UDC 376.1
BBC Ч420.242
GSNTI 14.01.11; 14.29.01
Code VAK 13.00.03

I. E. Luk'yanova, E. A. Sigida, S. N. Utenkova
Moscow, Russia

ADAPTIVE REHABILITATION EDUCATIONAL ENVIRONMENT AS A COMPONENT OF THE PROGRAM OF DEVELOPMENT OF HIGHER PSYCHOLOGICAL FUNCTIONS OF PERSONS WITH DISABILITIES

Abstract. The article dwells on the concept of adaptive rehabilitation-educational environment forming the controlled stream of external stimulation affecting the internal mechanisms of development in the course of adaptive abilitation, complex rehabilitation, inclusive adaptation and integration of children with disabilities into the educational space. From the pedagogical point of view, the adaptive rehabilitation-educational environment is an integrated educational space in which structural functional changes in the organism and the corresponding behavior of the child, including optimization of his social adaptation, are provided by means of controllable external stimuli adapted to the developmental defect. The authors state that the optimization of the structure of adaptive rehabilitation-educational environment is closely connected with the period of individual development and peculiarities of formation of the elements of the sensory system of the child. The new mental properties and social skills of the child with different disabilities acquired by him during rehabilitation activity correlate with the developmental stimuli built in the mental activity. The article substantiates the use of differentiated external stimuli in rehabilitation activity for activization of the monofunctional systems of the child facilitating the development of new functions and expansion of his compensatory opportunities, as the said rehabilitation measures adequate to the period of ontogenesis and organized taking into account the structure of disability ensure the required sequence of formation of mental functions. The article argues that the child's adaptation takes a more natural course in a new integration environment which corresponds to his opportunities and adequately matches the period of development.

Keywords: adaptive rehabilitation-educational environment; adaptive abilitation; inclusive education; inclusion; children with disabilities; disabilities; higher psychological functions.

About the author: Luk'yanova Inna Evgen'evna, Doctor of Medicine, Professor.
Place of employment: Department of Clinical Foundations of Defectology and Special Psychology, Faculty of Special Pedagogy and Psychology, Moscow State Regional University (Moscow, Russia).
About the author: Sigida Evgeniy Antonovich, Doctor of Medicine, Professor.
Place of employment: Department of Clinical Foundations of Defectology and Special Psychology, Faculty of Special Pedagogy and Psychology, Moscow State Regional University (Moscow, Russia).

About the author: Utenkova Svetlana Nikolaevna, Candidate of Biology, associate Professor.
Place of employment: Department of Clinical Foundations of Defectology and Special Psychology, Faculty of Special Pedagogy and Psychology, Moscow State Regional University (Moscow, Russia).

Psychophysical properties of children with developmental disorders, as a rule, differ from those of children developing in the framework of typical ontogenesis [6]. According to the cultural-historical conception of L. S. Vygotskiy, atypical development caused by a disorder cannot grow into the culture directly as it happens in the case of a typical child [2], which calls forth the problem of development of behavior adequate to the situation often accompanied by communicative difficulties of children with developmental disorders. If the biological disorder stays in a child with disabilities, neurophysiological processes lag behind in their development; and several functions often "fall out" because of divergence of the mechanisms of interaction with the environment. The natural course of development in this case is violated; the duration of the normative periods is not observed. With some congenital disorders brain structures are not able to respond to external environment stimuli which are necessary for activization of the inner mechanisms of physiological development. External environment stimuli which are normally catalyzers of inner structural-functional changes in brain systems and provide the formation of new psychological functions and forms of behavior, in cases of developmental disorders are either ignored or perceived with distortions. As a result, the new neurosensory connections turn out to be unable to provide compensatory capabilities of the child in due time.

Formation of psychological functions in children takes place in a heterochronic and differentiated way. It is necessary for the child's typical development that the received stimuli should mate each other and be adequate to the period of time of development of the child; what is more, they should correspond to the level of development of his higher psychological functions. It is important to see the nature of the child's interaction with the environment and his ability to perceive the stimuli both at the genetic (biological) and environmental (social) levels during all periods of ontogenesis [14]. Divergence of the development planes, temporal misalignment or inadequate external stimuli lead to the slowdown of inner genetically conditioned pro-

cesses, especially during sensitive periods of development of certain psychological functions.

Stimulus characteristics (direction, force, frequency, etc.) are significant for optimization of the process of psychological functions formation. In a rehabilitation environment not meeting the demands and capabilities of the child, he finds himself in the situation of estrangement and rejection of incoming information, which becomes the cause of psychomotor developmental disorder and emotional deprivation manifested in various forms of deviation, deficiency of social capabilities, etc. It is impossible to make the child respond to a rehabilitation intervention stimulus without his being ready to do so (without inner demand). External environment factors by themselves are not perceived and do not produce any changes in the organism. The child responds selectively to only those stimuli that can be transformed by his brain. It is necessary to turn on the intrapsychological process of inclusion of exterior stimuli into inner neurofunctional mechanisms [7]. While organizing rehabilitation activity it is necessary to take into account neuropsychological peculiarities of children with various disorders as their morphological systems more often than not become mature some time later than in typical children. That is why the process of design of rehabilitation environment should maximally consider individual peculiarities of ontogenesis with reference to the specificity of the child's developmental disorder and be adequate to his inner capabilities. These requirements are met by the so-called controlled environment considered by us in the framework of rehabilitation work as **adaptive rehabilitation-educational environment (AREE)**. AREE is a *complex of external transformed stimuli included in psychological activity (built in) and facilitating psychological development.*

From the pedagogical point of view, adaptive rehabilitation-educational environment is an integrative educational space in which the child's structural-functional changes of the organism and the corresponding behavior are effected by means of external stimuli adapted to the specific features of defect. As a result of purposive pedagogical activity, the physiological conditions for stage-by-stage maturity of brain structures are improved. It is clear that using such an approach needs provision of neuropsycologically based methods of rehabilitation work. AREE is called upon to create the necessary conditions for satisfaction of educational needs of persons with disabilities. These needs are connected both with the educational activity itself and the specificity of the needs which are based on the child's dis-

orders of physical and psychological development.

As a most important link of the AREE, psychological development stimuli are to include the element of adaptability. Adaptive stimuli of AREE designed to match the nature of defect allow one to influence the neuro-functional systems of brain structures more physiologically ensuring the achievement of the aims of rehabilitation activity. The adaptive component of rehabilitation-educational environment is strictly individual as it needs a differentiated approach to the determination of the external environmental stimuli in accordance with the form, degree and specificity of violation of the course of typical development.

AREE as a complex system can be effective in the frames of rehabilitation-compensatory work with children with disabilities in education and social security. The approach to the interpretation of AREE presented in this paper allows figuring out the opportunities of rehabilitation-educational environment from the point of view of provision of adaptive abilitation, inclusive adaptation, rehabilitation and integration of persons with disabilities having special educational needs.

Adaptive abilitation of the child with developmental disorders presupposes creation of the necessary conditions for the formation or extension of his absent or inadequately developed functional capabilities, enhancing behavioral opportunities and social potential with orientation towards safe organism functions [5; 12]. From this point of view, the abilitation component connected with the necessity to select external transformed stimuli of influence upon the neurosensory zones of the child with disability should be oriented in accordance with defect specificity in order to exercise more consistent intervention upon the zones connected with the safe functions, and to take into account the perception opportunities of the damaged zones. In order to acquire new knowledge or skill, the child must fall back on his experience and possess a certain amount of sensory models on the basis of which he could be able to imagine something identical and to create his own "ideation sketch". That is why rehabilitation work in the frames of adaptive abilitation potential should include the disabled child's knowledge, habits and skills on the basis of which simple realistic images are created; it is only then that abstract images are formed in accordance with the child's inner psychological capabilities and analytical activity skills.

The adapted environment stimulus included (built-in) in the brain structures and ensuring stage-by-stage enhancement of the intellectual potential and opportunities of adequate behavior becomes a catalyzer of provision of new

knowledge and capabilities (functions). At the stage of external rehabilitation intervention in the process of abilitation, the impact of the recurrent external stimulus with controlled support creates preconditions for the formation of new knowledge and independent actions. But the creation of new functions and capabilities in children with disabilities should not be an end in itself. Abilitation measures in the conditions of AREE make up only part of the general plan of the child's development. Creation of an adaptive controlled environment can make it possible to realize and reinforce in practice the acquired knowledge and functions, which would enhance the process of transition of psychological development to a new stage of social interaction.

Inclusive adaptation presupposes inclusion of the child with a developmental disorder in the general education environment if it is properly organized taking into account the defect and special educational needs of the child for further extension of his capabilities and realization of the natural developmental potential. The aim of inclusive adaptation consists in widening the process of active accumulation of social ties and interioration of the acquired social experience of the child with disability by means of inclusion in the environment of peers [11]. Controlled AREE stimuli forming adequate social needs become a factor of adaptation of the disabled child's behavior.

The inclusive adaptation potential consists in the interaction between biological and social factors [13]. The child's individual health represents the biological factor. A change of the normative indices of psycho-somatic status lowers the adaptive potential as a result of a change of physiological capabilities of the organism. Biological mechanisms depend on the constitution and hereditary potential and facilitate the formation of positive adaptive activity. Constitution should be understood not only as a well-proportioned body but also the specificity of functioning of the whole organism. It is not only disabilities and illnesses that are constitutionally determined but also the individual peculiarities of behavior. Knowledge of the neuron, psychological and hormone-sexual constitution allows revealing the principles of the child's interaction in reality and assessing the natural reaction to social intervention and opportunities of adaptation with the help of individual biological properties. And it goes without saying that the rehabilitation programs used in the conditions of inclusion cannot be designed for a group of pupils.

The adaptation result will be temporary if it is not reinforced by positive social interaction, factors of a higher order and psychological support. It is not advisable to focus on the technological approach in

practical rehabilitation activity as this approach does not properly involve the process of personal interaction. AREE actualizes personal opportunities both on the side of the pedagogue and the child himself in problems of realization of the perspectives of the situation development, assessment of the need of intervention, and determination of the forms of support. Dehumanization of relations in the collective is inadmissible. The psychological component of AREE orients the person at self-affirmation, overcoming low self-esteem and self-perfection. In each concrete case, adaptive rehabilitation-educational environment brings about changes in perception of the child's own self in the process of social interaction and socialization. Socialization is looked at not only as the process of appropriation (consumption) but also as the process of the child's reproduction of new interpersonal relations and interpersonal communication in which the social aspect dominates the biological one. In the conditions of adaptive rehabilitation-educational environment with differentiated accumulation of external stimuli, the process of developing psychological functions and integration of the child in the educational space is accelerated. The capabilities and functions that have already been "acquired" are further developed; and new "underdeveloped" and sleeping ones spring up. The child's dream to get rid of the defect is reinforced more naturally in the adaptive environment. Nevertheless, rehabilitation of interpersonal communication should take into account the individual personality traits of the child with disorders of psychological development causing difficulties in adaptation. It is necessary not to forget about the difference between the notions "individual's personality" and "individual's psyche". Demonstrative, labial, psychostenic and inert-impulsive variants of personality accentuations may be the cause of inadequate self-expression and self-realization.

Rehabilitation is viewed upon as a process of restoration of the child's earlier capabilities of interaction either lost under the influence of causes bringing about health problems [10], or as a result of inadequate attention to special educational needs of children with disabilities. Polimorphemic nature of psychological changes in children with disabilities manifests itself clinically in various kinds of disabilities and heterogeneous structure of disorders of psychological functions [1; 4]. Rehabilitation should involve both children with easily solved problems of development and children with severe lesions of brain structures of organic character. In cases of non-complicated form of intellectual disability emerging as a result of objective causes during postnatal period and not accompanied by

severe impairments of analyzers, a well-designed system of complex rehabilitation produces positive effect. Children with visual and hearing impairments preserve their emotional-volitional sphere well enough; they are capable of purposive rehabilitation activity.

In the process of rehabilitation, it is necessary to foresee the possibility of congenital "domination" of one of the analyzers, hearing or visual one in particular, and to use adaptive audio-visual or kinetic teaching methods in the right time keeping in mind that the dominant role in oral speech is played by the hearing modality, and in written speech – by the visual one. Late left hemisphere lateralization causes specified disorders of psychological development, and as early as at 7 years of age there may be problems with acquisition of letters and numbers. Different predisposition of boys and girls to certain kinds of speech pathology (stammering, dysgraphia, dyslexia, etc.) can be explained from these positions. Left hemisphere lateralization is also responsible for left-handedness and ambidexterity. It should be taken into account that left-handed children are characterized by excessive vulnerability and propensity for affective states; and that is why the selection of AREE in the rehabilitation process should be done taking this peculiarity into consideration.

General tendencies and specific features of psychological development of a child with disability determine the character of the transformed stimuli of AREE in the process of rehabilitation. It should be noted that rehabilitation process often involves such technological notions as "intervention", "rehabilitation program" and "conduct of rehabilitation measures" [8; 9], and from psycho-sociological positions, the patient is considered as "the subject of relations" or as a component of a "socially significant system". In the framework of such approach the child may turn out to be a passive participant or an abstract object of the process. The most important property of the human being – the uniqueness of his personality – may be lost in such a process. Rehabilitation cannot reach its goal if it is not oriented towards the person and if it does not influence all factors that lead to disability through personality. Otherwise, rehabilitation will consist of a number of measures that should be carried out to produce a certain impact on the organism or environment but not on man – a personality in a concrete environment [8].

Integration is a social, psycho-pedagogical component of the education process guaranteeing equal conditions for interaction between all members of the community. It is not only the child that adapts to the society in the process of integration but also educational conditions that are made to match the child's personality

[3; 15]. Mutual integrative effort and interaction in AREE help to avoid disintegration of the child's living space. The process of integration is complex and often contradictory as it deals with the child with physical or mental disabilities and simultaneously includes disintegration (ruin) of the old and integration (birth) of the new. Integration is a multi-stage process of unity when all parts of the process are equally recognized and valued. Integration is reached in the case when man is respected as a personality trying to change his or her life situation. To be whole means to keep to common ideals and values in the shared living space, in the unity of the personal and the common, the biological and the social, which cannot be separated from each another.

Nevertheless, it should be noted that until the child with disability realizes the necessity to change his state he cannot become a member of the integration process. Taking the decision by the child but not by the adult is the critical moment of an action and the beginning of a behavioral act in which the synthesized complex of afferent stimuli forms a personal efferent answer. Psycho-physiological mechanisms of taking a decision are multi-level – from a separate neuron (receptive field) of the sensory system to the system as a whole. These mechanisms have different units and different levels for each form of limitation of living activity.

Thus, neuro-psychological diagnostics of bio-social developmental disorder can reveal the sequence of maturity of psychological functions, analyze the morphological-functional structure of the existing defect and focus attention on the features of anormality in the child's development in the adaptive rehabilitation-educational environment. Timely syndrome diagnosis for early detection of sensory disorder on the basis of neuro-psychological knowledge, no doubt, extends the competence education of a defectologist.

The AREE under consideration interpreted as a unity of external transformed stimuli of psychological development included (built in) in brain structures corresponds to the inner capabilities of sensory systems structures, and the rehabilitation measures adequate to the period of ontogenesis ensure the sequence of formation of psychological functions. The child adapts to the new integrated environment corresponding to his capabilities and the period of development in a more natural way.

References

1. Akhverdova, O. A. Lichnostnye i povedencheskie rasstroystva u detey i podrostkov s organicheskoy nedostatochnost'yu mozga / O. A. Akhverdova, I. V. Boev, N. N. Voloskova. — Stavropol' : Stavropol'skiy gos. un-t, 2000.

2. Vygotskiy, L. S. K psikhologii i pedagogike detskoy defektivnosti / L. S.

Vygotskiy // Sobr. soch. : v 6 t. / L. S. Vygotskiy. — M. : Pedagogika, 1983. — T. 5.

3. Dmitriev, A. A. Integrirovannoe obuchenie detey: «za» i «protiv» / A. A. Dmitriev, S. A. Dmitrieva // Narodnoe obrazovanie. — 2011. — № 2.

4. Zhigoreva, M. V. Psikhologicheskie osobennosti detey s kompleksnymi narusheniyami razvitiya / M. V. Zhigoreva, I. Yu. Levchenko // Detskaya i podrostkovaya reabilitatsiya. — 2012. — № 2 (9).

5. Levchenko, I. Yu. Tendentsii razvitiya sovremennoy spetsial'noy psikhologii / I. Yu. Levchenko // Spetsial'naya pedagogika i spetsial'naya psikhologiya. — M. : LOGOMAG, 2013.

6. Lubovskiy, V. I. Spetsial'naya psikhologiya / V. I. Lubovskiy, T. A. Basilova, S. M. Valyavko, Ch. B. Kozhalieva, L. V. Kuznetsova, R. A. Kurbanov, I. Yu. Levchenko, V. A. Lonina, V. G. Petrova, T. V. Rozanova, L. A. Solntseva. — M. : Yurayt, 2015.

7. Luk'yanova, I. E. Psikhologiya gumanitarnogo poznaniya / I. E. Luk'yanova, E. A. Sigida. — M. : INFRA-M, 2016.

8. Luk'yanova, I. E. Reabilitatsionnaya pomoshch' litsam s ogranicheniyami zhiznedeyatel'nosti / I. E. Luk'yanova, V. G. Sukhanov. — M. : Nauka, 2007.

9. Luk'yanova, I. E. Problemy razvitiya reabilitatsionnykh tekhnologiy / I. E. Luk'yanova, V. G. Sukhanov, E. A. Sigida // Problemy sotsial'noy gigieny, zdravookhraneniya i istorii meditsiny. — 2007. — № 1.

10. Luk'yanova, I. E. Inklyuzivnoe obrazovanie kak forma reabilitatsionnoy pomoshchi detyam s ogranicheniyami zhiznedeyatel'nosti / I. E. Luk'yanova, S. N. Utenkova // Vestn. Moskov. gos. obl. un-ta. Ser.: Pedagogika. — 2015. — № 4.

11. Luk'yanova, I. E. Obrazovatel'naya inklyuziya kak bazis sotsial'noy adaptatsii detey-invalidov / I. E. Luk'yanova, S. N. Utenkova, E. V. Kovylova, N. Yu. Baklagina // Natsional'naya assotsiatsiya uchenykh. — 2015. — № 9-1 (14).

12. Malofeev, N. N. Osobyy rebenok — obychnoe detstvo / N. N. Malofeev // Defektologiya. — 2010. — № 6.

13. Malofeev, N. N. Pokhval'noe slovo inklyuzii, ili Rech' v zashchitu samogo sebya / N. N. Malofeev // Vospitanie i obuchenie detey s narusheniyami razvitiya. — 2012. — № 1.

14. Panteleeva, L. A. Osobennosti ovladeniya uchebno-terminologicheskim materialom det'mi s ogranichennymi vozmozhnostyami zdorov'ya / L. A. Panteleeva // Kul'tura fizicheskaya i zdorov'e. — 2012. — № 6 (42).

15. Shilova, E. A. Kompleksnyy podkhod k korrektsii zaikaniya u doshkol'nikov s ispol'zovaniem zdorov'esberegayushchikh tekhnologiy / E. A. Shilova // Vestn. Moskov. gos. obl. un-ta. Ser.: Pedagogika. — 2014. — № 3.