AN ANALYSIS OF HIGH RATE SPEECH PROCESSING STRATEGIES USING THE NUCLEUS 24 COCHLEAR IMPLANT

Speech comprehension for a group of five users of the Nucleus 24 Cochlear Implant system was explored at three rates of electrical stimulation, 250, 807, and 1615 pulses per second per channel. For the high stimulation rate the analysis frequency was the same as for the medium rate condition. The study investigated the effect of varying rate of stimulation when using the electrode selection technique of the SPEAK strategy. This has been undertaken using a repeated ABC experimental design to account for learning and minimize ordering effects. Speech perception was assessed using open-sets of CNC words in quiet and open-sets of C/NY sentences at signal-to-noise ratios from +20 to 0 dB. Closed-sets of 19 vowels and 24 consonants were also presented, in the HIV/D and A/C/A context. The recognition and perception of distinctive features were assessed across strategies and patients. Preliminary speech perception results have shown no statistically significant difference in performance between the low and medium stimulation rates. However, significantly poorer results were observed for the high rate condition for some tests. Individual differences may be explained by the effects of rate of stimulation on speech features.

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