Social Validity of Technology Assisted Language Intervention for Children who are Deaf or Hard-of-Hearing

Virginia Bolster BA, Samantha Secrist BA, Jade Clark, Sandra Grether PhD, Lisa Hunter PhD, Jareen Meinzen-Derr PhD

Leadership Education in Neurodevelopmental and related Disabilities (LEND) Program
The Division of Developmental and Behavioral Pediatrics, Cincinnati Children’s Hospital Medical Center
The University of Cincinnati University Center for Excellence in Developmental Disabilities

Background

Children who are Deaf or Hard-of-Hearing (DHH) are at-risk for language delays and possible language impairments which can impact social and communication functioning (Maimone-Derr et al., 2013). Coch (2014) and Kroner (2015) discuss the need for increasing access to technology in support of language learning. Technology Assisted Language Intervention (TALI) is a novel approach that focuses on the feasibility of using augmentative and alternative communication (AAC) as an intervention for children who are DHH. TALI combines AAC strategies with up-to-date and socially acceptable technology (iPads®) to enhance and support language development in children who are DHH and continue to display clinically significant gaps in language.

Aims

The purpose of this research study was to investigate the social validity of TALI for children who are DHH. It is important to investigate the feasibility of TALI across various settings. Intervention success is dependent on generalization to other environments. While results were positive in individual therapy sessions, the feasibility of using this intervention in the child's natural environments (home and school) was investigated.

Methods

Participants:

- Audiologists
- Speech-Language Pathologists
- Educators of children who are DHH
- Settings: public school, Ohio Valley Voices, St. Rita School for the Deaf
- Representatives of the Audiology Family Advisory Council
- Families of children who are DHH

Data Collection:

Uniform questions were used to conduct ongoing family interviews by telephone or email. Predetermined small and large group questions were discussed during two separate professional focus groups. These responses were documented through written means and recorded audio. Example questions and responses are shown below in Figures 2 and 3.

Data Analysis:

A group level assessment approach was used to group comments into common themes. This was done through group discussion and consensus.

Results

Results: Family Interviews

Positive Feedback:
- Increased quality and quantity of verbalizations
- Improved grammar and syntax use in both verbal and written communication
- Increased vocabulary
- Ease and enjoyment of using the iPad®
- Incorporated into interactions with family members and close friends

Barriers:
- Difficulty implementing when the child was fatigued or frustrated
- Difficulty prioritizing time for TALI use at home
- Difficulty implementing at school due to lack of knowledge or resources
- Unable to incorporate into peer interactions at school
- Unavailable written/video instructions aiding parents in TALI execution at home

Technology issues

Results: Professional Focus Groups

Strengths of children who are DHH:
- Strong visual/spatial skills
- Concrete “black and white” thinkers

Obstacles for children who are DHH:
- Communication limitations
- Socio-emotional difficulties
- Difficulty keeping up academically

How would you describe communication needs of children who are DHH?
- Receptive and expressive language delays
- Need of visual supports (i.e., sign language)

What are your expectations for children who are DHH?
- Full integration into society, ideally
- Ability to advocate for themselves

What behaviors would you expect for children who are DHH?
- Improved participation and academic and language skills with accommodations
- Frustration, withdrawal, and delayed comprehension without accommodations

What are your reactions to AAC devices to develop language with DHH children?
- Concerns for ability to use sign language and AAC simultaneously
- Requires good receptive language
- Challenges to using TALI with peers
- Useful tool for facilitating reading and writing activities

A DHH child you work with is utilizing a similar AAC device: What are your concerns?
- Slow pace of communication
- No corrective feedback provided by the device
- Work and time intensive to train the child to use the device
- Disrupting the established language foundation of children who communicate using sign language

Can these concerns be addressed? If so, how?
- Changes to the software (increase vocal clarity and intensity, create an undo button, provide corrective feedback for mistakes)
- Increase the 24-week speech therapy sessions to a more intensive 1:1 therapy for 1 year
- Changes to the software (increase vocal clarity and intensity, create an undo button, provide corrective feedback for mistakes)
- Increase the 24-week speech therapy sessions to a more intensive 1:1 therapy for 1 year

Next Steps

- Data has been used to design a large-scale randomized control trial comparing TALI to traditional therapy for children with hearing loss.
- A 3-year study has been funded by the National Institute on Disability, Independent Living, and Rehabilitation Research (NDILRR). Participants will include children 5-12 years old with bilateral sensorineural hearing loss and a gap between non-verbal IQ and receptive language.

Acknowledgements

- This project is funded by the Maternal and Child Health Bureau Grant T73MC00032, the Schmidlapp Women’s Scholar Fund, the March of Dimes, and the Jack Rubenstein Foundation.
- The patients, families, and professionals who made this work possible through their participation.