

Introduction

- A child's language environment and experiences within the first three years of life greatly influence their language development trajectory: by the age of three, children from lower-income families hear 30 million fewer words compared to their peers from higher-income families (Hart & Risley, 1995).
- A multicomponent prevention approach should be used to maximize closing the word gap; providing preventative intervention programs at the population, community, and child/family level. (Greenwood et al., 2017).
- Programs at the child/family level that have used quantitative linguistic feedback (e.g. LENA devices) have shown to be effective in increasing parental language input (Suskind et al. 2016)
- LENA StartTM is a 13-week parent training program that teaches caregivers strategies to increase adult language input and parent-child interactions. In a group format, parents learn about language and brain development; and activities and strategies that create a language-rich environment. Additionally, families complete weekly language recordings that provide quantitative linguistic feedback.

Research Questions

A non-equivalent group design was used to answer the following questions:

- To what extent do parents enrolled in LENA StartTM attend scheduled courses, meet standards for completing training, and express satisfaction in the training they received?
- To what extent does parent talk, child talk and turn taking increase, as a function of participating in LENA StartTM?
- To what extent does child language ability increase, as measured by the LENA Developmental Snapshot, as function of participating in LENA StartTM?

Method

Participants and Setting

- 56 families were recruited through Early Child and Family Education (ECFE) programs in 5 local school districts
- Participants included English- and Spanish-speaking children aged 1 to 39 months who were enrolled in ECFC programs. A total of 39 families were in LENA StartTM classes; 17 families were in the Comparison group who received general education programs. See Table 1.

Measures

- Demographic survey
- Parent Satisfaction survey (LENA StartTM families only)
- Pre- and post-test measures for all participants included:
 - Daylong LENA recordings: adult word count (AWC), child vocalizations (CV) and conversational turns (CT)
 - LENA Developmental Snapshot (a 52-item parent questionnaire about receptive and expressive child language abilities)

Method Continued



Figure 1. Sample recording report that LENA StartTM families received Weeks 3-13.

LENA StartTM Intervention

- 13 weekly parent training sessions implemented by parent educator.
- Combination of PowerPoint presentations, videos, and group discussions.
- Families completed weekly, all day language recording, with LENA recorder.
- Received weekly recording reports showing breakdown of Adult Word Count (AWC), Conversational Turns (CT), and Electronic noise (Figure 1)
- Each week families received a shared reading book.

Table 1. Sample Characteristics

	LENA Start TM (n = 39)	Comparison (n = 17)
Mean (SD) Child Age in months	19 (6.93)	24 (8.17)
Child Gender		
Male (%)	20 (51%)	7 (41%)
Female (%)	19 (49%)	10 (59%)
Child Race		
Asian/Asian-American (%)	2 (5%)	0 (0%)
Black/African American (%)	1 (3%)	0 (0%)
Hispanic/Latino (%)	11 (28%)	1 (6%)
White/Caucasian (%)	22 (56%)	16 (94%)
Multi (%)	3 (8%)	0 (0%)
Mean (SD) Parent Age in years	35 (5.84)	32 (5.74)
Home Language*		
English	22 (56%)	14 (82%)
Spanish	7 (18%)	0 (0%)
Russian	0 (0%)	1 (6%)
Bilingual (SP & EN)	6 (15%)	1 (6%)
Other bilingual	4 (10%)	1 (6%)
Families ≤ 185% of Poverty Guidelines	22 (56%)	4 (24%)
Family Size (n)	21 (54%)	12 (71%)

*Note: Home language = language adult uses when talking to her child; Other bilingual languages = Mandarin, German, and American sign language.

Results

Implementation Results

- Attendance for LENA StartTM classes ranged 59%-100% with higher attendance for Sessions 1-6
- 72% of parents met Graduation Criteria: (a) attended Sessions 1-5, (b) attended ≥ 5 sessions 5-13, (c) completed ≥ 10 recordings
- Overall, parents liked participating in the program (67% strongly agree; 21% agree)
- Overall, parents would recommend the program to other parents (63% strongly agree; 25% agree)

LENA Results

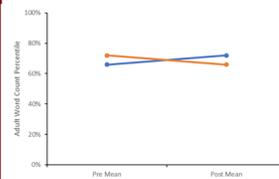


Figure 2. Adult Word Count.

- LENA StartTM group increased by 7 percentiles ($d=0.45$)
- Comparison group decreased by 4 percentiles ($d=0.05$)
- $p=0.31$

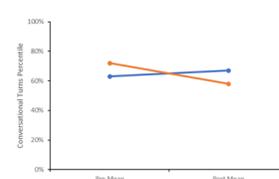


Figure 3. Conversational Turns.

- LENA StartTM group increased by 6 percentiles ($d=0.23$)
- Comparison group decreased by 13 percentiles ($d= -0.39$)
- $p=0.04$

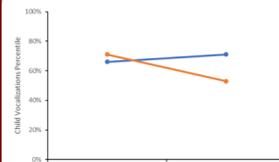


Figure 4. Child Vocalizations.

- LENA StartTM group increased by 6 percentiles ($d=0.22$)
- Comparison group decreased by 19 percentiles ($d= -0.58$)
- $p=0.01$

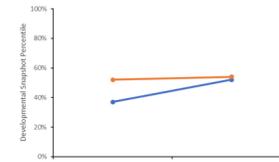


Figure 5. LENA Developmental Snapshot. In 13 months.

- LENA StartTM group increased by 14 percentiles ($d=0.41$)
- Comparison group decreased by 2 percentiles ($d=0.07$)
- $p=0.04$
- Children in LENA StartTM made by the equivalent of 5 months of growth

Discussion

- Families participating in LENA StartTM made greater gains on all measures, compared to comparison families.
- Preliminary results suggest that it is feasible to implement LENA StartTM in ECFC programs.
- Preliminary results indicate that LENA StartTM increases adult language input and adult-child interactions, which may improve the quality of the language environment for these young children.
- Factors to further consider to fully scale-up LENA StartTM and integrate the program into ECFC programs:
 - Funding:** To integrate and sustain LENA StartTM within ECFC programs, a reliable funding source will have to be identified.
 - Goodness of fit:** Typically, ECFC parents choose different topics to be covered. Although, both parents and parent educators reported that they liked LENA StartTM and would like to see the program continue, to increase the likelihood that it can be fully integrated within ECFC programs, there is a need to determine how to incorporate ECFC's parent-driven approach.
- Study Limitations:
 - Two groups were not well matched based on ethnicity and income.
 - The sample size is small, limiting generalizations and power of statistical analyses.
- Future research is needed to:
 - Investigate how to reach families that will benefit the most from community-level language intervention programs.
 - Evaluate if LENA StartTM is effective for other populations (e.g., other languages, children with language impairment).

Select References

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- Greenwood, C. R., Carta, J. J., Walker, D., Watson-Thompson, J., Gilkerson, J., Larson, A. L., & Schnitz, A. (2017). Conceptualizing a Public Health Prevention Intervention for Bridging the 30 Million Word Gap. *Clinical Child and Family Psychology Review*, 20(1), 3–24. <https://doi.org/10.1007/s10567-017-0223-8>
- Suskind, D. L., Leffel, K. R., Graf, E., Hernandez, M. W., Gunderson, E. A., Sapolich, S. G., ... & Levine, S. C. (2016). A parent-directed language intervention for children of low socioeconomic status: A randomized controlled pilot study. *Journal of Child Language*, 43(2), 366-406.

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