

## EFFICIENCY OF THE ATTENTIONAL MECHANISMS AS A PREDICTOR OF SCHOOL READINESS OF CHILDREN BORN VERY PREMATURELY

*Description for the general public*

With a rapid development of medical technologies and use of better solutions in the field of medical and semi-medical (including psychological) care, the survival rate of children born at a very low gestational age increases. As a result, we already can observe cases of children rescued as early as 21 weeks of gestation (normally pregnancy cover a period of approx. 40 weeks). Birth occurring before the end of 32<sup>nd</sup> week of gestation is considered as “very premature”. Distinguishing this category is important, because prematurity is often associated with medical complications (including high perinatal mortality, occurrence of perinatal hemorrhages, periventricular leukomalacia, respiratory distress syndrome and others) and subsequent developmental difficulties (e.g. developmental delays, cerebral palsy), including psychological problems (e.g. behavioral or emotional disorders) as well as school difficulties.

The greatest difficulties in the area of psychological development of a child born prematurely appear in the preschool and school period, taking the form of difficulties in concentrating, maintaining and shifting attention, as well as in the area of executive functions - related to the practical application of existing abilities and knowledge gained during targeted activities. Teachers indicate that premature children have greater problems in the functioning at school lessons, which may be a secondary consequence of basic difficulties - related to attention. However, this relationship has not been adequately described so far - attention and school problems are described in the literature as separable. What connects them is usually the fact that they concern and are more severe in those children who were born very prematurely - before 32<sup>nd</sup> week of pregnancy. Delivery in this term is associated with a much greater burden of medical complications in this group, including the occurrence of central nervous system disorders.

**The aim of this project is to characterize the mechanisms of attention in preschoolers (at 5 and 6 years of age), who were born very prematurely, as well as to assess the prediction value of the effectiveness of attentional mechanisms for further school readiness. In addition, changes in the effectiveness of attentional mechanisms between the age of five and six years (i.e. at the beginning of the formal education) will be captured among children born very prematurely and at term.**

The participants of the study will be children born before the 32<sup>nd</sup> week of pregnancy at the age of 5 years, as well as a group of term-born children - in order to show the differences between these two cohorts. The study will be carried out in two stages. In the first stage, the attention will be examined by a computer task in which the ability to orientate attention to stimuli, maintain attention, and direct attention to important aspects of the task (important characteristics of stimulation) will be measured. The measurement will be based on the reaction times (measured in milliseconds), because it better reflects the efficiency of functioning of the central nervous system than measuring the correctness of task performance. It will also be necessary to control sociodemographic variables, as well as child's intellectual abilities. Parents will be asked to fill in questionnaires concerning child's temperament and severity of parental stress. Thus, we will be able to conclude that the observed differences in the scope of attention processes are not the result of generally reduced intellectual abilities, or the effect of the socio-economic status of the family. In the second stage, children will take part in the study of school readiness. Also at this stage, a computer attentional test will be used - comparative analysis of data from the first and second stage will allow to determine the changes occurring between the fifth and sixth year of life in the scope of children's attention. Obtained data in this research will enable to test the possible relationship between efficiency of attentional networks and school readiness of children born very prematurely.

The results of the study will help us to better understand the difficulties, which parents and teachers observe in cognitive functioning of prematurely born preschoolers. We assume that this project, will enable explanation of the ground of intensified school problems in premature children, and thus allow better planning of interventions.