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Advantages and disadvantages of fast and slow compression in hearing aids

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Compression is used in hearing aids to compensate for the effects of loudness recruitment. However, there is no consensus about the "best" compression speed. The theoretical advantages and disadvantages of slow and fast compression will be discussed. Studies comparing the relative merits of slow and fast compression have led to a great variety of outcomes. It is argued, following the work of Gatehouse and colleagues, that this is partly the result of a failure to consider individual differences and the auditory ecology of each individual. It is argued that listening in the dips of a fluctuating background sound, such as a competing talker, depends on the ability to process the temporal fine structure (TFS) of sounds, as represented in patterns of phase locking in auditory neurons. For people with a good ability to process TFS, fast compression can amplify sounds in the dips, increasing the effectiveness of dip listening. However, for people with a poor ability to process TFS, envelope cues may be critical for speech intelligibility and fast compression may disrupt such cues. It is proposed that a test of the ability to process TFS might be useful for selecting compression speed for an individual.