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Reception of phonetic features in fluctuating background noise maskers

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We will review recent studies investigating the reception of phonetic features (voicing, manner and place of articulation) in non-stationary background maskers. In each study, consonant identification was assessed in steady and amplitude-modulated speech-shaped noise at signal-to-noise ratios yielding about 50% correct in steady noise. The rate and depth of amplitude modulation applied to the noise masker were either fixed or systematically varied. Confusion matrices were compiled across listeners and the amount of release from masking (percent information received in non-steady minus steady noise) was calculated for each phonetic feature and experimental condition. Speech and noise mixtures were i) left intact (unfiltered), ii) lowpass filtered (<1.5 kHz), or iii) processed in order to degrade spectral (place of excitation in the cochlea) and/or temporal fine structure cues. Overall, the results indicate that release from masking typically reported in normal-hearing listeners (i.e., the substantial improvement in speech reception in fluctuating noise compared to steady noise) is not identical across phonetic features. This suggests that the ability to "glimpse" into background noise valleys involves multiple auditory processes constrained by both peripheral and central factors.