



Impact Evaluation of Partners Advancing Childhood Education (*PACE*)

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PACE

Final Evaluation Report

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ABSTRACT

Partners Advancing Childhood Education (PACE) is an Investing in Innovation (i3) development grant funded by the Office of Innovation and Improvement, U.S. Department of Education. *PACE* is a family engagement program that enhances family engagement skills among educators and leadership skills among parents to support the academic and social-emotional development of children in pre-K through third grade (ages three to eight). The impact evaluation used a quasi-experimental design (QED) to examine the effect of *PACE* participants' mathematics, language, literacy, and social emotional development. *PACE* enrolled three cohorts of students over 3 years (cohort 1: 2014; cohort 2: 2015; cohort 3: 2016) and followed each cohort over a full year (September through September). Outcomes for *PACE* students were compared to a sample of students with similar characteristics who participated in business-as-usual, traditional academic instruction in matched pre-K and elementary programs. Comparison students were recruited using similar methods and time frames as those used for *PACE* students. Using hierarchical linear modeling, we found no statistically significant difference in mathematics, language, literacy, or social emotional development gains among *PACE* students compared to those exposed to business-as-usual.

1. INTRODUCTION

Parent engagement, defined as “parents and school staff working together to support and improve the learning, development, and health of children and adolescents” (Centers for Disease Control and Prevention, 2015) has been found to be an important part of increasing minority students’ academic achievement (Jeynes, 2003). Students with more involved parents have also been shown to have better behavior and enhanced social skills (El Nokali, Bachman, & Votruba-Drzal, 2010). Research indicates that low-income families (Hill & Taylor, 2004; Lee & Bowen, 2006) and families living in high-poverty environments (Waanders, Mendez, & Downer, 2007) may benefit from family engagement programs. However, there is a need for an increased number of evidence-based family engagement programs for children as they transition from pre-K to early childhood education. To fill this gap, in 2014, United Way of Greater Atlanta (UWGA) was awarded an Investing in Innovation (i3) grant for Partners Advancing Childhood Education (*PACE*), a family engagement program for low-income families with children ages three to eight and the educators that support them. *PACE* is an iteration of *SPARK* (a W.K. Kellogg Foundation national school readiness program) that focused on children ages zero to five and further integrated United Way programs into the curriculum, including *Parents as Teachers* and the *K-3 Incredible Years*. The purpose of this study is to evaluate the expansion of the *SPARK* and *PACE* models into a comprehensive program for families with children ages three to eight.

1.1 Program Description

The i3 *PACE* program is a 2-year family engagement program that aims to improve educational and social-emotional outcomes of children ages three to eight by strengthening family engagement skills among educators and leadership skills among parents. The i3 *PACE* program builds upon two United Way of Greater Atlanta (UWGA) early-childhood education programs for children ages zero to six, *SPARK* and *PACE*. *SPARK* is a W.K. Kellogg Foundation national school readiness program targeting children ages three through six at risk for being inadequately equipped to succeed in elementary school. *PACE* was an iteration of *SPARK* that focused on children ages zero to five and further integrated UWGA programs into the curriculum, including *Parents as Teachers* and *Incredible Years*. In prior evaluations, *SPARK* and *PACE* benefitted children and their parents. Comparisons of *SPARK* cohorts with control groups show that *SPARK* children outperformed their peers on standardized tests in Grades 1 and 2 and had significantly better school attendance. A 2012-13 *PACE* evaluation showed both child educational and parent knowledge gains.

Similar to *SPARK* and *PACE*, the i3 *PACE* model encompasses five key components targeted toward parents, children, and educators. The key components include personal visitation for parents and students, school transition councils for educators and parents, parent group activities, professional development for educators, and a summer transition academy for students (Table 1).

Table 1. PACE Logic Model				
Inputs	Key Components	Outputs	Short-Term Outcomes	Long-Term Outcomes
<p>Community Partnerships</p> <ul style="list-style-type: none"> DeKalb County Schools Atlanta Speech School Georgia Department of Early Care and Learning UGA Center for Family Research PAT National Center Parent Services Project <p>Curriculum</p> <ul style="list-style-type: none"> Parents as Teachers Incredible Years Stronger Together <p>Personnel</p> <ul style="list-style-type: none"> Parent Educators (PreK and School Age) UWGA Leadership Team School Administration and K-3 Teachers 	<p>Personal Visitation</p> <ul style="list-style-type: none"> 24 monthly personal visits Health and Developmental Screenings Referral Resource Network 	<ul style="list-style-type: none"> % of children that receive all instruction categories % of Parent Educators observed by a supervisor % of children who receive 3+ Personal Visits % of enrolled children who receive 1+ Personal Visits % of parents who report satisfaction with Personal Visit experiences on personal visit parent survey 	<p>Ready Parents: Improve Parent and Family Engagement in Child's Education</p> <ul style="list-style-type: none"> Increase knowledge of child development Increase in healthy home indicators Increase in school involvement Increase in leadership behaviors Increase in # of identified families receiving referral services <p>Ready Schools: Build Family-School Partnerships</p> <ul style="list-style-type: none"> Increase in educator participation in school transition activities Increase in # of school transition activities offered 	<p>Ready Students: Increase School Readiness and Academic Achievement</p> <ul style="list-style-type: none"> Increase in language skills and performance Increase in literacy skills and performance Increase in Math skills and performance Increase in social skills and positive school behaviors
	<p>Parent Group Meetings</p> <ul style="list-style-type: none"> 18 monthly group connection meetings 6 monthly family leadership institute (FLI) meetings Parent Led Community Project 	<ul style="list-style-type: none"> % of group connection sites that receive all instruction categories % of group connection sites that hold 5+ meetings % of parents attending monthly group meetings % of parents who report positive outcomes on group connection parent survey % of parents who report positive outcomes on FLI survey % of parents who attend at least 1 FLI meeting % of parents who attend 4+ FLI meetings % of parents who report satisfaction on FLI survey 		
	<p>School Professional Development (PD)</p> <ul style="list-style-type: none"> Professional Development events to support Family Engagement 	<ul style="list-style-type: none"> % of professionals who report positive outcomes on PD survey % of professionals who report positive outcomes on summer transition academy survey # of PD events held for professionals # of PD events held for STA teachers % of administrative professionals who attend PD events % of educational professionals who attend PD events % of childcare professionals who attend PD events % of professionals who report satisfaction on PD survey 		
	<p>School Transition Council (STC)</p> <ul style="list-style-type: none"> Quarterly meetings Year-round School Transition Activities 	<ul style="list-style-type: none"> % of councils implementing school transition activities % of meetings involving diverse representatives % of councils implementing 2+ meetings % of members attending at 1+ meetings % of members who report satisfaction on STC survey 		
	<p>Summer Transition Academy (STA)</p> <ul style="list-style-type: none"> 4 weeks, 5 days per week 	<ul style="list-style-type: none"> Ratio of teachers to students % of enrolled students who attend 15+ days of STA % of PACE families enrolled in STA % of parents who report satisfaction with the STA % of educators who report satisfaction on STA survey 		

1.1.1 Personal Visitation

UWGA parent educators provided families with 24 monthly personal visits over a 2-year program cycle. Taking guidance from the United Way of Greater Atlanta pre-K *Parents as Teachers* and the K-3 *Incredible Years* programs, parent educators worked with students and their guardians to improve student academic performance and whole-child development through one-on-one activities with the child and hands-on activities for parents and children to practice during the month. Additionally, the parent educators worked with families to establish healthy home routines to support child development and academic success. Data were collected during the first two sessions and then every 12 months.

1.1.2 Parent Group Meetings and Family Leadership Institute

UWGA parent educators invited parents to participate in monthly meetings. Each monthly parent meeting provided parents with an opportunity to network with other parents in their community, review and discuss educational material related to healthy home routines for child development and parent leadership in schools, and practice their new skills to support their use at home.

UWGA created two venues to facilitate parent group meetings: Group Connections and the Family Leadership Institute (FLI). Group Connections were designed to train and support all *PACE* parent/guardians to be leaders in early childhood and school settings. These meetings took place monthly and were held at each *PACE* treatment school. The Family Leadership Institute (FLI) is a series of six meetings based on the FLI curriculum that is more time-intensive and targeted for parents/guardians who exhibit promising leadership skills or have indicated a desire to be community or school leaders. Given the significant investment of time that FLI participants must make to each session, only a minority of parents were ready to attend the FLI. Those parents practiced and shared their leadership skills with other parents in the other key components of *PACE*.

1.1.3 School Transition Council

School administration, teachers, and early childhood educators in the community as well as *PACE* parents of pre-K-Grade 3 students were invited to participate in the School Transition Council at their local elementary school. The School Transition Council met quarterly each year to discuss current school transition policies and plan school transition activities throughout the year. In addition to council meetings, UWGA provided elementary school staff and early childhood educators in the community with professional development opportunities around supporting parent engagement in education and school transitions.

1.1.4 Summer Transition Academy

Each summer, rising kindergarten to rising Grade 3 students identified as struggling readers were invited to participate in the Summer Transition Academy (STA). Using data collected through *PACE* personal visits, as well as school-level data provided by elementary school teachers, *PACE* students who performed just below grade-level standards and would likely achieve the grade-level literacy scores with additional support were nominated for inclusion in the STA. The STA was offered five half-days a week for 4 weeks, and could host up to 80 students, with two classes of 10 students per grade level. In collaboration with Atlanta Speech School and the Georgia Grade Level Reading Campaign, the STA provided additional academic support for students to enhance reading comprehension, fluency, and vocabulary.

1.1.5 Professional Development

UWGA provided elementary school staff and early childhood educators in the community with professional development opportunities around supporting parent engagement in education and school transitions. Professional development events included an initial training focused on the Stronger Together curriculum, preparatory training for educators involved in the Summer Transition Academy, and training for educators involved in the School Transition Council on how to develop and implement school transition events.

2. IMPACT STUDY DESIGN

This impact study used a 1-year, pre-post *quasi-experimental design* (QED) with a comparison group to examine the impact of *PACE*'s parent engagement and family-school partnerships on the academic and social-emotional outcomes of students aged three through eight in select DeKalb County Schools compared to business-as-usual. Specifically, we examined the impact of exposure to *PACE* on changes in 1) math achievement, 2) reading achievement, 3) language achievement, and 4) social-emotional development, for students after one program year. Changes in outcomes were measured using recognized assessments with proven reliability and validity. To measure social emotional development, all parents responded to questions about their children's social skills and problem behaviors via the Social Skills Improvement System (SSIS) (Gresham & Elliott, 2008). Math, language, and literacy growth were measured using different assessments according to participants' grade and time assessed. The Bracken School Readiness Assessment (BRSA) (Panter & Bracken, 2009) was used to measure literacy and mathematics development among children who entered the *PACE* program in PreK and Kindergarten. The Peabody Picture Vocabulary Test (PPVT) (Dunn & Dunn, 2007) was used to measure language development among children in PreK and Kindergarten. Both the BRSA and PPVT were administered in English and Spanish languages by UWGA staff. Children who entered the *PACE* program in Grades 1 and

2 were assessed on mathematics, literacy, and language development using the Iowa Test of Basic Skills (ITBS) and Measures of Academic Progress (MAP) depending on their grade level and assessment year. Both tests were administered by the DeKalb County School District and changes to the testing calendar resulted in children in grades 1 and 3 taking the IOWA exam in 2014 and 2015 and children in grades 1-5 taking the MAP exam in 2016-2018. The study sample included cohorts 1, 2 and 3 which were recruited at the beginning of the 2014, 2015, and 2016 school years, respectively. Students were followed over one calendar year. The three cohorts consisted of 685 children (57% *PACE*; 43% comparison). Outcomes for *PACE* students who participated in *PACE* services within the first year of enrollment were compared to students with similar characteristics who participated in business-as-usual traditional academic instruction in matched pre-K and elementary programs.

Participation in *PACE* was defined as having participated in at least one of the following:

- Two personal visits (to allow for data collection in the first visit and the provision of *PACE* services thereafter);
- One Group Connection event;
- One or more days of the Summer Transition Academy; and/or
- One day of Family Leadership Institute training.

Comparison students were recruited using similar methods and time frames as those used for *PACE* students. Propensity score matching was used to predict the selection of families into the *PACE* program and baseline equivalency was established separately for each of the four domains examined. For each outcome domain, hierarchical linear modeling (Raudenbush & Bryk, 2002) was used to examine the differences in student achievement between the treatment and comparison groups and to account for the nesting of students in schools. The study was approved by Sterling IRB in 2014.

2.1 Selection of Schools, Teachers, and Students

2.1.1 School Selection

Four schools from DeKalb County School District (DCSD) near Atlanta were purposively selected for participation in this study. Conversations with DCSD and community partners helped to identify the local schools and communities that would benefit most from additional family engagement and school transition supports. DCSD recommended two different feeder patterns to target (Clarkston and Stone Mountain), and within those clusters, we identified appropriate schools using the following criteria, with preference given to higher levels of need: 1) percent economic disadvantage, 2) percent Limited English Proficiency, 3) Title 1

status, 4) percent below proficient on ELA standards, and 5) percent below proficient on reading standards. Using these criteria, as well as securing principal buy-in, Allgood Elementary and Dunaire Elementary were selected from the Clarkston High School feeder pattern, and Stone Mill Elementary and Stone Mountain Elementary were selected from the Stone Mountain High School feeder pattern. These schools were then randomly assigned as implementation sites (Allgood Elementary, Stone Mill Elementary) and comparison sites (Dunaire Elementary, Stone Mountain Elementary). Early childcare and early education centers known to feed into the selected elementary schools were targeted for pre-K participant recruitment. Once recruitment was completed, early childcare and early education centers were classified as either treatment or comparison sites depending on where the majority of participants intended to enroll in elementary school (Table 2).

Recruitment for cohort 1 began in September 2014 and, due to lower than expected recruitment, additional early education centers were added as comparison sites based on the feeder school pattern to increase power for the analysis (see Table 2 below).

Table 2. Study Schools

School/Center	Condition Assignment	Grade Levels
All Star Kids Academy	Treatment	Pre-K
Allgood Elementary School	Treatment	Pre-K - Grade 5
Appletree Learning Center*	Comparison	Pre-K
Busy Bee Childcare and Learning Center*	Comparison	Pre-K
Developing Minds*	Comparison	Pre-K
Dunaire Elementary School	Comparison	Pre-K - Grade 5
Early Learning Scholars	Treatment	Pre-K
Good Foundation	Treatment	Pre-K
Hambrick Head Start*	Treatment	Pre-K
Journey to Wisdom	Comparison	Pre-K
Mem's Daycare	Comparison	Pre-K
Partnership for Community Action/Lawrenceville Head Start	Comparison	Pre-K
Powell Early Learning*	Comparison	Pre-K
Stone Mill Elementary School	Treatment	Pre-K - Grade 5
Stone Mountain Elementary School	Comparison	PreK - Grade 5
Teach O'Rea	Treatment	Pre-K
Good Foundation	Treatment	Pre-K
*Early education center added in 2015 to increase sample size for the Comparison group		

2.1.2 Selection of Study Teachers

All pre-K through Grade 3 teachers working at the treatment elementary schools and early childcare centers were included in the study. Teachers at the treatment schools and centers only interacted with students in the treatment condition. Teachers in the comparison elementary schools and early childcare centers only interacted with students in the comparison condition.

To meet the needs of the student participants in the Summer Transition Academy, teachers from Allgood Elementary and Stone Mill Elementary – the two treatment elementary schools - were invited to apply for the STA teaching position. Applications were reviewed based on teaching history at the targeted grade level, experience teaching literacy skills, and school principal recommendations. STA teacher recruitment took place yearly from January to April. Sixteen elementary school teachers from the treatment elementary schools were selected to participate each year.

2.1.3 Selection of Students

All families who had at least one age-eligible child enrolled in the relevant grades at participating schools were eligible to join the study during each recruitment period (September through December). Although the condition was assigned at the school level, families in both the treatment and comparison conditions were required to opt-in to the study by completing an enrollment form and participating in data collection.

Across all sites, the inclusion criteria for participating families was the same. Families were eligible to join the study if they had at least one child between the ages of 3-7 and enrolled in pre-K to Grade 2 in one of the treatment or comparison sites. After initial recruitment, a screening checklist was used to confirm that participating families spoke either English or Spanish.

Families with children who attended the relevant grades at Allgood Elementary, Stone Mill Elementary, and the early childcare centers that feed into them were identified as treatment families and received *PACE* services. *PACE* families received a combination of monthly personal visits, participated in parent group meetings, and were exposed to the School Transition Council and the Summer Transition Academy. Teachers and early childcare educators working at each of the treatment sites received professional development workshops on parent engagement and school readiness, as well as invitations to attend quarterly School Transition Council meetings.

Families with children enrolled in the relevant grades who attended Dunaire Elementary, Stone Mountain Elementary, and the early childcare centers that feed into them were identified as comparison families and did not receive any *PACE* services. Comparison teachers and early childcare educators did not receive any *PACE* services. Comparison families, teachers, and early childcare educators only participated in pre-and post-test data collection and were exposed to traditional, academic-based school environments.

Three cohorts participated in this study across 4 years, 8 months. This study was originally intended to last 4 years and recruit two cohorts of 1,000 children in total (500 *PACE* and 500 comparison children). However, due to lower recruitment, higher attrition, and a later start than expected, the study framework was altered to include an additional cohort of students to increase sample size and power to detect differences across groups. Cohort 1 families received services from the fall of 2014 through the fall of 2016 and included 178 participants, of which 139 were *PACE* children and 39 were comparison children. Cohort 2 was added to increase sample size to address lower recruitment and higher loss to follow-up than expected in cohort 1. Cohort 2 families received services from the fall of 2015 through the fall of 2017 and included 209 children of which 121 were *PACE* and 88 were comparison. Cohort 3 families received services from the fall of 2016 through the summer of 2018 and included 298 children of which 130 were *PACE* and 168 were comparison children. Over the course of three cohorts, *PACE* recruited 685 children (68.5% of target) of which 390 were *PACE* children (78% of target) and 295 were comparison children (59% of target).

2.2 Data Collection

The data collection timeline was relatively consistent across cohorts (Table 3). For each cohort, pretest student, parent, and education outcomes were measured in months 1-4, 1-year posttests were collected in months 12-15, and 2-year posttests were collected in months 21-24. However, 2-year posttests were not collected for cohort 3, as data could not be collected prior to the end of the grant. Due to retention challenges and the funding period of the no-cost extension ending prior to cohort 3 post-2 data collection, the current impact study examines the results of *PACE* programming after 1 year of exposure (post-1 data collection; Table 3).

Table 3. Data Collection Timeline

	Pretest	1-Year Posttest	2-Year Posttest
Cohort 1	Sept – Oct 2014	Sept – Oct 2015	Sept – Dec 2016
Cohort 2	Sept – Dec 2015	Sept – Dec 2016	Sept – Dec 2017
Cohort 3	Sept – Dec 2016	Sept – Dec 2016	<i>Not collected</i>

Outcome data for each domain were collected using valid and reliable measures that were consistently measured across Treatment and Comparison groups (Table 4).

Table 4. Outcome Measures Psychometric Properties

Domain	Test	Internal Consistency	Test-Retest Reliability	Marginal Reliability
Literacy	Bracken School Readiness Assessment – Letters Subtest	0.95	0.86	Not available
	Iowa Test of Basic Skills – Reading Subtest	Grade 1 = 0.95 Grade 2 = 0.93 Grade 3 = 0.94	Not available	Not available
	Measures of Academic Progress – Literacy	Not available	0.87	0.95
Language	Peabody Picture Vocabulary Test (PPVT)	0.94-0.95	0.93	Not available
	Iowa Test of Basic Skills – English Language Arts Subtest	Grade 1 = 0.79 Grade 2 = 0.87 Grade 3 = 0.88	Grade 1 = 0.76 Grade 2 = 0.81 Grade 3 = 0.83	Not available
	Measures of Academic Progress – Language	Not available	0.89	0.94
Mathematics	Bracken School Readiness Assessment – Numbers/ Counting, Comparison/ Size, and Shapes Subtests	0.95	0.86	Not available
	Iowa Test of Basic Skills – Mathematics Subtest	Grade 1 = 0.81 Grade 2 = 0.92 Grade 3 = 0.93	Grade 1 = 0.82 Grade 2 = Not available Grade 3 = Not Available	Not available
	Measures of Academic Progress – Mathematics	Not available	0.83	0.92
Social-Emotional	Social Skills Improvement System (SSIS) – Parent Form	0.95	0.86	Not available

The data collector and the standardized test used to measure outcome domains differed by cohort, domain, and age of the child participant (Table 5). Treatment and comparison participants in kindergarten or pre-K were assessed by *PACE* program staff with the assistance of The Evaluation Group (TEG) staff on literacy, language, and mathematics via

the Bracken School Readiness Assessment – Letters Subtest, Peabody Picture Vocabulary Test (PPVT), and Bracken School Readiness Assessment – Numbers/Counting, Size/Comparison, and Shapes Subtests, respectively (Table 6).

For Treatment and comparison participants in Grades 1 and higher, academic outcome data were measured through standardized tests conducted by DeKalb County School District. In 2014 and 2015, students’ academic achievement was measured with the Iowa Test of Basic Skills (ITBS) exam. Based on the DeKalb County School District schedule, students in second grade did not take the ITBS and therefore, there is no academic outcome or baseline data for students enrolled in second grade for these years. In 2016, DeKalb County School District shifted to the Measures of Academic Progress (MAP) exam and MAP data were collected for children in Grades K-5 so there is no systematic missing data by grade as there was for the IOWA test. However, MAP language data was not available for all participants, and therefore, participants who enrolled in kindergarten and had reached Grade 1 by posttest were also given the PPVT to measure language growth.

For all participants, social emotional development was tracked via the Social Skills Improvement System (SSIS) – Parent Form and there is no systematic missing data because the data were collected solely by *PACE* staff with the support of TEG.

Table 5. Data Collection by Cohort

	Cohort 1					Cohort 2					Cohort 3				
Grant YR1 2014/2015 (Cohort 1 Pretest)	3-year olds (Pre-K1) Pretest	4-year olds (Pre-K2) Pretest	5-year olds (K) Pretest	6-year olds (Grade 1) Pretest	7-year olds (Grade 2) Data not available										
	↓	↓	↓	↓	↓										
Grant YR2 2015/2016 (Cohort 1 Post1; Cohort 2 Pretest)	4-year olds (Pre-K) Post1	5-year olds (K) Post1	6-year olds (Grade 1) Post1	7-year olds (Grade 2) Data not available	8-year olds (Grade 3) Post1	3-year olds (Pre-K1) Pretest	4-year olds (Pre-K2) Pretest	5-year olds (K) Pretest	6-year olds (Grade 1) Pretest	7-year olds (Grade 2) Data not available					
	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓					
Grant YR3 2016/2017 (Cohort 1 Post2; Cohort 2 Post1; Cohort 3 Pretest)	5 years olds (K) Post2	6-year olds (Grade 1) Post2	7-year olds (Grade 2) Post2	8-year olds (Grade 3) Post2	9-year olds (Grade 4) Post2	4-year olds (Pre-K) Post1	5-year olds (K) Post1	6-year olds (Grade 1) Post1	7-year olds (Grade 2) Post1	8-year olds (Grade 3) Post1	3-year olds (Pre-K1) Pretest	4-year olds (Pre-K2) Pretest	5-year olds (K) Pretest	6-year olds (Grade 1) Pretest	7-year olds (Grade 2) Pretest
						↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
Grant YR4 2017/2018 (Cohort 2 Post2; Cohort 3 Post1)						5 years olds (K) Post2	6-year olds (Grade 1) Post2	7-year olds (Grade 2) Post2	8-year olds (Grade 3) Post2	9-year olds (Grade 4) Post2	4-year olds (Pre-K) Post1	5-year olds (K) Post1	6-year olds (Grade 1) Post1	7-year olds (Grade 2) Post1	8-year olds (Grade 3) Post1
											↓	↓	↓	↓	↓
Post grant period 2018 (Cohort 3 Post2)											5 years olds (K) Post2	6-year olds (Grade 1) Post2	7-year olds (Grade 2) Post2	8-year olds (Grade 3) Post2	9-year olds (Grade 4) Post2

Notes: Orange cells indicate *PACE* team collects academic data (Bracken, PPVT). Blue cells indicate district collects academic data (IOWA). Purple cells indicate no academic data collected. Green cells indicate district collects academic data (MAP test). Grey cells indicate cohort ineligible for data collection. Social Emotional Data collected by *PACE* study team all grant years.

Table 6. Measures by Cohort and Grade

		Cohort 1		Cohort 2		Cohort 3	
		Pretest-Fall 2014	Posttest-Fall 2015	Pretest-Fall 2015	Posttest-Fall 2016	Pretest-Fall 2016	Posttest-Fall 2017
Literacy	PreK	BSRA ¹ -Letters	BSRA-Letters	BSRA-Letters	BSRA-Letters MAP ⁵ -Literacy	BSRA-Letters	BSRA-Letters or MAP-Literacy
	K	BSRA-Letters	ITBS-Reading	BSRA-Letters	BSRA-Letters or MAP-Literacy	BSRA-Letters or MAP-Literacy	BSRA-Letters or MAP-Literacy
	1	ITBS ² - Reading		ITBS-Reading	MAP-Literacy	MAP-Literacy	MAP-Literacy
	2		ITBS-Reading		MAP-Literacy	MAP-Literacy	MAP-Literacy
Language	PreK	PPVT ³	PPVT	PPVT	PPVT or MAP-Language	PPVT	PPVT or MAP-Language
	K	PPVT	ITBS-ELA	PPVT	PPVT or MAP-Language	PPVT or MAP-Language	PPVT or MAP-Language
	1	ITBS-ELA		ITBS-ELA	MAP-Language	MAP-Language	MAP-Language
	2		ITBS-ELA		MAP-Language	MAP-Language	MAP-Language
Math	PreK	BSRA-Math	BSRA-Math	BSRA-Math	BSRA-Math	BSRA-Math	BSRA-Math or MAP-Math
	K	BSRA-Math	ITBS-Math	BSRA-Math	BSRA-Math or MAP- Math	BSRA-Math or MAP- Math	BSRA-Math or MAP- Math
	1	ITBS-Math		ITBS-Math	MAP- Math	MAP- Math	MAP- Math
	2		ITBS-Math		MAP- Math	MAP- Math	MAP- Math
Social- Emotional	PreK	SSIS ⁴	SSIS	SSIS	SSIS	SSIS	SSIS
	K	SSIS	SSIS	SSIS	SSIS	SSIS	SSIS
	1	SSIS	SSIS	SSIS	SSIS	SSIS	SSIS
	2	SSIS	SSIS	SSIS	SSIS	SSIS	SSIS

Notes: Beginning in 2016, participants might have taken multiple pretests or posttests for the math, language, and literacy domains due to changes in the DeKalb County Schools testing calendar. Data paths were prioritized to favor similar pretest and posttest combinations.

¹ BRSA - Bracken School Readiness Assessment ² ITBS - Iowa Test of Basic Skills ³ PPVT - Peabody Picture Vocabulary Test ⁴ SSIS- Social Skills Improvement System ⁵ MAP - Measures of Academic Progress

3. ANALYSIS AND RESULTS

3.1 Analytic Approach

The *PACE* evaluation examined differences in student outcomes between a treatment group of *PACE* students who had participated in *PACE* over the course of their first year in the *PACE* program (i.e., had at least two personal visits, one group connection, one day of Summer Transition Academy, or one day of Family Leadership Institute) and a matched comparison group (i.e., business as usual). Student performance data on developmental assessments (Bracken School Readiness Assessment, Peabody Picture Vocabulary Test, Social Skills Inventory Scale) and standardized test scores (Iowa Test of Basic Skills and Measures of Academic Progress) were used in combination with propensity score weights to establish baseline equivalence separately for each research question. Details on baseline equivalency testing are described in section 3.3 below.

Propensity score matching was used to predict the selection of families into the *PACE* program. The calculated propensity scores were incorporated as weights into multi-level analyses to test each confirmatory contrast proposed in this study. Details on propensity scores are described in section 3.5 below.

As mentioned above in Table 6, participants were assessed on each outcome domain (literacy, language, and math) using different measures for different grade levels (PreK through 3). To address the use of multiple tests to examine growth in mathematics, literacy, and language, assessment scores were standardized into z-scores so all grade levels could be pooled into the same analysis. Using this approach, students had a score in each outcome domain that was measured on the same scale, regardless of their grade level. Within each domain, the z-scores were calculated separately by participants' grade at enrollment (i.e., pre-K, kindergarten, and Grades 1 and 2). For some tests, both the raw and age/gender standardized scores were available. Where possible, the raw score was used as the basis for the z-score calculation; however, the RIT or standardized scores were also used when the raw score was not available (Table 7). We did not calculate z-scores for the SSIS, because the same measure was used for all grade levels. All grade levels were pooled into the same analysis using the SSIS standard scores.

Table 7. Scores Used to Calculate the Z-Score, By Test

BRSA- Letters	BRSA - Numbers	Pearson Picture Vocabulary Test (PPVT)	Social Skills Improvement System (SSIS)	Iowa- Reading, Language or Math			MAP - Language, math or reading		
				Raw	Raw	Raw	RIT	RIT	RIT
Raw	Raw	Standard	Standard	Raw	Raw	Raw	RIT	RIT	RIT

Further, due to changes in the DeKalb County School District’s testing calendar, multiple pretests and posttests were collected on some participants for a single domain. For example, a cohort 2 student enrolled in first grade who had not yet reached 7 years old could have been assessed for reading growth via the BRSA and the IOWA reading subtest. To ensure that students’ data were not counted twice, data paths were prioritized for the analysis. Priority was assigned to those paths that had the same pretest and posttest format (e.g., MAP-Language to MAP-Language) with the exception of the BRSA. BRSA data were found to have a ceiling effect and were therefore considered lower priority for the outcome data paths.

Given that multiple community tracks are used within this study (Clarkston: Allgood Elementary and Dunaire Elementary; Stone Mountain: Stone Mill Elementary and Stone Mountain Elementary), multi-level models were used to estimate student impacts. All three cohorts were combined into one model per research question and participants were nested in the school they attended at baseline measurement.

3.2 Sample

Participants included in the analysis had complete baseline and posttest data and had complete demographic data (i.e., age, sex, race/ethnicity, and language spoken at home; Table 8). Participants were also included in the analysis if they had participated in i3 *PACE* (e.g., at least two personal visits, one group connection, one day of Summer Transition Academy, or one day of Family Leadership Institute). These cases were selected to get a more accurate estimate of the impact of *PACE* for participants who received more than one quick and short component of the *PACE* program. Regarding missing data, we utilized list-wise deletion if data were missing on variables of interest.

Table 8. Analysis Sample, by school

	School/Center	Grades	Participants Recruited, Cohorts 1-3	Participants Included in the Impact Analysis, Cohorts 1-3
Treatment	Allgood Elementary School	PreK – Grade 3	139	89
	Stone Mill Elementary	PreK – Grade 3	155	110
	All Star Kids Academy	PreK	14	5
	Early Learning Scholars	PreK	1	1
	Good Foundation	PreK	28	14
	Hambrick Head Start	PreK	3	0
	Teach O’Rea	PreK	48	30
	Total		388	249

	School/Center	Grades	Participants Recruited, Cohorts 1-3	Participants Included in the Impact Analysis, Cohorts 1-3
Comparison	Dunaire Elementary School	PreK – Grade 3	114	75
	Stone Mountain Elementary School	PreK – Grade 3	82	35
	Memorial Drive Presbyterian	PreK	1	0
	Journey to Wisdom	PreK	2	0
	Partnership for Community Action	PreK	74	35
	Developing Minds	PreK	16	8
	Appletree Learning Center	PreK	6	3
	TOTAL		295	156

Total number of participants differed by research question based on available baseline and post-test data (Table 9).

Table 9. Analysis Sample, by Domain

Domain	Number of Treatment Students	Number of Comparison Students	Number of Treatment Schools	Number of Comparison Schools
Reading	166	121	5	5
Language	121	44	5	5
Mathematics	168	119	5	5
Social-Emotional	163	17	5	5

3.3 Baseline Equivalence

We tested for the equivalence of students who did and did not receive *PACE* using a pretest measure for the dependent variable. Note that we analyzed baseline equivalency separately for each of our research questions. Groups were considered equivalent at baseline if the effect size difference between *PACE* and non-*PACE* students was less than 0.25 and the baseline measure was included in the analytic model. All dependent variables met baseline equivalence on a pretest measure.

Additionally, Hedge’s *g* was calculated: (math (ES = -0.03), reading (ES = -0.05), language (ES = 0.03), and SSIS (ES = -0.10)).

3.4 Confirmatory Questions

Confirmatory Question 1: What is the impact of *PACE* on students' math achievement 1 year after entering *PACE* compared to students in a business-as-usual comparison group?

Confirmatory Question 2: What is the impact of *PACE* on students' reading achievement 1 year after entering *PACE* compared to students in a business-as-usual comparison group?

Confirmatory Question 3: What is the impact of *PACE* on students' language achievement 1 year after entering *PACE* compared to students in a business-as-usual comparison group?

Confirmatory Question 4: What is the impact of *PACE* on students' social skills 1 year after entering *PACE* compared to students in a business-as-usual comparison group?

3.5 Propensity Score Model

To estimate a propensity score for each child, we fit a series of random-intercepts logistic-regression models to predict the selection of families into the *PACE* program (versus non-*PACE*). The following covariates were included in the calculation of the propensity score: pretest scores on literacy, language, mathematics, and social-emotional measures, student sex (female or male), age at entry into *PACE*, ethnicity (non-minority or minority) as well as primary language spoken in the home (English and Spanish/other). The hypothesized selection model therefore takes the following form for the i^{th} child in the j^{th} setting:

$$P\{PACE_{ij} | \mathbf{V}, \mathbf{X}\} = \frac{1}{1 + \varepsilon^{-(\beta_1 \mathbf{V}_{ij} + \beta_2 \mathbf{X}_{ij})}}$$

Where $P\{\}$ represents the probability that a child would enroll in a *PACE* program, and vector \mathbf{V} and \mathbf{X} , represent the child and household covariates respectively.

3.6 Confirmatory Analytic Model

The multi-level model we used to estimate a treatment effect for language, literacy, mathematics, and social emotional development after 1 year of program exposure is shown below. Note that the same model specification was used for each outcome, so the model was run a total of four times.

$$\begin{aligned} Y_{ij} = & \alpha + \text{Baseline}_{ij}\beta_1 + \text{Condition}_{ij}\beta_2 + \text{EnrollmentAge}_{ij}\beta_3 + \text{Gender}_{ij}\beta_4 \\ & + \text{OtherRaceDummy}_{ij}\beta_5 + \text{HispanicRaceDummy}_{ij}\beta_6 + \text{Cohort2Dummy}_{ij}\beta_7 \\ & + \text{Cohort3Dummy}_{ij}\beta_8 + \varepsilon_j + e_{ij} \end{aligned}$$

Where:

Y_{ij} = the outcome for student i in school j

α = intercept

Baseline $_{ij}\beta_1$ = parameter estimate for the effect of the baseline or pretest score

Condition $_j\beta_2$ = treatment effect, or treatment comparison difference (1 = treatment and 0 = comparison)

EnrollmentAge $_{ij}\beta_3$ = effect of student enrollment age (mean centered, higher numbers indicate older age)

Gender $_{ij}\beta_4$ = effect of student gender (1 = female and 0 = male)

OtherRaceDummy $_{ij}\beta_5$ = race dummy variable 1 (1 = Other race, 0 = Not other)

HispanicRaceDummy $_{ij}\beta_6$ = race dummy variable 2 (1 = Hispanic, 0 = Not Hispanic)

Cohort2Dummy $_{ij}\beta_7$ = cohort dummy variable 1 (1 = cohort 1, 0 = not cohort 1)

Cohort3Dummy $_{ij}\beta_8$ = cohort dummy variable 2 (1 = cohort 2, 0 = not cohort 2)

ϵ_j = a random error term for school j

e_{ij} = a random error term for student i in school j

Sensitivity analyses were also performed to examine if a more complex model that incorporated the pretest and posttest combinations across students was a better fit for the data. Since the results produced were the same across models, the more parsimonious models were selected as described above.

3.7 Results for Math Achievement Outcome

Results indicated no statistically significant difference between the *PACE* treatment group and the business-as-usual comparison group on the math achievement outcome (Table 10). No statistically significant findings were found in our model, except for baseline math achievement scores positively predicting posttest math achievement scores.

Table 10. *PACE* Math Achievement Model

Variable	Estimate	Standard Error	<i>t</i> -value	<i>p</i> -value
Intercept	-0.47	0.16	-2.91	0.004
Math Achievement Baseline Score	0.70	0.04	15.80	< 0.001
Condition	0.14	0.10	1.34	0.218
Other	0.21	0.14	1.51	0.133

Variable	Estimate	Standard Error	t-value	p-value
Hispanic	0.00	0.18	0.01	0.991
Enrollment Age	0.08	0.04	1.94	0.053
Gender	0.04	0.09	0.48	0.632
Cohort 1	0.26	0.15	1.69	0.092
Cohort 2	0.27	0.15	1.83	0.068

3.8 Results for Reading Achievement Outcome

Results indicated no statistically significant difference between the *PACE* treatment group and the business-as-usual comparison group on the reading achievement outcome. No statistically significant findings were found in our model, except for baseline reading achievement scores positively predicting posttest reading achievement scores. Table 11 includes our regression model output.

Table 11. *PACE* Reading Achievement Model

Variable	Estimate	Standard Error	t-value	p-value
Intercept	0.03	0.27	0.10	0.920
Reading Achievement Baseline Score	0.50	0.06	9.03	< 0.001
Condition	-0.19	0.27	-0.71	0.499
Enrollment Age	-0.06	0.06	-1.02	0.309
Other	0.08	0.17	0.45	0.650
Hispanic	-0.21	0.22	-0.949	0.344
Gender	0.06	0.10	0.59	0.554
Cohort 1	-0.06	0.19	-0.34	0.735
Cohort 2	-0.12	0.18	-0.69	0.493

3.9 Results for Language Achievement Outcome

Results indicated no statistically significant difference between the *PACE* treatment group and the business-as-usual comparison group on the language achievement outcome. Two statistically significant findings were found in our model: higher pre-measure language achievement scores predicted higher outcome language achievement scores and higher age at enrollment predicted higher outcome language achievement scores. Table 12 includes our regression model output.

Table 12. PACE Language Achievement Model

Variable	Estimate	Standard Error	<i>t</i> -value	<i>p</i> -value
Intercept	-0.01	0.22	-0.03	0.977
Language Achievement Baseline Score	0.74	0.06	12.13	< 0.001
Condition	-0.17	0.18	-0.95	0.371
Enrollment Age	0.15	0.06	2.46	0.015
Other	0.17	0.20	0.84	0.400
Hispanic	0.00	0.25	0.00	0.998
Gender	-0.09	0.12	-0.76	0.450
Cohort 1	0.09	0.17	0.51	0.608
Cohort 2	0.21	0.17	1.28	0.202

3.10 Results for Social Skills Outcome

Results indicated no statistically significant difference between the *PACE* treatment group and the business-as-usual comparison group on the social skills outcome. Only one statistically significant finding was found in our model: higher pre-measure social skills scores predicted higher outcome social skills scores. Table 13 includes our regression model output.

Table 13. PACE Social Skills Model

Variable	Estimate	Standard Error	<i>t</i> -value	<i>p</i> -value
Intercept	45.62	14.50	3.15	0.002
Social Skills Baseline Score	0.67	0.10	7.06	< 0.001
Condition	-9.47	10.02	-0.95	0.372
Enrollment Age	2.01	1.23	1.63	0.104
Other	-6.49	5.12	-1.27	0.207
Hispanic	-2.35	6.54	-0.36	0.720
Gender	-0.14	3.05	-0.05	0.963
Cohort 1	1.79	4.15	0.43	0.668
Cohort 2	1.84	4.17	0.44	0.589

4. DISCUSSION

The current study applies a quasi-experimental pre-posttest design to examine the impact of *i3 PACE* on reading, language, mathematics, and social emotional outcomes compared to

business as usual after 1 year of program exposure. Overall, the study found no statistically significant differences in the treatment versus the comparison group for each of the outcome domains.

Our findings were in contrast to two prior evaluations of iterations of the i3 *PACE* program – *SPARK* and *PACE* – which found improved outcomes for parents and their children. Those studies indicated that we should see gains in pre-K and kindergarten students while gains in older elementary school students were more exploratory.

The results of the current quantitative analysis also do not reflect the results of the qualitative studies that the independent evaluation team conducted in 2016 and 2018. In 2016, two focus group discussions were conducted with parent participants in i3 *PACE*. The parents were selected for their active participation in and knowledge of the i3 *PACE* program from the distinct vantage points as parents with younger (pre-K and kindergarten) and older (Grades 1-3) i3 *PACE* children. From these parents we learned that i3 *PACE* increased the self-confidence of parents and children, encouraged children to read on their own and with their parents, and provided parents with key emotional support and community connections that they would utilize long after i3 *PACE* ends. For example, one parent described i3 *PACE* as “an enrichment program for me and my family with all different types of elements to help the children be successful academically and for us to be, as a family, successful.” The interviews conducted in 2018 with i3 *PACE* parents and educators from the two i3 *PACE* elementary schools (n=16) also provided insight into i3 *PACE* achievements. Again, participants were selected based on their knowledge of the i3 *PACE* program and diverse experience with its key components. Both educator and parent participants indicated that *PACE* improved students’ educational and social emotional outcomes by helping families and educators build stronger relationships and providing families and educators with strategies. As one parent participant indicated, “I still look, I still flip through my manual for different things and skills like we did a family crest thing and I wanted to do that with the kids and so just even to this day, it was two years ago, still bringing back just positive personal memories and actual workable skills that I can apply.” One i3 *PACE* educator similarly stated, “one thing that the *PACE* program taught us is to allow the children to speak. I probably learned that 4 years ago with *PACE*, and I’ve been doing it in my classroom because I realized when you allow them to talk freely, they actually stay on task and it’s not overwhelming and out of control, as long as you go over the rules. So, I did get that from *PACE* and I use that to this day.”

Several limitations of the study design and program implementation may have contributed to our null findings. First, implementation of the program key components differed significantly across years with a slow start-up that delayed implementation of the School Transition Councils until program year 3 (calendar year 2016). Second, the i3 *PACE* program

was composed of multiple curricula and lacked a unifying framework which may have decreased implementation fidelity. Third, regarding the study design, we utilized multiple tests to examine growth in each domain and were required to calculate z-scores to measure growth which likely increased error in our analysis. While the application of z-scores were anticipated, changes in DeKalb County Schools testing required that, for each domain, we calculate growth using four separate tests. Fourth, regarding the Bracken School Readiness Assessment, we found an important ceiling affect for older, eligible children which likely blunted our ability to detect differences for children ages 3 to 6 years 11 months. Finally, we were unable to control for parental measures of socioeconomic status due to relatively large amounts of missing data; however, given the overall homogeneity of the students at the elementary schools, missing these data may not have had a large impact.

The current study also has several strengths that should be leveraged in future studies of family engagement programs such as *i3 PACE*. The study used reliable and valid measures to examine participant growth in skills, such as the Social Skills Improvement System. The study also sought continuous feedback from participants using mixed methods so that *i3 PACE* participants could receive the information and services that they wanted and needed. In this regard, the program flexibility may have contributed to the null findings of the current study but provided better services to the community. In sum, while *i3 PACE* demonstrated no significant gains in *i3 PACE* participants compared to business-as-usual comparison students, the study has identified several strengths that should be leveraged to inform future iterations of the program.

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