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Identification of place of articulation and voicing in white and babble noise

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Previous research shows that white noise influences the degree auditory and visual modalities are used in audio-visual (AV) speech perception. This study assesses identification of voicing and place of articulation (POA) in the infrequently studied natural babble noise. Incongruent monosyllabic AV stimuli were presented to 15 young adults in white and babble noise at 0 and -12 dB SNR where voicing stimuli differed in voicing and voicing structure and POA stimuli differed in POA and POA structure. In white noise POA stimuli received fewer audio responses than in babble whereas voicing stimuli received more audio responses in white noise than in babble. Voiced syllables received more audio responses than voiceless. Findings suggest that differences in noise type for POA and voicing identification are attributable to discrepancies in acoustical attributes of noise and target stimuli. In voicing identification, the spectral transition between aspiration (stable signal) and voicing (fluctuating signal) is less distinct in the fluctuating babble noise than in the flat power white noise. Voiceless consonants are more spectrally similar to white noise than voiced consonants, making the latter more auditorily accessible. Visual cues aid voicing identification, but only when POA is visually salient and auditorily susceptible to the noise type.