an increase in vowel formant perception with the SMSP is associated with a one dimensional percept for two electrodes separated by larger distances (such as between the first and second formant stimulation areas).

Case Study: Child with a Surface Electrode Placement

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A number of children who have been rendered profoundly hearing impaired as a result of meningitis have had a "surface" electrode placement due to neo-osteo genesis of the cochlear duct.

This paper presents a case study of one such child who received a cochlear implant at the children's Cochlear Implant Centre (NSW) in November 1992 following meningitis at the age of 10 years. The questions this case study raises with regard to similar cases are discussed.

Loudness Growth Characteristics of Cochlear Implantees Using the Spectral Maxima Sound Processor

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The study of perceptual characteristics of subjects with cochlear implants can lead to improvements in the design of speech processors. One important aspect of speech processing which has received little attention in the past is the conversion acoustic signal amplitudes into appropriate levels of electrical stimulation. The optimum conversion would provide implantees with loudness growth characteristics that mimic those of normal hearing. To investigate how implantees using the Spectral Maxima Sound Processor (SMSP) perceive changes in loudness, an experiment involving production of fixed loudness ratios was conducted. Ten subjects participated: five users of the Mini System 22 cochlear implant, and five normally-hearing subjects. In the experiment, the subjects were required to adjust the loudness of two stimuli (white noise and speech-weighted noise) to equal half or twice that of a reference. The reference was presented at various levels over a range of 25 to 75 dBA. The results for three of the implantees were similar to those of all the normally-hearing subjects, who produced an average level change of 10.8 dB for the task. The remaining subjects, who had the largest electrical dynamic ranges, produced larger level changes (up to 20 dB) which were constrained by the limited electrical dynamic range of the processor (46 dB). The SMSP utilises an amplitude conversion function by which the stimulus level (in dB) is directly proportional to the input sound level (in dB). The experimental results suggest that the shape of this function is satisfactory, though not necessarily optimum, for these implantees.

Combined Cochlear Implant and Speech Processing Hearing Aid for Implant Users With a Severe to Profound Hearing Loss in the Contralateral Ear

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The bimodal device was developed for cochlear implant users who simultaneously wear a hearing aid in the opposite ear having residual hearing of a severe to pro-
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