

# Phonological Acquisition in Children with Cochlear Implants: A Pilot Study

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## Purpose

The purpose of this study was to investigate if, matched by age and gender, there are significant differences in phonological production skills between normally hearing children and children with cochlear implants.

## Key Words

**Phonology:** study of how sounds are organized and used in natural languages

**Cochlear Implant:** a small, electronic device that aids in hearing restoration by bypassing the peripheral auditory system to directly stimulate the main nerve of the ear, creating the sense of hearing

## Participants

### Normally Hearing Subjects

Subject - Normal Hearing	Age**	Gender
NF1	2;11	F
NM2	2;11	M
NM3	3;8	M
NM4	4;4	M
NM5	4;8	M
NM6	4;10	M

\*\*Age at the time of testing

### Cochlear Implant Subjects

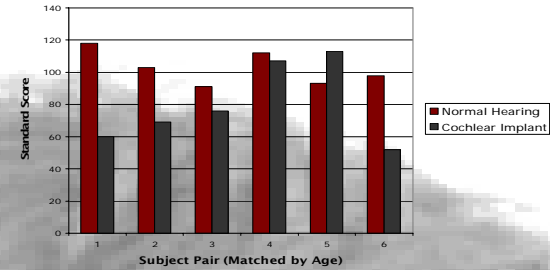
Subject - Cochlear Implant	Age**	Gender	Age When Implanted	Amt. of Time With Implant
CF1	2;11	F	22 mo.	15 mo.
CM2	3;0	M	15/22 mo.*	17 mo.
CM3	3;9	M	15 mo.	34 mo.
CM4	4;4	M	11 mo.	40 mo.
CM5	4;6	M	19 mo.	37 mo.
CM6	4;10	M	23 mo.	35 mo.

\* First cochlear implant failed; implanted a second time at 22 months

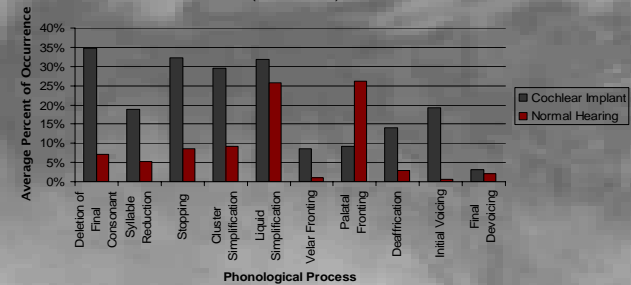
\*\*Age at the time of testing

## Results

### Comparison of Standard Scores (from KLPA-2)



### Comparison of Phonological Processes (from KLPA-2)



## Methods

### Subject Selection

- 6 Children with Cochlear Implants
  - Prelingually deafened
  - Between the ages of 2-7
  - Use of oral communication
  - Implanted before 24 months of age
  - Implanted for more than 12 months prior to testing
  - No physical or cognitive impairments other than hearing impairment
  - Native speaker of English
- 6 Normal Developing Children
  - No cognitive or physical impairments
  - Between the ages of 2-7
  - Within two months of age to paired child with cochlear implant
  - Same gender as age-matched child with cochlear implant
  - Native speaker of English

### Testing

- The Goldman-Fristoe Test of Articulation (2<sup>nd</sup> Edition) (GFTA-2)
- Each testing session recorded using Olympus digital voice recorder
- Khan-Lewis Phonological Analysis (2<sup>nd</sup> Edition) (KLPA-2)

## Conclusions/Discussion

- No significant differences found between the two groups
- Great variability in standard scores in children with cochlear implants
- Children with cochlear implants show persistence and extensive use of normal phonological processes and, with intensive therapy, may catch up to normally hearing age-mate peers.
- Children with cochlear implants are not showing aberrant processes.
- Future direction for therapy and research:
  - Results indicate common processes to target in therapy.
  - Larger sample size may lead to more significant differences between the groups.
  - Expand research to a longitudinal study investigating academic success.

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