

# SENSORY INTEGRATION, DESCRIPTION FEATURES

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DOI: 10.54503/2579-2903-2022.1-105

## Abstract

The article describes the problem of "sensory integration", the need to study it, the peculiarities of its manifestation. Sensory integration is the regulation of emotions, which must then be applied in some way. Emotions give us information about the physical state of the world around us and the body. Every second, sensory information reaches our brain through five senses, the corresponding receptors. The vestibular system's work is very important, too; it helps a person perceive his own body in space. By integration we mean the organization of something. To integrate means to assemble or organize different parts into one whole. When something is integrated, its various parts work in an organized way as a whole. The central nervous system and brain is designed to be able to organize a myriad of sensory information into a complete system [1].

Sensations are the flow of electrical impulses. Chemical reactions that take place in the nervous system are also involved in generating impulses. In order for impulses to play a role in the system, they must be integrated. Integration allows you to perceive emotions. We perceive our bodies and other people's objects due to the fact that the brain integrates sensory signals into semantic forms and relationships.

Attempts are being made to draw the attention of professionals to a problem that is often encountered today, but is not evaluated or corrected accordingly in either children or adults. The problem is especially acute among schoolchildren, as our observations have shown that this problem may be at the root of negative educational motivation, failure to complete the curriculum, and bad behavior.

In other words, the child has an age-appropriate intellect, educated parents, but exhibits bad behavior or fails to learn school subjects.

The article also discusses the case of a 5-year-old child. In our opinion, the boy has a problem of sensory integration. The symptoms of sensory integration dysfunction are described.

The article also suggests different methods and means that are aimed at regulating the functions of individual senses by frequently directing stimuli to those senses. We have carried out psychological intervention to work and activate all the senses as much as possible. Because we think that a child has an emotional hunger that is why he exhibits strange behavior from the outside. We used color-light therapy, music therapy, as well as Isotherapy and etc, which are described in detail in the article.

**Keywords and phrases:** Sensory integration, autism, autism spectrum, sensitivity, analyzer.

## ԶԳԱՅԱԿԱՆ ԻՆՏԵԳՐԱՑԻԱ ԴՐՍԵՎՈՐՄԱՆ ԱՌԱՆՁՆԱՀԱՏԿՈՒԹՅՈՒՆՆԵՐԸ

### ՄԱՐԻԱՆԱ ԱՎԵՏԻՍՅԱՆ

ՀՀ Գիտությունների ազգային ակադեմիայի  
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### Համառոտագիր

Հոդվածում նկարագրված է «զգայական ինտեգրման» խնդիրը, դրա ուսումնասիրման անհրաժեշտությունը, դրսևորման առանձնահատկությունները: Զգայական ինտեգրացիան հույզերի կարգավորումն է, որն այնուհետ պետք է ինչ-որ կերպ արտահայտվի: Զգացմունքները, զգայարանները տեղեկատվություն են տալիս մեզ շրջապատող աշխարհի և մարմնի ֆիզիկական վիճակի մասին: Ամեն վայրկյան զգայական տեղեկատվությունը մեր ուղեղ է հասնում հինգ զգայարանների՝ համապատասխան ընկալիչների միջոցով: Շատ կարևոր է նաև հենաշարժողական համակարգի աշխատանքը. այն օգնում է մարդուն ընկալել սեփական մարմինը տարածության մեջ: Ինտեգրում ասելով հասկանում ենք ինչ-որ բանի կազմակերպում: Ինտեգրել՝ նշանակում է տարբեր մասեր հավաքել կամ կազմակերպել մեկ ամբողջության մեջ: Երբ ինչ-որ բան ինտեգրված է, դրա տարբեր մասերը գործում են կազմակերպված ձևով՝ որպես ամբողջություն: Կենտրոնական նյարդային համակարգը և ուղեղը նախագծված են այնպես, որ կարողանան կազմակերպել անհամար զգայական տեղեկատվություն ամբողջական համակարգի մեջ [1]:

Զգայությունները էլեկտրական իմպուլսների հոսքն են: Նյարդային համակարգում տեղի ունեցող քիմիական ռեակցիաները նույնպես մասնակցում են իմպուլսների առաջացմանը: Ազդակները մարդու վարքում դեր խաղալու համար պետք է ինտեգրված լինեն: Ինտեգրումը թույլ է տալիս ընկալել զգացմունքները: Մենք ընկալում ենք մեր մարմինները և այլ մարդկանց, առարկաները, քանի որ ուղեղը ինտեգրում է զգայական ազդանշանները իմաստային ձևերի և հարաբերությունների մեջ:

Փորձ է արվում մասնագետների ուշադրությունը հրավիրել մի խնդրի վրա, որը հաճախ հանդիպում է այսօր, բայց համապատասխանաբար չի գնահատվում կամ շտկվում ո՛չ երեխաների, ո՛չ մեծահասակների մոտ: Խնդիրը հատկապես սուր է դպրոցականների մոտ, քանի որ մեր

դիտարկումները ցույց են տվել, որ այս խնդիրը կարող է լինել կրթական բացասական մոտիվացիայի, ուսումնական պլանը չկատարելու և վատ վարքագծի հիմքում:

Այսինքն՝ երեխան ունի տարիքին համապատասխան ինտելեկտ, կրթված ծնողներ, բայց վատ վարքագիծ է դրսևորում կամ դպրոցական առարկաները չի սովորում:

Հոդվածում խոսվում է նաև 5-ամյա երեխայի դեպքի մասին: Մեր կարծիքով՝ տղան զգայական ինտեգրման խնդիր ունի: Նկարագրված են զգայական ինտեգրման դիսֆունկցիայի ախտանիշները:

Հոդվածում առաջարկվում են նաև տարբեր մեթոդներ և միջոցներ, որոնք ուղղված են առանձին զգայարանների գործընթացների կարգավորմանը՝ գրգռիչների հաճախակի ուղղմամբ դեպի այդ զգայարանները: Մեր կողմից հոգեբանական միջամտություններ են իրականացվել զգայարանները կարգավորելու և հնարավորինս ակտիվացնելու ուղղությամբ: Քանի որ մենք կարծում ենք, որ երեխան զգացմունքային քաղց ունի, այդ իսկ պատճառով նա դրսից տարօրինակ վարք է դրսևորում: Մենք օգտագործել ենք գունային-լուսային թերապիա, երաժշտական թերապիա, ինչպես նաև իզոթերապիա և այլն, որոնք մանրամասն նկարագրված են հոդվածում:

**Քանալի բառեր և բառակապակցություններ.** զգայական ինտեգրում, աուտիզմ, աուտիստիկ սպեկտոր, զգայություն, անալիզատոր:

# СЕНСОРНАЯ ИНТЕГРАЦИЯ, ОПИСАНИЕ, ОСОБЕННОСТИ

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## **Аннотация**

В статье описывается проблема «сенсорной интеграции», необходимость ее изучения, особенности ее проявления. Сенсорная интеграция — это регуляция эмоций, которую затем необходимо каким-то образом применить. Эмоции дают нам информацию о физическом состоянии окружающего мира и тела. Каждую секунду сенсорная информация поступает в наш мозг через пять органов чувств, соответствующих рецепторам. Работа вестибулярного аппарата тоже очень важна, она помогает человеку воспринимать собственное тело в пространстве. Под интеграцией мы подразумеваем организацию чего-либо. Интегрировать означает собирать или организовывать различные части в одно целое. Когда что-то интегрировано, его различные части работают организованно как единое целое. Центральная нервная система и мозг устроены так, чтобы иметь возможность организовать множество сенсорной информации в целостную систему [1].

Ощущения — это поток электрических импульсов. Химические реакции, происходящие в нервной системе, также участвуют в генерации импульсов. Чтобы импульсы играли роль в системе, они должны быть интегрированы. Интеграция позволяет воспринимать эмоции. Мы воспринимаем свое тело и чужие предметы благодаря тому, что мозг интегрирует сенсорные сигналы в смысловые формы и отношения.

Предпринимаются попытки привлечь внимание специалистов к проблеме, которая часто встречается сегодня, но не оценивается и не корректируется соответствующим образом ни у детей, ни у взрослых. Особенно остро проблема стоит у школьников, так как наши наблюдения показали, что эта проблема может лежать в основе негативной учебной мотивации, невыполнения учебной программы, плохого поведения.

Другими словами, ребенок имеет соответствующий возрасту интеллект, образованных родителей, но плохо себя ведет или не усваивает школьные предметы.

В статье также рассматривается случай ребенка 5 лет. На наш взгляд, у мальчика проблемы с сенсорной интеграцией. Описаны симптомы нарушения сенсорной интеграции.

В статье также предлагаются различные методы и средства, направленные на регуляцию функций отдельных органов чувств путем частого направления

раздражителей на эти органы чувств. Мы провели психологическое вмешательство, чтобы максимально активировать все органы чувств, потому что полагаем, что у ребенка эмоциональный голод, поэтому он и проявляет странное поведение со стороны. Использовали цвето-терапию, музыкотерапию, а также изотерапию и другие, которые подробно описаны в статье.

**Ключевые слова и словосочетания:** сенсорная интеграция, аутизм, спектр аутизма, чувствительность, анализатор.

## Introduction

The issue of "sensory integration" was first addressed by the American ergo therapist Jean Ayres in the 1950s. His first book, "Emotional Integration and Child", published in the 1970s, explains the problem in detail. Later, his students continued his work [1].

Sensory integration is the regulation of emotions, which must then be applied in some way. Emotions give us information about the physical state of the world around us and the body. Every second, sensory information reaches our brain through five senses, the corresponding receptors. The vestibular system's work is very important, too; it helps a person perceive his own body in space.

Thus, sensory integration [4]:

- It is an unconscious process that takes place in the head.
- Organizes the information received through the senses (taste, smell, sound, hearing, sight, touch, human position in space and movements).
- Gives strong senses by processing information, clearing what not to focus on (for example, listening to the teacher, not paying attention to outside noise).
- Helps to act meaningfully and to respond to the situation in which he /she/ is (adaptive response).
- Forms the basis for theoretical teaching and social behavior.

By integration we mean the organization of something. To integrate means to assemble or organize different parts into one whole. When something is integrated, its various parts work in an organized way as a whole. The central nervous system and brain is designed to be able to organize a myriad of sensory information into a complete system [1].

Sensations are the flow of electrical impulses. Chemical reactions that take place in the nervous system are also involved in generating impulses. In order for impulses to play a role in the system, they must be integrated. Integration allows you to perceive emotions. We perceive our bodies and other people's objects due to the fact that the brain integrates sensory signals into semantic forms and relationships. When we look at an orange, our brain integrates the sensation we get from the eye and we perceive the color and the form of the fruit. When we touch the orange, the sensation we get from the fingers and hands is integrated, and because of this we realize that the outside of the orange is covered with a peel, which is hard, and the inside is watery. The integration of the senses that result from the scent allows us to feel the citrus scent. When the brain

weakly integrates the senses, it affects many different areas of a person's life, it takes a lot of effort to overcome difficulties, which also increase, and the result of the effort becomes less noticeable.

Experts who have studied the problem of sensory integration in the United States have estimated that 5-15% of schoolchildren behave badly and drop out of school because of the problem of sensory integration. Some children with poorly developed emotional integration did not differ from their peers, and in some cases even had high intellectual data. Unfortunately, there is no way to measure a brain disorder yet. Violation of sensory integration is not the same as other health problems. It is very difficult to notice. It is necessary to observe how the child plays, moves, and to evaluate the work of the brain based on them. Only a well-trained professional can notice this problem. If the problem is diagnosed as early as possible and appropriate work is done, then children, especially being in the process of development, may be able to overcome this problem. And because this is not done, most parents face problems at school, which manifests itself in falling behind in the curriculum, irregular behavior, lack of motivation towards school, etc. [1].

Even at school age, dealing with the problem is considered too late, so the work should be done from a very early age. Here are some signs to help parents understand if their child has this problem.

Babies with sensory integration during infancy sit, stand, and turn late. Later, they find it difficult to tie the knots and ride a bicycle. It can be manifested by frequent falls or by constantly hitting any part of the body due to poor motor or muscle function. The problem here is not with the muscle or the nerve but with the function of the brain. That is, the information received can not be completed by the brain. In primary school, children with sensory integration disorders have poorly developed play activities. The child is not able to integrate the information that comes from the eyes, ears, hands or body, so he is not able to respond appropriately to what he sees and hears. He misses details or does not understand other people's actions. He is not attracted to games, unlike his peers, and some toys that involve manipulation can be problematic for him. Such children often get injured and break things. Impaired sensory integration can make even the simplest of actions difficult. And one of the most common manifestations of this is a speech disorder. They do not have a hearing problem but usually do not listen to the interlocutor, and the words seem to be lost somewhere. By not receiving clear information from the eyes, hands, and ears, the child performs various actions worse than one might expect, for example, cutting poorly with scissors [1 p. 12].

### **Methodological bases**

Before presenting case from our research, let's talk about why it is relevant to address this phenomenon, especially now. In the RA, in the educational system, there was a gradual transition to inclusive education. Most of the schools became "inclusive", for which the teachers, the society and the specialists were not ready. The

problem is exacerbated when even professionals are unable to make proper diagnoses, raise public awareness, or train teachers. The problem still exists today. Let's talk about each of them in more detail.

The problem with specialists is that the field of psychology, unfortunately, is young, that is, there are still many practical questions, the answer to which has not yet been unequivocally resolved, it concerns the problems of people who meet the accepted norms of age and psychological characteristics. And now it is not difficult to imagine how many problems there will be for children with special needs, why not for such adults. In other words, the issue of effective methodology of psychological work with these people is not sufficiently solved in science. It should be noted that, of course, there are methods, which we will also refer to, but here, too, the problem is in the transfer of that knowledge. In other words, these methods have been developed in the United States, in a number of European countries; there is a need for specialists to be trained, and then to train the relevant specialists, which is partially implemented at a very slow pace.

In addition to corrective and rehabilitation methods, dealing with the individual stories of inclusive school students there, we noted that diagnostic centers often provide inadequate diagnoses, such as autism, which has long been out of the international arena. It has been replaced by the name of Autistic Spectrum. Experts have noted that even the behavior of children with a diagnosis of autism have other characteristics and significantly different from each other. Here we also must state that the issue of the classification of child mental problems is problematic all over the world, and any deviation from the norm fits into the autistic spectrum. If the problem is not clearly diagnosed, then there are difficulties in applying the appropriate correction methods. Here is our observation that from a professional point of view it is wrong to include children with all the incomprehensible symptoms in the autistic spectrum or, as they do in Armenia, to label them autistic, thus leaving the child and his family in uncertainty. Our observations have shown that for years, people, having applied to many specialist centers, have not been able to receive proper professional, corrective therapy. Therefore, this article is dedicated to the partial solution of this problem, which is dedicated to sensory integration, a problem that has not yet found a place in the international classification. This problem is very common today in both children and adults., According to the DSM International Classification [5], sensory integration considered one of the characteristics of the autistic spectrum. That is to say, a child is believed to have autism spectrum syndrome if it meets the three main characteristics.

1. If there is a speech disorder
2. There is a dysfunction of sensory integration
3. There is stereotypical behavior.

#### Case description and Psychological Intervention

In this section, we want to present a case of emotional integration, as well as suggest psychological work for children with such problems. Karen is 4 years old, but he still does not speak. His parents turned to me to solve possible psychological

problems related to speech. Before that, the parents had been to different specialists, but no one could say why the child did not speak. While working with the child, we noticed that the child picked stones from the sand, chewed them, licked the iron rod, ate the sand while working with beans the grains. While working with the child, we noticed that the child climbed very high places very easily, not always. That is, he lifted his bodyweight very easily. Still, when walking, we noticed an asymmetry of foot and hand movements. He often closed his eyes and opened them. Combining all this, we can see that the child has a dysfunction of sensory integration, that is, the fact that the child chews dirt, sand and stone, is related to the sense of taste.

It should be noted that the mother complained about the food, that the child did not eat soft, slimy food, he refused. Often the strong closing of the eyes is connected with the visual sensation, and the problem with the muscular, big or small motor skills is associated with the corresponding receptors. At first, the child was very disgusted with touching the sand, then we taught him, which is related to the sensation of touch. I think the child also has a problem with the sense of hearing, because of which he cannot understand the words correctly in order to learn the word. After running, he often could not keep his balance, which is a problem with the vestibular system.

In fact, the problem here is not in the senses but in the brain, which must analyze the information received from the senses and integrate it, which is broken in the child. Examining children with different problems, we noticed that this problem, to varying degrees, is present in many children, which does not allow them to adequately perceive, analyze information from the outside world, and respond appropriately. Trying to find the reasons for the event, we noticed that most of them spend a lot of time watching computer games, videos, TV shows. Thus, it can be concluded that the problem is the sedentary life of children, mainly the long viewing of different tablets, which affects both physiology and psyche. It is also very interesting to work on the correction, which is so brilliant, at the same time very simple.

We have carried out psychological intervention to work and activate all the senses as much as possible. Because we think that a child has an emotional hunger that is why he exhibits strange behavior from the outside, such as chewing on a stone. In fact, these children have a strong need to feel intense emotions. They have two extremes. They are sometimes very sensitive to external stimuli and sometimes, on the contrary, have no sensitivity. It often confuses adults. They may feel a slight pain from the touch of a light hand, but after a while, they may not feel pain even from a decisive blow. This is again explained by the fact that the brain does not adequately analyze the information received from the muscle. Since the problem is in signal analysis, we think it would be proper to direct strong signals from different analyzers: light, sound, taste, smell, touch, and as much as possible. As well as work with proprioceptors, that is, to affect the muscle, often giving weight to the child and developing the vestibular system. Let's present the work in these directions in more detail.

We used the following method to stimulate the signals received from the muscles. We suggested that the child carry weights both during our work and during



the day. The goal is for the baby to feel its muscle and gradually gain weight to get a more vital impulse to the brain. Nursing also works effectively here. We take a large piece of cloth and wrap it so that the person can hardly get out of it. Note that the diaper actually gave that feeling; it develops the muscular sensation, helps the person to feel his body. He can also generate tremendous or small motor skills. For this, you need physically active games - running, climbing stairs, jumping. And for the development of small motor skills, you need to actively work with your hands, for which there are games and toys.

To develop tactility, you need to work with the child on materials like sand, clay, dough, hydrogel, and various granules.

For hearing, music therapy should be performed together with efforts of developing the vascular system. This is an organ system in the ear that is responsible for perceiving a person's place in space. That is, if it is poorly developed, the child does not perceive his body in space. If the child does not perceive and feel his body, he cannot perceive himself or another person's boundaries; therefore, he cannot keep the border between other people and communicate with them. This also means that he can hit the other person and not realize that he has hurt him. In other words, regular human-to-human communication is conditioned by the healthy operation of this system. And to develop this system, the child needs a lot of swinging. The baby crib, the swing, best contribute to the development of the vestibular system, which in turn affects the development of attention and memory.

For a sense of taste, it is recommended that the child often chew solid foods, cookies and often use sour foods.

For the smell, we used materials in the games that contributed to both the development of the corresponding centers of touch and smell. For example, playing with coffee beans and plastering with ground coffee, playing with cloves, we sometimes used fragrant plants such as cinnamon, mint, and nutmeg.

We used color-light therapy, as well as Isotherapy, to develop our sense of sight. It is also essential to develop self-care skills for the child. Work has also been done in this direction [2].

Feldenkrais method. Feldenkrais is one of the most famous scientists in body-oriented therapy. His approach works very well with children. It seems to be a bridge between the body, or rather the muscle and the brain. Working with this method leads to the fact that the change in the stereotypical action of the muscle in the brain leads to new connections, new activation, which in turn leads to positive changes in human behavior and psyche. We have seen positive results in correcting sensory integration with this method [1 p. 45].

## **Conclusion**

Thus, the aim of the article was to raise the issue of "sensory integration", to draw the attention of specialists to the diagnosis and appropriate solutions to this phenomenon, as we often encounter this problem in both children and adults during their professional activities. And we think that psychological work with children

should include active physical games, but we should approach it literally, consciously, understanding exactly what emotional-cognitive result we expect. Sedentary methods that ostensibly develop attention or memory are not very effective, and the child should do as much physical activity as possible, sit on a swing, play in the sand to grow up healthy both physically and mentally.

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