that may have required more instruction, such as playing games that get children to listen for sounds and take turns during conversations.

High-quality language and literacy practices are challenging even for experienced educators to implement. Staff members who supervise volunteers should provide regular training to help reinforce and support the knowledge of these practices, and regularly emphasize the importance of employing them frequently. Such training could include workshops about ways to integrate several of the practices throughout a Jumpstart session. In addition to having program staff observe and provide feedback to the volunteers, early childhood education center staff (such as lead teachers, who spend the most time with the volunteers) could also be asked for their feedback on a regular basis, whether informally or through a survey or checklist. Teachers' responses could be used to help determine which instructional practices to focus on with volunteers during training sessions.

- **Early childhood education teachers may be spending a significant amount of time on language and literacy development, which can have implications for program delivery.**

The findings from this study indicate that teachers were "often" or "almost always" using practices that target language and literacy development. The frequency of language and literacy instruction reported by teachers in the study centers may reflect a growing push toward improving instructional quality in early childhood education settings. California specifically has recently demonstrated a commitment to improving the quality of preschool instruction in response to increased accountability.[2] The state's investment in preschools increased by more than $364 million in 2018 (accounting for an increase of more than $1,000 per child), and the state has successfully met the recommended benchmarks for early learning and development standards.[3] This increased investment has enabled preschools (including some of the ones in this study) to invest in and adopt language and literacy curricula in their classrooms.[4] This trend toward richer language and literacy instruction in preschools should be taken into account by organizations that offer

[2]Though California has struggled to meet the National Institute for Early Education Research's (NIEER) quality benchmarks in the past, the most recent report identified them as a "State on the Move," suggesting a strong push toward improvement (Friedman-Krauss et al., 2019).

[3]Friedman-Krauss et al. (2019)

[4]Curricula used in Jumpstart study centers included the DLM Early Childhood Express curriculum, which provides additional STEM resources and materials, and High Scope, a comprehensive curriculum that includes language and literacy and social-emotional learning.

supplemental services in early childhood education classrooms. For example, it may be important to consider how the supports provided by volunteers interact with (or supplement) the other curricula used by teachers, to ensure that the language and literacy activities delivered by both are aligned across a child's day and week.

- **High child mobility and sporadic attendance in early childhood education settings can make it challenging for staff members to build relationships with children, which highlights the programmatic importance of child-centered strategies.**

In this study, many children left the centers partway through the academic year and were not assessed in the spring. [5] Children with inconsistent or unstable school attendance in preschool miss out on instruction and supports that will prepare them for kindergarten. Child mobility also makes it more challenging for adults in early childhood education centers to build relationships with children. Organizations like Jumpstart that focus on relationships need to work especially hard to make sure that one-on-one time with children (like CCT) is maximized during the time children may be enrolled at the center, no matter how short. Studies have shown that some preschool children receive little or no individualized attention from their teachers, so CCT also provides an opportunity for volunteers to make a crucial contribution to children's language and social-emotional development. [6]

- **Volunteers balance general classroom support with spending one-on-one time with children, and they may need some structure for the time they spend in the classroom.**

Findings from this study indicate that it can be challenging for volunteers to provide individual attention solely to their partner children in a classroom setting when other children are present and may need or want their attention, too. One strategy for helping the volunteers balance general classroom support with spending more time with partner children would be to have them engage in activities with their partner children for a dedicated amount of time, and to set specific goals about how much time they should spend one-on-one. This in turn, may require having a more explicit understanding with the centers and teachers about how the volunteers should be deployed.

- **To spend high-quality one-on-one time with children, volunteers should be intentional about the activities they engage in.**

Offering well-focused and language-rich CCT can be challenging even for a seasoned educator. Volunteers working in early childhood education centers may need additional training and support to make sure they are being intentional about helping their partner children build skills. For example, they might benefit from guidance on how to make the most of the one-on-one time. Supervisory staff could train the volunteers in how to engage their partner children with

[5]Out of the 470 children who had consent from a parent to participate in the study, 93 children (20 percent) were not enrolled for the full academic year.

[6]Kontos and Wilcox-Herzog (1997).

activities that more consistently incorporate evidence-based strategies that build on and extend the child's interest and learning. Such strategies could include scaffolding — volunteers supporting and guiding children while they are learning something new and gradually decreasing the level of support as children's abilities develop — as well as incorporating the child's cultural and linguistic background into interactions. Supervisory staff could also demonstrate how to increase conversational exchanges with children during CCT and provide a toolkit of ideas for how to use one-on-one time.

Another factor that may enhance volunteers' ability to provide high-quality one-on-one time is their ability to communicate with children in their home language. In some cities, many children speak a language other than English at home. Deploying volunteers to centers based on the language they and the children speak is another strategy that may help promote stronger bonds between children and volunteers.

Lessons for Future Studies

- **When used for evaluation purposes, data collected by teachers should be supplemented by additional training.**

In early childhood education studies, children's outcomes are typically measured using teacher reports (based on an observational tool) and direct assessments. Teachers are generally trained in how to use an observational tool to make sure that the information collected is valid and reliable. This study is unique in that it used an existing source of data: a teacher-reported assessment called the Desired Results Developmental Profile – Preschool (DRDP-PS), instead of collecting child data specifically for the purposes of the study. Using this tool made it possible to collect data at a lower cost and put less of a burden on the study centers. Although the tool has been shown to have high internal and inter-rater reliability and validity when properly used, the pattern of DRDP-PS scores for children in the study centers suggests that teachers may not be using the tool as intended. For example, the pattern of differences in scores across classrooms suggests that teachers may be interpreting the scales and ratings in different ways. One would not expect the children in the CCT-only classrooms to make numerically larger (if not statistically significant) gains than children in the Jumpstart classrooms, because children in the Jumpstart classrooms receive both sessions and CCT (that is, CCT-only children receive fewer services).

Future studies that measure child outcomes by using existing teacher observation tools should provide teachers with additional training (beyond what is provided by preschool centers), to make sure they are using the tools correctly and consistently. Additionally, if study resources allow it, direct assessments should be used as well so that information about children's development can be assessed from multiple perspectives.

- **To reduce potential teacher bias in data on children's outcomes, evaluators should consider using direct child assessment.**

When using direct assessments, a trained assessor sits with individual children and engages them in a series of activities and games designed to measure their development. The

advantage of direct assessments is that they are conducted by an independent observer who is not biased by their relationship with the child; the advantage of a teacher-reported observation tool is that teachers know the children better and are able to rate them based on observing them over multiple days (and not, like a direct assessment, at just one point in time).

- **To fully understand a program's potential to improve child outcomes, studies should aim to observe volunteers directly when they are providing services.**

This study primarily relied on a teacher survey and data collected by Jumpstart to understand how the volunteers spent their time in the classrooms. However, these data sources provided a limited (and perhaps biased) range of perspectives on volunteers' time and classroom practices. To better understand the effect of volunteers on children's outcomes, future evaluations of Jumpstart or other volunteer programs should conduct formal classroom observations with valid and reliable tools to examine how the volunteers engage with children, the quality of literacy and language instructional practices they use, and how they support children and teachers in the classroom. Part of this data collection could include measuring how much time is spent providing one-on-one attention to partner children compared with how much time is spent providing general classroom support. Observational data could also be collected to better understand the ways in which the volunteers support social-emotional skills development in children.

Looking Forward: Enhancements to the Jumpstart Model

Jumpstart has made several enhancements to CCT and to the Jumpstart sessions, which were implemented by Jumpstart's College Corps in fall 2019. The goal of these enhancements is to help volunteers provide more intentional and focused language and literacy and social-emotional supports to children.

Volunteers are now trained in a modified version of CCT called Individual Classroom Service (ICS), to help them implement higher-quality, individualized classroom time with their partner children. ICS focuses on more intentional activities to promote language and literacy development. Volunteers receive training and support in the use of strategies for engaging children in conversations during one-on-one time, as well as activities for building vocabulary and comprehension skills. During ICS, volunteers continue supporting the general classroom by assisting children during teacher-led activities (such as Circle Time), but there are guidelines that emphasize dedicated attention to partner children (that is, approximately 50 percent of volunteers' nonsession service time should be spent providing individual attention). Making a clear distinction between the two components of ICS (individualized learning activities and general classroom support) provides a new framework for organizing volunteers' time.

The Jumpstart session curriculum has been adapted to more strongly emphasize oral language and social-emotional skill-building. This increased focus on oral language creates coherence across the components of Jumpstart programming (sessions and ICS) and emphasizes a deepening of children's knowledge-based competencies. The change also means that Jumpstart

has moved away from activities with an explicit focus on print knowledge and phonological awareness. While these activities, such as songs and chants, were sometimes easier for volunteers to implement, they were not necessarily leading to gains for children. With a deeper focus on oral language and social-emotional development, Jumpstart intends to better supplement the language and literacy instruction teachers are already providing, and drive impact in an area that research has identified as being critical for the population of children that Jumpstart serves.[7]

The findings from this study suggest that these modifications, which are intended to help the volunteers provide children with a substantially different instructional and supportive experience, could further strengthen the Jumpstart model and lead to better outcomes for children in the communities served by the program.

[7]Hoff (2013).

Appendix A

Teacher Survey Instrument

Jumpstart Teacher Survey
Version: Jumpstart classroom teachers
Spring 2018

Thank you for completing the Teacher Survey as part of the Jumpstart Foster Grandparent Research Study.

Instructions & Reminders:

1. *Please read and sign the consent form (on separate page) before getting started.*
2. *Make sure there is an ID sticker in the upper right-hand corner of the first page of the survey. (If not, please let your supervisor know right away.)*
3. *Remember: Your name will not be linked with your responses. Your consent form will be separated from the survey once MDRC receives it. Your individual responses will not be shared with Jumpstart. You may skip any questions you don't want to answer but we would appreciate if you tried to answer as many questions as you can, as honestly as you can.*
4. *Please use blue or black ink to complete the survey.*
5. *Once you have completed the survey, please place the survey in the envelope provided and seal the envelope. Please do not place your consent form in the sealed envelope.*

Please hand deliver the completed survey in the sealed envelope and the separate consent form to your supervisor who is responsible for making sure completed forms get to MDRC. By hand delivering the survey and the consent form, the liaison can remove your name from his/her follow-up list.

Thank you for your help!

SECTION 1 -- BACKGROUND

First, please tell us about your background.

Q1. What is your age?

(Please select one.)

- ○1 Under 25
- ○2 25-29
- ○3 30-39
- ○4 40-49
- ○5 50-59
- ○6 60 or more

Q2. Are you of Hispanic, Latino or Spanish origin?

(Please select one.)

- ○1 Yes
- ○2 No

Q3. What is your race?

(Please select all that apply.)

- ☐a Asian
- ☐b Black or African American
- ☐c Native American
- ☐d Pacific Islander
- ☐e White
- ☐f Something else *(Please describe: _____)*

Q4. How many years as an early childhood educator do you have?

(Please round to the nearest year.)

_____years

Q5. How many years have you worked at this Early Childhood Center?

(Please round to the nearest year.)

_____years

Q6. How much training to support children's language and literacy development have you had in the 2017-18 school year?

(Please round to the nearest hour.)

_____hours

Q7. What is the highest level of education you have attained?

(Please select one.)

○1 Some High School

○2 High School or GED

○3 Child Development Associate

○4 Some College

○5 Associate's Degree

○6 Bachelor's Degree

○7 Graduate Degree

○8 Some other degree *(Please describe: _____)*

Q8. Last week, about how much time did you spend preparing language and literacy activities for your students?

_____hours in the last week and _____minutes in the last week

Q9. How much do you agree or disagree with the following statements:

(Please select one for each statement.)	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	*Decline to Answer*
The amount a child can learn is primarily related to family background.	○1	○2	○3	○4	○5	○6
A teacher is very limited in what he/she can achieve because a child's home environment is a large influence on his/her achievement.	○1	○2	○3	○4	○5	○6
If parents would do more for their children, I could do more.	○1	○2	○3	○4	○5	○6
If a child in my class becomes disruptive and noisy, I feel assured that I know some techniques to redirect him/her quickly.	○1	○2	○3	○4	○5	○6
If a child couldn't do a class activity, I would be able to accurately assess whether the activity was at the correct level of difficulty.	○1	○2	○3	○4	○5	○6
If I really try hard, I can get through to even the most difficult or unmotivated children.	○1	○2	○3	○4	○5	○6
When it comes right down to it, a teacher really can't do much because most of a child's motivation and performance depends on his/her home environment.	○1	○2	○3	○4	○5	○6

SECTION 2 –JUMPSTART SESSION TIME

The following section asks you to consider language and literacy instructional practices that take place in your classroom during the Jumpstart sessions and identify how often, if ever, the Foster Grandparent volunteers assigned to your classroom utilize each practice.

When responding to the next question, please consider how often, on average, the volunteers in your classroom engaged in each practice throughout the Jumpstart sessions that took place last week.

Q10. Last week, how often did the Foster Grandparent volunteers assigned to your classroom do the following during the Jumpstart sessions?

(Please select one for each statement.)

	Never	Seldom	Some-times	Often	Almost Always	*Decline to Answer*
Created a variety of opportunities for children to interact in one-on-one conversations.	○1	○2	○3	○4	○5	○6
Created a variety of opportunities for children to interact in small group conversations.	○1	○2	○3	○4	○5	○6
Initiated conversations that maximized talk and built on oral language skills. *(For example: Had a discussion about how the class could create their own post office, including brainstorming and listing the supplies they would need, etc.)*	○1	○2	○3	○4	○5	○6
Asked open-ended questions to children for which an answer was not known (and that require more than a one- or two-word response) that would encourage them to talk about their thinking. *(For example: "Tell me about our day at the zoo" instead of "What color was the flamingo?")*	○1	○2	○3	○4	○5	○6
Talked to the children in my classroom using some words slightly beyond their understanding to broaden their knowledge of words and sentence structure.	○1	○2	○3	○4	○5	○6
Gave age-appropriate definitions of words to children.	○1	○2	○3	○4	○5	○6
Used songs, chants, nursery rhymes, and rhyming poems.	○1	○2	○3	○4	○5	○6
Played games that got children to listen for beginning and ending sounds. *(For example: "I spy something that begins with a /b/ sound.")*	○1	○2	○3	○4	○5	○6
During reading, used expressions, tone of voice, gestures and/or references to illustrations to define words and support children's understanding of the story.	○1	○2	○3	○4	○5	○6
Used song and word games to isolate sounds in words. *(For example: "What is the sound that begins these words: chin, chicken, and cheek? Ch is the sound that begins these words.")*	○1	○2	○3	○4	○5	○6

(Please select <u>one</u> for each statement.)

	Never	Seldom	Some-times	Often	Almost Always	*Decline to An-swer*
Helped children connect letters and sounds.	○1	○2	○3	○4	○5	○6

Now we would like to ask you about each Jumpstart session component.

Q11. Please tell us how much you agree or disagree that the following took place during the Welcome component of the Jumpstart sessions last week:

(Please indicate the extent to which you agree or disagree with each statement.)

	Strongly Disagree	Disagree	Neither Agree nor Disa-gree	Agree	Strongly Agree	*Decline to An-swer*
Children transitioned to the Jumpstart session from their previous activity smoothly.	○1	○2	○3	○4	○5	○6
Children built alphabet knowledge through exploration of name cards.	○1	○2	○3	○4	○5	○6

Q12. Please tell us how much you agree or disagree that the following took place during the Reading component of the Jumpstart sessions last week:

(Please indicate the extent to which you agree or disagree with each statement.)

	Strongly Disagree	Disagree	Neither Agree nor Disa-gree	Agree	Strongly Agree	*Decline to An-swer*
Most children were engaged in a shared reading experience.	○1	○2	○3	○4	○5	○6
Foster Grandparents introduced children to a variety of rich vocabulary words.	○1	○2	○3	○4	○5	○6
Foster Grandparents asked children questions about a story to support the development of their comprehension skills.	○1	○2	○3	○4	○5	○6

Q13. Please tell us how much you agree or disagree that the following took place during the Circle Time component of the Jumpstart sessions last week:

(Please indicate the extent to which you agree or disagree with each statement.)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	*Decline to Answer*
Children had the opportunity to participate, make suggestions, and practice taking turns.	○1	○2	○3	○4	○5	○6
Activities (songs, poems, games) were offered at an appropriate level for children.	○1	○2	○3	○4	○5	○6
Children were able to participate at their own level.	○1	○2	○3	○4	○5	○6

Q14. Please tell us how much you agree or disagree that the following took place during the Center Time component of the Jumpstart sessions last week:

(Please indicate the extent to which you agree or disagree with each statement.)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	*Decline to Answer*
Most children were engaged in Center Time activities.	○1	○2	○3	○4	○5	○6
The centers that were set up involved activities that support children's language and literacy skill development.	○1	○2	○3	○4	○5	○6
Volunteers used rich, concrete language that helped children to build their vocabulary.	○1	○2	○3	○4	○5	○6
Volunteers played as partners with children.	○1	○2	○3	○4	○5	○6
Centers were set up with materials and activities that were appropriate for young children.	○1	○2	○3	○4	○5	○6

Q15. Please tell us how much you agree or disagree that the following took place during the Let's Find Out About It component of the Jumpstart sessions last week:

(Please indicate the extent to which you agree or disagree with each statement.)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	*Decline to Answer*
Most children were engaged in the small group activities.	○1	○2	○3	○4	○5	○6
Children learned about objects and their use through the small group activities.	○1	○2	○3	○4	○5	○6
The small group activities supported children's language and literacy skill development.	○1	○2	○3	○4	○5	○6

Q16. Please tell us how much you agree or disagree that the following took place during the Sharing and Goodbye component of the Jumpstart sessions last week:

(Please indicate the extent to which you agree or disagree with each statement.)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	*Decline to Answer*
Some children shared their favorite session activities in the large group conversation.	○1	○2	○3	○4	○5	○6
Foster Grandparents used objects or examples of children's work from Center Time to support the large group conversation.	○1	○2	○3	○4	○5	○6
Foster Grandparents used rich vocabulary to support the large group conversation.	○1	○2	○3	○4	○5	○6

SECTION 3 - NON-JUMPSTART SESSION TIME

*The following section asks you to consider language and literacy instructional practices that take place in your classroom **outside** of the Jumpstart sessions.*

*First, we would like to ask you about the supports the **Foster Grandparent** volunteers provide outside of the Jumpstart sessions.*

Q17. Last week, what kinds of one-on-one activities did the Foster Grandparent volunteers assigned to your classroom engage in with their partner children outside of the Jumpstart sessions?

(Please select all that apply.)

- ☐a Read a book to the child
- ☐b Practiced recognizing letters
- ☐c Practiced recognizing numbers
- ☐d Drew or completed other arts and crafts projects
- ☐e Sang a song or made music
- ☐f Used building blocks
- ☐g Played dress-up
- ☐h Played with dolls or other toys
- ☐i Supported children during transitions
- ☐j Engaged in conversations or supported children during snack or meal time
- ☐k Something else *(Please describe: _____)*

Q18. Last week, during these activities, what types of language or literacy strategies did the Foster Grandparent volunteers assigned to your classroom use with their partner children?

(Please select all that apply.)

- ☐a Directly taught new words to children *(For example: "A cave is a hole in the mountain.")*
- ☐b Connected a new word to a word the children already know *(For example: "Enormous – it means really big. Say 'enormous' with me.")*
- ☐c Had children repeat new words by asking them to respond to prompt *(For example: "What does ___ mean?")*
- ☐d Asked children comprehension questions about a story
- ☐e Helped children say sounds in unfamiliar words
- ☐f Embedded the use of new words into children's daily experiences
- ☐g Noted specific features of print and letters *(e.g., "That is the letter D like Deondre's name")*
- ☐h Asked children where to start reading
- ☐i Counted words in a text with children
- ☐j Pointed out print within pictures
- ☐k Something else *(Please describe: _____)*

Q19. Please use this space to describe how volunteers interact with their partner children and provide supports in your classroom.

*Now we would like to ask you about the language and literacy instructional practices **YOU** utilize.*

Q20. Last week, how many days did you spend on language and literacy instruction and/or activities with your children outside of the Jumpstart sessions?

_____ (Please round to the nearest day.)

When responding to the next question, please consider how often, on average, you engaged in each practice outside of the Jumpstart sessions during the last week.

Q21. Last week, how often did you do the following outside of the Jumpstart sessions?

(Please select <u>one</u> for each statement.)

	Never	Seldom	Some-times	Often	Almost Always	*Decline to An-swer*
Created a variety of opportunities for children to interact in one-on-one conversations.	○1	○2	○3	○4	○5	○6
Created a variety of opportunities for children to interact in small group conversations.	○1	○2	○3	○4	○5	○6
Initiated conversations that maximized talk and built on oral language skills. *(For example: Had a discussion about how the class could create their own post office, including brainstorming and listing the supplies they would need, etc.)*	○1	○2	○3	○4	○5	○6
Asked open-ended questions to children for which an answer was not known (and that require more than a one- or two-word response) that would encourage them to talk about their thinking. *(For example: "Tell me about our day at the zoo" instead of "What color was the flamingo?")*	○1	○2	○3	○4	○5	○6
Talked to the children in my classroom using some words slightly beyond their understanding to broaden their knowledge of words and sentence structure.	○1	○2	○3	○4	○5	○6
Gave age-appropriate definitions of words to children.	○1	○2	○3	○4	○5	○6
Used songs, chants, nursery rhymes, and rhyming poems.	○1	○2	○3	○4	○5	○6
Played games that got children to listen for beginning and ending sounds. *(For example: "I spy something that begins with a /b/ sound.")*	○1	○2	○3	○4	○5	○6
During reading, used expressions, tone of voice, gestures and/or references to illustrations to define words and support children's understanding of the story.	○1	○2	○3	○4	○5	○6
Used song and word games to isolate sounds in words. *(For example: "What is the sound that begins these words: chin, chicken, and cheek? Ch is the sound that begins these words.")*	○1	○2	○3	○4	○5	○6
Helped children connect letters and sounds.	○1	○2	○3	○4	○5	○6

Now we would like to ask you about the environment in your classroom outside of the Jumpstart sessions.

Q22. Last week, how often did children in your classroom do the following outside of the Jumpstart sessions?

(Please select <u>one</u> for each statement.)

	Never	Seldom	Some-times	Often	Almost Always	*Decline to Answer*
Moved smoothly throughout this period of day with few conflicts.	○1	○2	○3	○4	○5	○6
Needed to be reminded of rules and routines.	○1	○2	○3	○4	○5	○6
Did off-task things.	○1	○2	○3	○4	○5	○6
Created behavior problems in your class.	○1	○2	○3	○4	○5	○6
Followed established classroom rules and procedures.	○1	○2	○3	○4	○5	○6

Q23. Please use this space for additional comments about language and literacy practices in your classroom:

Thank you for completing the survey!

Jumpstart Teacher Survey
Version: CCT-only classroom teachers
Spring 2018

Thank you for completing the Teacher Survey as part of the Jumpstart Foster Grandparent Research Study.

Instructions & Reminders:

1. *Please read and sign the consent form (on separate page) before getting started.*
2. *Make sure there is an ID sticker in the upper right-hand corner of the first page of the survey. (If not, please let your supervisor know right away.)*
3. *Remember: Your name will not be linked with your responses. Your consent form will be separated from the survey once MDRC receives it. Your individual responses will not be shared with Jumpstart. You may skip any questions you don't want to answer but we would appreciate if you tried to answer as many questions as you can, as honestly as you can.*
4. *Please use blue or black ink to complete the survey.*
5. *Once you have completed the survey, please place the survey in the envelope provided and seal the envelope. Please do not place your consent form in the sealed envelope.*

Please hand deliver the completed survey in the sealed envelope and the separate consent form to your supervisor who is responsible for making sure completed forms get to MDRC. By hand delivering the survey and the consent form, the liaison can remove your name from his/her follow-up list.

Thank you for your help!

SECTION 1 -- BACKGROUND

First, please tell us about your background.

Q1. What is your age?

(Please select one.)

- ○1 Under 25
- ○2 25-29
- ○3 30-39
- ○4 40-49
- ○5 50-59
- ○6 60 or more

Q2. Are you of Hispanic, Latino or Spanish origin?

(Please select one.)

- ○1 Yes
- ○2 No

Q3. What is your race?

(Please select all that apply.)

- ☐a Asian
- ☐b Black or African American
- ☐c Native American
- ☐d Pacific Islander
- ☐e White
- ☐f Something else *(Please describe: _____)*

Q4. How many years as an early childhood educator do you have?

(Please round to the nearest year.)

_____years

Q5. How many years have you worked at this Early Childhood Center?

(Please round to the nearest year.)

_____years

Q6. How much training to support children's language and literacy development have you had in the 2017-18 school year?

(Please round to the nearest hour.)

_____hours

Q7. What is the highest level of education you have attained?

(Please select one.)

- ○1 Some High School
- ○2 High School or GED
- ○3 Child Development Associate
- ○4 Some College
- ○5 Associate's Degree
- ○6 Bachelor's Degree
- ○7 Graduate Degree
- ○8 Some other degree *(Please describe: _____)*

Q8. Last week, about how much time did you spend preparing language and literacy activities for your students?

_____hours in the last week and _____minutes in the last week

Q9. Last week, how many days did you spend on language and literacy instruction and/or activities with your children?

_____ (Please round to the nearest day.)

Q10. How much do you agree or disagree with the following statements:

(Please select one for each statement.)	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	*Decline to Answer*
The amount a child can learn is primarily related to family background.	○1	○2	○3	○4	○5	○6
A teacher is very limited in what he/she can achieve because a child's home environment is a large influence on his/her achievement.	○1	○2	○3	○4	○5	○6
If parents would do more for their children, I could do more.	○1	○2	○3	○4	○5	○6
If a child in my class becomes disruptive and noisy, I feel assured that I know some techniques to redirect him/her quickly.	○1	○2	○3	○4	○5	○6
If a child couldn't do a class activity, I would be able to accurately assess whether the activity was at the correct level of difficulty.	○1	○2	○3	○4	○5	○6
If I really try hard, I can get through to even the most difficult or unmotivated children.	○1	○2	○3	○4	○5	○6
When it comes right down to it, a teacher really can't do much because most of a child's motivation and performance depends on his/her home environment.	○1	○2	○3	○4	○5	○6

SECTION 2 – LANGUAGE AND LITERACY TIME

The following section asks you to consider language and literacy instructional practices that take place in your classroom and identify how often, if ever, YOU utilize each practice.

When responding to the next question, please consider how often, on average, you engaged in each practice.

Q11. Last week, how often did you do the following during language and literacy instructional time?

(Please select <u>one</u> for each statement.)

	Never	Seldom	Some-times	Often	Almost Always	*Decline to An-swer*
Created a variety of opportunities for children to interact in one-on-one conversations.	○1	○2	○3	○4	○5	○6
Created a variety of opportunities for children to interact in small group conversations.	○1	○2	○3	○4	○5	○6
Initiated conversations that maximized talk and built on oral language skills. *(For example: Had a discussion about how the class could create their own post office, including brain-storming and listing the supplies they would need, etc.)*	○1	○2	○3	○4	○5	○6
Asked open-ended questions to children for which an answer was not known (and that re-quire more than a one- or two-word response) that would encourage them to talk about their thinking. *(For example: "Tell me about our day at the zoo" in-stead of "What color was the flamingo?")*	○1	○2	○3	○4	○5	○6
Talked to the children in my classroom using some words slightly beyond their understanding to broaden their knowledge of words and sen-tence structure.	○1	○2	○3	○4	○5	○6
Gave age-appropriate definitions of words to children.	○1	○2	○3	○4	○5	○6
Used songs, chants, nursery rhymes, and rhyming poems.	○1	○2	○3	○4	○5	○6
Played games that got children to listen for begin-ning and ending sounds. *(For example: "I spy something that begins with a /b/ sound.")*	○1	○2	○3	○4	○5	○6
During reading, used expressions, tone of voice, gestures and/or references to illustrations to de-fine words and support children's understanding of the story.	○1	○2	○3	○4	○5	○6
Used song and word games to isolate sounds in words. *(For example: "What is the sound that begins these words: chin, chicken, and cheek? Ch is the sound that begins these words.")*	○1	○2	○3	○4	○5	○6

(Please select <u>one</u> for each statement.)

	Never	Seldom	Some-times	Often	Almost Always	*Decline to Answer*
Helped children connect letters and sounds.	○1	○2	○3	○4	○5	○6

Now we would like to ask you about the general environment in your classroom during language and literacy instructional time.

Q12. In general, how often did children in your classroom do the following last week during language and literacy instructional time?

(Please select <u>one</u> for each statement.)

	Never	Seldom	Some-times	Often	Almost Always	*Decline to Answer*
Moved smoothly throughout this period of day with few conflicts.	○1	○2	○3	○4	○5	○6
Needed to be reminded of rules and routines.	○1	○2	○3	○4	○5	○6
Did off-task things.	○1	○2	○3	○4	○5	○6
Created behavior problems in your class.	○1	○2	○3	○4	○5	○6
Followed established classroom rules and routines.	○1	○2	○3	○4	○5	○6

*Now, we would like to ask you about the supports the **<u>Foster Grandparent</u>** volunteers assigned to your classroom provided during language and literacy instructional time.*

Q13. Last week, what kinds of one-on-one activities did the Foster Grandparent volunteers assigned to your classroom engage in with their partner children?

(Please select <u>all</u> that apply.)

- ☐a Read a book to the child
- ☐b Practiced recognizing letters
- ☐c Practiced recognizing numbers
- ☐d Drew or completed other arts and crafts projects
- ☐e Sang a song or made music
- ☐f Used building blocks
- ☐g Played dress-up
- ☐h Played with dolls or other toys
- ☐i Supported children during transitions
- ☐j Engaged in conversations or supported children during snack or meal time
- ☐k Something else *(Please describe: _____)*

Q14. Last week, during these activities, what types of language or literacy strategies did the Foster Grandparent volunteers assigned to your classroom use with their partner children?

(Please select <u>all</u> that apply.)

- ☐ a Directly taught new words to children *(For example: "A cave is a hole in the mountain")*
- ☐ b Connected a new word to a word the children already know *(For example: "Enormous – it means really big. Say 'enormous' with me.")*
- ☐ c Had children repeat new words by asking them to respond to prompt *(For example: "What does ___ mean?")*
- ☐ d Asked children comprehension questions about a story
- ☐ e Helped children say sounds in unfamiliar words
- ☐ f Embedded the use of new words into children's daily experiences
- ☐ g Noted specific features of print and letters *(e.g., "That is the letter D like Deondre's name")*
- ☐ h Asked children where to start reading
- ☐ i Counted words in a text with children
- ☐ j Pointed out print within pictures
- ☐ k Something else *(Please describe: _____)*

Q15. Please use this space to describe how volunteers interact with their partner children and provide supports in your classroom.

_____

_____

_____

_____

_____

_____

Q16. Last week, how often did children in your classroom do the following specifically when volunteers were present in your classroom?

(Please select <u>one</u> for each statement.)

	Never	Seldom	Sometimes	Often	Almost Always	*Decline to Answer*
Moved smoothly throughout this period of day with few conflicts.	○1	○2	○3	○4	○5	○6
Needed to be reminded of rules and routines.	○1	○2	○3	○4	○5	○6
Did off-task things.	○1	○2	○3	○4	○5	○6
Created behavior problems in your class.	○1	○2	○3	○4	○5	○6
Followed established classroom rules and routines.	○1	○2	○3	○4	○5	○6

Q17. Please use this space for additional comments about language and literacy practices in your classroom:

_____

_____

_____

_____

_____

_____

Thank you for completing the survey!

Jumpstart Teacher Survey
Version: Business as usual classroom teachers
Spring 2018

Thank you for completing the Teacher Survey as part of the Jumpstart Foster Grandparent Research Study.

Instructions & Reminders:

1. *Please read and sign the consent form (on separate page) before getting started.*
2. *Make sure there is an ID sticker in the upper right-hand corner of the first page of the survey. (If not, please let your supervisor know right away.)*
3. *Remember: Your name will not be linked with your responses. Your consent form will be separated from the survey once MDRC receives it. Your individual responses will not be shared with Jumpstart. You may skip any questions you don't want to answer but we would appreciate if you tried to answer as many questions as you can, as honestly as you can.*
4. *Please use blue or black ink to complete the survey.*
5. *Once you have completed the survey, please place the survey in the envelope provided and seal the envelope. Please do not place your consent form in the sealed envelope.*

Please hand deliver the completed survey in the sealed envelope and the separate consent form to your supervisor who is responsible for making sure completed forms get to MDRC. By hand delivering the survey and the consent form, the liaison can remove your name from his/her follow-up list.

Thank you for your help!

SECTION 1 -- BACKGROUND

First, please tell us about your background.

Q1. What is your age?

(Please select one.)

- ○1 Under 25
- ○2 25-29
- ○3 30-39
- ○4 40-49
- ○5 50-59
- ○6 60 or more

Q2. Are you of Hispanic, Latino or Spanish origin?

(Please select one.)

- ○1 Yes
- ○2 No

Q3. What is your race?

(Please select all that apply.)

- ☐a Asian
- ☐b Black or African American
- ☐c Native American
- ☐d Pacific Islander
- ☐e White
- ☐f Something else *(Please describe: _____)*

Q4. How many years as an early childhood educator do you have?

(Please round to the nearest year.)

_____years

Q5. How many years have you worked at this Early Childhood Center?

(Please round to the nearest year.)

_____years

Q6. How much training to support children's language and literacy development have you had in the 2017-18 school year?

(Please round to the nearest hour.)

_____hours

Q7. What is the highest level of education you have attained?

(Please select one.)

- ○1 Some High School
- ○2 High School or GED
- ○3 Child Development Associate
- ○4 Some College
- ○5 Associate's Degree
- ○6 Bachelor's Degree
- ○7 Graduate Degree
- ○8 Some other degree *(Please describe: _____)*

Q8. Last week, about how much time did you spend preparing language and literacy activities for your students?

_____hours in the last week and _____minutes in the last week

Q9. Last week, how many days did you spend on language and literacy instruction and/or activities with your children?

_____ (Please round to the nearest day.)

Q10. How much do you agree or disagree with the following statements:

(Please select one for each statement.)	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	*Decline to Answer*
The amount a child can learn is primarily related to family background.	○1	○2	○3	○4	○5	○6
A teacher is very limited in what he/she can achieve because a child's home environment is a large influence on his/her achievement.	○1	○2	○3	○4	○5	○6
If parents would do more for their children, I could do more.	○1	○2	○3	○4	○5	○6
If a child in my class becomes disruptive and noisy, I feel assured that I know some techniques to redirect him/her quickly.	○1	○2	○3	○4	○5	○6
If a child couldn't do a class activity, I would be able to accurately assess whether the activity was at the correct level of difficulty.	○1	○2	○3	○4	○5	○6
If I really try hard, I can get through to even the most difficult or unmotivated children.	○1	○2	○3	○4	○5	○6
When it comes right down to it, a teacher really can't do much because most of a child's motivation and performance depends on his/her home environment.	○1	○2	○3	○4	○5	○6

SECTION 2 – LANGUAGE AND LITERACY TIME

The following section asks you to consider language and literacy instructional practices that take place in your classroom and identify how often, if ever, YOU utilize each practice.

When responding to the next question, please consider how often, on average, you engaged in each practice.

Q11. Last week, how often did you do the following during language and literacy instructional time?

(Please select one for each statement.)

	Never	Seldom	Some-times	Often	Almost Always	*Decline to Answer*
Created a variety of opportunities for children to interact in one-on-one conversations.	○1	○2	○3	○4	○5	○6
Created a variety of opportunities for children to interact in small group conversations.	○1	○2	○3	○4	○5	○6
Initiated conversations that maximized talk and built on oral language skills. *(For example: Had a discussion about how the class could create their own post office, including brainstorming and listing the supplies they would need, etc.)*	○1	○2	○3	○4	○5	○6
Asked open-ended questions to children for which an answer was not known (and that require more than a one- or two-word response) that would encourage them to talk about their thinking. *(For example: "Tell me about our day at the zoo" instead of "What color was the flamingo?")*	○1	○2	○3	○4	○5	○6
Talked to the children in my classroom using some words slightly beyond their understanding to broaden their knowledge of words and sentence structure.	○1	○2	○3	○4	○5	○6
Gave age-appropriate definitions of words to children.	○1	○2	○3	○4	○5	○6
Used songs, chants, nursery rhymes, and rhyming poems.	○1	○2	○3	○4	○5	○6
Played games that got children to listen for beginning and ending sounds. *(For example: "I spy something that begins with a /b/ sound.")*	○1	○2	○3	○4	○5	○6
During reading, used expressions, tone of voice, gestures and/or references to illustrations to define words and support children's understanding of the story.	○1	○2	○3	○4	○5	○6
Used song and word games to isolate sounds in words. *(For example: "What is the sound that begins these words: chin, chicken, and cheek? Ch is the sound that begins these words.")*	○1	○2	○3	○4	○5	○6
Helped children connect letters and sounds.	○1	○2	○3	○4	○5	○6

Now we would like to ask you about the general environment in your classroom during language and literacy instructional time.

Q12. In general, how often did children in your classroom do the following last week during language and literacy instructional time?

(Please select <u>one</u> for each statement.)

	Never	Seldom	Some-times	Often	Almost Always	*Decline to Answer*
Moved smoothly throughout this period of day with few conflicts.	○1	○2	○3	○4	○5	○6
Needed to be reminded of rules and routines.	○1	○2	○3	○4	○5	○6
Did off-task things.	○1	○2	○3	○4	○5	○6
Created behavior problems in your class.	○1	○2	○3	○4	○5	○6
Followed established classroom rules and routines.	○1	○2	○3	○4	○5	○6

Q13. Please use this space for additional comments about language and literacy practices in your classroom:

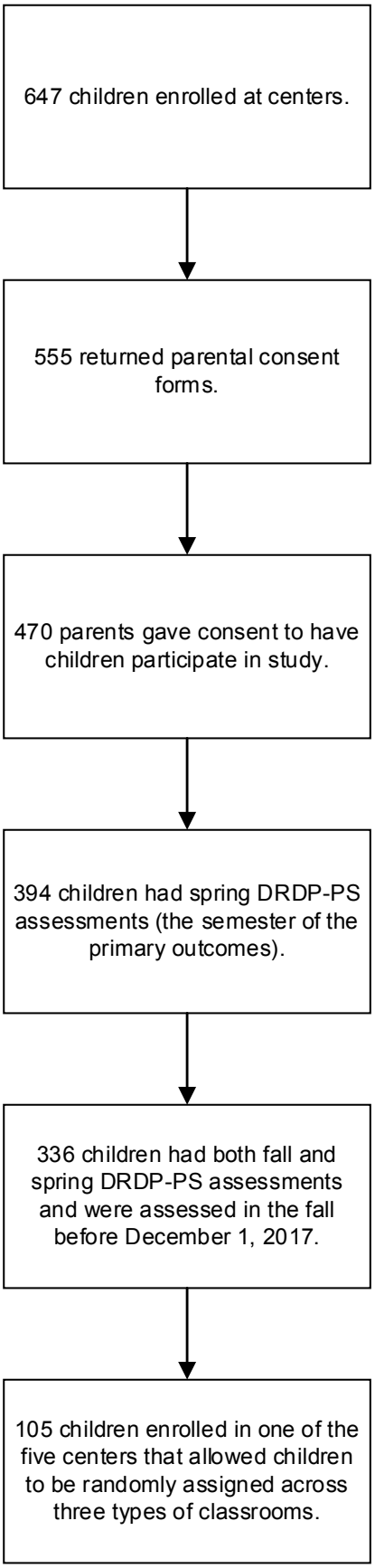
Thank you for completing the survey!

Appendix B

Recruitment and Sample

Figure B.1

Sample for the Analysis of the Jumpstart Foster Grandparent Evaluation



Appendix C

The Desired Results Developmental Profile – Preschool (DRDP-PS) Measures

The Desired Results Development Profile – Preschool (DRDP-PS) is a teacher-reported, formative assessment. The DRDP is made up of eight domains: Approaches to Learning–Self-Regulation; Social and Emotional Development (which measures children's interpersonal skills); Language and Literacy Development (which rates children's development in their main language); English-Language Development (for dual language learners only); Cognition; Physical Development-Health; History-Social Science; Visual and Performing Arts. The nine levels are: Responding (earlier and later), Exploring (earlier, middle, later), Building (earlier, middle, later), and Integrating (earlier).[1]

Impact Outcome Measures Constructed from DRDP domains

For the impact study, the research team used two outcome measures based on children's scores in four specific domains measured by the DRDP:

The English Language and Literacy Development Outcome Measure

The English Language and Literacy Development outcome that is used in this evaluation is based on children's scores on two DRDP domains. For children who are not dual language learners, their English Language and Literacy Development score is based on their ratings on items in the DRDP's "Language and Literacy Development" domain. This domain assesses the progress of children in developing foundational language and literacy skills. These skills can be demonstrated in any language and in any mode of communication, and dual language learners may demonstrate knowledge and skills in their home language. Therefore, for children who are dual language learners, their score for the DRDP's English-Language Development domain is used instead, because this assesses their progress toward learning to communicate in English.

The Language and Literacy domain includes 10 measures. For each one, teachers rate the developmental level of children on a nine-point scale: (1) Responding Earlier, (2) Responding Later, (3) Exploring Earlier, (4) Exploring Middle, (5) Exploring Later, (6) Building Earlier, (7) Building Middle, (8) Building Later, and (9) Integrating Earlier. The measures of Language and Literacy Development domain are as follows:

Measures of Language and Literacy Development

- Understanding of Language
- Responsiveness to Language
- Communication and Use of Language
- Reciprocal Communication and Conversation
- Interest in Literacy

[1] A detailed description of DRDP-PS domains, measures, rating scales, and administration guidelines can be found here: https://www.desiredresults.us/sites/default/files/docs/forms/DRDP2015PSC_090116.pdf.

- Comprehension of Age-Appropriate Text
- Concepts about Print
- Phonological Awareness
- Letter and Word Knowledge
- Emergent Writing

The English-Language Development domain includes four measures. For each one, teachers rate the developmental level of children on a six-point scale: (1) Discovering Language, (2) Discovering English, (3) Exploring English, (4) Developing English, (5) Building English, and (6) Integrating English. The measures of English Language Development are as follows:

Measures of English-Language Development

- Comprehension of English
- Self-Expression in English
- Understanding and Response to English Literacy Activities
- Symbol, Letter, and Print Knowledge in English

Social-Emotional Development Outcome Measure

The Social-Emotional Development outcome that is used in this evaluation is a combined construct of scores from two domains in the DRDP: Interpersonal Skills (which is referred to as "Social and Emotional Development" in the DRDP but was renamed by the study team for this report) and Self-Regulation (which is referred to as Approaches to Learning–Self-Regulation in the DRDP).

The Interpersonal Skills domain includes five measures. For each one, teachers rate the developmental level of children on a nine-point scale: (1) Responding Earlier, (2) Responding Later, (3) Exploring Earlier, (4) Exploring Middle, (5) Exploring Later, (6) Building Earlier, (7) Building Middle, (8) Building Later, and (9) Integrating Earlier. The measures of the Interpersonal Skills domain are as follows:

Measures of Interpersonal Skills

- Identity of Self in Relation to Others
- Social and Emotional Understanding
- Relationships and Social Interactions with Familiar Adults
- Relationships and Social Interactions with Peers
- Symbolic and Sociodramatic Play

The Self-Regulation domain includes seven measures. Three of them are conditional measures that are only rated when a child has an individualized education plan or is a dual language learner. Theses conditional measures were not included in the composite social and emotional learning measure. Teachers rate the developmental level of children on a nine-point scale: (1) Responding Earlier, (2) Responding Later, (3) Exploring Earlier, (4) Exploring Middle, (5) Exploring Later, (6) Building Earlier, (7) Building Middle, (8) Building Later, and (9) Integrating Earlier. The measures of the Self-Regulation domain are as follows:

Measures of Self-Regulation

- Curiosity and Initiative in Learning
- Self-Control of Feelings and Behavior
- Engagement and Persistence
- Shared Use of Space and Materials

Methodology for creating outcome measures

For each outcome, a composite score was created using a partial credit Rasch model for polytomous items.[2] Using a partial credit Rasch model, instead of taking the average score across items, takes into account the variation in difficulty across items, giving a child more credit for being further developed on a difficult item.

[2]The data were scaled using the Item Response Theory — Partial Credit Model package in Stata.

Appendix D

Service Contrast for Five Impact Study Centers

Table D.1

Comparing Teacher and Foster Grandparent Use of Language and Literacy Instructional Practices in Jumpstart Classrooms, Impact Sample

Practices (5-point scale)[a]	Foster Grandparent	Teacher
Created opportunities for children to interact in one-on-one conversations	4.2	4.7
Created opportunities for children to interact in small group conversations	4.5	4.5
Initiated conversations that maximized talk and built on oral language skills	4.0	4.7
Asked open-ended questions that would encourage children to talk about their thinking	4.3	4.8
Talked to children using words slightly beyond their understanding to broaden knowledge of words	4.7	4.3
Gave age-appropriate definitions of words	4.3	4.8
Used songs, chants, nursery rhymes, and poems	4.8	4.8
Played games that got children to listen for beginning and ending sounds	4.3	4.3
Used expressions, tone of voice, gestures, or references to illustrations to support understanding during reading	4.5	4.8
Used song and word games to isolate sounds in words	4.5	4.8
Helped children connect letters and sounds	4.5	4.7

SOURCE: MDRC calculations based on teacher surveys distributed and collected in spring 2018.

NOTES: Findings in this table are based on data for 6 Jumpstart group teachers. Sample size for individual items varies due to nonresponse or skipped questions.

[a]The values presented in this table are calculated from the mean of a 5-point scale: 1 (never), 2 (seldom), 3 (sometimes), 4 (often), and 5 (almost always).

Table D.2

Percentage of Classrooms Where Foster Grandparents Employed Specific One-on-One Activities during CCT, Impact Sample

Activities	Percentage
Read a book	72.7
Practiced recognizing letters	81.8
Practiced recognizing numbers	63.6
Completed arts and crafts projects	63.6
Sang songs or made music	63.6
Used building blocks	63.6
Played dress-up	63.6
Played with dolls or toys	54.6
Supported children during transitions	81.8
Engaged children during snack or meals	81.8
Sample size	11

SOURCE: MDRC calculations based on teacher surveys distributed and collected in spring 2018.

NOTES: Findings in this table are based on data for 5 Jumpstart group teachers and 6 CCT-only group teachers. Sample size for individual items varies due to nonresponse or skipped questions.

Appendix E

Impacts for Combined Analytical Sample

Table E.1

Baseline Characteristics of Children in Combined Study Sample
Jumpstart vs. Business as Usual Group

Characteristic	Jumpstart Group	Business as Usual Group	Estimated Difference	Effect Size	P-Value for Estimated Difference
DRDP-PS					
English Language and Literacy Development (IRT scale)[a]	0.2	0.0	0.2	0.196	0.175
Developmental scale (9-point)	5.4	5.2			
Social-Emotional Development (IRT scale)[b]	0.2	0.1	0.1	0.102	0.430
Developmental scale (9-point)	6.4	6.3			
Self-Regulation (IRT scale)	0.2	0.1	0.1	0.129	0.350
Developmental scale (9-point)	6.4	6.2			
Interpersonal Skills (IRT scale)	0.2	0.1	0.1	0.085	0.499
Developmental scale (9-point)	6.4	6.3			
Age	3.7	3.7	0.01	0.02	0.852
Male (%)	46.7	57.3	-10.6	-0.21	0.153
Race/ethnicity (%)					
Hispanic	76.3	64.3	12.0	0.26 *	0.098
Black, non-Hispanic	12.7	14.3	-1.6	-0.05	0.755
White, non-Hispanic	1.0	2.1	-1.1	-0.09	0.618
Asian	1.1	2.1	-1.0	-0.08	0.610
Other	8.9	17.1	-8.3	-0.25	0.182
Individualized Education Plan (%)	4.3	9.8	-0.1	-0.22	0.176
English as a second language (%)	44.5	44.8	0.0	0.00	0.972

(continued)

Table E.1 (continued)

Characteristic	Jumpstart Group	Business as Usual Group	Estimated Difference	Effect Size	P-Value for Estimated Difference
Language predominantly spoken at home (%)					
English	59.1	53.3	5.7	0.12	0.455
Spanish	39.8	39.3	0.6	0.01	0.939
Other	1.1	7.4	-6.3	-0.30	0.135
Food stamp recipients (%)	42.1	46.0	0.0	-0.08	0.619
Parent educational attainment (%)					
Not a high school graduate	27.9	19.2	0.1	0.20	0.247
High school graduate or GED recipient	30.9	25.8	0.1	0.11	0.466
Some college	23.9	36.7	-0.1	-0.28 *	0.093
College graduate or higher	17.4	18.3	0.0	-0.02	0.881
Number of children	144	69			

SOURCE: Teacher ratings based on the Desired Results Developmental Profile – Preschool (DRDP-PS) in fall 2017.

NOTE: The analyses reported in this table are based on children whose parents consented to their participation in the study and who were assessed by their teachers using the DRDP-PS in fall 2017 and spring 2018. The sample includes children assigned to classrooms that received the full Jumpstart model from the volunteers (Jumpstart group) and children assigned to classrooms that were not supported by the volunteers (business as usual group). Some children were assigned to classrooms using random assignment (experimental subsample); other children were not assigned to classrooms using random assignment, so they were matched to children with similar characteristics in classrooms that did not receive services from the volunteers (quasi-experimental subsample).

Estimated differences are regression-adjusted using ordinary least squares, controlling for random assignment blocks or matching blocks. The values in the column labeled “Jumpstart Group” are the observed means for children who were randomly or nonrandomly assigned to a classroom that received the full Jumpstart model. The "business as usual group” values in the next column are the regression-adjusted means for randomly assigned or matched children who were assigned to a classroom that did not receive services from the Jumpstart volunteers.

[a]For English language learners, this scale is based on four items measuring children's English-language development. For children whose primary language was English, this scale is based on 10 items measuring children's language and literacy development. A partial-credit IRT model was used to create a composite scale based on these items.

[b]The Social-Emotional Development scale includes nine items (four items measuring self-regulation and five items measuring interpersonal skills). A partial-credit IRT model was used to create a composite scale based on these items.

A t-test was used to assess the statistical significance of each estimated difference with significance levels as follows: ***=1 percent, **=5 percent, and *=10 percent.

Because IRT scores do not have a meaningful interpretation, group means for children's simple average score across the relevant items are also shown, based on the original nine-point developmental scale.

Table E.2

Baseline Characteristics of Children in Combined Study Sample
CCT-Only vs. Business as Usual Group

Characteristic	CCT-Only Group	Business as Usual Group	Estimated Difference	Effect Size	P-Value for Estimated Difference
DRDP-PS					
English Language and Literacy Development (IRT scale)[a]	0.0	0.0	0.0	0.061	0.734
Developmental scale (9-point)	4.8	5.2			
Social-Emotional Development (IRT scale)[b]	0.0	0.2	-0.3	-0.294 *	0.074
Developmental scale (9-point)	6.2	6.5			
Self-Regulation (IRT scale)	0.0	0.2	-0.2	-0.283 *	0.080
Developmental scale (9-point)	6.2	6.4			
Interpersonal Skills (IRT scale)	0.0	0.2	-0.3	-0.282 *	0.092
Developmental scale (9-point)	6.2	6.5			
Age	3.7	3.6			
Male (%)	53.0	46.3			
Race/ethnicity (%)					
Hispanic	79.0	70.2	8.8	0.20	0.255
Black, non-Hispanic	11.0	8.5	2.5	0.08	0.591
White, non-Hispanic	0.1	3.2	-3.1	-0.25	0.300
Asian	2.1	3.2	-1.1	-0.07	0.696
Other	7.8	14.9	-7.1	-0.23	0.266
Individualized Education Plan (%)	3.6	12.6	-0.1	-0.35 *	0.068
English as a second language (%)	69.5	48.4	0.2	0.43 **	0.010

(continued)

Table E.2 (continued)

Characteristic	CCT-Only Group	Business as Usual Group	Estimated Difference	Effect Size	P-Value for Estimated Difference
Language predominantly spoken at home (%)					
English	50.0	43.8	6.2	0.12	0.508
Spanish	46.3	47.2	-0.9	-0.02	0.920
Other	3.8	9.0	-5.2	-0.21	0.299
Food stamp recipients (%)	44.0	51.1	-0.1	-0.14	0.447
Parent educational attainment (%)					
Not a high school graduate	19.9	15.9	0.0	0.11	0.548
High school graduate or GED recipient	33.4	36.6	0.0	-0.07	0.740
Some college	29.1	34.1	-0.1	-0.11	0.599
College graduate or higher	17.6	13.4	0.0	0.12	0.488
Number of children	105	57			

SOURCE: Teacher ratings based on the Desired Results Developmental Profile – Preschool (DRDP-PS) in fall 2017.

NOTE: The analyses reported in this table are based on children whose parents consented to their participation in the study and who were assessed by their teachers using the DRDP-PS in fall 2017 and spring 2018. The sample includes children assigned to classrooms that received the child-centered time model from the volunteers (CCT-only group) and children assigned to classrooms that were not supported by the volunteers (business as usual group). Some children were assigned to classrooms using random assignment (experimental subsample); other children were not assigned to the CCT-only classroom using random assignment, so they were matched to children with similar characteristics in classrooms that did not receive services from the volunteers (quasi-experimental subsample).

Estimated differences are regression-adjusted using ordinary least squares, controlling for random assignment or matching blocks. The values in the column labeled “CCT-Only Group” are the observed means for children who were randomly or nonrandomly assigned to a classroom that received the child-centered time (CCT) model. The "business as usual group” values in the next column are the regression-adjusted means for randomly assigned or matched children who were assigned to a classroom that did not receive services from the Jumpstart volunteers.

[a]For English language learners, this scale is based on four items measuring children's English-language development. For children whose primary language was English, this scale is based on 10 items measuring children's language and literacy development. A partial-credit IRT model was used to create a composite scale based on these items.

[b]The Social-Emotional Development scale includes nine items (four items measuring self-regulation and five items measuring interpersonal skills). A partial-credit IRT model was used to create a composite scale based on these items.

A t-test was used to assess the statistical significance of each estimated difference with significance levels as follows: ***=1 percent, **=5 percent, and *=10 percent.

Because IRT scores do not have a meaningful interpretation, group means for children's simple average score across the relevant items are also shown, based on the original nine-point developmental scale.

Table E.3

Estimated Effect of the Full Jumpstart Model on Children's Outcomes, Combined Study Sample

Outcome	Jumpstart Group	Business as Usual Group	Estimated Difference	Effect Size	P-Value for Estimated Difference
English Language and Literacy Development (IRT scale)[a]	-0.06	0.05	-0.11	-0.12	0.244
Developmental scale (9-point)	6.3	6.5			
Social-Emotional Development (IRT scale)[b]	-0.02	0.08	-0.10	-0.10	0.302
Developmental scale (9-point)	7.5	7.7			
Self-Regulation (IRT scale)	-0.04	0.03	-0.07	-0.08	0.427
Developmental scale (9-point)	7.4	7.6			
Interpersonal Skills (IRT scale)	-0.02	0.08	-0.10	-0.11	0.335
Developmental scale (9-point)	7.6	7.8			
Number of children	144	69			

SOURCE: Teacher ratings based on the Desired Results Developmental Profile – Preschool (DRDP-PS) in spring 2018.

NOTES: The analyses reported in this table are based on children whose parents consented to their participation in the study and who were assessed by their teachers using the DRDP-PS in fall 2017 and spring 2018. The sample includes children assigned to classrooms that received the full Jumpstart model from the volunteers (Jumpstart group) and children assigned to classrooms that were not supported by the volunteers (business as usual group). Some children were assigned to classrooms using random assignment (experimental subsample); other children were not assigned to the Jumpstart classroom using random assignment, so they were matched to children with similar characteristics in classrooms that did not receive services from the volunteers (quasi-experimental subsample).

Estimated effects are regression-adjusted using ordinary least squares, controlling for random assignment or matching blocks, as well as any remaining differences between the Jumpstart and comparison group with respect to children's fall 2017 scores on the DRDP-PS assessments, whether the child was a dual language learner (DLL), whether the child had an individualized education plan, their gender, their age, language spoken at home, parent education, family size, whether a child's family received food stamps, and the number of times the family had moved in the last five years. The values in the column labeled “Jumpstart Group” are the observed means for children who were randomly or nonrandomly assigned to a classroom that received the full Jumpstart model. The "business as usual group” values in the next column are the regression-adjusted means for randomly assigned or matched children who were assigned to a classroom that did not receive services from the Jumpstart volunteers.

[a]For English language learners, this scale is based on four items measuring children's English-language development. For children whose primary language was English, this scale is based on 10 items measuring children's language and literacy development. A partial-credit IRT model was used to create a composite scale based on these items.

[b]The Social-Emotional Development scale includes nine items (four items measuring self-regulation and five items measuring interpersonal skills). A partial-credit IRT model was used to create a composite scale based on these items.

A t-test was used to assess the statistical significance of each estimated difference with significance levels as follows: ***=1 percent, **=5 percent, and *=10 percent.

Because IRT scores do not have a meaningful interpretation, group means for children's simple average score across the relevant items are also shown, based on the original nine-point developmental scale.

Table E.4

Estimated Effect of Child-Centered Time (CCT) on Children's Outcomes, Combined Study Sample

Outcome	CCT-Only Group	Business as Usual Group	Estimated Difference	Effect Size	P-Value for Estimated Difference
English Language and Literacy Development (IRT scale)[a]	0.09	0.11	-0.01	-0.02	0.904
Developmental scale (9-point)	6.3	6.5			
Social-Emotional Development (IRT scale)[b]	0.28	0.08	0.20	0.25 *	0.062
Developmental scale (9-point)	7.9	7.8			
Self-Regulation (IRT scale)	0.28	0.02	0.26	0.33 **	0.022
Developmental scale (9-point)	7.9	7.6			
Interpersonal Skills (IRT scale)	0.22	0.09	0.13	0.17	0.241
Developmental scale (9-point)	8.0	7.9			
Number of children	105	57			

SOURCE: Teacher ratings based on the Desired Results Developmental Profile – Preschool (DRDP-PS) in spring 2018.

NOTES: The analyses reported in this table are based on children whose parents consented to their participation in the study and who were assessed by their teachers using the DRDP-PS in fall 2017 and spring 2018. The sample includes children assigned to classrooms that received the child-centered time model from the volunteers (CCT-only group) and children assigned to classrooms that were not supported by the volunteers (business as usual group). Some children were assigned to classrooms using random assignment (experimental subsample); other children were not assigned to the CCT-only classroom using random assignment, so they were matched to children with similar characteristics in classrooms that did not receive services from the volunteers (quasi-experimental subsample).

Estimated effects are regression-adjusted using ordinary least squares, controlling for random assignment or matching blocks, as well as any remaining differences between the CCT-only and comparison group with respect to children's fall 2017 scores on the DRDP-PS assessments, whether the child was a dual language learner (DLL), whether the child had an individualized education plan, their gender, their age, language spoken at home, parent education, family size, whether a child's family received food stamps, and the number of times the family had moved in the last five years. The values in the column labeled “CCT-Only Group” are the observed means for children who were randomly or nonrandomly assigned to a classroom that received the child-centered time (CCT) model. The "business as usual group” values in the next column are the regression-adjusted means for randomly assigned or matched children who were assigned to a classroom that did not receive services from the Jumpstart volunteers.

[a]For English language learners, this scale is based on four items measuring children's English-language development. For children whose primary language was English, this scale is based on 10 items measuring children's language and literacy development. A partial-credit IRT model was used to create a composite scale based on these items.

[b]The Social-Emotional Development scale includes nine items (four items measuring self-regulation and five items measuring interpersonal skills). A partial-credit IRT model was used to create a composite scale based on these items.

A t-test was used to assess the statistical significance of each estimated difference with significance levels as follows: ***=1 percent, **=5 percent, and *=10 percent.

Because IRT scores do not have a meaningful interpretation, group means for children's simple average score across the relevant items are also shown, based on the original nine-point developmental scale.

Appendix F

Teacher Characteristics Tables

Table F.1

Baseline Teacher Characteristics, Combined Study Sample

Characteristic (%)	Jumpstart Group	CCT-Only Group	Business as Usual Group
Age			
Under 25	0.0	0.0	0.0
25-29	0.0	0.0	0.0
30-39	25.0	14.3	16.7
40-49	16.7	57.1 **	0.0
50-59	58.3	28.6	66.7
60 or more	0.0	0.0	16.7
Hispanic, Latino, or Spanish	58.3	57.1	50.0
Race			
Asian	0.0	0.0	25.0
Black or African American	50.0	25.0	50.0
Native American	0.0	0.0	0.0
Pacific Islander	0.0	0.0	0.0
White	40.0	12.5	25.0
Other	20.0	62.5 **	0.0
Highest Education Level			
Some high school	0.0	0.0	0.0
High school or GED	0.0	0.0	0.0
Child Development Associate	8.3	0.0	0.0
Some college	8.3	0.0	0.0
Associate's degree	8.3	0.0	16.7
Bachelor's degree	58.3	100.0	83.3
Graduate degree	8.3	0.0	0.0
Other	8.3	0.0	0.0
Years as an early childhood educator	18.8	14.2 *	24.0
Years at current early childhood center	9.3	7.6	12.5
Sample size	12	9	6

SOURCE: MDRC calculations based on teacher surveys distributed and collected in spring 2018.

NOTES: Findings in this table are based on data for 12 Jumpstart group teachers, 9 CCT-only group teachers, and 6 comparison group teachers. Sample size for individual items varies due to nonresponse or skipped questions. Responses may add up to more that 100 percent as teachers "checked all that applied" for certain questions.

A t-test was used to assess the statistical significance of each estimated difference with significance levels as follows: ***=1 percent, **=5 percent, and *=10 percent. Both Jumpstart and CCT-only groups were compared to the business as usual baseline.

Table F.2

Baseline Teacher Characteristics, Impact Sample

Characteristic (%)	Jumpstart Group	CCT-Only Group	Business as Usual Group
Age			
Under 25	0.0	0.0	0.0
25-29	0.0	0.0	0.0
30-39	33.3	20.0	16.7
40-49	16.7	40.0	0.0
50-59	50.0	40.0	66.7
60 or more	0.0	0.0	16.7
Hispanic, Latino, or Spanish	50.0	50.0	50.0
Race			
Asian	0.0	0.0	25.0
Black or African American	60.0	40.0	50.0
Native American	0.0	0.0	0.0
Pacific Islander	0.0	0.0	0.0
White	60.0	0.0	25.0
Other	0.0	60.0 *	0.0
Highest Education Level			
Some high school	0.0	0.0	0.0
High school or GED	0.0	0.0	0.0
Child Development Associate	0.0	0.0	0.0
Some college	16.7	0.0	0.0
Associate's degree	0.0	0.0	16.7
Bachelor's degree	50.0	100.0	83.3
Graduate degree	16.7	0.0	0.0
Other	16.7	0.0	0.0
Years as an early childhood educator	16.7	17.8	24.0
Years at current early childhood center	8.7	10.8	12.5
Sample size	6	5	6

SOURCE: MDRC calculations based on teacher surveys distributed and collected in spring 2018.

NOTES: Findings in this table are based on data for 6 Jumpstart group teachers, 5 CCT-only group teachers, and 6 business as usual group teachers. Sample size for individual items varies due to nonresponse or skipped questions. Responses may add up to more that 100 percent as teachers "checked all that applied" for certain questions.

A t-test was used to assess the statistical significance of each estimated difference with significance levels as follows: ***=1 percent, **=5 percent, and *=10 percent. Both Jumpstart and CCT-only groups were compared to the business as usual baseline.

Appendix G

Statistical Analysis of Impacts

The impact of the full Jumpstart model was estimated by fitting the following statistical model to children in the analysis sample who were assigned to the Jumpstart classrooms or the business as usual classrooms:

$$Y_i = \alpha_0 + \beta_0 FULL_i + \sum_d \gamma_d B_{di} + \sum_s \lambda_s X_{si} + \varepsilon_i$$

where the variables in this model are defined as follows:

Y_i	=	Outcome of interest for child *i;*
$FULL_i$	=	Indicator for group membership (=1 if child *i* is assigned to the Jumpstart classroom in their center, and =0 if the child is assigned to a business as usual classroom);
B_{di}	=	Set of *D* indicators for the random assignment blocks (=1 if child *i* is in random assignment block *d*, and =0 otherwise). As noted earlier, random assignment was conducted by center, and in some centers also by gender and/or by age.
X_{si}	=	A set of *S* child-level covariates for child *i;* these variables are included to improve the precision of the impact estimates;
ε_i	=	A child-level random error for child *i*, assumed to be independently and identically distributed.

In this model, the estimate of β_0 is a fixed-effects estimate of the impact of the full Jumpstart model in the centers and classrooms in the study.[1] There are several features to note about this model:

- **Random assignment blocks:** The model includes a set of indicators for random assignment blocks. Controlling for blocks in the model serves two purposes. First, it accounts for differences in the random assignment ratio (proportion of children assigned to each experimental group) across blocks to provide an unbiased estimate of impacts.[2] Second, it improves the precision of the impact estimates by explaining some of the variation in child outcomes among children in the sample.

- **Child-level covariates:** The model also controls for children's baseline characteristics, including their age, gender, whether the child is a dual language learner, whether a child has an individualized education plan, language spoken at home, parent education, family size, whether a child's family received food stamps, the number of times the family has moved in the last five years, and children's baseline (fall 2017) language and literacy scores and social-emotional development scores on the DRDP-PS. Controlling for

[1] In other words, the results only apply to the centers and classrooms in the study, and they should not be generalized to a different set of centers or to a different set of classrooms within the existing centers.

[2] There are several ways to account for variation in the random assignment ratio. The two most common are to: (1) "block-mean" center the covariates on the right-hand side of the model, or (2) include block indicators in the model. These two methods produce the same impact estimate. See Raudenbush (2009).

children's baseline characteristics and outcomes improves the precision of the estimated impact.

A similar model was used to estimate the classroom-level impact of CCT, except that in this case, the model was fitted to the sample of children in CCT-only and business as usual classes, and the treatment variable was an indicator for whether children were assigned to the CCT-only class or the business as usual class.[3]

[3]Rather than estimating two separate models, another strategy would have been to estimate the effect of the full Jumpstart model *and* of CCT with the same impact model, by using the full analysis sample and including two treatment indicators in the model (one for children in the Jumpstart classroom, and one for children in the CCT-only classroom). The two approaches produce very similar results.

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