

# **RELATION BETWEEN NRT RESPONSE AND PSYCHOPHYSICAL PARAMETERS IN PEDIATRIC COCHLEAR IMPLANTEES USING SPEAK AND ACE SPEECH CODING STRATEGIES**

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The study aimed to find a relation between neural response telemetry (NRT) responses and the threshold (T-) and comfort (C-) current levels in pediatric cochlear implantees using SPEAK and ACE speech coding strategies. A total of 18 children aged between 3 years 10 months to 12 years who had undergone cochlear implantation under the UKM cochlear implant program participated as subjects. Post switch-on experience with implant ranged from 4 months to 4 years and 3 months. Data for SPEAK processing strategies were obtained from 12 subjects who were obtained from 15 subjects who were using ACE during data collection. Test measurements included recording of the NRT responses in electrodes 5, 10, 15 and 20 as well as mapping to obtain reliable T- and C- levels in each subject for the same 4 electrodes. Results showed that NRT responses were recordable in the majority of the electrodes (94.4%), however large intra- and inter- subject variability in NRT thresholds were observed. For SPEAK strategy NRT thresholds lie at about 58% of the dynamic range across the electrodes and at 78% for that of the ACE strategy. Paired T- test revealed that there were significant differences between the NRT threshold and the psychophysical parameters for both strategies even though there were weak correlations ( $r=0.314$ ,  $p<0.05$  for SPEAK;  $r=0.383$ ,  $p<0.05$  for ACE). Correlation methods were performed to improve the correlation between the 2 parameters. Results showed predicted psychophysical parameters ( $T_p$  and  $C_p$ ) were highly correlated with the measured values ( $T_m$  and  $C_m$ ) for both SPEAK and ACE coding strategies ( $T_p-T_m$ :  $r=0.867$ ,  $C_p-C_m$ :  $r=0.849$ ,  $p<0.01$  for SPEAK;  $T_p-T_m$ :  $r=0.833$ ,  $C_p-C_m$ :  $r=0.859$ ,  $p<0.01$  for ACE). Comparing the mean NRT thresholds across the test electrodes, the middle electrode (E10) had the highest value whereas the apical electrode (E20) had the lowest mean NRT threshold. Implications of the results were discussed.

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