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The main principles of neuropsychological remediating education of children with learning disabilities

Abstract. The paper discusses the differences between remediating education and general education and its main tasks and principles based on the cultural-historical theory by L.S. Vygotsky. Basic functional systems formed during remediation are analyzed. Individual, group and dyadic methods of remediation are described with regard to their potential for mediating child's activity.

Key words: remediating education, learning disabilities, cultural-historical psychology, L.S. Vygotsky, mediation, play therapy

INTRODUCTION

Learning disability is now a major concern of psychology and education all over the world because of the growth in the number of children with learning disabilities and maladjustment at school and within family, without evident medical problems. It means that mental and social functioning of such children does not correspond to their psychophysiological abilities and to their needs as well as to the demands of their micro social environment.

A.R. Luria used to stress that nothing is more practical than a good theory. How can the cultural-historical neuropsychology help these children?

In 1917 L.S. Vygotsky began his works on assessing and helping children with vision and hearing loss as well as with mental retardation in his home town Gomel (Belarus). In 1925 he carried them out Moscow, where he setup the Medico-Pedagogical Station of Narkompros (Ministry of Education) of Russian Federation, which was later transformed into the Research Institute of Defectology (now the Institute of Corrective Pedagogy). These works were fundamental for the creation of the cultural-historical theory – L.S. Vygotsky showed that a defect interferes with the child's appropriation of the culture,

but cultural means help the child to overcome the defect. By this, the cultural-historical approach has become a methodological basis for remediating education.

According to Vygotsky the natural processes such as physical maturation and sensory mechanisms, interact with culturally determined processes in order to produce the psychological functions of adults and the variety of ways in which the functions are carried out, through “[a] **bifurcation in the course of a child's behavioral development into the natural-psychological and the cultural-psychological development**” (Vygotsky, Luria, 1930, p. 20).

These new formations have a cultural origin, a dynamic psychological structure, and a dynamic brain (body) organization. Thus, a word is considered to be an external material sign, a psychological tool for the organization of human behavior.

The **cultural-historical approach in neuropsychology** seeks the origins of human conscience and mental activity neither inside the brain, nor in the mechanisms of nervous processes but in the human social life. In other words, if we want to trace how it functions (or why it dysfunctions) in the behavior of an individual, we must consider how it is used to be functioning in social behavior.

PRINCIPLES OF REMEDIATION

Assuming these theoretical foundations, I will pass on to the **problems of remediation for learning disabled children**. L.S. Vygotsky (1925, 1930) proved that education **leads** to development. Remediating education **determines** development. Remediating education differs from the general one in its **aims**. The aim of general education is to acquire knowledge; remediation is aimed at forming new functional organs or a new functional system which makes it possible to perform a mental process. For a learning disabled child, remediation must precede formal schooling and create a foundation for future education. New basic functional systems formed during remediation enable independent learning by the child in the future.

These **basic systems** include: voluntary regulation and control of own behavior, space orientation, phonemic and kinesthetic verbal analysis and syntheses, motor ability, volume and stability of verbal and visual memory, logic reasoning and communicative skills. Some of these systems should already be formed by the time a child enters primary school, others, like space orientation, are still in the process of formation.

The main task of remediation is to, together with a child, create a means of compensating and thus to overcome the underdevelopment of some mental functions, using the “strong” components of mentality to compensate for the weak ones.

Who needs remediation?

- pupils unsuccessful at school because of underdevelopment (retardation) of some mental functions (sometimes talented in others);
- children with low neurodynamic capacities in mental functioning;
- children with poor executive functioning;
- children with problems with behavior and social communication;
- pupils whose achievements at school wealsen general health.

This list can be continued.

Certain features or psychological consequences of academic failure are common among these children, such as:

- negative attitude to scholarship;
- fear of failure;
- low self-appraisal and self-credit.

Therefore, **the** remediation process is oriented on the following *tasks*:

- cognitive development and increasing success at school;
- correcting negative traits of personality and emotional reactions;
- improving behavior at school and at home;
- developing communicative skills;
- psychological assistance to parents.

A multitude of remediation tasks necessitates a complex approach in order to find the appropriate method. This approach is based on Vygotsky’s and Luria’s principles of neuropsychological rehabilitation and remediation:

1. Neuropsychological qualification of child’s problems – a systemic neuropsychological assessment revealing both deficits and strengths in child’s development, his or her scope of proximal development, that is, upon Vygotsky, the possibilities and conditions of improving the results with the help from an examiner. It is only possible if Luria’s principle of dialogue assessment is used, including the components of education – a base for the individual program of remediation (Leontiev, Luria, Smirnov, 1968). Luria’s assessment in contrast to psychometric methods measures not an achieved level of education (retrospective aspect), but a potential to education (prospective aspect). Similary, Luria’s tests are oriented not on the result of the assessment (pass or fail), but on its processes and possibilities of making it more efficient.

2. The principle of complex remediation means a combination during each session of cognitive, motor, respiratory and emotional methods that together form the same mental function.

For instance, to develop space orientation in the motor part of the remediation session, children have to move being oriented by 2 toys which must always be at the level of their

waist. In the cognitive part of remediation, during the game called the “fly”, the task is to follow the “flight” of the fly in accordance with the teacher’s instructions – two rows up, one to the right and so on – and “catch” the fly at the moment when it gets out the cage. The respiratory method “blow-ball” not only increases the general activation, but also trains orientation in the space of the table, mutual interaction and adequate emotional reactions to success and failure.

3. The principle of **systemic remediation** means that the program for each child does not aim at surmounting an isolated defect but tries to balance the whole mentality and personality of the child. It does not exclude the need for a choice of the main focus and specific techniques at each stage of remediation for every child, based on the data of his or her neuropsychological assessment and personal needs. This principle ensures the efficiency of neuropsychological remediation for learning disabled children.

4. Play remediation favors **emotional involvement and motivation** of the child in the remediation process. Games, competitions, small gifts, and so on, significantly increase the efficiency of remediation. The principle ensures that **the child becomes a subject** instead of an object of remediation. To realize it, the proposed tasks should be interesting and accessible for the child, taking into account his or her age and life experience; failures should not come one after another but successes cannot be achieved too effortlessly. The most important element is an indication not to teach but to stimulate a desire to learn.

If children are subjects of their own remediation, they form “the affective basis of education” which is according to Vygotsky, “the alfa and omega, the beginning and the end, the prologue and epilogue of each mental development” (Vygotsky, 1984, p. 297). A child who chronically fails at school must **experience a feeling of success** to increase his or her own self-estimation and self-credit.

5. It results in an **individualized remediation** of each child. Each problematic child has unique problems and concerns.

6. The **weak components of mental functions are developed by supporting the strong ones**. This means that at the beginning of remediation, teachers themselves perform the functions of the weak components and then, gradually, transfer them to children following the rules of interiorization described by L.S. Vygotsky: from common activity to an independent one, from an action mediated with the external means to an internal one, from a step-by-step analytic action to a global automatized one (Akhutina, Pylaeva, 2008).

7. The cultural-historical approach in neuropsychological remediation of learning disabled children consists in further development of the theory of **mediation**. L.S. Vygotsky proved that mediation is a natural way of both cognitive development and the psychological compensation of cognitive and physical deterioration in children. This last principle results in a search for **mediation methods** in remediation instead of direct training of underdeveloped functions.

A good example of this can be writing and its underdevelopment in dysgraphia. Building upon Vygotsky’s viewpoint, orthography is a tool of written communication where a finite number of signs is continually recombined into symbols by following artificial rules of formulation. It is a set of abstract tools for written communication. So, to overcome dysgraphia – one of the most frequent problems of learning disability, a psychologist must form an instrumental behavior.

We use the following *methods of mediation*:

VISUAL:

- External marks for space orientation;
- Frames for writing;
- Externalized numbers or signs for counting and attention.

SEMANTIC:

- Logical analysis in counting and problem solving;
- Actualization of word semantic relations for memorization;
- Actualization of image and word relations for vocabulary and
- memorization.

EMOTIONAL:

- Computer games for space orientation and vocabulary;
- Competition situations;
- Feedback.

For instance, external means (toys indicative of the needed position in the space, touch on the hand saying “Stop and think about”) help a child with learning problems to form a system of orientation in the activity and an ability of self-control of his or her own movements and actions (Glozman, 2010). “A diary of achievements” where the teacher together with the student put the results of each session (note! only the achievements) is a good method to provide feedback to the child and to overcome negative attitudes towards learning.

In all these methods, the effects may concern the cognitive and motor abilities, the linguistic formulation of knowledge, the permanence in memory, the transfer onto concrete situations, the links to other fields and situations, and the motivation, attitudes dispositions of learners.

8. Mediation in teams or co-mediation in groups and dyadic remediation may present different characteristics and challenges compared to remediation conducted by a single individual. Underdevelopment of communicative abilities (often accompanied by weak executive functions) is one of the mechanisms of academic failure as well as of behavioral and emotional problems (Glozman, 2004, 2013). The communicative abilities are always formed socially, therefore their remediation is only possible in a group. Group remediation provides:

- an analysis and amelioration of own behavior and personality through group-interaction;
- conditions and place to meet the need for communication, common for each child;
- of new communicative skills: appropriation in a protected and controlled environment, the how to propose help, how to indicate a mistake or praise the peer, how to protect own independence, and so on;

- a feedback and emotional support from peers;
- new experiences in solving interpersonal and intra-family problems;
- increased self-appreciation.

Group remediation has 3 main interrelated components: emotional (self-acceptance and stimulation of self-development);

- cognitive (knowledge about communication, own and of others);
- behavioral (development of communicative skills and own problems solving).

It is necessary to provide details for dyadic remediation. It combines all the merits of group lessons – options for play activity, competition and communication – with the advantages of individual work – a possibility to concentrate attention on each child.

Child’s activity in a dyad consists of different motivations:

Competition motivation – a desire to win, to reveal one’s potential and consequently, to do one’s best to achieve the task.

Altruistic motivation – a desire to help the peer and assist the other; the child becomes more self-confident and self-respected.

Play motivation – child’s attention is distracted from cognitive and motor abilities developed during the play. It makes these abilities involuntary and easy, and forms (according to L.S. Vygotsky) the unity of affective and intellectual parts of an activity. Besides, play is essential for executive functions development. “Play continually creates demands on the child to act against immediate impulse. At every step, the child is faced with a conflict between the rules of the game and what he would do if he could suddenly act spontaneously... A child’s greatest self-control occurs in play. He achieves the maximum display of willpower when he renounces an immediate attraction” (Vygotsky, 1978, p. 99).

In dyadic motor remediation each child should take into account the actions of his or her partners; dyads also favor child’s self-control and interaction skills used during playing together.

It is possible to differentiate the following types of dyadic interaction:

Cooperation

- of both children in achieving a common goal;
- of one child with the teacher aimed at helping another child.

Competition

- of one child with the other when the teacher becomes a judge;
- of both children against the teacher in a joint game.

A specific form of dyadic interaction is a situation when one child becomes the teacher's assistant – he or she controls and helps another child; the activity favors a lot self-control.

9. The next principle of remediation (both individual and in groups) is **optimal teaching strategies**: participative-guided and peer-collaborative strategies are more efficient than classical-expositive; optimal individualized choice of mediating means also that in the majority of subjects interfunctional mediation (semantic/visual) is more efficient, than intrafunctional with some limitation to patients with specific features of interhemispheric interaction.

The teaching strategies are not only a way to learn culture; to form or to remediate mental functions – they are cultural instruments by themselves. It is the reason why, as according to Vygotsky, “[t]he higher mental function is a social means of behavior, converted to himself” (Vygotsky, 1978).

10. All methods follow the didactic principle: **from simple to complicated**. But in remediation this way from simple to complicated takes account of the weak components in

mental functioning of a child in all verbal and non-verbal functions, including these components. The help of a psychologist must be interactive, that is reduced or enlarged in accordance with the child's achievements. In other words the specialist always works in the zone of the child's proximal development.

11. Next principle: the remediation is efficient only in **interaction with child's parents**. The main preoccupation is an emotional support for parents. The task of a psychologist is to help the parents to realize the positive changes in their child after remediation and to accept “the new child”. It is necessary to stimulate the parents to participate in the remediation process and also to create and maintain an active and optimistic life attitude of the parents and the family unity, as we call it, “the family we”.

12. The last principle is **team approach** (interaction with medical and pedagogical staff) that also favors the efficiency of remediation. Each specialist contributes to a certain task using his/her own methods. Thus, the ideas of Vygotsky still retain their relevance.

It is important to underline, that Vygotsky-Luria's approach is a scientific phenomenon the value of which cannot be limited to the outcomes achieved by the authors themselves, it has opened potential for development in new branches and fields.

To conclude, it is necessary to point out, that remediation is not a correction – it is a creation. A psychologist must understand and overcome everything interfering with the child's successful adjustment to the society.

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