



## Electroencephalographic coherences during emotion identification task

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### ABSTRACT

Coherence, a measure of spectral similarity, may estimate cortical coupling between two EEG signals as a function of frequency. The coherence between EEG signals from different brain areas depends on the structural connection and functional coupling between two regions. The theory of hemispheric specialization proposes left hemisphere activation to positive emotions and right one to negative emotions. Other proposal is that right hemisphere activation occurs with emotional stimuli. In the present study EEG coherences were calculated during the presentation of the International Affective Pictures to 36 healthy male university students. The subjects' task was to determine the valence of the stimuli. Base line recording were done with subjects observing the blank monitor. Our results showed higher coherences during the emotional condition. No differences between negative and positive emotions were obtained. Neutral pictures evoked the highest coherence values. These data suggest that coherences between functionally coupled brain areas do not reflect emotional recognition of the valence of stimuli, but they are internal indicators of different mental processes such as memory, mental effort and arousal. Our findings do not support the theory of hemispheric specialization, neither the theory of right hemisphere; rather they suggest a complex activation pattern that involves mostly frontal areas in connection with the entire cortex.

### KEYWORDS

EEG Coherences; Emotions of Positive and Negative Valence; International Affective Pictures

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