

A Study of Assisting Hearing-Impaired Students in Identifying Mandarin Tones by Using Modified Pitch Contours and Low-Pass Filtering

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ABSTRACT

This study explores the effects of using a computerized speech modification system to expand pitch contours and low-pass filtering in hearing-impaired students' perception of six different types of modified Mandarin tones. Twenty-six students with moderate to severe hearing impairment participated in this study. The results of this study were that hearing-impaired students' ability to identify Mandarin tones was significantly improved by expanding pitch contours and low-pass filtering. Among the six types of computer modified speech, the easiest tone for identification was tone 4, and the most difficult tone to identify varied with the computer speech modification type. Frequent error patterns were that tone 1 was identified as tone 2; tone 2 was identified as tone 3; tone 3 was identified as tone 2 or tone 4; and tone 4 was identified as tone 1. Suggestions for teaching hearing-impaired students Mandarin tones and future studies were discussed based on the findings.

Keywords: computer speech modification, hearing-impaired students, Mandarin tones, expand pitch contour, low-pass filter