The effects of varying the stimulation rate on speech perception was evaluated in five postlinguistically deaf adult users of the Nucleus 24 Cochlear Implant System. Three different rates of electrical stimulation, 250, 807, and 1615 pulses per second per channel were employed. For the high stimulus 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. The study used a repeated ABC experimental design, in order to account for learning effects and to minimize ordering effects. Speech perception was evaluated using both monosyllabic words (open-sets of CNC words in quiet) and sentence materials (open-sets of CUNY sentences at signal-to-noise ratios from +20 to 0dB). In addition, the subjects’ perception of closed-sets of 19 vowels and 24 consonants, presented in the H/V/D and A/C/A context, were also investigated.

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 with some individuals. Individual differences may be explained by the effects of rate of stimulation on speech features.
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