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Learning More about Home Visitation: RCT Evaluation of the Parent Child+ Program for Black and Latino Children Living in Poverty

Technical Report: Study 1

Overview

Early childhood research has found that Black and Latino children arrive in kindergarten with limited school readiness skills (i.e. the "achievement gap"; Children's Defense Fund, 2014). Recently described as the "new non-majority" in this country (i.e., by 2018 it is projected that White children will no longer be in the majority; Hernandez & Napierala, 2013), identification of programs which ameliorate this educational gap is all the more crucial for practitioners and policymakers alike. Home visitation programs offer a unique way to provide high-quality early childhood services to low-income, urban communities comprised of immigrant and racially/ethnically diverse families. However, there is limited "gold-standard" evidence demonstrating that home visitation programs improve the skills that poor, urban, Black and Latino children need to be successful learners in early childhood settings (Paulsell, Avellar, Martin, & Del Grosso, 2010). This report introduces new evidence from a randomized controlled trial evaluation of the impact of Parent Child+ [1]on diverse, low-income, urban children and their parents after participation in the two-year program.

I. Study Characteristics

Intervention Condition. Parent Child+ began as the Mother-Child Home Program of the Verbal Interaction Project and served to (1) promote positive parenting skills and parent-child communication, (2) enhance the child's conceptual and social-emotional development, and (3) develop pre-literacy skills. Parent Child+ targets children from 16 months to four years, but for this RCT, the age range was restricted to 18 to 30 months. The intervention involved visits in the family's home environment, by a trained home visitor who was closely matched based on family culture and language, for a half-hour twice weekly, for twenty-three weeks over the course of two years. The intervention was given in the parent's native language (English or Spanish). For each visit, a home visitor would bring a new book or toy for the family. Using the book or toy as a medium, home visitors would model reading activities, quality verbal interactions, and age-appropriate developmental expectations. Parents were then guided by home visitors through their own interactions with their children to ensure understanding of developmentally appropriate play interactions.

[1] Previously called Parent Child Home Program

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Comparison Condition. Recruitment for the sample involved distinct, community-specific strategies, involving collaboration between the research team and the community-based organization (CBO) that delivered Parent Child+. The CBO partner site historically serves low-income, African-American families. Families were recruited from the CBO's local geographic catchment zones. All families recruited were targeted to participate in three data collection interviews over the course of two years.

The research team implemented a control group intervention as a strategy to retain the program sample. Control group participants received a monthly nutrition awareness program that we coined *Raising Happy & Healthy Eater, which* was adapted from the *Raising Healthy Eaters* curriculum which has been implemented in communities serving low-income parents with young children. This "control group program" was organized and run by a coalition of graduate student researchers with an interest in community health. Monthly workshops took place in the community, and interactive, informative glossy newsletters were sent to each family at their home every month. The workshops cover topics such as healthy eating, physical health, and fitness.

Setting. This study took place in a large urban north eastern city. The neighborhoods that were specifically targeted have been ranked as high-needs communities.

Participants. Parents described their ethnicity as African-American (31.2%), Latino (28.7%), Afro-Caribbean (21.7%), African (1.8%), Black-Latino (1.8%), Asian (>1%), and Other (1.1%). At the start of the study, the mean age of parents was 30.68 years, with the majority of participants reported being female. In the sample, 25.74% of parents reported having less than a high school, 31.99% obtained a GED or High School diploma, 20.96% indicated having some college/trade school experience, and 9.56% attended a four-year college or beyond. Almost half of parents (46.3%) were born outside of the United States. Primary language spoken in the home was English for 82.4% of the families and Spanish for 17.3% of families. For 70.6% of families, the average income across time points was $20,000 per year or less. The mean age of children at the beginning and end of the study was 2.15 years and 3.54 years, respectively. In terms of gender, 44.9% of children were male, and 53.7% were female.

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II. Study Design & Analysis

This study adheres to a longitudinal, randomized intervention/control group design, with assessments of children and parents at the outset of the program and after two years of program participation.

Sample Formation. The sample was randomized on a rolling basis throughout the recruitment period. Three hundred thirty-six parent-child dyads were randomized in order of recruitment date. Dyads were randomized into either the experimental group (Parent Child+) or the control group using paired randomization.

Eligibility criteria. Eligibility criteria included the following: children were between the ages of 18–30 months, families were eligible for government assistance programs (e.g., WIC, Medicaid, Food Stamps), lived within 100% of the federal poverty level and within designated catchment zones, and identified as English-or-Spanish-speaking. Participants living within the same household, families with twins, foster parents or parents with temporary custody, and families who did not want to participate in the program lottery process were not eligible for randomization. Families with other atypical circumstances (e.g. custody disputes, children with severe developmental delays) were also not eligible for randomization.

Randomization. After consent was obtained from families, an additional screening call was made within 1-2 weeks to verify contact information, complete additional questions, and provide potential participants the opportunity to decline participation. Because attrition rates in RCTs of home-visitation programs are due to inability to contact participants via phone (Olds, Sadler, & Kitzman, 2007), we identified additional predictors of attrition prior to randomization (Watson & Wooden, 2009; Karras-Jean Gilles, Astuto, Gjicali, & Allen, 2019). For example, families who were at-risk for moving (i.e. had moved 1 or more times in last 6 months, or had plans to move), and those who indicated clear preference for either the intervention or control group were not eligible for randomization.

Measures. The study used outcome measures that are highly correlated with the outcomes that the intervention seeks to impact. Measures were chosen for their relevance to child school-readiness and parent-related constructs that Parent Child+ seeks to impact, including competencies that are important for school-success: child language and social-emotional development and parent support of their children's learning. Measures were selected for their use among low-income, ethnically diverse, urban, and Spanish-speaking populations. Also, most measures have been used in nationally representative samples. All measures of child language, social-emotional competence, self-regulation, parental beliefs about children's learning, and

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parental demographics were administered at Baseline, Time 1 (end of program year1), and Time 2 (end of program year 2), unless otherwise stated.

Brief Infant-Toddler Social Emotional Assessment (BITSEA). The BITSEA is a parent report used to assess children birth to 36 months of age for social-emotional development and competencies (Briggs-Gowan & Carter, 2006). The BITSEA is a 44-item questionnaire which can be completed in seven to ten minutes with scales including externalizing, internalizing, dysregulation, maladaptive habits, fears, and competence. Possible answers include: "not true/rarely", "somewhat true/sometimes," and "very true/often". In addition, parents are asked "how worried" they are about the child's behavior, emotions, and relationships, as well as language development. When aggregated, these items produce Total Problem and Total Competence scores, with higher scores reflecting greater problems or greater competence, respectively. The tests have high internal reliability (r=.92, .82) and good inter-rater reliability with intraclass correlations of .74 and .63. This measure was administered at baseline.

Ages & Stages Questionnaires: Social-Emotional (ASQ:SE). At Time 2, when children were older than 36 months, the ASQ:SE was introduced to measure social-emotional competence measuring similar constructs as the BITSEA (Squires, Bricker, & Twombly, 2002). The parent report of child's social-emotional development consists of approximately 30-items and is a normed screener with Spanish-language assessments for children aged 30-41 months, 42-53 months and 54-65 months. The domains assessed include child self-regulation, compliance, communication, adaptive functioning, autonomy, affect, and interaction with people. Parents are asked how often the child displays each behavior (most of the time, sometimes, never, or rarely) and "how concerned" they are about each of these behaviors. Based on responses, total scores and cut-scores are calculated and provided for each age range. Cutoff scores for each age range, generated an indicator of whether children had problem behaviors (Yes/No) as per ASQ:SE referral criteria. Children may be classified as falling in a possible problem range or not. Internal reliability ranges from r =.89- .91 for the assessments, with 94% test-retest agreement. Percent agreement with professional diagnosis and with psychometrically sound measures ranged from 89.9%-94%. In this study, Cronbach's alphas for the 36- month and 48-month ASQ:SE version were .78 and .80, respectively.

Preschool Language Scale – Fourth Edition (PLS-4). The PLS-4 English and Spanish versions were used across all three data points. The PLS-4 is a measure of child language competence, is an individually administered standardized test for use with infants and children from birth -6 years (Zimmerman, Steiner, & Pond, 2002). This measure assesses children's receptive and expressive language abilities, producing a Total Language Score and two subscales: Auditory Comprehension and Expressive Communication. Each subscale contains 48 items, and yields a raw score, standard score, and percentile rank. The PLS-4 has been normed with a diverse sample and has been used in Early Head Start, Head Start, and Early Reading First projects. It

has strong test- retest reliability across all age ranges for the two subscales (r=.82 -.95) and the Total Language score (r=.90 - .97). Overall internal reliability for the Auditory subscale, Expressive subscale, and Total Language score was r=.86, r=.91 and r=.93, respectively. Inter-rater reliability for this subscale is very strong (r=.99).

Preschool Self-Regulation Assessment (PRSA) and Effortful Control Batteries (EF). These measures assess child self-regulation using three tasks: Tower Task, Tower Clean-Up, and Day-Night (Kochanska, Coy, & Murray, 2001; Murray & Kochanska, 2002; Smith-Donald, Raver, Hayes, & Richardson, 2007). These tasks were added to the data collection protocol at Time 1 and 2 and were designed to measure children's executive function by requiring children three years and older to complete a task and filter competing stimuli. All three tasks were translated into Spanish by a bilingual, native Spanish speaker.

Tower Task measures the child's ability to suppress a dominant response and requires the child to participate in turn-taking when building a tower with the assessor, i.e. allow the assessor a turn after every block placed (Kochanska, Murray, Jacques, Koenig, & Vandegeest, 1996; Smith-Donald et al., 2007). This task was piloted during the Baseline interviews, and the scoring protocol was revised for administration during Time 1 and 2. For each trial, the child was given a score of "0", "1", or "2" for "gives examiner no turn", "partial-turn taking", and "full turn-taking". These data were later re-coded into "0" for gives no turns and "1" for gives either partial or full turns, so that these data could be analyzed using logistic regression. Binary coding of turn-taking on the Tower Task has also been done by other researchers using this assessment (Smith-Donald et al., 2007).

Tower Clean-Up was included as a "do" task to assess children's compliance (Smith-Donald et al., 2007; Brumfield & Roberts, 1998; NICHD Early Child Care Research Network, 1998). For this task, each child was asked to follow the assessor's prompt and place all 18 blocks used during the Tower Task into a bag. Children had to complete this within a two-minute time frame. Data collectors used stopwatches and recorded whether or not the child began and completed the task within the appropriate time frame. A time delay variable was computed to incorporate the children who did not begin and either/or did not complete the task.

A Stroop-like task, Day-Night, was included to assess the child's ability to inhibit an impulse and suppress reactions to dominant stimuli (Gerstadt, Hong, & Diamond, 1994). Using color picture cards of a day sky and a night sky, the data assessors administered a series of 10 scored trials, with a one-time reinforcement of the rules after the fifth trial. For each trial, children received a score of "0" for "fails to point", "1" for "incorrect", "2" for self-corrects" and "3" for "correct on the first attempt". Total scores ranged from 0 to 30.

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Parent as a Teacher Inventory in Spanish (PAAT). The PAAT assesses parents' expectations of their children and attitudes about developmentally appropriate behavior (Strom, 1995). The PAAT is a 50-item questionnaire measuring parental attitudes for children between 3- to- 9 years-old that included English and Spanish-language translations. Five subscales are included in this measure: creativity, frustration, control, play, and teaching/learning. The creativity subscale captures the level of parental acceptance of the child's creativity and the parent's willingness to encourage this aspect of development. The frustration subscale measures parent tolerance for developmentally appropriate behaviors in their children. The control subscale measures parents' willingness to share control with the child in terms of play, learning and conversation. The play subscale captures parents' understanding of their role in play and their willingness to engage with their children in play. Finally, the teaching and learning subscale measures parents' understanding about their children's development and their perception of their ability to provide a supportive home environment. Parents respond to each item with "Strong Yes," "Yes," "No," or "Strong No." This measure has been used with diverse, low-income populations and test-retest reliability has been established with parents of diverse backgrounds (r =.80-.90) including Latinos and low-income families. Cronbach's alphas for the 50-item PAAT measure were .60 and .70.

Parent/family demographics. Assessors collected demographic data from parents, which included family income, child's participation in other programs (e.g. daycare, preschool, family daycare, etc.), parent race/ethnicity, and parent education at all three time points.

Parent language proficiency. Parent language proficiency was assessed at baseline only, to confirm equivalence between intervention and control group parents. Parent language proficiency was measured using the Woodcock-Muñoz Language Survey-Revised Spanish-language tests (WMLS-R) (Schrank, Wendling, Alvarado, & Woodcock, 2010) to assess each parent's language level. The Oral Language Cluster is a picture vocabulary test that measures listening and speaking skills and has a reliability of .93 for adults. The Listening Cluster is a measure of listening ability, comprehension, and linguistic competency and has a reliability of .96 for adults.

Analytic Approach. Analyses were run to address the question: does participation in Parent Child+ increase children's school readiness skills and related parental behaviors? The analytic sample sizes included the number of participants in the Time 2 sample who had at least one data value from Time 2 outcome variables. An intent-to-treat analysis was conducted, and all intervention group families were included in the analysis, regardless of level of participation in Parent Child+ (i.e. number of home visits received). The analytic strategy followed the framework outlined by What Works Clearinghouse (WWC) procedures and standards regarding attrition, baseline equivalency, and reporting of effect sizes. Sample size and attrition information is provided in Table 3.

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Due to high overall and differential attrition, baseline equivalency was established for the analytic sample. Differences in baseline characteristics showed small differences in terms of standard deviations. Absolute effect size differences ranged from $0.002 \leq d \leq 0.086$ (see Table 5.). The characteristics on which equivalence was established are either based on pre-intervention measures from data collected at baseline, or from baseline measures that are related to the outcomes. Construct validity statistics for the BITSEA subscales indicate that the BITSEA Problem total score and the BITSEA Competence total score strongly correlate with the ASQ:SE total scores at r = .55 and r = -55, respectively (Community-University Partnership for the Study of Children, Youth, and Families, 2011). BITSEA Competence scores were used to establish baseline equivalency for the ASQ:SE total and the ASQ:SE problem behavior range outcomes. The PLS-4 Total measured at baseline was used to establish baseline equivalency for the Day Night Task, Tower Task, and Tower Cleanup outcomes. These baseline measures were used for regression adjustment in the analysis.

Analysis of the effect of the intervention used a complete case analysis approach with regression adjustment for baseline covariates. The analytic strategy for testing the effects of the intervention used regression analyses to obtain adjusted group differences. Control variables that were explored included child characteristics (e.g., child sex, child participation in center-based care), family characteristics (e.g., parent language) and variables measured at baseline related to the outcome variable, in order to control for individual differences. Models were chosen based on predictability of outcome; model fit statistics, and model simplicity. Additional specifications about control variables are outlined in Tables 6-7.

Ordinary least squares (OLS) regression was employed to assess the impact of the intervention on continuous Time 2 outcome variables (e.g., PAAT, PLS-4, etc.). Logistic regression was employed to assess intervention impact on dichotomous Time 2 outcome variables; these variables included whether or not children's ASQ scores of social-emotional competence fell in the possible problem range and, completion or not of the Tower Clean-Up task. For OLS regressions, assumptions were tested and criteria such as collinearity and heteroscedasticity were met. For models with non-normally distributed residuals, coefficient estimates were confirmed using robust standard errors, to verify unbiasedness. There were no differences in the values of the coefficients when robust standard errors were used; therefore, coefficients from OLS regressions are reported.

Statistical Adjustments. For this study, controls included were baseline measures of outcomes (PAAT Total outcome measure with PAAT Total baseline, PLS-4 outcomes with PLS-4 baseline measures; ASQ:SE with BITSEA Competence, BITSEA Problem, and BITSEA Problem Behavior Range at baseline; Day Night Task, Tower Task, and Tower Clean-up with PLS-4 Total at baseline). Additional controls included child sex, child participation in center-based care

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(except for PAAT Total), parent language (except for PLS-4 outcomes), and child age at Time 2 (except for PLS-4 outcomes). Child age at Time 2 was used as an important control variable to account for the age variability of the children in the sample.

Missing Data. Data screening included testing for normality of continuous variables. Degree of skewness was derived by dividing the skewness statistic by the standard error of skewness. For variables that were most skewed (i.e., > 2.5 or < - 2.5), outliers were removed. Transformation of these variables was not employed to simplify interpretation of results across subscales within the same measure. Missing value analysis revealed that there was low item-level missingness across variables (less than or equal to 2.3%). The creation of composite scores for subscales that were missing item-level data was determined by the specifications of each measure developer.

III. Study Data

Outcome Measures. The study used outcome measures that are highly correlated with the outcomes that the intervention seeks to impact. Measures were chosen for their relevance to child school-readiness and parent-related constructs that Parent Child+ seeks to impact, including competencies that are important for school-success: child language and social-emotional development and parent support of their children's learning. Measures were selected for their use among low-income, ethnically diverse, urban, and Spanish-speaking populations. Also, most measures have been used in nationally representative samples.

Child-level measures tapped language development (Preschool Language Scale 4 [PLS-4]) and self-regulation skills (Tower Clean Up, Tower, and Day Night tasks). Data were collected from parents on children's social-emotional competence (Ages and Stages Questionnaire: Social-Emotional [ASQ: SE]) and parent beliefs about how their children develop and learn (Parent as a Teacher [PAAT]). These outcomes are of great policy and practical importance because 1) they provide first-time, "gold-standard" evidence for a nationally implemented home-based intervention that focuses on school readiness for poor, urban, and racially and ethnically diverse children and families, 2) they meet the parameters outlined by the Department of Health and Human Services Home Visiting of Effectiveness Criteria (U.S. DHHS, 2013), and 3) the sample represents children of color, who will comprise the majority of all children by 2018, and thus, interventions that address the needs of these communities are pressing (Hernandez & Napierala, 2013). All data were collected by trained and supervised, graduate researchers who were blind to group assignment. Impacts were measured 18 months after the start of the intervention program. All data were collected in families' homes, which is where they received the intervention.

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Table 1

Pre-Intervention Baseline Sample Characteristics (n = 272)

Variable	N	Range	Mean	SD
Parent Age	263	16-57	30.68	7.27
Child Age	266	15-41	2.15	.42
Variable	**N**		**Percentage**	
Education Level				
Less than high school	118		43.4	
High school or above	133		48.9	
Annual Income				
Up to $20,000	192		70.6	
Greater than $20,000	66		24.3	
Employment Status				
Working (part-time)	49		18.0	
Working (full-time)	39		14.3	
Unemployed	173		63.6	
Retired	4		1.5	
Other	2		.7	
Immigrant				
Nonimmigrant	116		42.6	
Immigrant	126		46.3	
Ethnicity of Parent/Primary Caregiver				
African-American	89		31.2	
Afro-Caribbean	62		21.7	
African	5		1.8	
Latino	78		28.7	
Black-Latino	5		1.8	
Asian	1		.4	
Other	3		1.1	
Marital Status				
Married	85		31.3	
Living Together	45		16.5	
Divorced	11		4.0	
Never Married	102		37.5	
Separated	18		6.6	
Parent Language				
English	224		82.4	
Spanish	47		17.3	
Sex of Child				
Male	122		44.9	
Female	146		53.7	

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Table 2

Descriptive Statistics of Continuous Baseline Measures by Parent Language

Measure	n	Range	Mean	SD
English-speaking Subsample				
Child Measures				
PLS-4[a] Auditory	219	51-136	87.74	15.30
PLS-4[a] Expressive	218	50-126	89.78	15.51
PLS-4[a] Total	217	50-128	87.69	15.51
Parent Measures				
PAAT Total	212	118-176	143.94	10.78
WMLS-R[b] Oral Language cluster	176	52-104	81.27	8.90
WMLS-R[b] Listening cluster	182	53-113	86.38	9.90
Spanish-speaking Subsample				
Child Measures				
PLS-4[a] Auditory	46	54-121	96.65	17.54
PLS-4[a] Expressive	46	67-145	96.83	19.15
PLS-4[a] Total	45	56-132	93.64	17.90
Parent Measures				
PAAT Total	46	123-167	134.72	7.95
WMLS-R[b] Oral Language cluster	34	56-97	77.18	8.32
WMLS-R[b] Listening cluster	39	61-105	80.23	10.50

[a] PLS-4 Standard Scores are reported. [b] Woodcock-Muñoz Language Survey-Revised English-language and Spanish-language tests (WMLS-R) Standard Scores reported.

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Table 3

Attrition Information

	Original Sample	Follow-up Timing (24 months)	Attrition	Differential Attrition
Full Sample	336	238	29.17%	7.19%
Intervention Group	168	125	25.60%	
Control Group	168	113	32.70%	

Table 4

Pre-Intervention Sample Size and Characteristics for the Analytical Sample

	Intervention				Control			
	Sample Size		Sample Characteristics		Sample Size		Sample Characteristics	
Baseline Measures	Unit of Assignment *n*	Unit of Analysis	Mean	SD	Unit of Assignment *n*	Unit of Analysis	Mean	SD
PAAT Total	111	Parent	M = 142.63	SD = 12.33	101	Parent	M = 141.69	SD = 10.35
PLS-4 Auditory	87	Child	M = 87.91	SD = 15.31	88	Child	M = 88.65	SD = 15.41
PLS-4 Expressive	85	Child	M = 90.75	SD = 15.41	87	Child	M = 89.93	SD = 15.59
PLS-4 Total	85	Child	M = 88.32	SD = 15.60	87	Child	M = 88.09	SD = 15.51

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Table 5

Baseline Equivalency for Analytic Sample in Study One by Outcome

Outcome Measure	Baseline Measure	n	*M*	*SD*	Statistic	*p*	Cohen's *d*
PAAT Total	PAAT Total						
	Control	101	141.7	10.35	*t* = -.624	.533	.086
	Intervention	111	142.6	12.33			
PLS-4 Auditory	PLS-4 Auditory						
	Control	88	88.65	15.41	*t* = .318	.751	.048
	Intervention	87	87.91	15.31			
PLS-4 Expressive	PLS-4 Expressive						
	Control	87	89.93	15.59	*t* = -.348	.728	.053
	Intervention	85	90.75	15.41			
PLS-4 Total	PLS-4 Total						
	Control	87	88.09	15.51	*t* = -.095	.924	.015
	Intervention	85	88.32	15.60			
Day Night Task	PLS-4 Total						
	Control	104	89.72	15.07	*t* =.186	.853	.025
	Intervention	115	89.31	17.18			
Tower Clean-Up	PLS-4 Total						
	Control	103	89.19	15.37	*t* =-.128	.898	.017
	Intervention	113	89.48	17.05			
Tower Task	PLS-4 Total						
	Control	103	89.52	15.01	*t* =.013	.990	.002
	Intervention	115	89.50	15.87			
ASQ Problem Range	BITSEA Competence						
	Control	86	13.97	7.10	t = .440	.660	.065
	Intervention	101	13.52	6.57			
ASQ Total	BITSEA Competence						
	Control	84	17.48	3.04	t = .244	.807	.036
	Intervention	101	17.37	3.05			

Note. Absolute effect sizes reported by Cohen's *d* computation; equation used was: Cohen's $d = M_1 - M_2 / \sigma_{pooled}$

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Table 6

Post-Intervention Linear Regression Analyses of Impact of Intervention on Child and Parent Outcomes

Measure	*b*	*β*	*t*	*p*	R^2_{adj}	Cohen's *d*	*n*	Hedge's *g*
Child outcomes								
PLS-4 Auditory [a]	4.143	.134	2.04	.043*	.321	.319	i = 79 c = 86	.317
PLS-4 Expressive	1.510	.049	.720	.473	.301	.113	i = 78 c = 84	.112
PLS-4 Total	3.157	.099	1.575	.117	.390	.248	i = 78 c = 84	.246
ASQ: SE Total[b]	-.454	-.053	-.774	.440	.215	.116	i = 96 c = 82	.115
Day Night Task	.549	.030	.481	.631	.219	.066	i = 110 c = 102	.066
Tower Clean-Up[c]	-9.936	-.069	-1.080	.282	.175	.150	i = 109 c = 100	.149
Parent outcome								
PAAT Total[d]	-1.294	-.060	-1.098	.274	.416	.154	i = 107 c = 98	.153

Note. [a] PLS-4 analyses pertain to the English-speaking subgroup only, as scores from this measure cannot be compared across English-and-Spanish-speaking groups. An additional control for these models was income (less than 20K/above). The results of the Spanish-speaking sample are excluded due to small sample size. [b]For ASQ Total scores, a negative direction of the coefficient favors the intervention group. [c]A negative direction of coefficient for Tower Clean-Up favors the intervention group. [d]Controls in PAAT Total regression model also included parent education (less than HS/HS or above) and annual income (less than 20K/above) measured at baseline. Cohen's *d* was calculated using the *t* statistic and the df (n -1) in the regression model (absolute value reported). Hedge's *g* was computed by using sample sizes (i = intervention group, c = control group) and Cohen's *d*.

*p < .05

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Table 7

Study One Logistic Regression Analyses of Impact of Intervention on Child Outcomes

Measure	*b*	OR	Wald χ^2	*p*	Nagelkerke R^2	d_{Cox}	*n*
ASQ: SE Problem Range	-.068	.934	.042	.837	.172	.041	181
Tower Task	.764	2.146	3.974	.046*	.270	.463	211

Note. All logistic regression analyses are presented in terms of intervention group's likelihood (e.g. intervention group's likelihood of being in the ASQ: SE problem range). Direction of coefficient for group difference for ASQ: SE Problem Range favors the intervention group. Effect size index (d_{Cox}) was computed by $L_{OR}/1.65$ and does not include a small sample size correction.

*p < .05

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Intervention Effects. Analyses were run to address whether participation in Parent Child+ increased Black and Latino children's school readiness skills and related parental behaviors. Ordinary least squares regression analyses were conducted to assess the impact of the intervention on continuous outcome variables. Logistic regression analyses were conducted to assess the intervention impact on dichotomous outcome variables.

Child language. Analyses for the PLS-4 were run separately by language, since scores from the English-language and Spanish-language PLS-4 assessments are not comparable. This is due to the different norming populations and lack of item equivalence across assessments. English-speaking children in the intervention had significantly higher PLS Auditory scores (b = 4.143, p = .043) than children in the control group (see Table 6). Results of the Spanish-speaking sample are not reported due to small sample size (n = 47). There were no other impacts on language outcomes (PLS Expressive or PLS Total).

Child social-emotional competence. There were no statistically significant impacts on child-social emotional development at Time 2 as measured by the ASQ:SE Total and the ASQ:SE problem behavior range (see Table 7).

Child self-regulation. Children in the intervention group were 2.146 times more likely than children in the control group to display turn-taking ability during the Tower Task (b = .764, p = .046). No significant effects were found for the Day and Night Task or the Tower Clean-up Task (see Table 7).

Parent beliefs. No significant impacts of the intervention on PAAT scores were found (see Table 6).

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References

Briggs-Gowan, M.J., & Carter, A.S. 2006. Manual for the brief infant-toddler social & emotional assessment BITSEA - Version 2. San Antonio, TX: Psychological Corporation, Harcourt Press.

Brumfield, B. D. & Roberts, M. W. (1998). A comparison of two measurements of child compliance with normal preschool children. *Journal of Clinical Child Psychology, 27*(1), 109-116.

Children's Defense Fund. (2014). *The State of America's Children.* Washington, DC.

Community-University Partnership for the Study of Children, Youth, and Families (2011). Review of the Brief Infant-Toddler Social and Emotional Assessment (BITSEA). Edmonton, Alberta, Canada.

Gerstadt, C.L., Hong, Y.J., & Diamond, A. (1994). The relationship between cognition and action: Performance of Child 3 ½ - 7 years old on a Stroop-like day-night test. *Cognition, 53*(2), 129-153.

Hernandez, D. & Napierala, J.S. (2013). Diverse children: Race, ethnicity, and immigration in America's new non-majority generation. New York, NY: The Foundation for Child Development. Retrieved December 2, 2013 from http://fcd-us.org/sites/default/files/DiverseChildren.pdf

Karras-Jean Gilles, J., Astuto, J., Gjicali, K., & Allen, L. (2019). Sample retention in an urban context: Exploring influential factors within a longitudinal randomized evaluation. *American Journal of Evaluation*, *40*(2), 268-290.

Kochanska, G., Coy, K.C., & Murray, K.T. (2001). The development of self-regulation in the first four years of life. *Child Development*, *72*(4), 1091-1111.

Kochanska, G., Murray, K., Jacques, T. Y., Koenig, A.L., & Vandegeest, K.A. (1996). Inhibitory control in young children and its role in emerging internalization. *Child Development, 67*(2), 490-507.

Murray, K.T. & Kochanska, G. J. (2002). Effortful control: Factor structure and relation to externalizing and internalizing behaviors. *Journal of Abnormal Child Psychology, 30*(5), 503-514.

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NICHD Early Child Care Research Network. (1998). Early child care and self-control, compliance and problem behavior at 24 and 36 months. *Child Development, 69,* 1145-1170.

Olds, D. L., Sadler, L., & Kitzman, H. (2007). Programs for parents of infants and toddlers: Recent evidence from randomized trials. *Journal of Child Psychology and Psychiatry, 48*(3-4), 355-391.

Paulsell, D., Avellar, S., Martin, S. A., & Del Grosso, P. (2010). Home Visiting Evidence of Effectiveness Review: Executive Summary. Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services. Washington, D.C.

Schrank, F. A., Wendling, B.J., Alvarado, C.G., & Woodcock, R.W., (2010). *Woodcock-Muñoz Language Survey-Revised Normative Update*. Retrieved from http://www.hmhco.com/hmh-assessments/bilingual/woodcock-munoz.

Smith-Donald, R., Raver, C. C., Hayes, T., & Richardson, B. (2007). Preliminary construct and concurrent validity of the Preschool Self-regulation Assessment (PSRA) for field-based research. *Early Childhood Research Quarterly, 22*(2), 173-187.

Squires, J., Bricker, D., & Twombly, E. (2002). *Ages and Stages Questionnaires: Social-Emotional.* Baltimore: Brookes.

Strom, R. (1995). *Parent as a Teacher Inventory (PAAT).* Bensenville, IL: Scholastic Testing Service.

U.S. Department of Health and Human Services (2013, December 14). Home visiting evidence of effectiveness: Review process. Retrieved from http://homvee.acf.hhs.gov/programs.aspx

Watson, N. & Wooden, M. (2009). Identifying factors affecting longitudinal survey response. *Methodology of Longitudinal Surveys,* 157-181.

Zimmerman, I. L., Steiner, V. G., & Pond, R. E. (2002). *Preschool Language Scale (4th ed.).* San Antonio, TX: The Psychological Corporation.

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