



Save the Children®

0-3 Parenting Program Innovations in Bangladesh: Follow-up Study 2015-2016

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Executive summary

Since 2011 Save the Children (SC) in Bangladesh has been programming and evaluating ECD programs for children aged 0-3 years. Early learning and development programs for very young children tend to focus on working with mothers as they are often the primary caregivers of babies and young children. However, working closely with communities in rural Bangladesh, the SC team recognized that fathers were important decision makers within the home who can also offer vital early stimulation and support to young children. Therefore the SC team developed parenting programs for 0-3 year olds focused on both engaging both mothers and fathers.

One of the biggest questions in the field of early learning and development is the long-term effects of early interventions. Few studies are able to follow children over time to answer these questions. However, due to Save the Children's long-term investment in communities through the Sponsorship program, it was possible to track 0-3 year old children whose parent's participated in parenting education programs in 2011-2012 and measure their development in 2015 as they prepare to enter primary school. Therefore, investigating the possible last impact of 0-3 programming on parents and children is the primary purposes of this study.

The results of this study find an interesting interplay between factors related to children's learning and development. There was no relationship found between participation in a 2011-2012 0-3 parenting program and 2015 learning materials or activities at home. Also fathers reported having substantially less engagement with their children than mothers despite the prior intervention.

There was also no relationship between 0-3 parenting program participation and child development outcomes, taking into account current factors influencing children's learning and development like ECCD enrollment and parent-child activities at home. However, for children not enrolled in an ECCD program, previous 0-3 parenting program participation was significantly positively related to emergent numeracy skills. That is, for children not currently enrolled in an ECCD center program, those whose parents had participated in a 0-3 parenting program had stronger early math skills than their peers whose parents were not involved in an early parenting program. This could suggest that enrollment in a center-based ECCD program has a large enough impact on early learning to obviate any lasting impact of 0-3 interventions, but 0-3 programming does have a lasting relationship with learning and development for children who are not receiving early learning support from a center-based program.

Looking at equity factors impacting children's learning and development, being enrolled in an ECCD center was found to be the strongest driver of children's skills. Enrollment was significantly related to all domains with effect sizes ranging from .34 - .60. Home learning activities were also significantly positively related to all domains scores, and relative family wealth (measured by home possessions) was a significant predictor of all skills except social-

emotional development. Taken together this suggests that children who are not receiving consistent stimulation and learning support and those from poorer families are at the highest risk for falling behind in their early development and learning.

Given the importance of early stimulation for later cognitive development and the fact that Bangladesh has a limited number of early stimulation programs, further research is needed to identify programs for 0-3 year olds that have both positive short-term and long-term impact on child development. These results suggest that more work is needed to maintain the positive parent behavior change seen in short-term impact evaluations, especially for fathers. Future projects could consider factors that would support behavior change even after a program has ended like activities cards for parents to keep after the program ends or encouraging continued parenting-focused group meetings led by community members. Alternatively, a higher intensity of programming could be considered in the future. For example, longer programming cycles or more frequent meetings could establish more lasting behavior change.

Finally, analyses of ASQ and IDELA results from 138 children aged 54 – 60 months found that the tools measured related constructs of child development, but that IDELA is a better fit instrument for this context. All related domains were significantly positively correlated, suggesting concurrent validity between the two measures. However, the IDELA assessment showed a more normal distribution of scores and greater sensitivity to intervention and equity factors. The strong negative skew found in the communication and personal-social ASQ domains could be related to caregiver response bias. Further investigation is needed to test the relationship between these two tools in other settings.

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Background

Since 2011 Save the Children (SC) in Bangladesh has been programming and evaluating ECD programs for 0-3 year olds. Early learning and development programs for very young children tend to focus on working with mothers as they are often the primary caregivers of babies and young children. However, working closely with communities in rural Bangladesh, the SC team recognized that fathers were important decision makers within the home who can also offer vital early stimulation and support to young children. Therefore the SC team developed parenting programs for 0-3 year olds focused on both engaging both mothers and fathers.

Mother program

In this study, the mothers and children included as part of the 'mother study' group resided in the rural and peri-urban areas in the Meherpur sub-district of Meherpur district, Bangladesh, 250 km west of the capital city, Dhaka, where Save the Children had implemented a parenting program for caregivers of young children. The intervention was implemented in 2011 and engaged mothers through a combination of group meetings and home visits. During home visits, mothers received messages concerning hygiene, responsive feeding, play, communication, gentle discipline, and nutritious foods presented along with an illustrative card. Mothers in the comparison group received the standard government care.

To evaluate program effectiveness, pre- and post-tests were administered to families in the intervention and comparison groups. Mothers were asked questions about their child's health, stimulation, knowledge of developmental milestones, as well as about family assets, occupations and education, household decision-making and depression. Three subtests of the Bayley scales were administered to evaluate children's development (cognitive, receptive language and expressive language). Results displayed significantly higher cognitive and language outcomes for children in the intervention group relative to those in the comparison group. However, they did not show reductions in sickness or stunting. The intervention mothers also showed significant improvements in a number of parenting practices, such as dietary diversity, stimulation, and knowledge of development milestones. The program was equally effective with older and younger children, with poor and less poor families, and with mothers who graduated from primary school vs others with less education. Children of mothers with less education reached cognitive levels equivalent to better educated mothers after the program.

Father program

Based off of a community needs assessments at program sites in rural Bangladesh, Save the Children designed and implemented an education and engagement curriculum for fathers of children between 0-3 years of age that include mobile phone messages in 2012. The program aimed to improve child development outcomes by (a) increasing paternal participation in decisions regarding child rearing and development, (b) increasing paternal involvement in childcare and improving the quality of father-child interactions, and (c) enhancing the quality of husband-wife relationships. Male volunteers from the community were trained to conduct monthly education sessions with fathers and provide individualized support through home

visits. Approximately half of the treatment group also received weekly text (SMS) messages to remind them of critical messages discussed during the sessions.

Mother and father-report, as well as child assessments were conducted in January 2012 and December 2012 to evaluate the results of this program. Findings from of the endline study displayed significant positive impact of the program on children's health, child development, and parent-child behaviors (both mother and father). Larger effect sizes were found for fathers in the intervention condition that included SMS messaging, especially in the areas of father-child interactions, suggesting that this was an effective way of engaging with fathers in communities in rural Bangladesh.

Current study

One of the biggest questions in the early child development (ECD) field concerns the long-term effects of early interventions. Few studies are able to follow children over time to answer these questions. However, due to Save the Children's long-term investment in communities through the Sponsorship program, it was possible to track 0-3 year old children whose parent's participated in parenting education programs in 2011 and 2012 and measure their development in 2015 as they prepare to enter primary school. Investigating the possible lasting impact of 0-3 programming on parents and children is the primary purposes of this study.

A secondary purpose of this study is to compare how the Ages and Stages Questionnaire (ASQ) and International Development and Early Learning Assessment (IDELA) measure development and learning for young children. In 2011-2012 children's development was measured using a Bangla version of the Ages and Stages Questionnaire (ASQ). In 2015, children's development was measured using a combination of ASQ and IDELA, allowing for a comparison of the two tools.

Methods

Tools

The 54 and 60 month forms of the ASQ tool were used for this study as well as the IDELA tool. The ASQ forms contain 6 questions in each of 5 domains: Communication, Gross motor, Fine Motor, Problem Solving and Personal-Social. Children under 57 months were given the 54 month questionnaire and children 57 months or older were given the 60 month questionnaire. The IDELA tool contains 22 items that cover 4 domains: Motor, Emergent Literacy/Language, Emergent Numeracy/Math and Social-emotional, as well as two additional items related to executive functioning. All children receive all items and scores are calculated as the proportion of correct responses given divided by the total possible points. Finally, all parents responded to a caregiver questionnaire that covered topics including parental education, home learning materials and activities, family assets, children's enrollment in ECCD centers and parent's attitudes towards their children's early development.

Table 1. Domains and items in ASQ and IDELA tools

Domain	ASQ	IDELA
Gross & fine motor development	12 items (6 gross & 6 fine)	4 items (1 gross & 4 fine)
Emergent language/literacy	6 items	6 items
Emergent math/problem solving	6 items	7 items
Social-emotional development	6 items	5 items

Sample

The sample included 714 children aged 48 – 73 months (mean age = 64 months) whose parents participated in either the mother-focused parenting program in 2011 or the father-focused program in 2012. All children of mother program participants received the IDELA tool, and children of the father program participants received both the ASQ and IDELA tools (some only ASQ and some both ASQ and IDELA). Tables 2a and 2b describe the study sample and tools used.

Table 2a. Detailed sample by assessment, intervention group and program

	Mother program		Father program	
	Intervention	Comparison	Intervention	Comparison
ASQ			102	18
IDELA	345	111		
ASQ & IDELA			66	72

Table 2b. Sample overview by assessment and intervention group

	Intervention	Comparison	Total
Total ASQ	168	90	258
Total IDELA	411	183	594

Analysis

Analyses will first compare at the developmental status of children in intervention and comparison groups across the two programs to investigate potential lasting effects of the 0-3 interventions. Given that a number of years have passed since the interventions and many other factors have been influencing children's learning and development during this time, analyses of potential relationship between previous intervention participation and children's

current learning and development will control for relevant background characteristics (child age and gender, home learning activities, family assets and current ECCD enrollment). This by no means captures all possible factors influencing children's learning and development from 2011/2012 – 2015 but is an effort to increase the rigor of the analysis with available measurable factors. Following this, analyses will focus on the similarities and differences found between how the ASQ and IDELA tools measure learning and development for the subsample of children who responded to both tools.

Limitations

The samples used in this study represent families who were able to be located in November 2015 and are a subset of those involved in previously designed quasi-experimental studies. Therefore the sample does not contain a representative sample of the original intervention and comparison groups. Thus the results of this study are correlational only and no causal conclusions can be made. Also, we do not have information on the attendance of any families to the original parenting activities nor do we have information about what happened to children in the years between the interventions and the current study. So these analyses represent a preliminary attempt to look at the relationship between 0-3 programming and future stimulation support from parents and child development.

Results

This section will investigate differences in home learning environments and child development in an effort to identify lasting relationships between two 0-3 programs and current parenting practices and child development. Outcomes for children's home learning environments, both materials and activities, will be presented first followed by child development outcomes. Information about children's current enrolment in formal ECCD centers will also be discussed but this is not seen as a directly related to either of the parenting programs, rather simply as an important factor influencing children's current learning and development.

Parenting

One of the primary research questions in this study is whether parenting interventions have lasting impact on the care and stimulation caregivers provide for their children after the programming has ended. In this section, will we investigate the presence of child-friendly materials and activities in the homes of children whose parents participated in the mother and father programs compared to parents who had no exposure to these interventions.

Learning materials

In terms of reading materials and toys at home, parents in the mother program tended to report having more types of materials than parents in the father programming study but **there were no significant differences between parents in the intervention and comparison groups for either program related to reading materials or toys for children.** On average, parents reported having 1.5 – 2.4 types of reading materials out of seven possible types. **The most common reading materials were textbooks or religious books, and only 35 percent of parents reported owning storybooks. This suggests that there are few child-friendly reading materials available in these**

homes. On average, parents reported having 3.7 – 5.6 types of toys out of 10 possible options, without outside and household objects being the most common.

Table 3. Reading materials by program and intervention group

	Father program		Mother program	
	Comparison (N=90)	Intervention (N=171)	Comparison (N=111)	Intervention (N=345)
No. types of reading material (out of 7)	1.5	1.6	2.3	2.4
Storybook	38%	30%	32%	39%
Textbook	60%	72%	92%	89%
Magazine	1%	3%	1%	3%
Newspaper	3%	3%	2%	3%
Religious	91%	84%	78%	84%
Coloring	14%	18%	29%	24%
Comics	1%	4%	0%	2%

Figure 1. Reading materials by program and intervention group

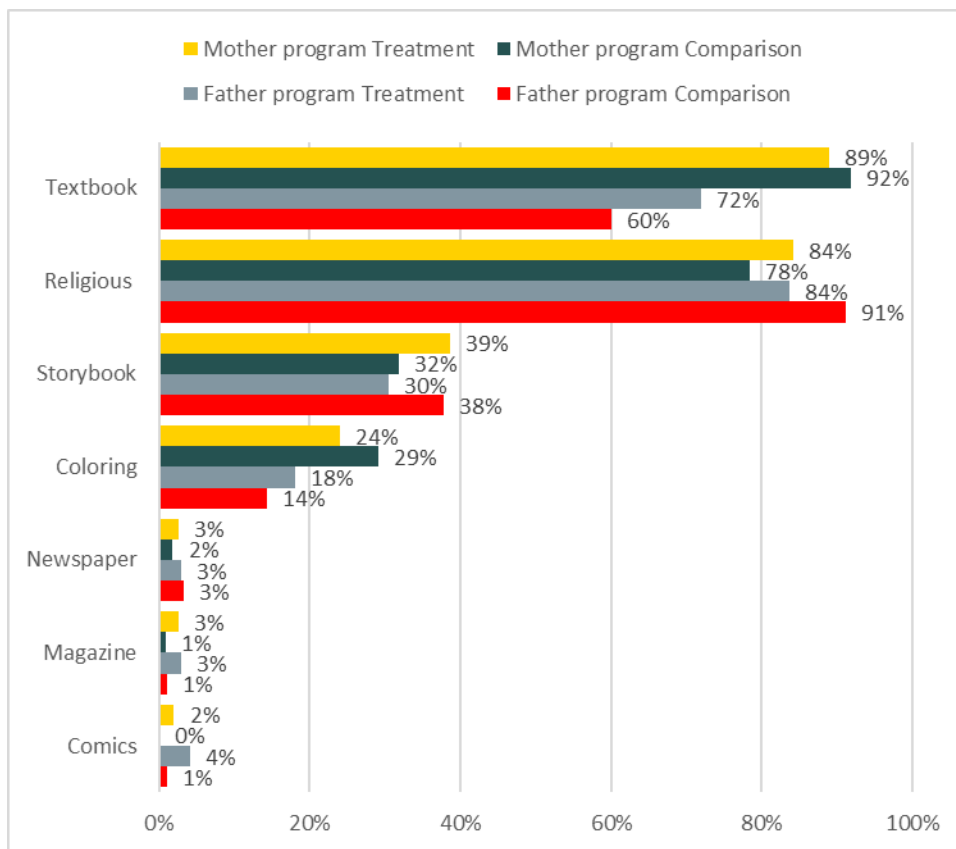


Table 4. Toys at home by program and intervention group

	Father program		Mother program	
	Comparison (N=90)	Intervention (N=171)	Comparison (N=111)	Intervention (N=345)
No. types of toys (out of 10)	3.8	3.7	5.6	5.6
Homemade	89%	88%	82%	83%
Shop-bought	99%	95%	93%	91%
Household objects	94%	91%	88%	87%
Outside objects	97%	97%	96%	95%
Drawing	36%	40%	59%	52%
Puzzle	3%	6%	4%	8%
Building	62%	55%	71%	72%
Coloring	12%	11%	35%	30%
Counting	27%	24%	32%	43%
Other	21%	14%	20%	25%

Learning activities

Parents were also asked about the activities they engaged in with their children because home learning activities are a key component of children's early stimulation and learning. Also improving parent-child interactions was an important goal of both the mother and father focused programs. **At the time of this assessment, there were no significant caregiver-child activity differences found between parents in the comparison and intervention groups for fathers from the father group or mothers from the mother group. On average, mothers reported substantially more engagement with children than fathers, highlighting that engaging fathers is early child development is still an important need in these communities.** The most commonly reported activities were hugging and yelling followed by teaching letters and numbers, and the least frequent were playing drawing games with children or singing. This also highlights the need for parenting programs to focus on the importance of positive discipline and age-appropriate play for children as opposed to harsh discipline and rote learning.

Table 5. Home learning activities by program and intervention group

	Father program: Father-child activities		Mother program: Mother-child activities	
	Comparison	Intervention	Comparison	Intervention
No. learning & play activities (out of 9)	0.49	0.42	3.95	3.92
Reading	4%	4%	55%	47%
Telling stories	3%	4%	41%	46%
Singing	1%	1%	35%	37%
Taking outside	21%	17%	32%	38%
Playing	4%	3%	28%	33%
Naming/drawing	1%	1%	22%	22%
Teaching	4%	3%	52%	44%
Teaching letters	4%	5%	64%	65%
Teaching numbers	4%	5%	66%	61%
Hugging	70%	66%	96%	95%
No. negative discipline activities (out of 3)	0.23	0.24	1.70	1.57
Spanking	6%	6%	46%	43%
Hitting	2%	4%	47%	44%
Yelling	16%	15%	78%	70%

Figure 2. Home learning activities by study and treatment group: Mothers

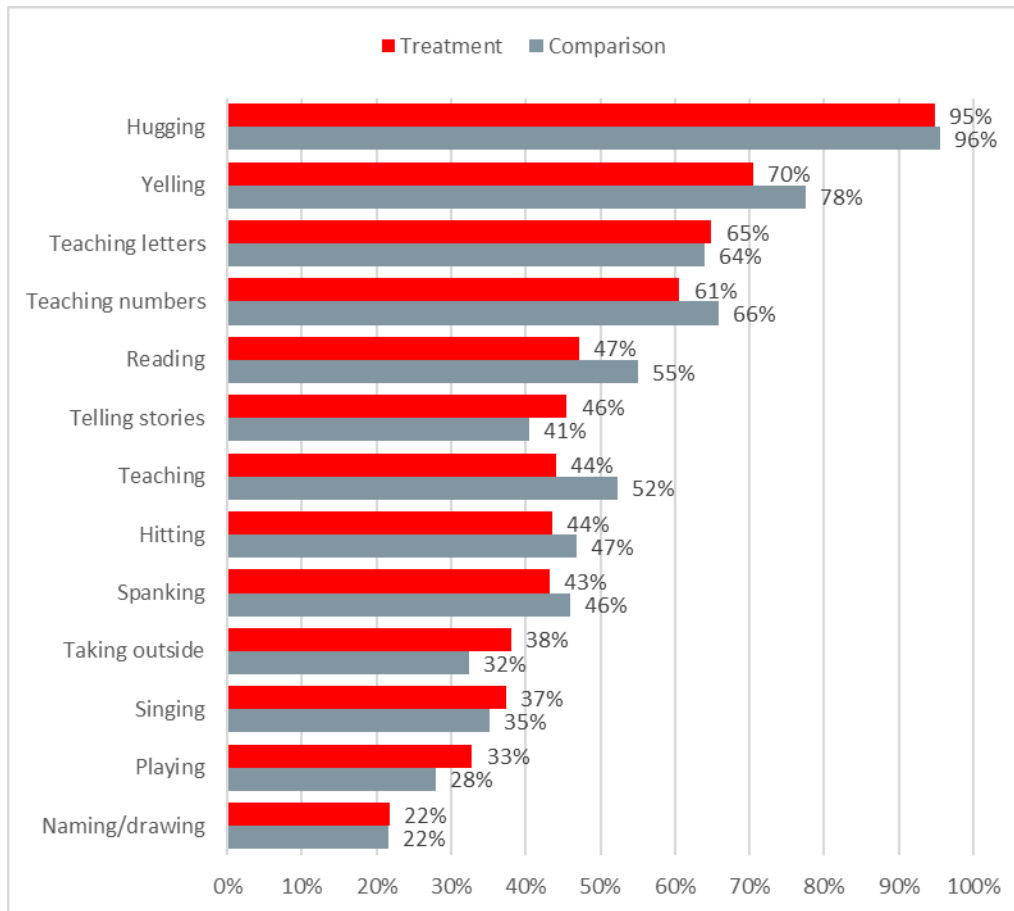
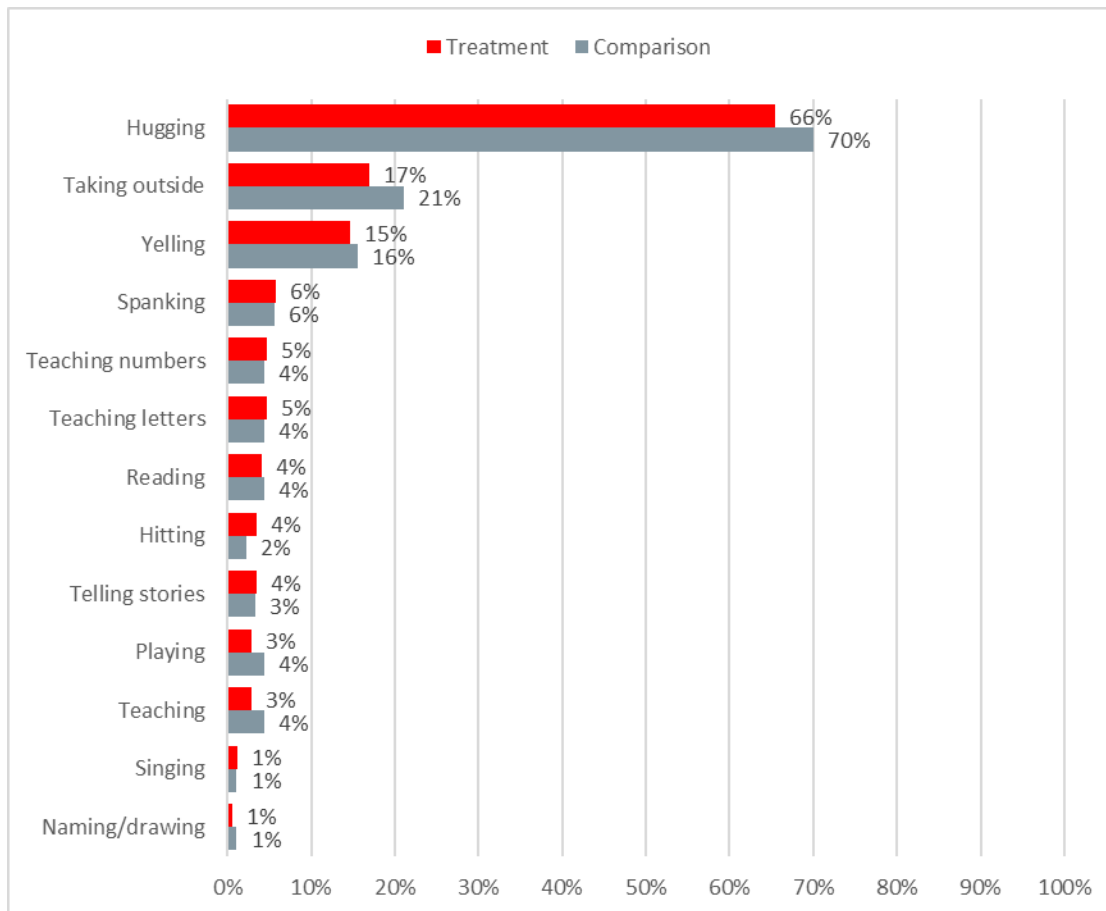


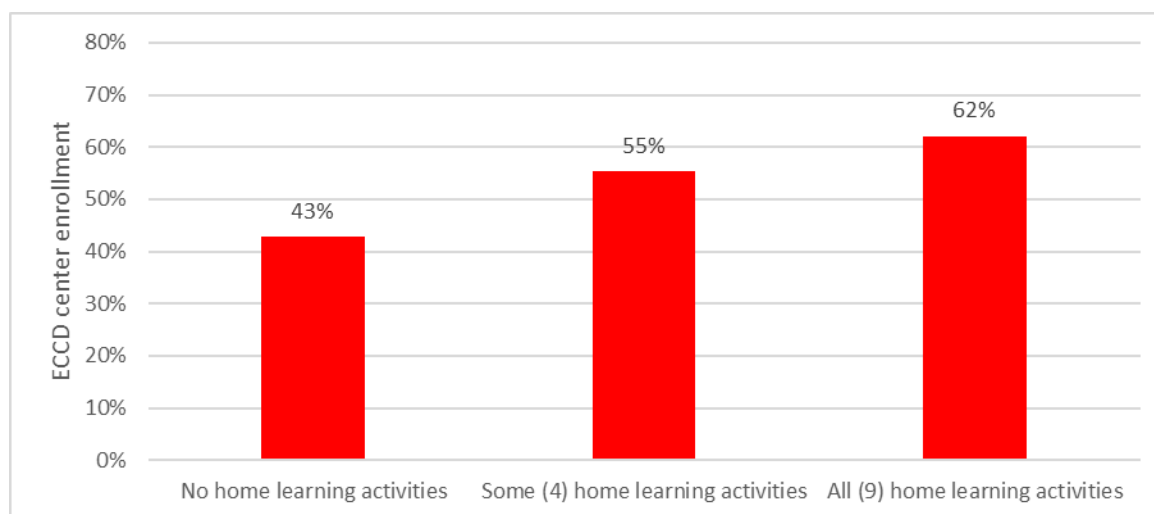
Figure 3. Home learning activities by study and treatment group: Fathers



ECCD enrollment

Parents were also asked whether their children were currently enrolled in an ECCD center. There are many factors that could influence enrollment of a child into an ECCD center, including proximity of a center to the family, parent motivation to enroll children, and ability to pay entrance fees. Therefore this is not necessarily seen as an outcome related to previous interventions but is an important component to understanding the skills that children currently possess. **Using multivariate logistic regressions to investigate factors related to ECCD enrollment, analyses find that older children are more likely to be enrolled in ECCD centers, as well as children whose parents reported engaging in more home learning activities. Previous participation in a 0-3 intervention was marginally significantly related to enrollment ($p < .1$), and there was no significant relationship between family wealth and ECCD enrollment.**

Figure 4. Relationship between ECCD center enrollment and home learning activities

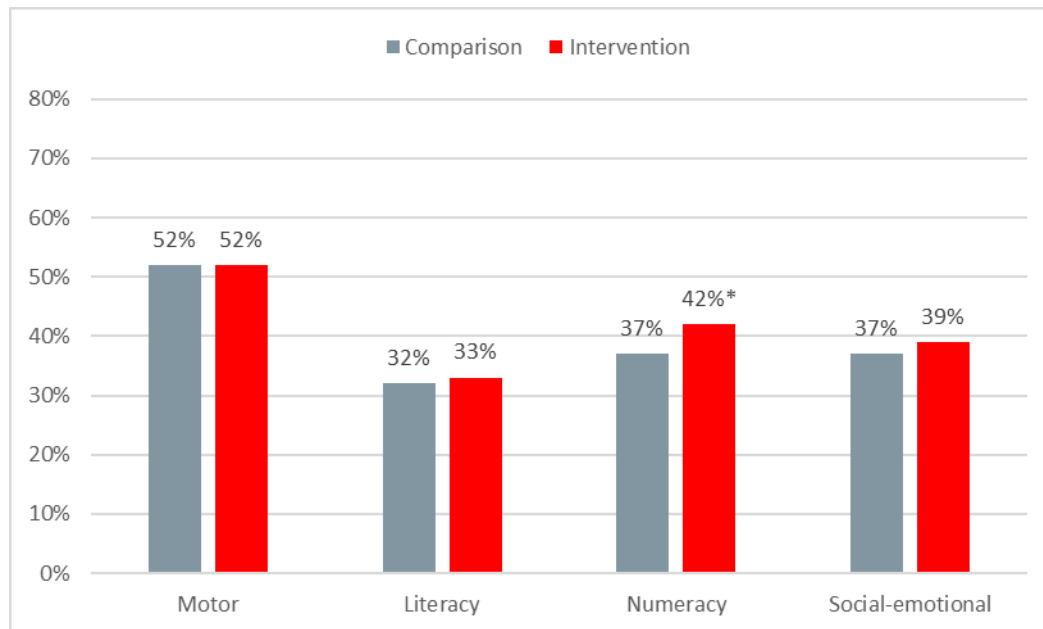


Note: Figure controls for child age, child sex, previous 0-3 intervention enrollment, intervention group, and relative family wealth.

Child development and learning

To investigate children's development and learning, both the ASQ and IDELA tools were used. Due to the length of time between intervention completion and this follow up study and the limitations of the study sample, multiple control variables were used in these analysis. This also allows for an understanding of whether there are relationships between children's development and important equity factors. **Neither tool identified significant relationships between the mother or father parenting program participation and current child development. However, when looking only at children not currently enrolled in an ECCD center, those whose parents attended one of the interventions had significantly stronger early numeracy skills than those who did not.** In addition, analyses identified a number of equity factors that were significantly related to children's learning and development.

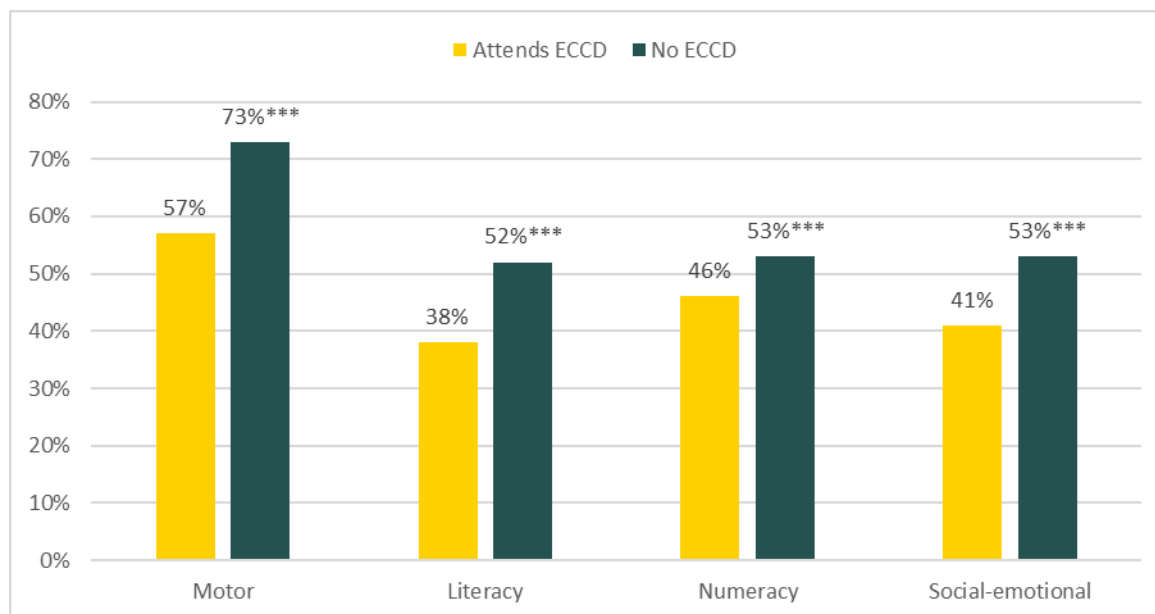
Figure 5. Relationship between 2011-12 0-3 parenting intervention participation and 2015 learning and development (IDELA) for children not enrolled in an ECCD center only



Note: * $p < .05$, ** $p < .01$, *** $p < .001$. Figure controls for child age, child sex, home learning activities, intervention group, and relative family wealth.

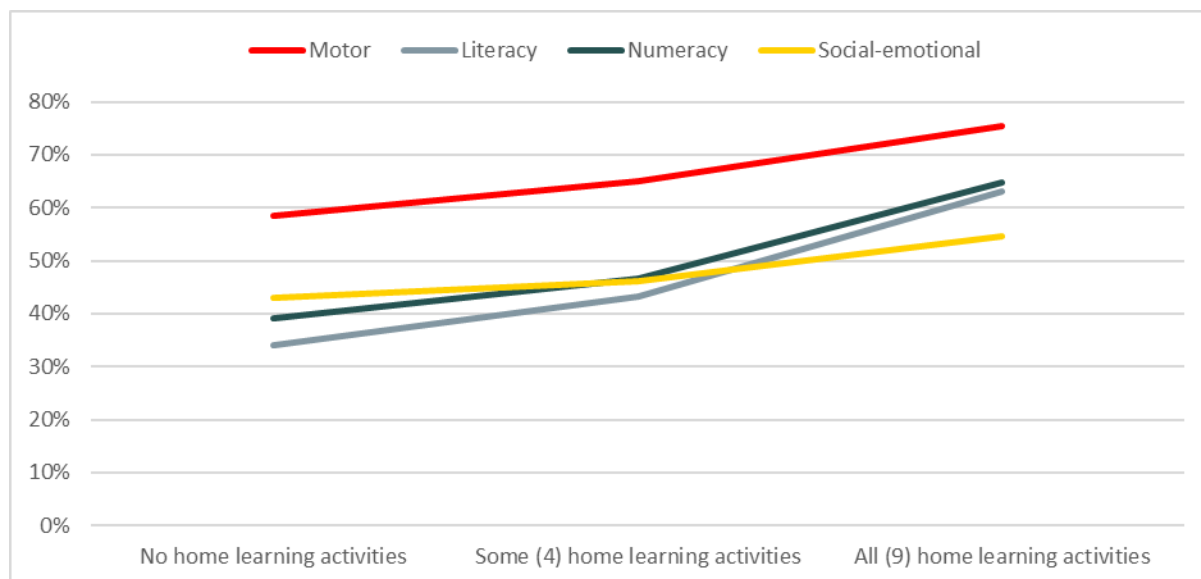
Analyses of IDELA outcomes revealed a number of interesting findings. Being enrolled in an ECCD center was the strongest driver of children's skills; enrollment was significantly related to all domains with effect sizes ranging from .34 - .60. Home learning activities were also significantly positively related to all domains scores, and relative family wealth (measured by home possessions) was a significant predictor of all skills except social-emotional development. Finally, girls had significantly stronger literacy skills than boys.

Figure 6. Predicted IDELA skills related to ECCD enrollment



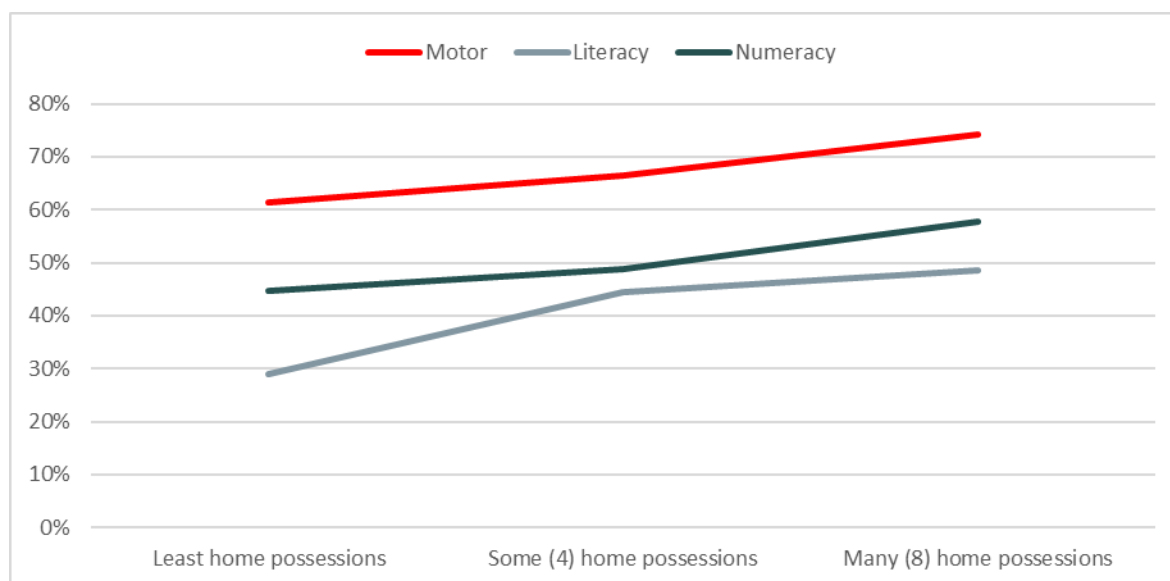
Note: Figure controls for child age, child sex, home learning activities, previous 0-3 intervention enrollment, intervention group, and relative family wealth.

Figure 7. Predicted IDELA skills related to home learning activities



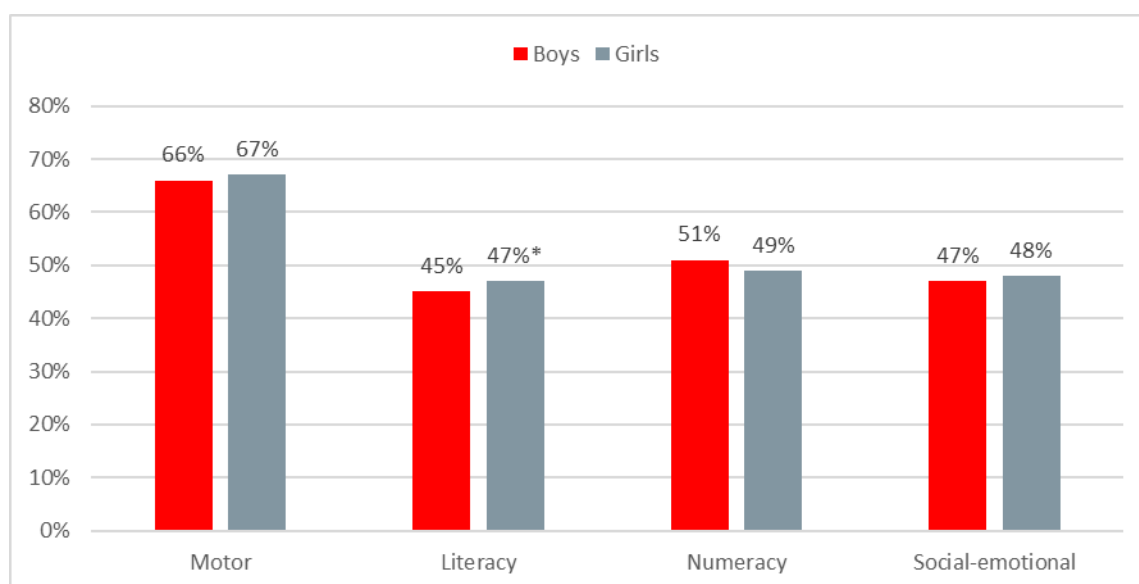
Note: Figure controls for child age, child sex, ECCD enrollment, previous 0-3 intervention enrollment, intervention group, and relative family wealth.

Figure 8. Predicted IDELA skills related to relative family wealth (home possessions)



Note: Figure controls for child age, child sex, home learning activities, ECCD enrollment, previous 0-3 intervention enrollment, and intervention group.

Figure 9. Predicted IDELA skills related to child gender



Note: * $p < .05$. Figure controls for child age, home learning activities, home possessions, ECCD enrollment, previous 0-3 intervention enrollment, and intervention group.

Analyses of the ASQ data did not find any significant relationships between previous interventions and current child development, nor any relationship between gender and early learning skills. However, they did also display home learning activities and family wealth to be strong predictors of children's development, and to a lesser extent ECCD enrollment as well.

The ASQ analysis found home learning environment and family wealth significantly predicted scores in three of the five domains, and ECCD enrollment to significantly predict children's problem solving skills.

Conclusion and next steps

In summary, the results of this study find an interesting interplay between factors related to children's learning and development. There was no relationship found between participation in a 2011 and 2012 parenting programs and 2015 learning materials or activities at home. There was also little relationship between 0-3 parenting program participation and child development outcomes for children taking into account current factors influencing children's learning and development like ECCD enrollment and parent-child activities at home. However, for children not enrolled in an ECCD program, previous 0-3 parenting program participation was significantly positively related to emergent numeracy skills. That is, for children not currently enrolled in an ECCD center program, those whose parents had participated in a 0-3 parenting program had stronger early math skills than their peers whose parents were not involved in an early parenting program. This could suggest that enrollment in a center-based ECCD program has a large enough impact on early learning to obviate any lasting impact of 0-3 interventions, but 0-3 programming does have a lasting relationship with learning and development for children who are not receiving early learning support from a center-based program.

Looking at equity factors impacting children's learning and development, being enrolled in an ECCD center was found to be the strongest driver of children's skills. Enrollment was significantly related to all domains with effect sizes ranging from .34 - .60. Home learning activities were also significantly positively related to all domains scores, and relative family wealth (measured by home possessions) was a significant predictor of all skills except social-emotional development. Taken together this suggests that children who are not receiving consistent stimulation and learning support and those from poorer families are at the highest risk for falling behind in their early development and learning.

Results also found that children whose parents reported engaging in more home learning activities were more likely to be enrolled in ECCD centers but that there was no relationship between family assets and ECCD enrollment. Given the limitations of the study, we cannot conclude that parent involvement in child development activities at home is driving ECCD enrollment or that cost is not a barrier for some families when considering ECCD enrollment, but it does suggest that motivators and barriers to ECCD enrollment should be an area of further investigation. Given the strong impact ECCD enrollment can have on children's learning and preparation for primary school, it is important to consider how to encourage more parents to enroll their children in these beneficial programs.

Finally, given the importance of early stimulation for later cognitive development and the fact that Bangladesh has a limited number of early stimulation programs, further research is needed to identify programs for 0-3 year olds that have both positive short-term and long-term impact on child development. These results suggest that more work is needed to maintain the positive parent behavior change seen in short-term impact evaluations,

especially for fathers. Future projects could consider factors that would support behavior change even after a program has ended like activities cards for parents to keep after the program ends or encouraging continued parenting-focused group meetings led by community members. Alternatively, a higher intensity of programming could be considered in the future. For example, longer programming cycles or more frequent meetings could establish more lasting behavior change.

Appendix A. ASQ – IDELA comparison

A subgroup of children in this study sample received both the ASQ and IDELA tools (n=138), allowing for a comparison of how the tools measure child development. Specifically it allows for an analysis of convergent validity between the two instruments. The overlap in tool domains and items is displayed in table A1.

Table A1. Domains and items in ASQ and IDELA tools

Domain	ASQ	IDELA
Gross motor	6 items: Hopping, jumping, throwing, catching, balance	1 item: Hopping
Fine motor	6 items: Copying, tracing, coloring, drawing, cutting with scissors	3 items: Copying, drawing, folding paper
Communication/Emergent literacy	6 items: Expressive vocabulary and oral comprehension/executive function	6 items: Print awareness, expressive vocabulary, oral comprehension, emergent writing, letter identification, phonemic awareness
Problem solving/Emergent math	6 items: Color identification, pretend play, counting, size comparison, number identification, letter identification	7 items: size/length comparison, number identification, one-to-one correspondence, shape identification, simple operations, puzzle completion
Personal-social/Social-emotional	6 items: Face washing, peer relationships, teeth brushing, utensil use, self-identification, independence (dressing and toilet use), sharing	5 items: Self-identification, emotional awareness and regulation, conflict resolution, peer relationships, empathy

Investigating the relationships between domains, analyses find significant positive correlations between relevant domains suggesting that both tools are measuring these constructs in similar ways. The strongest correlation was between the fine motor domain of ASQ and the motor domain of IDELA, and the weakest correlation was between with gross motor domain of ASQ and the motor domain of IDELA. The stronger relationship between the IDELA motor domain and ASQ's fine motor domain compared to the ASQ gross motor domain makes sense given that the IDELA domain contains 3 fine motor items and only 1 gross motor item.

There are also significant but relatively small correlations between the communication/emergent literacy and personal-social/social-emotional domains. Some reason for this could be different emphasis of the items within these domains. Looking at the items in the language domain, IDELA items cover a wider variety of early literacy skills whereas the ASQ domain is more focused on expressive and receptive language. Within the personal-social/social-emotional domain IDELA items are more focused on emotional awareness of self and others whereas ASQ items focus more on personal care and independence.

Table A2. Correlation between ASQ and IDELA domains

Domain	Correlation	Significance
Gross motor	0.33	***
Fine motor	0.61	***
Emergent language/literacy	0.36	***
Emergent math/problem solving	0.48	***
Social-emotional development	0.36	***

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

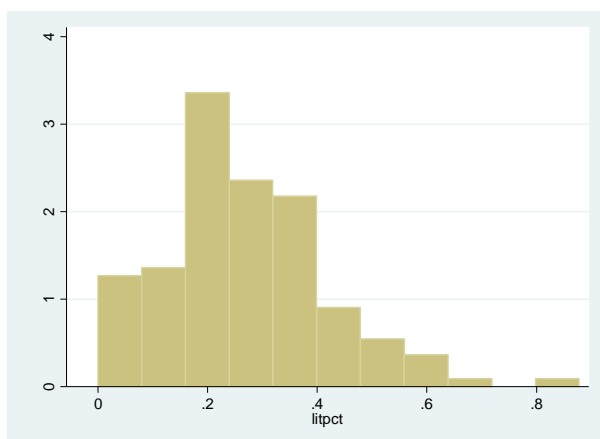
The other possible explanation for the relatively small correlations between domains is the difference in administration styles between the two assessments. ASQ is primarily caregiver-reported with some child engagement, especially at 54 and 60-months, whereas IDELA is completely direct child assessment. The IDELA domains were found to have more normal distributions than the ASQ domains, especially in the language and social-emotional domains as shown in Table and Figures. This suggests that there could be social desirability bias in the ASQ items in these ideas that does not exist in a direct child assessment.

Table A3. Summary statistics, ASQ and IDELA domains

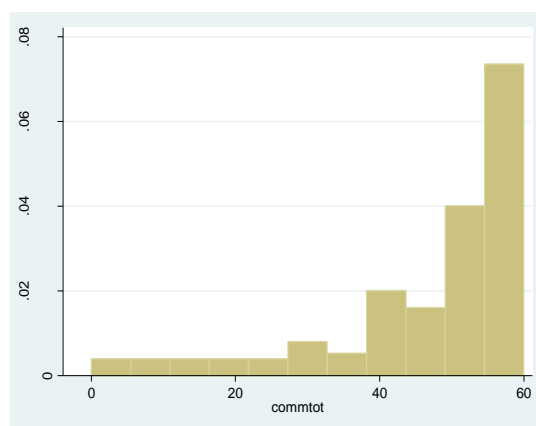
Variable	Mean	Std. Dev.	Min	Max
Motor	43.1%	25.31%	0	100.0%
Literacy	26.3%	15.43%	0	87.8%
Numeracy	30.5%	14.93%	0	92.1%
Social-emotional	36.2%	18.93%	0	88.3%
Gross motor	45.7	12.92	0	60.0
Fine motor	21.3	16.08	0	60.0
Communication	46.6	14.28	0	60.0
Problem solving	24.5	12.68	0	60.0
Personal-social	51.9	10.73	0	60.0

Figures A1a – i.

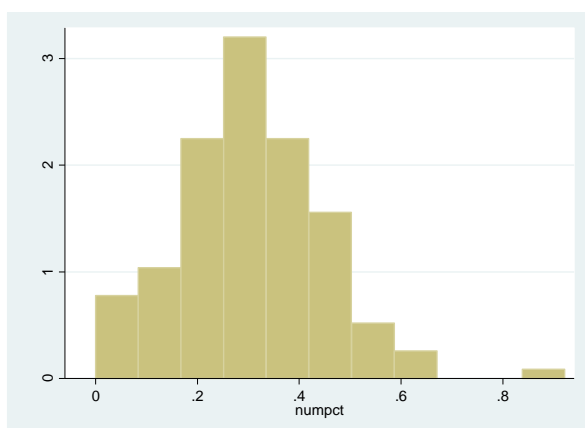
a) IDELA emergent literacy



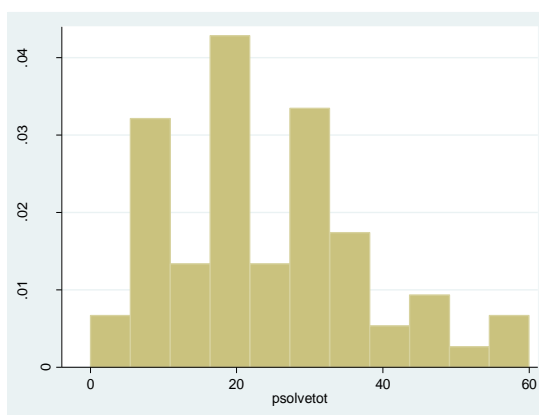
b) ASQ Communication



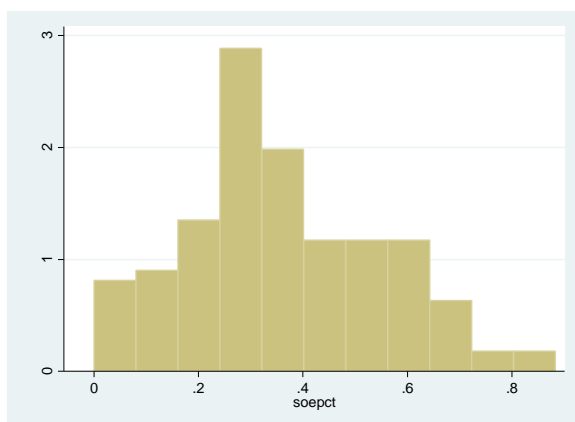
c) IDELA emergent math



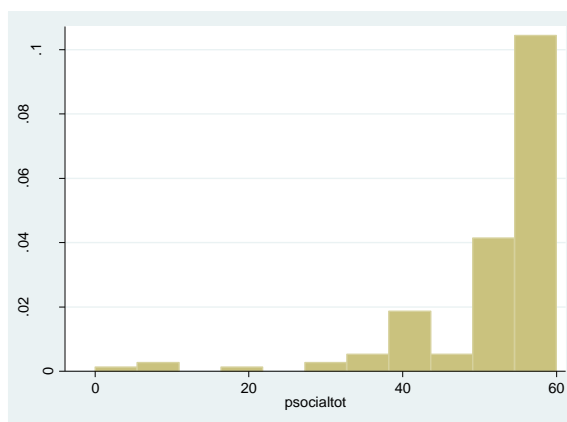
d) ASQ Problem solving



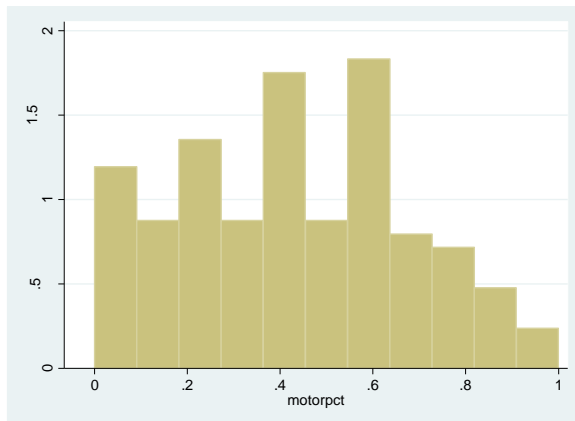
e) IDELA social-emotional



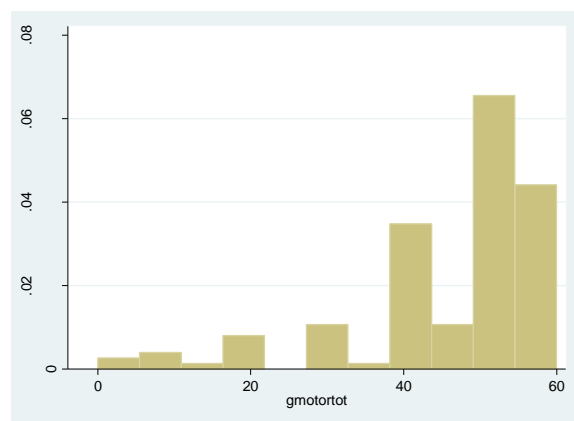
f) ASQ Personal-social



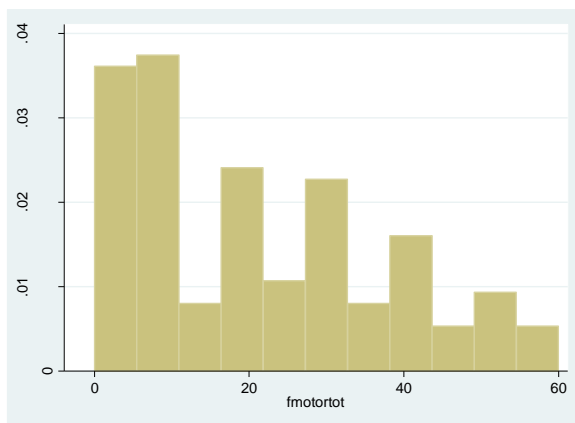
g) IDELA motor development



h) ASQ Gross motor



i) ASQ Fine motor



Relatedly, IDELA and ASQ tools found similar patterns of relationships between intervention and equity variables with child outcomes in the program evaluation analysis, but IDELA was more sensitive to these variables. The similarity in the program evaluation findings between the two tools is consistent with the finding that related domains within each are significantly positively correlated, and the increased sensitivity of IDELA to predictor variables of interest is also aligned with the more normal distribution of the IDELA domains and the potential reporting bias on the ASQ items.

Finally, domains within both tools were found to have at least acceptable internal consistency.¹ This suggests that domains within both tools contain items that are related to the construct they propose to be measuring. Internal consistency statistics can become inflated in scales with numerous items but domains in both tools contain a relatively small number of items.

Table A4. Internal consistency of ASQ items

¹ Nunnally J. C. & Bernstein I. H. (1994) Psychometric Theory, 3rd edn. McGraw-Hill, New York.

Domain	Cronbach's alpha (α)
Communication	0.83
Gross motor	0.86
Fine motor	0.81
Problem solving	0.76
Personal-social	0.77

Table A5. Internal consistency of IDELA items

Domain	ICC
Motor	0.93
Literacy	0.82
Numeracy	0.85
Social-emotional	0.80

In summary, analyses of ASQ and IDELA results from 138 children aged 54 – 60 months in rural Bangladesh found that the tools are measuring related constructs of child development, but that IDELA is a better fit instrument for this context. Related domains were significantly positively related suggesting concurrent validity between the two measures. However, the IDELA assessment showed a more normal distribution of scores and greater sensitivity to intervention and equity factors. The strong negative skew found in the communication and personal-social ASQ domains could be related to caregiver response bias. Further investigation is needed to test the relationship between these two tools in other settings.

Appendix B. Program impact analysis results

Table A1. ECCD center attendance

VARIABLES	(1) ECCD center attendance
0-3 intervention participation	0.461~ (0.255)
Study group	-0.664 (0.523)
Child age (month)	0.123** (0.0416)
Child is female	0.0705 (0.161)
No. home learning activities	0.128** (0.0467)
No. home possessions	-0.00163 (0.0571)
Constant	-7.951* (3.313)
Observations	714
Adjusted R-squared	.

Robust standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

Table A2. IDELA results, all children (both study groups)

VARIABLES	(1) Motor	(2) Literacy	(3) Numeracy	(4) Social- emotional	(5) IDELA
0-3 intervention participation	-0.0300~ (0.0153)	-0.0161 (0.0135)	0.00729 (0.0149)	0.0147 (0.0183)	-0.00602 (0.0103)
Study group	-0.100* (0.0429)	-0.0235 (0.0364)	-0.0200 (0.0297)	-0.0139 (0.0379)	-0.0394 (0.0292)
Child age (month)	0.00987** (0.00323)	0.0128*** (0.00262)	0.0145*** (0.00254)	0.00501~ (0.00265)	0.0105*** (0.00213)
Child is female	0.0105 (0.0159)	0.0248* (0.0118)	-0.0130 (0.0117)	0.00794 (0.0133)	0.00753 (0.00952)
No. home learning activities	0.0184*** (0.00330)	0.0247*** (0.00287)	0.0224*** (0.00233)	0.0129*** (0.00303)	0.0196*** (0.00210)
No. home possessions	0.0235*** (0.00551)	0.0215*** (0.00456)	0.0174*** (0.00407)	0.00794 (0.00474)	0.0176*** (0.00364)
Attends ECCD	0.157*** (0.0239)	0.137*** (0.0134)	0.0731*** (0.0183)	0.119*** (0.0168)	0.122*** (0.0139)
Constant	-0.118 (0.271)	-0.627** (0.218)	-0.641** (0.203)	-0.00678 (0.222)	-0.348~ (0.179)
Observations	593	593	593	593	593
R-squared	0.376	0.455	0.446	0.226	0.491
Adjusted R-squared	0.369	0.449	0.439	0.217	0.485

Robust standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

Table A3. IDELA results, mother group only

VARIABLES	(1) Motor	(2) Literacy	(3) Numeracy	(4) Social- emotional	(5) IDELA
0-3 intervention participation	-0.0158 (0.0182)	-0.0143 (0.0191)	0.00766 (0.0206)	0.0259 (0.0198)	0.000867 (0.0139)
Child age (month)	0.00932* (0.00357)	0.0136*** (0.00293)	0.0159*** (0.00248)	0.00626* (0.00263)	0.0113*** (0.00220)
Child is female	0.0383* (0.0183)	0.0399** (0.0136)	-0.00331 (0.0132)	0.0230 (0.0151)	0.0245* (0.0112)
No. home learning activities	0.0181*** (0.00373)	0.0273*** (0.00329)	0.0248*** (0.00292)	0.0123*** (0.00336)	0.0206*** (0.00243)
No. home possessions	0.0201** (0.00675)	0.0246*** (0.00510)	0.0165** (0.00499)	0.00987~ (0.00580)	0.0178*** (0.00438)
Attends ECCD	0.172*** (0.0242)	0.151*** (0.0168)	0.0800*** (0.0205)	0.126*** (0.0168)	0.132*** (0.0154)
Constant	-0.196 (0.258)	-0.747*** (0.206)	-0.773*** (0.175)	-0.131 (0.192)	-0.462** (0.159)
Observations	456	456	456	456	456
R-squared	0.244	0.365	0.301	0.178	0.371
Adjusted R-squared	0.234	0.357	0.292	0.167	0.363

Robust standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

Table A4. IDELA results, father group only

VARIABLES	(1) Motor	(2) Literacy	(3) Numeracy	(4) Social- emotional	(5) IDELA
0-3 intervention participation	-0.0263 (0.0398)	-0.00583 (0.0229)	0.0136 (0.0217)	0.00163 (0.0378)	-0.00423 (0.0248)
Child age (month)	0.0140 (0.00917)	0.00846 (0.00575)	0.00820 (0.00732)	-0.000723 (0.00656)	0.00749 (0.00637)
Child is female	-0.0879* (0.0340)	-0.0276 (0.0239)	-0.0457~ (0.0225)	-0.0394 (0.0275)	-0.0502** (0.0173)
No. home learning activities	0.0217*** (0.00535)	0.0143** (0.00462)	0.0126* (0.00469)	0.0157* (0.00725)	0.0161*** (0.00435)
No. home possessions	0.0363** (0.0102)	0.0111~ (0.00642)	0.0201* (0.00767)	0.000474 (0.00598)	0.0170** (0.00482)
Attends ECCD	0.0722 (0.0540)	0.0646* (0.0272)	0.0368 (0.0328)	0.0844~ (0.0472)	0.0645* (0.0280)
Constant	-0.549 (0.521)	-0.307 (0.331)	-0.280 (0.416)	0.353 (0.371)	-0.196 (0.364)
Observations	137	137	137	137	137
R-squared	0.197	0.151	0.166	0.094	0.203
Adjusted R-squared	0.160	0.112	0.128	0.0521	0.166

Robust standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1

Table A5. ASQ results, father group only

VARIABLES	(1) Communication	(2) Gross motor	(3) Fine motor	(4) Problem solving	(5) Personal-social
0-3 intervention participation	0.152 (0.252)	0.163 (0.222)	-0.208 (0.297)	0.0819 (0.222)	0.321 (0.476)
Child age (month)	0.167~ (0.0894)	0.0731 (0.0664)	-0.241*** (0.0656)	-0.157** (0.0496)	-0.152 (0.102)
Child is female	0.0995 (0.338)	0.174 (0.380)	0.254 (0.294)	-0.0560 (0.331)	0.485 (0.464)
No. home learning activities	-0.0715 (0.0633)	0.155* (0.0688)	0.225*** (0.0682)	0.159** (0.0567)	0.134 (0.100)
No. home possessions	0.200* (0.0883)	0.121 (0.0995)	0.225** (0.0843)	0.182* (0.0909)	0.0306 (0.139)
Attends ECCD	0.892~ (0.520)	-0.0705 (0.386)	-0.0523 (0.399)	1.003* (0.438)	-0.260 (0.649)
Constant	-9.135~ (5.167)	-3.974 (3.966)	10.55** (3.742)	5.875* (2.792)	10.15~ (6.099)
Observations	255	255	255	255	255
Adjusted R-squared

Robust standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05, ~ p<0.1