

PSIHOLOGIE CLINICĂ

EXPRESS METHOD FOR NEUROPSYCHOLOGICAL ASSESSMENT OF CHILDREN WITH EPILEPSY

METODĂ EXPRES DE EVALUARE NEUROPSIHOLOGICĂ A COPIILOR CU EPILEPSIE

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Aurelia GLAVAN

Neurologist, Ph.D., university professor,
Coordinator of the Psychological Evaluation and Counseling Service,
National Center of Epileptology
<https://orcid.org/0000-0002-2549-5367>

Natalia DOTEN

Clinical psychologist, National Centre of Epileptology
<https://orcid.org/0000-0002-6073-866X>

Gabriela REPEȘCO

Psychopedagogue, PhD Student
<https://orcid.org/0000-0001-9661-6886>

Abstract

The express method of neuropsychological assessment of children with epilepsy was adapted by us based on the principles of neuropsychology promoted by A.R. Luria and L. S. Tsvetkova. The research sample included 250 preschool-aged children and 250 young school-aged children diagnosed with epilepsy, all presenting with complex neuropsychological disorders, including language and communication deficits, cognitive, affective and personality difficulties. The research results reveal a complex neuropsychological profile, altered with multiple evident dysfunctions in the motor, verbal, gnostic, mnesic and intellectual domains, with predominant lesions in the left frontal lobe, consistent with the patient's medical history. which persist even 2.5 years after the trauma. Spatial perception and memory disorders suggest a possible secondary dysfunction of the parietal regions.

Keywords: method, express assessment method, neuropsychological, epilepsy, children, higher mental functions

Rezumat

Metoda expres de evaluare neuropsihologică a copiilor cu epilepsie a fost adaptată de noi pe baza principiilor neuropsihologiei promovate de A.R. Luria și L. S. Tsvetkova. Eșanționul cercetării a inclus 250 de copii de vârstă preșcolară și 250 de copii de vârstă școlară mică diagnosticați cu epilepsie, toți prezentând tulburări neuropsihologice complexe, inclusiv deficite de limbaj și comunicare, dificultăți cognitive, afective și de personalitate. Rezultatele cercetării relevă un profil neuropsihologic complex, alterat cu multiple disfuncții evidente în domeniile motor, verbal, gnostic, mnezic și intelectual, cu leziuni predominante în lobul frontal stâng, în concordanță cu istoricul medical al pacientului, care persistă chiar și la 2,5 ani după traumă. Tulburările de percepție spațială și de memorie sugerează o posibilă disfuncție secundară a regiunilor parietale.

Cuvinte - cheie: metodă expres de evaluare, neuropsihologic, epilepsie, copii, funcții psihice superioare

INTRODUCTION The assessment of the development of higher mental functions (HMF) in children with epilepsy is essential for understanding their cognitive, emotional, and behavioural profiles. In both clinical and educational contexts, the early identification of neuropsychological dysfunctions allows for effective and personalized corrective interventions [5, 8, 12]. The Express Method for neuropsychological diagnosis, developed and adapted within the National Center for Epileptology, is inspired by the principles of neuropsychology advanced by A.R. Luria and L.S. Tsvetkova [14, 15, 16]. It provides a rapid yet comprehensive approach to evaluating higher mental functions in older preschool and early school-age children with epilepsy. The tests included in the method allow for the assessment of general cognitive status, memory, attention, praxis, gnosis, motor skills, executive functions, and emotional aspects within a relatively short period of time.

The Express Method is effective in educational, clinical, and psychological screening contexts where time is limited and the need for rapid identification of difficulties is essential. It generates both descriptive and quantitative data, enabling psychologists and educators to determine not only which functions are impaired but also the manner in which these deficits manifest and their likely neurofunctional origins. Compared to other methods - such as the Wechsler Intelligence Scale for Children (WISC), the NEPSY neuropsychological battery, or Raven's Progressive Matrices - the Express Method stands out for its accessibility, ease of use, and the absence of costly materials or licensing requirements [3, 10].

MATERIALS AND METHODS

The aim of the study is to provide a specific and detailed assessment of the Express Method for the neuropsychological diagnosis of children with epilepsy of their psychological, emotional, behavio-

ral, cognitive and relational functioning, as well as their ability to adapt to changes in the environment.

The main objective of the Express Method for the neuropsychological diagnosis of children with epilepsy is to:

- obtain a comprehensive overview of each case;
- determine the child's developmental level;
- identify any age-specific issues;
- establish the child's developmental potential.

Tailored for children with epilepsy, the Express Method assesses a wide range of aspects to support accurate neuropsychological diagnosis and intervention planning. These include:

- identification of current difficulties experienced by the child and family;
- highlighting key elements from the child's personal history that contribute to their psycho-emotional development (psychological anamnesis);
- assessment of attention concentration and memorization in relation to the child's chronological age;
- observation of the child's behaviour in familiar environments as well as during the psychological assessment;
- emotional reactions to new or unfamiliar situations, interactions with unfamiliar people, and responses to family members;
- description of temperament, personality traits, and patterns of emotional attachment;
- evaluation of cognitive intelligence and exclusion of possible intellectual disability;
- comprehensive understanding of the child's living environment - including family system and structure, type of family, and conditions for physical and psychological development.

The outcome of using this innovative assessment method lies in the optimization of clinical neuropsychological evaluation for children with epilepsy. It enables

the development and refinement of tests, techniques, and methods for quantifying developmental levels across multiple domains - socialization, language, self-care, cognitive, and motor skills - based on both initial and residual semiological indicators. This facilitates the selection of appropriate follow-up assessment procedures using tools adapted to the specific characteristics of each child with epilepsy.

Thus, the results obtained through the Express Method of assessing a child with epilepsy can be used for:

- assisting in treatment planning for epilepsy by providing targeted recommendations aimed at maximizing strengths and minimizing weaknesses;
- identifying brain areas affected by seizure activity, which can help localize the seizure focus - particularly useful when considering surgical intervention;
- predicting the risk of post-surgical cognitive decline (or lack thereof);
- guiding and structuring rehabilitation strategies;
- documenting and monitoring changes over time.

Neurocognitive and psychological impairments observed in children with epilepsy

Cognitive impairments are commonly observed in patients with epilepsy [1]. The term “cognition” refers to a set of mental processes - including attention, processing speed, memory, language skills, perception, reasoning, and judgment - that support everyday functioning [4, 9]. Among these, memory is most often affected, though difficulties such as reduced attention and concentration, “mental slowing,” and word-finding problems are also common. While these issues may be a direct consequence of seizure activity affecting brain function, additional factors indirectly related to the epilepsy diagnosis may also impact cognitive abilities [2, 11]. For

instance, although not all anti-epileptic drugs cause cognitive side effects, some are known to impair memory, attention, and processing speed in certain patients [13]. Furthermore, depression and anxiety are observed at higher rates among patients with epilepsy, and both disorders are known to have neuropsychological consequences [6]. In cases where seizures begin at an early age, cognitive development can be affected in several ways: the direct impact of seizure activity on neural development; reduced self-esteem and activity limitations; and a higher prevalence of attention-deficit/hyperactivity disorder (ADHD) among children with epilepsy compared to the general population [3, 17].

The brain regions most frequently involved in seizure activity overlap with the brain’s “emotional networks.” Consequently, patients with epilepsy exhibit higher rates of depression and anxiety compared to the general population [18]. While these disorders may arise because of living with a chronic medical condition, it is now understood that there are epilepsy-specific factors rendering these children particularly vulnerable to emotional disturbances, possibly due to the involvement of specific brain areas [2, 19].

The presence of depression and/or anxiety can significantly complicate the clinical picture, as these disorders are known to have an additional impact on cognitive functions beyond the effects of seizures on general cognitive abilities. As a result, depression and anxiety are strongly associated with a lower overall quality of life in patients with epilepsy [10].

Traditionally, neuropsychological assessments are conducted in children older than five years, although neuropsychological diagnosis can also be performed in children as young as three to four years old [1, 10, 15, 18]. Pediatric evaluations in cases of epilepsy typically require a substantial amount of time, ranging from

two to 20 hours depending on the patient and the nature of the diagnostic questions. Most assessments last between four and eight hours. For preschool-aged children, the duration of each assessment session is between 20 and 30 minutes, for early school-aged children between 40 and 50 minutes, and starting from 10 to 12 years of age, the examination time may extend up to 1.5 hours.

The developed method includes an “express” variant - a rapid screening - followed by a comprehensive version, with the main tests adapted to the specific characteristics of the child with epilepsy as identified through the application of the express method.

Description of the Express Psychodiagnostics Method for children with epilepsy

The psychological assessment using the Express Psychodiagnostics Method for children with epilepsy is a structured process of data collection, problem identification, hypothesis formulation, and

decision-making for subsequent therapeutic intervention [7]. This involves, on one hand, identifying the child’s interests, abilities, and preferences, and on the other hand, detecting dysfunctional behaviours that prevent the child from fully utilizing their resources. Through this assessment, the developmental level can be established in the following areas: socialization, language, self-care, cognitive functioning, and motor skills.

The Express Method consists of 20 standardized tests presented in the form of games, drawing activities, motor tasks, and dialogue. It evaluates the child’s ability to understand and perform tasks, respond to verbal and nonverbal stimuli, and express personal content (e.g., through family drawings or storytelling). The method is adaptable according to the child’s age, psycho-emotional state, fatigue, or oppositional behaviour, with a total administration time ranging from 25 to 40 minutes. The developed tool allows investigation of the following domains (Table 1):

Table 1.
Higher mental functions assessed using the Express Method in children with epilepsy

1.	Auditory and visual memory
2.	Phonemic hearing and verbal comprehension
3.	Fine and gross motor skills
4.	Dynamic, spatial, and ideomotor praxis
5.	Visual, auditory, and spatial gnosis
6.	Executive functions (attention, control, inhibition)
7.	Affective-emotional domain

The assessment using the Express Method for the neuropsychological diagnosis of preschool and early primary school children should begin with the evaluation of the child’s ability to establish social contact and engage in verbal communication, as well as -an examination of their personality traits, emotional-volitional domain, skills and habits, and the child’s „psychological adaptability” or,

conversely, signs of reduced work capacity. At the end of the evaluation, the child’s overall behaviour, motivation, work pace, fatigue level, and cognitive style (e.g., impulsive/slow, rigid/flexible) are recorded. If specific disorders are suspected (such as dyslexia, ADHD, or developmental delay), a full neuropsychological evaluation is recommended. The information gathered about the child’s abilities, com-

petencies, and performance on the tests contributes to forming a clear picture of the development of certain higher mental functions [8].

Through the application of the Express Method, it is possible to assess how well an individual functions both cognitively and psychologically, specifically by identifying:

- difficulties in understanding instructions (indicative of dysfunction in the left temporal lobe – T-L);
- motor reproduction impairments (associated with frontal regions – F – or the corpus callosum);
- problems with spatial orientation and visual perception (related to parieto-occipital areas – P-O);
- attentional instability or perseveration (frontal lobe involvement – F);
- verbal expression difficulties (linked to the left temporo-parietal regions – T-P L);
- poor logical structuring and disorganized task performance (suggesting underdeveloped executive functions).

Validation of the innovative methodology „Express Method for the neuropsychological evaluation of children with epilepsy”

Representing a combined qualitative and quantitative approach to the assessment of higher mental functions (HMF), this method was developed by the team of clinical psychologists at the National Center for Epileptology (NCE), in collaboration with partners from the Faculty of Psychology and Special Education of the „Ion Creangă” State Pedagogical University. It was validated through a psycho-clinical study conducted at the NCE within the Institute of Emergency Medicine, in partnership with the Laboratory of Neurobiology and Medical Genetics at the „Nicolae Testemițanu” State University of

Medicine and Pharmacy, during the period September 2024 – May 2025.

The study sample: a total of **500 children**, beneficiaries of the National Epileptology Centre, were evaluated using the Express Method for neuropsychological assessment. The sample included 250 preschool-aged children and 250 early school-aged children diagnosed with epilepsy, all presenting complex neuropsychological disorders, including language and communication impairments, cognitive, affective, and personality difficulties, as well as low levels of vital and behavioral activity.

Although designed as a brief method, the express methodology allowed us to investigate object actions – tests for all types of praxis, the degree of formation of voluntary activity and gnostic processes in various modalities (acoustic, visual, spatial perception), mnemonic processes. Attention was not specifically investigated, its state is concluded on the basis of previous activities. Speech is studied by the neuropsychologist throughout the examination, since in all tests the state of speech understanding (by addressed instructions), dialogical speech, lexical composition, phraseology and others can be observed.

The Qualitative and quantitative analysis of higher mental functions (HMF) and task performance by children using the proposed method allowed us to identify higher mental function syndromes (HMF), find the cause of difficulties in mental development in children. The evaluation of the results was realised both qualitatively (based on the type of errors and behaviors observed) and quantitatively, using a four-level scoring system: 0 – no errors; 1 – <25% errors; 2 – 50% errors; 3 – errors in all tasks.

The following section presents an illustrative case study that describes the neuropsychological characteristics identified through the application of the Express Method to a child with epilepsy, along

with recommendations for further psychological evaluation and intervention.

Case Study Patient X, a 10-year-old right-handed child, underwent neuropsychological evaluation 2.5 years following a severe traumatic brain injury sustained in a road traffic accident. The medical diagnosis included: *severe isolated open traumatic brain injury, basal skull fracture, severe contusion of the left frontal lobe, and post-traumatic generalized tonic-clonic seizures.*

Evaluation Context. The neuropsychological evaluation was requested by specialists from the National Epileptology Center (NCE) to determine the degree of

post-traumatic cognitive impairment and to guide neuropsychological rehabilitation interventions. At the time of assessment (February 15, 2025), the child was cooperative, partially oriented in time, emotionally stable, but exhibited uncertainty when faced with tasks perceived as difficult.

General Observations. The patient demonstrated critical thinking, appropriate motivation for the evaluation, and full willingness to cooperate. No signs of fatigue were observed during the testing. However, difficulties were noted in coherent verbal expression and a slow pace in graphomotor activities (Table 2.).

Table 2.

Results of the neuropsychological assessment following the application of the Express Method (Patient X, age 10):

N/o	Area of interest	Assessment results
1.	<i>Motor domain</i>	<ul style="list-style-type: none"> Praxis disorders: difficulties in motor planning, perseveration, simplification of motor sequences, and loss of automatization (2.5 points); Impaired bimanual coordination, especially under sensory stress conditions (e.g., eyes closed, acceleration, etc.); Audio-motor and visual-motor coordination difficulties, marked by perseveration, spatial errors, and general muscular tension; Kinesthetic component of postural praxis affected (1 point, left hand).
2.	<i>Gnostic domain</i>	<ul style="list-style-type: none"> Disorders of visual and visuospatial gnosis: difficulties in recognizing objects under complex conditions, structural and topological errors in perception; Impaired tactile gnosis, especially on the left side (2–1 points).
3.	<i>Verbal domain</i>	<ul style="list-style-type: none"> Difficulties in sentence construction, verbal paraphasias, verbal in-ertia, problems with automatic naming (e.g., days of the week); Impairments in understanding logical-grammatical sentences (2.5–3 points).
4.	<i>Memory domain</i>	<ul style="list-style-type: none"> Significant auditory-verbal memory impairments: decreased productivity, intrusions, semantic substitutions, confabulatory insertions; Moderate visual memory impairments: spatial errors, difficulties in recalling sequences, and inhibition of memory traces.
5.	<i>Intelectual and academic domain</i>	<ul style="list-style-type: none"> Difficulties in understanding stories and images with a narrative structure; Calculation problems (especially with crossing tens), frequent errors, and marked slowing; Significant writing disorders: omissions, substitutions, optical paraphrasing, difficulties with words containing consonant clusters; Reading is syllabic, with reduced intonation, exhibiting guessing errors, substitutions, and omission of endings.

6.	Interpretation	The obtained data reveal a complex altered neuropsychological profile that persists even 2.5 years after the trauma. Multiple dysfunctions are evident in the motor, verbal, gnostic, mnesic, and intellectual domains, with predominant impairments in the left frontal lobe, consistent with the patient's medical history (left frontal contusion). The presence of perseverations, loss of automatization, difficulties in motor planning, and verbal instability indicate involvement of the fronto-subcortical networks. Spatial perception and memory disturbances suggest possible secondary dysfunction of the parietal regions.
7.	Recommendations	<ul style="list-style-type: none"> • Structured psychological intervention focusing on the rehabilitation of executive functions, speech, and memory; • Occupational therapy and sensory integration exercises; • Speech therapy program supporting coherent and accurate verbal expression; • Remedial activities in mathematics and reading–writing adapted to the child's needs; • Quarterly psychoeducational monitoring and annual neuropsychological reassessment.

CONCLUSIONS The Express Neuropsychological Assessment Method for children with epilepsy has proven to be an effective tool for the early detection of cognitive and emotional difficulties. The integration of qualitative and quantitative analyses enables the construction of a comprehensive functional profile and can guide a personalized intervention plan. By incorporating this method into rou-

tine evaluations, specialists can prevent the worsening of disorders and support the child's harmonious development. The practical use of the Express Neuropsychological Assessment Method for children with epilepsy is intended for professionals in the fields of education and psychology, including psychologists, speech therapists, neuropsychologists, special education teachers, educators, and clinicians.

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