



LENA in China: Shanghai Children's Medical Center to Conduct First Experimental Confirmation of Hart & Risley Correlational Study

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**1000 personnel
500 medical beds**



Offer services for children and young adults birth - 18 years



**A floor space of more than
70,000 square meters**





In December of 2010, SCMC passed the Joint Commission International accreditation.



On June 30, 1998, Ms. Hilary Clinton, wife of US president Mr. Bill Clinton, and Ms. Zuo Huanchen, vice mayor of Shanghai, cut the ribbon for the opening of the hospital

PROFESSIONAL'S TRAINING



With the support from Project HOPE, every year, over 20 medical professionals receive overseas training which lasts for at least three months.



KEY SPECIALTIES



HEART CENTER



HEMATOLOGY AND ONCOLOGY

DEVELOPMENTAL AND BEHAVIORAL PEDIATRICS



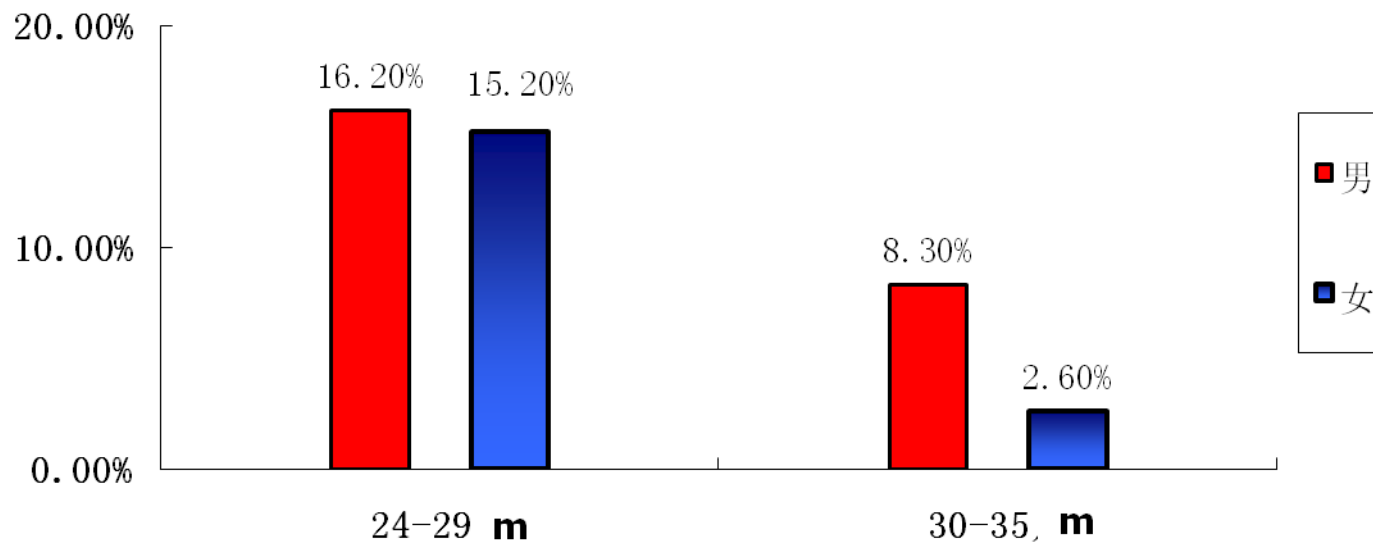


Background

- **“Meaningful Differences in the Everyday Lives of American Children” Hart & Risley (1995)**
 - Hart & Risley longitudinally recorded and transcribed the language environment of infants and toddlers
 - Children were followed longitudinally into school years
 - Results showed significant correlations between early word exposure and IQ, academic success later in life
 - Correlational results led Hart & Risley to claim that enhancing early language environment could result in accelerated development
- **Difficult to replicate**
 - Because of the labor intensiveness of transcription and coding, this study has been difficult to replicate
- **Experimental design needed**
 - Because their results were correlational, there is a need for an experimental study to extend on their work and validate their seminal research

Background in China

Language delay for 24 to 35 month-old children in Shanghai



Criteria: vocabulary words fewer than 30 (24 months)
number of phrases fewer than 5 (30 months)

Background in China



- **Awareness of child language development**
 - **Very important**
 - **Some false assumptions**
 - a) The later speech emerges, the smarter the child
 - b) Language delay is attributed to tongue problems
 - **Phenomena**
 - a) Fewer opportunities for communication
 - b) Limited strategies for parents to communicate with children
 - c) Caregivers rely on pictures, television and DVD programs to facilitate language development
 - d) Oral motor exercise is one of the major therapies in some institutions
- **Language professionals in China**
 - **Speech pathology and language therapy programs were set up in East China Normal University several years ago**
 - **Pediatricians and child health workers have to manage with:**
 - a) Limited knowledge and strategies
 - b) Few language screening tools
 - c) Rely on IQ tests



Our research in language development

The first 50 words in expressive vocabulary

people: father, mother, grandmother, grandfather, elder sister, baby, younger brother, younger sister, aunt, uncle

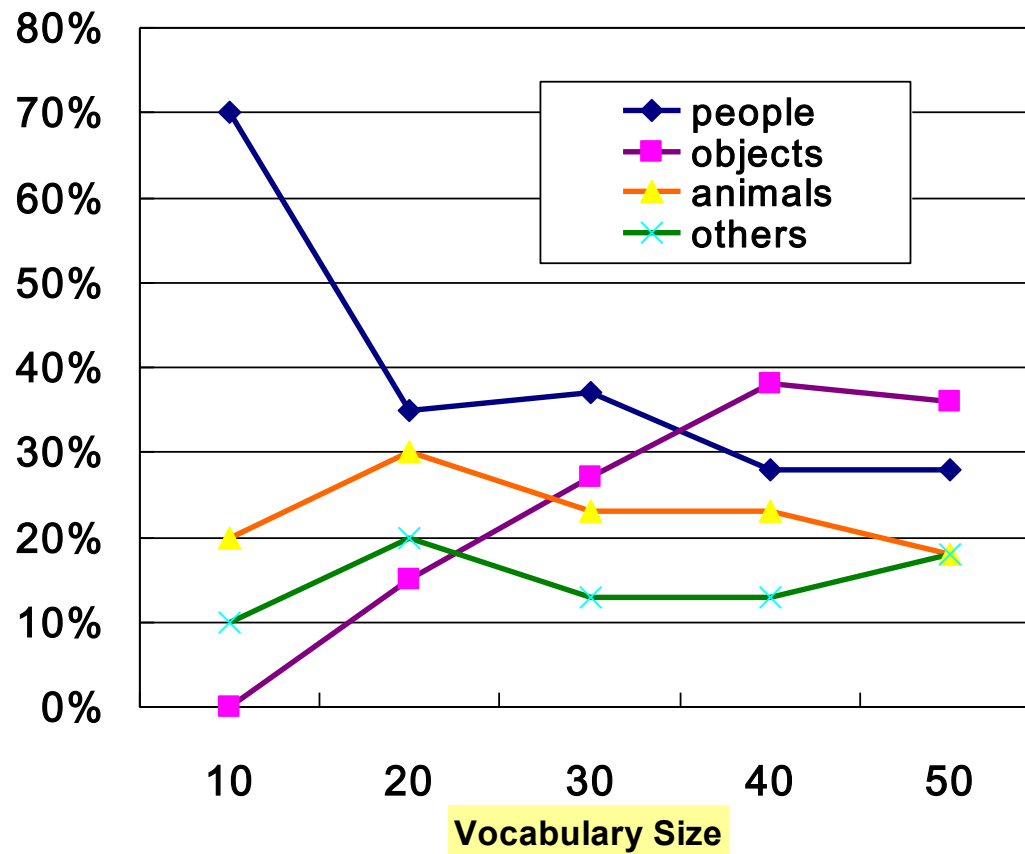
objects: flower, egg, shrimp, ball, rice, candy, shoe, sock, leg, hand, cake, mouth, nose, head, car, ear, eye, telephone, cap, light, dish, meat

animals: dog, chicken, cat, duck, bird, horse

verbs: eat, take, don't, want, thank

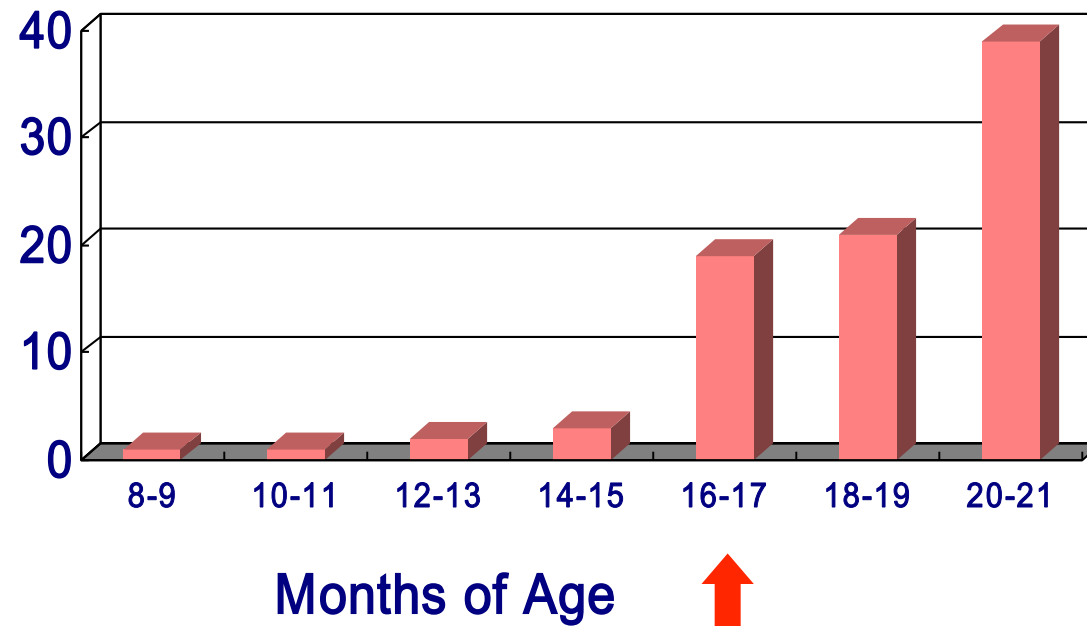
sound like words: “wu-wu”, “wang-wang”, “yi”

Classification of the first 50 words



Word explosion

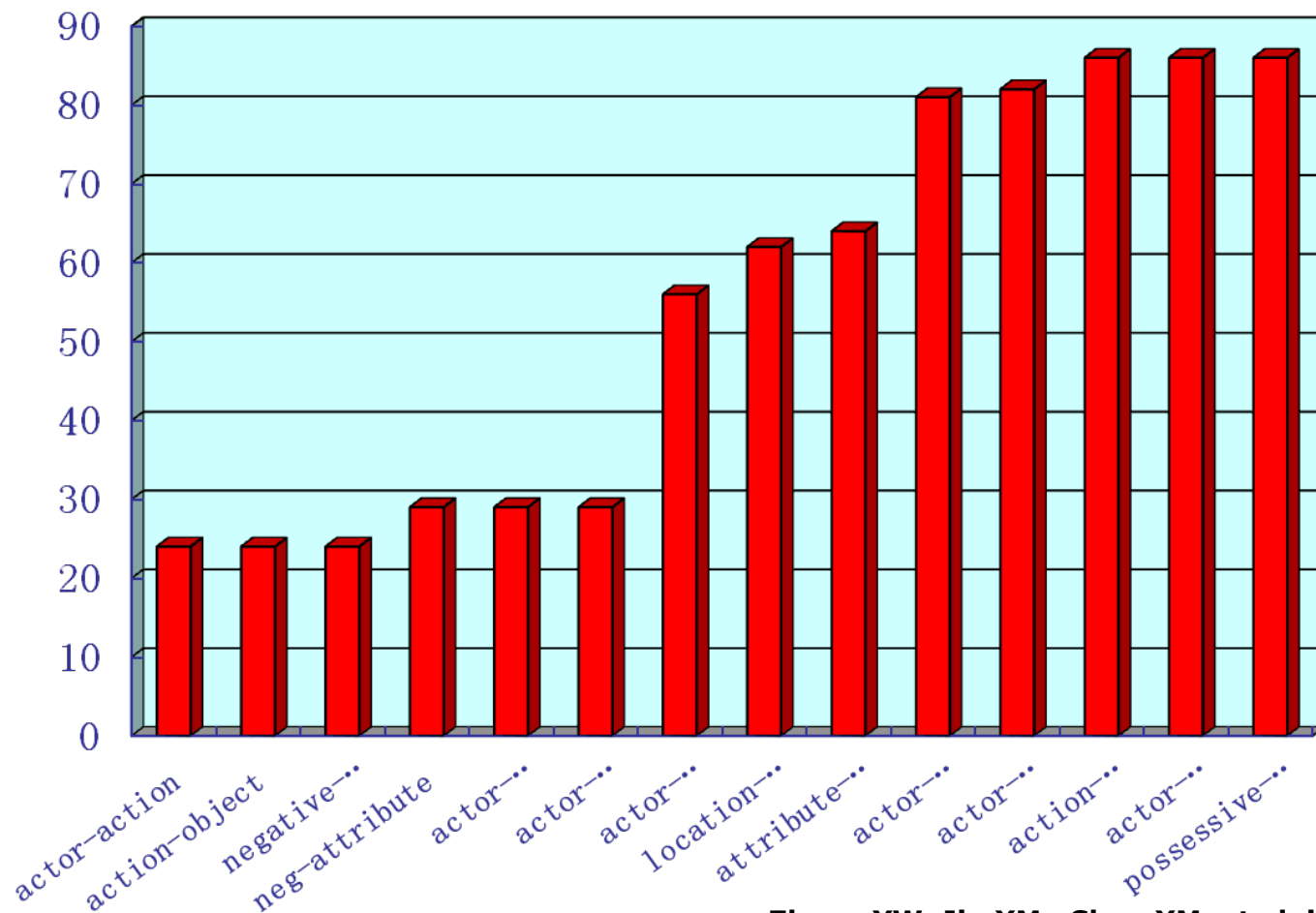
Vocabulary size



↑
explosion

Relationship between grammatical complexity and vocabulary size

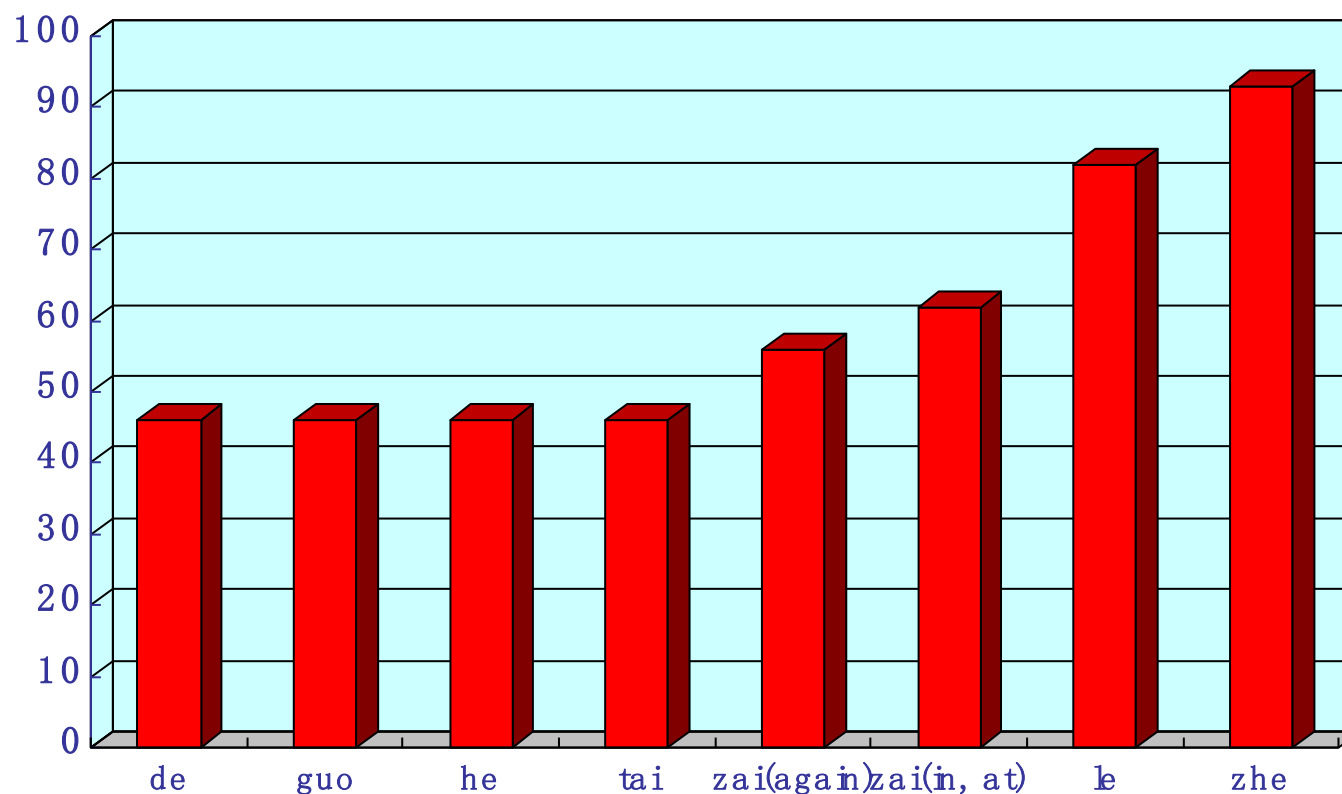
Vocabulary Size



Zhang YW, Jin XM, Shen XM, et al. in preparation.

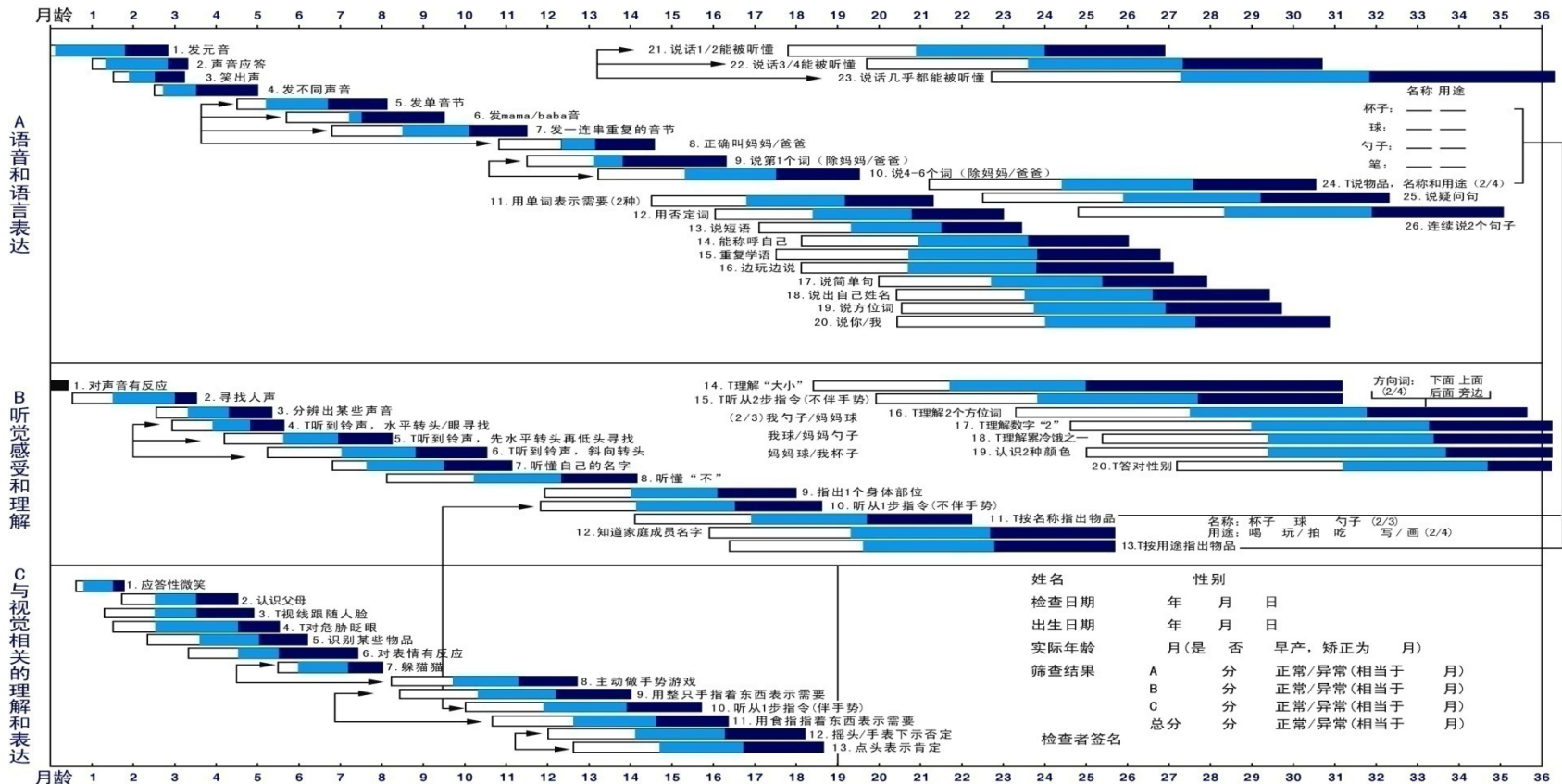
Relationship between grammatical complexity and vocabulary

Vocabulary Size



Zhang YW, Jin XM, Shen XM, et al. in preparation.

Early language development scale



Our vice mayor said

First , I'm a pediatrician



- ▣ Teaching of language for children should follow the developmental rules
- ▣ What if it doesn't?

There will be an additional burden in terms of sacrificing time, happiness and children's interests in learning

Cooperation between medicine and education



- **Educators** should realize that child growth and development should be a major focus in education;
- **Teachers** should understand early growth and developmental patterns, and curricular innovation should be in accord with this knowledge;
- **Pediatric professionals** should focus more research in the area of early growth and developmental patterns, and increase the amount of public education designed to spread this information to educators.



It's urgent in China

- Language research in child development
- Parent education focusing on communicating with children
- Therapy for language delayed children



LENA System

- LENA System eliminates the need for transcription, significantly reducing the expense of a replication study
- LENA System is unobtrusive and records all day, so data are most representative of real life
- Finally, parents can get feedback on their behavior and can use this to improve their child's language environment, potentially re-setting the developmental trajectory



Shanghai Children's Medical Center LENA Study

- Multi-phase study
- Phase I – pilot study, designed to establish effective protocols
- Phase II – experimental study, designed to validate H&R claims



Phase I

- Design

- N = 18 children 2-30 months of age
- Recruited from SCMC personnel
- 6 month study (plus baseline)
 - Baseline: 3 recordings + developmental assessments + LENA training
 - Month 1: record 1/week + parent meeting
 - Month 2-5: record every other week + parent meeting once per month
 - Month 6: record 1/week + developmental assessments



Developmental Assessments

- Clinician visit
 - Bayley III, SCMC language Assessment
- Parent Questionnaires
 - Chinese MacArthur Communicative Development Inventory
 - Chinese Child Development Inventory
 - LENA Developmental Snapshot (translated)



LENA Training

- Parents will attend hour-long workshop held at SCMC
 - Parents will see LENA baseline results
 - Parents will be instructed on how to interpret LENA results
 - Professional will provide parents with strategies for increasing counts
 - Parent will receive *Talking Tips* videos with subtitles to view at home



Monthly Parent Meetings

- Each month, parents will attend a 1-hour LENA meeting
- Meeting will provide a supportive atmosphere for parents to discuss results and brainstorm on effective strategies for enhancing language environments
- Experts in child development will provide short seminars (20 min) at each session focusing on different parenting topics
- Parents will be given children's books at each meeting, to help enhance their child's language environment
- Clinicians will be available to talk with parent individually after meeting



Analysis

- Change in parent behavior
 - LENA measures will be compared to baseline, to investigate patterns of behavioral change
 - Do counts increase?
 - Does change in behavior maintain across study?
- Change in child's development
 - Developmental measures will be compared between baseline and 6 months post-baseline, to investigate acceleration in child development
 - Is development accelerated beyond what would be expected in 6 months?
 - Questionnaires will also be completed at month 3.
 - Can accelerated development be detected by questionnaires 3 months into LENA treatment?



Qualitative Measures

- Parent Feedback

- Parents will complete questionnaires designed to tell us about how they feel about LENA feedback reports and use

- Clinician Feedback

- Clinicians and researchers at SCMC will troubleshoot issues; lessons learned will be applied during Phase II



Phase II

- Experimental study designed to validate H&R
- Design
 - N = 30 (15 treatment, 15 control)
 - Children with language delays recruited from community
 - 3 baseline recordings, developmental assessments, then random assignment into treatment or control condition
 - Treatment group follows recording schedule established in Phase I, as well as parent meetings
 - Control group produces recordings but does not see LENA reports
 - Post-baseline comparisons investigating significant differences between treatment and control group



Contributions

- LENA Foundation will be providing the equipment for the study, as well as guidance on design and protocol
- SCMC will be responsible for implementation of both study phases



Project Significance

- Experimental design
 - Experimental study design will allow us to prove the usefulness of LENA as clinical tool that can effectively facilitate change in parent behavior and improve outcomes for children with language delays.
 - Longitudinal design will allow us to investigate patterns of behavior change with a developmentally delayed population.
- LENA use in China
 - This study will also allow us to learn more about how LENA can be used most effectively in Chinese cultures.
 - Provide more sensitive index for Chinese professionals in doing language research.



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