Analyzing the Impact of BRAC's Play Lab Model on Early Childhood Development (ECD) in Uganda and Tanzania

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FINDINGS AT A GLANCE

Independent researchers studied BRAC's Play Lab model in Uganda and Tanzania and observed the following through a quasi-experimental evaluation:

- Play Labs children showed clear gains versus comparison group children on children's developmental outcomes using the Ages and Stages Questionnaire - 3 (ASQ-3) test, a common assessment tool measuring children's physical, cognitive, and socio-emotional development. On other measures, the gains were less clear.
- Play Lab children showed significant progress in the number of play types in which they engaged. In Uganda, Play Labs equipped parents with the knowledge and resources to support their children's development.

INTRODUCTION

Play-based learning in early childhood is an effective way to develop socio-emotional skills and foster children's resilience and prepare them for adulthood. Since the 1990s, BRAC has been implementing pre-primary education programmes, reaching millions of children in Africa and Asia. Building upon early success, BRAC partnered with LEGO Foundation in 2016 to pilot the Play Lab project in Uganda, Tanzania, and Bangladesh. During 2018-2020, the project was extended and simultaneously implemented in all three countries. A total of 120 Play Labs in Uganda, 120 in Tanzania, and 510 in Bangladesh reached over 115,000 children. This research brief is on the cohorts in Tanzania and Uganda and serves as a follow-up to the Play Lab Research Brief – Bangladesh from August 2021.

RESEARCH METHODS

Under the leadership of the late Dr. David Whitebread, a developmental psychologist and researcher at the University of Cambridge, BRAC's Play Lab project in Uganda and Tanzania underwent rigorous monitoring and evaluation, culminating in a quasi-experimental evaluation in 2018 and 2019. Sadly, Dr. Whitebread passed away before the data could be analyzed. Therefore, BRAC International engaged an independent research analyst to complete the analysis for Year 2 of the program.

BRAC and the Independent Evaluation and Research Cell (IERC) collaborated with the University of Cambridge and the Centre for Play at BRAC Institute of Educational Development (BRAC IED) at BRAC University to evaluate the effects of the intervention on children's learning and development. The study used a quasi-experimental design where nearby schools with similar characteristics were selected for the comparison group. It applied eight tools including ASQ-3, Wechsler Preschool and Primary Scale of Intelligence (WPPSI-III), and Developmental Index of Pre-School Playfulness (DIPP).

Homemade toys at a Play Lab in Tanzania

Participants

In both Tanzania and Uganda, the study was conducted with a sample of 120 children in Year 1 and 480 children in Year 2 in each country. A comparison group was not recruited during the first year in either country, so all 120 children in each country were intervention group participants in BRAC's Play Labs. In Year 2, 240 children were included in the intervention group in each country, and 240 children were in the comparison group.

In Tanzania, there were 60 boys and 60 girls in the Play Lab intervention group in Year 1 and 117 boys and 123 girls in the intervention group in Year 2. For the comparison group in Tanzania, there were 104 boys and 136 girls in Year 2.

Table 1: Tanzania Participants/ Sample Children

TANZANIA	Year 1	Year 2	Year 2
Demographics	Intervention	Intervention	Comparison
Total number	120	240	240
Gender			
Male	60	117	104
Female	60	123	136
Age at entry to Play Lab/Pre-school (months)	$M = 34.00$	$M = 34.02$	$M = 32.20$

In Uganda, there were 57 boys and 63 girls in the Play Lab intervention group in Year 1 and 108 boys and 132 girls in the intervention group in Year 2. For the comparison group in Uganda, there were 119 boys and 121 girls in Year 2.

Table 2: Uganda Participants/ Sample Children

UGANDA	Year 1	Year 2	Year 2
Demographics	Intervention	Intervention	Comparison
Total number	120	240	240
Gender			
Male	57	108	119
Female	63	132	121
Age at entry to Play Lab/Pre-school (months)	$M = 33.96$	$M = 32.88$	$M = 31.13$

A majority of children (53.3%) in the Tanzania sample were from single-parent households, while a majority of children (42.1%) in the Uganda sample were from single-family (both caregivers) households.

In Tanzania, caregivers' ages ranged from 21 to 80, with a mean of 32 for female caregivers and 37 for male caregivers. Caregivers' education levels ranged

Table 3: Tanzania Family

UGANDA	Year 1	Year 2	Year 2
Demographics	Intervention Mean (min-max)	Intervention Mean (min-max)	Comparison Mean (min-max)
Female caregivers (*n*)		240	240
Female caregiver's age (years)	32.25 (21-62)	32.19 (21-79)	31.40 (22-49)
Female caregiver's education (years)	7.56 (0-14)	7.58 (0-14)	9.89 (0-16)
Male caregivers (*n*)		240	240
Male caregiver's age (years)	37.86 (24-70)	38.13 (23-80)	36.75 (26-62)
Male caregiver's education (years)	8.35 (0-16)	8.25 (0-16)	10.63 (7-16)
Monthly income (Tz shillings)	200,542 (10,000-600,000)	197,862.50 (5,000-800,000)	349,041.67 (10,000-900,000)
Total belongings	5.78 (1-14)	5.72 (1-14)	7.19 (1-14)

from no schooling up to 16 years, with an average of 7-9 years for female caregivers and 8-10 years for male caregivers. Monthly incomes spanned from 5,000 to 900,000 Tanzanian shillings (approximately $2 to $360 USD per month). The average monthly household income drastically varied between the intervention and comparison groups. The average monthly income for intervention group participants in Years 1 and 2 was approximately 200,000 Tanzanian shillings (approximately $80 USD), while the average for comparison group participants in Year 2 was much higher at approximately 349,000 Tanzanian shillings ($139.60 USD).[1]

In Uganda, there were no significant differences in demographic variables between the families of children in the intervention group in Year 1 and Year 2 and the comparison group in Year 2. Across all groups, caregivers' ages ranged from 18-82, with a mean of 32 for female caregivers and 38 for male caregivers. Caregivers' education levels ranged from no schooling up to 16 years, with an average of 8 years for female caregivers and 9-10 years for male caregivers. Monthly incomes spanned from approximately 10,000 to 800,000 Ugandan shillings ($4 to $320 USD) per month, with an average of close to 177,000 Ugandan shillings ($70.8 USD) per month.[2]

Measures
Researchers measured outcomes using the ASQ-3; the Checklist for Independent Learning (CHILD); the Knowledge, Attitude, and Practice Questionnaire (KAP) - Parents and Play Leaders; verbal scales from the WPPSI-III; and several tools developed specifically for the Play Lab project to measure playfulness (the DIPP), the fidelity of the model (Fidelity), the quality of the Play Leader-Child interaction (PLC), and Play Leaders' competencies. The KAP tool was used to assess both parents' and caregivers' knowledge and engagement with children across a number of indicators including child health and their interactions in the home. Most of the research tools were new to Uganda and Tanzania, so BRAC piloted and validated them to ensure contextual relevance.

RESEARCH RESULTS
The results presented in this brief illustrate findings from the second year of the project, covering baseline2 and endline2.

Uganda
There were significant differences in the achievement levels of the Play Lab and comparison children in Year 2 in Uganda. The results for the ASQ-3 test, a common

[1] These conversions were generated based on the 2020 average conversion rate, which was 1 TZS to 0.0004 USD.

[2] These conversions were generated based on the 2020 average conversion rate, which was 1 UGX to 0.0004 USD.

Table 4: Uganda Family

UGANDA	Year 1	Year 2	Year 2
Demographics	Intervention Mean (min-max)	Intervention Mean (min-max)	Comparison Mean (min-max)
Female caregiver's age (years)	32.25 (19-66)	32.24 (18-85)	31.23 (19-67)
Female caregiver's education (years)	8.46 (0-15)	8.18 (0-15)	8.33 (0-16)
Male caregiver's age (years)	38.87 (21-70)	38.24 (21-82)	37.32 (21-63)
Male caregiver's education (years)	10.25 (0-17)	9.16 (0-17)	9.49 (0-16)
Monthly income (Ug shillings)	171,625 (10,000-600,000)	177,063 (10,000-800,000)	171,375 (50,000 - 800,000)
Total belongings	4.45 (1-10)	4.46 (1-11)	4.37 (1-12)

assessment tool measuring children's physical, cognitive, and socio-emotional development, show a clear increase in the levels of progress achieved between the Play Lab and comparison children. In Year 2, the Play Lab children achieved significant progress ($p < .05$) in all subscales (except in the problem-solving subscale) and in the total ASQ-3 score. Comparison group children, on the other hand, made non-significant progress in communication, gross motor, and total ASQ-3 scores.

An independent group t-test showed that these differences were at strong levels in all the subscales of the ASQ-3 test. The Year 2 results show that the Play Lab children made a gain of 30.76 (221.65 at baseline2 to 251.62 at endline2), against the comparison group children's gain of 6.34 (232.80 at baseline 2 to 239.02 at endline2). Scores on the ASQ-3 range from 0 to 300. This striking difference can likely be attributed to the two key differences in the children's experience – that the curriculum and learning experience of the Play Lab were superior to that provided in the other provision available for preschool children. There was no significant change for Play Lab children in the number of play types in which they engaged. However, the Play Lab children showed significant progress from baseline2 to endline2 on the DIPP ($p < .001$), which measures children's self-regulation and playfulness.

On other measures, the gains were less clear. For instance, within the Uganda cohort, we see comparable backgrounds between families in the intervention and comparison groups. At baseline2, parents of Play Lab children scored higher than parents of comparison group children on KAP questions related to early childhood development and education. Although we observed an increase in KAP scores from baseline2 to endline2 for Play Lab caregivers, comparison group caregivers made slightly larger gains during this same period.

Play Leaders had, on average, fewer years of experience but a similar level of education to comparison group teachers. Although Play Leaders improved in their quality of interactions with children from baseline2 to endline2 while the comparison group teachers saw a decline, the overall level of improvement was statistically insignificant. However, we see a statistically significant increase in Play Leaders' interaction with children on 10 out of 21 items from baseline2 to endline2. Although not statistically significant, among Play Leaders, we observed a decrease in the level of fidelity with which Play Leaders were able to carry out the Play Lab program.

Children at a Play Lab in Uganda

In some areas, the Play Lab experience made significant gains for Play Lab children during the second year of the study. Although we see gains in the comparison group on some indicators–for example, we observed an increase in caregivers' KAP in the comparison group–the overall gains of Play Lab children are measurable and significant. Additional insights are needed to better understand whether parental engagement was carried out according to program plans. This activity-level data was not captured by this evaluation.

Tanzania

For child-level outcomes, we see progress on the ASQ-3 for Play Lab children in Tanzania. The results for the ASQ-3 test show a clear increase in the levels of progress achieved between the Play Lab and comparison groups. In Year 2, the Play Lab children achieved significant progress in all subscales ($p < .05$) and in the total ASQ-3 score. Children in the comparison group, on the other hand, made progress that was not statistically significant in gross motor and personal social scores. The Year 2 results show that the Play Lab children made a gain of 27.4 (234.96 at baseline2 to 262.35 at endline2), against the comparison children's gain of 11.98 (243.65 at baseline2 to 255.63 at endline2). We also see improvement in Play Lab children's self-regulation abilities. Much like in Uganda, we can reasonably attribute these significant differences to the Play Lab intervention. In Year 2, Play Lab children also showed progress in the number of play types they engaged in and DIPP scores. Play Lab children again consistently outperformed the comparison children in their degree and range of playfulness.

Much like the Uganda cohort, we see comparable backgrounds between families in the intervention and comparison groups in Tanzania, although slightly more comparison group families were two-parent households. At baseline2, the KAP scores for caregivers of Play Lab children were higher than caregivers of children in the comparison group. By endline2, comparison group caregivers' KAP scores exceeded those of Play Lab caregivers' scores suggesting the comparison group outperformed the intervention group in this area.

The quality of teacher interactions with children increased in both the comparison group and Play Lab group, although teachers in the comparison group made a greater degree of improvement from their relatively low

A Play Leader in Tanzania leads students in drumming lessons.

starting point, thus outperforming Play Lab teachers in this area. Progress in the level of fidelity with which Play Leaders were observed to carry out the Play Lab program was observed, with a score of 36.90 at baseline2 and improved upon to a score of 38.44 by endline2, $p < .001$. The daily level of fidelity was scored from 0-40 on the key areas of Play Lab daily planning, materials and organization, emotional support offered to children, supportive learning practices, and volunteer engagement at the Play Labs.

THE PATH FORWARD

BRAC aims to continue championing early childhood development with the goal of reaching 10 million children between the ages of 0-8 and their caregivers by 2030.

In the last few years, BRAC has added new features and adapted Play Labs in various contexts. Climate resilient Green Play Labs in Bangladesh is a new initiative that is focusing on strengthening children's and communities' connection with and empathy for nature, as well as highlighting indigenous knowledge and practices around adapting to climate change. In Tanzania and Uganda, BRAC revised its Play Curriculum, parenting curriculum, and staff and facilitator training with a gender transformative lens to develop mindfulness around gender inequality and an aim to dispel harmful gender norms from an early age. There is also an increasing focus on psycho-social support, which involves the integration of mental health support into ECD services to improve the well-being of children and their families.

BRAC is committed to building the evidence base for early

childhood development in the Global South. In addition to these findings from Uganda and Tanzania, findings from numerous studies and evaluations of BRAC's ECD programs, especially within a humanitarian context, are forthcoming.

For example, an internal experimental study carried out by BRAC IED in 2021 on the effectiveness of the remote learning model Pashe Achhi for ultra-poor communities in Bangladesh shows that 6 months of intervention duration was effective for achieving children's optimum development. To reduce the depressive symptoms of female caregivers, a longer intervention duration was needed. This research is in the process of being published.

BRAC is also working with IPA to implement its Ultra-Poor Graduation (UPG) and Humanitarian Play Lab (HPL) programs in refugee and host communities of West Nile, Uganda. For this evaluation, the research team is using the IDELA tool to measure children's development and learning. A formal baseline report detailing findings will be disseminated in Fall 2023. In addition, researchers from New York University (NYU) are carrying out an impact evaluation of the Fathers' Engagement model for humanitarian settings in the Rohingya camps, results of which will be shared later in 2023, as well as qualitative studies of different aspects of the HPL intervention.

If successful, these models and their evidence base could help BRAC reach more children and families through quality play-based learning. Moreover, the evidence here contributes to the development literature on the importance of play-based learning. It showcases an effective model that is worthy of consideration for uptake by government entities and other implementing agencies.