

## **DEVELOPMENT OF ACOUSTIC VOWEL SPACE FOR MANDARIN NATIVE SPEAKING CHILDREN**

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### **ABSTRACT**

The aim of this paper is to study the vowel space development of 1;0 to 4;11 –year-old native Mandarin-speaking children. Vowel development is crucial for the process of speech sound acquisition. Acoustic studies of vowel development were limited in Malaysia. Majority of the acoustic studies done in Malaysia focused on the development of the consonant. This was a descriptive cross-sectional study. A total of 30 subjects were divided into 8 age groups. In addition, three female adults were recruited to become control subjects. Vowels /a/, /i/ and /u/ from the speech sample of each subject were segmented and analysed using PRAAT software. Acoustic measures in this study included size of vowel space area, range of formant 1 and formant 2 of /a/, /i/ /u/ as well as vowel distance between children and adults. The findings indicated that vowel space emerged at age 1;11. The size of vowel space area increased generally from group aging 1-year old to the 3 –year olds. However, the size of the vowel space area decreased for the 4-year old group. The range of formant 1 and formant 2 increased across the age groups. The vowel /i/ and /u/ of children became closer to an adult’s vowel pattern with increase in age. This phenomena indicated that the vowel space area of children become more adult-like across age. This preliminary study of vowel space provides a general idea of vowel development of Mandarin speaking children in Malaysia. The findings from this study could be used as a reference for future study of vowel space development.

Yeoh, S.J. 2008. *Development of Acoustic Vowel Space for Mandarin Native Speaking Children*. Bachelor of Speech Science Thesis. Universiti Kebangsaan Malaysia.