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## Particularities of the electric brain activity of twins in the conditions of actualizing achievement motivation

At present in the frame of the theory of the functional system, motivational excitation is defined as the component of the afferent synthesis, which turns to be the one of the most useful adaptive mechanism [1; 7].

Moreover: «Even symmetric sensitive and motored systems can be presented asymmetrically in the case of the selective effect» [4, c. 345].

The goal of this study consisted in revealing correlation of the factors, such as: genotype and environment in inter individual variation of the interhemispheric asymmetry of the amplitude and rhythmic elements of EEG of twins in the conditions of actualizing achievement motivation. We have assessed and compared in symmetrical leads the impact of the genetic and environmental components upon inter individual variation of the interhemispheric asymmetry of the amplitude and rhythmic elements of EEG, registered in different functional conditions, such as: basic test of EEG, while actualizing achievement motivation and motivation to avoid failure.

53 people parents of the twins took part in our research. The object of our study was 16 pairs of homosexual dizygotic twins, 27 pairs of enzygotic twins from 14 up to 27 years old.

We have carefully studied the amplitude and rhythmic elements of EEG of twins, and the impact the impact of the genetic and environmental components upon the phenotypic variation of the interhemispheric functional asymmetry in the conditions of actualizing achievement motivation.

As the methods of our research we have used: questionnaire survey, interview, modified twins method [2], EEG (Fp1, Fp2, F3, F4, F7, F8, C3, C4, T3, T4, T5, T6, P3, P4, O1, O2 according to monopolar scheme with ipsilateral ear sensors), the method of mathematical statistics (program STATISTICA 6).

Analysis of the research results showed, that genetic component of the phenotypic dispersion of the interhemispheric asymmetry beta-2- band EEG in the conditions of actualizing achievement motivation in comparison with basic test of EEG significantly decreases in parietal part (in basic test of EEG  $h^2=0,39$ ; in the conditions of actualizing achievement motivation  $h^2=0,01$ ; reliability of differences at the level of  $p<0,01$ ); while actualizing achievement motivation in comparison with basic test of EEG genetic component of phenotypic dispersion of the interhemispheric asymmetry theta-band of EEG significantly increases in lateral-frontal part (in the basic test of EEG  $h^2=0,00$ ; while actualizing achievement motivation  $h^2=0,36$ ; reliability of differences at the level of  $p<0,05$ ); while actualizing failure avoidance motivation in comparison with basic test of EEG genetic component of phenotypic dispersion of the interhemispheric asymmetry beta2-band EEG significantly decreases in central



hemisphere ( in basic test of EEG  $h^2=0,62$ ; EEG in the conditions of actualizing failure avoidance motivation  $h^2=0,21$ ; reliability of differences at the level of  $p<0,001$ ).

We validated the hypothesis that the biggest influence upon interindividual changes of the results of the interhemispheric asymmetry of the amplitude and rhythmic elements of EEG of twins in the conditions of actualizing achievement motivation is caused by environmental factors, moreover the impact of individual and environmental component into phenotypic dispersion is higher, than the impact of the consolidated familial component.

The term of the individual or interfamilial environment suggests unique, specific, different, undivided, circumstantial diversity of the prenatal conditions, socio-psychological particularities of the environment, particular for each individual [3; 5; 6].

The results of the research confirmed the hypothesis that the sample changes of the achievement motivation and failure avoidance under the conditions of psycho physiological experiment can be explained by changes of the structure of the phenotypic dispersion of the of the amplitude and rhythmic elements of EEG :

- in the conditions of actualizing achievement motivation it can cause the genetic influence upon the interhemispheric asymmetry of the parameters of theta-rhythm for frontal leads; alpha- rhythm –for frontal, parietal and occipital leads; beta-1-rhythm – occipital leads, besides for high-frequency components of EEG (beta2- rhythm) we can also observe the reduction of the genetic influence upon the interhemispheric asymmetry for central, temporal and parietal leads;
- in the conditions of actualizing failure avoidance motivation it leads to reduction of the genetic influence of the interhemispheric asymmetry parameters alpha- rhythm for frontal, temporal and occipital leads; beta1- rhythm – occipital and frontal leads; beta2- rhythm– central and parietal leads.

### The Literature

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