

# Developing a Public Health Prevention-Intervention for Bridging the Word Gap

Judith J. Carta, Dale Walker, Charles R. Greenwood and the BWG National Research Network  
 Juniper Gardens Children's Project, University of Kansas

## ABSTRACT

Poor outcomes in health and health disparities like the Word Gap are linked to social determinants. These include income, education, early childhood development, social support networks, among other health factors (e.g., access to health care) and physical factors (e.g., genetics) (World Health Organization).

Preventing the Word Gap in early childhood development is facilitated by environmental conditions wherein stable, responsive caregiving plays out in support of physical, social-emotional, and cognitive development. We are using caregiving and caregivers to refer to those adults regularly interacting with the child (i.e., parents, guardians, other adults [e.g., Nanny, baby sitter] in the home, childcare, and community. These interactions facilitate early brain development, child language learning, and affect later life-long learning.

**The Goal of this project is to Pilot Test a Multilevel Prevention Intervention addressing population-, community-, and child level components so that anywhere a child goes in a community their language will be nurtured.**



## CONTACT

Anne L. Larson  
 Bridging the Word Gap Research Network  
 Email: alars@ku.edu  
 Phone: (785) 424-8855  
 Website: www.bwgresnet.res.ku.edu

## INTRODUCTION

Bridging the word gap has become a national priority and a social movement. Policy makers, community leaders, and philanthropists are engaged or planning to become engaged in efforts to intervene to support children and families who are living in poverty. While some theoretically promising interventions exist and others are emerging at the population, community, and child-caregiver levels of influence, little empirical data yet exist on the feasibility, costs and adult/child impacts of word gap initiatives. Particularly absent is information on multilevel prevention efforts that assess word gap outcomes at the population, as well as community and caregiver-child levels.

### What Do We Intend To Do?

The aim of this research is to pilot test a multilevel public health prevention-intervention framework in two phases:

- Phase 1 will examine the feasibility of mounting a multi-level intervention in one community
- Phase 2 will replicate the intervention and examine multiple outcomes in three communities

### Why is a Pilot Study Needed?

A pilot study is an initial step in exploring a novel intervention

- To evaluate the feasibility of recruitment, retention, assessment procedures, new methods, and implementation of novel interventions
- To examine the feasibility of an approach that is intended to be used in a larger scale study

## Design

- Phase 1 – Two years for development and tryout in one community
  - Case study design with multiple outcomes
- Phases 2 – Three years for an experimental evaluation in three communities
  - Single case within communities multiple baseline design (Figure 3)

### Research Questions for Phase 1?

- Was implementation of the multilevel prevention intervention feasible?
- Was the observed implementation consistent with the public health framework (Figure 1)?
- Were the intervention strategies implemented with fidelity and dosage (Figure 2)?
- What were the intermediate impacts on the community, and local services (Figure 3)?
- Where the intended measures well implemented and yielding the needed data?
- What were the costs associated with implementation?

- What was the rate of attrition?
- Where the interventions and measures acceptable to participants?
- What improvement to procedures are needed for future replications?

### Research Questions for Phase 2?

- Do community intervention impacts (actions, changes, and services) co-vary with impacts on adults and children (Fig. 3)?
- Do impacts on the Preschool Language Scale suggest closing of the children's vocabulary gap?
- What contextual factors influenced community agencies attrition and fidelity of implementation?
- Are attrition, implementation, and adult/child-level outcomes moderated by parent/home risk levels?
- What improvements to the intervention need to be made for replication?

## Methods/Participants

- Poverty level communities will be recruited and enrolled in the studies (Phase 1= 1; Phase 2 = 3)
- Inclusionary criteria will require demonstration that many of the barriers and challenges to implementation can be overcome
- Within the community, we will recruit and enroll 75 (Phase 1; 150 Phase 2) families, each with a child 6 months old
- Recruitment will begin at the population level via well-child visits to pediatricians who first see newly born children and families

## Multilevel Prevention Framework

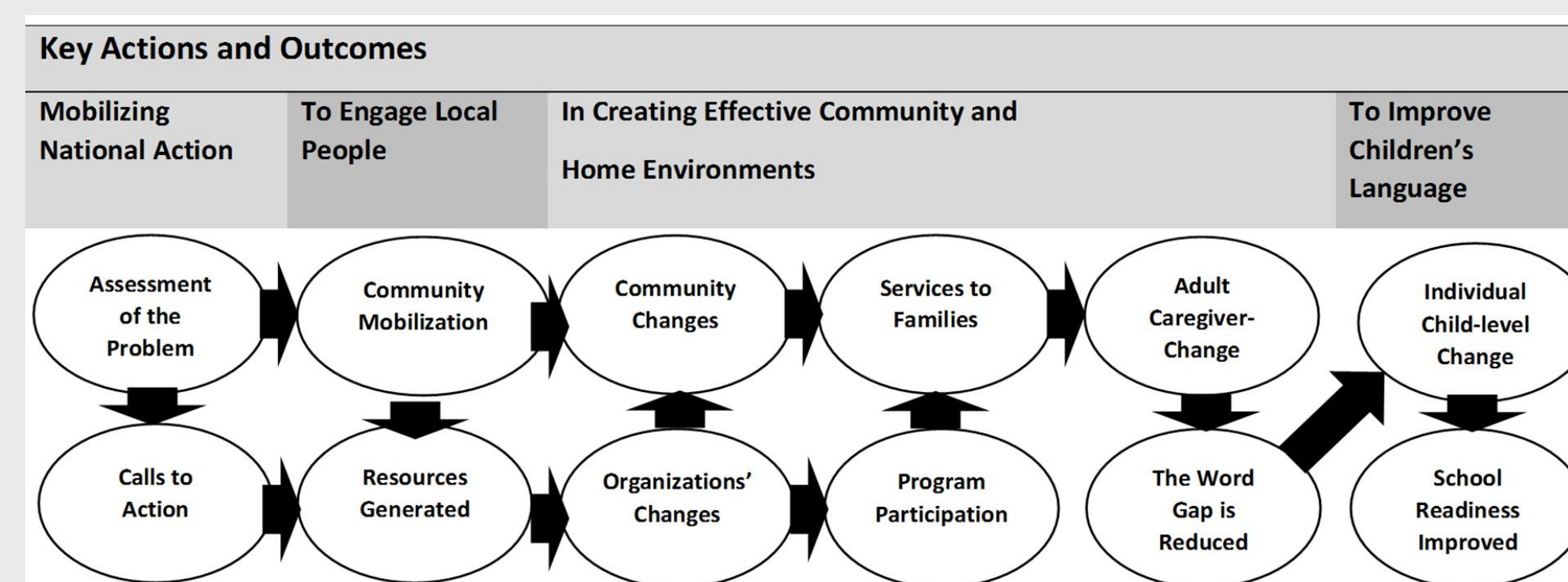


Figure 1, see Table 2 also

## Community Leadership Intervention

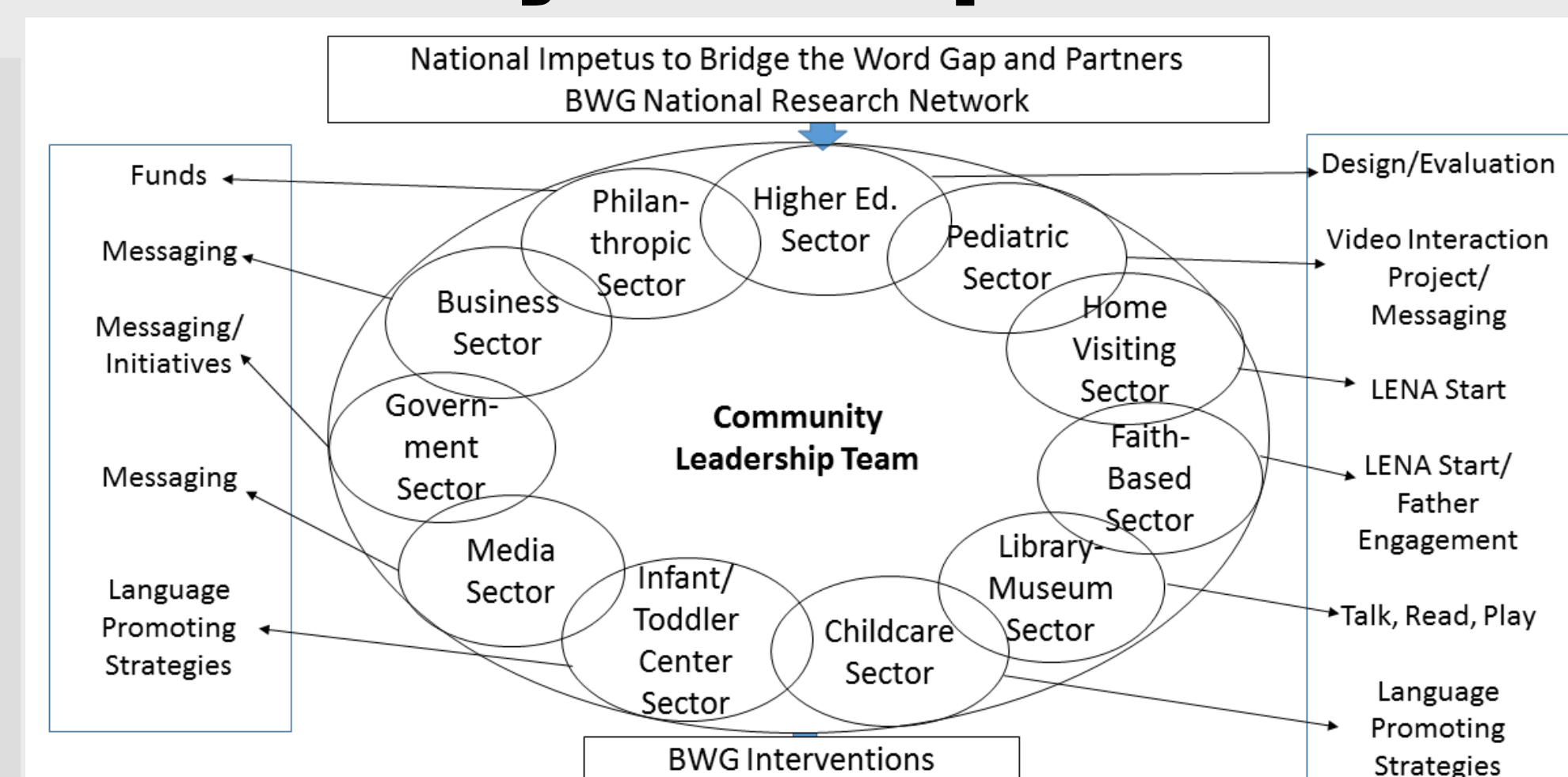


Figure 2, see Table 1 also

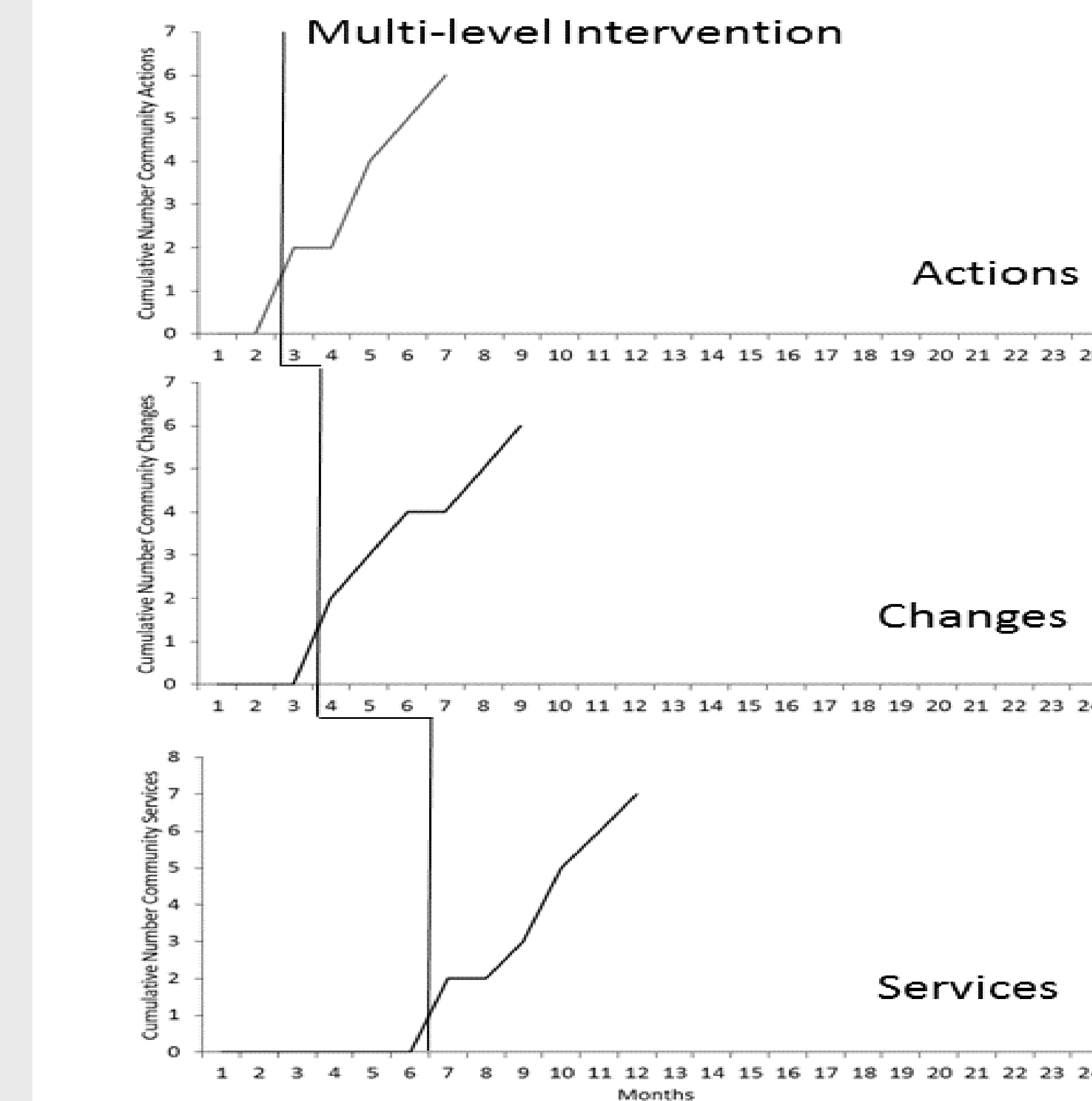


Figure 3. Multiple baseline design within communities design.

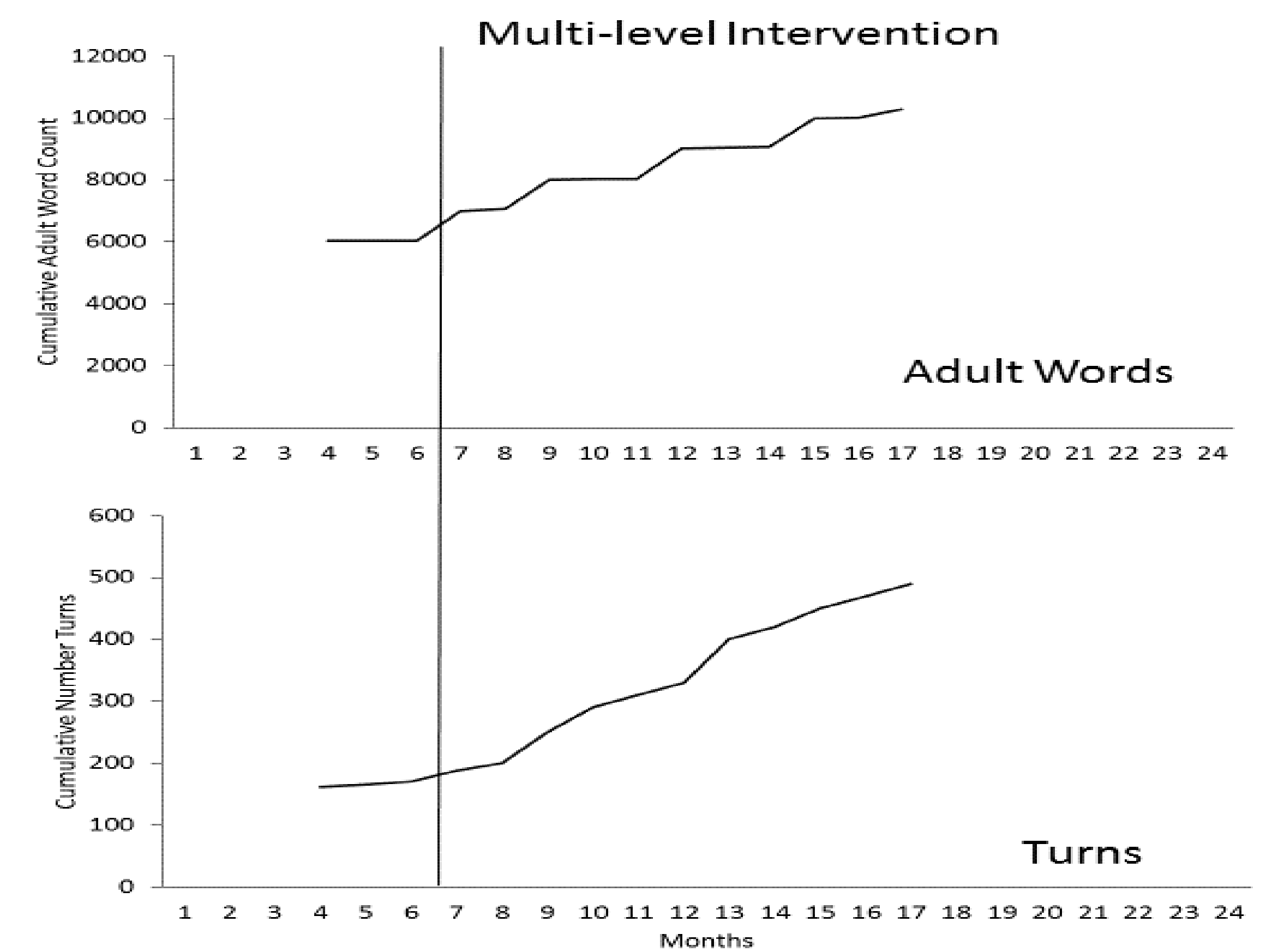


Table 1. Multi-Level Prevention-Intervention Strategies for Bridging the Word Gap.

STRATEGY	Level	Setting	Digital Technology	Citation	Theory/Evidence
LENA START • SMARTER HAPPIER BABY™ • LENA MOBILE + • FATHER INVOLVE- MENT	Child/ Parent	Home	LENA DLP LENA Mobile	LENA Research Foundation. (nd). LENA: Every word counts	Inspired by Hart & Risley (1995); Strategies recommended by the LENA Scientific Advisory Board informed by research  Father's engagement, Stiles & Ortiz, (1999)
LANGUAGE PROMOTING STRATEGIES	Child/ Caregiver	Child-care	LENA DLP LENA Pro Software	Walker, Bigelow, Harjulsola-Webb (2008)	Evidence-based interventions developed to extend Hart & Risley's work. Derived in part from Milieu and Responsive Teaching
COMMUNITY PROVIDERS/ ORGANIZA- TIONS	Schools Churches, Libraries, Coalitions	Neighbo- rhood/ City	LENA DLP LENA Pro Software	Family Conservancy Website	Williams, M. R. (2013, November 19). To help children talk, just talk. Kansas City Star
TOO SMALL TO FAIL'S COMMUNITY TOOL KIT	Popu- lation	Nation	Webinar, Internet, Pediatric Office Access	<a href="http://www.whitehouse.gov/sites/default/files/microsites/ostp/federal_word_gap_fact_sheet_final.pdf">http://www.whitehouse.gov/sites/default/files/microsites/ostp/federal_word_gap_fact_sheet_final.pdf</a>	Safe to Sleep Campaign <a href="http://www.nichd.nih.gov/sts/Pages/default.aspx">http://www.nichd.nih.gov/sts/Pages/default.aspx</a>
THE BELLE VIP PROJECT	Popu- lation	Well-Child Visits	Video and LENA	<a href="http://www.med.nyu.edu/pediatrics/developmental/research/the-belle-project">http://www.med.nyu.edu/pediatrics/developmental/research/the-belle-project</a>	Mendelsohn et al., (2011)

Table 2. Measurement Details and Psychometrics.

CONSTRUCT/ INDICATOR	Instrument Name	Digital Infra-structure	Citation
PARENT/FAMILY CHARACTERISTICS (PRE AND POST)	Sociodemographics, HOME Parenting Stress/Social Support	Data Entry	Researcher Developed Caldwell & Bradley (1984) Abidin (1995) Beck, Steer, & Brown (1996) Procidano & Heller (1983)
PROXIMAL OUTCOME-CAREGIVER LEVEL (MONTHLY)	Adult Word Count (AWC)	Website/Software	Xu, D., Yapanel, U., & Gray, S. (2009). Reliability of the LENA™ Language Environment Analysis System in young children's natural home environment: LENA Foundation Technical Report LTR-05-02).
PROXIMAL OUTCOME – CHILD LEVEL (MONTHLY)	Turns (TRS) Child (CWC)	Website/Software	See above, Xu, D., et al.
	Early Communication Indicator	Website	Greenwood, et al., 2006; 2010; 2011
	LENA Snapshot	Website	Gilkerson et al., 2014
DISTAL CHILD OUTCOME (PRE-POST)	Preschool Language Scale (PLS)		Zimmerman, I. L., Steiner, V. G., & Pond, R. V. (2012). Preschool Language Scale -5. San Antonio, TX: Pearson.
FEASIBILITY & USABILITY (MONTHLY)	Implementation Volume	Website	Researcher developed
FIDELITY OF INTERVENTION – CHILD AND COMMUNITY (MONTHLY)	Fidelity Checklists	Website	Researcher developed
QUALITATIVE STAKEHOLDER SURVEYS (POST)	Satisfaction/Acceptability Indicators	Website	Researcher developed
COLLABORATIVE ACTION: FREQUENCY, DURATION, INTENSITY, & STRATEGY (MONTHLY)	Community Check Box	Website	Collie-Akers, et al., 2013.

## CONCLUSION

- Preventing the Word Gap, requires a multilevel intervention that can scale up, community by community, city by city, and state by state if children's language is to be nurtured anywhere they go
- Research is needed that develops and tests multilevel interventions like the one proposed
- Many efforts are underway, few to date have provided strong evidence of population-, community-, and child-level implementation and outcome impacts

## Acknowledgement

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