Advantages and limitations of the probe microphone instrument are discussed. In addition, measurements of some hearing aids (e.g. compression, low SSPL aids etc.) that require careful interpretation are described in the presentation.

The real-ear probe microphone instrument is also used as a research tool at the Human Communication Research Centre, University of Melbourne. Some of its uses are described.

The Tickle Talker: a speech perception aid for profoundly hearing-impaired children

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Fifteen prelingually profoundly hearing-impaired children participated in speech perception training and evaluation, to assess potential benefits from use of the Tickle Talker. This device, a multichannel electrotactile speech processor, developed by Cochlear Pty. Ltd. and the University of Melbourne, presents speech as a pattern of electrical sensations felt on the fingers. The eight small electrodes are located over the digital nerve bundles, on both sides of the four fingers of the non-dominant hand. Speech processing hardware is similar to that used in the 22-channel cochlear implant. In the encoding strategy, second formant frequency (F2) is presented as electrode position, speech waveform amplitude as stimulus strength, and fundamental frequency (F0) as rate of stimulation. Each child participated in an ongoing training program involving clinicians, teachers and parents. The evaluation program included measures of sound and speech detection thresholds, and discrimination of speech features, words and open-set sentences. Both individual and mean scores for all the children demonstrate significant improvements in speech perception scores when input from the Tickle Talker is combined with either aided-residual hearing, or aided residual hearing and lipreading. These results are consistent with those previously reported for profoundly hearing-impaired adults using the Tickle Talker, and indicate that children are able to integrate speech information provided through the tactual modality with information from vision or residual hearing.

Speech perception results in children using the 22-electrode cochlear implant

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Twenty-one profoundly hearing impaired children ranging in age from 3 to 20 years have been implanted with the 22-electrode cochlear implant (Cochlear Pty Ltd) at the University of Melbourne Cochlear Implant Clinic. Five children (aged 6.0 to 14.8 years) have achieved substantial scores on open set speech tests using hearing without lipreading. Phoneme scores in monosyllabic words ranged from 30% to 72%. Word scores in sentences ranged from 25% to 74%. Four of these five children were implanted during preadolescence and the fifth who had a progressive loss, was implanted during adolescence. Eight children (aged 3.0 to 11 years), have either been implanted recently or are too young for detailed assessments. However some have shown using closed set speech perception tests or vowel imitation tasks, that they are beginning to use the auditory input provided by the implant. The remaining children (aged 13.11 to 20.1 years) have not demonstrated open set recognition but are all full time users of the device. This group was implanted during adolescence after a long duration of profound deafness. The results will be discussed with reference to a number of variables which may contribute to successful implant use; such as age of onset of deafness, duration of deafness, age of implantation, educational program and type of training.
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Title:  
The Tickle Talker: a speech perception aid for profoundly hearing impaired children [Abstract]

Date:  
1990

Citation:  

Persistent Link:  
http://hdl.handle.net/11343/27291

File Description:  
The Tickle Talker: a speech perception aid for profoundly hearing impaired children [Abstract]

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