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Masking release based on fine-grain temporal pitch cues in
speech-like stimuli - mechanisms and implications for the
cocktail-party phenomenon

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One of the most important cues for segregating wanted from unwanted sounds when listening in noisy environments is temporal regularity (or harmonicity), which gives rise to the perception of pitch. This study measured masked signal detection thresholds when both the signal and the masker are complex tonal stimuli similar to speech. Detection was considerably easier when the pitch of the masker differed from that of the signal. A control experiment involving non-simultaneous masking revealed that this pitch-based release from masking was not due to spectral differences between the signal and the masker. A second experiment investigated the effect of a pitch difference between the signal and the masker on the audibility of certain perceptual features of the signal when the signal is presented at a supra-threshold level. Two features were used that are known to be particularly important for speech perception: amplitude modulation and spectral profile related to formant frequencies. The supra-threshold tasks enabled to quantify the unmasking effect of pitch on the processing of these features over and above the effect on the signal detection threshold. The results provide new insights into the low-level processes involved in the cocktail-party phenomenon.

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