

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

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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 (Meinzen-Derr et al., 2013 Coch Imp Int; 2014 J Dev Behav Pediatr).

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.

TouchChat HD AAC with WordPower is a language system on the iPad® that varies in the number of buttons per page. It has a keyboard and is predictive in its automatic navigation, offering grammatically appropriate options of what to say next.



Fig 1. TouchChat HD with WordPower with 60-cell overlay

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.

Qualitative data was gathered from the parents of children enrolled in TALI to better understand their perspective on the use of this intervention outside of therapy.

Qualitative data was gathered from professionals and community partners who work with children who are DHH to better understand their perspective on the implementation of this intervention within their unique settings.

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.

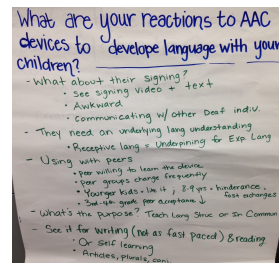
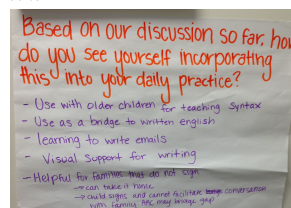


Fig 2 and 3: Discussions with professional partners are displayed. Responses to each of the focus group questions were recorded and matriculated to general responses and trends.



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-perceptive 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

Based on our discussion so far, how do you see yourself incorporating this into your daily practice?

- Useful for mainstreamed children who primarily use verbal expression
- Teaching academic concepts such as writing, drafting emails, vocabulary, etc.
- Aid for families that do not use sign language with their child



Conclusions

- Parents reported that TALI was feasible in home and therapy settings, in comparison to professionals who reported increased barriers to implementation within school settings.
- TALI may not be appropriate for use with a student in a manual/total communication academic setting.
- Professional partners indicated TALI may be beneficial for supplementing reading and writing curriculum.

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 (NIDILRR). Participants will include children 5-12 years old with bilateral sensorineural hearing loss and a gap between non-verbal IQ and receptive language.

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