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Final consonant voicing and vowel height contrasts in whispered speech

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Whispered speech is a naturally distorted speech signal. Whereas it preserves some characteristics of fully phonated speech, some important acoustic cues are removed, diminished or altered. The prominence of acoustic cues in whispered speech may change due to the physical properties of the whispered speech signal, i.e., decreased intensity, the absence of periodic vibration of the vocal folds, damping of F1, shift of the formants and flattening of the amplitude envelope. Such changes affect the acoustic cues both for vowels (e.g. vowel height) and consonants (e.g. voicing contrasts). The objective of the present project was to explore the acoustic cues for post-stressed syllable-final consonant voicing contrasts and the vowels preceding them in continuous whispered speech of American English speakers and to compare the results with those in fully phonated speech. The stimuli were recorded in the carrier sentence "I'll utter /habVC/ off the list". The consonant pairs included voiced/voiceless bilabial stops /b-p/ and labiodental fricatives /f-v/, each combined with 11 AE vowels /i, I, "epsilon", e, æ, a, "turned-v", o, "open-o", u, "horseshoe"/. Preliminary results showed that vowels had longer duration in whispered speech than in fully phonated speech. Spectral dispersion, temporal contrastiveness of vowels; F1, and vowel duration cues will be reported in the presentation.