

Effects of anticipation of shock on brainstem auditory evoked potentials

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**Introduction:** Brain stem auditory evoked potentials (BAEP) reflect activation of the lower auditory system in the first milliseconds after presentation of an auditory stimulus. These early steps of processing are highly automatic and have been shown to not be influenced by cognitive factors or task demand. However, studies in patients with anxiety disorders suggest deviations in several measures taken from the BAEP. These differences have been hypothesized to be a result of heightened activation of structures such as the amygdala that project to the generators of the BAEP in the brain stem. Of particular interest was wave V of the BAEP because animal studies suggest that one of its proposed generators, the inferior colliculus, is involved in fear and anxiety.

**Method:** In this study BAEP were recorded from healthy normal volunteers under threat of shock as compared to safe conditions in two experiments.

**Results:** As hypothesized, the first experiment (n=12) resulted in an increase of the peak-to-trough amplitude of wave V during the threat of shock period. A second experiment (n=11) conducted to replicate this result with slightly altered experimental parameters (click frequency and duration of threat) confirmed this finding.

**Conclusion:** Even though BAEP has proven to be highly invariant with respect to attentional and cognitive manipulations, activation of the fear system due to threat of shock seems to modulate this early level of auditory processing.

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