Abstract

The first aim was to determine the baseline psychophysiological correlates in healthy subjects as a first necessary step towards the long-term goal of application the psychophysiological techniques in diagnostics mood and cognitive disorders. The second aim was to establish an easily applicable set of tests for evaluating emotional and memory processes by non-invasive psychophysiological methods. EEG, GSR, and eye-tracking data from 100 participants without any neurological or psychiatric disorders were obtained during watching affective pictures and performing memory tests. The spectral powers were computed for each 500 ms of the stimuli in theta, alpha, beta1, beta2 and beta3 bands in 12 areas of the brain. Lower alpha and higher beta3 power was related to higher emotional intensity. Negative emotions were distinguished in spatio-temporal changes of beta1 power and positive emotions showed higher beta3 power in right temporal region. Memory encoding showed higher alpha power. Lower theta and higher alpha power in central regions and overall increase of beta bands were observed during successful memory retrieval. A summary of spatio-temporal spectral correlates to emotional and memory processes was provided by this work.

Key words: Electroencephalography, electrodermal activity, psychophysiology, memory, emotion, attention