

ACOUSTIC ANALYSIS OF VOWEL SPACE IN MALAY CHILDREN COCHLEAR IMPLANT USER

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Cochlear implant has been proven to help patients with hearing impairment to gain access to auditory input. In Malaysia, there is no research concerning the vowel space development of individuals with cochlear implants. Thus, this study aims to investigate the development of vowel space size that reflects the improvement in speech production among cochlear implantees. In this study, the development of vowel space size on each subject was described descriptively. Eleven Malay children who had undergone cochlear implantation participated in this study. Their hearing age ranged from 4 months to 1 year 11 months as test subjects. One subject with hearing age of 9 years 10 months has been chosen as the control subject. This study is specific to obtain F1 and F2 values and vowel space sizes for each subject. The vowel space size was observed to increase towards the vowel space size that belongs to the control subject in a nonlinear pattern. Vowel space sizes of subjects with hearing age 0;4, 0;5, 0;6, 0;7, 0;10, 1;3, 1;7, 1;11, and 9;10, is 30-660 Hz, 18-686 Hz, 108-763 Hz, 35-709 Hz, 37-177 Hz, 39-882 Hz, 67-889 Hz, 115-965 Hz, and 306-288 Hz respectively. This indicates an improvement in speech production with the increase of implant duration. Pre-lingual children that wear cochlear implant is believed to receive phonetic cues by the auditory feedback experienced from the cochlear implant. For formant values, there is no linear pattern observed in F1 and F2 values across duration of implant. This study gives a view on the pattern of vowel development across hearing ages among Malay pre-lingual children who receive cochlear implantation. This study can be used as a reference and starting point in future research on vowel space development among cochlear implantees in Malaysia.

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