



Mechanistic effects of a Family Strengthening Intervention on early child outcomes in Rwanda

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Background

Poverty-related risks that are known to affect early child development can be targeted in interventions. We present data from a longitudinal cluster-randomized trial (CRT) examining the effectiveness of **Sugira Muryango ("Strong Family")**, a father-engaged lay-workers delivered home-visiting intervention for families living in severe poverty with children aged 6-36 months in Rwanda. Results from pre- to post-intervention assessments suggested that Sugira Muryango was associated with increased stimulation and positive parenting, improved caregiver mental health, and reduced family violence, including harsh discipline and that children from families receiving Sugira Muryango improved more on gross motor, communication, problem-solving, and personal-social development. The current study explores the extent to which intervention-related changes in caregiver behaviors mediate the positive effects of Sugira Muryango on children's developmental outcomes. In line with the program's theory of change, we focus on behaviors related to playful caregiving, violent discipline, dietary diversity, caregiver emotion regulation, and caregiver mental wellbeing.

Theory of change

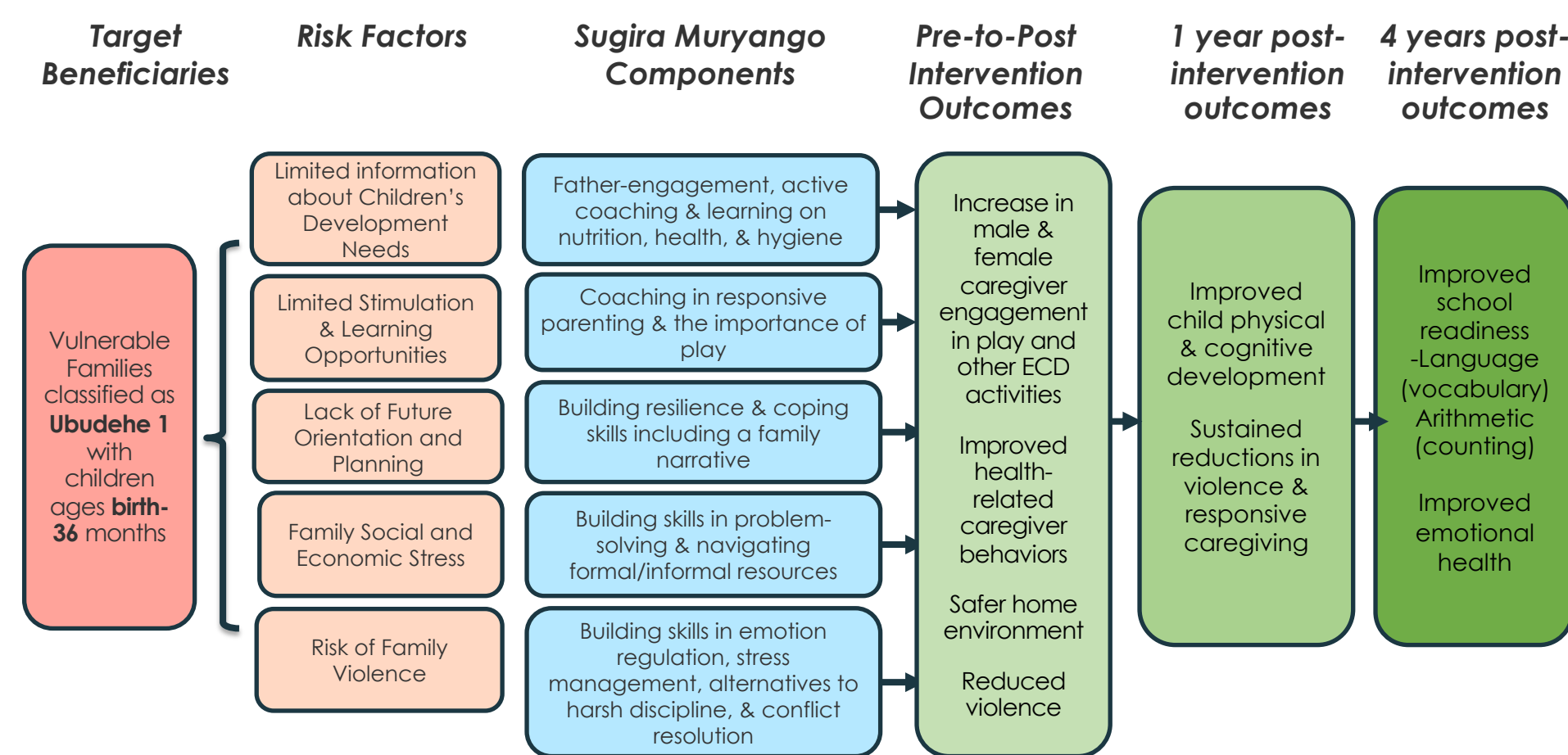


Figure 1: The Sugira Muryango parenting intervention theory of change

Methods

The CRT enrolled 1049 families. Data were collected at baseline, immediately after the intervention, and at a 12-month follow-up. Current analyses included all 1023 caregiver-child dyads. Developmental outcomes were assessed using ASQ-3. Playful learning was assessed using the Family Care Indicators from UNICEF's MICS. Violent discipline was assessed using the Discipline module from MICS. Dietary Diversity was assessed using USAID items that reflect whether or not the child consumed seven food groups in the past 24 hours. Caregiver emotion dysregulation was assessed using the Difficulties in Emotion Regulation Scale (DERS), and caregiver anxiety and depression were assessed using Hopkins Symptoms Checklist (HSCL-25). We use Structural Equation Modeling to examine the model presented in Figure 1.

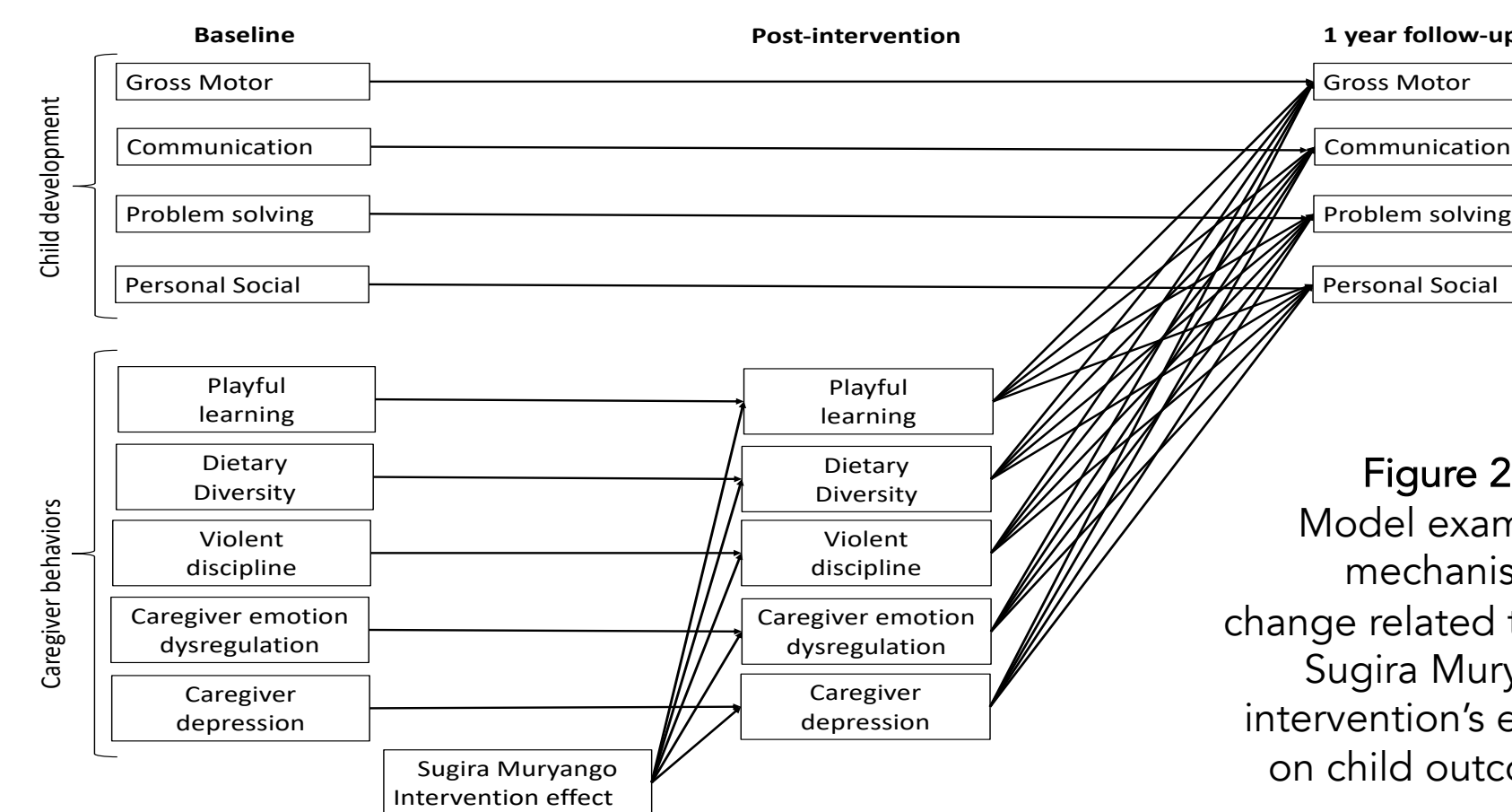


Figure 2: Path Model examining mechanisms of change related to the Sugira Muryango intervention's effects on child outcomes.

Results

The model showed acceptable fit: RMSEA = 0.071; CFI = 0.914; SRMR = 0.060. Results are presented in Table 1. As expected, we found that child development scores at baseline predicted one-year follow-up outcomes and that caregiver behavior showed significant consistency from baseline to post-intervention. We also found that all post-intervention caregiver outcomes were predicted by treatment status, except for caregiver depression. Concerning the associations of changes in caregiver behaviors to child outcomes, we found that changes in playful learning activities predicted all four child outcomes, namely gross motor, communication, problem-solving, and personal-social development. Changes in dietary diversity predicted all child outcomes, except communication.

Indirect effects were estimated for playful learning and dietary diversity. Results show significant indirect effects of the intervention on child outcomes via playful learning activities ($p < 0.05$), and on gross motor and problem solving via dietary diversity ($p < 0.05$).

Conclusions

Understanding mechanisms by which early parenting interventions improve child development is important for the optimization and scale-up of programs to reach vulnerable families. Findings suggest that increased engagement in playful learning and dietary diversity are key mechanisms through which parenting interventions might contribute to generating positive child development outcomes.

Outcome	Predictor	Estimate	P-value	95% CI LL	95% CI UL
Auto-regressive path child development at baseline to 1-year follow-up					
Gross motor2	Gross motor 0	0.010	<0.001	0.007	0.013
Communication 2	Communication 0	0.008	<0.001	0.006	0.011
Problem Solving 2	Problem Solving 0	0.009	<0.001	0.006	0.013
Personal Social 2	Personal Social 0	0.012	<0.001	0.008	0.015
Auto-regressive path caregiver behavior baseline to post-intervention					
Playful learning 1	Playful learning 0	0.170	<0.001	0.139	0.200
Violent discipline 1	Violent discipline 0	0.320	<0.001	0.271	0.367
Dietary diversity 1	Dietary diversity 0	0.184	<0.001	0.137	0.231
Caregiver DERS 1	Caregiver DERS 0	0.027	<0.001	0.024	0.030
Caregiver dep. 1	Caregiver dep. 0	0.906	<0.001	0.815	1.000
Treatment effects on caregiver behavior					
Playful learning 1	Treatment	0.675	<0.001	0.560	0.779
Violent dis. 1	Treatment	-0.332	<0.001	-0.434	-0.224
Dietary div. 1	Treatment	0.345	<0.001	0.225	0.470
Caregiver DERS 1	Treatment	-0.107	0.047	-0.164	0.043
Caregiver dep. 1	Treatment	-0.060	0.247	-0.211	0.000
Effects of caregiver behaviors on child development outcomes at 1-year follow-up					
Gross motor					
Gross motor2	Playful learning 1	0.088	0.011	0.024	0.157
Gross motor2	Violent discipline 1	-0.028	0.405	-0.094	0.037
Gross motor2	Dietary diversity 1	0.074	0.019	0.013	0.137
Gross motor2	Caregiver DERS 1	-0.033	0.438	-0.116	0.052
Gross motor2	Caregiver dep 1	-0.054	0.192	-0.137	0.032
Communication					
Communication 2	Playful learning 1	0.149	<0.001	0.087	0.214
Communication 2	Violent discipline 1	0.050	0.086	-0.008	0.104
Communication 2	Dietary diversity 1	0.037	0.235	-0.025	0.100
Communication 2	Caregiver DERS 1	-0.017	0.642	-0.092	0.050
Communication 2	Caregiver dep 1	-0.055	0.151	-0.131	0.022
Problem-solving					
Problem Solving 2	Playful learning 1	0.111	<0.001	0.052	0.167
Problem Solving 2	Violent discipline 1	-0.007	0.828	-0.067	0.055
Problem Solving 2	Dietary diversity 1	0.070	0.020	0.011	0.132
Problem Solving 2	Caregiver DERS	-0.002	0.949	-0.082	0.072
Problem Solving 2	Caregiver dep 1	-0.054	0.185	-0.139	0.027
Personal social					
Personal Social 2	Playful learning 1	0.126	<0.001	0.064	0.192
Personal Social 2	Violent discipline 1	-0.011	0.698	-0.068	0.041
Personal Social 2	Dietary diversity 1	0.068	0.030	0.002	0.128
Personal Social 2	Caregiver DERS 1	-0.014	0.726	-0.091	0.059
Personal Social 2	Caregiver dep 1	-0.039	0.324	-0.114	0.042

Table 1: Main Results from Path Model (Direct Effects)

Sponsors



Financial support for this work was provided by the Government of Japan through the Japan Trust Fund for Scaling Up Nutrition

