



CAN TECHNOLOGY NARROW THE EARLY CHILDHOOD STIMULATION GAP IN RURAL GUATEMALA?

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BACKGROUND

WHY. How children develop in the early years affects how well they do for the rest of their lives (Campbell et al., 2014; Gertler et al., 2014; Heckman, 2011; Black et al., 2017).

WHAT. Parenting interventions have been successful to improve child development outcomes and reduce behavior problems as well as improving parenting practices (Jeong et al. 2021, Aboud et al 2015). Impacts are larger in LMICs compared to HICs.

HOW. Multiple delivery modalities (home visits, health center, group meeting, virtual). Research mostly focused on home visits with recent evidence comparing alternative delivery modalities i.e home visits vs groups meeting (Grantham-McGregor et al 2020, Luoto JE et al 2021, Trias et al 2022).

- Using technology to train parents on child stimulation could be a cost-effective modality to support families at large scale as well as to reach the most underserved populations.

- Evidence from technology-based behavioral parenting interventions shows positive impact on parenting variables such as parent knowledge, behavior, and self-efficacy (Corralejo et al. 2018).

THE CONTEXT

Rural Guatemala, mostly indigenous population

High prevalence of stunting (60-70%)

Poor child health outcomes: 71% of children under 3 had respiratory illness and 40% diarrhea in the last 2 weeks (WB- IE baseline 2017)

Low level of maternal education (4 years)

Low stimulation at home:

- 1% has children's books at home,
- 20% of parents have ever read to their children
- 1 out of 10 children have toys that can be assembled. Similarly for toys to be pushed/pulled



BUILT ON PRIOR PARENTING INNOVATIONS IN GUATEMALA



Group Meetings

Home Visits



Nuestros Niños Sanos y Listos Program

Home visits vs Group Meetings

Coverage: 5500 children and 850 guide mothers

Implemented by ChildFund with World Bank support through the Japan Trust Fund.



USING TECHNOLOGY TO BUILD PARENTAL SKILLS DURING COVID-19

- Phone intervention (audio) based on Reach Up curricula
- Messages covered 4 domains: language, cognitive, motor and socio-emotional
- 20 messages sent between Sept – Nov 2020 in indigenous languages and Spanish.
- Duration 1-2 minutes
- Children 6-33 months (9 age groups)
- Current beneficiaries of a ChildFund parenting program suspended during 2020.



EXAMPLE OF THE MESSAGE STRUCTURE

Introduction –Motivation for the activity

- ¡Hola! Es importante estimular la memoria de los niños para que crezcan más atentos. Además, ¡siempre recordarán el amor que han recibido!

Child Age

- ¡Prepárate, tenemos una actividad para tu niño de **27 a 29 meses!** Puedes grabarla, tomar notas o invitar a alguien para que también la escuche. Te invitamos a que la hagas con tu niño en los próximos dos días.

Activity

- ¡Vamos a jugar a tocar y traer objetos! En este juego su niño va a desarrollar su **lenguaje**. Piense en cuatro cosas de la casa que su niño puede traerle fácilmente y que este aprendiendo sus nombres como peine, libro, taza. Nombre un objeto. Pídale que lo busque y lo traiga, por ejemplo: “Emilia, tráeme el peine”. Ayúdele si es necesario. Aliente a su niño a que diga el nombre del objeto que le trajo. Felicite a su niño cuando lo haga correctamente. El pedirle a su niño que traiga cosas, lo ayuda a aprender.

Closing

- ¡Recuerda decirle a tus hijos e hijas lo mucho que los amas y lo importante que son para ti!



Audio Sample



THE STUDY

Research Questions

1. Can voice messages on early childhood stimulation improve parental practices and reduce maternal anxiety?
2. Can voice messages on early childhood stimulation improve language skills and overall child development?



OUTCOMES

Intermediate outcomes (Mid-line)

- Parent-child interaction (FCI-play)
- Maternal anxiety (GAD-7)

Final Outcomes (Endline)

- Vocabulary (MacArthur-Bates; adaptation by Jackson-Maldonado et al 2013)
- Overall child development (CREDI-short form)

TIMELINE

Baseline Data

September 1-11, 2020

n = 1,475 hrs

Follow-up Survey

October 12-30, 2020

n=1,241 hrs

Final Survey

Dec 8 – 31, 2020

n=1,221 hrs

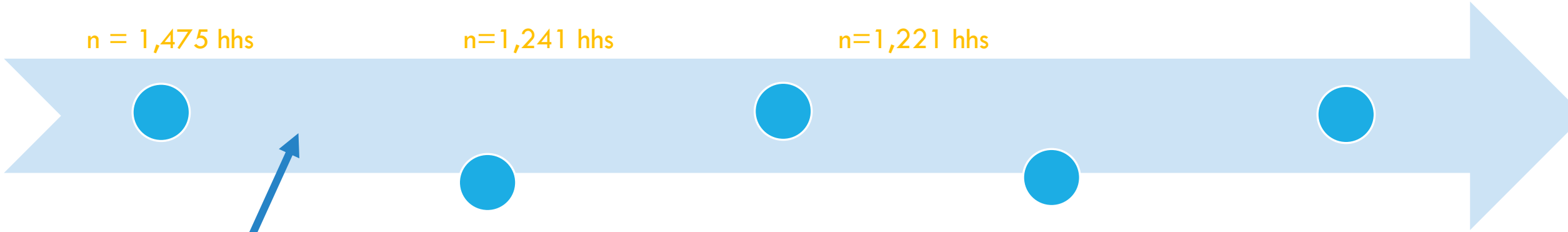
Randomization:
T=699, C=701

Intervention starts

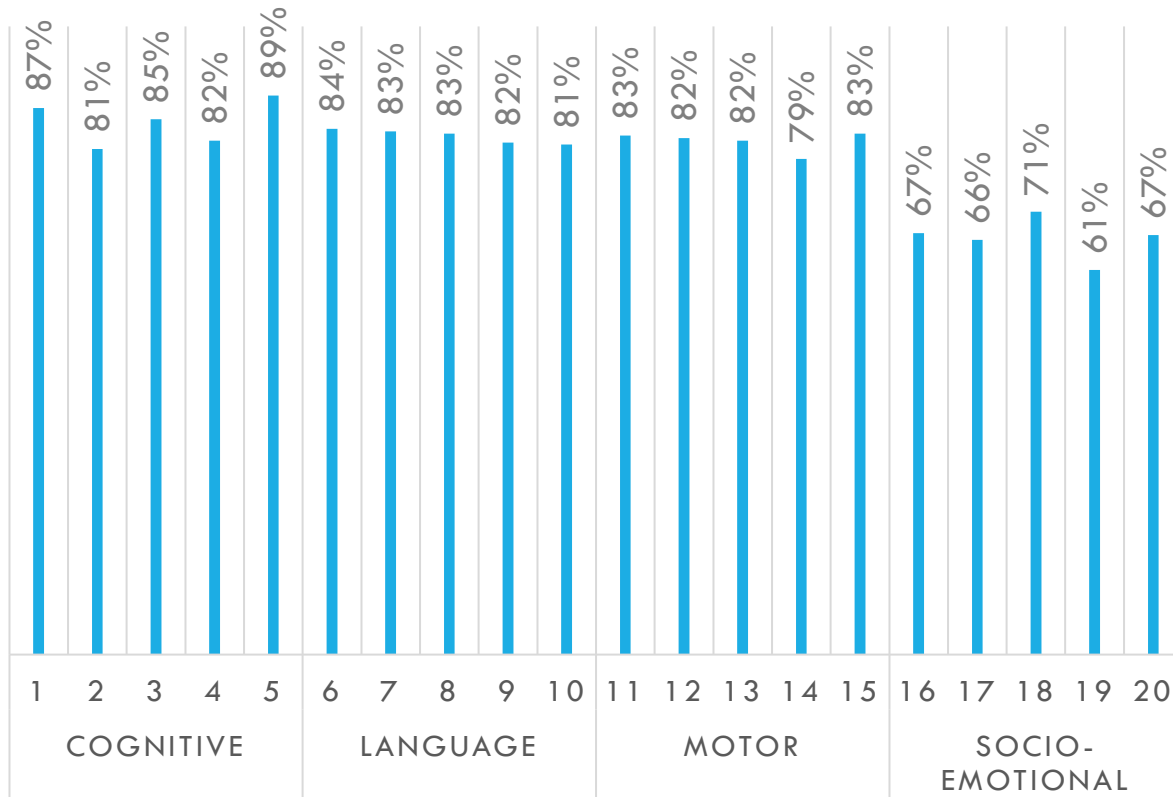
September 14
2020

Intervention Ends

November 13 2020



DID PARENTS LISTEN TO THE MESSAGES?



95 % received the messages

More than 80% listened cognitive, language and motor messages (based on call duration)

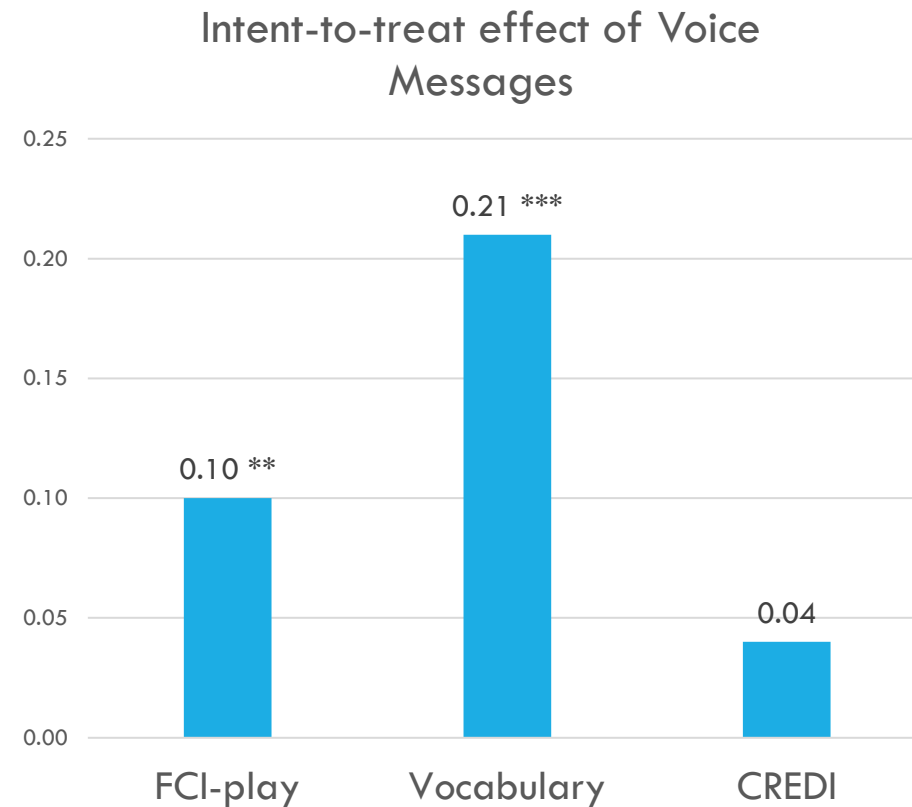
Socio-emotional messages had lower take up (but they were not resent)



FINDINGS

Improvements on parental practices and language skills

No impact on maternal anxiety and overall child development.



FINAL REMARKS

- Training parents on early stimulation using voice messages is an effective tool. It increases parent-child interaction and child's vocabulary (0.2 SD in TWO months!)
- Once the messages are produced, the recurrent cost per child for the full package is around US\$ 28 (US\$1.42 per message), including monitoring costs. Costs are smaller the larger the scale (US\$0.50 per message if the program reaches 3000 children).
- Key aspects:
 - ✓ Updated registry of participants (phone numbers)
 - ✓ Cultural and linguistic adaptation of messages
 - ✓ Active engagement to increase take-up of messages (delivery strategies & monitoring)
- Program can be implemented to strengthen in-person parenting program or to expand coverage with digital tools. More research is needed to understand the impact on families who have not been previously exposed to parenting programs.



THANKS





ANNEX

VALIDATION IE DESIGN

	Treatmen t	Contro l	Differenc e	t-test
Child is male	0.50	0.53	-0.02	0.851
Child's age in months at baseline	21.00	20.61	0.39	0.901
Mom's age	28.81	28.48	0.33	0.800
Mom is married	0.50	0.49	0.01	0.255
Mom lives with partner	0.37	0.41	-0.03	-1.214
Mom knows to read	0.74	0.77	-0.03	-1.217
Mom Speaks Spanish	0.33	0.33	0.00	-0.169
Mom's years of education	4.19	4.19	-0.01	-0.030
Dad's age	31.21	30.20	1.02	1.602
Dad is married	0.56	0.54	0.02	0.541
Dad lives with partner	0.40	0.42	-0.02	-0.708
Dad knows how to read	0.877	0.858	0.02	0.884
Dad's years of education	4.79	4.72	0.07	0.068
Dad works for salary	0.70	0.68	0.03	1.002
Dad is head of household	0.96	0.95	0.01	1.062
Household has electricity	0.82	0.83	0.00	-0.200
Household has radio	0.51	0.46	0.05	1.638
Listen to radio with neighbors or relatives	0.87	0.86	0.01	-0.347
Monthly income	783.521	767.6242	15.897	0.425
Totonicapán	0.323	0.327	-0.004	-0.169
Quiche	0.474	0.477	-0.003	-0.099
San Marcos	0.187	0.180	0.007	0.339
NGO Acodihue	0.504	0.501	0.003	0.106
NGO CDRO	0.451	0.463	-0.011	-0.416

Source: Baseline Data

