Effects of slow- and fast-acting compression on hearing impaired listeners’ consonant-vowel identification in interrupted noise

There is conflicting evidence about the relative benefit of slow- and fast-acting compression for speech intelligibility. It has been hypothesized that fast-acting compression improves audibility at low signal-to-noise ratios (SNRs) but may distort the speech envelope at higher SNRs. The present study investigated the effects of compression with nearly instantaneous attack time but either fast (10 ms) or slow (500 ms) release times on consonant identification in hearing-impaired listeners. Consonant-vowel speech tokens were presented at several presentation levels in two conditions: in the presence of interrupted noise and in quiet (with the compressor “shadow controlled” by the corresponding mixture of speech and noise). These conditions were chosen to disentangle the effects of consonant audibility and noise-induced forward masking on speech intelligibility. A small but systematic intelligibility benefit of fast-acting compression was found in both the quiet and the noisy conditions for the lower speech levels. No negative effects of fast-acting compression were observed when the speech level exceeded the level of the noise. These findings suggest that fast-acting compression provides an audibility benefit in fluctuating interferers compared to slow-acting compression, while not substantially affecting the perception of consonants at higher SNRs.

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