



Project ASPIRE: Empowering Families of Children With Hearing Loss

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Agenda

- Project ASPIRE
- Exploring Health Disparities
- Developing A Best Practices Curriculum
- The Modules
- Module Components
- The Dream
- Research Protocol/Pilot Testing
- Q & A






What is Project ASPIRE?

- Project ASPIRE: Achieving Superior Parental Involvement for Rehabilitative Excellence
 - A comprehensive interactive multimedia intervention
 - Imparts knowledge and skills for parents of economically disadvantaged children to aid in their children's listening, language and speech development after implantation
 - Empowers parents





Impetus for the Program: Implant Outcome Disparities

- Economically disadvantaged implant recipients have less favorable outcomes than their more affluent peers (Witkin, 2005; Easterbrooks, O'Rourke & Todd, 2000)
- Factors in Outcome Disparities
 - Access and Availability of Habilitation
 - Inadequate Parental Skills to support their child's language development (Geers, 2006; Moog & Geers, 2003, Easterbrooks, O'Rourke & Todd, 2000)





What Are Health Disparities?

- Unequal burden in disease morbidity and mortality rates experienced by ethnic/racial groups as compared to the dominant group
- Widening disparity in the United States affecting all aspects of healthcare
- Socioeconomic status (SES): the most frequently cited, and most consistent, contributor
 - SES=income, education, wealth or a combination
- *Healthy People 2010* has designated the elimination of health disparities as one of its essential goal
 - Improved hearing health of the nation through prevention, early detection, treatment and rehabilitation
 - **Successful Implantation and Habilitation of Children Makes good economic sense!**

Children and Poverty

RACE	BELOW 100% POVERTY**	BELOW 150% POVERTY**
White	13.8%	24.3%
Black	32.6%	46.9%
Asian	11.3%	18.9%
Hispanic	26.6%	45.6%
All Children	16.9%	28.1%

** Percentages from 2006 data



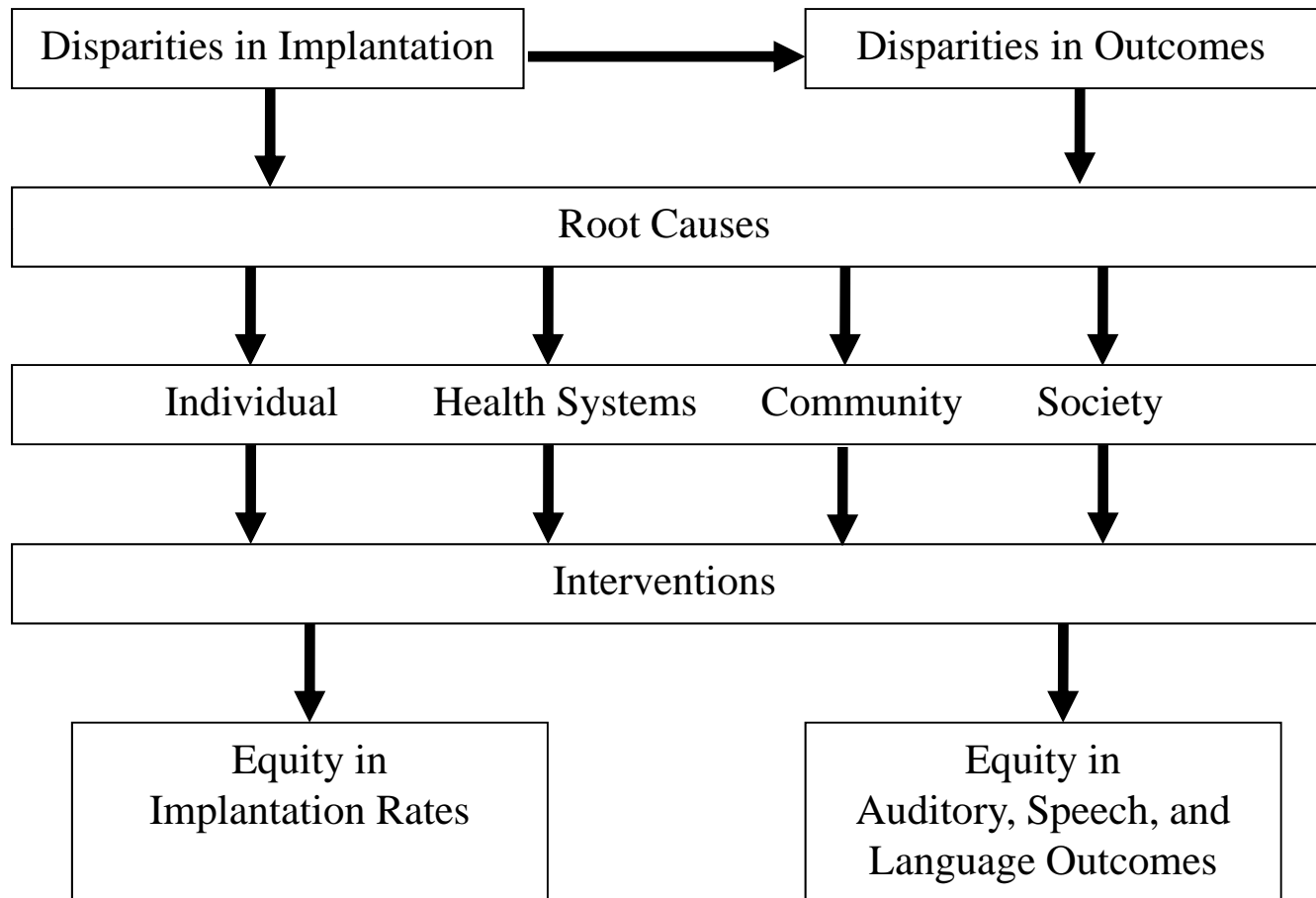


Health Disparities in Pediatric Cochlear Implantation

- Disparities in Hearing-Impaired Ethnic Minorities: A Double Jeopardy
- Early Hearing Detection and Intervention (EHDI)
 - Loss to follow-up after failed initial screening occurs in 59.9% of the children
 - ethnic minorities or publicly insured are 1.5 to 2x more likely to be lost after failing the newborn screening
- Implantation Rates
- Auditory, Speech and Language Outcomes

Understanding and Addressing Disparities

Horn & Beal (adapted)





Health Disparities in Pediatric Cochlear Implantation

- 2008 national survey of pediatric audiologists “Socioeconomic Determinants of Pediatric Cochlear Implant Success” (Kirkham, Perry, Baroody, Nevins & Suskind)
 - 78% (n=98) of pediatric audiologists noted a negative effect of SES on outcomes
 - This disparity attributed to internal & external factors
 - parental self efficacy, advocacy and adherence
 - access and quality of habilitation and resources
 - Overwhelming agreement that increasing parental involvement in habilitation would be most effective strategy for reducing outcome disparity





Project ASPIRE Collaborators

- Headquartered at the University of Chicago, Project ASPIRE collaborators include:
 - Medical Director & PI, Dana L. Suskind, MD
 - Educational Consultants, Lyra Repplinger, MS, Mary Ellen Nevins, Ed.D. & Jean DesJardin, Ph.D.
 - Health Disparities Expert, Sarah Gehlert, Ph.D.
 - Linguistics & Psychology Consultant, Amy Franklin, Ph.D.
 - Interactive Multimedia Expert, Dr. Cammy Huang
 - Research Associate, Renate Schultz, B.A.
 - Script Writer & Social Worker, Ms. Leslie Lewinter
 - Animator MIT, Fardad Faridi
 - Sean Adibs, Producer/videographer
 - Cree Rankin, Director
 - John Paro, Songwriter/medical student



Conceptualizing Project ASPIRE

- 8 Interactive Multimedia Sessions
- Professionally Supervised, Parentally Directed Group Sessions
- Project ASPIRE Module Components
 - Animated introduction
 - Modeled behavior video
 - Practice new behavior
 - Carryover activity





Developing a Best Practices Curriculum

- A number of parent education/skill building programs are already in existence
- These were consulted for developing the themes and key points of each of Project ASPIRE modules





Formative Studies Performed

- Parent Focus Groups and Individual Interviews
- Assess Barriers and Motivators
- Cultural Sensitivity of material
- Understand Baseline Knowledge and Beliefs



Identifying Module Topics

- Curriculum review and consensus building discussions with other educational experts yielded 8 areas for information dissemination and skill building for the Project ASPIRE pilot





Module One:

What is Project ASPIRE?

- Core Instruction
 - critical role of post implant habilitation
 - key role of parent involvement
- Key Points
 - parents are partners
 - implant activation is a beginning, not an end
 - wear time necessary for success






Module Two:

Setting the Stage for Good Listening

- Core Instruction:
 - Ling Six Sound check necessary to determine device functioning
 - reducing background noise helps the child listen
- Key Points:
 - daily equipment check is critical to success
 - good acoustic environment supports listening and talking





Module Three:

Sound Safari/Be the Announcer

- Core Instruction:
 - parents play an important role in calling attention to, labeling and describing sounds in the environment
- Key Points:
 - understanding what sound means is different from just hearing it
 - parents provide labels for the sounds the child hears to help create a sound/word inventory



Module Four:

How to talk so your child learns to listen and speak

- Core Instruction:
 - use of Child-Directed Speech helps children listen and learn
- Key Points:
 - rate, pitch and acoustic highlighting are elements of CDS
 - using an “interesting” voice helps a child know when speech is being directed to him/her





Module Five: *Be a Copycat*

...Talking Starts with Imitating Sounds

- Core Instruction:
 - speech production is assisted by imitating sounds that the child produces
- Key Points:
 - imitating a child's sounds reinforces the conversational attempt and allows the parents to take a turn
 - over time, parents help shape these sounds into meaningful word





Module Six:

Tell Her/Him About It. It's as Easy as 1, 2, 3

- Core Instruction:
 - reprises the importance of CDS and conversational turns
 - adds element of language expansion
- Key Points:
 - after labeling, parents provide more information about a word by using it in a phrase or sentence
 - using the word in yet another context helps broaden the child's understanding



Module Seven:

Getting Ready for Reading by Book Sharing

- Core Instruction:
 - it is important to build vocabulary from the start to get ready for reading
- Key Points:
 - the words a child learns today prepare him/her for reading in later years
 - Sharing and reading books is critical to language learning and later reading achievement





Module Eight: *From Empowerment to Advocacy: Knowledge is Power*

- Core Instruction:
 - Through Project ASPIRE, parents gain new knowledge and skills to best help their child develop listening and spoken language.
- Key Points:
 - Review Local Educational Resources, Parent Support Groups, etc
 - Don't be afraid to stand up for your child!

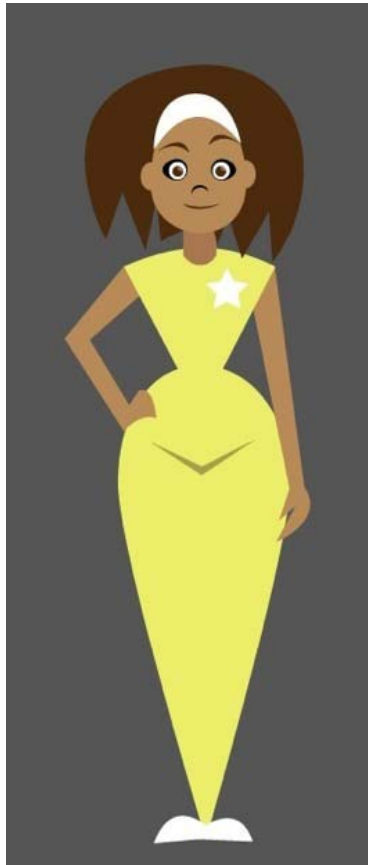


Animation: The Characters

- Star
- Stella
- Audi
- The Doctor
- Speak Lee
- Moose the Mouse
- The Camera Man



Star



- Main character
- Young mother
- Provides information from an “I’ve been there” perspective



Stella



- Bilateral implant recipient
- Animation depicts both a younger, newly-implemented Stella and Stella as an experienced listener



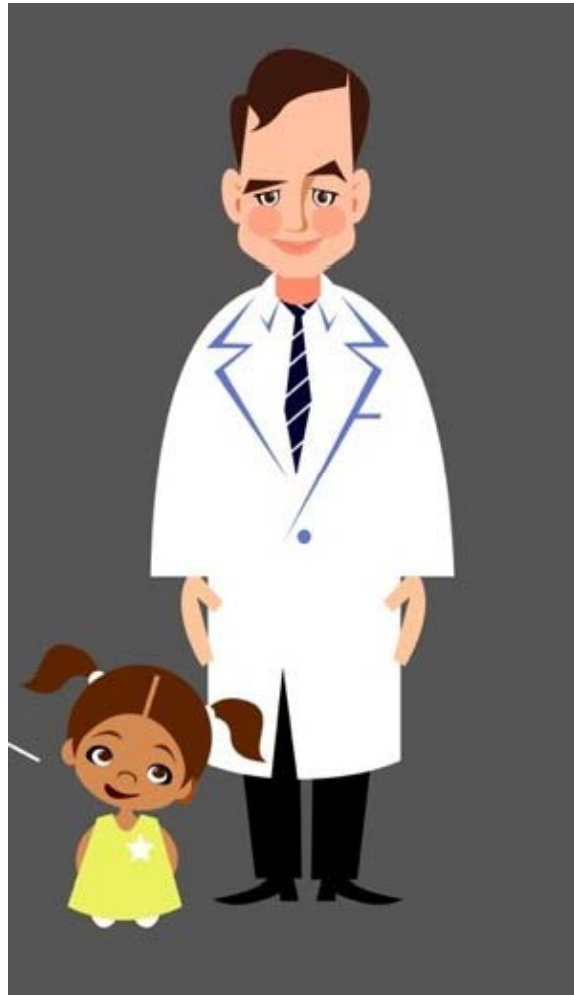
Audi



- The audiologist delivers important information to Stella and serves as her support



The Doctor



- Representative of the medical component of the process of implantation



Speak Lee



- This character is introduced as the director of the video recordings that parents will be asked to do



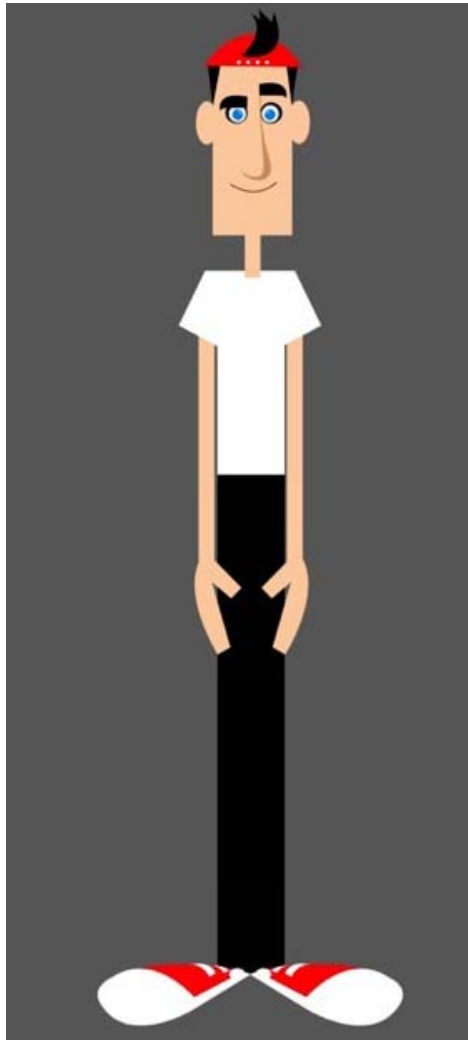
Moose the Mouse



- This “comic relief” character is a representation of the computer mouse that serves to gain access to the computer/DVD modules



The Camera Man



- This character assists the Director in capturing the images of parent-child dyads





Project ASPIRE

Videos



Project ASPIRE

The Pilot Study, Phase 1
The University of Chicago





Pilot study of Project ASPIRE

- **Hypothesis:** Within families of low SES background, completion of the Project ASPIRE pilot program will:
 - Improve **parental knowledge** of their hearing impaired child's language development and listening needs
 - Positively affect **parental behavior** – increased adult language input, conversational turns, and decreased background noise

Methods

Study Participants

The U of C Pediatric Hearing Loss and Cochlear Implantation Program

Low SES background

n=8 families who have a child with varying degrees of hearing loss

Study Design

Baseline LENA recording and questionnaire

One 1-1/2 hour intervention/teaching session

1-week, 2-week, and 4-week post-intervention audio recordings and questionnaires



- **LENA** (Language Environment Analysis) System
 1. **Adult Word Count (AWC)**
 2. **Conversational Turn Count (CTC)**
 3. **Television Exposure**



○ **Digital Language Processor (DLP)—**

recording devices worn by the child for 16 hours





THE INTERVENTION

- Powerpoint presentation format
- Coaching Method employed
- Therapist and family view it together
- Intervention is interactive
 - Questions
 - Role Play
 - Parent Involvement and Input



THE INTERVENTION

- The therapist visits the family at their home
- Intervention takes approximately one hour.
- At the end of the Intervention, the family is given another DLP and is asked to do a future recording.



The 3 T's

1. Talk more to child
2. Take turns talking
3. Turn of the TV

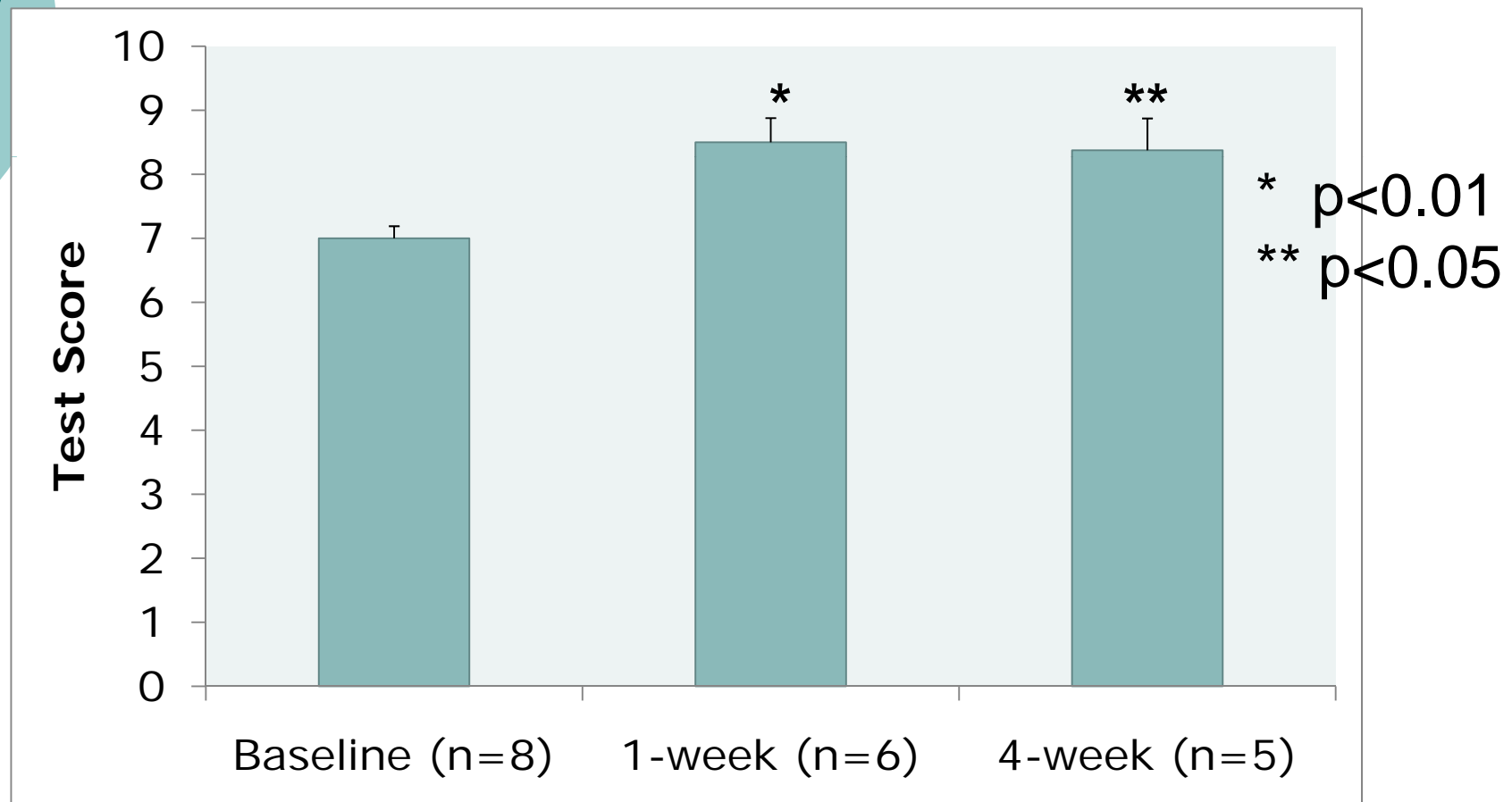


Results

- Parental Knowledge Questionnaires
- LENA System Outputs
 - Adult Word Count
 - Conversational Turn Count
 - Television Exposure
- Correlations between parental knowledge and behavior

Results

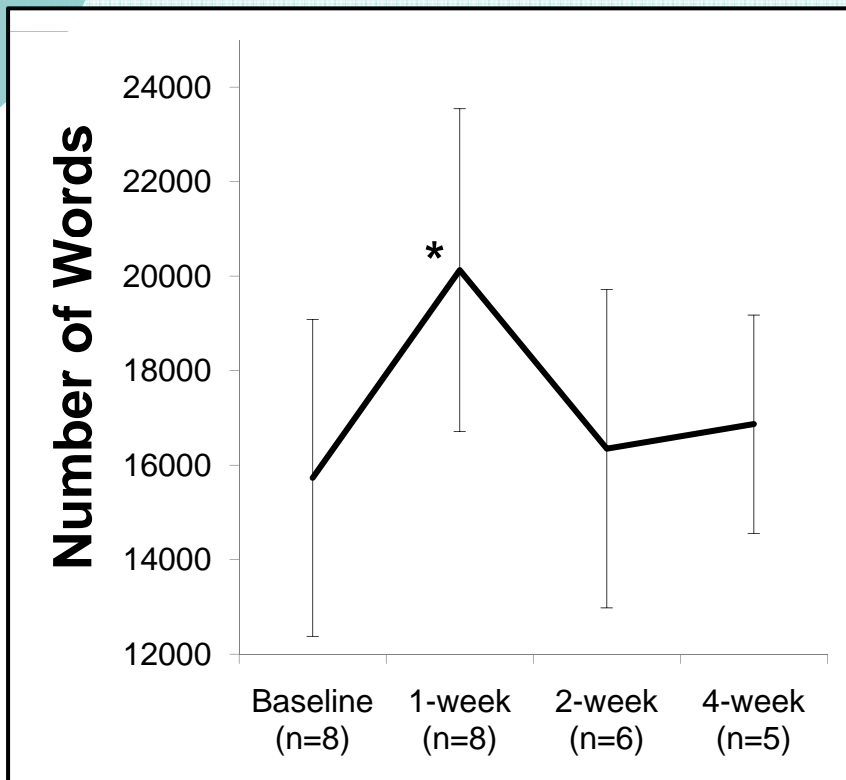
Parental Knowledge Questionnaires Scores



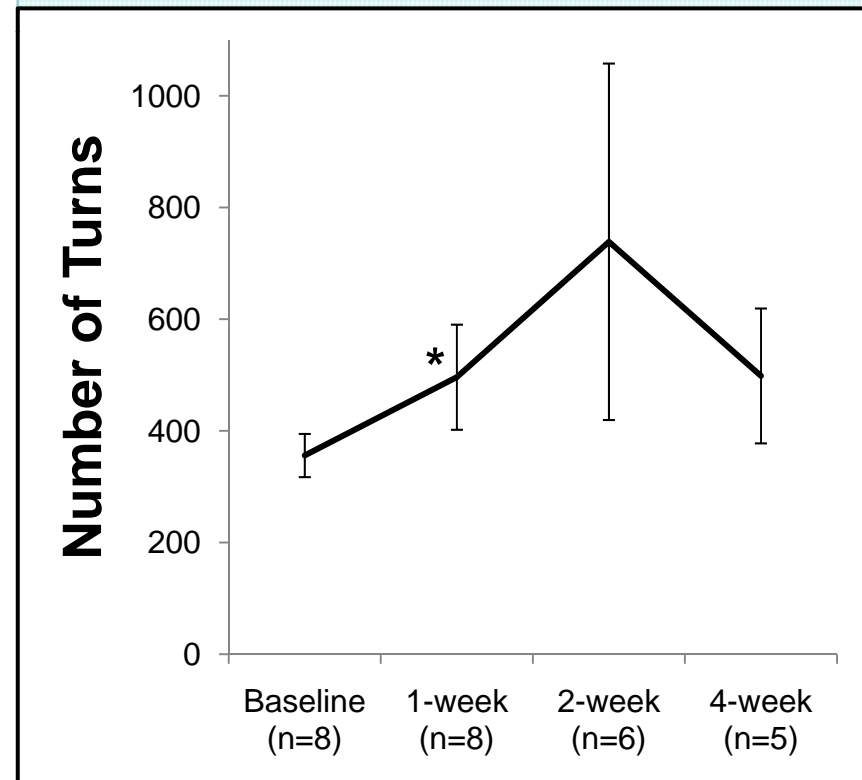
Results

LENA System Output

Mean Adult Word Count
(* $p < 0.100$)



Mean Conversational Turn Count
(* $p < 0.100$)

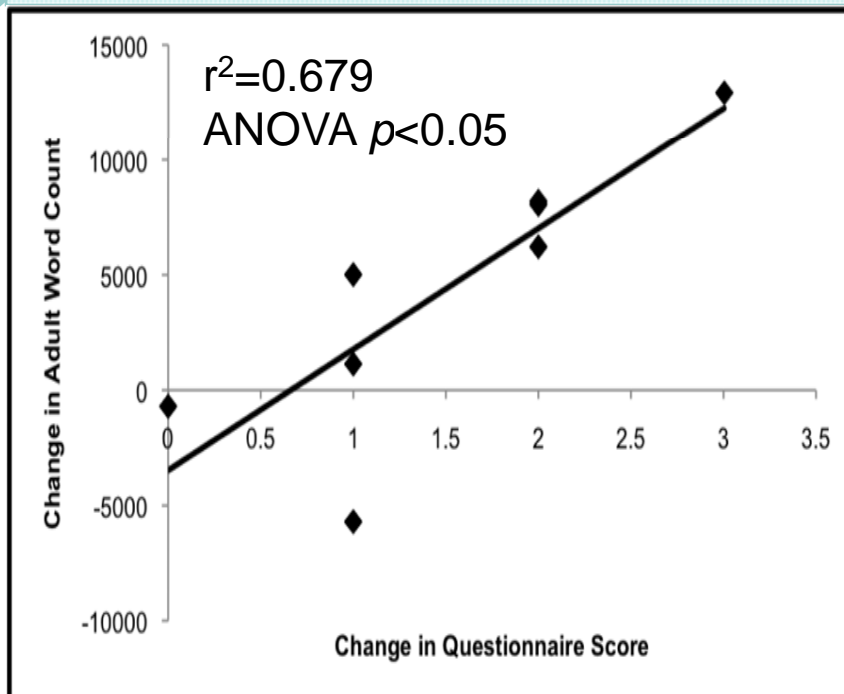


Results

Questionnaire Scores and LENA Output

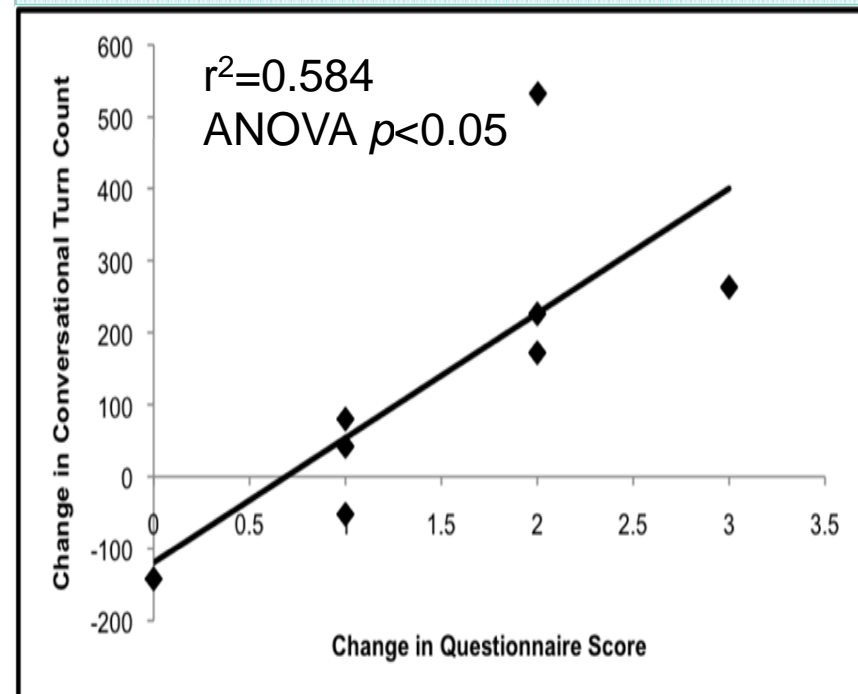
Change in AWC and Questionnaire Scores

Baseline to 1-week post-intervention



Change in CTC and Questionnaire Scores

Baseline to 1-week post-intervention

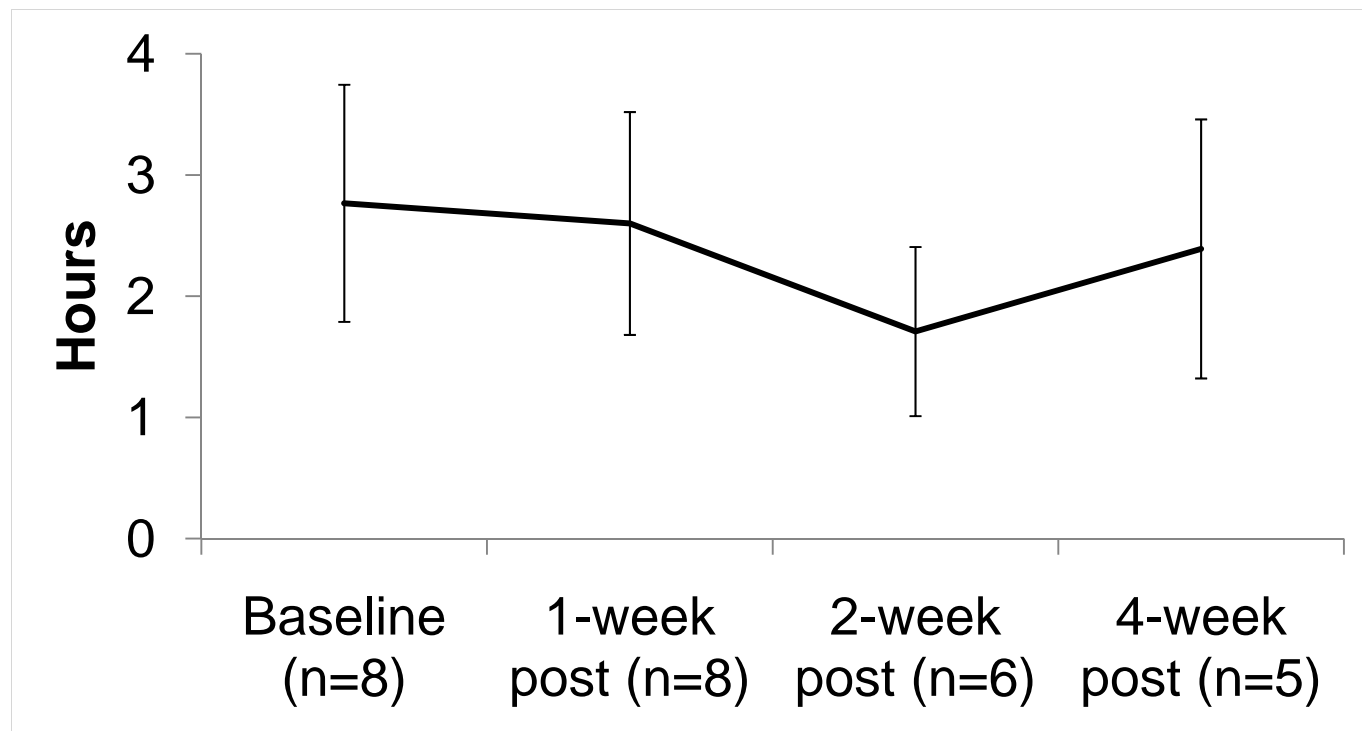


Results

LENA Output: Television Exposure

Mean Duration of TV Exposure

Paired samples t-tests insignificant at 1-week, 2-week, and 4-week post intervention





Study Limitations

- Small sample size (n=8)
 - Low detection power
 - High between-subjects variation in AWC, CTC, and TV exposure

- Hawthorne Effect





Project ASPIRE

The Pilot Study, Phase 2
The University of Chicago



What's Next

- Participants will be given **feedback reports** with results from their LENA recordings
- Participants will create **weekly goals** and will see their progress through the LENA printouts



The 3 T's

1. Talk more to child
2. Take turns talking
3. Turn of the TV

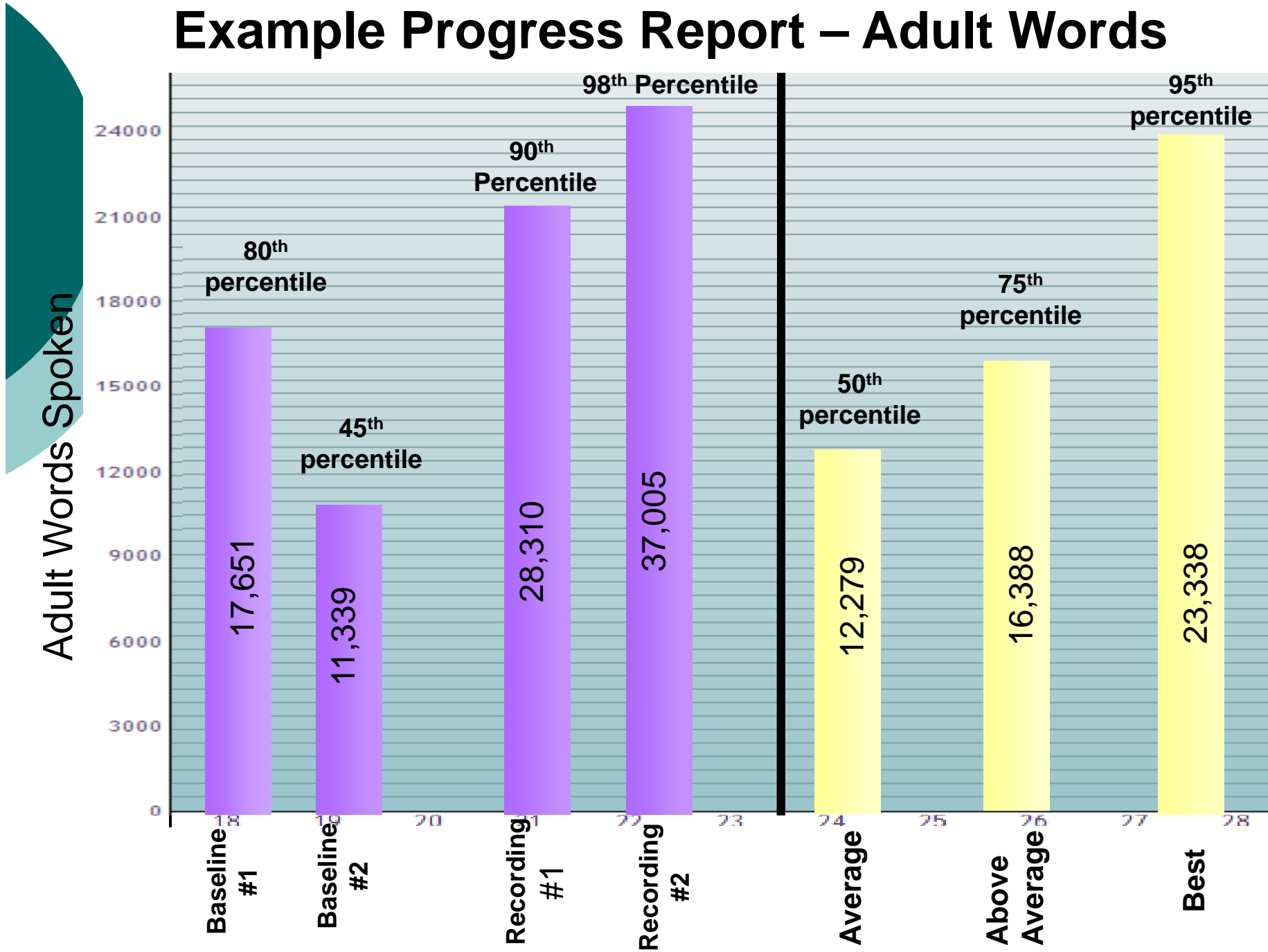


Talk More

Adult Word Count

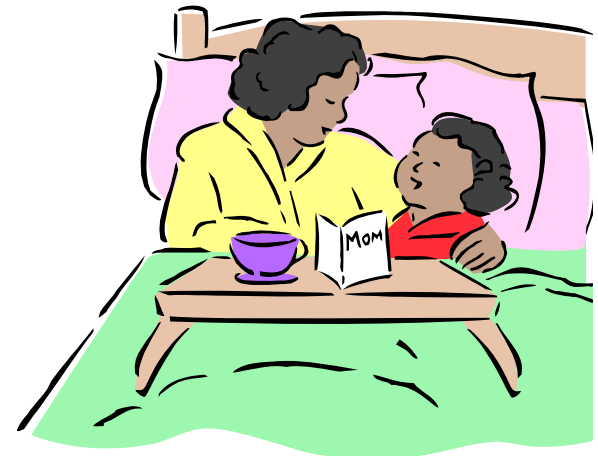


Example Progress Report – Adult Words



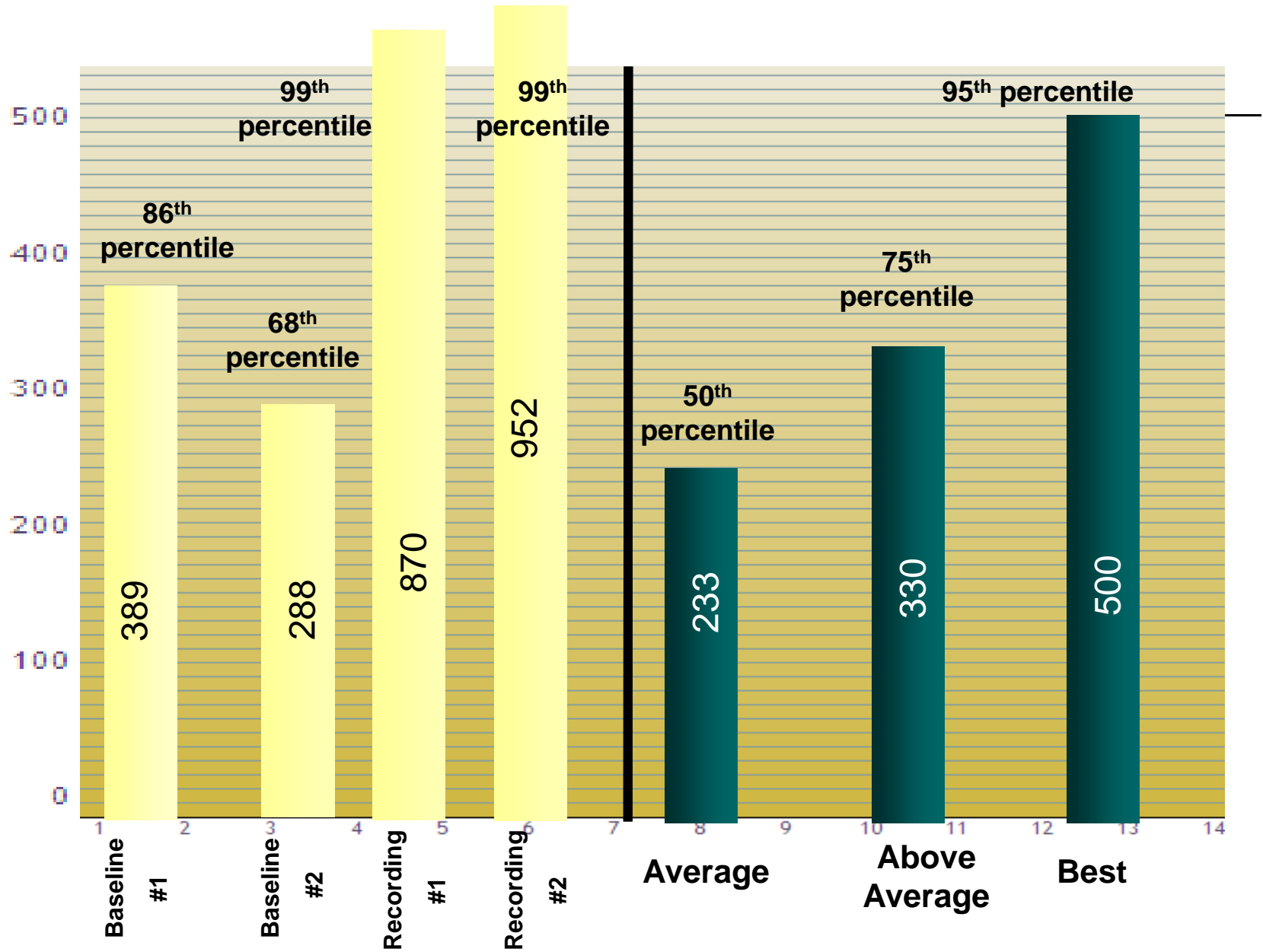
Take Turns

Conversational Turns



Example Progress Report – Conversational Turns

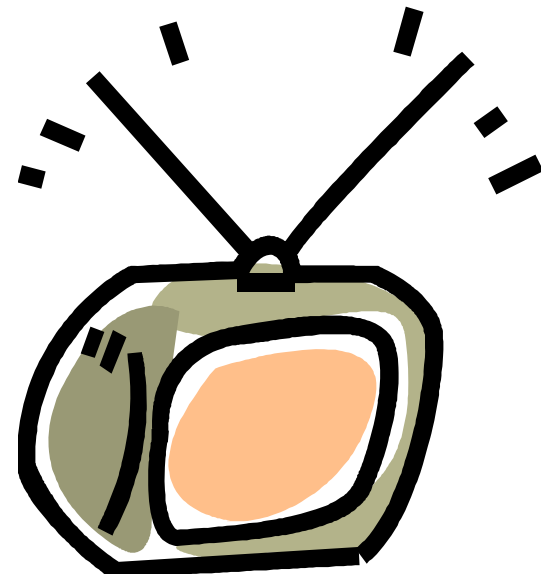
Number of Conversational Turns





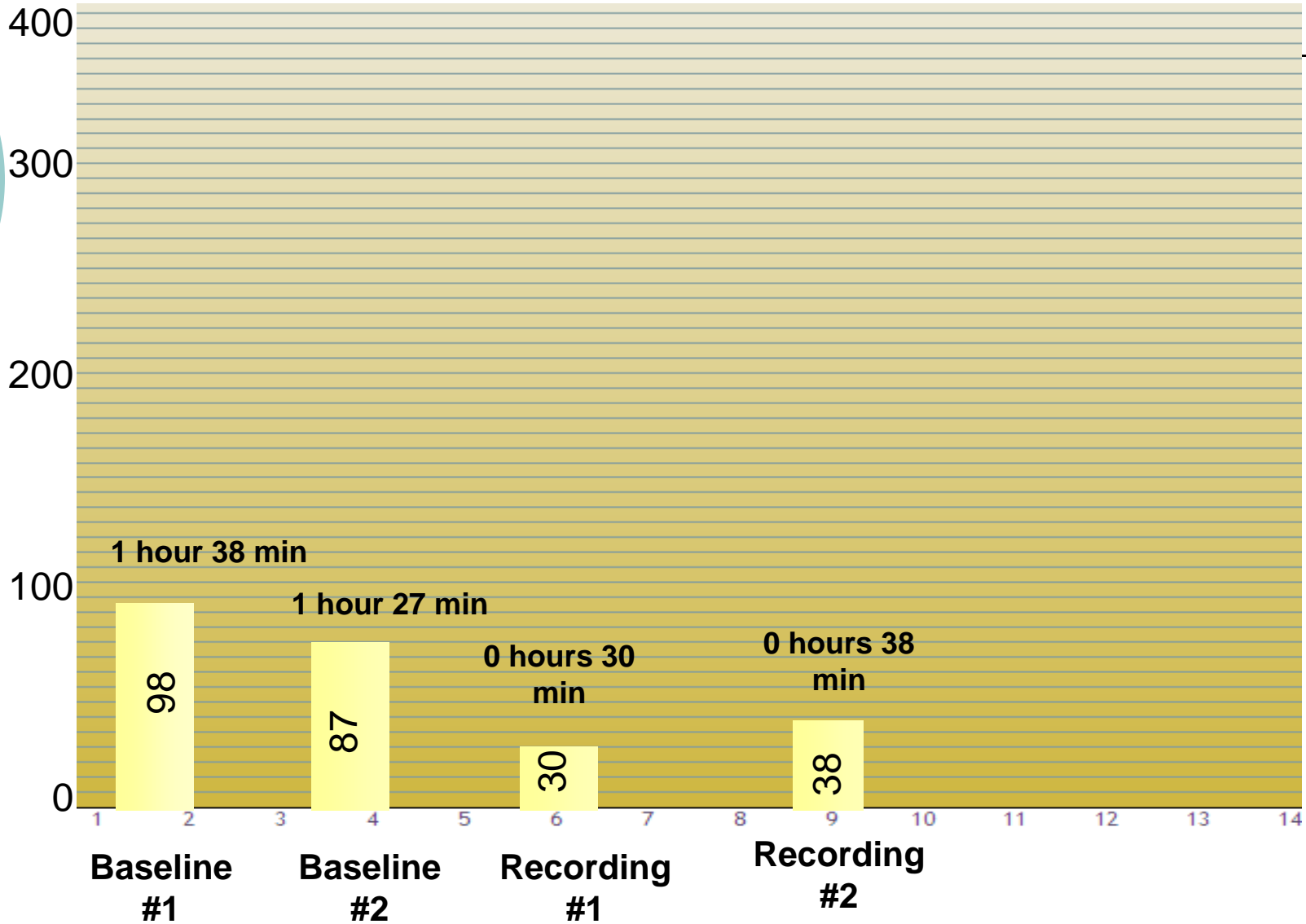
Turn off the TV

Audio Environment



Example Progress Report—Total Daily TV time

Total minutes TV was on





What we learned

- The Relationship with the family should be established prior to the administering the intervention.
- Interactive interventions were the most successful
- Don't PREACH...PLAN and be their PARTNER!



Questions & Comments

