MOTIVATION OF BEHAVIOR OF ELEMENTARY SCHOOL CHILDREN WITH AUDITORY SENSORY DEPRIVATION

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Abstract

This paper presents an experimental study of motivation of behavior of elementary school children with auditory sensory deprivation. Hard-of-hearing children with 2-4 degree of deafness were examined in accordance with the strength of their nervous processes. We used the table of behavior features proposed by Γμπьбух (2009) and a questionnaire to evaluate motivation to attend school. The paper presents correlations between indicators of behavioral responses and motivational sphere for this children's group according to their strength of nerve processes before schooling start, during school studying and at additional correction implementation. Influence of schooling and additional correction on formation of new correlative relationships was shown, this fact highlighting impact of schooling and additional correction on neural process activation that significantly improves the learning activity states.

Key words: motivation of behavior, children with auditory sensory deprivation, correlations.

Relevance of studies. Learning activities during early school years are closely related to arbitrary behavior, formation of which begins in preschool years. Such behavior allows a child to control own behavior, to have an adequate diligence level, continuous undivided attention during tasks, to bring task to logical conclusion, control over own actions.

Such behavior is performed by a child if he/she has school motivation, has a desire to acquire some knowledge, feel like a schoolchild, and attend school.

Children with hearing impairments bring cognitive motivation to the forefront in the motivation sphere, but children with intellectual development problems prefer play activities, play motivation dominates for them. Motivational behavior begins to develop in early childhood and continues during school years. Motivational readiness for school is formed due to broadening ideas about the world, about relationships between people, desire to receive an encouragement from a teacher. Social motives predominate for children with impaired hearing in the case of broadening of child's perception on life around him/her, during increased communication with peers and possibility of understanding. During the school period, such communications pass to the next level and supported by cognitive motives that are common to child's classmates and peers, because the speech communication singularity of this category of children significantly complicates communication, but common activities during namely this school period lead to faster understanding.

Collaboration, partnerships, overall activity pace during group task performance promote motivation to group communication, joint activities and cognitive motives.

Motivational readiness is aimed at determination of child's readiness for schooling, acceptance of new knowledge, development of eye-mindedness. Motivation, according to Maslow (Μασπου, 2008), is interpreted as a field that includes needs, motives, goals, interests, and their interactions.

Many teachers emphasize importance not only of readiness to acquire knowledge and skills, but the level of child's readiness for learning, which includes abilities to analyze, compare, and highlight features and properties of objects and phenomena, developed eyemindedness and abilities to draw conclusions. To do this, children need to have developed verbal abilities. A prerequisite for any activity is the ability to communicate with peers, which is somewhat difficult due to existing auditory defects. Thus, behavior of children with hearing impairment is stipulated by child's self-esteem of the defects on the one hand, and the desire and actions aimed at reducing of physical and psychological distance between them and children with normal hearing (Речицкая, 2003).

One of the first researchers of this issue Π латонов (1972) believed that behavioral responses are determined not only by emotional states, but also play an important role in adaptation.

Given the above, we can affirm that the behavior, motivation and emotional sphere development is one of the basic conditions of learning activities for children with auditory sensory deprivation.

An experimental study of children with auditory sensory deprivation was performed for **the purpose** to study their behavior and motivational sphere. Behavior of children with auditory sensory deprivation was the study **object**. Motivational of behavior of hard-of-hearing children of primary school age served as the study **subject**. We put forward the next **tasks** to achieve the study purpose:

- 1. to determine motivation and behavior development of elementary school children with auditory sensory deprivation;
- 2. to define correlation between behavior and motivational sphere, formed by this category children at the beginning of schooling, in the process of special corrective help and in the process of additional corrective intervention, which was carried out with influence on neuropsychological processes.

For the experiment, a respondents' group was selected consisting of 119 people, children of primary school age with auditory sensory deprivation who were hard-of-hearing with deafness of 2-4 degree according to the classification of Л.В. Нейман (Нейман & Богомильский, 2001), 59 girls and 50 boys aged from 7 to 10.3 years. Children are enrolled in the kindergarten - special boarding school № 29 in Kherson (Ukraine) for hearing impaired children and in the school for children with impaired hearing of Mykolaiv city, where classes of elementary education exist. Among respondents, children with deafness of 2 degree constituted 31.9%, ones with 3 degree deafness were 51.3%, and ones with 4 degree deafness were 16.8%. 75.6% of children had preserved intellect, but 24.4% showed somewhat reduced intellect, i.e. they belong to a group of children with developmental delay. Hearing loss of this children group was due to hereditary and acquired causes. Usually, it is bilateral cochlear neuritis in 32.1% of cases, sensor neural hearing loss of 2-3-4 levels at 53.5%, bilateral sensory hearing loss at 20.2%. Only 11.7% of the observed children inherited hearing loss; the children were from families of deaf people. Causes of deafness were not clear in 6.7% of cases, and the rest − 93.3% − acquired hearing loss due to influence of various kinds of drugs.

The lines of thinking and speech development for children with hearing impairment meet at a point later than that of children with good hearing. B.Poзанов (1990), on the base

of this principle, identified the following groups of children, each of which requires a special approach. The first group consists of children with a relatively high level of eye-mindedness. They are not inferior to their peers with good hearing as for development of eye-mindedness, but they are behind in development of conceptual thinking for about three years. These children are highly motivated for learning, they are active and independent at task solving, successfully mastered the curriculum. The second group consists of children with an average level of eye-mindedness, so they are is behind in both types of thinking in comparison with normal hearing peers. During schooling they need constant care of a deaf educator. The third group includes children with a high level of eye-mindedness and a low level of conceptual thinking. In terms of eye-mindedness these children are not inferior to normal hearing peers, but they have difficulty in verbal conversation mastering. That is why they have difficulties in curriculum mastering. Their operations are inadequate, insufficient and inconsistent noticed Соловьев back in 1971.

For the experiment, children with auditory defects were divided into three subgroups according to the strength of their nervous processes (NP): with a strong NP type, a medium NP type and a weak NP type. The study of all components was performed according to nervous processes strength.

Research methodology

The experimental study was conducted using the method of Γμπδσχχ (2009), which included identification of certain traits of behavior and learning (see. Table 1). Observation after children, talk with their teacher gave an opportunity to assess child's psychological features with a rating scale (a five-mark scale of feature intensity). Mark 1 corresponded to a low level of feature indicators development, mark 5 corresponded to the maximum assessment, mark 3 was an intermediate score. These marks created overall assessment and characterized overall level of personality development and strength of nervous processes according to subjective observations. At this experimental stage, a questionnaire survey of primary school children was conducted to determine the level of academic motivation. The questionnaire survey was performed in a writing form, individually.

The schoolchildren were asked to answer the questions and, depending on the answer, the experimenter proposed a mark. If it was necessary, questions were explained additionally

According to the obtained index, the level of academic motivation development was estimated. The maximum score was 30 marks (the higher the score, the higher the level of motivation). For convenience, scores are converted to the levels: 25-30 marks means formed attitude to himself (herself) as to a schoolchild, high educational activity; 20-24 marks means that attitude to himself (herself) as to a schoolchild is almost formed, a sufficient level, 15-19 marks means positive attitude towards school, but school attracts mainly by extracurricular activities, an average level, 10-14 marks means that attitude to himself (herself) as to a schoolchild is not formed, a below average level. Lower than 10 marks means negative attitude to school, low academic motivation.

The respondents of experimental group were divided by the types of neural process strength in accordance with Table 2, where all types were represented almost equally.

A survey of the children according to the strength of nervous processes was conducted to identify the extent of development of the motivation to attend school among primary school children with auditory sensory deprivation.

28.57 % of the children with hearing defects responded positively for the first question, describing their desire to attend school. The question number 3 reflects also to some extent a desire to attend school. The motivation to attend school for the most children is associated with ability to communicate with peers. It is applied for 66.4 % of the children, but there are a small

number of children with hearing impairment -6.72% (8 people) – who do not have friends among their peers and 29 children, which is 24.4%, who socialize with peers not enough. According to the table, social normative motivation to attend school is at the first place for the hard-of-hearing group. Communication motives took the second place, that is communication with friends, and cognitive activities took the third place, although encouragement from adults is not the least of all motives.

Table 1. Behavioral features proposed by Гильбух

Quality	1	2	3	4	5
Attention focusing	Low ability to focus attention. Noise, conversations distract easily from a task		A child works very enthusiastically but easily stop working (starts talking), and then continues to work	A child can focus attention. He/she is not distracted	
Resistance to failures	A child cries after comments, bad evaluation, he/she is passive in class		A child can lose interest and move on to other tasks	A child takes initiative at lessons. He/she prepares carefully for lessons.	
Attitude to difficulties	Minor difficulties are surprising. No attempt to overcome an obstacle, a child just stops working.		A child can be confused and move on to other tasks	hereistence tries	
Behavior	withdraws 6	half-hearted, eyes, is slow in ponse At first, a child is hesitant, and then answers questions calmly		Conversation and answers are as usual	
Stress during task solving	a child had posture, ma objects. He/s	sk fulfillment, s constrained inipulates with she is blushing; s are trembling.	A child shows sometimes stress signs	Behaviousual, v	without
Working efficiency		rms poorly long- refers easy tasks.	A child fulfills easy as well as hard tasks	Work is efficient	
Sociability	likes to be a	efers solitude; alone or with a friend.	A child feels good alone and in company aroup pla		•
Responsibility		es to work with responsibility.	A child fulfills sometimes orders	A child performs responsible work with a desire	
Proneness to conflicts	A child seeks always a compromise		A child seeks sometimes a compromise, but sometimes defends own views	A child defends always their views, despite possibility of conflicts	

Table 2. Types of neural processes in the experimental group

Groups, number	Types of neural process strength			
Groups, number	strong	medium	weak	
Hard-of-hearing children	34.4%	35.3%	30.3%	
(n = 119), %	n = 41	n = 42	n = 36	

The data on the level of the motivation to attend school in the group of hard-of-hearing primary school children is distributed as follows:

- the high level is shown by 23.53 % the entire sample, it is 28 schoolchildren;
- -34 children has the sufficient level, it is 28.57 %;
- the average level is shown by 41 schoolchildren (34.45 %);
- the motivation level is lover then average for 16 children (13.45 %).

The results indicate that the level of motivation formation for the children with sensory deprivation is average. The tabular data shows that 63.02% children from the group of hearing impaired ones have average motivation to attend school, 43 children with hearing defects have the sufficient level of academic motivation, but the motivation is developed due to emotional factors and communicative orientation, i.e. extracurricular activities, that indicates a need for development of children's interest in educational process and teacher's competence.

Along with questioning, we monitored children's behavior to determine the primary strength of nerve processes on the base of subjective data and traits of these groups children. These data are in some way related to the motivational components as for school attendance of primary school children.

Children's behavior was assessed with the Table of Гильбух (2009) to determine behavioral responses and with 5-mark intensity scale for behavior features, where:

- high academic activity equals to 25-30 marksж
- a sufficient level equals to 20-24 marksж
- 15-19 marks means average positive attitude to school, but it is related with extracurricular activitiesж
- 10-14 marks means a lower than average level, attitude to school was not formed4
- lower then 10 marks means negative attitude to schooling.

According to the average data from the Table of Γμπьбух (2009), we can say that the children from this group have focused enough attention and a high level of behavior (3.54 marks), sufficient general working efficiency (3.29 marks) and responsibility (3.2 marks). Children react normally at educational difficulties (3.57 marks), that indicates their readiness for schooling.

Total mark sum on the 5-mark scale was distributed as follows (Table 3).

Table 3. Total mark sum for behavior features of the examined group

Group	Types of NP strength	Mark sum for behavior features (marks)	
II1 - C1	Strong type of NP strength $n = 41$	34.85 ± 0.91	
Hard-of-hearing children n = 119	Medium type of NP strength $n = 42$	30.38 ± 1.38	
	Weak type of NP strength $n = 36$	24.58 ± 1.44	

As a result of academic performance, brain activity changes, it means processes of excitation and inhibition, motivational and behavioral responses.

We studied correlative relationships that emerged during schooling, after a correctional program and after additional correction for children where influence of neurophysiologic processes was carried out.

At the beginning of the experiment, i.e. learning start, children with auditory sensory deprivation and a strong type of nervous processes (Figure 1 A) had a high correlation between the total index (sum) of behavioral responses and indicators of attention (r = 0.71), significant positive correlations between indicators of attention and resistance to failure (r = 0.51), attitude to difficulties (r = 0.51), stress during task solving (r = 0.51), general working efficiency

(r = 0.51); between resistance to failure, attitude to difficulties (r = 0.51) and general working efficiency (r = 0.51); the sum of behavioral responses and specific behavior during task fulfillment (r = 0.51); general working efficiency (r = 0.51), sociability and responsibility (r = 0.51).

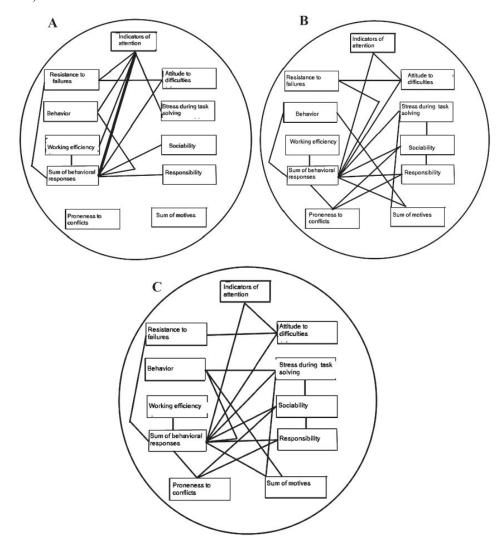


Figure 1. Correlations between the components of behavioral responses and the motivational component for primary school children with auditory sensory defects at the beginning of the experiment

Note: A – Hard-of-hearing children before influence, strong type of NP; B – Hard-of-hearing children before influence, medium type of NP; C – Hard-of-hearing children before influence, weak type of NP. The solid lines show significant positive correlations (r = 0.51-0.71), the solid bold lines show high correlations (r = 0.71-0.99) between indicators respectively. The dotted lines show significant negative correlations (r = 0.51-0.71), the dotted bold lines show high correlations (r = 0.71-0.99) between indicators respectively.

The schoolchildren with the medium NP type (Figure 1 B) revealed correlation between attitude to difficulties and indicators of attention (r = 0.65); the sum of behavioral responses and indicators of attention (r = 0.58), resistance to failures (r = 0.63), behavior (r = 0.51), stress during

task solving (r = 0.66), general working efficiency (r = 0.51); between sociability and response (r = 0.53), proneness to conflicts (r = 0.58), the sum of behavioral responses (r = 0.65).

The schoolchildren with the weak NP type (Figure 1 C) have, before schooling start, positive correlations between the sum of behavioral responses (r=0.55) and attitude to difficulties (r=0.66), resistance to failures (r=0.61), stress during task solving (r=0.66); between sociability (r=0.65), responses at lessons (r=0.56), proneness to conflicts and the sum of behavioral responses (r=0.55). A significant positive correlation exists between the sum of motivational components and the summary estimation of behavioral responses (r=0.57).

After training with the correction program, schoolchildren from the experimental group were surveyed repeatedly concerning links between behavioral components and motivation.

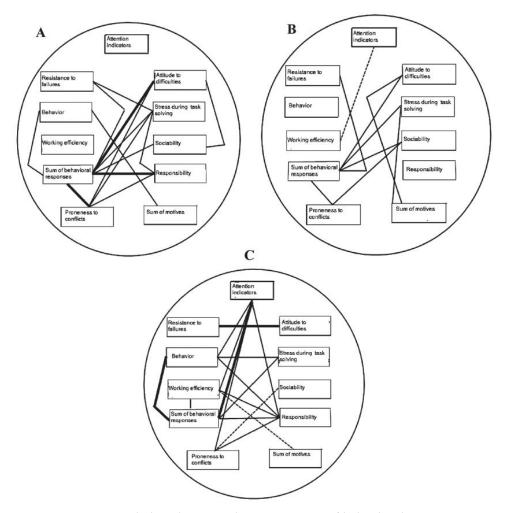


Figure 2. Correlations between the components of behavioral responses and the motivational component for primary school children with auditory sensory defects after corrective training

Note: A - Hard-of-hearing children, strong type of NP; B - Hard-of-hearing children, medium type of NP; C - Hard-of-hearing children, weak type of NP. The solid lines show significant positive correlations (r=0.51-0.71), the solid bold lines show high correlations (r=0.71-0.99) between indicators respectively. The dotted lines show significant negative correlations (r=0.51-0.71), the dotted bold lines show high correlations (r=0.71-0.99) between indicators respectively.

In the group of hard-of-hearing children with the strong NP after training (Figure 2A), new high positive correlations were formed between the sum of behavior components, the stress component (r = 0.71), answering for questions (r = 0.7), proneness to conflicts (r = 0.72) and attitude to difficulties (r = 0.79). Positive significant correlations were observed between resistance to failures and attitude to difficulties (r = 0.51), general working efficiency and indicators of attention (r = 0.51); between the sum of behavior components and attitude to difficulties (r = 0.54), behavior (r = 0.51), general working efficiency (r = 0.6); between the sum of behavior responses and proneness to conflict (r = 0.51).

In the group of hearing impaired children with medium strength NP type (Figure 2 B) after corrective training, formation of significant positive correlations was observed between indicators of behavioral components , namely between the sum of behavioral responses and resistance to failure (r=0.51), attitude to difficulties (r=0.52), stress during task solving (r=0.51), sociability (r=0.51) and proneness to conflicts (r=0.54). At the same time, formation of significant inverse correlations occurred between general working efficiency and indicators of attention (r=-0.69), that indicates significant strain of neural processes during thinking activities at this category children.

A large number of significant positive correlations was observed in the group of children with the weak NP type (Figure 2 C). A high correlation was found out between the sum of behavior components (r = 0.85), between attitude to difficulties and resistance to failures (r = 0.87). Significant positive correlations exist between the sum of behavior responses, proneness to conflicts (r = 0.51), answering for questions (r = 0.51), general working efficiency (r = 0.55), behavior (r = 0.56); between stress during task solving and behavior (r = 0.55), answering (r = 0.51) and the sum of behavioral responses (r = 0.7); between proneness to conflicts and the sum of behavior response components (r = 0.59).

As the results show, a number of correlations between the behavior components and motivation increases after corrective training, this is a positive result for learning activities.

After additional correction, which was aimed at physiological functions, a psychomotor system of children suffering because of hearing impairment as a primary defect, a study of the motivation and behavioral components was conducted again. (Figure 3).

In the group of hard-of-hearing children with the strong NP (Figure 3 A) after additional correction, significant positive correlation forming was observed between indicators of attention and behavior (r = 0.63), general working efficiency (r = 0.51), sociability (r = 0.57) and the sum of behavior components (r = 0.66); between attitude to difficulties and resistance to failures (r = 0.52); sociability (r = 0.51), the sum of the behavioral response components (r = 0.58); between behavior, sociability (r = 0.71) and general working efficiency (r = 0.55); the sum of behavioral responses (r = 0.68) and a state of motivation formation (r = 0.51).

The schoolchildren with the medium NP type (Figure 3 B) showed many new significant positive correlative relationships, including high correlations found out between indicators of attention and resistance to failure (r=0.84), behavior (r=0.74), the sum of behavior components (r=0.71). Positive significant correlations were found out between resistance to failures and attitude to difficulties (r=0.52), behavior (r=0.61), stress during task solving (r=0.54); between behavior, general working efficiency (r=0.59) and the sum of behavioral components (r=0.79); between sociability (r=0.6) and answering (r=0.7).

Quite a number of new correlations was observed after additional correction in the group of hearing impaired children with the weak NP type. High correlations were observed between the sum of behavioral components and indicators of attention (r=0.85), between attitude to difficulties and resistance to failures (r=0.87). Significant correlations emerged between indicators of attention and behavior (r=0.55), general working efficiency (r=0.55), answering for questions (r=0.51); between behavior and stress during task solving (r=0.65), general working efficiency and answering for questions (r=0.51); between answering and proneness to conflicts (r=0.5) and the sum of behavioral components (r=0.59).

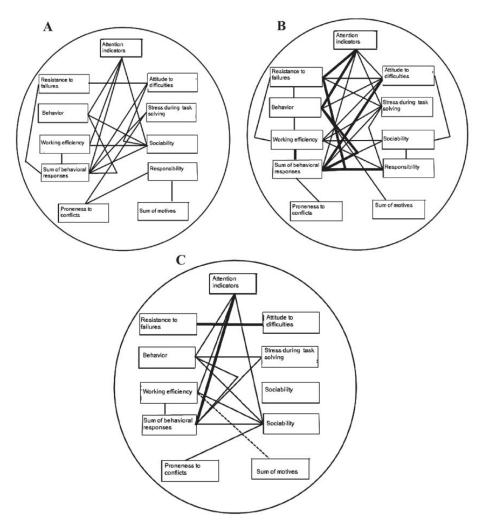


Figure 3. Correlations between the components of behavioral responses and the motivational component for primary school children with auditory sensory defects after additional correction

Note: A - Hard-of-hearing children, strong type of NP; B - Hard-of-hearing children, medium type of NP; C - Hard-of-hearing children, weak type of NP. The solid lines show significant positive correlations (r=0.51-0.71), the solid bold lines show high correlations (r=0.71-0.99) between indicators respectively. The dotted lines show significant negative correlations (r=0.51-0.71), the dotted bold lines show high correlations (r=0.71-0.99) between indicators respectively.

These findings suggest a positive impact of learning activities on the levels of behavior and motivational component development that is an essential lever in educational activities. Formation of correlations during corrective training and additional correction indicates additional activation of brain structures that impact on the behavior and motivational-emotional sphere, which play an important role in development of cognitive processes and higher mental functions of children with sensory disabilities.

Conclusions

- 1. The results indicate that the level of motivation formation at children with sensory defects is average. That is, 63.02% children from the group of hearing impaired ones have average motivation to attend school, 43 children with hearing defects have the sufficient level of academic motivation, but the motivation is developed due to emotional factors and communicative orientation, i.e. extracurricular activities, that indicates a need for development of children's interest in educational process and teacher's competence
- 2. We determined the behavioral components with the Table of Гильбух (2009) and noted that children from this group have focused enough attention and a high level of behavior (3.54 marks), sufficient total working efficiency (3.29 marks) and responsibility (3.2 marks). Children react normally at educational difficulties (3.57 marks), that indicates their readiness for schooling.
- 3. Correlations between the components of behavioral responses and formation of the motivation to attend school were determined during corrective training and additional correction, which showed that the learning activity contributes in formation of sufficiently high positive correlations between studied indicators, and additional correction, which influenced on children's neurophysiologic structures and psychomotor system, stimulated spreading of correlations and formation of new ones. A large number of correlations emerged at children with auditory defect and the weak type of nervous processes that indicates a need for additional correction for all groups of children, especially for children with the weak type. Additional correction activate brain structures, has positive effect on behavior, motivational and emotional sphere that is one of the basic conditions of learning activities for children with auditory sensory deprivation.

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Summary

Learning activities during early school years are closely related to arbitrary behavior, formation of which begins in preschool years. Such behavior allows a child to control own behavior, to have an adequate diligence level, continuous undivided attention during tasks, to bring task to logical conclusion, control over own actions.

Children with hearing impairments bring cognitive motivation to the forefront in the motivation sphere, but children with intellectual development problems prefer play activities, play motivation dominates for them.

Motivational readiness is aimed at determination of child's readiness for schooling, acceptance of new knowledge, development of eye-mindedness.

Behavior of children with hearing impairment is stipulated by child's self-esteem of the defects on the one hand, and the desire and actions aimed at reducing of physical and psychological distance between them and children with normal hearing.

An experimental study of children with auditory sensory deprivation was performed for the purpose to study their behavior and motivational sphere.

We put forward the next tasks to achieve the study purpose:

- 1. to determine motivation and behavior development of elementary school children with auditory sensory deprivation.
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For the experiment, a respondents' group was selected consisting of 119 people, children of primary school age with auditory sensory deprivation.

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