



Learning More about Home Visitation: RCT Evaluation of the Parent Child+ Program for Latino Spanish Speaking Children of Immigrants

Technical Report: Study 2

Overview

Today, Latino children make up the largest group of poor children (5.8 million) in this country (Children's Defense Fund, 2014). Low-income Latino children arrive at kindergarten with limited school readiness competencies. One way to ameliorate the effects of growing up poor on early cognitive and social-emotional skills is to provide families with high-quality, early childhood interventions. Home visitation programs offer a unique way to provide services to low-income, urban communities comprised of immigrant and ethnically diverse families. However, there is limited "gold-standard" evidence demonstrating that home visitation programs improve the skills that poor, urban, Latino children of immigrants need to be successful learners in early childhood settings. This report introduces new evidence from a randomized controlled trial evaluation of the impact of Parent Child+¹ on immigrant, Latino parents and their children after participation in the two-year program.

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 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-year period. The intervention was given in the parent's native language. 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.

Comparison Condition. Recruitment for the sample involved collaboration between the research team and the community-based organization (CBO) that delivered Parent Child+. Families were recruited from the geographic catchment zones where CBO provided services.

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¹ Previously called the Parent Child Home Program (PCHP)

The CBO partner site historically serves low- income, immigrant, Spanish-speaking families. All families recruited into the study were targeted to participate in three data collection interviews over the course of two years.

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 with a high population of Latino immigrants.

Participants. Parents described their ethnicity as Latino (100%). At the start of the study, the mean age of parents was 30.27 years, the majority of the participants were female. In the sample, 45% of parents reported having less than a high school education, 30.9% obtained a GED or High School diploma, 10.5% indicated having some college/trade school experience, and 13.2% attended a four-year college or beyond. Almost all parents (98.1%) were born outside of the United States. Spanish was the primary language spoken in the home for all families in the sample (100%). For 83.2% of families, the average income of families across time points was \$20,000 per year or less. The mean age of children at the beginning and end of the study was 2.4 years and 3.79 years, respectively. In terms of gender, 47.1% of children were male, and 52.9% were female (see Table 1).

Funding Source. The following foundations funded the RCT study reported in this technical report: PEW Charitable Funds, Heising-Simons Foundation, Edith Glick Shoolman Foundation, and Edward & Ellen Roche Relief Foundations.

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. One-hundred-and-sixty-six parent-child dyads were randomized in order of recruitment date. Dyads were randomized into either the intervention program (Parent Child+) or the control group using paired randomization.

Eligibility Criteria. Eligibility criteria included the following criteria: age 18–30 months. Families in this RCT were eligible if they met the following criteria: recipient of government assistance programs (e.g., WIC, Medicaid, Food Stamps), lived within 100% of the federal poverty level and within designated catchment zones, and identified - 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 diagnosed 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 demographic questionnaire, 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 atrisk 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 parental demographics were administered at Baseline, Time 1 (end of program year 1), 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, 2003). 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.

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 3to- 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 Spanishlanguage 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 Latino children's school readiness skills and related parental behaviors? An intent-to-treat analytic strategy was conducted, in which all models included all participants who had at least one data value on Time 2 outcome variables, 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.

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 Table 5.

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. Control variables included in the analysis 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 (except for PAAT Total), and child age at Time 2 (except for PLS-4 and ASQ: SE Total outcomes because the outcome was standardized (M = 0, SD = 1). 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. 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 Task, Tower Clean Up, 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.

Table 1 Pre-Intervention Baseline Sample Characteristics (n = 155)

Variable	N	Range	Mean	SD
Parent Age	147	21-66	30.27	5.99
Child Age	153	17-38	2.4	.32
Variable	N	Percentage		
Education Level				
Less than high school	116		76.3	
High school or above	36		23.7	
Annual Income				
Up to \$20,000	113		72.9	
Greater than \$20,000	38		24.5	
Employment Status				
Working (part-time)	36		23.2	
Working (full-time)	12		7.7	
Unemployed	105		67.7	
Retired	-		-	
Other	-		-	
Immigrant				
Immigrant	152		98.1	
Ethnicity of Parent/Primary Co	aregiver			
Latino	155		100.0	
Marital Status				
Married	74		47.7	
Living Together	57		36.8	
Divorced	-		-	
Never Married	13		8.4	
Separated	7		4.5	
Parent Language				
Spanish	155		100	
Sex of Child				
Male	73		47.1	
Female	82		52.9	

Table 2
Descriptive Statistics of Continuous Baseline Measures

Measure	n	Range	Mean	SD
Child Measures				
PLS-4 ^a Auditory	146	50-146	97.07	19.14
PLS-4 ^a Expressive	149	53-150	100.1	21.24
PLS-4 ^a Total	143	50-150	98.15	21.50
Parent Measures				
PAAT Total	148	113-166	135.32	7.45
WMLS-R ^b Oral Language cluster	107	56-99	76.93	7.88
WMLS-R ^b Listening cluster	138	53-119	79.43	10.20

^a PLS-4 Standard Scores are reported. ^b Woodcock-Muñoz Language Survey-Revised Spanish-language test (WMLS-R) Standard Scores reported.

Table 3
Sample Attrition

	Original Sample	Follow-up Timing (24 months)	Attrition	Differential Attrition
Full Sample	166	154	6.63%	7.23%
Intervention Group	83	80	3.61%	
Control Group	83	74	10.84%	

Table 4

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
Child outcomes								
PLS-4 Auditory	4.527	.186	2.191	.030*	.107	0.381	i = 68	0.378
PLS-4 Expressive	2.881	.092	1.149	.253	.198	0.198	c = 65 i = 72 c = 64	0.197
PLS-4 Total	4.960	.176	2.089	.039*	.169	0.372	i = 65 $c = 62$	0.369
ASQ: SE Total ^a	267	138	-1.582	.117	.316	0.318	i = 52 $c = 48$	0.315
Day Night Task	1.694	.092	1.060	.291	.084	0.182	i = 70 $c = 66$	0.181
Tower Clean- Up ^b	-11.68	088	-1.023	.308	.098	0.175	i = 71 $c = 66$	0.174
Parent outcome								
PAAT Total	.547	.033	.468	.641	.270	0.078	i = 73 $c = 71$	0.077

Note . ^aASQ: SE scores for the 36 month and 48 month measures were standardized. A negative direction of the coefficient favors the intervention group. ^bA negative direction of the coefficient for Tower Cleanup Task favors the intervention group. 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

Table 5

Post-Intervention 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	-1.090	.336	4.678	.031*	.349	.660	106
Tower Task	.250	1.284	.267	.606	.066	.152	135

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 $L_{\text{OR}}/1.65$ and does not include a small sample size correction. *p < .05

Intervention Effects. Analyses were run to address whether participation in Parent Child+ increased 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. Children in the intervention group had significantly higher PLS-4 Total Language Spanish scores (b = 4.960, p = .039), which were driven by higher language comprehension scores on the PLS-4 Auditory subscale (b = 4.527, p = .030) (see Table 4). There was no statistically significant impact on PLS-4 Expressive subscale outcome.

Child social-emotional competence. Intervention group children were 66.4% less likely than the control group children to fall in the ASQ:SE range for possible problem behaviors (b = 1.090, p = .031; see Table 5). There were no statistically significant impacts on ASQ:SE total score; however, there is a small effect size difference between the intervention and control group children on this measure; Cohen's d = 0.318. This indicates that parents of children in the intervention group endorsed less social-emotional concerns of their child; b = -.267, p = .117 (see Table 4 & 5).

Child self-regulation. No significant impacts on child's self-regulation were observed as measured by the Day and Night Task, Tower Clean-Up, and Tower Task (see Table 5).

Parent beliefs. No significant impacts of the intervention on PAAT scores were found (see Table 4).

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