Dai & Shinn-Cunningham, 2016:

Abstract:

* Top-down executive control modulates the sensory representation of sound in the cortex
* This representation depends also on the coding fidelity of the peripheral auditory system 🡪 which may contribute to individual differences in performance
* **Selective auditory attention paradigm**
* Measured ERPs from the scalp 🡪 which reflect cortical responses to sound
* Behavioral scores
* The stimulus conditions varied 🡪 to alter the degree to which performance might be limited due to fine stimulus details vs due to control of attentional focus
* Behavioral differences are correlated with the strength of attentional modulation of ERPs

Introduction:

* Auditory neuropathy
* Low-spontaneous rate auditory nerve fibers are more susceptible to damage from noise exposure than high-spontaneous rate fibers, which respond at hearing threshold
* AN driven by ageing and noise exposure
* A likely contributor to individual differences in the encoding of subtle spectro-temporal features of supra-threshold sound
* **If a listener cannot segregate sounds based on such features 🡪 trouble directing attention to sound of interest**
* The accuracy of how the early sensory system encodes the timing patterns of sounds that are just audible significantly affects an individual's capability to effectively communicate in difficult situations.
* The envelope following response (EFR) is an auditory evoked potential that reflects the brain's neural response to the temporal envelope of an auditory stimulus. The temporal envelope refers to the changes in intensity or amplitude of a sound wave over time