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**Temporal manipulations in multi-channel compression effecting  
sound quality and performance**

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Multi-channel compression (in four or more compression channels) is expected in modern hearing aids, but compression temporal characteristics vary without an understanding of what is optimal and why. This study takes a 16 channel system using linearly spaced compressors with minimal overlap and evaluates sound quality ratings and speech recognition performance with the HINT in quiet and noise with various attack and release settings in a 2 x 2 x 2 design. The first variable is the relationship between attack and release times, with asymmetric time constants (attack faster than release) or symmetric time constants (attack and release set the same). The second variable is the relationship of time constants across frequency channels, with uniform settings across frequencies, or frequency dependent time constants (faster settings for higher frequencies with shorter wavelengths). The third variable is absolute speed, with fast or slow time constants. No characteristics other than the temporal settings of the compressor were changed between conditions. Results will be presented showing optimal settings for sound quality as well as speech recognition. The interaction between compression characteristics and additional signal processing, such as single-microphone noise reduction, will be discussed.