

SESSION 5

Speaker 6

Pamela Dawson

AUDITORY PROCESSING ABILITIES IN CHILDREN USING COCHLEAR  
IMPLANTS: THEIR RELEVANCE TO SPEECH PERCEPTION

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This study aimed to investigate the relationships between some basic auditory processing skills, subject variables and speech perception ability in young children using cochlear implants. A modification of the play audiometry procedure was used to measure electrode discrimination and "rate-of-processing" ability in seventeen 4-10 year old children. In the electrode discrimination task, children responded with a game-like motor response when a repeating stimulation on a reference electrode "changed" to a different electrode. In the "rate-of-processing" task, children had to respond to the "change" to a different electrode, when the duration of the stimuli and the time interval between the stimuli were decreased. Normally-hearing children were assessed on this task with acoustic stimulation. Nonverbal intelligence, speech feature discrimination and closed-set word recognition were also measured in the children using implants.

An ability to discriminate between adjacent electrodes in mid and apical regions of the cochlea was evident in 65% of the children. The remaining children required electrode separations of between two and nine electrodes for successful discrimination. Although the children using cochlear implants did not perform as well as the normally-hearing children on the rate-of-processing task, all but one of them scored significantly above chance for all conditions of stimulus duration and interstimulus interval. Significant correlations ( $r > 0.7$ ,  $p < 0.01$ ) were found between electrode discrimination ability and each of the speech perception measures. This basic auditory processing ability was the strongest factor in accounting for variance in the speech perception scores. In a forward stepwise regression analysis, subject variables such as duration of deafness, nonverbal intelligence and implant experience, did not account for further variance in speech perception ability for this group of children. Similarly rate-of-processing ability did not account for further variance in speech perception scores.

Support provided by The Bionic Ear Institute, Lions Club International, The Garnett Passe & Rodney William Memorial Foundation and The Sidney Myer Fund.

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Dawson, Pam W.; McKay, Colette M.; Busby, Peter A.; Grayden, David B.; Clark, Graeme M.

**Title:**

Auditory processing abilities in children using cochlear implants: their relevance to speech perception [Abstract]

**Date:**

1999

**Citation:**

Dawson, P. W., McKay, C. M., Busby, P. A., Grayden, D. B., & Clark, G. M. (1999). Auditory processing abilities in children using cochlear implants: their relevance to speech perception [Abstract]. In Program & Abstracts of the 1999 Conference on Implantable Auditory Prostheses, California.

**Persistent Link:**

<http://hdl.handle.net/11343/27054>

**File Description:**

Auditory processing abilities in children using cochlear implants: their relevance to speech perception [Abstract]