Conversational Language Skills of Young Children Who Received Cochlear Implants Prior to Two Years of Age

Judith Losh

The purpose of the study was to compare the conversational language skills and interactions of two children who are d/hh and who received CIs prior to or within six months of the age of two years with a typically hearing peer matched for age, gender, and race for each child using a CI. This study was conducted by observing the behavior of the two dyads of children, each composed of one child using a CI and the matched peer with typical hearing, interacting with others in their kindergarten classrooms. The purpose of this study was not to make generalizations to the larger population of children who received CIs prior to or within six month of two years of age; the data obtained and conclusions drawn can only be used to describe the unique communication behaviors of the children under study.

Digital sound recordings and detailed data analysis using the Language Environment Analysis (LENA) software formed the foundation of the data-gathering component of this study. This study gathered and analyzed data on the matched dyads of four children alike in age, gender, and race and differing in hearing status to gain an in-depth understanding of the conversational language skills of young children using cochlear implants (CIs) when compared with peers with typical hearing. The specific questions of concern in this study included: (a) does the mean length of utterance of children using CIs differ from that of their typical hearing peers,(b) does the number of conversational turns for children using CIs differ from that of their typical hearing peers, (c) do the number of vocalized words of children using CIs differ from that of their typical hearing peers, and (d) do classroom teachers show a difference in the number of interactions they initiate with children using CIs and their typical hearing peers.

Limitations

1. Small sample size
2. Results from one female dyad and one male dyad
3. Results from two different states
   (School one= NC; School two=VA)
4. Studied only children with bilateral CIs
5. Studied only children implanted prior to age of two years

Participants

School One:

The child using the CIs at a school one was a five year, four month old white female who used bilateral CIs. Her first CI was implanted when she was twelve months of age; the second was implanted just prior to her second birthday.

The matched peer for this child was also a five year, four month old white female. Both girls were judged to have above average language skills by their kindergarten teacher.

School Two:
The child using the CIs at school two was a five year, one month old white male who used bilateral CIs. He received both implants at the age of twenty-two months.
The matched peer for this child was a five year, two month old while male. Both boys were judged to have above average language skills by their kindergarten teacher.

School One					
Variable		Child with CI	Matched Peer	*t*-value	Probability
Child Vocalization Count (CVC)	M SD	449.5 (303.2)	191.1 (126.8)	2.224	.052
Adult Word Count (AWC)	M SD	2159.8 (1317.3)	2244.5 (1784.0)	-.108	.915
Conversational Turn Count (CTC)	M SD	65.3 (38.6)	32.6 (19.4)	2.138	.051

School Two					
Variable		Child with CI	Matched Peer	*t*-value	Probability
Child Vocalization Count (CVC)	M SD	851.7 (84.3)	770.0 (133.1)	.896	.420
Adult Word Count (AWC)	M SD	6364.7 (2332.2)	7408.0 (3252.6)	-.452	.675
Conversational Turn Count (CTC)	M SD	156.0 (80.0)	168.0 (81.0)	-.183	.864

Results

Independent-samples t-tests were conducted to compare the child vocalization count, adult word count, and conversational turn counts between the children using CIs and their matched peers with typical hearing.

As we can see in both instances, there was not a significant difference in any areas under study between the children using CIs and their matched peers.

It is interesting to note that although the child with the CIs had noticeably more vocalizations and conversational turns with others than her matched peer, the difference was not large enough to be statistically significant (CVC t=2.224, p=.052; CTC t=2.138, p=.051).

These results suggest that early cochlear implantation of the children in this study had an effect on their conversational language skills. Specifically, the results suggest that when children are implanted early in life, they are able to develop conversational language skills commensurate with their hearing peers.