Effects of compression and onset/offset asynchronies on the detection of one tone in the presence of another - DTU Orbit (14/12/2018)

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The weaker of two temporally overlapping complex tones can be easier to hear when the tones are asynchronous than when they are synchronous. This study explored how the use of fast and slow five-channel amplitude compression, as might be used in hearing aids, affected the ability to use onset and offset asynchronies to detect one (signal) complex tone when another (masking) complex tone was presented almost simultaneously. A 2:1 compression ratio was used with normal-hearing subjects, and individual compression ratios and gains recommended by the CAM2 hearing aid fitting method were used for hearing-impaired subjects. When the signal started before the masker, there was a benefit of compression for both normal-hearing and hearing-impaired subjects. When the signal finished after the masker, there was a benefit of fast compression for the normal-hearing subjects but no benefit for most of the hearing-impaired subjects, except when the offset asynchrony was relatively large (100ms). The benefit of compression probably occurred because the compression improved the effective signal-to-masker ratio, hence reducing backward and forward masking. This apparently outweighed potential deleterious effects of distortions in envelope shape and the introduction of partially correlated envelopes of the signal and masker.

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