

## **Use of prosodic information during sentence processing in acoustically challenging listening conditions**

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Acoustic cues used for prosodic phrasing (amplitude modulation, pitch contour, rhythmic information) have been shown to be robust information against a stationary speech-shaped noise masker (e.g., CARROLL, 2013). Although a noise masker with an amplitude modulated envelope has been shown to be beneficial for speech recognition due to 'glimpsing' (e.g., COOKE 2006), preliminary findings suggest that the "prosodic benefit" of speech in noise does not necessarily hold for such a noise masker. By manipulating the rhythmic modulation of the noise masker envelope, different cues (rhythm, duration vs. F0 pitch contour) may become more or less reliable and hence useful for stream segregation, and hence for successful processing of sentences that mainly rely on the use of prosodic information. An ERP correlate of prosodic boundaries (Closure Positive Shift; STEINHAUER et al., 1999) is used to determine the impact of different noise maskers on processing the prosodic information in young normal hearing listeners. Rhythmically modulated noise is expected to negatively influence the rhythmic structuring of the speech signal, which may result in cancellation or depletion of the prosodic ERP component.

This project will be extended to processing mechanisms in users of hearing systems. Manipulating the technical restrictions by using different populations in combination with a manipulation of prosodic cues (e.g., temporal vs. spectral) will thus allow insight into the nature, availability and the usability of important speech-based information, which is acoustic in nature, is known to be physiologically encoded (e.g., MILLER & SACHS, 1983), can be modelled (e.g., BROWN et al., 2011), and can be directly linked to semantic comprehension at the sentence level, which in turn may be linked to higher cognitive levels. The electrophysiological measures will provide a clearer picture not only on the correct interpretation, but also on individual differences due to listening effort.