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REGULATION OF GENERAL ACTIVITIES OF PRIMARY SCHOOL CHILDREN WITH HEARING DISORDERS IN ADVERSE CONDITIONS

Abstract. The article presents the results of a study of the peculiarities of arbitrary regulation of behavior of younger primary school children with hearing disorders in achieving a goal in adverse conditions (satiety) in comparison with children with good hearing. The ability to perform certain activity in conditions of mental satiety is largely determined by the motivation and, due to it, ability to overcome difficulties. The results show the existence of similar trends in the arbitrary regulation of activity of both groups of children and peculiar manifestations of arbitrary regulation in primary school children with hearing disorders.

Key words: arbitrary regulation, primary school children with hearing disorders, mental satiety, monotonous activity.

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The study of arbitrary regulation of behavior of children with disabilities including those with hearing disorders in the new conditions of work of the modern school becomes especially significant. The introduction of the Federal State Educational Standard aimed at ensuring diversity of design of educational activity on the basis of individual properties of each child shifts the accent from the diagnostics of a disorder and sending children to the corresponding institution to the diagnostics of developmental peculiarities with the purpose of working out an individual educational route. Nevertheless, educational activity in new conditions does not exclude the absence of certain efforts in acquisition of new learning skills. Long ago, K. D. Ushinskiy noted that “if you make your lesson interesting, you may hope not to become boring, but please remember that not all things can be interesting in learning; there are, and surely must be, uninteresting things in learning. So, teach your child to do not only things which are entertaining but also those which are dull – to do them out of the pleasure to perform one’s duty” [10, p. 252].

Learning activity demands from the child hard effort, much time and, sometimes, even giving up more attractive activity. In her study of these processes, L. S.

Slavina stresses that “learning activity is a kind of labor activity”, and it presupposes the presence of efforts to achieve the goal. Building education process on interest alone does not give due results. The solution of educational problems needs reaching a number of intermediary aims which may turn out unattractive and tiring but quite necessary [9].

Our research is urgent because it is necessary to expand our understanding of the peculiarities of arbitrary regulation of activity of children with hearing disorders. Arbitrariness is a systemic property characterizing higher psychological functions as true psychological systems [5]. Analysis of the peculiarities of arbitrary regulation in childhood in the conditions of safe and impaired hearing is important for the study of regularities of development of the mechanisms of activity control.

For any kind of activity, arbitrary regulation includes both common and specific components. The common components embrace indirect nature of behavior, its focus on the search for such actions that can lead to the achievement of the goal under the given circumstances. Arbitrary regulation presupposes the presence of the psychological processes which enhance the motivations issuing from the set goal and

inhibit the opposing ones. It is at the junior school age that the children learn to overcome instant desires and control their own behavior. Achievement of success in the learning activity is a complex task associated not only with the acquisition of learning skills but also with the development of the person as a whole.

The purpose of our research is to study the peculiarities of arbitrary regulation of activity in children with safe and impaired hearing while they try to achieve the aim (obtain the result) in adverse conditions – monotonous activity leading to mental satiety.

The state of mental satiety was first studied by the school of Kurt Lewin. It is defined as the state emerging in the process of monotonous activity or long subjectively insignificant work. A. Karsten noted that in this case the person first loses interest and feels like giving up the activity and has an inclination to use different methods of performing the work; in case he continues doing it, he gets annoyed, sharply rejects the activity and tries to stop doing it by all means.

The Russian researchers looked at the problem under study in the framework of the motivational approach [4]. During junior school age, the development of arbitrariness itself which is based on motivational-demand education is in the center of psychological de-

velopment. Determination of the mechanisms of development of arbitrary processes and the search for the means stimulating to activity even in the case of low attractiveness of the process of goal achievement takes place in the context of the imperative force of consciousness [3].

Modeling situation in which the ability to regulate activity in adverse conditions would manifest itself is possible in the situation of mental satiety. Researchers have often stressed the influence of the amount of work on the goal achieving results: the larger the volume, the stronger the desire to give up the work. The capacity to go on with unattractive activity is preserved due to the changes in the motivational-semantic sphere of the person [6]. A really strong motive is necessary to inhibit the existing situational motives. In this case, the person follows consciously set goals and suppresses immediate urgings [4].

The studies in the sphere of relationships between motivational regulation of intellectual activity and goal setting of persons with hearing disorders show that “in the situations of more significant motivation those tested set themselves aims dealing with the quality [1, p.177]. The choice of interrelationship between motivation and goal setting determines the effectiveness of the problem solution. To achieve the result, it

is necessary that the actor should accept the task and include it in the general hierarchically organized system of motives [2].

Continuation of the work over a task in the situation of monotonous activity leading to mental satiety demands for the person certain efforts and takes place in the actor's inner sphere by way of mobilizing his or her reserves. The degree of effort is determined subjectively: the higher the strain, the stronger the needed effort. An externally successful effort reveals itself in the effectiveness of the action, which is based on the concentration on the action being performed regardless of the obstacles occurring on the way to the goal achievement [6; 7]. If the person experiences positive emotions connected with the goal achievement, they will act as a means enhancing the motivational tendencies facilitating the continuation of the activity performance.

The power of arbitrary regulation of behavior in adverse conditions is determined by various factors, among which it is possible to single out the manifestation of personality traits. The system of these properties and the level of their development determine the level of arbitrary behavior of a person [6]. The highest level of development of arbitrariness is reached when the person has formed sustained personal interests, stable purpose, inner

concentration and organization [3].

In our research, the situation of mental satiety was modeled on the background of long monotonous activity with the help of the modified method worked out by A. Karsten. The testing procedure included three successive stages. The child under test was offered a sheet of grid paper, similar to a chess board, and was asked to cover all squares with tokens of unattractive color in a chequered pattern, switching from a brown token to the white one. The instruction was accompanied by a demonstration. At the first stage, the sheet contained 64 squares; at the second stage it consisted of 130 squares. At the third stage, which was held after the successful completion of the second one, the sheet of paper was unfolded revealing one more row of squares, then another row and so on; i.e. the children could not see the whole amount of work to be done. The continuation of activity in the case of loss of interest was possible due to preservation of the motive and the goal of activity, and realization of the necessity of its performance consisting in the need to follow the given instruction. We chose the following parameters characterizing the state of mental satiety: time of the task completion, involvement in activity, accuracy of task completion, responses to unwillingness to perform the activity,

variation of the methods of activity and speech responses in the process of activity. In addition, we used the method of expert assessment of the personality traits characterizing the opportunities of arbitrary regulation of behavior such as persistence, determination, independence and self-discipline. The experts were offered a sheet of paper with descriptive attributes of personality traits and an assessment form to evaluate each trait on the five-point scale. The common evaluation of each personality trait is an average one and was calculated by dividing the sum total of evaluations of the given property by the number of persons providing evaluation.

Research was conducted on the base of Moscow Special General Education Boarding School of type II #22 and "Gymnasium # 1596". The sample included 148 children of the junior school age: the control group consisted of 38 pupils of the 1-4 forms with safe hearing, and the experimental group included 98 schoolchildren with partial hearing loss and 12 deaf pupils of forms 1-5.

The computer program "PASW Statistics 18.0" was used to process the research results. The results of observation of children with safe hearing were compared with those of children with hearing impairments using the nonparametric Mann-Whitney *U* test.

Significant differences be-

tween the children with safe and impaired hearing in task completion were obtained for the following parameters: emotional involvement in activity ($p < 0.005$, $p < 0.001$), accuracy of task completion ($p < 0.038$), and speech responses in the process of activity ($p < 0.005$).

We have registered similar tendencies in task completion of the children of junior school age with safe and impaired hearing for emotional responses to unwillingness to perform monotonous activity, for variation of methods of activity and capacity to cover the squares in additional rows. There are no differences between the children with safe hearing and the children with hearing disorders in the choice of activity methods in performing monotonous activity (the differences between the groups are not statistically significant).

Both groups demonstrated three stable types of choice of the method of activity. The first type is characterized by accurate execution of instruction: laying the tokens by rows, in due order, alternating brown and white tokens. The given method radically hampers the process of task completion and needs high concentration of attention and ability to switch over. The choice of this method of activity indicates the children's accurate understanding of the instruction.

The solution of the problem in

a different way may mean the change of goal. It is important here to see what the child understands under goal achievement in adverse conditions: just to cover all squares or to follow the instruction to the letter. Accordingly, the second and the third types lead to the achievement of the goal symbolically, as it is achieved via different variants of the methods of task completion. The second type consists in the following: the children classify the tokens into two groups and first place only white and then only brown tokens. The third type of laying out the tokens is the fastest one: the children collect all tokens in their hands and lay them out on the squares randomly without observing any sequence. The second and the third types of task completion are more often used immediately after they have placed several rows of tokens in accordance with the instruction. The appearance of variations of the methods of task completion testifies to the emergence of mental satiety. The increase of the volume of work brings about the desire to finish it as soon as possible, and then the details connected with the quality of the work go to the background. In this case, work completion becomes the leading motivational tendency, and the accuracy of following the instruction does not matter much.

Children with safe and impaired hearing demonstrate common

tendencies while working under the conditions of satiety. In the first experimental situation, first and second form pupils prefer to complete the task closely following the instruction in correspondence with the given model of activity – they lay out the tokens one after another in rows. The children of forms 3-5 do not keep to the instruction closely and act according to their own plan of activity. The fourth form schoolchildren with safe hearing use the first type of task completion in 33% of cases, and the pupils with impaired hearing – in 25% of cases.

A common tendency is also observed when the children are given the second task sheet: the children change the method of task completion and achieve the goal symbolically. The third form pupils with safe hearing (77%), the same as the pupils with hearing disorders of the fourth and fifth forms (81% and 75%) prefer the fastest third type of task completion.

Increase of mental satiety is accompanied by the growth of negative attitude to monotonous activity and desire to give it up. Anyway, the work is not stopped immediately when such feelings appear. This fact is attributed by L.S. Slavina with the fact that the state of mental satiety brings about an inner personal conflict between two opposite tendencies: in accordance with the first tendency it is necessary to stop the activity, but the second one urges to continue working in order to

live up to the expectations of the surrounding people (the requirements of an adult). The inner conflict functions as a subjective barrier which consists in feeling inner dissatisfaction with own success, in experiencing failure and in emergence of frustration. The emotional complex adds to the state of mental satiety and changes the whole future behavior of the child [8].

The children with safe and impaired hearing showed differences in the work in conditions of satiety. Thus, we observed different responses to unwillingness to continue the task performance. Among them, we can see speeding up of the activity, signs of fatigue, surprise, refusal or absence of response. The children with safe hearing demonstrate fewer emotional responses and higher stability in performing monotonous activity. Beginning with the second form, the pupils get surprised when they see an additional task sheet, and then go on with the work in the same tempo (from 44% to 66%). Quiet continuation of activity is the second most frequent response. The children do not look tired and do not change the tempo of activity (44 %).

The most typical response of children with impaired hearing consists in speeding up the activity. These children do not look tired, but they feel like finishing the uninteresting work as soon as possible. The children cannot find a motive or resource in the work itself. Then the

tempo is slowly restored to normal, and the child finishes work in the usual tempo. The frequency of such response varies from 16 to 50%. Surprise at seeing additional rows of squares is less evident; it amounts to 38% in the third form. Quiet continuation of activity is less characteristic for children with hearing loss and amounts to 5-25% (the peak of manifestation is observed in the fourth form). The signs of fatigue (less than 25%) appear in response to the inner resistance to activity. The children begin to wrinkle up their forehead, sigh, gasp and show that they are very tired, they are about to give up the work, but if the adults motivate their activity its effectiveness grows up considerably.

The differences in accuracy while working on a small number of squares are significant ($p < 0.038$). The schoolchildren with loss of hearing of forms 1-5 show better indices of accuracy (from 31% in the first form to 50% in the fifth form). The highest results were registered in the first form. The children with safe hearing show lower indices of accuracy in all experimental situations (11 and 22% in the third and fourth forms). And it is only in the second form that the children with safe hearing have better results of accuracy of work performance (44%).

In the children with hearing disorders, the requirement to follow

the instruction to the letter provokes aggravation of the state of mental satiation and rejection of activity more often than in the children with safe hearing. Using a larger number of variations and symbolical goal achievement the children with safe hearing can avoid the state of mental satiation. Rejection responses were registered in 50% of first formers only. Beginning with the second form, rejection responses were not registered. Absence of rejections is achieved due to the ability to control emotions, active use of variations and persistent search for the meaning of the task.

Rejection responses in the children with impaired hearing were registered in the first form in 40% of cases; the number of such responses gradually goes down and reaches zero only by the fourth form.

Increase of the number of verbal utterances not connected with the activity in progress is one of possible variations of task completion leading to alleviation of the state of satiation. The differences between the groups by the given parameter are on the level of significant ($p < 0.005$). In the second and fourth forms, the given phenomenon is demonstrated by 55.6% of all utterances of the children with safe hearing. The children ask additional questions about the details, make suppositions, and if the experimenter pays no

attention to their words, they tell about their hobbies, brothers, sisters, etc. Thus, speech does not allow them to go back to the monotonous, senseless and unattractive activity again. Search for the task meaning is especially important for the children with safe hearing. The children try to figure it out persistently and make different guesses and suppositions: "Anyway, why do we do it? It may be a new kind of draughts". The indices differ with age from 33% to 55%.

The children with hearing disorders, the same as the children with safe hearing, speak on abstract topics but practically never try to figure out the meaning of the task. They more often use utterances of self-regulating orientation. This can be seen not only during accomplishment of more difficult and time-assuming tasks but also in covering the squares on a smaller field. Depending on the form and the volume of activity to be performed the indices vary from 6.4 to 25%. The children say out loud the colors of the tokens and comment on their actions. The use of this technique allows the children with loss of hearing to keep their attention on the story of the task and to closely follow the task instruction.

At the third stage, after completion of a large amount of work, the sheet of the grid paper is unfolded so as to show an additional row of squares. The new rows ap-

peared in such a way that the children did not know what amount of additional work they were to do. The first formers with safe hearing showed high mental satiety and inability to continue work under indefinite conditions. The majority of children (60 %) could not fill in more than 3-5 rows. In 20% of cases they refused to complete the task; in 10% of cases they could lay out only 1-2 rows. Beginning with the second form, the children with safe hearing demonstrated better capability to monotonous activity, resilience in the conditions of satiety, which shows that their arbitrary regulation has been formed. Two groups of children are clearly distinguished. The children of the first group (from 33% in the second form and 55% in the fourth form) could lay out from two to five additional rows. The children of the second group (from 44 to 66%) could do more than 6 rows.

The pupils of the third and fourth forms with safe hearing demonstrate a high level of development of arbitrariness when they are offered additional rows. Such pupils look concentrated and self-possessed, the tempo of task completion is high enough; they perform the task silently and do not try to begin a dialogue. They do not seek assistance from adults in the process of work. Independence is a distinguishing feature of activity of children

with safe hearing. On reaching about the third additional row their annoyance grows. But it is not associated with an external change in their activity, i.e. it is not manifested by a change of tempo, concentration or other parameters. The children with safe hearing are capable of setting a limiting goal independently. In the case the children wish to stop performing the task their refusal is final and additional stimulation does not lead to their resuming the activity.

The process of task completion in children with hearing disorders under the complex conditions of indefinite perspective differs from that of children with good hearing. On the one hand, the capability of children to fill in more than six additional rows grows gradually: in the first form, such pupils make up 40%, and in the fifth form – 87%. On the other hand, increased emotionality, especially in the first and second formers, is a specific feature of their behavior. The appearance of each additional row is accompanied by a storm of emotions. Externally, the emotions are manifested very vividly. The children are surprised: “What? More rows?”, then say that “they are too many”. The children look as if they did not wish to continue the activity. Poor capability to control their own emotions provokes the greater part of refusals. Additional stimulation may urge to go on with the task completion. Any bright object disconnected with the

activity performed by the child may serve as a stimulus to switch over from monotonous activity. Such alternation of the periods of refusal and going back to activity may take place from one to eight times. The motivating role of the adult is also significant. Under the adult's support, the children are capable of completing a large amount of work. Active stimulation makes it possible for the children with hearing disorders to perform the work comparable to the work completed by the children with safe hearing. But the children with impaired hearing still demonstrate inaptitude to the search and definition of the motive of their activity. The children try to figure out the volume of their work, how many rows are still to be done and count the remaining squares and the number of the rows already done.

Thus, the fourth form school-children with hearing disorders correspond to the second form pupils with safe hearing by the level of development of arbitrary regulation

of activity.

Significant differences are observed according to the parameter of emotional involvement in activity ($p < 0.005$, $p < 0.001$). The emotional coloring of the task and its acceptance or rejection to a large extent determine the capability to work for a long time performing monotonous activity.

The dominating emotional response in the group of children with safe hearing during the whole period of junior school age is stable unemotional attitude to the task, which tells on the stability of their work in all experimental situations. The given type of response becomes dominant: from 40% of first formers to 77.8% of fourth formers demonstrate it. The increase of the number of such responses manifests the forming ability of the children to regulate and control their emotions and to preserve the wish to follow the instruction for a long time (see Table 1).

Table 1

Indices of emotional involvement in activity in the children with safe hearing, %

Parameters	Form							
	1		2		3		4	
	Field of 64 squares	Field of 130 squares	Field of 64 squares	Field of 130 squares	Field of 64 squares	Field of 130 squares	Field of 64 squares	Field of 130 squares
Unemotional acceptance of the task	40.0	40.0	44.4	55.6	66.7	66.7	77.8	88.9
Involved in the task	50.0	10.0	55.6	33.3	22.2	11.1	22.2	11.1
Not involved in the task	10.0	50.0	—	11.1	11.1	22.2	—	—

Expansion of the chequered field in the second experimental situation brings about increase of the number of negative emotional responses. The volume of the work to be done influences the emotional attitude to the task. The children see the expanded field, and the wish to begin activity declines radically. The highest indices were shown by the pupils of the first form: they amounted to 50%; the children take their time and do not start performing the task right away.

The children with hearing disorders demonstrate more diverse emotional responses. It is possible to single out three stable types of emotional responses which are almost evenly revealed during the whole

period of junior school age. The first type is emotional involvement. The children accept the task and quickly start completing it. The second type of emotional response is unemotional acceptance of the task, but the children with hearing disorders are less likely to display it than the children with safe hearing. By the third form, the second type of response is identified in 33%, and then the frequency goes down to 12%. The typical feature of the children with hearing disorders consists in rigidity of emotional response, sticking on a certain type of response and absence of positive changes (Table 2). The third type of emotional response is characterized by non-involvement, which increas-

es with the expansion of the number of squares to be covered.

The dominating type of emotional response is preserved during the whole junior school age, whereas the children with safe hearing demonstrate dynamic changes.

A similar tendency is observed under the conditions of nega-

tive attitude to the task. The percentage of similar responses is higher in the children with impaired hearing. In the first form it makes up 25%, when the children with safe hearing show only 10%; in the second form – 21%, and the children with safe hearing have none.

Table 2

Indices of emotional involvement in activity in the children with impaired hearing, %

Parameters	Form									
	1		2		3		4		5	
	Field of 64 squares	Field of 130 squares	Field of 64 squares	Field of 130 squares	Field of 64 squares	Field of 130 squares	Field of 64 squares	Field of 130 squares	Field of 64 squares	Field of 130 squares
Unemotional acceptance of the task	15.0	15.0	44.7	27.7	22.2	33.3	37.5	12.5	37.5	12.5
Involved in the task	60.0	45.0	34.0	17.0	55.6	11.1	43.8	31.3	50.0	50.0
Not involved in the task	25.0	40.0	21.3	55.3	22.2	55.6	18.8	56.3	12.5	37.5

Table 3

Correlation between the time of task completion and the level of development of personality traits

Parameter	Persistence	Self-possession	Determination	Independence	Organization	Sense of purpose
The value of Spearman's rank correlation coefficient r	-0.216	-0.383	-0.241	-0.339	-0.342	-0.268

The dominant emotional response in the second experimental situation, when the field of 130 squares is presented, was a negative attitude to the task resulting in its rejection.

The comparison of the data in order to determine the correlation was carried out with the help of Spearman's rank correlation coefficient r . The research revealed significant correlation between the results of activity in the conditions of satiety and the development of personality traits. The analysis was conducted by way of comparison of the time of the task completion with the outcomes of expert evaluation. We can state that there is inverse relationship between the time of the task completion on the field of the size of a usual chessboard and the development of such personality traits as persistence, self-possession, determination, independence, organization and sense of purpose (Table 3). The children possessing these personality traits spend less time on the task completion, which corresponds to the high level of development of arbitrary regulation. The children are attentive and concentrated in the process of task completion.

The second experimental situation also demonstrates significant negative relationship with the personality traits – with independence

($p = -0.269$) and sense of purpose ($p = -0.189$).

The results of work under complicated conditions (the third situation) showed the presence of positive relationship with such personality traits as self-possession ($p = 0.295$) and organization ($p = 0.266$). And, on the contrary, inability to lay out more than one-two rows demonstrated significant negative correlation with the development of such traits as poor organization ($p = -0.219$) and absence of the sense of purpose ($p = -0.285$).

Our research allowed us to single out specific peculiarities of development of arbitrary regulation of activity in the conditions of mental satiety of children with hearing disorders in comparison with their peers with good hearing. Work under the conditions of monotonous activity is equally difficult for the children of both groups. The use of a large number of variations of activity performance is, on the one hand, an indication of such a state, and, on the other hand, allows the pupils to symbolically achieve the set goal in the long run. If the children with safe hearing are capable to optimize their activity independently and to use different variations and set limiting goals, the children with hearing disabilities need active assistance of adults both to create and to support the corresponding motivational tendencies

and to organize their activity until they are fourth form pupils.

The main differences concern the quality of task completion. The children with safe hearing try actively to understand the essence of the task and the purpose of activity; they are distinguished by independence and organization. They produce more mature forms of emotional responses and are able to control their emotional state.

The children with hearing disorders are characterized by underdevelopment of arbitrary regulation which embraces the motivational sphere and the ability to regulate and control the emotions as well. At the time when the task becomes boring, the growing resentment to activity completion cannot be subject to complete arbitrary control. The external motive of activity – the volume of the work – is important for the children with impaired hearing. The difficulties of these children in regulation of emotional states enhance mental satiety and the emotions they feel are contrastive: improvement of the emotional background and acceleration of the activity tempo alternate with periods of depression.

The peculiarities we have revealed testify to the lag in development of arbitrary regulation in children with hearing disorders and the need to carry out rehabilitation-educational work. This work should

be designed on the basis of the individual approach taking into account the zone of proximal development of each concrete child. The work will be complex and multifaceted due to the complexity of the property itself. Development of the motivational sphere of children with hearing disabilities will be one of the urgent issues to investigate in the future. Formation of the cognitive motivation based on the need for new impressions is the most important one [3]. The presence of the corresponding hierarchy of motives is necessary for the development of arbitrary regulation of activity. Multiple motivation and hierarchy are the basic characteristics of the motivational sphere of man. Some motives are directly connected with activity; others are aimed at the result in terms of its external utilitarian significance. Thus, for instance, enhancement of motivation does not only lead to the increase of effectiveness of intellectual activity of children with impaired hearing manifested by the growing number of ideas produced by the children, but also to a change of the qualitative characteristics of solutions – their originality, depth of design, etc. [2].

Goal achievement in education is often possible only in case of performance of a number of actions which may include those unattractive and uninteresting to the child due to

various reasons, for example, monotonous actions that need considerable effort and concentration. The child can perform these actions only if he is able to control his behavior.

Formation of the education activity itself – which is the leading activity at the junior school age – in the unity of all its structural components is an important area of rehabilitation-educational work. It is necessary to form learning-cognitive motivation in children with impaired hearing matching the content and the learning activity facilitating the creation of stable interest to this activity. School education has special social significance, new level of relations with adults and the need for acquisition of the rules of social behavior and following them. These peculiarities of education activity influence the intellectual development of children, the structure of their personality and the arbitrary regulation of behavior.

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