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# METHODOLOGICAL

for holding sensory cinema  
screenings for children with  
developmental disabilities

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Zvezdana Novina Repovečki

# FRAMEWORK

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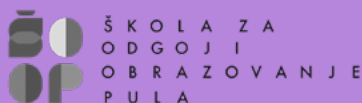
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# **METHODOLOGICAL FRAMEWORK FOR HOLDING SENSORY CINEMA SCREENINGS FOR CHILDREN WITH DEVELOPMENTAL DISABILITIES**

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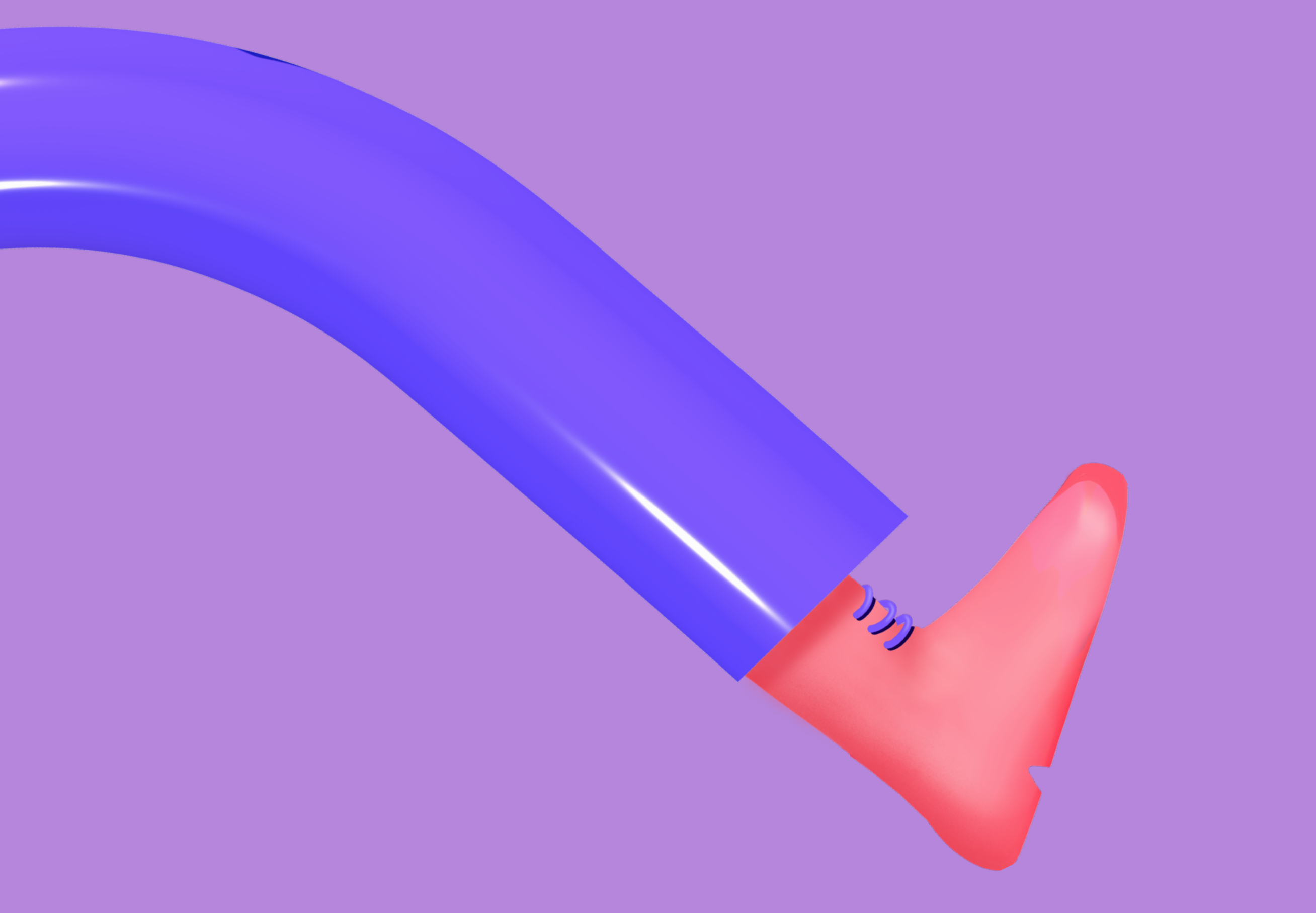
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# 1. INTRODUCTION

In accordance with the National Strategy for the Equalization of Opportunities for Persons with Disabilities from 2017 to 2020, in the area of activity “Participation in Cultural Life” the number one measure is: “Ensure greater accessibility to persons with disabilities of all contents related to the cultural life of the community intended for all other citizens”. Likewise, according to Article 27 of the Universal Declaration of Human Rights, “everyone has the right to participate in the cultural life of the community, to enjoy the arts and to participate in scientific development and its benefits”. However, this guaranteed right in Croatia has not yet fully taken root in reality.

In the last two decades, we have witnessed a rapid increase in children with developmental disabilities, especially children with deviations in sensory modalities. During differential diagnosis, sensory integration disorder is closely related to autism spectrum disorder and hyperactive disorder, so that in addition to certain specificities, there are also overlaps when receiving, processing and interpreting auditory and visual stimuli.

According to data from the WHO (World Health Organization), the prevalence of autism spectrum disorder increased from 1 to 150 children in 2000, and according to the latest report, it increased from 1 to 36 children, with growth predicted in the coming years. At the root of the mentioned disorder are difficulties with sensory modulation (along with other difficulties in communication and social interactions) that can significantly affect the growth and development and competences of the child.

According to the UN Convention on the Rights of Persons with Disabilities, which was ratified by the Republic of Croatia in 2007, reasonable accommodation means necessary and appropriate adaptations and adjustments that do not represent a disproportionate or inappropriate burden. The aim is to ensure equal enjoyment or use of all human rights and fundamental freedoms on an equal basis with others especially for children with developmental disabilities.

In the UN Convention on the Rights of Persons with Disabilities, discrimination against children with disabilities means any distinction, exclusion or limitation based on disability that has the purpose or effect of preventing or nullifying the recognition, enjoyment or exercise of all human rights and fundamental freedoms in the political, economic, social, cultural, social and any other area, on an equal basis with others. It refers to all forms of discrimination, including denial of reasonable accommodation.

## 2. SCIENTIFIC BASIS OF SENSORY PROJECTIONS

The use of media begins at an early age, and audio-visual content is now part of the development paradigm. The auditory and visual systems are the main determinants for the shaping of our world, and it is through them that the media achieve their greatest influence. From a very early age, children react to moving images through the media thanks to the orientation response, that is, the visual or auditory reaction that occurs instinctively to a new or sudden stimulus to which the child is exposed.

The orientation response is an instinctive and unconscious reaction of the organism, and it is stimulated by advertisements and action scenes so that the brain remains in an excited state and focused on the content. Four to six seconds after the stimulus, the body calms down again, that is, the viewer's attention decreases. To avoid this, orienting responses are encouraged using rapid editing, camera angle changes, zooming, and sudden audio-visual stimuli (Sigman 2010). A series of experiments was conducted to determine the critical eye blink frequency at which a static image becomes real-time motion.

The conclusion is that the critical flicker frequency of the human eye is around 60 frames per second (Brčić 2018). However, through a century of using 24 frames per second, the human eye has become accustomed to the illusion that all those imperfections on film are a realistic representation of reality. Bright colours are inevitable in animation, and combined with quick frame changes and relatable characters, they serve to keep the viewer's attention. Bright colours, sudden changes of frames and characters, and sudden sounds are some of the specifics that can create difficulties during sensory processing in children with autism spectrum disorders, given their difficulties in sensory modulation.

The availability of media, which have long lived in deep coexistence and symbiosis with each individual, indicates the importance of looking at the impact of audio-visual stimulation on children's development. Atypical visual processing has been widely documented in children with developmental



disabilities, as evidenced by changes in basic perceptual functions, including contrast sensitivity, boundary detection, visual field size, and colour perception (Thye 2018). The first scientific research of sensory projections in the Republic of Croatia shows that these projections can significantly increase the communication competence of children with developmental disabilities. It provides them with the possibility of spontaneous interaction with peers of regular development and thus promotes the integration of children into the local community in a spontaneous and unobtrusive way (Brlak and Malenica 2019). Evaluating all of the above, sensory projections bring significant changes to the very meaning of cinema projections with an emphasis on stimulating the maximum potential and capacity of the individual, developmental stimulation and putting children's well-being first.

## 2.1. What is sensory integration?

The term sensory integration implies a kind of organization, that is, the assembly of different parts into a whole. According to author Anna Jean Ayers, sensory integration is defined as the ability to receive, organize and process sensory information from the environment for purposeful use in everyday life.

All stimuli that occur in the environment, to which a person is exposed, are received through the seven sensory systems — vision, hearing, smell, taste, touch and the vestibular system — function on an unconscious level and provide information about changes in position and movement in space. The sensory system is involved in the development of balance, balance reactions, postural control, muscle tone, orientation in space and the proprioceptive system, i.e. the internal sense that provides information about the position of body parts without visual guidance.

## 2.2. How does sensory integration develop?

The development of sensory integration takes place through four levels:

**The first level** — implies the successful integration of the so-called internal sensations: tactile, vestibular and proprioceptive. Tactile information helps the child with sucking and swallowing, and later with swallowing and chewing food. A child who has difficulty processing tactile stimuli may have difficulty feeding due to the consistency of the food. In addition, tactile stimuli are important in creating the first emotional attachment. According to the American psychologist Harry Harlow, emotional attachment is primarily of a tactile character and is actually the first source of security in the mother-child relationship (Harlow 1958). The consequence of poor tactile processing and the resulting security at a later age can result in a lack of emotional security and overreaction in simple life situations.

The integration of vestibular and proprioceptive stimuli enables stabilization of the eyes during head movements and control over eye movements. Without it, the child would not be able to focus visual attention on a specific object or make tracking movements. Good organization and integration of vestibular and proprioceptive stimuli enables the child to develop postural reactions as the basis for standing and walking, maintaining balance and proper muscle tone.

**The second level** — is reached when the three basic senses (tactile, vestibular and proprioceptive) are integrated into body perception, coordination of two foreign bodies, motor planning, longer attention span, level of arousal, activation and emotional stability. A well-organized perception of the body allows the child to feel and understand what the body is doing, without focusing visually on a particular part of the body. We need proper information about the relationship between the left and right sides of the body to coordinate both arms and legs.

The second level creates the perceptual-motor foundations.

**The third level** — begins with the processing of auditory and visual sensations. The sense of hearing and sight was also developed at previous levels, but then the organization of the central nervous system depended on

the basic senses (tactile, vestibular and proprioceptive). In order to develop visual perception, a lot of tactile interaction with objects is needed, such as holding and moving objects to obtain information from muscles and joints, and interaction with the force of gravity. In doing so, auditory and vestibular stimuli are combined with body perception and related functions to enable the child to speak and understand language. Many children with sensory integration difficulties cannot feel exactly where their tongue is or how their lips are touching, and they have poor articulation.

The third level refers to perceptual-motor skills.

**The fourth level** — at the fourth level, information from the vestibular and auditory systems is integrated into speech and language skills, and information from the vestibular, proprioceptive, tactile, and visual systems is integrated into hand-eye coordination skills, visual perception, and meaningful, goal-oriented activities. The fourth level is important for academic skills.

The final product of appropriate sensory integration is the merging of all sensory processes into a single unit of brain functioning. Concentration skills, organization, self-esteem, academic skills, abstract thinking and the organization of every part of the body and brain are the final processes of all sensory processes that take place in the described four levels.

## **2.3. Orderly sensory integration — sensory integration disorder**

By the term orderly sensory integration, we mean the presence of appropriate adaptive responses and reactions to events in the environment, which represents the ability of the central nervous system to successfully organize the sensory information it receives from the environment. In order for sensory information to be integrated, it is necessary that the person is actively involved in the activities.

It is important to emphasize that sensory integration is an ability that every child is born with, but in order to develop it, it is necessary for him to be exposed to things and stimuli from his environment in order to gain different

experiences and thereby adapt his body and brain to different challenges during childhood. Therefore, adaptive reactions are needed in order to integrate the senses.

An adaptive reaction implies a purposeful, goal-directed response to a sensory stimulus (for example, a child sees a toy and reaches for it with his hand. Reaching is an adaptive reaction, but simple aimless waving is not).

When the brain's sensory integration capacity is sufficient to meet the demands of the environment, the child's response is effective, creative and satisfying.

Sensory integration disorder means that the brain does not process or organize the flow of sensory inputs in a way that provides the individual with good, accurate information about themselves and the world around them. Damage to the central nervous system, as well as insufficient interaction with the environment and people, can lead to poor sensory processing. Sensory integration disorder implies poor functioning, not absence of functioning.

The perception of sensory sensations is seen as a continuum in which, at one end, there are excessive reactions and increased sensitivity, where there are reactions of displeasure and rejection of certain types of stimuli, while at the other end of the continuum there is reduced sensitivity, weak reactions and weaker perception of sensory stimuli. In the middle of the continuum is orderly sensory functioning that results in appropriate motor and emotional behaviour.

### 3. SENSORY PROJECTIONS

In modern society, we come to the need to redefine the available movie screenings and to emphasize the individual specifics of the individual.

A uniform society is only possible on paper, while the real world is full of differences, and thus the need for modifications of current manifestations and projections arises. Due to the continuously growing prevalence of difficulties in the development of the individual, cinema screenings require adaptations in order to harmonize with the dynamic changes that modern society presents us with. Cinema projection in most cinemas is extremely simplified and homogenized. Such a projection is possible only in a sterile situation when the distractions from the environment are closed, with the presence of uniformity of the individual characteristics of the individual, which is less and less possible to achieve in the modern world full of diversity. Precisely because of the above, the need for various adjustments arises.

Taking into account the diversity in the possibilities and ways of learning of children with developmental disabilities, and respecting their sensory diversity, sensory projections provide a unique sensory experience inside the cinema using visual and auditory didactic techniques, kinaesthetic methods, forms of expression and methods of motivating the child to actively participate in learning and teaching.

Sensory projections represent an innovative concept of redefining film and the cinema environment, emphasizing an individualized approach.

# 4. METHODOLOGICAL GUIDELINES

In the audio-visual context, sensory projections offer the possibility of discrete individualization of the film and projection conditions inside the cinema. Taking into account the diversity in the possibilities and ways of learning of children with developmental disabilities, and respecting their sensory diversity, sensory projections provide a unique sensory experience inside the cinema using visual and auditory didactic techniques, kinaesthetic methods, forms of expression and methods of motivating the child to actively participate in learning and teaching.

The methodological framework for the valorisation of films suitable for sensory projections consists of specificities in:

- a selection of animated films with an emphasis on the duration of the film
- audio-visual stimulation
- the message and lesson of the film.

## 4.1. Animated films selection

### 4.1.1. Duration of the film

The duration of a film suitable for sensory screenings should not exceed 45–60 minutes, considering the attention characteristics of children with developmental disabilities. Attention is most often defined as the focus of mental activity on certain stimuli. In the framework of sensory projections, the child should focus on the film and its audio-visual elements from the beginning to the end of the projection. According to available scientific research, a child with typical development is able to maintain attention for 2–3 minutes depending on the child's age. Considering the specifics of children with developmental disabilities, with an emphasis on difficulties

with directing and maintaining attention, it is important to choose shorter films. Shorter films encourage effective attention, which enables us to separate important from unimportant stimuli and focus on information that is important to us at a certain moment, such as the main characters, content and other elements of the film. Sensory screenings play in cinemas without prior advertising promotion, which significantly shortens children's stay in the cinema and enables children with disabilities to watch films to the end.

#### **4.1.2. Audiovisual stimulation of the film**

In the optimal development process, we start from the assumption that the central nervous system is ready to receive and integrate information from the environment. In children with developmental disabilities, such an adaptive response is often inadequate due to the noises that arise during the sensory process between the film and the characteristics of the individual. Those characteristics are determined by the specifics in perceptual experience and the threshold of excitability to auditory and visual stimuli and individual characteristics that are manifested in numerous specifics. The integration of stimuli received from the environment is important for perception, and the absence of proper integration leads to difficulties with the interpretation of received information, which is reflected in the developmental outcome.

Accordingly, the modulation of stimuli received through audio-visual materials (film) which is sensory adaptable has numerous effects on encouraging the adequate development of an individual.

When selecting films for sensory projections, it is important to pay attention to the following specifics within the film:

- number of characters (we choose films with a smaller number of characters)
- simpler action (maximum of two parallel actions)
- without strong flashes
- without sudden and loud sounds
- slower frame changes
- pastel colors

- without subtitles (synchronized films or films without speech)
- option for voice-over (an actor reads the film instead of dubbing)
- simplicity, brevity, expediency, without a lot of details
- the film's message is based on tolerance, equality, and the spread of positive social values.

#### 4.1.3. The message and lesson of the film

The aforementioned specifics represent an innovative step forward in the field of cultural institutions in the Republic of Croatia, where performances are still subject to traditional and uniform models, without relying on contemporary trends that include inclusive and integrative elements in their development models with the aim of creating a society of equal opportunities.

Films that can be shown on sensory screenings include:

- animated films
- feature films
- recordings of plays for children.

The methodological framework for modulating the cinema environment for sensory projections consists of specifics in:

- lighting adjustment
- sound adjustments
- choosing an adequate place to sit
- adjustments to the usual cultural behaviour in the cinema.

In the environment where the projection takes place, the child is exposed to a lot of information, the intake of which takes place with the help of different sensory systems (sight, hearing, touch, taste, smell, muscle movements and balance). Through the process of sensory integration, information is shaped into perception, which is followed by the process of selecting the



information to be processed. Children with developmental disabilities often have difficulties with sensory integration. They arise due to inappropriate, insufficient or weak processing of sensory stimuli.

The methodological framework for the valorisation of the adaptation of the environment inside the cinema consists of exact indicators of quality, appropriateness and modulation.

#### **4.1.4. Lighting adjustment**

Lighting adjustment implies different levels of illumination, using ceiling or sidelights. It is not recommended that it is completely dark during the movie screening, but that the combination of lighting is such that it allows children to move freely around the hall during the film projection, wherever they are positioned.

It is important to:

- regulate the amount of light (so that it is not too dark, too much natural light or too much artificial light)
- place the light source so that it comes from the side opposite to the dominant hand (as much as possible)
- remove or reduce reflective glare (windows, floor or table)
- create contrasts in space with the aim of stimulating visual perception.

#### **4.1.5. Sound adjustment**

Adjusting the sound largely depends on the size of the hall and its occupancy. It is understood that in case of higher occupancy, the sound will need to be amplified, while in the case of lower occupancy, the sound should be turned down.

According to available scientific research, the threshold of sound stimulation should be limited to 90 decibels, in order to meet the criteria for the sensory specificity of the mentioned population of people with deviations in the field of sensory integration. In order to prevent the hypersensitivity of individuals, it is necessary to eliminate the use of stroboscopes. Elements such as sudden dimming or lighting must be introduced gradually, i.e. increase the

brightness according to the characteristics of the field of vision, which means a maximum increase or decrease of brightness up to thirty percent.

With the help of adequate sensory modulation, the child will be able to adequately balance his sensory system and neurological responses, which will result in an increased chance of participating in a cultural event. At the same time, it is important to provide noise-cancelling headphones at the institutional level, which can be provided as a supportive mechanism for sound neutralization.

#### **4.1.6. Choosing an adequate place to sit**

It is important to ensure that the child sits in the seat that suits him best.

For example, the experiences of people with motor disabilities support the fact that it is completely inappropriate to put them in the first row. The proximity of the projection screen is too close to them and the position of the head and neck they maintain during and after watching the projection immediately causes stiffness and/or prolonged pain that can last several days.

- The recommendation for the seating position is for the sound source to be on the side of the dominant ear and for the teacher/parent to be as close as possible to the child.

#### **4.1.7. Adaptation of the usual cultural behaviour in the cinema**

One of the advantages of sensory cinema screenings is the fact that the child can bring their favourite toy or blanket with them, and they are allowed to take their favourite snacks, i.e. everything that will make the stay in the cinema a desirable place for the child. In addition, during the projection, the child is allowed to stand up or walk if he needs to, to approach another child or hug someone next to him.

## 5. BENEFITS OF SENSORY PROJECTIONS

From the consideration of film screenings so far, it can be concluded that the constructs of individualization, viewed from traditional to contemporary approaches, in their starting points only partially include the principles of inclusion, integration and tolerance. In accordance with modern starting points and the growing tendency of various “deviations” in development, film projections are faced with the challenge of harmonizing with the dynamic changes of contemporary society and global processes. Film projections are mostly based on the principle of uniformity, insufficiently adapting to the diversity of the world that surrounds us. Without a more precise definition of the characteristics of detection, discrimination and interpretation of the received information and their impact on the individual’s neurological processes, the projections themselves will become less and less “interesting” and will lose the race with time. Therefore, sensory projections represent an innovative step forward, considering that they are inclusive and that they put children’s needs first, not only declaratively “on paper”, but in the real world, in their local community, where they belong.

A child with a disorder of sensory integration cannot effectively adapt to a uniform environment, considering that this requires a significant effort from him, and the result is not satisfactory because his brain is not able to integrate stimuli from the environment in the usual way. It needs a highly specialized environment adapted to its nervous system. If the environment is set up appropriately, the child will be able to integrate sensations that he could never integrate before. If we give the brain a chance to do this, it will organize itself. Most intelligence is neither predetermined nor conditioned, but is the result of interaction with the environment that develops the child’s intelligence. Sensory projections enable a cinema environment in which the child can actively participate and self-correct. In a spontaneous way in an adapted environment, sensory projections contribute to stimulating the development of the child’s brain. The cinema must not be a luxury — only for someone, only sometimes — but must be accessible to everyone, regardless

of the difficulties that children and their parents face. Only in this way can we ensure an inclusive society that provides equal opportunities for everyone. The scientific research conducted by the authors Eva Brlek and Sandra Malenica from 2019 shows that exactly these projections can significantly increase the communication competence of children with developmental disabilities because it provides them with the possibility of spontaneous interaction with peers of regular development and thus encourages integration into the local community in a spontaneous and unobtrusive way. (Brlek and Malenica 2019).

Sensory projections have a great influence on children with normal development, children with certain developmental deviations, parents, teachers, co-workers of movie theatres and all other subjects who visit cinemas. In addition to the fact that children with various deviations in development have the opportunity to participate in cultural contents that are otherwise not available to them because they are not adapted to them in many ways, children with normal development develop socio-emotional and social-personal competence by participating in sensory projections. To put it simply — they learn that differences exist, that they are part of our environment and that we are all equally valuable regardless of individual difficulties (temporary or permanent). Children in a peer group are equal, they learn from each other, they are role models and support each other, regardless of whether there is a developmental difficulty.

Furthermore, sensory projections have a positive impact on adults as well. We often forget that each of us in some period of life has our own requirements or needs that are different from others. We often do not notice why a child shouts or avoids certain content. We often don't try to see what bothers him. We also forget that adults often interpret some children's behaviour in their own way. They assume the possible causes of a certain behaviour, without trying to find out what could be the real cause of that behaviour. If we only become aware that there are differences among all of us, we will more easily accept the fact that we ourselves must create (or give) the opportunity for differences to meet and become part of our everyday life.

Only if adults are an example and an incentive for peer interactions, with some adaptation in the local environment, children will learn from an early age that we actually create differences ourselves. If we give every child the

opportunity to participate in contents that are taken for granted for children with normal development, and which are a big obstacle for children with disabilities to participate in the social or cultural life of the local environment, they will raise awareness, notice, and learn about acceptance of diversity among us all.

Certainly, in many cases, we adults can also learn a lot from children if we take some of our time and devote ourselves to children and their needs.

From all of the above, we see that the benefits of sensory projections are multiple.

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