

Neuropsychological approach to the correction of the psychoemotional state of younger schoolchildren

Abstract

The article deals with the neurophysiological determinants of psychoemotional states, their consideration in the selection of kinesiological exercises that contribute to overcoming the functional unreformed and compensating for the scarcity of neuropsychological factors. There is assessed the effectiveness of using this approach with underachieving students.

Volume 9 Issue 3 - 2018

Rakhmanina IN

Department of Psychology, Astrakhan State University, Russia

Correspondence: Rakhmanina IN, Department of Psychology, Deputy Director for Scientific and Methodological Work of the State University of AO Scientific and Practical Center for the Rehabilitation of Children” Correction and Development, Astrakhan State University, Russia, Email irinarah.72@mail.ru

Received: December 06, 2017 | **Published:** June 13, 2018

Introduction

Comprehension and consideration of the emotional state of the child in the educational process is a prerequisite for successful learning. At the younger school age, educational activity is leading, so the success of mastering this activity will determine the course of mental development. An important role in the study of the features of the regulation of the psychoemotional state is played by the study of the neurophysiological determinants of these states, the interaction of brain functional systems that determine the nature of the distortions of cerebral and mental development, which are risk factors for the occurrence of emotional-volitional disorders. Psychoemotional states are determined by various physiological mechanisms entering into the systemic interaction. Analysis of the behavior of people with local lesions and brain disorders allows us to distinguish three main localizations of the lesion, leading to distinct emotional disorders, which include lesions of the frontal and temporal lobes, pituitary-hypothalamic or diencephalic region of the brain.

Literature review

The lesion of the frontal lobes of the brain,¹ as a rule, causes a decrease in the volume of emotional reactions, the disappearance of differentiation and adequacy of emotions. Emotional-personality disorders, according to A.R. Luria, are prevalent in the lesion of the medial parts of the frontal lobes of the brain. When these parts of the brain are broken, euphoria, foolishness, emotional incontinence, irritability are most often noted. At the same time, the researchers state the great variability of the manifestations, including those related to the emotional sphere, which can't be due solely to the size and nature of the lesion, but is also directly related to other factors, such as the adaptive capacity of the organism before the disease, the age of the patient, etc. So, along with the behavioral approach to correcting deviant behavior and emotional-volitional disorders, Farmer² considers it necessary to take into account the influence of human bio-behavioral states.³ He refers to the study of Derryberry & Rothbart,³ in which temperament is regarded as “constitutional differences in reactivity and self-regulation” (1, p.132). In this case, reactivity involves the functioning of the central nervous and

other body systems, self-regulation, activation or suppression of the reactions of these systems. Farmer² examines the pathopsychological model of Gray & McNaughton⁴ in terms of the combined activity of these systems.² Based on these theoretical models, Farmer suggests that therapeutic intervention that takes into account individual constitutional differences into personality can be more effective than behavioral intervention. One of the first researchers who determined the importance of activation of the right hemisphere in the organization of emotions was V. K. Khoroshko (1943), who noted that the right frontal lobe damages are reason to, so-called “behavioral disorders» which include arise-impulsive actions and a decrease in criticality towards oneself. Lesions of the left frontal lobe often manifest themselves as damage of spontaneity of behavior.¹ AR Luria⁵ repeatedly pointed out, that lesions of the left frontal lobe are characterized by the phenomena of inhibition and disturbance of arbitrary regulation of various types of mental activity and behavior in general, and the damage of the right frontal lobe, as a rule, causes an inadequate attitude toward one's condition and the general uncriticality.⁵ This becomes evident when analyzing the works of BI Bely (1987), who believes that the defeat of the right frontal lobe promotes the emergence of emotional-personal changes (euphoria, anosognosia, tactlessness, uncriticality, etc.), which manifests itself on the background of mobility, talkativeness.⁷ Consequently, with the defeat of the frontal lobe all three levels of the emotional-personal sphere suffer - the level of emotional reactions, emotional state and emotional-personal qualities. Emotional disorders occupy a leading place in the overall picture of the disease when the temporal lobes are affected and are expressed in depressive states and spontaneously occurring affective disorders. Thus, lesions of the right temporal lobe usually determine outbreaks of rage, fear, anxiety, which are accompanied by vegetative and visceral disorders. At the same time, experiences related to attitudes to other people remain intact and clearly differentiated. For left-sided lesions of the temporal lobe, permanent emotional disturbances, irritability and tearfulness are more characteristic. The defeat of the pituitary-diencephalic region of the brain, most often promotes excitation, insomnia, depression, drowsiness, accompanied by vegetative disorders, in the form of disorders of background states while preserving the critique. The defeat of the posterior parts of the cerebral hemispheres contributes

to the appearance of carelessness and euphoria, which are gradually leveled; at the same time the defeat of the posterior parts of the left hemisphere to some extent causes a depressed state.

The hemispheric differentiation (not interhemispheric asymmetry) in the opinion of the majority of authors,¹ is associated with processing and regulation of positive and negative emotions, as well as emotional and personal qualities such as neuroticism, anxiety, depression, conformance, etc.^{1,6} With a shortage of functions of the right hemisphere, positive emotions are experienced more often, and the damage of the functions of the left hemisphere cause negative emotions. Depressive nature of experiences can be caused by damage to the temporal region of the right hemisphere, and the defeat of the temporal divisions of the left hemisphere contributes to pronounced euphoria. The study of the features of the emotional sphere from the point of view of the neuropsychological approach opens up new possibilities in the solution of neuropsychological problems directed to the correction of emotional states. American researchers Stokes & Whiteside⁷ developed the concept called “Three in One”. The basic idea is to use motor actions to harmonize energy in the human body; the method is that the integration of the brain hemisphere provides a more harmonious outlook on life, as emotional, behavioral and physical problems are the result of past traumas. Gradually, the direction of educational kinesiology was created, sponsored by American researchers Paul I. Dennison, Gail I. Dennison, who aimed to study the influence of the muscular system of the body on the learning process.⁸

Research

To study the influence of kinesiological exercises on the psychoemotional state of children of younger school age, we conducted an empirical study. The study was conducted on the basis of the State Autonomous Institution of the Astrakhan Region “Scientific and Practical Center for the Rehabilitation of Children” Correction and Development”. 47 children aged 7 to 12 years with learning difficulties and emotional disorders took part in this study. There was used the methodology of an adapted neuropsychological study, intended for children predominantly preschool and primary school age. Along with the quantitative analysis of the performance of subtests, there was studied the pace, efficiency, motivation, mood swings, psychoemotional state during the execution of test tasks, including using the device “Activatiometr” and on the basis of vibration parameters using the VibraMed program.

Results and discussion

Diagnostic results showed that all children with emotional disorders demonstrate underdevelopment of functions of voluntary attention, high exhaustion or satiety, reduced motivation and emotional lability of the subjects. 74.5% of children demonstrated an increased distraction of attention, difficulty concentrating on the task. In the situation of fatigue, two variants of behavior were identified. The majority (68%) of children demonstrated motor excitation reaction with disinhibition; reduced motivation to perform tasks, high distraction during the diagnosis, and the prevalence of

gaming interests. They had an excessive psychoemotional state with an affective outbreak at a height of fatigue, (children were able to quit when there were difficulties, showed tearfulness, irritability, and aggressiveness). The obtained data prove that these children have lesions of the frontal and occipital parts of the right hemisphere. The second type of behavior (32% of children) was manifested by inhibition, lethargy and detachment, “inhibition”, a sharp decrease in productivity in the work, which indicates a lesion of the pituitary-diencephalic region of the brain, as well as the frontal and temporal divisions of the left hemisphere. Based on the results for children with different behaviors, there were developed complexes of kinesiological exercises that contribute to overcoming functional inadequacy and compensating for the scarcity of neuropsychological factors.

Conclusion

The results of statistical data processing showed that there are significant differences ($p < 0.05$) in terms of exhaustion, satiety, reduced motivation and emotional lability of the subjects. Significantly decreased indicators of “excessive emotional state” and “inhibition” and increased the indicator of “energy.” Thus, kinesiological exercises have a positive impact on the psychoemotional state of children of primary school age, contributes to improving their productivity, energy, which can contribute to learning achievement.

Acknowledgements

None.

Conflict of interest

The author declares that there is no conflict of interest.

References

1. Homskaya ED, Batova N. *Brain and emotions. Neuropsychological research*. Moscow: publishing house of Moscow University; 1992. 180 p.
2. Farmer RF. Temperament, reward and punishment sensitivity, and clinical disorders: Implications for behavioral case formulation and therapy. *International Journal of Behavioral Consultation and Therapy*. 2005;1(1):56–76.
3. Derryberry D, Rothbart MK. Emotion, attention, and temperament. In: Izard CE, Kagan J, Zajonc RB, editors. *Emotions, cognition, and behavior*. New York: Cambridge University Press; 1984. 132–166 p.
4. Gray JA, McNaughton N. *The neuropsychology of anxiety*. 2nd edn, London: Oxford University Press; 2000.
5. Luria AR. *Higher cortical functions in man*. Springer; 2012. 432 p.
6. Philip A Vernon. *Neuropsychology of individual differences*. In: Homskaya ED, Efimova IV, Budyka EV, editors. *Academy*; 2011. 160 p.
7. Stokes G, Whiteside D. *One brain: dyslexic learning correction and brain integration*. 2003. 218 p.
8. Tsvetkova LS. *The method of neuropsychological diagnosis of children*. Pedagogical society of Russian Federation. 2002. 96 p.