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Spectral masking release with HiRes120 sound processing in cochlear implant users

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Current sound processors in cochlear implants show poor frequency resolution compared to normal auditory processes. They smooth spectral gaps within background maskers, thereby preventing implant users from experiencing release from masking (i.e., improved speech identification in maskers showing spectral gaps compared to maskers with continuous spectra). The Advanced Bionics' HiRes120 coding scheme aims to increase the transmission of fine-grain spectral information using a strategy based upon current steering. If HiRes120 improves the precision of spectral coding compared to the standard HiRes strategy, listeners should show improved release from masking for the slowest spectral modulations in a noise masker. This hypothesis is tested in newly implanted adults who alternately use HiRes and HiRes120 sound processing for a period of 10 months. Every 2 or 3 months, consonant identification is measured in each implantee in the presence of a stationary speech-shaped noise (SSN) masker at a fixed signal-to-noise ratio yielding 30-40% correct identification with unmodulated noise. The SSN masker is either unmodulated or spectrally modulated to produce periodic, 3 ERB-wide "spectral gaps" in the noise masker. Masking release scores defined as the change in consonant identification performance in modulated versus unmodulated noise will be presented and discussed.