

EXPERIMENTAL EVALUATION OF SOME ABILITIES UNDERLYING COGNITIVE PLANNING IN PRESCHOOL CHILDREN AGED 3-6

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ANNOTATION. Previously, it was suggested [1] that the degree of development of cognitive planning, in addition to basic executive functions, is determined by the ability to understand thematic (functional and instrumental) and causal relationships, as well as the ability to form serial action plans that take into account their non-permutability. To assess these abilities in preschoolers, we developed and implemented a number of computerized tasks. The aim of the present work was to test these tasks on a group of preschool children aged 3-6 years.

The experiment involved 95 children of both sexes (53 girls and 42 boys) in the age range from 3 to 6 years inclusive. A statistical analysis of the success rate of the tasks was performed. This analysis showed that the success rate significantly increases with age, and that its absolute value and the age-related changes rate depend on the nature of the task. No significant influence of child's gender on this indicator was revealed, nor was a significant interaction of the gender factor with the other two factors — type of the task and age.

The data obtained is in good agreement with the literature data on the development of working memory in ontogeny, on the understanding of cause-and-effect relationships, and on the planning and execution of serial organized actions.

In general, the proposed and tested tasks have proved to be a sensitive tool for assessing the abilities that are associated with the success of cognitive planning.

Keywords: ontogeny, preschoolers, cognitive planning, executive functions, visuospatial working memory, thematic relationships, causal relationships

SCHOOLCHILDREN'S PHYSICAL DEVELOPMENT AT DIFFERENT STAGES OF EDUCATION

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ANNOTATION. The indicators of schoolchildren's physical development at different educational stages have been studied in this longitudinal research. 102 schoolchildren were examined in the period of 2011-2021.

Using the anthropometric data, we calculated the body mass index and estimated the harmony of physical development. The physical development was assessed using graphical analysis (the method of standards).

The Chelyabinsk schoolchildren's anthropometric indicators are within the range of the average values of statistical data from other studies in the regions of the Russian Federation. Trends in a modern schoolchild's physical development are determined by growth and development physiological patterns.

Keywords: physical development, health, body mass index (BMI), harmony of development, anthropometry, schoolchildren.

ANTHROPOMETRIC AND PHYSIOMETRIC CHARACTERISTICS OF MODERN CHILDREN AND ADOLESCENTS IN NIZHNY NOVGOROD REGION

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ANNOTATION. Anthropometric and physiometric characteristics of modern children and adolescents. The aim of the study is to evaluate the average values of anthropometric and physiological indicators of modern students in the living conditions of the region of the Russian Federation of the Nizhny Novgorod region.

Morphological and functional indicators were observed in the context of age-sexual, social, climatic-geographical zoning. The analysis of anthropometric indicators of students 7-18 years old for the period 2011/21 identified a significant age-sex dynamics of indicators of morphofunctional state, depending, among other things, on the geographical conditions of the living environment. Respondents from the south of the region, in general, show more optimal studied patterns with a higher percentage of representatives with normal physical development. The average values of normalized coefficients for Southerners are more optimal in significant terms, relative to peers from the northern territories. The results of multidirectional changes, including the rates of physical development of peers of the space-time continuum, are shown.

The dynamics of the variability of the observed indicators, while preserving the age-related patterns of the evolution of ontogenesis, are involved as predictors of fluctuations in the conditions of the regional exoenvironment.

Keywords: anthropometry, physiometry, geography, ecology, increments, variances, correlations, factor characteristics.

DISTRIBUTION OF SOMATIC GROWTH PARAMETERS IN CHILDREN AGED 7-11 USING DIFFERENT ASSESSMENT TABLES

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ANNOTATION. One of the most challenging tasks in longitudinal and cross-sectional studies is to select standards that allow comparison of populations separated both territorially and temporally. Currently, the use of reference tables proposed by the World Health Organization (WHO) is widespread, both for children

under 5 years old and for the age category -5-19 years old. The WHO Anthro and WHO Anthro Plus computer programmes for individual assessment of a child's physical development are based on the tables. In contrast, these tables cannot fully replace the standards of individual regions. Therefore, in large-scale studies, it is advisable to rely on regional benchmarks (reference instruments) and to update these materials periodically.

The measurements of height, body weight and a number of other indicators carried out on 607 schoolchildren are a contribution to the expansion of the somatic growth database of children in Perm Krai.

Keywords: Younger schoolchildren, growth and development, standards, Z-scor distribution, median.

ON THE GENDER DIMORPHISM OF THE MORPHOFUNCTIONAL BASE OF SPIELBERGER'S ANXIETY (ANTHROPOLOGICAL ASPECT)

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ANNOTATION. In modern urban ecological studies, assessment of the biological basis of adaptation aspects of behavior in a concentrated anthropogenic environment is of particular interest. The work is devoted to finding an informative set of morphophysiological indicators from among three trait systems (soma; heart rate variability (HRV); EEG) characterizing individuals with high and low levels of anxiety according to Spielberger's anxiety scale. The sample consisted of 80 Moscow students aged 18-20, 30 males and 50 females. According to the level of anxiety, the sample is divided into 2 groups: group 1 - with low (less than 37 points), and group 2 - with high/medium (more or equal to 37 points) anxiety. Group 2 students, invariant to gender, had lower measures of transverse soma dimensions: shoulder width, transverse and sagittal diameters of the chest, and wrist circumference). Group 2 males showed higher spectral power of EEG for a number of leads: for T6 in the wide frequency range of 6 to 20 Hz, for T5 in the range 13-15 Hz, for O2 in the range 13-20 Hz, for Fpl in the range 11-15 Hz). Group 2 females are characterised by reduced values of HRV parameters such as pNN50 and total power of spectrum (TP), average duration of RR intervals, reflecting some tension of autonomous regulation. A high level of anxiety was associated with a higher leptosomality in subjects of both sexes.

Keywords: Spielberger's test; endophenotype; soma; EEG; heart rate variability (HRV); urboecology.

SCREENING DIAGNOSIS OF POSTURE DISORDERS IN SCHOOL AGE CHILDREN

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ANNOTATION. The paper reviews and analyses current foreign non-invasive screening methods for assessing postural abnormalities in schoolchildren, with a focus on identifying scoliotic posture and the risk of idiopathic scoliosis. The advantages and disadvantages of using an anthropometric scoliometer (inclinometer), topographic and photogrammetric methods of posture assessment are considered. It is shown that scoliometry and photogrammetry are the optimal non-invasive means and screening methods for posture disorders in schoolchildren.

Keywords: posture, schoolchildren, scoliometry, photogrammetry.

ELECTRONIC DEVICES IN THE EDUCATIONAL PROCESS: INFLUENCE ON THE BODY OF STUDENTS (ANALYTICAL REVIEW)

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ANNOTATION. The article presents an analytical review of the literature of national and foreign authors on the influence of various electronic devices on the body of students. The changes in the main parameters of the central blood supply, cerebral circulation, autonomous nervous regulation of heart rate when working on various electronic devices are considered. Both the benefits and the health risks of using new electronic devices are evaluated not only in the educational process, but also in everyday life.

Keywords: electronic devices, educational process, health, cardiovascular system, autonomic nervous system, schoolchildren