Cochlear Implant Education Center

Cochlear Implants and Sign Language: Building Foundations for Effective Educational Practices

Research to Practice

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Research to Practice

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Patricia Spencer, Ph.D, Educational Research Consultant

Patricia Spencer, researcher, author, educator, and consultant in deaf education, shared her review of the research on language and communication outcomes for children with cochlear implants. (See reference list.) This review revealed the following:

- Cochlear implant technology supports spoken language development for children with severe to profound hearing loss better than hearing aid technology.

- Children with cochlear implants do not function similar to hearing children due to limitations in the input obtained through an implant.

- Pre-implant language levels and pre-implant hearing experience boost the spoken language outcomes in children who obtain a cochlear implant after the early language learning years.

- When looking at research on reading development of children with cochlear implants, it is difficult to gain a lot of information about the impact of modality on reading development of cochlear implant users since there are many other individual differences among children.

- While research shows that the reading skills of some children with cochlear implants matches those of their hearing peers, there is less research that follows students with cochlear implants through high school to determine if they maintain or drop off in their reading competence.

- Non-verbal cognitive skills predict language outcomes.

- The quality of a child's early communication and interaction experience is critical to successful language outcomes regardless of which modality is used.

- While children obtaining cochlear implants most easily develop spoken language when implanted at close to a year of age, the ability of the neurological system to accommodate and learn how to utilize auditory information doesn't appear to begin to shut down until about 3 1/2 years. There is more plasticity in the system than previously thought.

- Children who are bilingual early in life get cognitive advantages that unilingual individuals may not achieve. (i.e. taking different perspectives, problem solving flexibility)

- Research literature related to children with cochlear implants tends to exclude children who are not at least within the typical range of IQ. At the same time approximately 1/3 of children with cochlear implants have some type of disability.

- Research that is available on children with cochlear implants who have multiple disabilities finds that these children have many advantages from their implant, yet the nature of the disability will impact spoken language performance outcomes and strategies used with these children.

- Children with cochlear implants still appear delayed in comparison to hearing children in relation to Theory of Mind (the ability to tell what another person is thinking) Remmel, E., Peters, K. (2009). Theory of mind and language in children with cochlear implants. Journal of Deaf Studies and Deaf Education, 14. One of the reasons for this is suspected to be cognitive flexibility.

- The intensity and the quality of the spoken language to which a child is exposed relates to how well a child learns spoken language. What is not evident in the research is that signing impedes the development of spoken language on average across children.

- Researchers are noting that children with cochlear implants in total communication programs may sign the important words in a sentence, and speak the grammatical English morphemes. This suggests that children with cochlear implants may be able to more readily combine visual and auditory input than initially suspected.

- There are divergent findings about the socio-emotional development of children with cochlear implants. Some children in mainstream situations seem to do well while others seem to be isolated. It appears optimal for children to interact both with deaf and hearing children so that they can recognize their identity as deaf.

- Deaf children (as well as hearing children) need instruction in English to learn that language. It is also necessary to teach English structures to deaf children with cochlear implants.

- If children are going to transition from a signing environment to an oral environment, it is critical to have a planned program of transition.

The Laurent Clerc National Deaf Education Center is comprised of two federally mandated demonstration schools for students from birth through age 21 who are deaf. Located on the campus of Gallaudet University, these schools work in collaboration with a national network of exemplary programs and professionals to identify, research, develop, evaluate, and disseminate innovative curricula, materials, educational strategies, and technologies for students who are deaf or hard of hearing. The Clerc Center also provides training and technical assistance to families and programs throughout the United States, and serves as a model individualized educational program, working in close partnership with its students and their families.

Working for Deaf and Hard of Hearing Children Throughout the United States

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