First Read Rwanda:

Children Aged 0-6 years

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1. Executive summary

In 2014-2015, Save the Children International Rwanda piloted First Read, a new programme focusing on developing emergent literacy skills in children aged 0-6, in three sectors of Rwanda's Ngororero district. This programme was piloted as part of Save the Children International Rwanda Country Programme's 'Advancing the Right to Read' Education Signature Programme. The First Read Signature approach aims to address the early literacy interventions service gap within the overall Early Childhood Care and Development (ECCD) framework in Rwanda.

First Read training sessions are given in two categories: one for families of children aged 0-3 years (First Read 0-3) and one for families of children aged 4-6 years (First Read 4-6). The First Read 0-3 program aims to increase children's holistic care and development in the first three years of life while the First Read 4-6 program is specifically tailored to help children acquire emergent literacy and numeracy skills as well as other school readiness skills. The First Read 0-3 program was given over a period of 16 weeks and parents met in groups of 20 families to receive participate in sessions on how to support their children's holistic development. First Read 0-3 sessions cover child development areas like cognitive and language development, socio-emotional, physical development and child protection. The First Read 4-6 program was given over a period of nine weeks and parents met in groups of 15 families to receive weekly trainings on how to support their children's learning at home. This report focuses on results from a baseline assessment of children in both the 0-3 and 4-6 First Read programs.

For the 0-3 First Read study, a random sample of 250 children was selected from four sectors in Ngororero, two intervention sectors (Muhororo and Hindiro) and two comparison sectors (Ndaro and Muhanda). Results of an impact evaluation that followed the same children over time found modest results related to First Read 0-3 programming and changes in parental and child outcomes. First, results found that 26 percent of intervention group parents reported that they had never attended a parenting session and 14 percent reported not receiving a home visit. Further investigation is needed to determine why some parents did not attend parenting sessions at all and also why some parents did not attend frequently but both factors influenced the overall effects of the program.

Looking at outcomes for families and children, the impact of the First Read 0-3 program varied depending on the outcome. For example, there were no significant differences in health activities related to First Read programming. However mothers in the intervention group reported significantly greater gains in learning and play activities with their children relative to mothers in the comparison group. Fathers in the intervention group showed significant gains in parent-child activities in three areas (read and show picture books and respond verbally to questions) but overall there were no differences between changes in comparison and intervention father-child activities. Measuring child development gains was difficult due to limitations of the tool used, but intervention children in the 24-month age group who received the same assessment at baseline and endline show significantly stronger gains than children in the comparison group.

For the 4-6 First Read program evaluation, a random sample of 300 children was selected from two intervention sectors (Muhororo and Ngororero) and two comparison sectors (Kageyo and Gatumba) in Ngororero district, and the results of the follow-up study highlight many important issues for

consideration in future ECCD programming. The First Read 4-6 parenting programming was found to have a significant positive effect on increases in the types of reading materials children had at home, as well as parents' attitudes about their role in children's learning and development. However, First Read 4-6 programming was found to have a less pronounced impact on changes in parents' behaviors with their children. The most impact was seen with mothers, but the increase in mother-child activities did not extend to fathers or other caregivers.

Looking at child outcomes, enrollment in an ECCD center program was found to have much stronger impact on children's learning than the First Read 4-6 parenting intervention. In addition, children enrolled in ECCD center programs were found to substantially better off economically as well as academically compared to children who were not enrolled in ECCD centers, suggesting that the neediest children are those whose families cannot afford preprimary school fees. In the future, First Read programming could consider specifically targeting these children in order to help fill early learning gaps for these children.

For children enrolled in an ECCD center, the primary drivers of learning were the variety of toys they had access to at home, socioeconomic status and gains in home learning activities. Children with a larger variety of toys at home, more family wealth and more home learning activities gained significantly more skills over the course of the school year than children with fewer of these resources. For children who were not enrolled in an ECCD center, the primary driver of learning gains paternal literacy. Children with fathers who were literacy gained significantly more skills over the course of the year than children with illiterate fathers.

2. Introduction

As part of Save the Children International Rwanda Country Programme's 'Advancing the Right to Read' Education Signature Programme, Save the Children piloted First Read, a new programme focusing on developing emergent literacy skills in children aged 0-6 in three sectors of Ngororero district in 2014-2015. The First Read Signature approach aims at addressing the early literacy interventions service gap within the overall Early Childhood Care and Development (ECCD) framework in Rwanda.

The aim of First Read is to support emergent literacy skills development for children aged 0-6 in the home and/or community. First Read recognizes the importance of a child's earliest experiences for his or her future learning. Core components of the approach are the development and sourcing of reading materials in local language (Kinyarwanda), book-gifting to families, and training of community parent trainers (practitioners) to support and families in home and/or community settings to help children aged 0-6 develop their emergent literacy skills.

Once trained, community parent trainers work with parents using local language and contextually-specific materials to encourage parental interaction – focusing on reading, talking, singing, sorting and counting with children aged 0-6. The aim of these activities is to develop children's emergent literacy skills, which provide the foundation for school readiness and future learning. First Read sessions are community-based, facilitating access to services for families who are not able to access ECCD centres or complementing services provided by ECCD centres where they do exist. A curriculum has been developed to enable volunteers or paid trainers/practitioners to support families in this way using locally available and inexpensive resources.

First Read training sessions are given in two categories, one for families of children aged 0-3 years and one for families of children aged 4-6 years. The First Read 0-3 program (FR 0-3) is aimed at increasing children's holistic care and development in the first three years of life while the First Read 4-6 (FR 4-6) program is specifically tailored to help children acquire emergent literacy and numeracy skills as well as school readiness.

In Rwanda, The First Read Programme is a strategic response to the goals expressed in Rwanda's Second Economic Development and Poverty Reduction Strategy (EDPRS 2), foundational and crosscutting issues, as well as the ECD national strategic plan and revised ECD Policy of 2014. The programme also directly addresses EFA (Education For All) Goal 1- "expanding and improving comprehensive early childhood care and education, especially for the most vulnerable and disadvantaged children." In addition, this programme is being implemented in partnership with a local community based organisation, Umuhuza.

This endline study aims to highlight the program effectiveness and impact by providing the gains in emergent literacy, numeracy, and school readiness skills of the children as well as the positive change in knowledge, attitudes and practices of parents/caregivers due to the implementation of FR 0-6 in Ngororero District.

The key research questions to be explored in this report include:

- Are there differences in gains made by in emergent learning and development for children in the intervention and control groups?
- Are there differences in gains made by in knowledge, attitudes, and behaviors for caregivers in the intervention and control groups?
- What are the drivers of gains in children's learning and development?

2.1 Context

The First Read Program is being piloted in the District of Ngororero, located in the Western Province of Rwanda. Ngororero is ranked the 9th poorest out of 30 districts, with 22.4% of its population classified as poor and 29.5% as extreme poor (NIS, 2012). In comparison to the national average, Ngororero's population has more difficult access to primary schools and ECCD centers; Ngororero is also the fifth lowest district in terms of literacy rates, at only 63.8% among the population aged 15 and above. This low-literacy context means that many parents feel ill-equipped to promote their children's cognitive development—making this an ideal context for First Read to support parents in ways to promote language development and emergent literacy and numeracy at home.

The choice to pilot this program in Ngororero district was based on Umuhuza's previous work experience in this district. Umuhuza worked in Ngororero district for 6 years implementing a parenting education program called 'Child I Care' for parents of children aged 0-3 years. Umuhuza's previous experience and good working relationships with the local authorities provided favorable conditions for the implementation of this pilot study.

The sectors of Muhororo, Hindiro and Ngororero were chosen because one is urban, Hindiro was chosen because it is rural but not very poor and Muhororo was chosen because it is rural and poor and also has a Vision 2020 Umurenge Program (VUP). VUP is a poverty eradication, rural growth and social protection initiative aimed at helping the poorest communities to come out of poverty.

Beneficiaries were identified by Umuhuza in collaboration with local authorities. All families with children in the required age bracket qualified for inclusion into the program but parents were required to commit to attending all sessions and be available at meeting times. Each meeting group was not allowed to exceed more than 15 and 20 families for First Read 4-6 and First Read 0-3 respectively for quality assurance purposes. In cases where there were more subscribers to the program, families were put on waiting lists.

3 First Read 0-3 Program Results

3.1 Implementation History

The First Read 0-3 Program was given over a period of 16 weeks. Parents met in groups of 20 families to receive weekly training sessions on how they can support their children's holistic care and development at home. Parenting sessions covered child development domains like cognitive and language development, physical development, socio-emotional development. The groups were facilitated by two practitioners. Parents were expected to come with their children so that they could benefit from free play

activities. Both parents were encouraged to attend sessions where possible. Parents received take-home cards with key messages on the session topic and suggested activities to do at home with the children to help support their holistic development. Parents also received at least 2 home visits from parent trainers/ practitioners over the course of the 16 week program.

Every parenting session site was furnished with both toys and age appropriate storybooks. Parents were encouraged to borrow books for reading at home at the end of every session. Both book and toy banks remain in the community for use after the end of the active parenting session meetings. At the end of the 16 week sessions parents devised an action plan on how they intended to keep meeting, sharing experiences, and organizing play group sessions for their children. Parents also put up a toy and book bank management committee to ensure that the materials are continually used and maintained.

3.2 Methods

3.2.1 Sampling

At baseline 439 households were sampled from five sectors (Ngororero, Ndaro and Muhanda in the comparison group and Muhororo and Hindiro in the intervention), with 213 children in the comparison group and 223 in the intervention group. As seen in Table 1, only 8 percent of the original families were missing at endline, and attrition was relatively even across age ranges and study groups. The most common reason for a family to be missing for the endline study was that they had moved. Due to the low and even rate of attrition rate, additional steps will not be taken to account for missing families in subsequent analyses.

Table 1. Endline sample distribution by group and age

	Baseline		Endline	
	Comparison	Intervention	Comparison	Intervention
0-6 months	61	55	0	0
7-12 months	60	67	36	31
13-24 months	93	98	102	99
25-36 months	2	3	63	66
Total	216	223	201	203

3.2.2 Measurement

A variety of questionnaires were used in this evaluation. Both mothers and fathers were asked a series of questions about their knowledge, attitudes, and behaviors related to nutrition and child development. In addition, the Child Emergent Literacy List (CELL) was used to measure development for children in this study.

3.2.3 Data collection

Twenty-four data collectors grouped in teams and two supervisors were used in the endline data collection exercise. Only data collectors on the Save the Children pre-qualified temporary enumerator list were qualified to participate in this data collection exercise. The data collectors participated in an

intensive three-day training workshop on the CELL (Child Emergent Literacy List) and Caregiver Questionnaire as well as Ethics of data collection and child safeguarding. Training on both CELL and Caregiver questionnaire was led by a MEAL Specialist. Data collectors were also given introductory session on how to relate with children during data collection to put children at ease as best as possible to collect most reliable data and highlights of Child development milestones from 0-3 years. Training sessions included also an explanation of assessment tools, practicing assessment strategies using role-play and piloting of the tools in the field. Piloting to the field was followed by debrief meeting session and adjustments to the tools. The whole exercise of data collection lasted five days.

3.2.4 Analysis

The main purpose of this analysis is to investigate gains in parent knowledge and behaviors related to the program being implemented, as well as growth in children's development. Summary statistics will be presented to display performance on each of the parent and child questionnaires, and gains will be shown where the same questionnaire was used in both the baseline and endline assessment.

To test the comparability of participants in the intervention and comparison samples, this report will use comparison of means through t-tests assuming unequal variance between the two samples and clustering within sectors. In addition, this report will look to multivariate regression models to explore relationships between early learning and development gains and parental knowledge, attitudes and home environments.

3.3 Program Results

This section details the parents and home environments in this study, including background characteristics, program participation, parent knowledge of positive parenting behaviors, parent attitudes about parenting, and parent behaviors with children.

3.3.1 Background characteristics

On average mothers in this study were about 30 years old and fathers were 34 years at endline. On average, parents reported that there were three children in their homes, half of whom were under the age of five. Mothers and fathers both reported that their primary occupation was farming and families made an average of about 13,000 Rwandan francs per month. In addition, the most common home possessions in both groups were a phone and then a radio, with almost no households owning a refrigerator, car, or motorcycle. **There were no significant differences between the background characteristics of comparison and intervention families at baseline or endline.**

Table 2. Endline parent characteristics

	Comparison (N=201)	Intervention (N=203)
Mother age	30	30
Father age	34	34
Mother occupation	Farmer	Farmer
Father occupation	Farmer	Farmer
Mother income (RWF)	10,137	9,303
Father income (RWF)	17,164	15,431
Number of children	3.2	2.9
Number of children under 5	1.5	1.4

Table 3. Proportion of families owning specified possessions

	Comparison (N=201)	Intervention (N=203)
Bike	3%	2%
Motorcycle	1%	0%
Car	0%	0%
Radio	43%	46%
Television	2%	2%
Refrigerator	0%	0%
Computer	0%	0%
Phone	56%	64%
Iron	0%	0%
Flat iron	3%	7%
Electricity	15%	13%

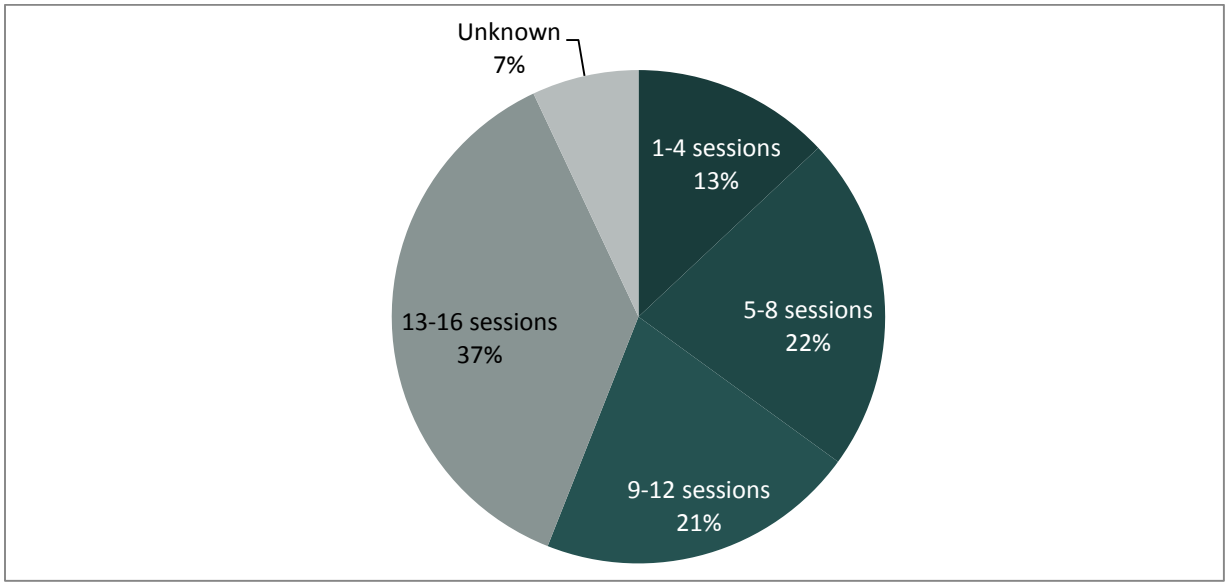
3.3.2 Attendance at program activities

Both comparison and intervention parents were asked about the frequency of their attendance at parenting sessions and receipt of home visits. Comparison parents reported low levels of session attendance or home visits suggesting that contamination was low. **Interestingly, 26 percent of intervention parents reported never having attended a parenting session, and 14 percent reported never having received a home visit. Also, among parents who did report attending sessions, there was a large range in the frequency with which parents attended. There is always the possibility for error with self-reported measures but one quarter of intended beneficiaries reporting not receiving services is a large enough proportion that it warrants further investigation into possible barriers to program attendance.**

Table 4. Attending at parenting sessions and receipt of home visits

	Comparison (N=201)	Intervention (N=203)
Ever attended a parenting session	3%	74%
Number of sessions attended	3	10.7
Ever received home visit	9%	86%
Number of home visits	2	2.4

Figure 1. Frequency of session attendance



Parents were also asked what they recall as the main topics and lessons from the parenting sessions. The most frequent topic reported was child development and the least was early numeracy. Looking at key messages, the most recognized were to give love and affection and to talk frequency to children. The least recognized messages were counting, sorting and matching and responding to children's needs.

Figure 2. Parent-reported session topics

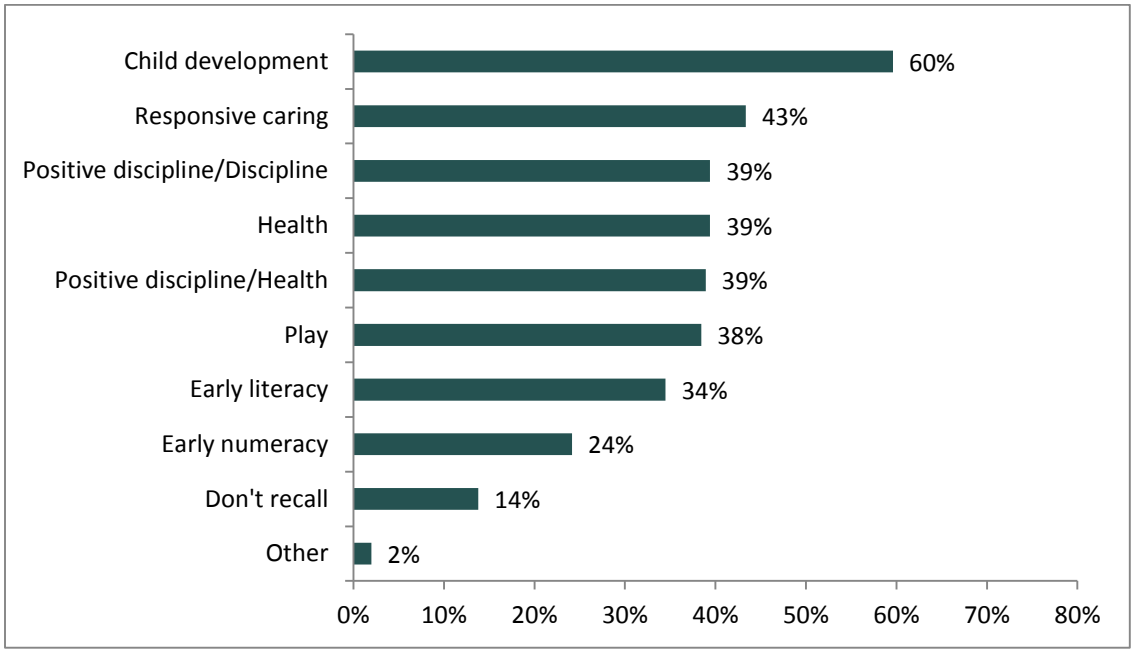
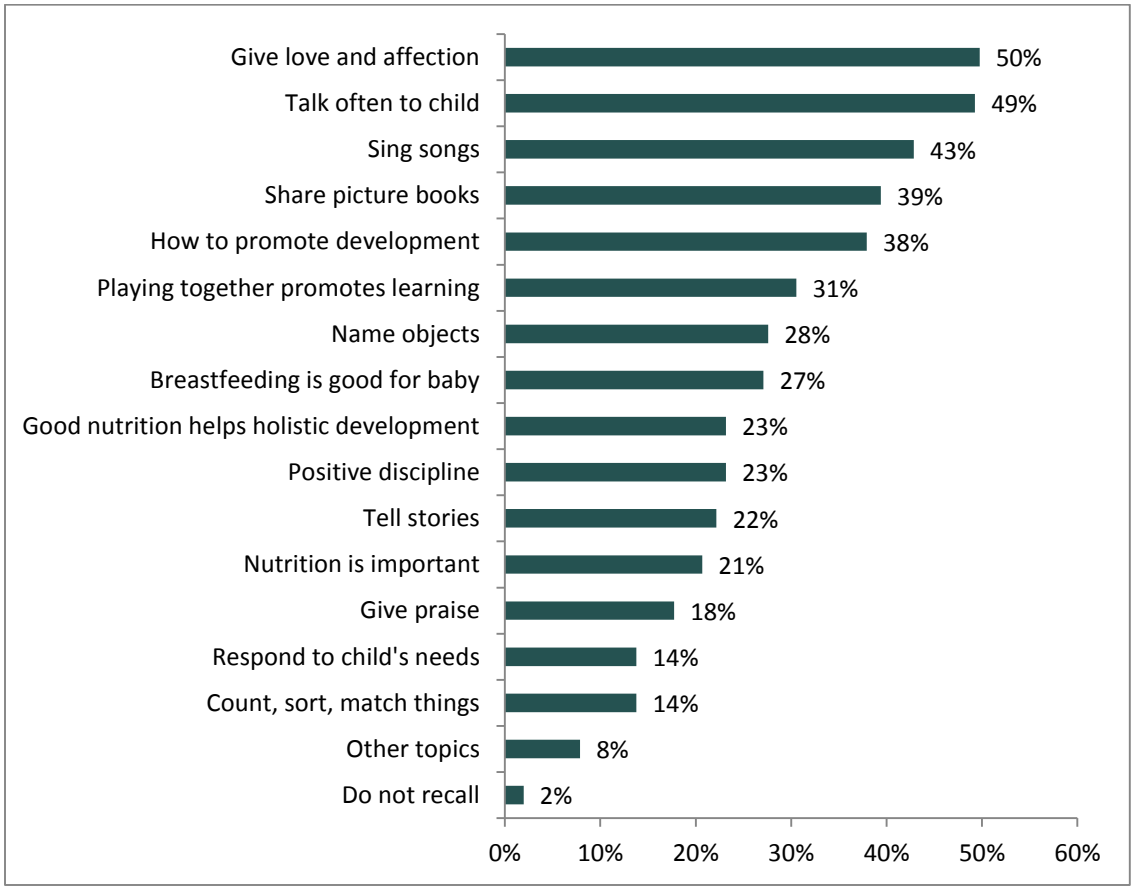


Figure 3. Parent-reported key messages from sessions



3.3.3 Parent health knowledge

This section describes where parents received health information and different types of health knowledge. When asking parents where they received health information, a variety of sources were named. Mothers most often reported hearing health advice from health workers, followed by the radio and then friends and family members. Looking at changes from baseline, parents in the intervention group were significantly more likely to report hearing health advice from NGOs and parenting sessions than parents in the comparison group, which could be related the First Read parenting sessions that covered health topics.

Table 5. Proportion of mothers reporting receiving advice on how to care for or feed young children from each source

	Baseline		Endline		Significant difference (Gain)
	Comparison	Intervention	Comparison	Intervention	
NGO	1%	0%	1%	41%	**
Parenting session	3%	1%	1%	37%	***
Radio	19%	17%	11%	15%	
Television	1%	1%	0%	0%	
Newspaper	1%	1%	1%	1%	
Poster/billboard	2%	6%	2%	8%	
Friends	11%	17%	9%	11%	
Family members	11%	14%	9%	16%	
Health workers	55%	70%	61%	76%	
Nutrition program	5%	4%	8%	14%	
Internet	0%	0%	0%	0%	
Other	0%	0%	2%	6%	

Note: *p < .05, **p<.01, ***p<.001

3.3.4 Child feeding practices

Mothers were asked about their feeding practices with young children. Almost all mothers reported that their child has received a vitamin A drop and that they were breastfed. Fewer mothers were breastfeeding at endline than at baseline and mothers reported given children more solid foods per day. This trend is to be expected given that their children were six months older at endline and breastfeeding should be becoming less common and solid food feeding more common. **There were no significant differences between feeding practices of mothers in the comparison and intervention group at baseline or endline.**

Table 6. Proportion of mothers engaging in child feeding practices

	Baseline		Endline		Significant difference (Gain)
	Comparison	Intervention	Comparison	Intervention	
Child received vitamin A drop	95%	95%	98%	99%	
Mother breastfed child at some point	98%	95%	98%	100%	
Mother is currently breastfeeding	95%	98%	78%	80%	
Number of times child was breastfed in past 24 hours	6.8	6.9	6.2	6.3	
Age (months) until which child was exclusively breastfed	5.8	6.0	5.8	5.8	
Number of times child is given solid food per day	1.9	2.1	2.8	3.1	

Note: *p < .05, **p<.01, ***p<.001

3.3.5 Hand washing

Mothers were asked to report on their handwashing behaviors. The most common time that mothers reported washing their hands was before eating, followed by after using the toilet. The least common times for handwashing are after cleaning the home and before cooking. When asked what material is typically used to wash hands, 80 percent of mothers report that soap is used in their homes. **On average, parents report more handwashing activities at endline, but there are no significant differences between the hand washing practices reported by comparison and intervention families at baseline or endline.**

Table 7. Percentage of mothers reporting hand washing at each time point

	Baseline		Endline		Significant difference (Gain)
	Comparison	Intervention	Comparison	Intervention	
Before eating	86%	87%	90%	89%	
Before cooking	28%	36%	41%	43%	
Before feeding child	35%	47%	66%	73%	
After toilet	50%	65%	54%	69%	
After cleaning child's bottom	43%	52%	43%	55%	
After eating	25%	31%	73%	60%	*
After cleaning home	19%	20%	30%	33%	
Other	7%	5%	11%	12%	
Total hand washing activities	3.1	3.2	4.1	4.3	

Note: *p < .05, **p<.01, ***p<.001

3.3.6 Parental influence on children

Parents were asked about how much influence they felt they had on different aspects of their child's life. Scores range from 0=No influence to 3=Very much influence. **Parents in the intervention group gained more in their perceived influence on their child's development relative to comparison parents, but the difference is not statistically significant.**

Table 8. Parents' perceived influence on children

	Baseline		Endline		Significant difference (Gain)
	Comparison	Intervention	Comparison	Intervention	
Learning	1.6	1.7	1.8	2.3	
Development	2.3	2.2	2.1	2.3	
Nutrition	2.2	2.2	2.1	2.3	
Child care	2.2	2.3	2.1	2.2	
Discipline or Child Guidance	1.8	1.9	2.1	2.3	
Health Care	2.3	2.4	2.2	2.4	
Total	12.3	12.6	12.5	13.8	

Note: *p < .05, **p<.01, ***p<.001

3.3.7 Parent-child interactions

Parents were also asked about how often then play and interact with their children. Questions about the frequency of interacting with their child were asked to both mothers and fathers and possible responses were: Not at all (0), Rarely (1), A few times per month (2), A few times per week (3), Once per day (4), More than once per day (5). At baseline, the most frequently reported activities were playing, hugging/kissing and soothing children, and the least frequently reported were reading picture books, showing picture books, and counting/sorting objects. **At endline, mothers in the intervention group reported significantly greater gains in 8 out of 18 learning and play activities than mothers in the comparison group and the overall level of mother-child interactions also differed significantly between the comparison and intervention groups. On average both groups of fathers reported more engagement with children at endline than at baseline, and for 3 out of 18 activities intervention fathers displayed significantly greater gains than comparison fathers. These results suggest that fathers are more likely to engage with their children as they get older but also that they are not benefitting from First Read parenting messages as much as mothers**.

Table 9. Frequency of mother-child interactions

	Baseline		Endline		Significant difference (Gain)
	Comparison	Intervention	Comparison	Intervention	
Play	3.8	4.1	4.3	4.6	
Sing	2.3	2.3	3.6	4.3	*
Read picture books	0.2	0.3	0.9	3.4	***
Tell stories	0.5	0.7	1.9	3.3	**
Play inside with toys	0.8	1.1	2.0	3.7	***
Take child outside to play	1.7	2.1	2.9	3.1	
Show picture books /magazines/newspaper	0.3	0.3	1.0	3.1	***
Take out to visit relatives/ places	2.1	2.2	2.7	2.9	
Teaching or showing the child something new	0.9	1.2	2.8	3.6	
Hug/Kiss or show physical affection	3.8	3.8	4.3	4.7	
Soothe when s/he is upset	3.4	3.1	4.4	4.8	*
Respond verbally to questions	2.7	2.4	3.5	4.1	**
Praise/Appreciate	2.2	2.5	3.8	4.5	
Name objects during routines	0.9	1.4	3.1	4.0	
Count or sort objects	0.3	0.3	1.7	2.7	**
Guide or give Positive Discipline	2.3	2.4	3.8	4.3	
Criticize/shout	2.0	2.2	3.4	3.5	
Threaten / Hit / Push / Spank	1.0	1.2	1.7	1.6	
Total Play & Care Activities	28.1	29.9	50.0	65.8	**

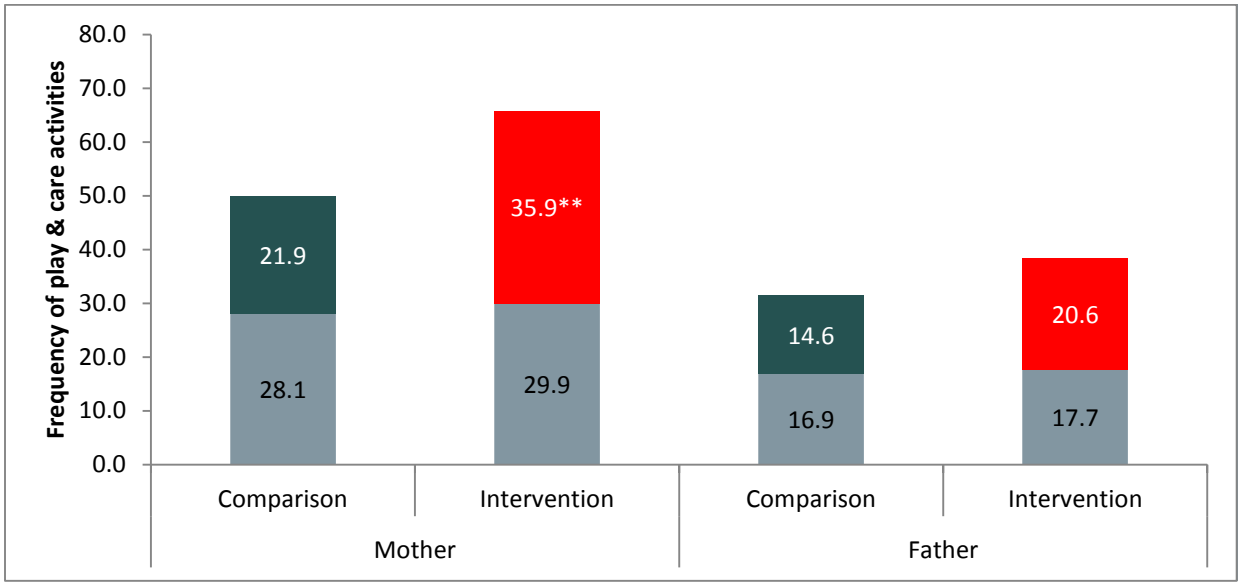
Note: *p < .05, **p<.01, ***p<.001

Table 10. Frequency of father-child interactions

	Baseline		Endline		Significant difference (Gain)
	Comparison	Intervention	Comparison	Intervention	
Play	2.4	2.6	2.8	2.9	
Sing	1.0	1.1	1.9	2.4	
Read picture books	0.2	0.3	0.9	1.8	*
Tell stories	0.3	0.4	1.3	1.8	
Play inside with toys	0.4	0.6	1.1	2.0	
Take child outside for a walk or to play in the yard or village	0.8	1.0	1.3	1.6	
Show picture books /magazines/newspaper	0.1	0.2	0.7	1.7	*
Take out to visit relatives/market places and others	1.0	1.1	1.2	1.5	
Teaching or showing the child something new	0.6	0.6	1.8	2.1	
Hug/Kiss or show physical affection	2.5	2.4	3.0	2.9	
Soothe when s/he is upset	2.3	2.0	2.9	2.9	
Respond verbally to questions	1.5	1.5	2.2	2.5	*
Praise/Appreciate	1.2	1.4	2.6	2.8	
Name objects during routines	0.7	0.8	2.0	2.4	
Count or sort objects	0.1	0.2	1.0	1.5	
Guide or give Positive Discipline	1.6	1.5	2.6	2.8	
Criticize/shout	1.1	1.3	2.1	2.0	
Threaten / Hit / Push / Spank	0.6	0.7	1.0	0.8	
Total Play & Care Activities	16.9	17.7	31.4	38.3	

Note: *p < .05, **p<.01, ***p<.001

Figure 4. Gains in mother and father-child interactions



Note: *p < .05, **p<.01, ***p<.001

3.4 Child outcomes

To measure children's development the Child Emergent Literacy List (CELL) was used. Three different versions of the tool targeting 6-months, 12-months, and 24-months were used to evaluate children's abilities at baseline and the 12-month, 24-month and 36-month tools were used at endline. Due to the fact that each questionnaire used different questions that the forms have not been equated it was not possible to measure development gains over time, except for within a small group of children who were given the same questionnaire twice. **Overall, no significant differences were found between the early development of children in the comparison and intervention groups in any age group at endline, except in the 36-month group where intervention children scored significantly higher than comparison children. In addition, intervention children in the 24-month age group who received the same assessment at baseline and endline show significantly stronger gains than children in the comparison group.**

Table 11. Average scores on 12-month CELL questionnaire

	Comparison (N=36)	Intervention (N=38)
Child listens to caregiver voice.	83%	76%
Child imitates caregiver babbling sounds.	58%	68%
Child take turns in imitating caregiver babbling sounds.	42%	42%
Baby listens to the caregiver talking.	36%	39%
Child responds by touching her or his nose.	6%	5%
Child points to mama or daddy.	19%	13%
Child repeats or babbles one word.	36%	29%
Child takes hands or cloth off of your face.	58%	63%
Child takes turns playing peek-a-boo.	25%	29%
Baby dances to the rhythm of the song.	44%	45%
Baby claps hands on her/his own.	44%	32%
Child attempts to repeat the rhyming words.	8%	16%
Total	38%	38%

Note: *p < .05, **p<.01, ***p<.001

Table 12. Average scores on 24-month CELL questionnaire

	Comparison (N=102)	Intervention (N=99)
Toddler joins singing with caregiver.	63%	64%
Toddler copies the caregiver actions.	65%	66%
Toddler repeats one rhyming word.	38%	42%
Toddler names objects with a single word.	23%	38%
Toddler names object with double words, with prompt.	10%	24%
Toddler names object with double words without prompts.	6%	10%
Toddler identifies and brings object to the caregiver.	36%	63%
Toddler names the object which she/he brought to caregiver with one word, with prompt.	22%	34%
Toddler names the object which she/he brought to caregiver without prompt.	10%	14%
Toddler identifies and brings requested item.	13%	19%
Toddler names item using one word (e.g. socks).	14%	13%
Toddler names item using two words (e.g. red socks)	6%	5%
Toddler names item using two words, without prompt.	2%	5%
Toddler points to the correct animal.	23%	41%
Toddler names animal, using one word.	19%	37%
Toddler points to the animal.	8%	16%
Toddler says elephant.	6%	13%
Toddler says 'big elephant' or 'small elephant' with prompt.	4%	9%
Toddler says 'big elephant' or 'small elephant' without prompt.	1%	3%
Toddler points to the animals.	8%	13%
Toddler counts 3 animals with you pointing.	5%	11%
Total	14%	21%

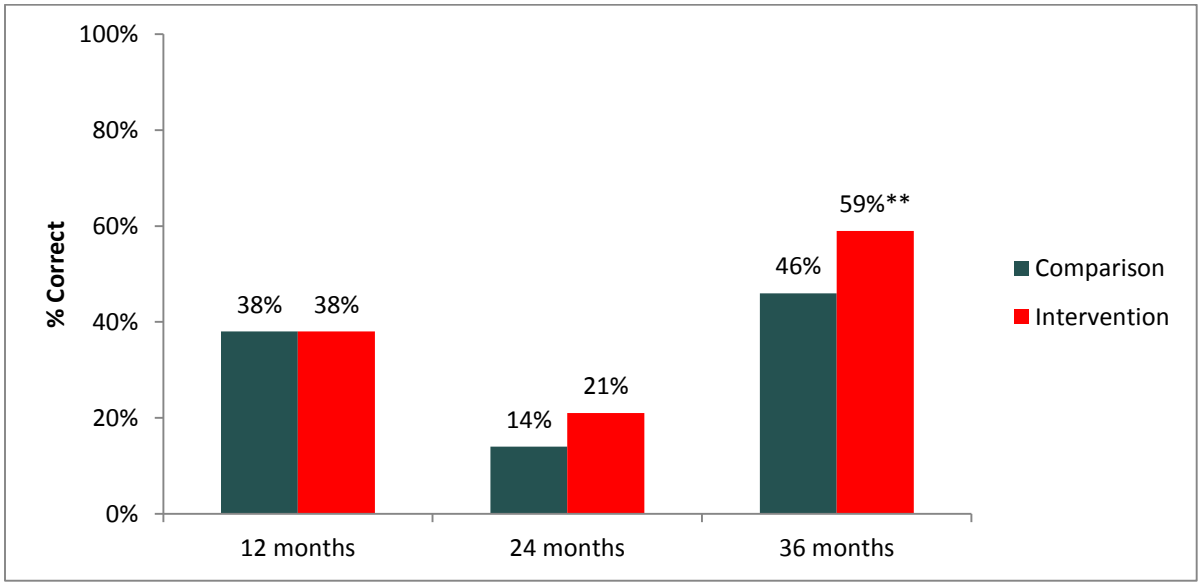
Note: *p < .05, **p<.01, ***p<.001

Table 13. Average scores on 36-month CELL questionnaire

	Comparison (N=63)	Intervention (N=66)
Child gives full name.	46%	58%
Child gives her or his age.	13%	27%
Child names at least six body parts.	37%	38%
Child puts book ON the table.	78%	94%
Child sits stand up.	90%	98%
Child looks for what is BEHIND the door.	86%	94%
Child closes the door AND brings you a towel.	79%	86%
Child brings both socks and shoes.	79%	80%
Child pretend feeds the doll.	46%	58%
Child sings the number song and touches fingers, one by one.	17%	32%
Child gives his/her caregiver a big stone and a small stone.	52%	65%
Child gives you a long stick and a short stick.	40%	62%
Child gives you a few seeds.	54%	68%
Child puts together big stones and small stones.	17%	48%
Child puts together long sticks and short sticks.	14%	41%
Child gives caregiver two small stones.	17%	39%
Child gives caregiver three big stones.	13%	20%
Child counts the stones that were given.	6%	12%
Total	46%	59%

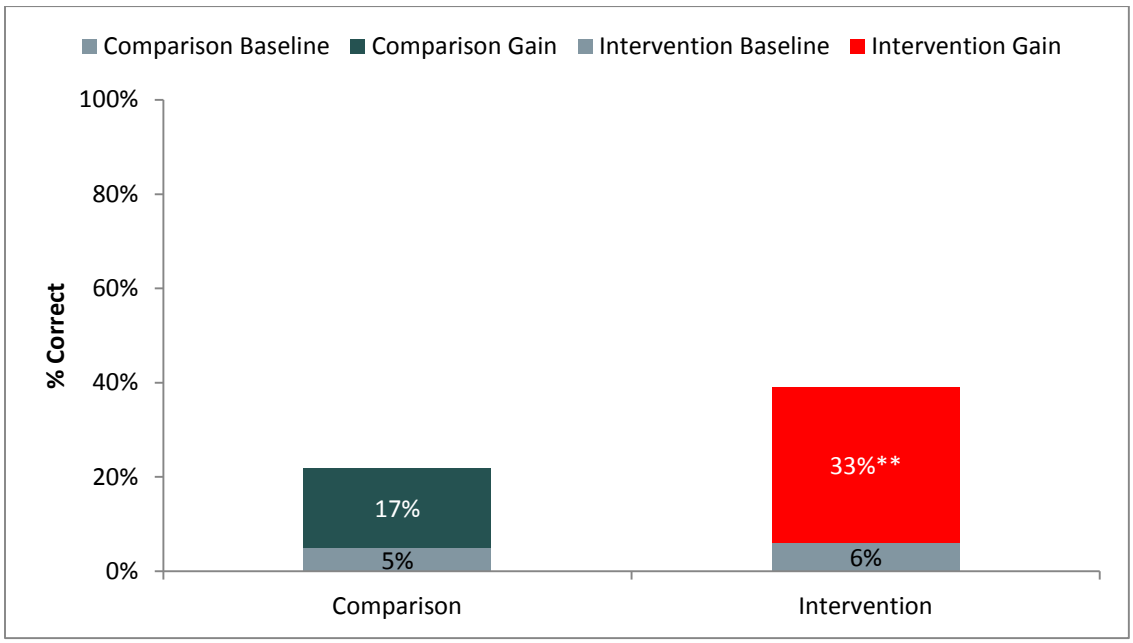
Note: *p < .05, **p<.01, ***p<.001

Figure 5. Average CELL questionnaire scores, all children



Note: *p < .05, **p<.01, ***p<.001

Figure 6. Average CELL questionnaire scores for children taking the 24-month questionnaire at baseline and endline



Note: *p < .05, **p<.01, ***p<.001

3.5 Equity results

Multivariate regression analyses were conducted to investigate connections between family characteristics and changes in child development that might help inform programming. First, analyses were undertaken to investigate whether child development outcomes differed in relation to caregivers' attendance at parenting sessions. **Multivariate regressions found no significant differences for 12-24 month old children, but 36 month olds children whose parents attended at least one session or who received a home visits did have significantly higher CELL scores than children whose parents did not attend sessions or receive a home visit. In addition, 36 month old children whose mothers engaged in more home learning activities at endline scores significantly higher than children experiencing fewer learning activities at home. There was no differential effect of father-child activities compared to mother-child activities.**

3.6 Limitations

There were a number of limitations to this study. First, the evaluation design was quasi-experimental and therefore it is not possible to make causal inferences about the impact of First Read programming on changes in caregiver behavior or children's learning and development. In addition, the CELL tool had not been tested in any other context and therefore it is not known whether it is an appropriate tool with which to measure child development. Finally, the small sample size of the study limits the ability to find significant differences between groups.

3.7 Conclusion

Overall, evaluation results find modest results related to First Read 0-3 programming and changes in parental and child outcomes. There are no significant differences in health activities related to First Read programming. However, the health practices of families was not found to be substantially lacking and changes in health practices are not the core focus of the First Read program. Therefore future studies may shorten or eliminate measurement of health-related outcome indicators and rather focus more on changes in children's home learning environments and child learning outcomes.

At endline, mothers in the intervention group reported significantly greater gains in 8 out of 18 learning and play activities than mothers in the comparison group and the overall level of mother-child interactions also differed significantly between the comparison and intervention groups. Fathers in the intervention group showed significant gains in parent-child activities in three areas but overall there were no differences between changes in comparison and intervention father-child activities. Measuring child development gains was difficult due to limitations of the CELL tool, but intervention children in the 24-month age group who received the same assessment at baseline and endline show significantly stronger gains than children in the comparison group.

The lack of significant differences found between comparison and intervention families could have occurred for number of reasons. Most substantially, 26 percent of parents reported never attending a session and 14 percent reported not receiving a home visit. Further investigation is needed to determine why some parents did not attend parenting sessions at all and also why some parents did not attend frequently. It could also be the case that the CELL tool, which has never been tested anywhere else, is not sensitive enough to child development outcomes to show change in these indicators. Finally, it is possible that the materials shared with parents were not easy for them to understand or perhaps monthly meetings were not enough to elicit enough behavior change to impact child development outcomes. Further research is needed to more conclusively evaluate the First Read 0-3 program.

4 First Read 4-6 Program Results

4.1 Implementation History

The First Read 4-6 parenting sessions were given over a period of nine weeks. Parents met in groups of 15 families with two practitioners to receive weekly training sessions on how they can support their children's learning at home to acquire emergent literacy and numeracy skills as well as other school readiness skills. Parents were expected to come with their children so that they could benefit from free play activities and both parents were encouraged to attend sessions where possible. Parents received take-home activity cards with three tailored and targeted activities to do at home with the children to help them acquire foundational skills in emergent literacy and math. Parents also received at least two home visits from parent trainers/practitioners over the course of the nine week program.

Every parenting session site was furnished with both toys and age appropriate storybooks. Parents were encouraged to borrow books for reading at home at the end of every session. Both book and toy banks remained in the community for use after the end of the active parenting session meetings. At the end of the nine week sessions parents devised an action plan on how they intended to keep meeting, sharing experiences, and organizing play group sessions for their children. Parents also put up a toy and book bank management committee to ensure that the materials are continually used and maintained.

4.2 Methods

4.2.1 Sampling

The suggested sample size was at least 280 households in total, 70 in each sector, and the final sample included 300 households with 75 per sector. There are two intervention sectors (Muhororo and Ngororero) and 2 control sectors (Gatumba and Kageyo). Of the two sectors in each group, one sector was VUP and the other is not. The control sectors of Kageyo and Gatumba were chosen because of their similarities with the treatment sectors of Ngororero and Muhororo. Kageyo is similar to Muhororo in terms of access to the road, socio-economic status and access to ECD services while Gatumba is similar to Ngorereroro sector. Random sampling was done in both intervention and control groups. In the intervention random sampling was done from already identified families slated to benefit from the program in late October 2014. In the control sectors, random sampling was done from the list provided by local authorities.

4.2.2. Attrition

Children who were sampled at baseline were the target sample for the endline data collection in order to be able to measure children's learning over time. **In total, nine percent of the baseline children were not able to be located at endline. There were no significant differences found between children who were located at endline and those who were missing related to important measureable characteristics like enrollment in the intervention, family socioeconomic factors, caregiver education, home learning activities, enrollment in ECCD or baseline IDELA scores. Due to the low and even attrition across groups, no additional variables were used to control for attrition bias in the analysis of child or caregiver changes over time.**

Table 14. Sample attrition in 4-6 year old sample

	Baseline	Endline	Missing	% Missing
Comparison	152	139	13	9%
First Read	148	135	13	9%
Total	300	274	26	9%

4.2.2 Measurement

The International Development and Early Learning Assessment (IDELA) tool was used for children and the revised IDELA Caregiver questionnaire was used for parents. The IDELA child assessment contains 22 questions in four domains: motor development, emergent literacy, emergent numeracy and socio-emotional development. It also contains two questions related to cognitive functioning (short-term memory and inhibitory control), as well as assessor-rated questions related to children's approaches to learning. The IDELA Caregiver questionnaire asks about parents' age and educational background, home learning environment for children (materials and activities), education aspirations for their child, parental attitudes about their role in child development, and family socio-economic status (using household possessions as proxies for familial wealth).

4.2.3 Data collection

Twenty-four data collectors grouped in teams and two supervisors were used in the exercise. Only data collectors on the Save the Children pre-qualified temporary enumerator list qualified to participate in this data collection exercise. The data collectors participated in an intensive three-day training workshop on the IDELA (The International Development and Early Learning Assessment) and Caregiver Questionnaire as well as Ethics of data collection and child safeguarding. Training on both IDELA and Caregiver questionnaire was led by a MEAL Specialist. Data collectors were also given introductory session on how to relate with children during data collection to put children at ease as best as possible to collect most reliable data. Training sessions included also practicing assessment strategies using role-play and piloting of the tools in the field. Piloting to the field was followed by debrief meeting session and adjustments to the tools. The whole exercise of data collection lasted six days.

4.2.4 Analysis

The primary purpose of this analysis was to investigate changes in caregiver's knowledge, attitudes and behaviors as well as changes children's early literacy and development related to the First Read program. Summary statistics will be used to analyze students' performance in each of the IDELA sub-tests, as well as learning materials and activities occurring in children's homes.

To test the comparability of learners in the intervention and comparison samples, this report used comparison of means through t-tests assuming unequal variance between the two samples. Summary statistics, accompanied by t-tests, were used to analyze learners' performance in each of the IDELA sub-tests. Finally, this report looked to multivariate regression models to explore relationships between early learning and development and background characteristics, home environment, and parent factors. **Due**

to significant differences found between intervention and comparison groups at baseline, these analyses focused only on significant differences in gains made between the two groups.

4.3 Program Results

4.3.1 Participation

Looking at caregiver participation in First Read 4-6 parenting sessions endline analyses found that 93 percent of parents in intervention communities reported having attended a parenting session. Fourteen percent of comparison parents reported having attended a session and very few people reported having attended more than one session which suggests very little contamination of the comparison group. **Among intervention parents, many reported participating in many more than the nine parent sessions that were offered by the First Read program. This could be because some of the same communities were engaged in the 0-3 First Read program and parents were reporting about participation in both parenting groups or could be due to continued community meetings that were established after the nine First Read sessions ended. This is especially interesting because as noted earlier in the report a substantial proportion of intervention parents in the 0-3 program reported never having attended a parenting session. Further investigation is needed to determine why there are differences in the participation in the two groups.**

Table 15. Participation in First Read sessions

	Comparison	Intervention
Ever attended a parenting session	14%	93%
Number of sessions attended	0.9	9.7

Table 16. Parent-reported session topics

	Average
Helping children learn	65%
Counting	40%
Talking and listening with children	55%
Sorting and classification	39%
Learning letters	49%
Learning shapes and sizes	47%
Knowing about books	41%
Planning for future activities	15%
Making a book	21%
Other	22%

4.3.2 Family characteristics

This section describes background characteristics about the families who were sampled and examined differences between comparison and intervention families. On average mothers were 33 years old and

fathers were 38 years old. In general, mothers and fathers had completed a primary level of education with 76 percent of mothers and 79 percent of fathers being literate. An average household had about 3.5 children, and the primary language at home was Kinyarwanda for all children in the sample. **At endline, about half of all children in both the intervention and comparison groups were enrolled in ECCD centers. This is likely due to the recent roll-out of more center-based ECCD programs in target communities. Government support ECCD centers are fee-based and therefore not accessible to all children.**

Table 17. Family characteristics, by group

	Comparison	Intervention	Significant difference (Gain)
Mother age	32.9	34.2	
Mother education (1=Preschool, 6=Master's level)	1.5	1.6	
Mother is literate	73%	79%	
Father age	38.6	38.7	
Father education (1=Preschool, 6=Master's level)	1.6	1.6	
Father is literate	82%	76%	
Number of child at home	3.4	3.7	
Child's primary language	Kinyarwanda	Kinyarwanda	
Child enrolled in preschool	50%	56%	

Note: *p < .05, **p<.01, ***p<.001

Looking at resources in homes, the endline data collection found that in general, televisions, refrigerators, and motorcycles were uncommon commodities for families to own, while bicycles, mobile phones, mattresses, land for crops and livestock were more common in the communities sampled. In addition, caregivers reported that average monthly income for their families was 23,131 Rwandan francs. The only significant difference between the possessions owned by families in the comparison and intervention groups was that intervention families reported owning more mattresses.

Table 18. Home possessions, by group

	Comparison	Intervention	Significant difference (Gain)
Bedroom	98%	99%	
Kitchen	57%	68%	
Living room	96%	96%	
Washroom	26%	22%	
Inside toilet	2%	3%	
Outside toilet	91%	93%	
# rooms	2.8	2.9	
Radio	38%	50%	
Television	7%	3%	
Refrigerator	0%	7%	

	Comparison	Intervention	Significant difference (Gain)
Bicycle	99%	94%	
Motorcycle	1%	2%	
Mobile phone	65%	64%	
Electricity	12%	16%	
Land for crops	85%	93%	
Mattress	57%	69%	*
Cow	43%	54%	
Livestock	55%	45%	
Total appliances	2.2	2.3	
Monthly family income (Rwf)	19608.6	26758.5	

Note: *p < .05, **p<.01, ***p<.001

4.3.3 Learning materials

This section describes learning materials found in children's homes**.** At baseline, children in the intervention group had significantly more storybooks, coloring books and overall types of reading materials than children in the comparison group. In addition, significantly more children in the intervention group had writing toys, toys that teach numbers and overall toy variety than children in the comparison group**.** These differences were likely due to previous parenting interventions in the intervention area: the 0-3 First Read intervention had already begun in Ngorororo when the baseline data was collected and Umuhuza had worked in the Ngororero sector area for six years prior to this program, training parents on holistic child care. Data support this hypothesis because 73 percent of parents in the intervention group report participating in either the FR 0-3 program or Umuhuza's previous program, whereas none of the comparison parents report participating in either program.

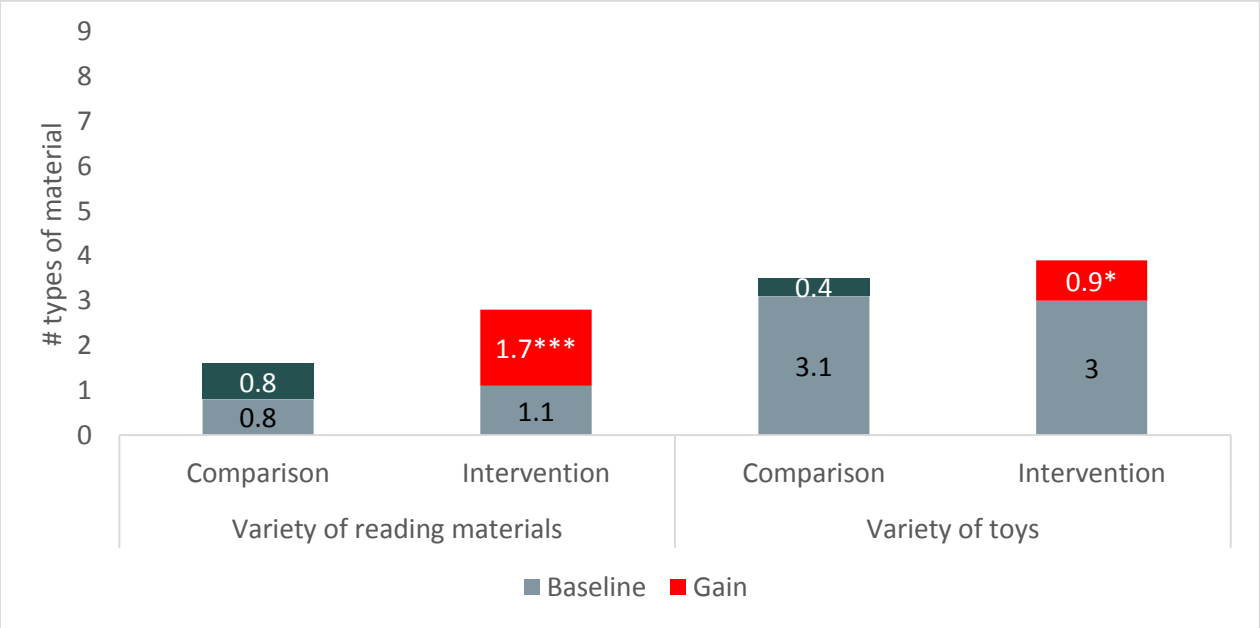
At endline, children in the intervention group still had more types of reading materials and toys than children in the comparison group. In addition, parents in the intervention group reported gaining more types of reading materials and toys compared to the parents in the comparison group.

Table 19. Home learning materials, by group

	Comparison		Intervention		Significant difference (Gain)
	Baseline	Endline	Baseline	Endline	
Storybooks	6%	14%	37%	93%	**
Total storybooks	2.4	1.8	2.9	3.6	
Textbooks	18%	28%	31%	40%	
Magazine	5%	4%	12%	16%	
Pamphlet	5%	2%	9%	27%	**
Religious book	41%	56%	56%	59%	
Coloring book	0%	1%	7%	19%	*
Comic	1%	3%	5%	23%	**
Total types reading material	0.8	1.1	1.6	2.8	***
Homemade toy	83%	64%	92%	74%	
Manufactured toy	39%	19%	34%	25%	
Household object	86%	87%	78%	80%	
Outside toys	NA	94%	NA	97%	
Writing material	5%	18%	23%	39%	
Puzzle	0%	2%	4%	11%	
Hand-eye coordination toys	1%	0%	3%	4%	
Problem solving	0%	2%	1%	3%	
Color/shape toys	1%	3%	5%	19%	**
Toys teaching numbers	1%	9%	10%	30%	*
Other toys	5%	3%	1%	7%	
Total types of toys	3.1	3.0	3.5	3.9	*

Note: *p < .05, **p<.01, ***p<.001

Figure 7. Variety of toys and reading materials at baseline and endline



Note: *p < .05, **p<.01, ***p<.001

4.3.4 Learning behaviors

This section describes activities that parents reported engaging in with their children at home. Baseline analyses found that parents in the intervention group reported reading to their children, telling stories and teaching the alphabet more than parents in the comparison group. However, no significant differences in the overall amount of learning or playing activities at home existed between parents in the comparison and intervention groups. These initial differences between groups could have been due to previous parenting interventions in the intervention area.

At endline, parents in the intervention group reported significantly increasing the frequency with which they name new things, teach numbers and yell at their children compared to parents in the comparison group. Overall there were no significant differences in gains in parent-child activities made by caregivers from the intervention group compared to those in the comparison group. However, looking at mothers' activities only, mothers in the intervention group reported significantly increasing activities with their children compared to mothers in the comparison group. This suggests that similar to the 0-3 results mothers are gaining more from First Read parenting sessions than fathers.

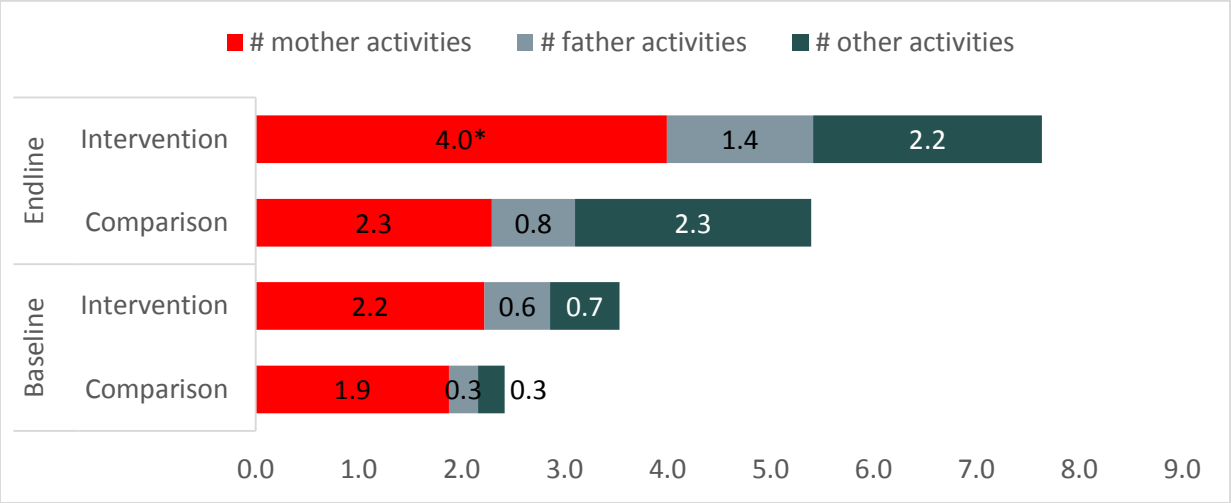
Table 20. Home learning activities, by group

	Comparison		Intervention		Significant difference (Gain)
	Baseline	Endline	Baseline	Endline	
Read books	13%	42%	43%	67%	
Tell stories	18%	47%	45%	65%	
Sing	32%	63%	46%	80%	
Take outside	47%	64%	51%	73%	
Play	34%	78%	42%	82%	
Name things/draw	22%	31%	16%	60%	***
Teach new things	27%	48%	30%	67%	
Teach alphabet	7%	35%	19%	54%	
Teach numbers	26%	43%	38%	73%	*
Hug	68%	84%	69%	95%	
Spank	61%	68%	51%	62%	
Hit	43%	59%	35%	54%	
Yell	64%	69%	41%	67%	*
Total learning/play activities	2.3	4.5	3.3	6.2	
Total learning/play mother activities	1.9	2.3	2.2	4.0	*
Total learning/play father activities	0.3	0.8	0.6	1.4	
Total learning/play other family activities	0.3	2.3	0.7	2.2	

Note: *p < .05, **p<.01, ***p<.001

Data collectors asked parents who in the home was engaging in these activities with children in that past week: mothers, fathers, or other caregivers. Mothers were reported to be the primary person interacting with children at baseline and endline.

Figure 8. Family member-child activities, baseline and endline



Note: *p < .05, **p<.01, ***p<.001

4.3.5 Parenting attitudes

This section reviews parent attitudes towards their role in their children's development. Parents were asked to rate how they feel about each of these statements: Strongly disagree (1), Disagree (2), Agree (3), Strongly agree (4). As Table 21 shows, parents in the intervention group reported telling their children stories and reading stories with them significantly more than parents in the comparison group. These differences are in line with the learning material and parent engagement differences seen in previous tables and may also be attributable to the 0-3 First Read intervention beginning in this community in 2014 and previous Umuhuza programming in intervention communities. A**t endline, parents in the intervention group report significantly more positive attitudes gains towards parenting than parents in the comparison group.**

Table 21. Parent attitudes, by group

	Baseline		Endline		Significant difference (Gain)
	Comparison	Intervention	Comparison	Intervention	
I play crucial role in development of my child	3.4	3.5	3.3	3.4	
It is important to take good child care	3.6	3.6	3.5	3.7	**
Important to enough time for child	3.4	3.4	3.3	3.3	
knowing to read and write is important for child	3.5	3.6	3.5	3.7	**
I will encourage child to complete secondary school	3.5	3.5	3.6	3.6	
think I can teach school readiness at home	3.2	3.3	3.3	3.5	*
I think my child learns skills by playing	3.3	3.3	3.2	3.4	*
I spend time with child naming things while cooking, etc.	3.2	3.3	3.1	3.4	**
I talk to child while doing household work	3.2	3.4	3.2	3.4	*
I tell stories to child at least 3 times weekly	2.7	3.0*	2.7	3.2	**
I read stories or show picture books to child at least 2 times weekly	2.4	2.6*	2.6	3.1	***
I praise my child whenever s/he does something impressive	3.6	3.5	3.4	3.6	**
Total score	38.9	40.0	38.6	41.3	**

Note: *p < .05, **p<.01, ***p<.001

4.4 Children's learning and development

This section will detail children's performance in the direct child assessment, IDELA, with a focus on learning gains made by comparison and intervention children between the baseline and endline assessments (November 2014 – November 2015). Significant differences between gains made by comparison and intervention children are shown in the intervention column using the star notation displayed under the tables.

4.4.1 Motor development

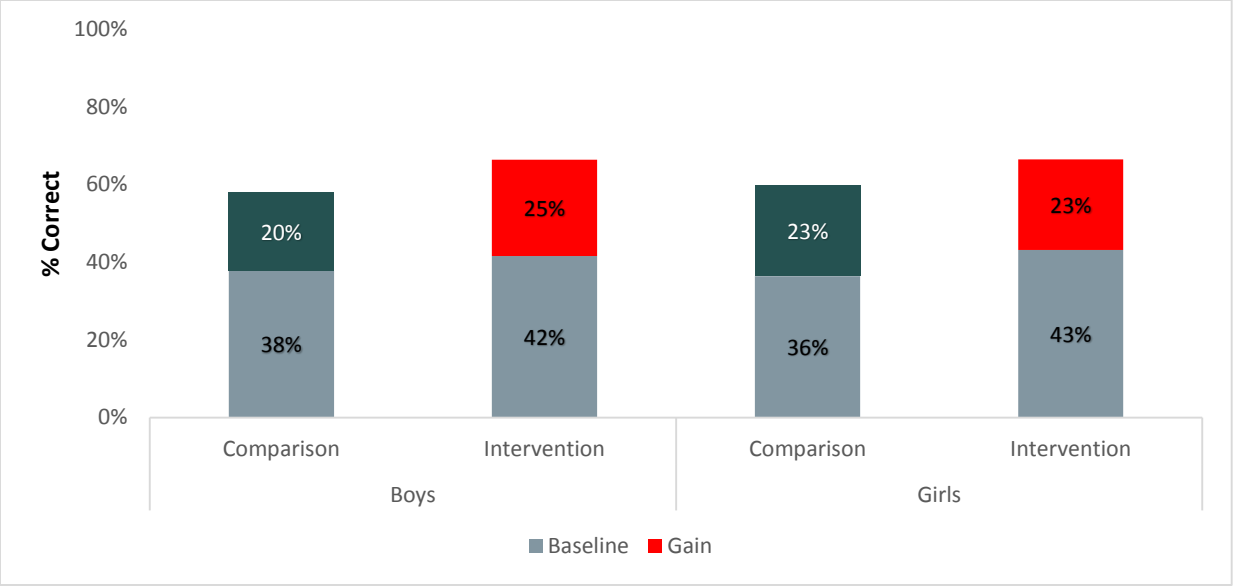
Table 22 displays average motor development skills for children in the comparison and intervention groups at baseline and endline. Children in the intervention group had significantly stronger motor skills than children in the comparison group at baseline and endline, most notably around copying a simple shape (baseline) and drawing a human figure (endline), but **there were no significant differences between gains made by comparison and intervention children over the course of the year. Also, there were no significant differences between gains made by boys and girls in either group.**

Table 22. Motor development, by group

	Baseline		Endline		Gain	
	Comparison	Intervention	Comparison	Intervention	Comparison	Intervention
Hopping	88%	86%	97%	96%	9%	9%
Drawing human figure	22%	29%	54%	69%*	33%	40%
Folding paper	27%	30%	34%	40%	8%	10%
Copying a shape	10%	24%*	48%	59%	38%	35%
Total Motor Development	37%	42%	58%	66%	22%	24%

Note: *p < .05, **p<.01, ***p<.001

Figure 9. IDELA Motor Development



4.4.2 Emergent Literacy

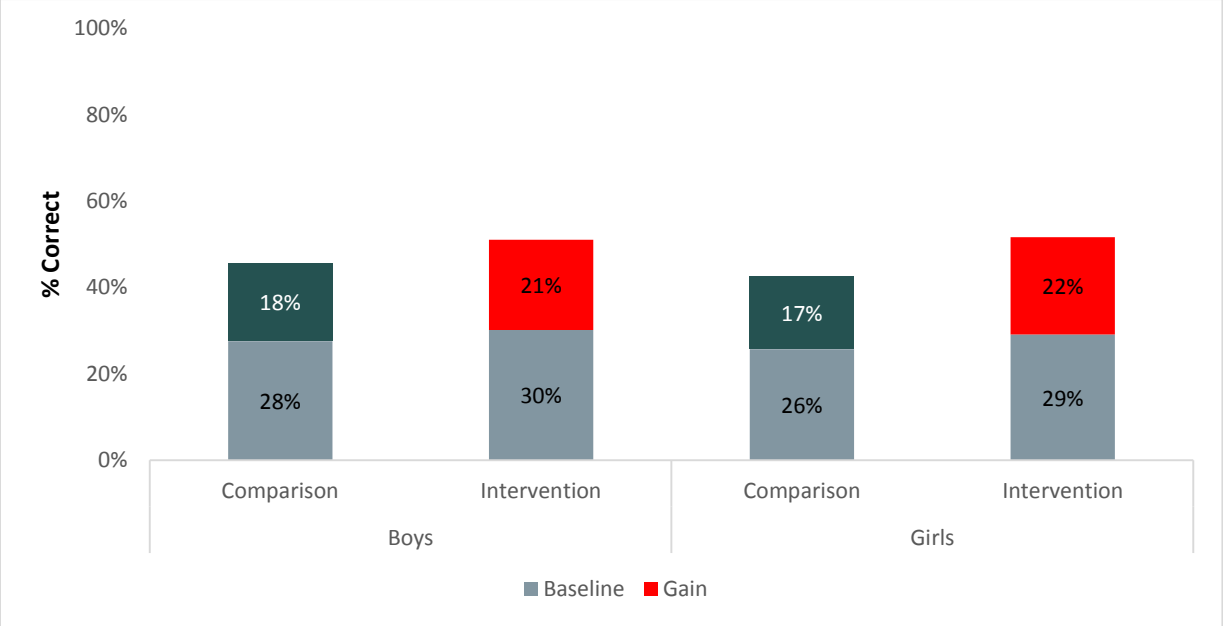
Table 23 displays children's emergent literacy skills at baseline and endline. At baseline children in the intervention group had significantly stronger oral comprehension skills compared to comparison children but overall no significant skill differences exist between the two groups of children. **At endline, children in the intervention group showed significantly greater gains in four out of six literacy domains compared to comparison children but the gain in the overall literacy score was not significantly different between groups. There were also no significant differences between gains made by boys and girls in either group.**

Table 23. Emergent Literacy, by group

	Baseline		Endline		Gain	
	Comparison	Intervention	Comparison	Intervention	Comparison	Intervention
Print awareness	56%	56%	64%	70%	8%	14%
Letter ID	0%	1%	7%	16%	7%	15%*
Expressive vocabulary	30%	34%	51%	55%	22%	21%
Oral comprehension	36%	52%**	70%	77%	35%	25%*
First word sounds	5%	4%	35%	49%*	31%	45%*
Emergent writing	30%	28%	32%	39%	2%	10%*
Total Emergent Literacy	27%	30%	43%	51%*	17%	22%

Note: *p < .05, **p<.01, ***p<.001

Figure 10. IDELA Literacy Development



4.4.3 Emergent Numeracy

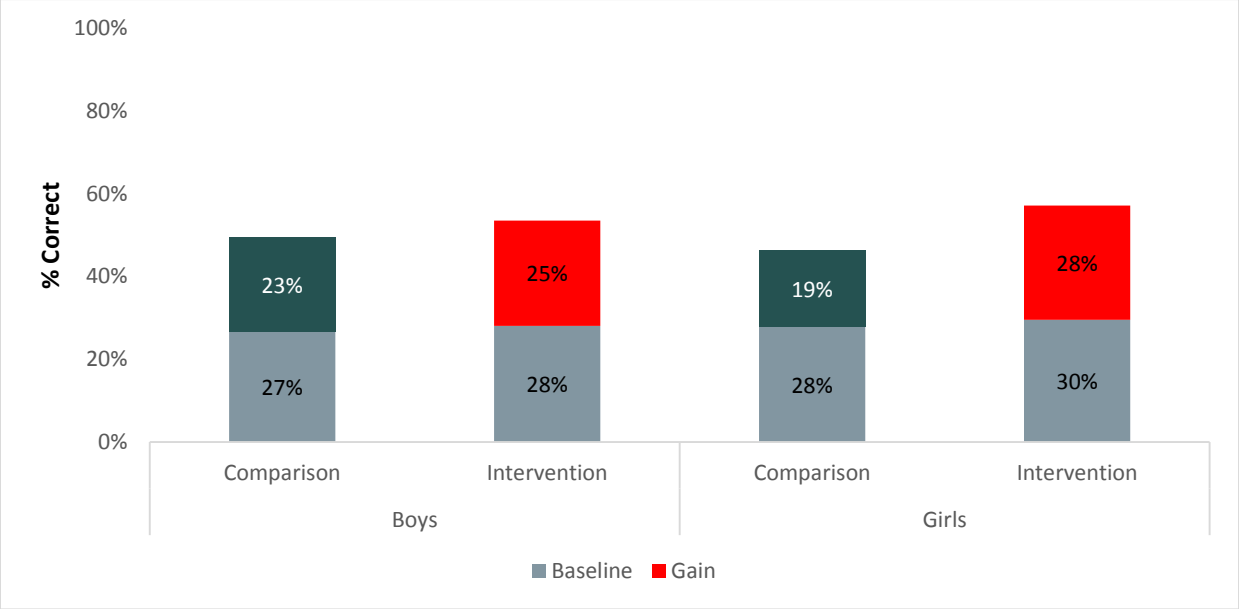
As seen in Table 24 no significant differences existed between the emergent numeracy skills of comparison and intervention children at baseline but at endline children in the intervention group had significantly higher numeracy scores than comparison children. **In addition, intervention children gained significantly more skills than comparison children from baseline to endline. There were no significant differences between gains made by boys and girls in either group.**

Table 24. Emergent Numeracy, by group

	Baseline		Endline		Gain	
	Comparison	Intervention	Comparison	Intervention	Comparison	Intervention
One to one correspondence	15%	18%	45%	57%	31%	39%
Number ID	2%	4%	19%	26%	17%	22%
Shape ID	20%	25%	37%	45%**	17%	20%
Sorting	45%	42%	60%	67%	15%	25%*
Size/length	83%	85%	90%	94%	6%	9%
Simple operations	17%	17%	50%	60%	34%	43%
Puzzle completion	7%	8%	31%	36%	25%	27%
Total Emergent Numeracy	27%	29%	47%	55%*	21%	26%*

Note: *p < .05, **p<.01, ***p<.001

Figure 11. IDELA Numeracy Development



4.4.4 Socio-emotional Development

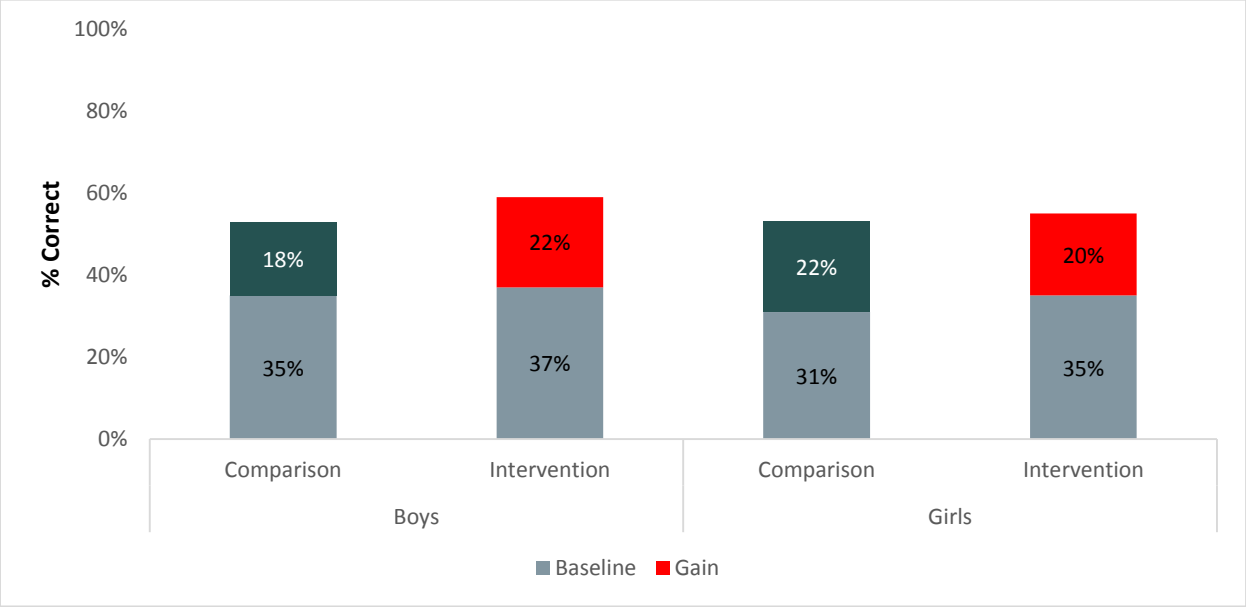
At baseline, no significant differences were found between comparison and intervention children in the area of socio-emotional development. **At endline children in the intervention group had gained significantly more than children in the comparison group in the area of conflict resolution but overall there were no significant differences between children's development in this area.**

Table 25. Socio-emotional development, by group

	Baseline		Endline		Gain	
	Comparison	Intervention	Comparison	Intervention	Comparison	Intervention
Emotional awareness and regulation	24%	29%	54%	59%	32%	30%
Friends	34%	32%	48%	51%	15%	19%
Empathy	28%	37%	43%	46%	16%	9%
Conflict resolution	22%	22%	42%	59%***	21%	37%*
Self-awareness(Following mixed instruction	55%	60%	68%	73%	14%	13%
Total Socio-emotional Development	33%	36%	51%	58%	20%	21%

Note: *p < .05, **p<.01, ***p<.001

Figure 12. IDELA Socio-emotional Development



4.4.5 Executive functioning

Two additional items were included in IDELA to measure the cognitive domains of short-term memory and inhibitory control. **No significant differences were found between intervention and comparison children on either executive functioning items at baseline or at endline and no differences in gains were made over the course of the year. There were also no differences between boys and girls in this area.**

Table 26. Cognition items, by group

	Baseline		Endline		Gain	
	Comparison	Intervention	Comparison	Intervention	Comparison	Intervention
Inhibitory control	31%	37%	59%	59%	29%	22%
Short-term memory	37%	40%	57%	56%	21%	17%

Note: *p < .05, **p<.01, ***p<.001

4.5 Learning equity

4.5.1 ECCD enrollment

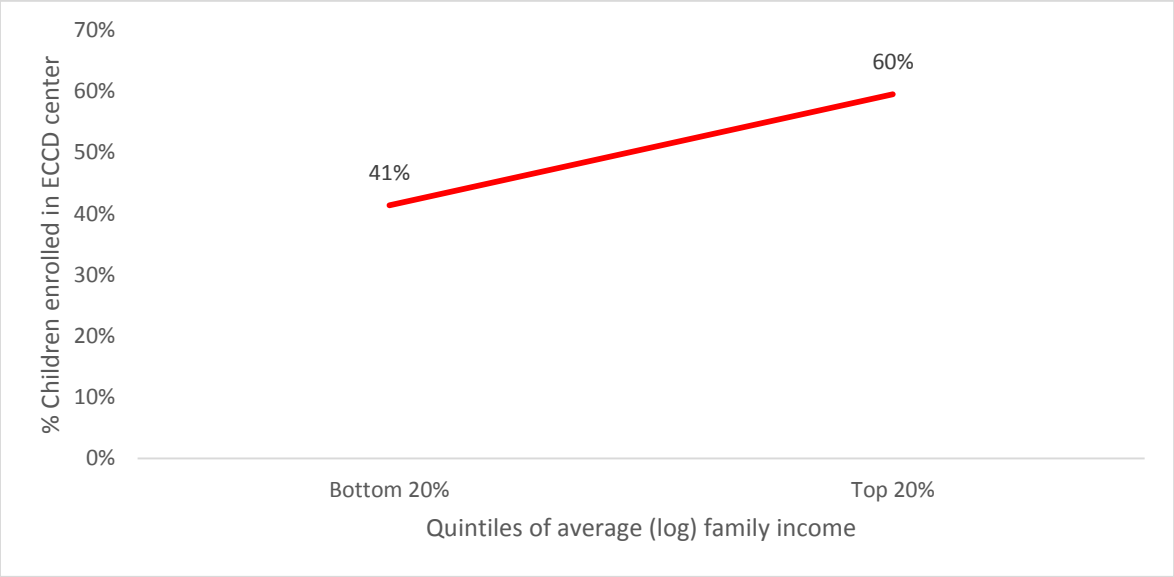
At endline it was found nearly half of the children in the intervention and comparison groups were enrolled in a center-based ECCD program (50% comparison children and 56% intervention children). Given that government supported ECCD centers are fee-based, an analysis was run to determine whether children from wealthier families were more likely to be enrolled in ECCD centers, and **results confirm that children from families with more relative wealth were significantly more likely to be enrolled in these center-based preschool programs.**

In order to compare the relative contributions of the First Read parenting program and a center-based ECD program multivariate regressions controlling for both variables as well as child age, socio-economic status and baseline scores were run. Being enrolled in an ECCD center significantly contributed to children's development gains in all domains except socio-emotional development and parent engagement in First Read programming did not significantly contribute to children's learning gains after controlling for ECD enrollment and socio-economic status. Further, looking at the effect size of ECCD center and First Read programming on IDELA gains, analyses find that the contribution of ECCD centers is consistently about double that of First Read programming (0.20 for First Read compared to 0.44 for an ECCD center on average).

Table 27. Effect size of First Read Parenting and ECCD Centers on IDELA gains

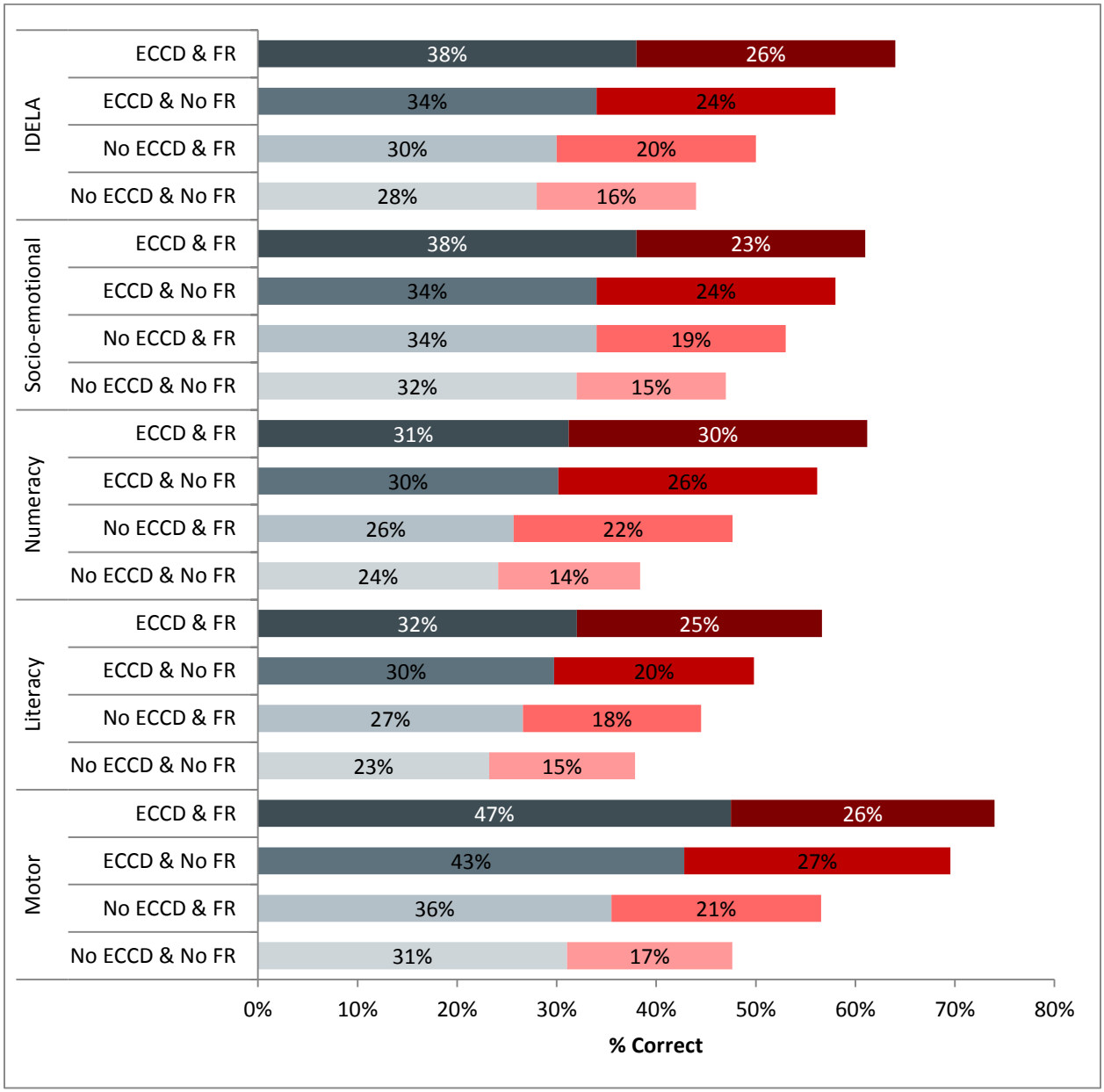
	First Read Parenting	ECCD Center
Motor	0.17	0.61
Literacy	0.22	0.35
Numeracy	0.24	0.46
Socio-emotional	0.12	0.24
IDELA	0.27	0.56

Figure 13. Enrollment in ECCD centers by family income



Children enrolled in ECCD centers were significantly advantaged compared to their peers who were not attending an ECCD center program in all areas except socio-emotional development. In addition, despite having stronger baseline scores, children enrolled in ECCD centers gained significantly more than children not enrolled in a center in all areas except socio-emotional development. First Read did not contribute to children's learning above and beyond what was learned from ECCD centers but contribute to significant gains for children not enrolled in ECCD centers in early numeracy.

Figure 14. Overall IDELA Score Gains: First Read Parenting and ECCD Center



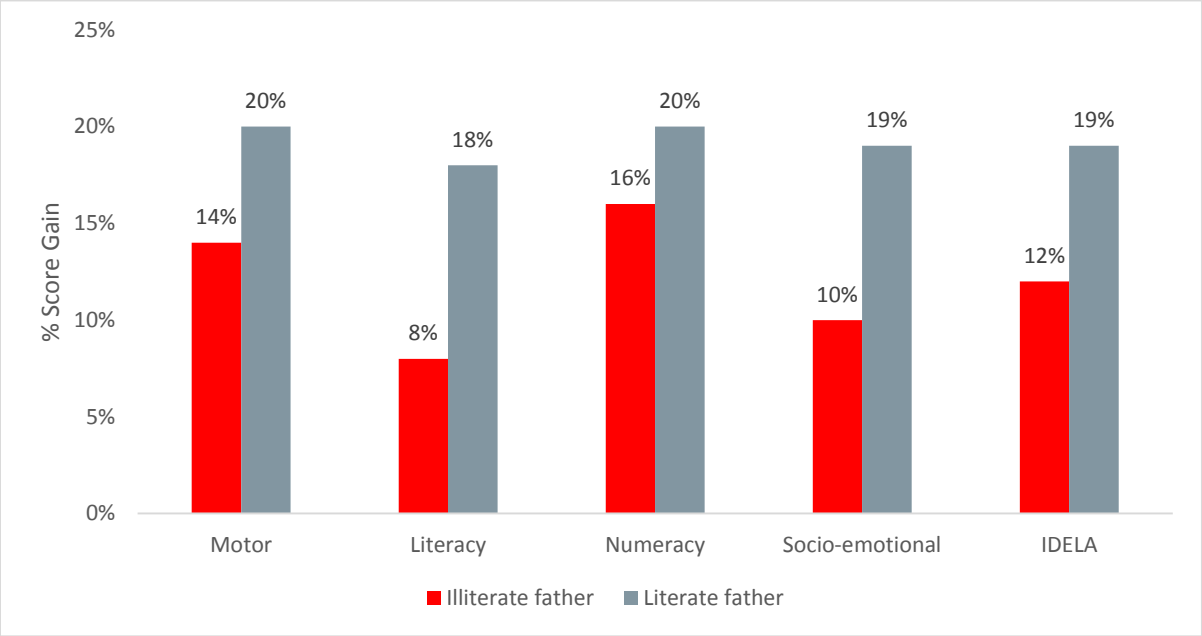
4.5.2. Learning equity

Multivariate regressions clustering for children within communities were used to investigate drivers of early learning and development. Given that children in who were or were not enrolled in an ECCD center program were found to differ substantially in family background and early learning skills, they were split into two groups in order to investigate drivers of learning for children in these two different situations.

For children enrolled in an ECCD center, the primary drivers of learning were the variety of toys they had access to at home, socioeconomic status and gains in home learning activities. Children with a larger

variety of toys at home, more family wealth and more home learning activities gained significantly more skills over the course of the school year than children with fewer of these resources. For children who were not enrolled in an ECCD center, the primary driver of learning gains paternal literacy. Children with fathers who were literacy gained significantly more skills over the course of the year than children with illiterate fathers.

Figure 15. Learning gains by paternal literacy for children not enrolled in ECCD centers



4.6 Limitations

There were a number of limitations to this study. First the evaluation design was quasi-experimental and significant differences were found between intervention and comparison families at baseline, likely due to previous ECCD programming in Ngororero. Therefore, it is not possible to make causal inferences about the impact of First Read programming on changes in caregiver behavior or children's learning and development. In addition, the small sample size of the study limits the ability to find significant differences between groups.

4.7 Conclusion

This report highlights many important issues for consideration in future ECCD programming. First Read 4-6 parenting programming was found to have a significant relationship with increases in the types of reading materials children have at home, as well as parents' attitudes about their role in children's learning and development. However, First Read programming was found to have less pronounced impact on changes in parents' behaviors with their children. The most impact was seen with mothers, but the increase in mother-child activities did not extend to fathers or other caregivers.

Looking at child outcomes, enrollment in an ECCD center program was found to have much stronger impact on children's learning than the First Read 4-6 parenting intervention. In addition, children enrolled in ECCD center programs were found to be wealthier and substantially better off in terms of baseline skills

and learning gains than children who were not enrolled in these center-based programs. This suggests that the neediest children are in these communities are those who are not enrolled in government supported ECCD centers and that future First Read programming could help fill early learning gaps for these children with outreach to parents.

Related to equity, the results of this study find no differences between learning gains for boys and girls. For children enrolled in an ECCD center, the primary drivers of learning were the variety of toys they had access to at home, socioeconomic status and gains in home learning activities. Children with a larger variety of toys at home, more family wealth and more home learning activities gained significantly more skills over the course of the school year than children with fewer of these resources. For children who were not enrolled in an ECCD center, the primary driver of learning gains paternal literacy. Specifically, children with fathers who were literacy gained significantly more skills over the course of the year than children with illiterate fathers.

Appendix A

Table A1. First Read 0-3: Multivariate regression results clustered by cell code: CELL 12-month

VARIABLES	(1) CELL: 12 month	(2) CELL: 12 month	(3) CELL: 12 month	(4) CELL: 12 month
Child age	0.0605***	0.0540	0.0638*	0.0646*
	(0.0105)	(0.0272)	(0.0231)	(0.0224)
Child is female	0.0476	0.120	0.127	0.167
	(0.0480)	(0.0902)	(0.0776)	(0.0773)
Caregiver ever attended parenting session	0.0571			
	(0.0512)			
# parenting sessions attended		0.00400		
		(0.00889)		
Caregiver ever received home visit			-0.180	
			(0.115)	
# home visits received				0.0273
				(0.0226)
Constant	0.186***	0.192	0.361*	0.102
	(0.0304)	(0.154)	(0.148)	(0.101)
Observations	74	32	37	33
R-squared	0.149	0.127	0.168	0.210
Adjusted R-squared	0.112	0.0338	0.0923	0.128

Robust standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05

Table A2. First Read 0-3: Multivariate regression results clustered by cell code: CELL 24-month

VARIABLES	(10) CELL: 24-month	(11) CELL: 24-month	(12) CELL: 24-month	(13) CELL: 24-month
Child age	0.0306***	0.0434***	0.0443***	0.0427***
	(0.00455)	(0.00475)	(0.00520)	(0.00570)
Child is female	-0.00618	-0.0268	0.00211	-0.0276
	(0.0220)	(0.0278)	(0.0385)	(0.0400)
Caregiver ever attended parenting session	0.0643			
	(0.0291)			
# parenting sessions attended		0.00641		
		(0.00389)		
Caregiver ever received home visit			0.0173	
			(0.0356)	
# home visits received				0.0188
				(0.0136)
Constant	-0.168**	-0.298**	-0.275***	-0.268**
	(0.0398)	(0.0611)	(0.0574)	(0.0559)
Observations	196	78	96	75
R-squared	0.268	0.484	0.396	0.474
Adjusted R-squared	0.257	0.464	0.376	0.452

Robust standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05

Table A3. First Read 0-3: Multivariate regression results clustered by cell code: CELL 36-month

VARIABLES	(19) CELL: 36-month	(20) CELL: 36-month	(21) CELL: 36-month	(22) CELL: 36-month
Child age	0.0146*	0.0137	0.0152	0.0154
	(0.00550)	(0.00756)	(0.00714)	(0.0122)
Child is female	0.0356	0.0240	0.0271	-0.0168
	(0.0368)	(0.0539)	(0.0458)	(0.0539)
Caregiver ever attended parenting session	0.109*			
	(0.0372)			
# parenting sessions attended		0.00662		
		(0.00432)		
Caregiver ever received home visit			0.113**	
			(0.0306)	
# home visits received				0.0343
				(0.0289)
Constant	0.177	0.246	0.184	0.232
	(0.126)	(0.145)	(0.167)	(0.278)
Observations	129	47	62	43
R-squared	0.094	0.102	0.144	0.115
Adjusted R-squared	0.0718	0.0391	0.0999	0.0465

Robust standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05

Appendix B

Table B1. IDELA Score gains, all children

VARIABLES	(1) Motor Gain	(2) Literacy Gain	(3) Numeracy Gain	(4) Socio-emotional Gain	(5) IDELA Gain
Child is female	0.000530	0.00387	-0.00997	0.00401	0.000757
	(0.0286)	(0.0180)	(0.0161)	(0.0213)	(0.0132)
Child age	0.0471*	0.0715***	0.0655**	0.0531*	0.0482**
	(0.0193)	(0.0124)	(0.0176)	(0.0223)	(0.0155)
Enrolled in ECCD Center	0.115**	0.0431	0.0658*	0.0385	0.0666**
	(0.0345)	(0.0211)	(0.0239)	(0.0292)	(0.0224)
Enrolled in First Read	0.0154	0.0308	0.0392	0.0124	0.0237
	(0.0279)	(0.0193)	(0.0291)	(0.0323)	(0.0211)
Father is literate	0.0381	0.0759*	0.0707*	0.0555	0.0590*
	(0.0269)	(0.0304)	(0.0297)	(0.0311)	(0.0232)
# Appliances	0.0181	0.0106	0.00695	0.0301**	0.0136
	(0.00874)	(0.00806)	(0.00915)	(0.00759)	(0.00644)
# Toy types	0.00875	0.0102**	0.0111*	0.0144*	0.0105*
	(0.00763)	(0.00327)	(0.00485)	(0.00588)	(0.00460)
# HLE activities gain	0.00533	0.00625	0.00817*	0.00474	0.00565*
	(0.00407)	(0.00311)	(0.00323)	(0.00243)	(0.00238)
Motor Baseline	-0.667***				
	(0.0579)				
Literacy Baseline		-0.468***			
		(0.0718)			
Numeracy Baseline			-0.356**		
			(0.120)		
Socio-emotional Baseline				-0.839***	
				(0.0882)	
IDELA Baseline					-0.467***
					(0.0891)
Constant	0.0618	-0.228**	-0.190	0.0102	-0.0611
	(0.123)	(0.0713)	(0.103)	(0.120)	(0.0873)
Observations	239	236	240	235	227
R-squared	0.350	0.257	0.210	0.467	0.260
Adjusted R-squared	0.325	0.227	0.179	0.446	0.229

Robust standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05

Table B2. IDELA Score gains, children in ECCD centers

VARIABLES	(1) Motor Gain	(2) Literacy Gain	(3) Numeracy Gain	(4) Socio-emotional Gain	(5) IDELA Gain
# HLE activities gain	0.00721	0.0101*	0.0100*	0.00399	0.00689*
	(0.00452)	(0.00435)	(0.00396)	(0.00331)	(0.00251)
# Toy types	0.0146	0.0143**	0.0154**	0.0193**	0.0162***
	(0.00816)	(0.00473)	(0.00394)	(0.00647)	(0.00352)
# Appliances	0.0271*	0.00538	0.00544	0.0241*	0.0137*
	(0.00942)	(0.0103)	(0.00763)	(0.00998)	(0.00593)
Child is female	0.00984	0.00658	-0.00562	0.0358	0.0116
	(0.0252)	(0.0225)	(0.0202)	(0.0299)	(0.0162)
Child age	0.0765**	0.0830**	0.0815**	0.0352	0.0546**
	(0.0200)	(0.0262)	(0.0207)	(0.0225)	(0.0178)
Enrolled in First Read	-0.0260	0.0196	0.00912	-0.0145	-0.00399
	(0.0392)	(0.0279)	(0.0412)	(0.0470)	(0.0326)
Father is literate	0.0325	0.0472	0.0969*	0.0202	0.0452
	(0.0440)	(0.0308)	(0.0444)	(0.0441)	(0.0369)
Motor Baseline	-0.802***				
	(0.0844)				
Literacy Baseline		-0.450***			
		(0.109)			
Numeracy Baseline			-0.355*		
			(0.123)		
Socio-emotional Baseline				-0.748***	
				(0.113)	
IDELA Baseline					-0.451**
					(0.113)
Constant	0.0507	-0.240	-0.238	0.137	-0.0407
	(0.131)	(0.125)	(0.137)	(0.151)	(0.110)
Observations	133	131	133	132	128
R-squared	0.433	0.235	0.215	0.367	0.200
Adjusted R-squared	0.396	0.184	0.165	0.326	0.147

Robust standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05

Table B3. IDELA Score gains, children not enrolled in ECCD centers

VARIABLES	(1) Motor Gain	(2) Literacy Gain	(3) Numeracy Gain	(4) Socio-emotional Gain	(5) IDELA Gain
# HLE activities gain	0.00181	0.000983	0.00600	0.00564	0.00447
	(0.00611)	(0.00268)	(0.00529)	(0.00483)	(0.00385)
# Toy types	-0.00186	0.00484	0.00194	0.00169	-0.00295
	(0.0156)	(0.0106)	(0.00988)	(0.0108)	(0.00945)
# Appliances	0.0112	0.0165	0.0161	0.0418*	0.0162
	(0.0139)	(0.0143)	(0.0225)	(0.0153)	(0.0110)
Child is female	-0.00762	0.00583	-0.0202	-0.0303	-0.0107
	(0.0404)	(0.0307)	(0.0355)	(0.0247)	(0.0246)
Child age	0.0235	0.0617***	0.0502	0.0725*	0.0443*
	(0.0313)	(0.00765)	(0.0261)	(0.0280)	(0.0186)
Enrolled in First Read	0.0608	0.0525	0.0807*	0.0619	0.0668**
	(0.0355)	(0.0329)	(0.0326)	(0.0436)	(0.0186)
Father is literate	0.0568	0.105*	0.0403	0.0894*	0.0765**
	(0.0383)	(0.0387)	(0.0411)	(0.0321)	(0.0242)
Motor Baseline	-0.512***				
	(0.0777)				
Literacy Baseline		-0.455**			
		(0.126)			
Numeracy Baseline			-0.404**		
			(0.134)		
Socio-emotional Baseline				-0.895***	
				(0.101)	
IDELA Baseline					-0.496**
					(0.129)
Constant	0.151	-0.199*	-0.0781	-0.0894	-0.0206
	(0.184)	(0.0787)	(0.184)	(0.148)	(0.115)
Observations	106	105	107	103	99
R-squared	0.240	0.261	0.136	0.582	0.262
Adjusted R-squared	0.177	0.200	0.0656	0.546	0.196

Robust standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05