Evaluation of Kindergarten Readiness in Five Child-Parent Centers: Report for 2014-15

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Background

The Child-Parent Center (CPC) model, one of the longest-running early childhood intervention models in the United States, has produced some of the most robust long-term outcomes for children's academic and social outcomes (Reynolds, 2000; Reynolds & Temple, 2008). Beginning in January 2012, as part of a U.S. Department of Education Investing in Innovation (i3) grant to the University of Minnesota, the city of Chicago and Chicago Public Schools (CPS) received funding to (1) increase the number of children who could attend existing CPC sites, and (2) increase the number of CPC programs by adding 16 new sites.

The Social Impact Bond (SIB) (also referred to as Pay for Success) is a funding mechanism where private businesses support programs that are expected to have a high return on investment. Beginning in 2014-15, the IFF Pay for Success project funded additional CPC preschool slots at six CPS schools. In 2015-16, two additional sites (identified by CPS and approved by the city of Chicago) were added to the PFS project. SRI International (SRI) has been hired to conduct the evaluation of the child outcomes for this project referred to as the "SIB-CPC project". The project anticipates serving four cohorts of preschool children across the eight sites over four school years— Cohort 1: 2014-15, Cohort 2: 2015-16, Cohort 3: 2016-17, and Cohort 4: 2017-18.

This first SRI project report describes the kindergarten readiness outcomes of the first cohort of children in the SIB-CPC project. First, we briefly describe the CPC program and its expansion efforts using SIB funding, including evidence about the impacts of the CPC program model on children's school readiness and school achievement. Second, we describe how the SIB-CPC program is being evaluated. Third, we present the extent to which the SIB-CPC program goals have been achieved for the kindergarten readiness outcomes for Cohort 1.

CPC Program Model

CPC Model Description

CPC programs seek to promote school readiness, parent involvement, and early learning that, in turn, will translate into long-term benefits with regards to academic achievement, higher graduation rates, and career success. The CPC model is unique

in that it is designed to (1) provide full- or part-time high-quality preschool experiences for three- and four-year old children, and (2) combine those educational experiences with family support services and parent engagement activities. The services for children and families offered by CPC sites are intended to be delivered in a coordinated and synergistic way across the preschool to third grade continuum. Indeed, the CPCs emphasize the provision of comprehensive services and parental involvement—program features that are considered to be strongly associated with program quality (Reynolds & Hayakawa, 2011; Reynolds, Magnuson, & Ou, 2010). A typical CPC site includes the components listed in Exhibit 1.

The CPC Program model components are explained more fully at https://humancapitalrc.org/midwest-cpc/cpc-resources (Human Capital Research Collaborative, 2015). For this report, the components listed in Exhibit 1 are taken from the draft evaluation plan in the SIB-CPC expansion agreement (see Chicago Child-Parent Center Social Impact Bond Evaluation Plan, December 2, 2014, in Appendix A, pp. 9-11). Note that the CPC model as conceptualized in the current SIB expansion project primarily focuses on providing high-quality preschool education, engaging parents in their child's education through a parent resource teacher (PRT) provided at the child's preschool, and promoting continuity and stability from pre-K through the primary grades. Because the focus for the SIB-CPC project is on providing preschool programming, SRI's evaluation has been designed to measure the impact of the preschool components on children's short- and long-term outcomes.

Exhibit 1. CPC Program Model Components

Effective Learning Experiences

- Offer Pre-K classes that are limited to 34 children for half-day classrooms (two sessions of 17 children each) and have a minimum of 2 teaching staff. Full day classrooms, if available, will be limited to 20 children per session.
- Provide highly qualified educational staff that will provide the classroom instruction and parent engagement activities. For example, classroom teachers are certified with a bachelor's degree (or higher). Overall, program staff must adhere to the requirements set forth by the CPS Talent office, in accordance with collective bargaining unit agreements, and state regulations. Any changes in CPS education and certification requirements will be complied with.
- Use data to drive instruction by effectively documenting the organization and implementation of instructional practices to monitor quality and adherence to the Program, which is completed by all Program staff where appropriate.
- Program staff meet with parents over the course of each school year to review their child's progress and discuss parent program opportunities with the Parent Resource Teacher (PRT).

Aligned Curriculum

- Implement a CPS District curriculum and formative assessment that is aligned to standards, domains of learning, assessments, and learning activities.
- Collaborate with the PRT and classroom teachers to ensure that opportunities to engage families in student learning are available, appropriate, and aligned to the program and parents' needs.
- CPS and, most specifically, the Office of Early Childhood Education provides meaningful professional development and ongoing coaching and feedback for teachers, aides, and other staff members that facilitates high-quality instructional practices.

Parent Involvement and Engagement

- Engage a PRT and School-Community Representative (SCR) to work closely with the Head Teacher and Liaisons to maintain a consistently supportive parent program.
- Encourage parents to sign a CPC school-home agreement at the start of the school year outlining a plan for fostering learning at home and participating in CPC activities.
- Offer and engage families in monthly activities. PRTs create and distribute a monthly parent involvement calendar, and conduct parent/teacher conferences over the year to review progress in the parent program.
- Provide a resource room dedicated to parent and family activities through Kindergarten when possible.
- Provide culturally responsive learning opportunities for families that provide flexibility for families' needs and schedules.

Collaborative Leadership Team

- Engage a Program leadership team that includes the Head Teacher, Parent Resource Teacher, and School-Community Representative.
- Meet regularly, under the direction of the Principal, to discuss operations and best practices within the CPC.
- Meet regularly, under the direction of the OECE Management Team, with staff from across sites to share challenges, experiences, and best practices, and make frequent on-site visits to monitor quality and effectiveness to the Program.
- Establish meaningful partnerships with community providers to strengthen service delivery and enlist local universities in training opportunities.

Exhibit 1. CPC Program Model Components (concluded)

Continuity and Stability

- CPC Pre-K classrooms are co-located in the same building as Kindergarten classrooms, when possible, to promote familiarity and integration for students as they transition to Kindergarten.
- Provide a structure of communication, planning, and joint activities, under the direction of the principal, Leadership team and OECE Management Team, from Pre-K through the primary grades.
- Provide a part-time Kindergarten aide when funding is available to support the transition into Kindergarten.

Professional Development System

- Offer ongoing professional development opportunities on current trends and needs in early childhood education classrooms, through the Office of Early Childhood Education and the CPC leadership teams, including topics such as quality curriculum and instruction, data-driven instruction, learning environment, social and emotional needs, and parent engagement.
- Meet regularly and create professional learning communities to review ways to support their instruction in the classroom and with other teachers.

Note: Chicago Child-Parent Center Social Impact Bond Evaluation Plan, dated December 2, 2014, included in Appendix A, pp. 9-11.

Expected Outcomes from the CPC Program Model

IMPACT ON SCHOOL READINESS

Early research on CPC showed significant positive effects on children's kindergarten readiness, with 47% of children who received CPC preschool considered ready for kindergarten compared with 28% of children who did not receive any preschool (Reynolds, 1995; Reynolds, Temple, Robertson, & Mann, 2002). Examination of a more recent cohort of CPC participants indicated that they had significantly higher scores on a measure of language proficiency at the end of the program compared with children enrolled in other publicly funded preschool programs (Reynolds, 2002).

IMPACT ON THIRD-GRADE READING AND LITERACY

The Chicago Longitudinal Study (CLS) followed children over time using administrative records to examine attendance, achievement, and graduation rates in CPC participants compared with children who did not attend CPC preschool. One study found a significant positive impact on third-grade reading achievement for pre-K to third-grade participants (.53 standard deviation) compared with participants who attended CPC only for pre-K and kindergarten (Reynolds, 1994). Smaller studies of high-quality preschool interventions have found similar impacts on later school achievement compared with a no-preschool control group (e.g., Abecedarian study:

Campbell, Raey, Pungello, Sparling, & Miller-Johnson, 2002; Perry preschool project: Belfield, Nores, Barnett, & Schweinhart, 2006).

IMPACT ON SPECIAL EDUCATION USE

The same long-term CLS study (described in the previous section) showed that extended CPC participation (defined as 4 to 6 years) resulted in reductions in the use of special education. For children 6 to 18 years, CPC participants had an average rate of special education placement of 14.4% compared with 24.6% for children in the comparison group (who did not receive CPC preschool intervention), indicating that CPC participants had a 41% lower rate of special education placement (Reynolds, Temple, & Ou, 2003). This finding is consistent with another analysis using the longitudinal CLS sample that compared the average rates of special education placement over time for children who had attended a CPC preschool to those of children who attended a full-day non-CPC kindergarten classroom (special education placement rates of 12.5% versus 18.4%, respectively) (Conyers, Reynolds, & Ou, 2003). A more recent study of North Carolina's current state-funded preschool program used statewide population-level data over time (1995 to 2010) to show that third-grade special education rates were reduced by as much as 39% for children who participated in the preschool program,even after taking into account a variety of child and family risk factors, types of special education categories, and funding levels that varied by year (Muschkin, Ladd, & Dodge, 2015). Other reviews of a variety of preschool program models also report reductions in special education placement as one of the many cost savings results from participation in high-quality preschool programs like the CPC model (Karoly et al., 1998; Lynch, 2007).

In summary, positive impacts on kindergarten readiness, third-grade reading achievement, and special education placements have been cited extensively to demonstrate the short- and long-term benefits for the individual child and savings for society that come from investing in early childhood education. These studies were used as the basis for identifying the selected outcomes in the current study and for calculating the repayments that will be made in the Chicago SIB-CPC project.

Chicago PFS Project (SIB-CPC Project)

During 2014-15, the SIB expansion of the CPC model involved funding for part-day or full-day CPC preschool at five sites. A sixth site was converted to a Child-Parent

Center (CPC) model beginning in January 2015. Because it did not operate for a full year, this site is not part of the evaluation for 2014-15. The five sites that participated in the evaluation for 2014-15 were already implementing the CPC program prior to the SIB-CPC expansion.[1] The SIB funding expanded the capacity of these five sites to provide preschool to an additional 156 three- and four-year olds.[2] The funding paid for the hiring of an additional teacher and teacher assistant at each site as well as enhanced resources and instructional materials to implement the CPC model. The CPC program typically serves both three- and four-year olds; sometimes in mixed-age classrooms. Thus, the funding provided by investors was used to provide CPC preschool and enhanced services to both three- and four-year olds.

In the second year (2015-16) of the SIB-CPC project, two additional sites, identified by CPS and approved by the city of Chicago, were added to the six 2014-15 SIB-CPC sites. The project anticipates that four cohorts of children will be served across the eight sites, identified by the school year in which children begin preschool (cohort 1: 2014-15, cohort 2: 2015-16, cohort 3: 2016-17, cohort 4: 2017-18) (see Appendix B for grade levels of children in the four cohorts across years.)

Evaluation Design

SIB and PFS initiatives typically involve an independent evaluator to help determine whether the outcomes have been achieved. Because government only pays when outcomes are achieved rather than for activities, the focus of the evaluation is on measuring the outcomes of the individuals participating in the initiative.

SRI is conducting the independent evaluation of the outcomes of the SIB-CPC expansion project for three primary child outcomes. SRI developed the evaluation methodology building on a draft design written by a team that included the Harvard Social Impact Bonds Technical Assistance Lab. The project also will include an oversight committee comprised of early education and research experts. The evaluation team has been charged with independently documenting the outcomes-

[1] Note that three sites had been providing CPC services since 2012 at the start of the i3 Innovation grant and two had been providing CPC services since 2013 when the original sites from the 1970s were merged with the current site.
[2] The sixth site opened up 6 new CPC classrooms for expansion of the CPC model to an additional 218 three- and four-year olds. Again, this site is not included in the 2014-15 evaluation as the site was not open for long enough to provide adequate dosage of CPC preschool.

based performance measurement of the initiative. This kind of evaluation is not intended to test the impact of the CPC model against other preschool models; rather it is tracking the outcomes of the participating children against specific performance standards. Three performance questions are being addressed in the evaluation.

(1) What is the rate of kindergarten readiness in children participating in the SIB-CPC sites as defined by performance on the Teaching Strategies (TS) Gold instrument (completed by teachers in the spring of preschool before a child enters kindergarten)?

(2) What is the rate of third-grade literacy as defined by performance in meeting or exceeding grade-level performance on the state or district-administered third-grade assessment in reading?

(3) What is the rate at which students are identified with special education needs and placed in special education services (starting in kindergarten) compared with a matched-comparison group of children?

Kindergarten readiness is being measured in the spring of preschool for CPC participants (as described below), and third-grade literacy will be measured in the spring of third grade following the administration of required state achievement tests. SRI will begin measuring special education placement in kindergarten and continue each year until spring 2020 (note that in spring 2020, cohort 1 will reach the fourth grade; cohort 2 will reach the third grade; cohort 3 will reach the second grade; and cohort 4 will reach the first grade).[3]

The evaluation of the SIB-CPC project is using two different designs to track the primary outcomes, a descriptive study for the *kindergarten readiness* and *third-grade literacy* outcomes and a quasi-experimental design for the *special education outcomes* (first to fourth grades). Specifically, for the *kindergarten readiness* and *third-grade literacy* outcomes, there will be no comparison group for evaluating the outcomes and calculating the subsequent repayment. For these two primary outcomes, the outcomes will be based on the intervention group only and payments will be calculated using outcomes relative to national standards. For the kindergarten readiness and literacy outcomes, a decision was made in the planning phase that these outcomes had normative information so that children's performance on the

[333] SRI's involvement in the evaluation is currently scheduled to end in Fall 2020.

measure could be used to identify whether they were performing at or above normative trends. It was decided to use this kind of standard rather than compare performance with a comparison group of children. In addition, the kindergarten outcome measure is not available for children with no preschool experience, given that the kindergarten readiness measure is collected during the spring of Pre-K in Chicago Public Schools.

For *special education outcomes* (first to fourth grades), children are identified as receiving the intervention (defined here as attendance in a CPC preschool classroom) in the year they are in preschool and then are matched to children with similar demographic characteristics but who did not attend any type of preschool in CPS. This "no Pre-K" comparison group will be identified when the children are in kindergarten for each of the four Cohorts. Specifically, the evaluators will create a no Pre-K comparison group for each cohort of intervention children using propensity score matching processes. This no Pre-K comparison group will serve as the 'business as usual' comparison group to provide a well-matched comparison group of children who are the same age as the intervention group of children and enrolled in the same district, but did not receive the preschool intervention.

Analysis Approach

SAMPLE INCLUDED IN THE COHORT 1 ANALYSIS

Children were included in the intervention cohort if they attended one of the five SIB-CPC sites, were enrolled in either a full- or half-day pre-K classroom, were not identified as having a severe disability, were income-eligible (i.e., eligible to receive free or reduced-price lunch), and were at least four years old in September 2014. Additionally, a child needed to have attended a CPC pre-K classroom for at least 66% of the days (not consecutively) in a given school year—a percentage considered a sufficient amount or "dose" of the intervention to affect child outcomes.

Children with a severe disability were excluded because the project is based on the hypothesis that high-quality early childhood education will prevent children **at risk** for developing delays or mild disabilities from needing special education services at later ages. Early childhood education and intervention also may reduce the need for children with mild delays or speech and language impairments in preschool from needing additional special education services in kindergarten and beyond. The

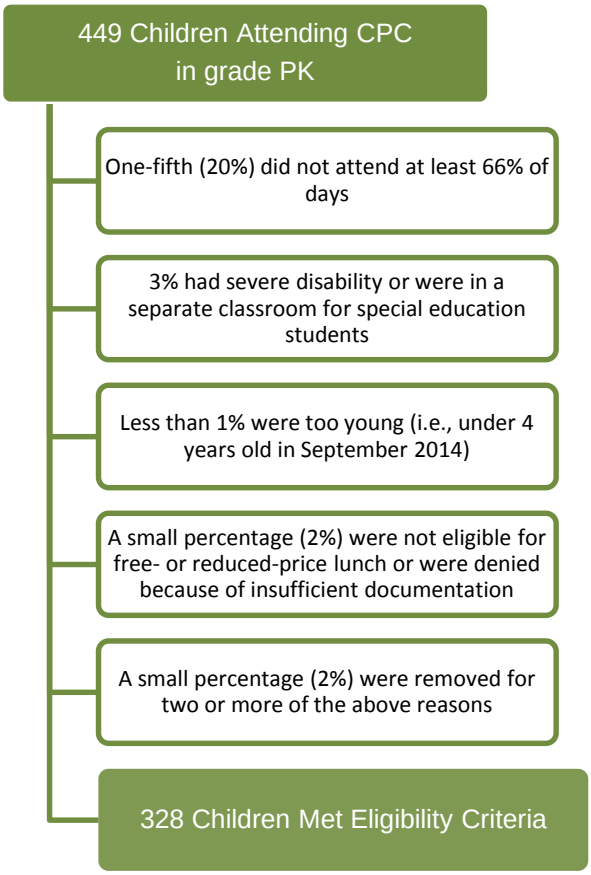
project does not expect to prevent children with severe disabilities or needs from receiving special education services. Children were categorized as having no disability, a mild disability, or severe disability based on a priori decisions in the planning and evaluation design phase. A severe disability could include autism, specific learning disability, deaf-blindness, deafness, hearing impairment, orthopedic impairment, other health impairment, traumatic brain injury, visual impairment, and multiple disabilities. A mild disability could include developmental delay, speech and language impairment, emotional disability, and accommodations or modifications for children with no other disability (mild or severe). Additionally, children were excluded from the intervention cohort if they were in a separate classroom for special education students.

The cohort used to determine kindergarten readiness included children from the five sites that were already providing the CPC model to three- and four-year olds. Inclusion of all eligible four year olds in this group increases the sample size for the study to provide a more reliable and valid assessment of kindergarten readiness at these five sites. At the end of the year, administrative enrollment data showed that 653 three- and four-year old children were attending preschool at these five sites (267 three-year olds; 386 four-year olds). SIB expansion funding covered the costs of providing CPC preschool for 156 of these 653 children. Of note, all of the children across all classrooms received the full CPC model. That is, the experience of all four year olds enrolled in these Child-Parent Centers is similar with a common curriculum, professional development, and parent engagement aligned through monthly Collaborative Leadership Training by all Child-Parent Centers., including high-quality preschool and family support services and parent engagement activities. Thus, the evaluation does not distinguish between SIB funding and other CPC funding sources.

SRI's evaluation is focused on kindergarten readiness as the first outcome and therefore focuses on examining the outcomes of children in each cohort who are at least four years old in September of their preschool year and then tracking outcomes beginning at the end of preschool, before children start kindergarten the following year.

SRI requested a data export of all students ever enrolled as grade PK[4] (the CPS designation for four-year-olds in preschool) in the five sites at any time in the 2014-15 school year. Overall, 449 PK students were ever enrolled at one of the five sites during 2014-15.[5] Across the total sample of 449 PK children attending one of the 5 sites in 2014-15, 328 or 73% met all of the eligibility criteria. The consort diagram in Exhibit 2 illustrates the exclusions from the original sample of 449 PK children ever enrolled in one of the 5 sites that resulted in the final sample of 328 children included in the analytic sample for this Cohort 1 (2014-15).

Exhibit 2. Participating Sample of Cohort I Children Attending CPC Sites, by Exclusion Criteria



The remaining 328 children became the SIB-CPC Cohort 1 (2014-15) analytic sample. As seen in Exhibit 2, meeting the attendance criteria was the biggest

[4] PK is the designation CPS assigns to students enrolled in 4-year-old preschool. Students in three-year-old preschool are designated PE, and are not included in the evaluation.
[5] The number of children *ever* enrolled is different than enrollment estimates at any given point in the year. As children left a site, new children were enrolled. The 449 includes all children *ever* enrolled during the 2014-15 year. Based on enrollment in May/June 2015, CPS reported that 386 four year old children were enrolled at the five sites at the end of the year.

challenge, with approximately 80% of the 449 PK children ever enrolled in the five sites attending for 66% of the days. The SIB-CPC cohort is defined as meeting the eligibility criteria above and will become the cohort to be tracked for outcomes in kindergarten and in later grades. This cohort also will be used to identify a matched-comparison group of children in kindergarten for comparing special education outcomes in kindergarten and in later grades.

The 328 students in Cohort 1 had the following characteristics:

- Half of the children were male (51%).
- Two-thirds of the children (68%) were identified as Hispanic and one-third (29%) were identified as African-American. Fewer than 2% of the children were identified as Caucasian and the remaining 2% were identified as Asian or multiracial.
- About one-tenth (11%) of the children attending the five sites had an identified mild developmental delay or disability or an identified 504 plan that described modifications and accommodations (e.g., an extra set of textbooks, home instruction, a tape recorder or keyboard for taking notes) that they needed to perform at the same level as their peers.
- About one-third (35%) were enrolled in full-day with the remainder enrolled in half-day Pre-K classrooms.

This final cohort included for the Year 1 analysis (n = 328) was similar to the total sample of PK children (n = 449) in regard to the following characteristics: gender, and disability. However, when we compared the 121 who did not meet the eligibility criteria to the 328 that did, we found that the children who were included (n = 328) were significantly more likely to be Hispanic and significantly more likely to speak Spanish compared with the children who were excluded (n = 121) (p < .001).

MEASURING KINDERGARTEN READINESS

Kindergarten readiness was examined using Teaching Strategies (TS) *GOLD*™ scores from the spring before the child entered kindergarten.[6] TS *GOLD*™ is a

[6] Teaching Strategies *GOLD*™ assessment was developed to be used as a formative assessment tool to monitor children's skills while attending a child care or preschool program so teachers can adjust their instructional strategies depending on how children are progressing on a variety of skills and behaviors.TS *GOLD*™ was not developed as a measure of kindergarten readiness.

teacher-reported measure of young children's skills across six developmental domains, including: literacy, language, mathematics, cognitive development, socio-emotional well-being, and physical health. This measure is being used because it was the only available child assessment data that CPS routinely collects and was therefore selected as the measure of kindergarten readiness by the SIB planning team.[7] It is used routinely in the CPS preschool programs and there is no CPS-wide meaure of kindergarten readiness that is completed about children as they are entering kindergarten in the fall of the school year. The metric for kindergarten readiness is the percentage of children who are performing "at" or "above" national trends across at least five of these six domains.[8] Put another way, a child is determined to be ready for kindergarten if he or she is rated by the teacher as demonstrating levels of skill or knowledge that are expected for a child at a particular age—the reference point for such expectations come from the observed abilities of other children from a representative sample of same-aged peers in the United States. We categorized children as kindergarten ready on each domain by the criterion of meeting or exceeding the 50% percentile on the standard score for that domain using scores from the most recently published technical manual (Lambert, Kim, & Burts, 2014a). Then, we calculated the percentage of children who met this criterion on five of six domains.[9]

CALCULATING IMPACT ON KINDERGARTEN READINESS

Every child who scored "at" or "above" the national norm on at least five of the six domains in the spring of their preschool year was categorized as "kindergarten ready."

[7] The methodology involved in SIB projects relies on use of available administrative data rather than additional data collection to evaluate outcomes.

[8] There are no available data on which domains of the TS *GOLD*™ assessment to use to reliably and validly determine kindergarten readiness. The decision to define kindergarten readiness as performing at or above national trends on five of six domains (and not four of six) aligns with the National Research Council's definition of school readiness which includes age-level skills across multiple domains (National Research Council, 2008). The threshold of 5 of 6 domains also takes into account that a child may not meet a standard for all 6 domains, especially in the spring of preschool, as these skills are emerging during this time period.

[9] Teacher-reported assessments have some unknown sources of variability and the GOLD assessment is no different. Research on the GOLD assessment indicates that between 17% and 25% of the variance in scale scores is accounted for by unmeasured differences between classroom and teachers, including rater effects (Lambert, Kim, and Burts, 2014b).

Results

This section discusses the results for the first cohort of SIB-CPC children (Cohort 1). The TS *GOLD*™ Spring 2015 data were missing for 3[10] of the 328 children, resulting in a final *analytic* sample for this outcome of 325 children (99% of the 328 children), which we used to calculate kindergarten readiness.

Of those 325 children, 59% (58.77%) were considered to be ready for kindergarten, where "readiness" was defined as scoring at or above the 50th percentile on at least five of the following six domains: literacy, language, mathematics, cognitive development, socio-emotional well-being, and physical health. One-tenth (11%) of the 325 children did not score at or above the 50th percentile for any domain, with 3% meeting the criteria for only one domain, 7% for two domains, 11% for three domains, and 9% for four domains (see Exhibits 3 and 4). Additionally, children who attended full-day CPC preschool had higher rates of kindergarten readiness (67%) compared to children who attended half-day CPC preschool (55%).

Exhibit 3. Percent of Cohort I Children Meeting Kindergarten Readiness Across Domains

Number of domains meeting or exceeding the 50th percentile	Percent
0	11%
1	3%
2	7%
3	11%
4	9%
5	10%
6	49%

[10] These children were missing data either because they were no longer enrolled in the spring (*n* = 2) or their GOLD assessment was incomplete (*n* = 1).

Exhibit 4. Percent of Cohort I Children Meeting Kindergarten Readiness, by Domain

Domain	Percent
Cognitive	80%
Language	64%
Literacy	72%
Math	78%
Physical	58%
Social-emotional	77%

Discussion

Socio-demographic risk factors—the most extensively studied of which is poverty—are associated with variability in skill development, as well as differential growth in later academic achievement. Early childhood programs potentially mitigate the risks endemic to children from disadvantaged backgrounds, with studies showing that the strongest positive short- and long-term outcomes result from intensive and comprehensive programs targeting low-income children (Burger, 2010; Institute for Research on Poverty, 1997; Reynolds et al., 2010). Prior studies highlight early childhood as a critical and sensitive period for the development of brain architecture and neurochemistry (e.g., Knudsen, Heckman, Cameron, & Shonkoff, 2006) and subsequent academic and socio-emotional well-being (Shonkoff & Phillips, 2000). Indeed, children's possessing cognitive and socio-emotional skills at kindergarten entry has been linked to enhanced learning and performance down the academic pipeline (e.g., Duncan et al., 2007).

In reporting the extent to which the CPC program has been successful at preparing children for kindergarten, comparisons may be instructive with respect to the degree our research findings agree with what we would expect from one year of preschool. We structure our discussion by reflecting on three guiding questions. First, do any data from TS *GOLD*™ (our outcome measure) indicate whether the proportion of

children who are kindergarten-ready in this project, is typical for the population we are studying? Second, to what extent are our findings similar to those of other CPC and CLS data? Third, to what extent are our findings similar to the ECLS-B[11] or ECLS-K data for the general population and for children from low-income families?

For the first contrast, does evidence exist that will allow us to verify the extent to which the TS *GOLD*™ accurately measures the kindergarten readiness domains? Kim, Lambert, and Burts (2013) recently published data that provide empirical evidence supporting the validity for the TS *GOLD*™ domains and learning objectives for typically developing children, as well as English-language learners and for those children identified with special needs or disabilities. In other words, this observation-based teacher rating evaluation measures the construct domains in the same way across various subgroups of children 3 to 5 years old. Next, Lambert, Kim, and Burts (2014b) established the external validity of the instrument by examining whether teacher ratings of child development and learning were associated with child demographic characteristics in expected directions. For example, children with identified disabilities started behind their typically developing peers and developed at a slower rate. More recently, Reynolds and colleagues (2014) published data in a peer-reviewed journal showing that 80.9% of children attending full-day CPC classrooms (*n* = 409) and 58.7% of children attending part-day CPC classrooms (*n* = 573) were considered kindergarten-ready when kindergarten-readiness was defined as meeting the national norm on ***four*** of the six TS *GOLD*™ subdomains. Additionally, full-day participants demonstrated higher average levels of skill mastery in the subdomains of language, mathematics, socio-emotional development, and physical health (but not for literacy and cognitive development). Reynolds and colleagues (2014) report a higher proportion of children who are kindergarten ready, but use a less stringent standard for "readiness," i.e., a threshold of four compared with five; five was the standard for the current evaluation. If we had used that standard of 4 of 6 domains, an additional 9% would meet that kindergarten readiness criteria, for a total of 68% (Exhibit 3). The independent evaluator decided prior to the

[11] ECLS-B and ECLS-K are two contemporary longitudinal datasets that draw from a nationally representative sample; both collected direct assessments of children's skills at kindergarten entry (cf. Hair, Halle, Terry-Humen, Lavelle, & Calkins, 2006; Lee, Zhai, Brooks-Gunn, Han, & Waldfogel, 2014).

analysis to use the more stringent standard of 5 of 6 domains to represent kindergarten readiness.

The CPC model, integrated into the CPS system since its inception in 1967, has been systematically evaluated for its impact on child and family outcomes. A notable by-product of the CPC program's efforts is the CLS, which has supported researchers' efforts to develop a deeper understanding of the "active" ingredients of early dual-generation interventions and early childhood interventions more generally. Using data from the CLS, Reynolds (1995) suggests that children who attended any form of preschool (e.g., full- versus half-day; a 1-year versus a 2-year program) outperformed those children who did not attend preschool in regard to measures of cognitive readiness at kindergarten entry. Specifically, analysis of the one of the original CPC cohorts (i.e., children attending kindergarten in the 1985-86 school year) showed that 44% of children who attended a CPC for 1 year were considered ready for kindergarten, compared with 28% for children who had no preschool (Arthur Reynolds, personal communication, February 25, 2015). These differences in achievement remained significant until third grade, reappeared in fourth grade, increasing in magnitude until children exited the study in the sixth grade. Additionally, preschool participants also had consistently lower cumulative rates of grade retention and special education placement up through the sixth grade. Indeed, ongoing evaluation efforts of the CPC program by Reynolds and colleagues have continued to document the positive effect of preschool participation on the cognitive aspects of kindergarten-readiness and early grade achievement (relative to children who did not attend preschool) over the years (e.g., Reynolds & Temple, 1998; Reynolds et al., 2003).

Finally, data from the contemporary, nationally representative sample of ECLS-K children and using calculations that are similar to those of this report, indicate rates of school or kindergarten readiness that are typically less than 50% for children from economically disadvantaged households (Isaacs, 2012). In comparison, the same report showed that 75% of children from more economically advantaged households (i.e., moderate to high income households) were considered ready for kindergarten.

Together these findings suggest a large number of children who attended a SIB-CPC for preschool were assessed by their teachers as ready for kindergarten based on the

assessment tool used. Given that this is not an experimental design, we cannot make causal attributions.

The year 2 report will include kindergarten readiness outcomes for children participating in Cohort 2. It will also include data examining special education placement rates in kindergarten for Cohort 1 compared with rates of special education placement in a matched-comparison sample of children who did not attend any preschool in CPS.

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Appendices

Appendix A: Chicago Child-Parent Center Social Impact Bond Evaluation Plan

Appendix B: Timing of Cohorts