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## Pitch of voiced and whispered vowels

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GG3. Pitch of voiced and whispered vowels. R. E. McGlone and W. H. Manning (Department of Speech, University of Nebraska, Lincoln, Nebraska, 68508)

The sound source for whispered vowels is considered air flow turbulence rather than pulsed flow from vocal-fold vibrations. These latter vibrations usually are considered to create the sensation of pitch. Yet, there is some evidence [G. J. Harbold, J. Acoust. Soc. Am. 30, 600 (1958)] that vowels maintain the same pitch relationship to each other whether voiced or whispered. The purpose of this study was to determine and compare the pitch ratings of vowels produced by both sound sources. Four male speakers recorded vowels /i, i, u, o, æ/ in hV syllables both whispered and vocalized. All possible syllable pairs were edited together within the same condition; whispered and voiced were not mixed. These pairs were played to 40 judges who indicated which of the pair had the higher pitch. From these judgments, rankings from highest to lowest pitched vowels were made. Differences occurred between voiced and whispered vowels of this study, and between voiced of this study and Harbold's voiced; but whispered vowels of the two studies were extremely similar with rho of 0.9. Results suggest that whispered vowels have distinct pitch-perceived qualities.