

ACOUSTICS2008/1120 Frequency importance function of Mandarin Chinese speech

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The speech intelligibility index (SII) theory objectively assesses speech intelligibility, and the frequency-importance function (FIF), which reflects the relative importance of various frequency bands to speech intelligibility for various languages, occupies the central part of the theory. However, the FIF has not been examined for tonal Chinese Mandarin speech. In this study, considering the characteristics of Mandarin speech, 50 phonemically-balanced one-syllable words were selected as the speech stimuli from the speech corpus "A Method for Calculating Articulation Index (GB/T 15508-1995)", which meets the National Standards of China, and the 1/3 octave FIF was measured and computed with the Fletcher's method. The results show that spectrum regions with frequencies 2000-4000 Hz are more important in Chinese speech than those in English speech. The results predicted by SII model with the new FIF fit the result of human psychophysical studies well, which indicate that the new FIF model is effective and appropriate for assessing the intelligibility of Mandarin speech even when a steady-state noise masker is co-presented. [Supported by the NSFC 60435010; 60535030; 60605016; 30670704]