

2018 Parents as Teachers Evaluation

PARENT POSSIBLE

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2018 Parents as Teachers (PAT) Evaluation

Parent Possible

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Executive Summary

Each year, Parent Possible supports organizations to deliver the evidence-based Parents as Teachers (PAT) program. Parent Possible also provides resources for an external evaluation of the program. In 2017-18, OMNI Institute conducted an analysis of the evaluation data gathered from 28 sites delivering the PAT program. Evaluation instruments were administered twice and include a parent-report survey; home visitor observations of parent child interaction; and home visitor assessments of children's school readiness.

This executive summary provides key findings from the 2017-18 evaluation, and the full report provides detailed information on the instruments used, the analytic approach, and each finding. Overall, results suggest that participating parents are increasing their protective factors, knowledge of parenting practices, use of literacy-promoting activities with their children, and engagement in positive parent-child interactions. In addition, participating children are improving in school readiness skills.

KEY FINDINGS

PAT sites across the state are **reaching families with diverse demographic profiles.**

- Participating parents report diversity in age (15 – 62 years); education (less than high school diploma to bachelor's degree or higher); annual household income (less than \$15,000 to more than \$60,000); employment (no employment to full-time); language spoken at home (English, Spanish, and several other languages); and ethnicity (62% of parents report Hispanic ethnicity).
- The majority of participating parents were female (97%).

Overall, parents reported **strong protective factors** and, from pre to post, demonstrated **significant increases in social support and concrete supports in time of need.**

- Continuing families reported significant increases in concrete and social support while new families reported significant increases in these areas as well as nurturing and attachment and family functioning and resiliency.
- For both continuing and new families, parents reported the strongest protective factors on the nurturing and attachment subscale, followed by the social support subscale.
- Continuing families demonstrated significant improvements in knowing how to help their children learn while new families demonstrated significant reductions in losing control when disciplining children and significant improvements in knowing how to help children learn and praising children.
- The presence of a greater number of significant changes for new families than continuing families is notable and suggests that the program is especially beneficial during the first year of participation.

The PAT program **increased parents' knowledge of parenting practices and child development**. These increases were reported for both continuing and new families.

- For both continuing and new families, parents, on average, reported that the PAT program increased their knowledge of parenting practices between “quite a bit” and “a lot”.
- There were statistically significant changes from pre to post on four out of six child development knowledge items for both continuing and new families (e.g., children’s brains develop better when parents do things with them).

Parents reported **increases in the frequency of reading with their children and engaging in other behaviors** to promote child literacy.

- From pre to post, there were significant increases for both new and continuing families in the frequency of reading with children and the percentage of families who have a designated time for reading with their children.
- Continuing families reported significantly greater frequency at post than pre on five out of six literacy activities. For new families, there were significant increases in frequency on three out of six literacy activities.
- Parents from both groups reported significantly higher scores on the interactive reading behaviors scale at post than pre. Both groups reported significantly greater frequency at post on seven of the nine interactive behaviors that comprise the scale.

The majority of **parents were consistently utilizing developmentally appropriate behaviors** with their children at both pre and post.

- At post, 95% of continuing parents and 95% of new parents demonstrated average or above average developmentally appropriate behavior.
- The proportion of continuing parents demonstrating average or above average developmentally appropriate behavior increased significantly from pre to post on the total parent-child interaction score and for each of the four subscales (affection, responsiveness, encouragement, and teaching).
- The proportion of new parents demonstrating average or above average behavior changed significantly only on the encouragement subscale (increasing from 86% at pre to 94% at post).

Children demonstrated **significant growth on school readiness percentile ranks and on percent mastery of all five subtests**.

- Both continuing children and new children significantly increased their school readiness percentile ranks from pre to post. Because this measure takes into account skills based on

child age, a significant increase indicates children increased their school readiness more than would be expected from typical maturation over this period.

- From pre to post, the proportion of children whose school readiness proficiency level was classified as “average” or “advanced” did not change significantly for continuing or new children.
- For both continuing and new children, there were significant increases in percent mastery in all five areas, with the largest percentage point increases in the areas of letters and numbers/counting.

Table 1. Summary of Significant Changes from Pre to Post

Domain	Continuing Families	New Families	Overall
Protective Factors Survey			
Family Functioning/Resiliency		✓	✓
Concrete Support	✓	✓	✓
Social Support	✓	✓	✓
Nurturing and Attachment		✓	
PFS Parenting and Child Development Items*	✓	✓	✓
Parent Knowledge			
Knowledge of Parenting Practices	N/A	N/A	N/A
Knowledge of Child Development*	✓	✓	✓
Parent Practices			
Frequency of Reading with Child	✓	✓	✓
Designated Time for Reading	✓	✓	✓
Literacy Activities (Under 2 Years Old)	✓	✓	✓
Literacy Activities (2 Years and Older)	✓		✓
Interactive Reading Behaviors	✓	✓	✓
Parent-Child Interactions (PICCOLO)			
Total PICCOLO Score	✓		✓
Affection	✓		✓
Responsiveness	✓		✓
Encouragement	✓	✓	✓
Teaching	✓		✓
Child School Readiness (Bracken)			
Percentile Rank	✓	✓	✓
Proficiency Level			
Colors	✓	✓	✓
Letters	✓	✓	✓
Numbers/Counting	✓	✓	✓
Sizes	✓	✓	✓
Shapes	✓	✓	✓

✓ Items with a check mark changed significantly ($p < .05$) in the desired direction from pre to post.

* At least one of the items changed significantly.

N/A = These items are asked at post only; no statistical analysis was conducted.

Introduction

PARENT POSSIBLE

Parent Possible equips parents¹ of young children with the tools and information to be their child's most valuable teacher, trainer and mentor in life. The organization promotes and oversees delivery of evidence-based parent engagement programs, including Parents as Teachers (PAT), Home Instruction for Parents of Preschool Youngsters (HIPPY), and Vroom. Parent Possible provides access and support, ensures efficacy and impact, and advocates and collaborates with early childhood partners across the state.

PARENTS AS TEACHERS (PAT)

PAT is an evidence-based early childhood program that includes home visits, group meetings, health and developmental screenings, and development of resource networks. Parent educators utilize the PAT curriculum to promote positive parent-child interaction from pregnancy through kindergarten. The PAT curriculum is designed to increase parent knowledge of childhood development, improve parenting practices, provide early detection of developmental delays and health issues, prevent child abuse and neglect, and increase children's school readiness and school success.

Research on the PAT program has shown positive impacts for parents and their children. Specifically, parents involved in the program were more likely to promote reading in the home after participation (Albritton, Klotz, & Roberson, 2004; Pfannenstiel, Seitz, & Zigler, 2003; Zigler, Pfannenstiel, & Seitz, 2008). In addition, parents demonstrated significant improvements in parent knowledge, parenting behavior and parenting attitudes (Owen & Mulvihill, 1994; Pfannenstiel & Selzer, 1989; Wagner, Spiker, & Linn, 2002). Children in the program scored higher on measures of achievement, language ability, social development, persistence in task mastery, and other cognitive abilities (Wagner, Spiker, & Linn, 2002; Drotar, Robinson, Jeavons, & Lester, 2009). Moreover, PAT combined with quality preschool has reduced the achievement gap between low-income children and their counterparts at kindergarten entry (Pfannenstiel, Seitz, & Zigler, 2003).

In 2017-18, Parent Possible supported 28 organizations to deliver PAT across Colorado. Each year, Parent Possible provides resources for an external evaluation of the PAT program. This report presents evaluation results from the 2017-18 PAT program year. Data presented in this report were collected via self-report parent surveys; home visitor assessments of children's school readiness skills (Bracken School Readiness Assessment); and home visitor observations of

¹ Throughout this report, "parents" is used to refer to guardians of children served by the PAT program, regardless of the relationship between the guardian and child.

parent-child interactions (Parent-Child Interactions Assessment (PICCOLO)). In general, each measure was administered twice to families to obtain enrollment (pre) and end-of-year (post) information on parents' knowledge and practices, children's school readiness, and the quality of parent-child interactions. Detailed information on each measure, including when and how it was administered, and the analytic approach is available in Appendix A.

PAT Parent Survey

SURVEYS BY SITE

1,420 families completed the PAT parent pre survey and 935 completed the post, resulting in 912 matched cases (63% match rate). Table 2 shows the distribution of surveys completed across participating PAT program sites. Sites contributed anywhere from less than 1% to 19% of the total matched parent survey sample. As such, findings are weighted towards sites with larger numbers of parents completing both the pre and post assessments. Note that sample sizes throughout this report vary due to missing responses; analyses include only valid responses.

Table 2. Parent Survey Participation by Site

	Pre Surveys	Post Surveys	Matched Cases	Percent of Total Analysis
Arapahoe County Early Childhood Council	29	13	13	1.4%
Boulder County Dept. of Housing & Human Services	42	22	20	2.2%
Bright Futures for Early Childhood & Families	24	9	8	0.9%
Catholic Charities Diocese of Pueblo	233	143	137	15.0%
Delta Family Center	19	5	3	0.3%
Divide Community Partnership	39	32	31	3.4%
Early Childhood Council of the San Luis Valley	77	46	46	5.0%
El Paso County Family Resource Center	20	12	12	1.3%
Estes Valley Investment in Childhood Success	15	9	9	1.0%
Families First	35	27	26	2.9%
Family & Intercultural Resource Center	122	110	109	12.0%
Family Connects	5	3	3	0.3%
Family Development Center Newborn Network	28	16	16	1.8%
Family Star	56	42	39	4.3%
Florence Crittenton	15	11	10	1.1%
Focus Points Family Resource Center	65	51	51	5.6%
Growing Home	245	180	180	19.7%
Hilltop Community Resources	9	5	5	0.5%
Hilltop Family First	45	20	20	2.2%
La Familia/The Family Center	57	45	45	4.9%
La Plata Family Centers Coalition	6	1	1	0.1%
Metro State University of Denver	41	38	38	4.2%
Morgan County Family Center	40	0	0	0.0%
Mountain Resource Center	35	16	15	1.6%
Roots Family Center	22	9	8	0.9%
Starpoint First Steps	41	35	33	3.6%
The Pinon Project	19	8	7	0.8%
Tri County Family Care Center	36	27	27	3.0%
TOTAL	1,420	935	912	100%

PARENT DEMOGRAPHICS

Parent demographics are provided for all parents who completed a pre survey (n=1,420). As noted above, some items may have missing responses; percentages are calculated using valid responses and shown percentages may not total to 100% due to rounding.

PARENT AGE AND FAMILY SIZE

Parents' mean age was 32 years (SD = 7.11), with a range from 15 to 62 years. The median age was 31 years.

On average, families consisted of 4.2 people (SD = 1.40), with a range from 2 to 10 people. The median number of people in a household was 4.

Table 3. Parent Age

AGE	N	PERCENT
UNDER 18	21	2%
18-24 YEARS OLD	214	15%
25-34 YEARS OLD	705	51%
35-44 YEARS OLD	403	29%
45 YEARS OR OLDER	46	3%

RACE & ETHNICITY

Most parents reported their race as White (85%) and 62% reported Hispanic or Latino ethnicity.

Figure 1. Parent Race

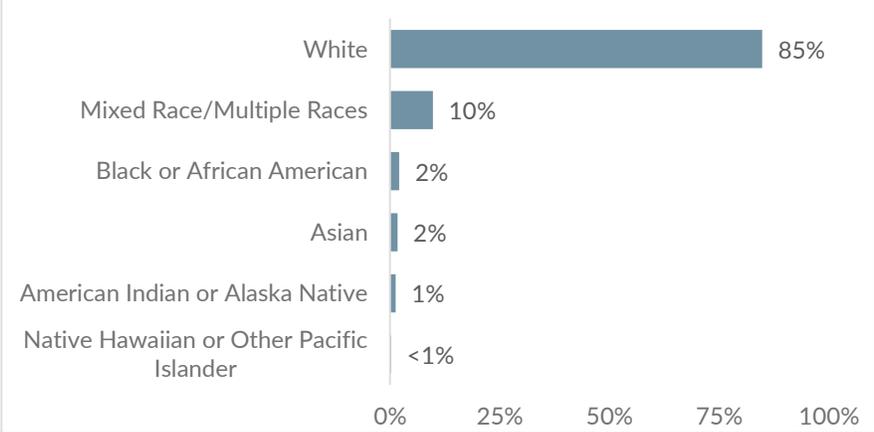
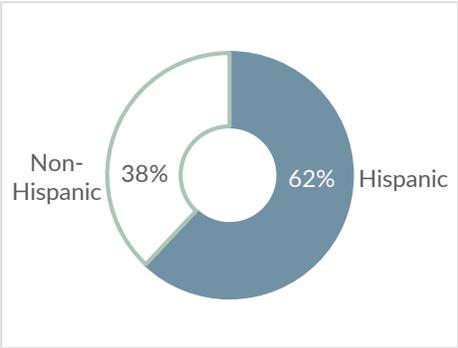


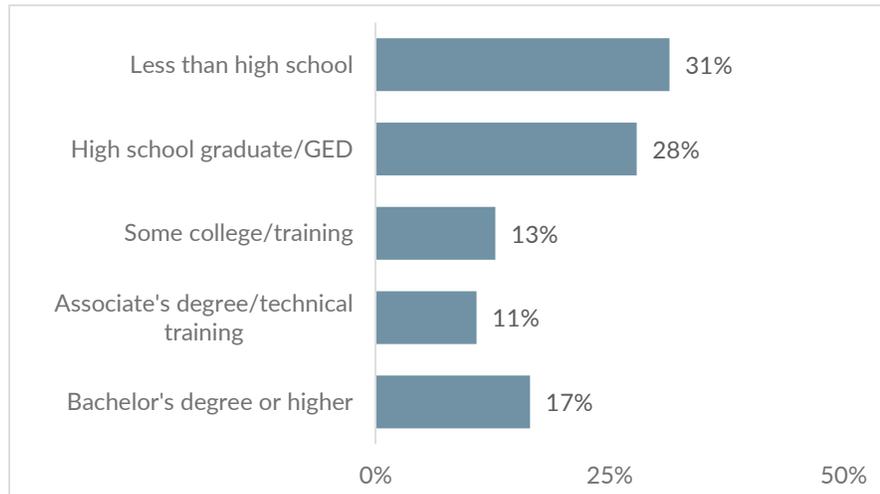
Figure 2. Parent Ethnicity



PARENT EDUCATION LEVEL

Approximately one-third of parents reported they do not have a high school degree (31%). 17% have a bachelor's degree or higher.

Figure 3. Parent Education Level

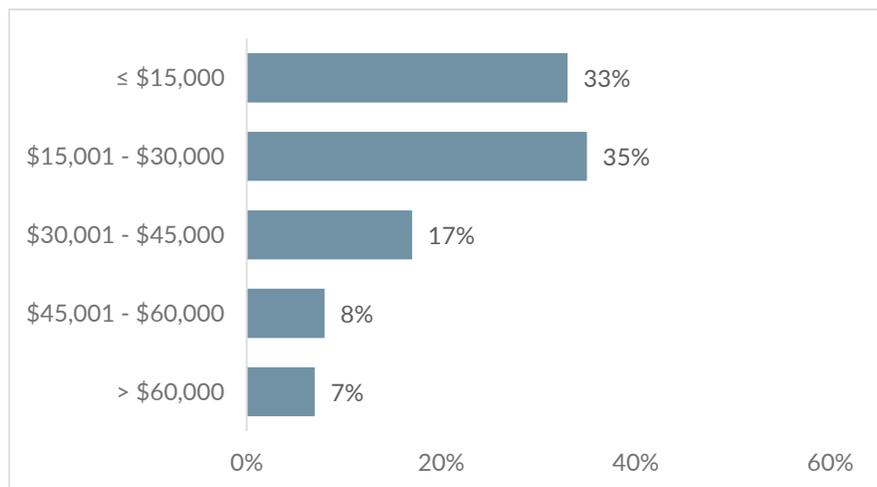


HOUSEHOLD INCOME

One-third of families reported an annual income of less than or equal to \$15,000, which is equivalent to 59% of the 2018 Federal Poverty Level (FPL) for a family of four.

56% of participating families are living in poverty (family income is below 100% of the 2018 FPL, which is equal to \$25,100 for a family of four), and 25% are living in extreme poverty (family income is below 50% of the 2018 FPL, which is equal to \$12,550 for a family of four).

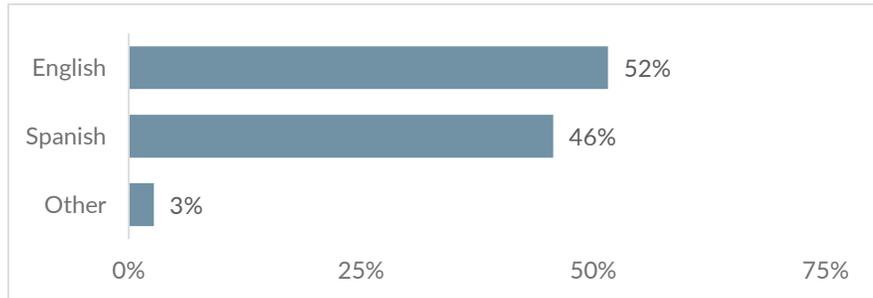
Figure 4. Household Income



PARENT PRIMARY LANGUAGE

Just over half of parents served by the PAT program reported primarily speaking English in the home (52%); 46% indicated Spanish as their primary language.

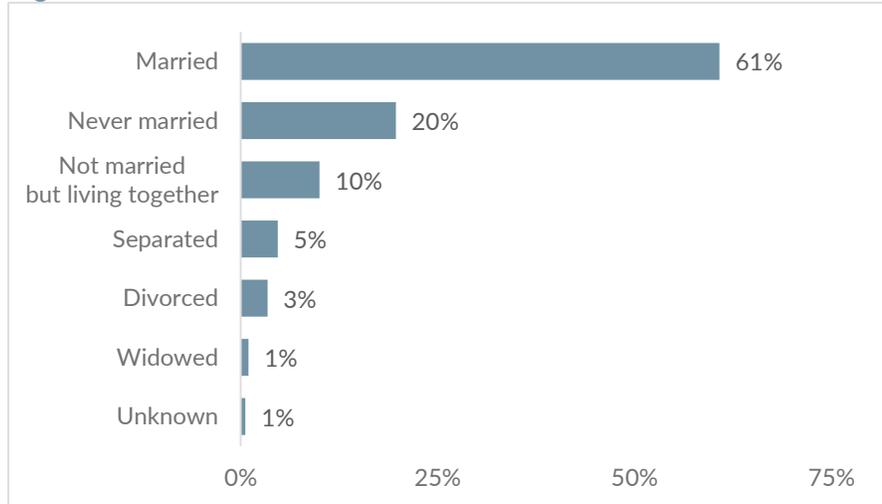
Figure 5. Parent Primary Language



PARENT MARITAL STATUS

Most parents reported their marital status as “married” (61%), followed by “never married” (20%).

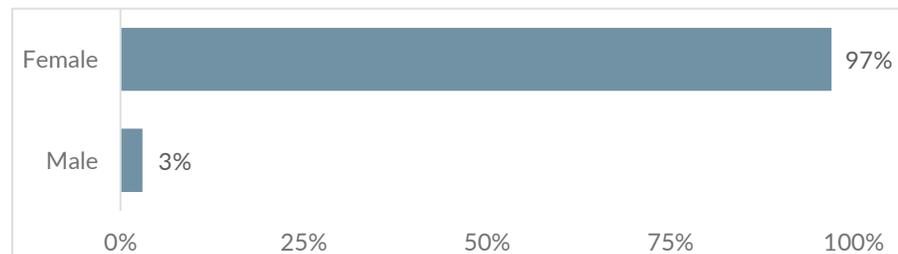
Figure 6. Parent Marital Status



PARENT GENDER

Nearly all participating parents were female (97%); 3% were male.

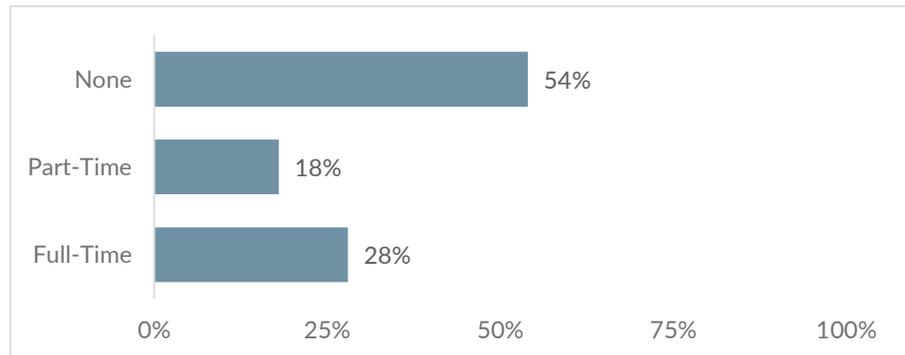
Figure 7. Parent Gender



PARENT EMPLOYMENT STATUS

More than half of participating parents reported no employment (54%), 18% reported part-time employment (1-39 hours per week), and 28% reported full-time employment (40 or more hours per week).

Figure 8. Parent Employment Status (Based on Hours Worked)



NEW AND CONTINUING FAMILIES

Throughout the rest of this report, data are presented separately for continuing and new PAT families. Families were considered “continuing” when their enrollment date in PAT was before July 1, 2017. Families were considered “new” when their enrollment date in PAT was on or after July 1, 2017. Information on the length of enrollment of the two analysis groups is outlined below in Table 4. These data include only the matched cases that were included in analysis.

Results for all PAT families in aggregate are available in Appendix B.

Table 4. Enrollment Characteristics of Analysis Groups at Post

	CONTINUING FAMILIES	NEW FAMILIES
NUMBER OF FAMILIES	746	166
MINIMUM # OF DAYS IN PAT	238 DAYS (7.9 MONTHS)	71 DAYS (2.4 MONTHS)
MAXIMUM # OF DAYS IN PAT	4,671 DAYS (155.7 MONTHS)	279 DAYS (9.3 MONTHS)
AVERAGE # OF DAYS IN PAT	942 DAYS (31.4 MONTHS)	192 DAYS (6.4 MONTHS)
MEDIAN # OF DAYS IN PAT	754 DAYS (25.1 MONTHS)	193 DAYS (6.4 MONTHS)

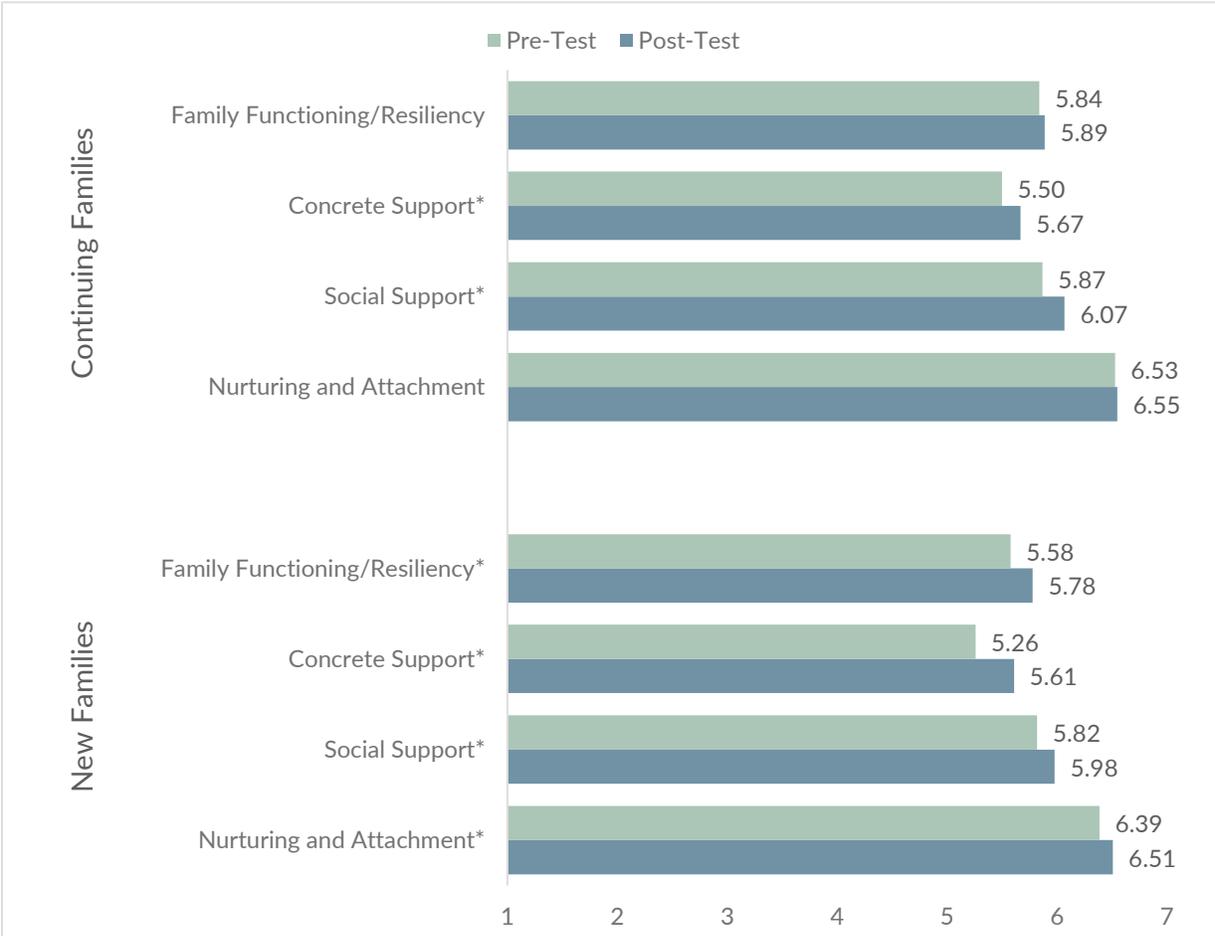
PROTECTIVE FACTORS SURVEY FINDINGS

The Protective Factors Survey (PFS) is a parent-report, 20-item measure designed for use with parents receiving prevention services such as home visiting, parent education, and family support. The PFS measures parental protective factors in five areas: family functioning and resiliency; concrete support; social support; nurturing and attachment; and knowledge of parenting and child development. The latter area is examined at the item (rather than subscale) level as the items do not form a cohesive scale.

PFS SUBSCALES

Overall, parents report strong protective factors in all areas. Parents reported the strongest protective factors on nurturing and attachment followed by social support. Continuing families reported significant increases in two of four PFS subscales while new families reported significant increases on all four subscales.

Figure 9. Protective Factor Survey Subscales



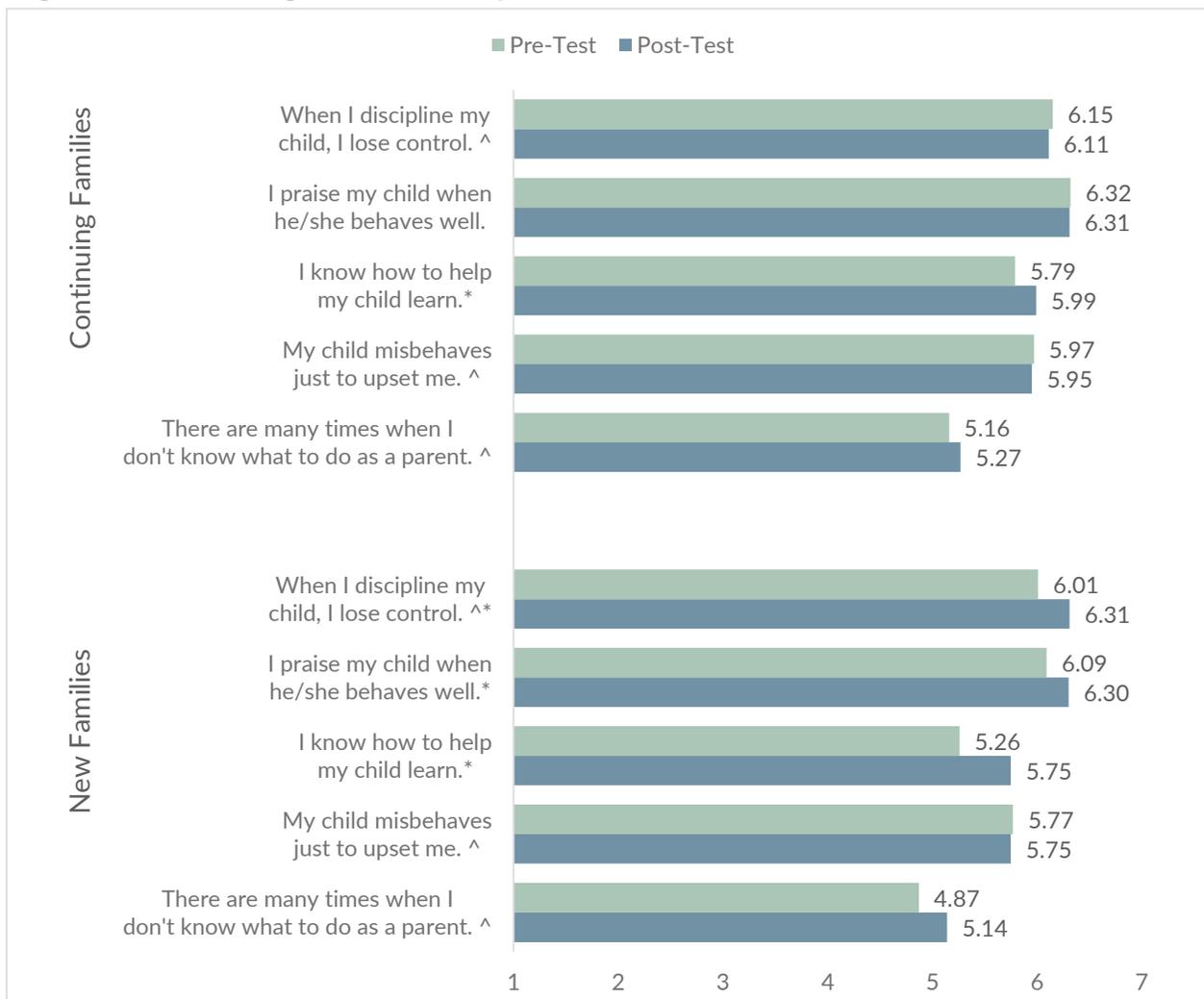
* = statistically significant, $p < .05$

PFS PARENTING AND CHILD DEVELOPMENT ITEMS

For these five statements, parents were asked either how much they agreed with each statement (scale of 1-7 with 1 indicating “strongly disagree” and 7 indicating “strongly agree”), or how frequently the described situation occurs in their family (scale of 1-7, with 1 indicating “never” and 7 indicating “always”). Some items (marked with “^”) were reverse coded so that for all items, higher scores indicate stronger protective factors.

Overall, the PFS parenting and child development items had high mean scores (greater than 5 out of 7 at post). Continuing families demonstrated significant change on just one of the items (“I know how to help my child learn”) while new families demonstrated significant change for three of the five items. The greater number of significant changes for new families suggests the program is beneficial within the first year and is especially notable because the sample size of the new families group was smaller, which can limit the detection of significant gains.

Figure 10. PFS Parenting and Child Development Items



^ = items which were reverse coded

* = statistically significant, $p < .05$

PARENT KNOWLEDGE

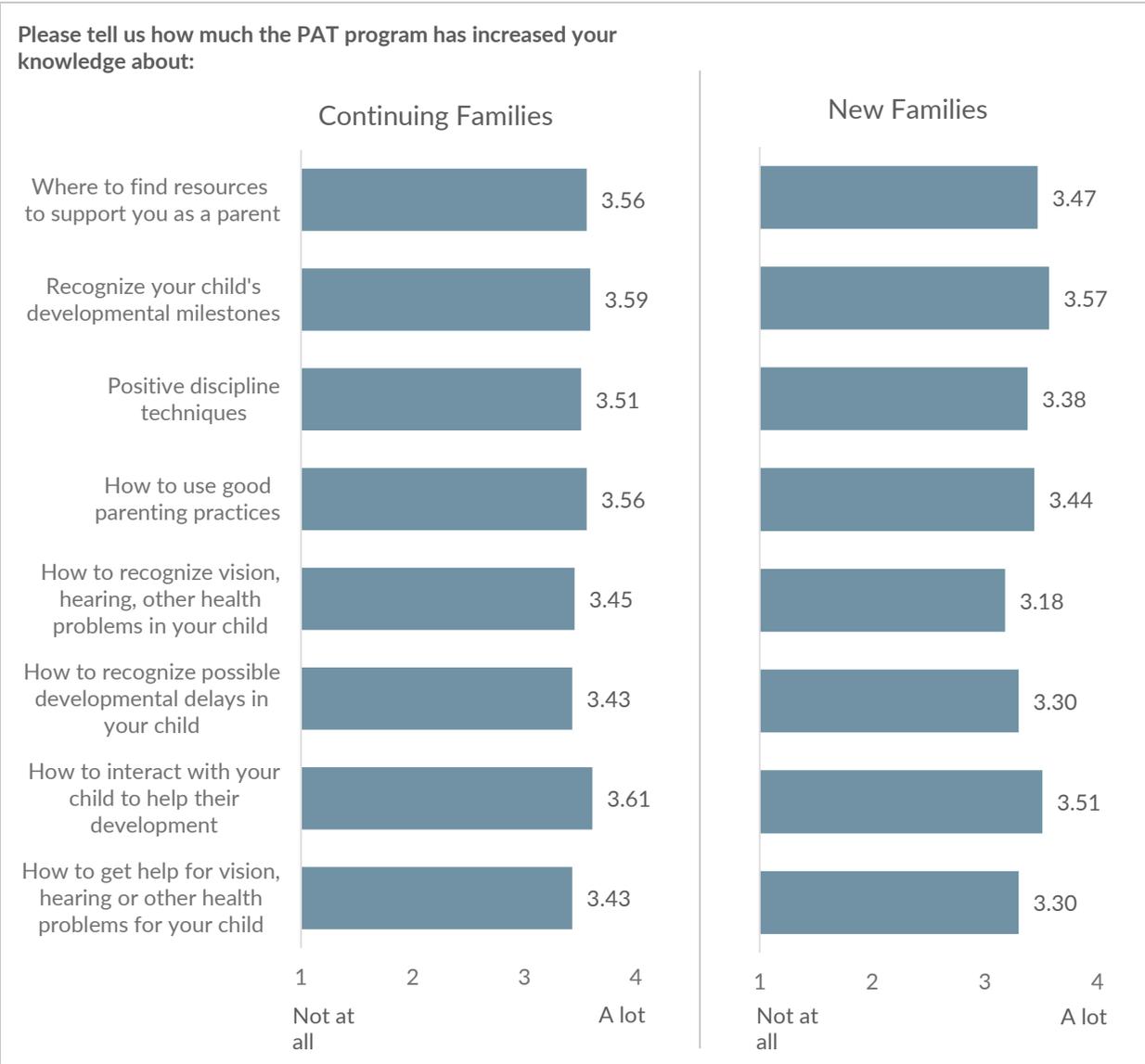
KNOWLEDGE OF PARENTING PRACTICES

For both continuing and new families, parents reported, on average, that the PAT program increased their knowledge of parenting practices between “quite a bit” and “a lot”.

Table 5. Knowledge of Parenting Practices - Scale Scores

KNOWLEDGE OF PARENTING PRACTICES	POST
CONTINUING FAMILIES	3.52
NEW FAMILIES	3.39

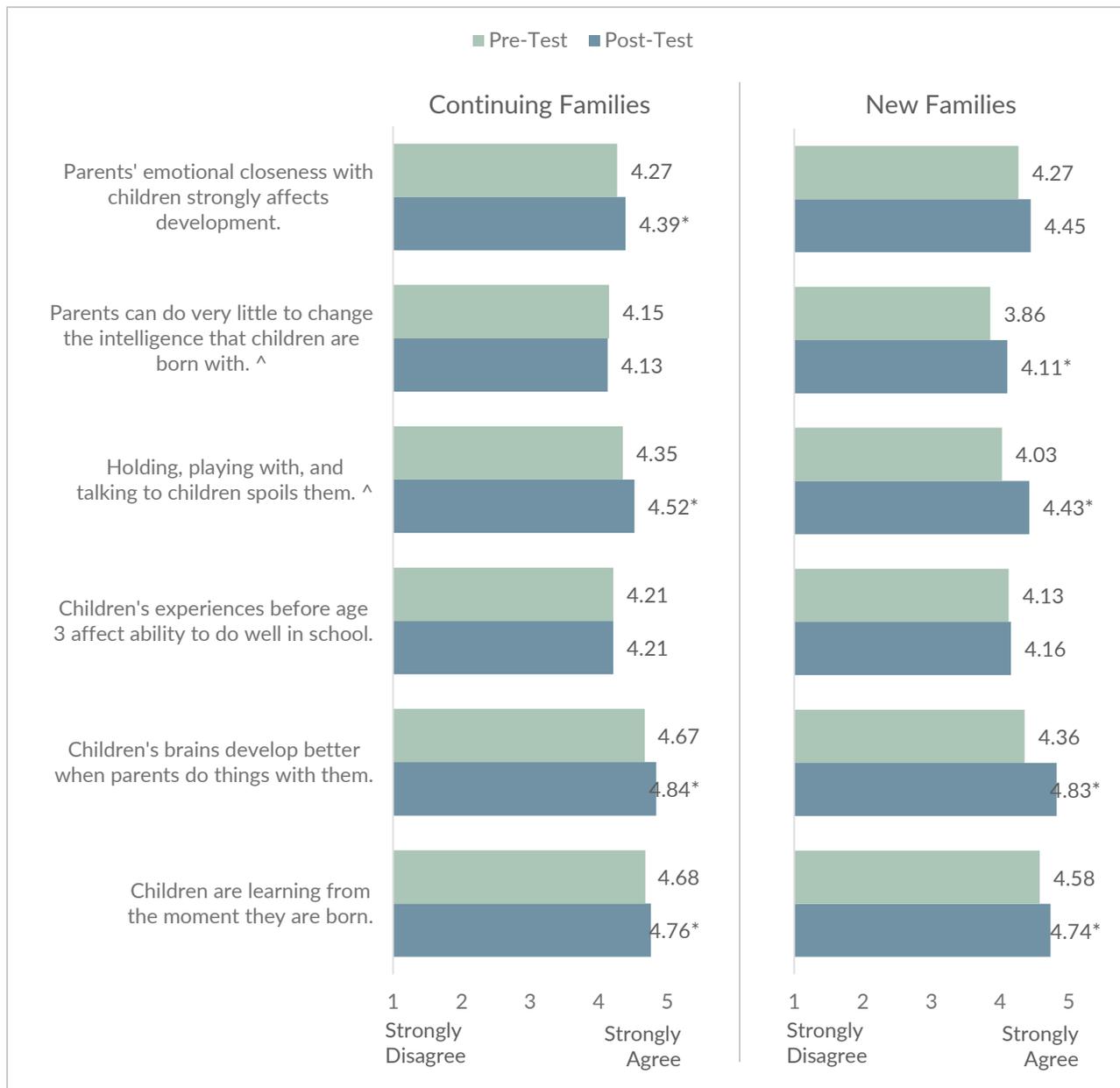
Figure 11. Increase in Knowledge of Parenting Practices



KNOWLEDGE OF CHILD DEVELOPMENT

For both continuing and new families, there were statistically significant changes from pre to post on four out of six child development knowledge items. Neither group showed significant change on the item “Children’s experiences before age three will affect their ability to do well in school.”

Figure 12. Knowledge of Child Development



^ = items that were reverse coded so that higher mean scores for all items reflect higher parent knowledge

* = statistically significant, $p < .05$

PARENT PRACTICES

FREQUENCY OF READING WITH CHILD

At pre and post, over one-third of parents in both the continuing and new family groups reported that they or someone else in their household read or look at books with their child every day.

There was a statistically significant change from pre to post in the frequency of reading with children for both continuing families ($Z = 2.48, p = .01$) and new families ($Z = 2.29, p = .02$).

Table 6. Reading with Child

FREQUENCY	CONTINUING FAMILIES		NEW FAMILIES	
	PRE	POST	PRE	POST
NEVER	1%	1%	0%	0%
LESS THAN ONCE A WEEK	4%	4%	7%	3%
1-2 DAYS PER WEEK	17%	13%	21%	17%
3-4 DAYS PER WEEK	25%	26%	23%	23%
5-6 DAYS PER WEEK	18%	19%	11%	19%
EVERY DAY	35%	37%	37%	39%

DESIGNATED TIME FOR READING

There was an increase from pre to post in the percentage of parents who indicated they have a designated time for reading with their child. This increase was statistically significant for both continuing families and new families ($p = .01$).

Table 7. Designated Time for Reading

PARENTS WHO INDICATED THEY HAVE A DESIGNATED TIME FOR READING	PRE	POST
CONTINUING FAMILIES*	69%	75%
NEW FAMILIES*	58%	70%

* = statistically significant, $p < .05$

LITERACY ACTIVITIES

The most frequently completed literacy activity for both continuing and new families was “sing songs”, followed by “talk to child about books you read together”.

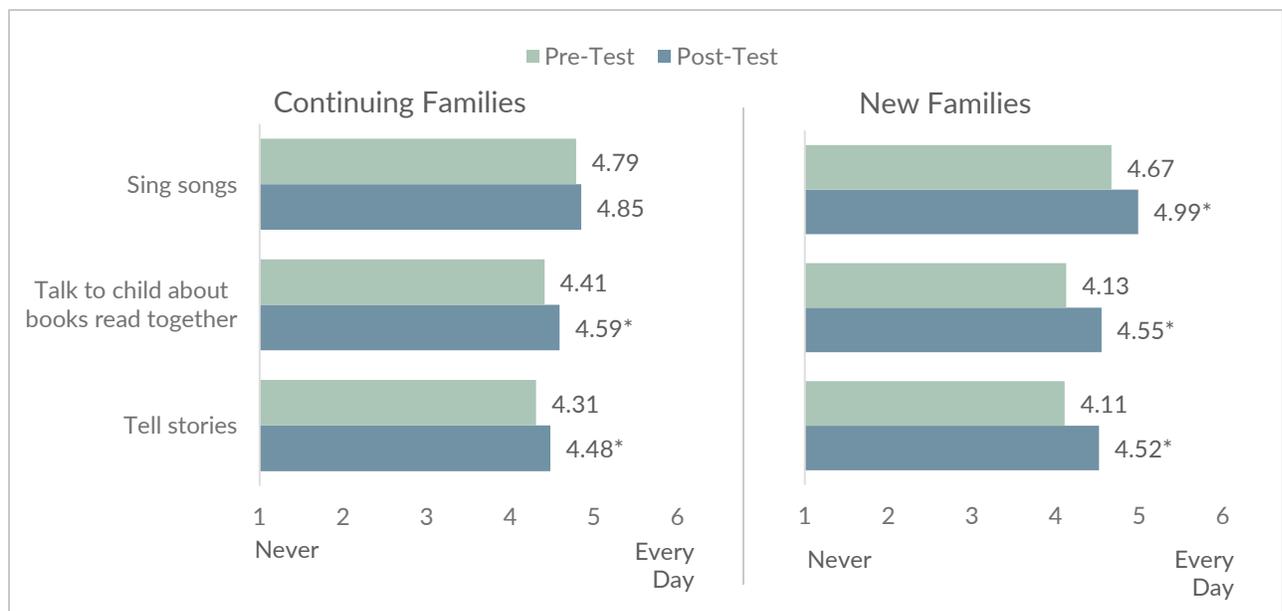
Continuing families reported significantly greater frequency at post than pre on five out of six literacy activities.

For new families, the frequency of literacy activities increased for the three activities asked of all parents; no significant changes were reported for activities asked only to parents of children 2 years and older. Even though there were fewer statistically significant changes for new families, there were notable increases in the means on five out of six literacy activities, and the smaller sample size of new families may have limited the significance testing findings.

Table 8. Literacy Activities - Scale Scores

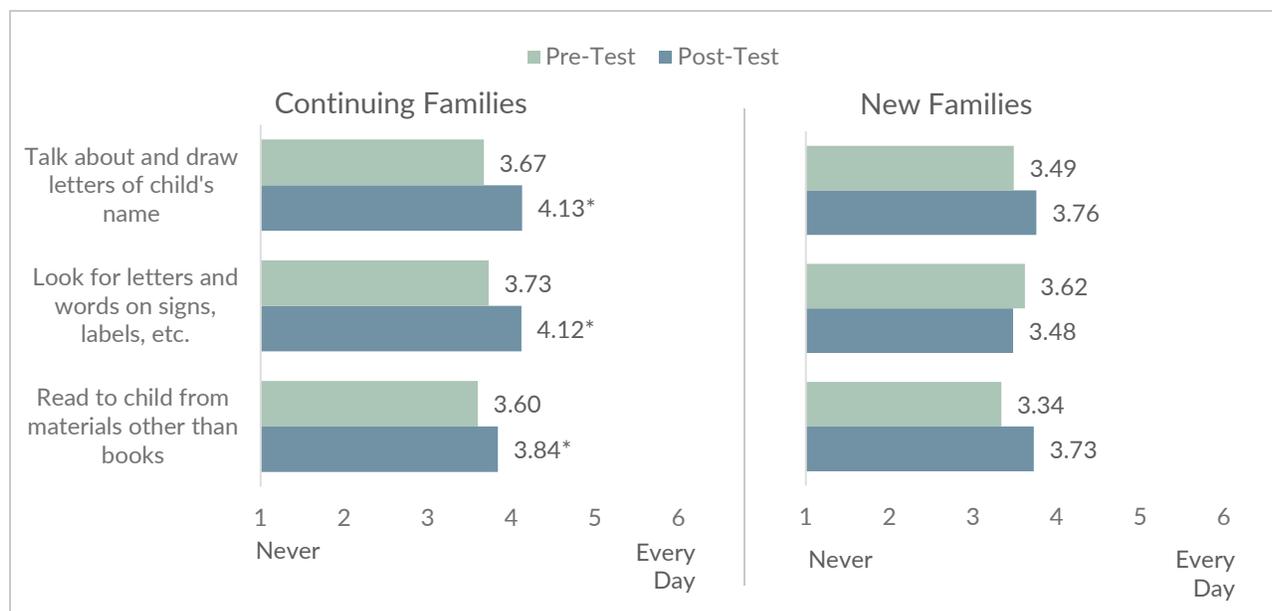
	# OF FAMILIES	PRE	POST
CHILDREN UNDER 2			
CONTINUING*	715	4.51	4.63
NEW*	145	4.29	4.69
CHILDREN 2 OR OLDER			
CONTINUING*	413	3.67	4.04
NEW	58	3.48	4.63

Figure 13. Literacy Activities - Children Under 2



* = statistically significant, $p < .05$

Figure 14. Literacy Activities – Children 2 Years and Older



INTERACTIVE READING BEHAVIORS

Parents whose oldest child in PAT is 2-years-old or older were asked how frequently they do nine different interactive reading behaviors with their child while reading.

For continuing families, the mean score on the interactive reading behaviors scale increased significantly from 3.85 to 4.04 ($t(419) = 5.31, p < .01$). There were significant increases from pre to post in the frequency of all behaviors except for “have your child identify objects in the pictures” and “let your child turn the pages as you read together”. The most frequently reported behavior at pre and post was “have your child identify objects in the pictures”.

For new families, the mean score on the interactive reading behaviors scale increased significantly from 3.37 at pre to 3.80 at post ($t(56) = 3.59, p < .01$). There were significant increases from pre to post in the frequency of all behaviors except for “have your child guess what will happen next” and “point out pictures that show what was told in the story”. The most frequently reported behavior at pre and post was the same as continuing families (“have your child identify objects in the pictures”).

Table 9. Interactive Reading Behaviors - Scale Scores

INTERACTIVE READING BEHAVIORS SCALE	PRE	POST
CONTINUING FAMILIES*	3.85	4.04
NEW FAMILIES*	3.37	3.80

* = statistically significant, $p < .05$

Figure 15. Interactive Reading Behaviors



* = statistically significant, $p < .05$

Parent-Child Interactions Assessment (PICCOLO)

Within 90 days of enrollment or the child turning 10-months-old, home visitors observed 1,598 parent-child dyads and completed a PICCOLO 'pre' observation; 1,051 also were observed approximately six months later and had a PICCOLO 'post' observation. There were 1,040 matched cases, resulting in a 65% match rate. In this section, we provide selected demographic information on all participating families (n=1,598), followed by results for families with matched data (continuing families n=928; new families n=112).

PICCOLO FAMILY DEMOGRAPHICS

CHILD AGE

At pre, children ranged in age from 8 months to 6 years, with a mean age of 2 years, 4 months (*SD* = 14.01 months).

PARENT RACE & ETHNICITY

Most parents were White (86%) and nearly two-thirds report being of Hispanic or Latino ethnicity (62%).

Figure 16. Parent Race

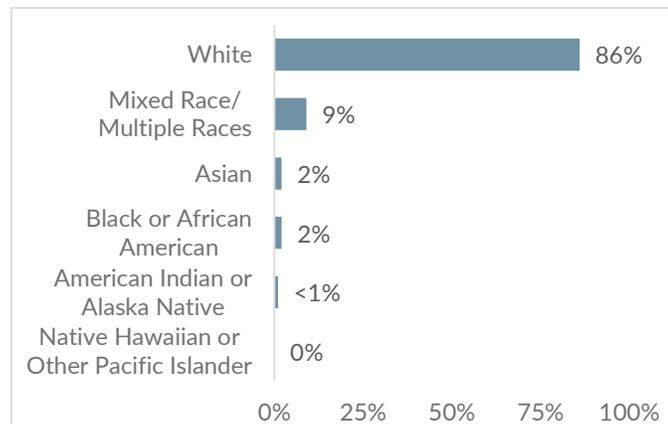
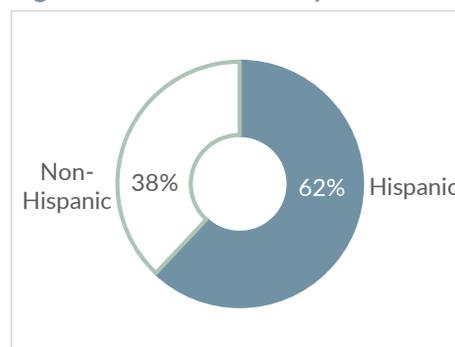


Figure 17. Parent Ethnicity



PICCOLO ASSESSMENT RESULTS

PICCOLO RESULTS FOR FAMILIES WITH MATCHED DATA

The proportion of continuing parents demonstrating average or above average developmentally appropriate behavior increased significantly from pre to post on the total PICCOLO score and for each of the four subscales ($p \leq .01$ for each). At post, at least 90% of continuing parents demonstrated average or above average behavior overall and on each subscale.

Figure 18: PICCOLO Proficiency Levels at Pre and Post



* = statistically significant, $p < .05$

At post, 95% of new parents demonstrated average or above average developmentally appropriate behavior overall. The proportion of new parents demonstrating average or above average behavior did not change significantly overall or for the affection, responsiveness, and teaching subscales. The magnitude and direction of the changes were similar to the changes for continuing families, but likely did not achieve statistical significance due to the smaller sample size for new families compared to continuing families.

The proportion demonstrating average or above average behavior did change significantly for the encouragement subscale, increasing from 86% at pre to 94% at post ($p = .04$).

Child School Readiness Assessment (Bracken)

Within 90 days of enrollment or the child turning 3-years-old, home visitors administered the Bracken ‘pre’ assessment with 700 children; 442 also were administered a second ‘post’ assessment approximately six months later. There were 422 matched cases, resulting in a 60% match rate. This section contains demographic information on all children who completed a pre assessment (n=700), followed by Bracken results for the matched data (continuing families n=378; new families n=44).

BRACKEN FAMILY DEMOGRAPHICS

AGE

Children from continuing families had a larger age range (35 to 83 months) than children from new families (35 to 71 months).

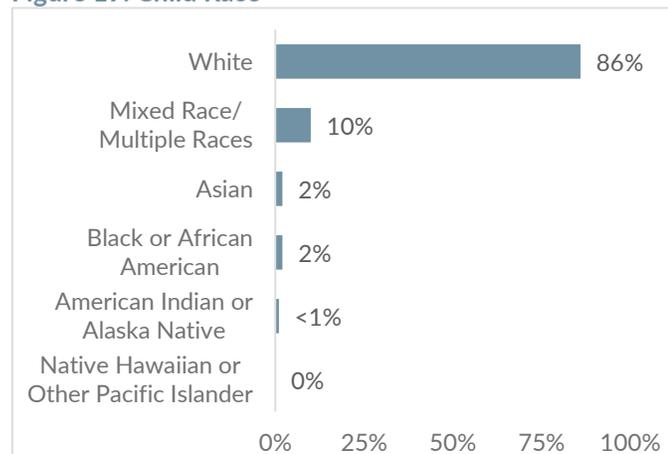
Table 10. Child Age at Bracken Pre Assessment

	MINIMUM AGE	MAXIMUM AGE	MEAN AGE (STAND. DEV.)
CONTINUING FAMILIES	35 MONTHS	83 MONTHS	45 MONTHS (8.8 MONTHS)
NEW FAMILIES	35 MONTHS	71 MONTHS	46 MONTHS (8.9 MONTHS)

RACE & ETHNICITY

Most children were White (86%) and over half report being of Hispanic or Latino ethnicity (57%).

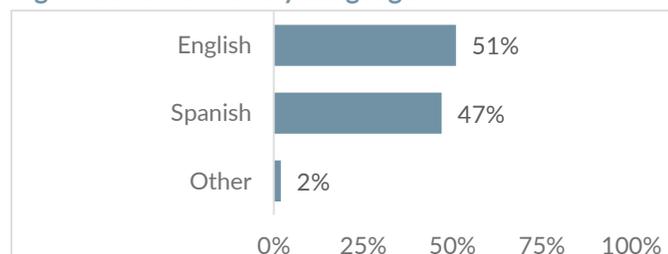
Figure 19. Child Race



LIVING SITUATION

The majority of children lived with at least one biological parent (97%) and 2% of children lived with a grandparent.

Figure 20. Child Primary Language



PRIMARY LANGUAGE

English was the primary language for more than half of children (51%), while Spanish was the primary language for 47%. Two percent of children had a different primary language.

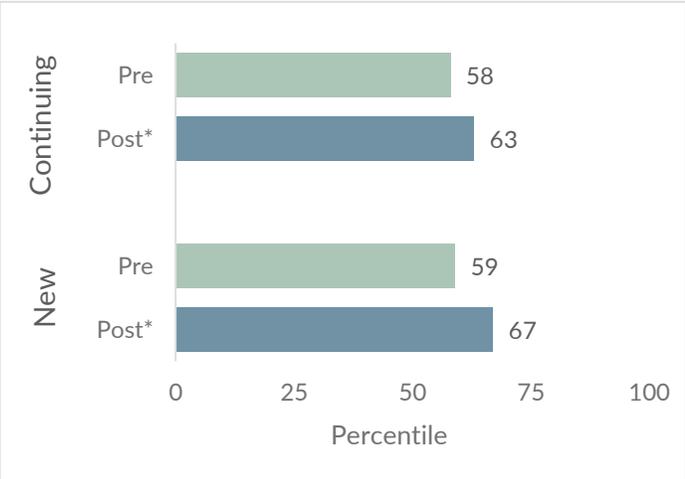
BRACKEN ASSESSMENT RESULTS

PERCENTILE RANK (CONTINUING FAMILIES N=193; NEW FAMILIES N=34)

Percentile ranks demonstrate school readiness skills compared to other children of the same age. Comparing a child’s ranking over time takes into account normal growth based on age. Percentile ranks are available for the 227 children who had valid matched data, completed the Bracken in English, and met the age requirements.

Both continuing children and new children significantly increased their school readiness percentile rank from pre to post (continuing children: $Z = 2.40, p = .016$; new children: $Z = 2.83, p = .005$). Because this measure takes into account skills based on child age, a significant increase indicates children increased their school readiness more than would be expected from typical maturation over this period.

Figure 21. School Readiness Percentile Rank



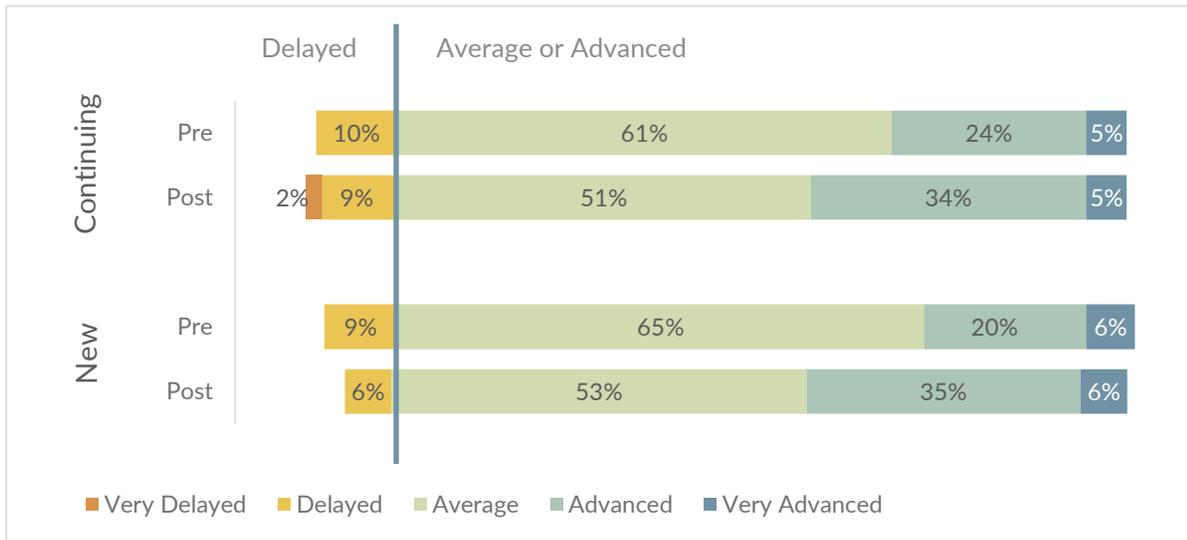
PROFICIENCY LEVELS (CONTINUING FAMILIES N=193; NEW FAMILIES N=34)

Proficiency levels are calculated based upon the raw scores and then adjusted for age to determine whether children are very delayed, delayed, average, advanced, or very advanced in their school readiness. Proficiency levels are available for 227 children who had valid matched data, completed the Bracken in English, and met the age requirements.

From pre to post, the proportion of children demonstrating at least average school readiness did not change significantly for continuing or new children.

* = statistically significant, $p < .05$

Figure 22. School Readiness Proficiency Levels



SUBTEST MASTERY

Children’s percent mastery was assessed for each subtest and tested for significant changes from pre to post.² Continuing children demonstrated significant increases in percent mastery in all five areas, with the largest percentage point increases in the areas of letters and numbers/counting.

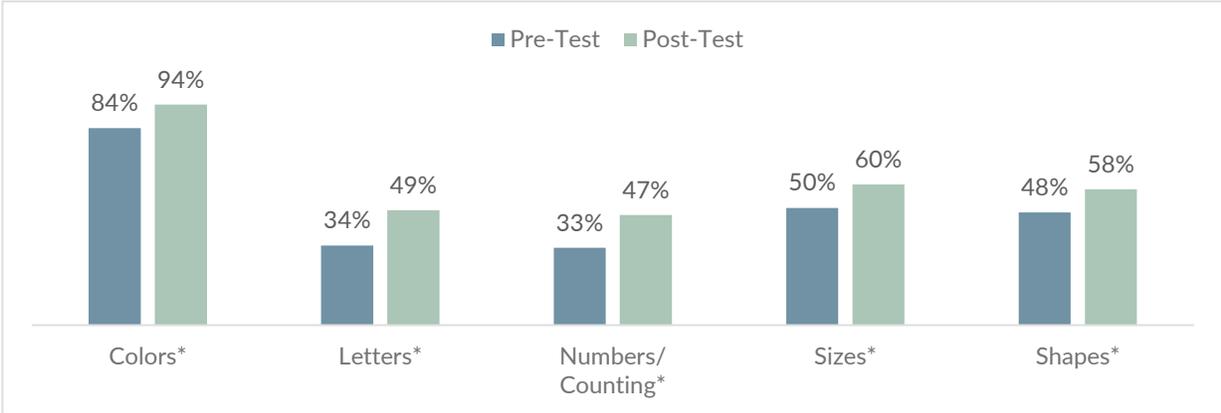
Table 11. Changes in Percent Mastery from Pre to Post (Continuing Families)

SUBTEST	CHANGE AMONG CONTINUING FAMILIES (N=378)
COLORS*	+10 percentage points (Z = 8.13, p < .01)
LETTERS*	+15 percentage points (Z = 12.05, p < .01)
NUMBERS/COUNTING*	+14 percentage points (Z = 11.29, p < .01)
SIZES*	+10 percentage points (Z = 10.35, p < .01)
SHAPES*	+10 percentage points (Z = 9.73, p < .01)

* = statistically significant, p < .05

² Statistical testing was done on the raw scores for each subtest that are used to calculate percent mastery.

Figure 23. Percent Mastery for Continuing Families

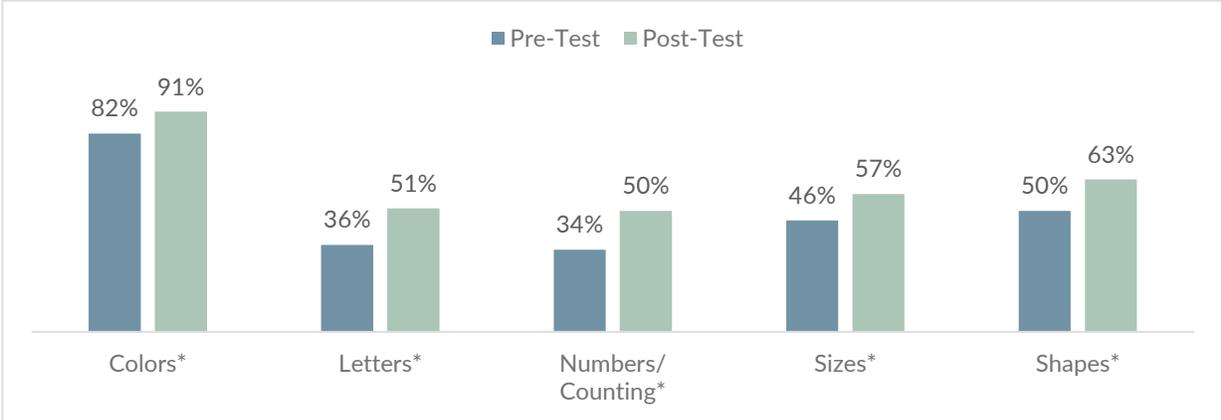


New children demonstrated significant increases in percent mastery in all five areas, with the largest percentage point increases in the areas of letters and numbers/counting.

Table 12. Changes in Percent Mastery from Pre to Post (New Families)

SUBTEST	CHANGE AMONG NEW FAMILIES (N=44)
COLORS*	+9 percentage points (Z = 3.60, p < .01)
LETTERS*	+15 percentage points (Z = 4.03, p < .01)
NUMBERS/COUNTING*	+16 percentage points (Z = 3.99, p < .01)
SIZES*	+11 percentage points (Z = 4.02, p < .01)
SHAPES*	+13 percentage points (Z = 4.66, p < .01)

Figure 24. Percent Mastery for New Families



* = statistically significant, p < .05

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Appendix A. Methods

This evaluation uses a robust set of tools to measure parenting practices, parent-child interactions, and children’s school readiness. This section includes a description of each tool, details regarding data collection processes, and the statistical analyses conducted for each assessment.

MEASURES & DATA COLLECTION

At most program sites, home visitors administered a parent survey, an assessment of parent-child interactions (PICCOLO), and a measure of children’s school readiness (Bracken). Each of these instruments is described in detail below.

PAT Parent Survey

The PAT parent survey is a 51-item measure that has three sections: The Protective Factors Survey; Parent Knowledge; and Parent Practices. A copy of the parent survey is available from Parent Possible upon request.

Parents complete the pre survey within 90 days of enrollment in PAT and then again each spring (March-April), as long as 90 days have elapsed since their first survey. Parents complete the survey in English or Spanish and respond based on their oldest child enrolled in PAT.

After completing the PAT parent survey on paper, parents return them to their home visitors. Unique ID numbers rather than names are used to match pre to post surveys and to ensure confidentiality. Each of the sites collected their paper surveys and provided them to Parent Possible for processing with Remark OMR software. The data were then provided electronically to OMNI Institute for analysis.

Some sites administer the Protective Factors Survey on the Colorado Family Support Assessment version 2.0 (CFSA-2.0) and report that data directly to Parent Possible. In such cases, an abbreviated version of the PAT parent survey without the Protective Factor Survey questions is administered. Parent survey data is subsequently matched with CFSA-2.0 data by Parent Possible for analysis.

PROTECTIVE FACTORS SURVEY (PFS)

The Protective Factors Survey is an evidence-based tool that measures protective factors in five areas: Family Functioning/Resiliency (5 items; 1-7 scale), Social Support (3 items; 1-7 scale), Concrete Support (3 items; 1-7 scale), Nurturing and Attachment (4 items; 1-7 scale), and knowledge of parenting/child development (5 items; 1-7 scale). Items in the first four areas are combined into scales and items assessing Knowledge of Parenting/Child Development are

analyzed at the individual level. For this sample, Cronbach's alpha for each of the scales were as follows: Family Functioning/Resiliency = 0.90, Social Support = 0.87, Concrete Support = 0.84, and Nurturing and Attachment = 0.72. The PFS was developed by the FRIENDS National Center for Community-Based Child Abuse Prevention and was analyzed following the guidance published by the FRIENDS National Center (FRIENDS National Center for Community-Based Child Abuse Prevention, nd).

PARENT KNOWLEDGE

The Parent Knowledge section includes two areas: Parenting Practices and Child Development. To assess increases in knowledge of parenting practices attributed to the PAT program, parents were asked to rate how much the PAT program increased their knowledge about several items on a scale from 1-4, with higher scores indicating a larger increase in knowledge. Example items include: how to use good parenting practices; positive discipline techniques; and where to find resources to support you as a parent. These items were not answered if the parent had been enrolled in PAT for less than 90 days (i.e., they are not answered during the 'pre' administration). The items were combined into a Knowledge of Parenting Practices scale (8 items in scale – 0.89 alpha coefficient).

To assess knowledge of child development, parents were asked to rate how much they agreed with six items on a scale from 1-5, with higher scores indicating more agreement. Example items include: children are learning from the moment they are born; and children's experiences before age three will affect their ability to do well in school. Two items were reverse coded so that higher mean scores for all items reflect higher parent knowledge. When the reliability of these items was tested, they showed low consistency in how respondents were answering related questions (6 items in scale – 0.58 alpha coefficient). Therefore, the data are reported for the individual items only; no scale scores were calculated or reported.

PARENT PRACTICES

The Parent Practices section includes data on how frequently families read with their child and whether families have a designated time for reading with their child. Two scales are also included in this section: Literacy Activities and Interactive Reading Behaviors.

To assess frequency of literacy activities, parents were asked to rate how frequently they participate in literacy activities with their children on a scale of 1-6, with higher scores indicating more frequent behaviors. Parents with children 2 years or older had additional literacy activity questions that covered activities appropriate for older children only. The items were combined into two scales: 1) literacy activities for children under 2 years old (e.g., sing songs, tell stories) (3 items in scale – 0.80 alpha coefficient); and 2) literacy activities for children 2 years old and older (e.g., talk about and draw the letters of your child's name) (3 items – 0.83 alpha coefficient).

To assess engagement in interactive reading behaviors, parents with children 2 years or older were asked to rate how often they performed a series of behaviors while reading with their child on a scale of 1-5, with higher scores indicating more frequent behavior (e.g., let your child turn the pages as you read together; point to the words as you read; and have your child identify objects in the pictures). Scores on these items were combined to create an Interactive Reading Behaviors scale (9 items in scale – 0.87 alpha coefficient).

MISSING DATA

Throughout the parent survey results section of the report, scale and item means are reported. For all scales in the Parent Knowledge and Parent Practices sections, scale means were calculated only when at least 75% of the scale items were completed. If a survey was missing more than 25% of the items in the scale, a scale score was not calculated and that survey was excluded from scale-level analyses.

Parent-Child Interactions Assessment (PICCOLO)

The PICCOLO (Parenting Interactions with Children: Checklist of Observations Linked to Outcomes) is a strengths-based measure of parenting interactions that has been found to predict children's early social, cognitive, and language development (Roggman et al., 2013). The tool is a checklist of 29 observable, developmentally supportive parenting behaviors for parents or guardians of children ages 10-47 months. For this evaluation, however, the tool was administered to children up to 6 years old.

Home visitors completed the PICCOLO within 90 days of enrollment in PAT or the child turning 10 months old, and then every six months thereafter for children 10 months or older. Prior to PICCOLO implementation statewide, home visitors were required to study the PICCOLO items and coding guidelines provided for each item, watch The PICCOLO Training DVD: Implementation and Scoring (Roggman et al., 2013), and practice scoring by watching video clips of parent-child interactions. Home visitors also completed a PICCOLO quiz and participated in a follow-up webinar training provided by Parent Possible.

To complete the assessment, home visitors observe caregivers while they engage in a 10-minute activity of their choice (e.g., shared reading, playing with toys, cleaning up) and record the frequency of 29 behaviors on a scale of 0 to 2 (0 = behavior not observed at all; 1 = behavior barely present; 2 = behavior clearly present). The parenting behaviors were combined to create four subscales, with higher scores indicating more developmentally supportive parenting. The four subscales are:

1. Affection (7 items in scale) – characterized by warmth, physical closeness, and positive expressions toward child

2. Responsiveness (7 items in scale) – characterized by responsiveness to child's cues, emotions, words, interests, and behaviors
3. Encouragement (7 items in scale) – characterized by active support of child exploration, effort, skills, initiative, curiosity, creativity, and play
4. Teaching (8 items in scale) – characterized by shared conversation and play, cognitive stimulation, explanations, and questions.

In addition to these subscales, each of the 29 item scores are added to create a Total PICCOLO Score.

Higher scores indicate more developmentally supportive parenting behaviors and should be interpreted as parent strengths. Lower scores may indicate that the parent and child are having difficulty interacting in ways that support the child's development and are associated with poor performance on measures of children's language, social, and cognitive development. This report includes proficiency cutoff scores (below average, average, and above average) designated by PICCOLO developers based on studies using the tool with diverse, low-income samples (Roggman et al., 2013).

More information about the PICCOLO assessment is available from the publisher's website: <http://www.brookespublishing.com/resource-center/screening-and-assessment/piccolo/>.

Child School Readiness Assessment (Bracken)

The Bracken School Readiness Assessment (BSRA-3) is a validated school readiness assessment that measures children's skills in five areas: Colors (color recognition), Letters (letter recognition), Numbers/Counting, Sizes (size comparisons), and Shapes (shape recognition) (Bracken, 2007). The BSRA-3 is appropriate for children aged 36- to 83-months-old, and is administered by asking children to point to pictures in response to examiner questions. The BSRA-3 is offered in both Spanish and English.

Home visitors administered the Bracken assessment to children within 90 days of enrollment in PAT or the child turning 3 years old, and every six months thereafter for children 3 years and older. Prior to Bracken implementation statewide, all home visitors were required to attend an all-day training hosted by Parent Possible to become familiar with the administration and scoring of the tool.

Raw scores from each subtest (i.e., the number of correct responses given by the child) are added together and then weighted based on the child's age to calculate a school readiness percentile rank score. The percentile rank score indicates how a child scores relative to other same-age peers. For example, if a child scores in the 30th percentile, he or she scored better than 30% of other same-aged children. The mean percentile ranks at pre and post are included in this report.

Proficiency levels at pre and post are also reported. These levels are based on chronological age and indicate whether a child is considered very delayed, delayed, average, advanced, or very advanced in school readiness for his or her age.

Finally, percent mastery scores are presented for children who completed Bracken pre and post assessments on each of the 5 subtests, and reflect the mean percentage of correct responses in that area. For example, an 80% in the Colors subtest indicates that, on average, children named 80% of the colors correctly. Percent mastery is not adjusted for age, and thus does not account for typical child development over time. However, since all analyses are conducted with a matched sample, subtest scores are an indicator of growth and learning in a specific area over the course of a year.

Because the standardization of scores used to calculate percentile rank and proficiency level is only available for the English version of the Bracken, children who completed the Bracken in Spanish are excluded from those analyses. Analysis of the percent mastery scores includes children who completed the Bracken in English and Spanish.

More information about the Bracken assessment is available from the publisher's website: <https://www.pearsonclinical.com/childhood/products/100000165/bracken-school-readiness-assessment-third-edition-bsra-3.html>.

STATISTICAL ANALYSES

For the PAT parent surveys, a matched pre-post case was considered valid if there were at least 90 days between the pre and post administration dates. Mean item and scale scores were calculated using valid matched data. All analyses for the PAT parent survey were conducted for two separate groups: 1) newly enrolled families who started on or after July 1, 2017; and 2) continuing families who started before July 1, 2017. For continuing families, the PAT parent surveys completed in spring 2017 were considered their pre surveys, and the completed surveys from spring 2018 were their posts. Depending on the nature of the dependent variable (ordinal, dichotomous, or interval), the pre and post scores were analyzed using Wilcoxon signed rank, McNemar's, or paired-samples t-tests to determine whether there were changes in parent responses over time.

For the PICCOLO assessment of parent-child interactions, a matched pre-post case was considered valid if there were at least 90 days between the pre and post administration dates. The distribution of scores falling into the below average, average, and above average categories are presented for the four subscales and the total PICCOLO scores at both pre and post. McNemar's tests were conducted to determine if the proportion of parents demonstrating average or above average developmentally appropriate parenting behaviors changed from pre to post.

For the Bracken percentile rank and proficiency level analyses, a matched pre-post case was considered valid if there were at least 90 days between the pre and post administration dates;

the Bracken was administered in English; and the child was at least 36 months old at the time of both administrations. The percentile rank scores were analyzed using the Wilcoxon signed rank test to determine if percentile ranks changed from pre to post. The proficiency levels were dichotomized into “Delayed” and “Average or Advanced” and analyzed using McNemar’s test to determine if there were changes in the proportion of children demonstrating average or advanced school readiness from pre to post. For the percent mastery analysis, a matched pre-post case was considered valid if there were at least 90 days between the pre and post administration dates. Changes in percent mastery from pre to post were analyzed by using the Wilcoxon signed rank test on the raw scores that are used to calculate percent mastery.

Appendix B. Results for all PAT Families

PARENT SURVEY DATA

Data in this section are for all families with a valid matched pre and post parent survey (n=912). Only valid responses are included; percentages shown may not sum to 100% due to rounding.

Protective Factors Survey Findings

Table 13. Protective Factor Survey Subscales

	PRE	POST
Family functioning/resiliency*	5.79	5.87
Concrete support*	5.46	5.66
Social support*	5.86	6.05
Nurturing and attachment	6.51	6.54

Table 14. PFS Parenting and Child Development Items

	PRE	POST
There are many times when I don't know what to do as a parent.^*	5.11	5.25
I know how to help my child learn.*	5.69	5.94
My child misbehaves just to upset me.^	5.93	5.92
I praise my child when he/she behaves well.	6.28	6.31
When I discipline my child, I lose control.^	6.13	6.15

^ = items which were reverse coded.

Parent Knowledge

Table 15. Knowledge of Parenting Practices (Post Only)

	POST
Knowledge of Parenting Practices Scale Score	3.49
Recognize your child's developmental milestones.	3.59
How to interact with your child to help their development	3.59
How to use good parenting practices	3.53
Where to find resources to support you as a parent	3.55
Positive discipline techniques	3.49
How to recognize possible developmental delays in your child	3.40
How to recognize vision, hearing or other health problems in your child	3.39
How to get help for vision, hearing or other health problems for your child	3.40

* = statistically significant, $p < .05$

Table 16. Knowledge of Child Development

	PRE	POST
Children are learning from the moment they are born.*	4.66	4.76
Parents' emotional closeness with their children can strongly affect their children's development.*	4.27	4.40
Children's experiences before age three will affect their ability to do well in school.	4.19	4.20
Children's brains develop better when parents do things like read to them, play with them, and hold them.*	4.61	4.84
Parents can do very little to change the intelligence that children are born with. ^	4.10	4.13
Holding, playing with, and talking to children spoils them. ^*	4.29	4.51

^ = items which were reverse coded

Parent Practices

Table 17. Frequency of Reading with Child*

FREQUENCY	PRE	POST
Never	1%	1%
Less than once a week	5%	4%
1-2 days per week	18%	14%
3-4 days per week	25%	26%
5-6 days per week	17%	19%
Everyday	35%	38%

Table 18. Designated Time for Reading*

	PRE	POST
Yes	67%	74%
No	33%	26%

Table 19. Literacy Activities

	PRE	POST
Literacy Activities (Under 2 Years Old) Scale Score*	4.47	4.64
Sing songs*	4.77	4.88
Tell stories*	4.28	4.48
Talk to child about books read together*	4.37	4.58
Literacy Activities (2 Years and Older) Scale Score*	3.65	3.99
Read to child from materials other than books ^*	3.57	3.83
Look for letters and words on signs, labels, etc. ^*	3.72	4.05
Talk about and draw letters of child's name ^*	3.65	4.08

^ = items only asked to parents with child age 2 years or older

* = statistically significant, $p < .05$

Table 20. Interactive Reading Behaviors

	PRE	POST
Interactive Reading Behaviors Scale Score*	3.79	4.01
Let your child turn the pages as you read together*	4.19	4.32
Point to the words as you read*	3.80	3.99
Point out letters*	3.57	3.88
Have your child identify objects in the pictures*	4.32	4.45
Point out pictures that show what was told in the story*	4.18	4.35
Explain what the story is about*	3.89	4.10
Have your child guess what will happen next in the story*	3.13	3.53
Encourage your child to repeat simple rhymes or phrases from the book*	3.64	3.82
Make the story personal by talking about your own family, pets or community*	3.38	3.65

PICCOLO

Table 21. PICCOLO Proficiency Levels at Pre and Post (n=1,040)

	PRE	POST
Total PICCOLO Score*		
Above Average	57.3%	61.4%
Average	32.7%	33.6%
Below Average	10.0%	5.0%
Affection*		
Above Average	61.0%	66.9%
Average	30.3%	28.1%
Below Average	8.8%	5.0%
Responsiveness*		
Above Average	43.2%	47.0%
Average	40.7%	42.5%
Below Average	16.1%	10.5%
Encouragement*		
Above Average	51.0%	55.6%
Average	38.3%	37.0%
Below Average	10.8%	7.4%
Teaching*		
Above Average	53.0%	60.1%
Average	38.5%	34.5%
Below Average	8.5%	5.4%

* = statistically significant, $p < .05$

BRACKEN

Table 22. School Readiness Percentile Rank (n=227)

	PRE	POST
Percentile Rank*	58.51	63.28

Table 23. School Readiness Proficiency Levels (n=227)

	PRE	POST
Very Advanced	4.8%	4.8%
Advanced	23.8%	33.9%
Average	61.7%	51.1%
Delayed	9.7%	8.8%
Very Delayed	0.0%	1.3%

Table 24. Percent Mastery (n=422)

SUBTEST	PRE	POST	CHANGE
Colors*	84%	93%	+9 percentage points (Z = 8.82, p < .01)
Letters*	34%	49%	+15 percentage points (Z = 12.73, p < .01)
Numbers/Counting*	33%	48%	+15 percentage points (Z = 11.96, p < .01)
Sizes*	50%	59%	+9 percentage points (Z = 11.09, p < .01)
Shapes*	49%	59%	+10 percentage points (Z = 10.68, p < .01)

* = statistically significant, p < .05