

EEG analysis of auditory and visual stimuli in normal controls

ABSTRACT:

The focus of the study was to determine if electrical brain activity could differentiate between pleasant and unpleasant visual stimuli and/or loud and soft auditory stimuli. Forty right-handed female subjects enrolled. Visual stimuli were selected from a standardized set of pictures for studying emotion and attention (International Affective Picture System). Eighty pictures for each of three categories was selected: highly pleasant, unpleasant and emotionally neutral. Auditory stimuli consisted of 500 msec of either 55dB (soft) or 95dB (loud) sounds. Event related potentials were recorded 1200 msec prior to stimulus onset and continued 1000 msec after the auditory or visual stimulus onset. We hypothesized that post-stimulus effects would be found for both the visual and auditory conditions in brain areas specific to those sensory modalities. Post-stimulus late positivity effects were greater for unpleasant than pleasant visual stimuli. Early and late negativity brain potentials were increased for loud compared to soft auditory stimuli. Exploration of the full time course of the electrical activity was obtained. Statistically significant visual and auditory effects were also seen in the pre-stimulus period. The results suggest that noxious visual and auditory stimuli produce regional effects consistent with their associated sensory modalities and differentially alter brain electrical activity compared to less noxious stimuli.

Keywords

EEG, Auditory, Visual, Emotion

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