

Beyond Academics: Exploring the benefits of hearing assistive technology for young children

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Overview:

- Marion's Way Preschool (MWP) is a language intensive 6-week program for children with hearing loss including children with secondary diagnoses and needs, such as autism spectrum disorder (ASD)
- The focus includes the optimization audibility with personal amplification/cochlear implants and FM/Roger technology
- Interdisciplinary approach, including:
 - Teacher of the Deaf and Hard of Hearing (TOD)
 - Speech Language Pathologist (SLP)
 - Auditory Verbal Therapist (AVT)
 - Audiologist
 - Student externs (e.g., AuD, SLP, TOD, etc.)
- Three parent education seminars per session

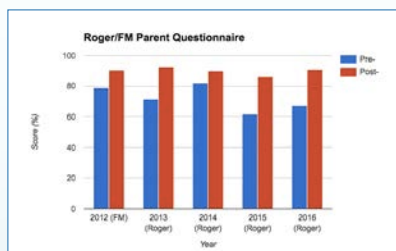
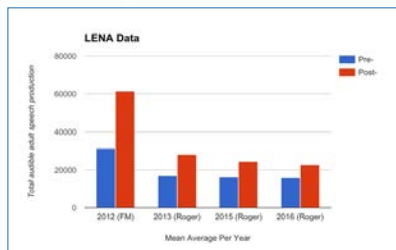
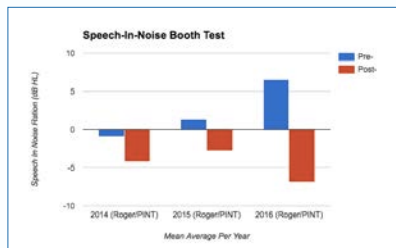
Research Questions:

- Is there a measureable benefit to using hearing assistive technology (HAT) outside of the traditional academic setting?
- What role does parental education play in utilizing HAT in a nonacademic environment?



Methods:

- Verified personal amplification (i.e., hearing aids and/or cochlear implants)
- Performed speech-in-noise test for children, students were tested first with personal amplification and then with personal amplification and FM/Roger
 - Scores are measured in signal-to-noise (SNR) ratio (lower the score the better the performance)
- Parents completed a pre- and post-HAT subjective questionnaire
 - Parents score their child's performance in hearing in quiet, in noise, at a distance, and with auditory only
 - The Amplification Evaluation for Children, a questionnaire, offers a Part 1 baseline with personal amplification only (e.g., hearing aids or cochlear implants) and part 2 with additional FM/Roger use
- Three LENA recordings were performed throughout the duration of the preschool
 - One LENA was recorded before the start of the preschool (pre-), one in the middle, and one at the end
 - The averages of the mid-LENA and final LENA were used as the post- scores
- Three mandatory parent education seminars were provided throughout the duration of the preschool on the following topics:
 - Optimizing audibility
 - Controlling signal-to-noise ratios
 - Maximizing communication in difficult to communicate environments



Year	Percentage
2012	63%
2013	50%
2014	25%
2015	50%
2016	43%

Results:

- Objective Measurements:
 - Average pre-HAT PINT score: 2.3 dB
 - Average post-HAT PINT score: -4.6 dB
 - Average pre-LENA score: 12219
 - Average post-LENA score: 24968
- Subjective Measurement:
 - Average pre-HAT questionnaire score: 72%
 - Average post-HAT questionnaire score: 90%

Feedback from Parents:

- Able to converse in the car
- Improved engagement in activities
- Able to understand directions and information in a loud environment
- Could communicate out on the playground
- Able to hear when there was noise and a lot of people around
- Could distinguish the most important voice speaking
- Overall ease of use
- Ability to speak to child from any direction



Discussion:

- Results show improvement in speech understanding in noise, child's attention, and adult/child interactions when using FM/Roger
- The use of HAT, specifically Roger/FM, in combination with parent education benefits young children in many environments as measured by parent questionnaire
- Questionnaire demonstrated subjective benefit of HAT in a variety of environments (i.e., quiet, noise, distance, and auditory only)
- Need for research on children with hearing loss and other diagnoses and benefits of Roger/FM



Interested in applying to MWP or learning more about the program? Visit:
<https://www.mariondowns.com/our-programs/marions-way-preschool>