Contribution of envelope periodicity to release from speech-on-speech masking - DTU Orbit (08/08/2016)

Contribution of envelope periodicity to release from speech-on-speech masking

Masking release (MR) is the improvement in speech intelligibility for a fluctuating interferer compared to stationary noise. Reduction in MR due to vocoder processing is usually linked to distortions in the temporal fine structure of the stimuli and a corresponding reduction in the fundamental frequency (F0) cues. However, it is unclear if envelope periodicity related to F0, produced by the interaction between unresolved harmonics, contributes to MR. In the present study, MR was determined from speech reception thresholds measured in the presence of stationary speech-shaped noise and a competing talker. Two types of processing were applied to the stimuli: (1) An amplitude- and frequency-modulated vocoder attenuated the envelope periodicity and (2) high-pass (HP) filtering (cutoff¼500 Hz) reduced the influence of F0-related information from low-order resolved harmonics. When applied individually, MR was unaffected by HP filtering, but slightly reduced when envelope periodicity was attenuated. When both were applied, MR was strongly reduced. Thus, the results indicate that F0-related information is crucial for MR, but that it is less important whether the F0-related information is conveyed by low-order resolved harmonics or by envelope periodicity as a result of unresolved harmonics. Further, envelope periodicity contributes substantially to MR.

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