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## GENDER DIFFERENCES OF CREATIVITY IN EXPERIMENTAL MODELS OF CREATIVE THINKING

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A development of computer technique, methods of data logging of brain's functional activity, and an analysis of complicated files of psychometric data gave a chance to take up active study of neurobiological bases of creativity. However, recently obtained results of psycho- and neurophysiological investigations point out the paradox in interpretation of gender differences in creative production. The study of this problem is interesting for an elucidation of the neurobiological base of creative thinking as well as for a search of the social conditions which supporting the psychic health in information-filled environment. The individual differences in hemispheric interaction associated with creative thinking were studied by complex of psychological assessment of personality traits and intelligence as well as EEG mapping during experimental performance of creativity tasks. 786 university students (440 males and 346 females, 17-23 age) participated in the psychological part of experiments. A quantitative analysis of the indices of figural and verbal creativity was performed by new computer-assisted methodics. 36 men and 30 women participated in the experiments with 16-channel recording of EEG. Power density and coherence in six frequency bands (4-30 Hz) were calculated by use of a fast Fourier transformation by. Neuromapping program EEG patterns were studied in resting and during convergent (mental arithmetic task) and divergent (a non-standard task) thinking. The results of psychological part of a research show that the factors of sex and intelligence as well as personality traits exert control over an effectiveness of creative thinking, and in doing so an intuition as well as verbal and figural intelligence are the most significant. An originality of figural creativity was higher in men than women. However, gender differences in creativity can be increased or reduced over by the changing of intelligence score, masculinity-feminity or individual choice of profession. Neurophysiological part of the study shown that that divergent thinking characterized by EEG changes in the high-frequency beta2 band. The increase of power, interhemispheric coherence and right intrahemispheric coherence was obtained in both men and women. However, the gender differences in EEG parameters depending on success of divergent thinking were found. Creative men characterized by the massive increases of amplitude and coherence in the beta2 indicating a close interaction between hemispheres whereas creative women had more local increase of the beta2-power and coherence. On the contrary, task-induced desynchronization of the alpha1 rhythms in creative women was topographically more expanded as compared with men. Obtained results of gender differences in EEG-patterns can be regard as argument that the effectiveness of divergent thinking in men was associated with an integration of diffusely divided ensembles of neurons oscillating in the beta2 high frequency. In contrast, in women creative thinking based on desynchronization in the alpha1 low frequency. This fact together with revealed gender differences in functional reactivity of the theta1-rhythm as the EEG-correlate of convergent thinking can be evidence that women use mostly polymodal strategies of thinking with an involving of semantic memory. On the other hand, an interaction of parietal system of attention and frontal part of one in the left hemisphere was expressed more in women than in men that indicates on greater significance of conscious control of behaviour for their. So, the recognition of new social-cultural norms in personal choice of cognitive styles and professional activity can be consider as base of creativity promotion in women

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