

Correctional and Developmental Work with Children with Down's Syndrome and Children with Autism by Means of Color and Music Therapy

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ABSTRACT

The article examines the features of the use of new approaches to correctional and developmental work focused on children with mental and physical retardation, in particular, "sun children" (with Down syndrome) and "rain children" (with autism spectrum dis-order) in inclusive education. It highlights the theoretical material and owns view of the practical use of the synthesis of music and colour in the implementation of this activity. The paper elucidates the mental processes that occur during the processing of information in the hemispheres of the child's brain. It reveals the wave energy nature of colour and the associative relationship of colours with the sound of musical works. The light auditory and the creative-practical component of

classes have been described. Particular emphasis has been placed on the "special" children's characteristics of perception, behaviour and performance of colour music tasks. It has been shown that our proposed program of colour music therapy has a positive effect on the emotional sphere, improves the quality of communication, and enhances the ability to self-regulation, creative activity of children.

Keywords: Keywords: "Sun Children" (with Down syndrome), "Rain Children" (with Autism Spectrum Disorder), Correctional and Developmental Work, Inclusive Education, Art Therapy, Colour Music Therapy, Sensory Games

INTRODUCTION

Correctional and developmental work in pedagogical, psychological and social contexts is a set of measures for systematic psychological and pedagogical support of children with special educational needs in education and upbringing. It aims at correcting various aspects of the development of a child with mental and physical disabilities, eliminating deficiencies and developing cognitive activity, emotional and volitional sphere, physical motor skills, speech, the personality of the child, behaviour.

Following the adoption of the UN Convention on the Rights of Persons with Disabilities and its ratification, Ukraine must provide inclusive education at all levels, lifelong learning without discrimination, develop the physical, mental and creative abilities of persons with disabilities, provide opportunities to learn life skills society of people with disabilities, a sense of dignity and self-respect and for effective participation of such people in society (Convention on the Rights of Persons with Disabilities, 2006).

The State Standard of Primary General Education for Children with Special Educational Needs outlines the main directions of correctional and developmental work, in particular: development of auditory or visual perception, speech, cognitive activity, psychophysical, social and communicative development of children with special needs, developing of skills of spatial, social and everyday orientation, etc.; development of skills of self-regulation and self-development of children by interaction with the natural environment taking into account the available knowledge, skills and abilities of communicative activity and creativity; use of compensatory methods of activity as an important condition for preparing children with special educational needs to study in secondary school; creating conditions for social rehabilitation and integration of children with special educational needs, development of their independence and vital competencies (State Standard of Primary General Education for Children with Special Educational Needs, 2013).

The *purpose* of the study is to identify and analyze the possibilities of colour music therapy in correctional and developmental work with children with mental retardation, including 'sun children' (with Down syndrome) and 'rain children' (with autism spectrum disorder).

The *research methodology* consists of the application of the analysis of medical documentation and descriptions of children's development before the beginning of

training, their psychological state and dynamics of development during the correctional and developmental classes, structure and content of conducted colour music therapy; using elements of ascertaining research, experimental training and observation of the child's behaviour in the classroom.

The *object* of the article is art therapy as a means of correctional and developmental care for children with developmental disabilities.

The *subject* of the study is the dynamics of mental development in 'sun children' and 'rain children' in the process of specially organized classes on colour music therapy.

THEORETICAL BACKGROUND

Current research objectively confirms the positive impact of art on children with various developmental disabilities. Physicists and psychologists, artists and musicians have worked on the problem of the synthesis of sound and light for centuries. The composer Scriabin O. (1872–1915) is considered the founder of light and music art, although shortly before Rimsky-Korsakov M. (1844–1908) became on this path. Possessing the phenomenon of colour hearing, these two composers-inventors solved the problem of light music in their own way. Rimsky-Korsakov M., focusing on his perception of each system, composed musical images of his operas in a certain key (in the opera "Sadko" the leitmotifs of the Sea are written in two blue tones – E major and E flat major). Scriabin O. created a work synthesized with colour – a symphonic poem "Prometheus" (1909–1910) for the first time in musical art (Derkach, 2016), (Yutsevich, 2003). However, light music as an auditory-visual art must be distinguished from another synthetic art form – "colour music".

Colour hearing (synopsis) is a variant of synesthesia in music, a phenomenon of music-colour synesthesia; both senses – sight and hearing – are connected, causing a person to make colour associations, visual images. According to Yutsevich (2003), a synopsis is a person's ability to form specific colour perceptions (feelings of different tones, chords, timbres, etc.). Some musicians and artists were distinguished by synopsis; the so-called coloured light was given the role of a full-fledged formative musical component in their works (Yutsevich, 2003).

In the context of the synthesis of arts in the early XX century, we should mention the figure of Leontovych M. (1982) – a world-famous composer, teacher, choral conductor who developed his system of displaying artistic material based on the relationship of colours with musical sounds. Leontovich M. (1982) led the search for new ways and means of the educational influence of music on young people to develop a theory based on the associative relationship of light and colour with the sound of a musical work. The composer considered the holistic perception of the musical image in combination with colour, comparing colours in music and painting. "The scientist was interested in high and low tones,... took into account all seven colours of the sun's spectrum in combination with seven sounds in music, thought that large fluctuations give dark colours, small – light" (Leontovich M., 1982). The composer-educator put forward ideas on the division of light and dark colours into transparent and opaque. Among the highlighted light are white (opaque), light yellow (transparent),

and light red (opaque), blue (transparent). Among the dark colours, he noted dark yellow (opaque), dark red (transparent), blue (transparent). He considered these paints the main ones that would give many colours. This specific approach to the separation of colours in terms of their transparency tells us about the high level of creative imagination, personal colour perception in combination with music. According to Zavitnevych V. (1971), Leontovych M. (1982) perceived not only the shades and transparency of colours but also "felt them in the timbres of choral voices".

Modern research by domestic and foreign authors proves the need for early correctional and developmental work with children with CPD (mental retardation), to avoid the risk of behavioural disorders, which is actively manifested in adolescence. In the correctional and developmental work with "sun children" (with Down syndrome) and "rain children" (children with autism spectrum disorder), it is necessary to clearly understand the mental processes that occur while processing information in the brain's hemispheres. Thus, mental processes that depend on the right hemisphere of the brain include sensory asymmetries (violation of the equality of functions of the right and left parts of the paired senses), and processes that depend on the left hemisphere are correlated with motor asymmetries. The right hemisphere prefers melody, hot colours, continuous geometric shapes (in which there is no divisibility into fragments), and the left – rhythm, cold colours, discrete shapes (with discontinuity of indivisible units) (Bragina, & Dobrokhotova, 1988).

All processes of information processing by the brain hemispheres are opposite but complementary. Thus, the processing of information by the right hemisphere is characterized by a holistic-synthetic emotional, continuous type of mental activity, which is manifested in a multifaceted linguistic and motivational-semantic perception of the world. Thus, the right hemisphere is the basis of the intuitive, subconscious manifestation of the human psyche.

The strategy of the left hemisphere is characterized by the abstract-logical, conceptual type of mental activity, discrete-analytical worldview, which is manifested in unambiguous linguistic and motivational-semantic contexts of perception and mastery of reality the conscious manifestation of the human psyche.

Therefore, in Down's disease, which is considered a phenomenon of the right hemisphere, the correction of mental activity of 'sun children' should be carried out by activating the left hemisphere, using various forms of sensory activity inherent in the left hemisphere (rhythm, cold colours, etc.). Moreover, the successful selection of music and play repertoire and the creation of a training and therapeutic environment will help such a child realize himself as a person in society.

A characteristic feature of a child with Down syndrome is delayed psychophysical development, due to which a special problem is learning difficulties. It means that it is more difficult for them to learn than for most children of the same age. Such children are too sensitive, vulnerable and open to the world around them and need special attention from society in creating conditions for their full life and development. They have a reduced rate of perception of information, so you need to talk to the "child of the sun" very slowly, clearly saying the words, repeating them many times so that he\she realizes it. It is important to be in constant contact with such children.

Children with autism spectrum disorder ('rain children'), in whom the left hemisphere is in a state of mental activity, need to adjust the work of the right hemisphere through special training. The treatment of such a child is on the border of three sciences – psychiatry, psychology, correctional pedagogy (Loreman, Deppeler, & Harvey, 2005).

All autistic children are very different in behaviour, abilities and intelligence. They have disorders in the nervous system that affect their behaviour in society. Such children often repeat the same phrases, monologues their language is quite limited. Some children who have a milder form of autism can talk about certain topics, but they note the difficulties of abstract thinking. The best approaches in their correctional and developmental work are combinations and methods of treatment by sensory correction. Although, it should be borne in mind that autistic children may have an inadequate response to sensory information (loud noise, too rhythmic and loud music, bright light). Better assimilation of the material and reduction of isolation are observed when children receive information at both verbal and visual levels. Therefore, developmental forms of work with such children should be selected both individually and in groups, as speech training and the formation of patterns of behaviour occurs through copying these processes in others.

In Ukraine, art therapy is widely used in rehabilitation and correction of the psycho-emotional state of both categories of children. The main types of art therapy are music therapy, dance therapy, drawing therapy, fairy tale therapy, puppet therapy, light therapy and others.

RESULTS

As an effective and safe means of correctional and developmental work with "sun children" and "rain children", we have concluded a program of colour music therapy based on the synthesis of music (listening to vocal, instrumental compositions), light (use of coloured lamps) and isotherapy (drawing therapy). The program was tested at the Tulchyn Center for Social and Psychological Rehabilitation «Ray of Hope» (Vinnytsia region, Ukraine).

We see the importance of using colour music to evoke positive emotions in a 'special' child that have a therapeutic effect on psychosomatic and psychoemotional processes, mobilize the child's reserve forces, and determine the development of a harmonious personality through self-expression and self-knowledge in creative activities.

The program was based on the ideas, principles of organizing and conducting classes by foreign and domestic psychologists, psychiatrists, neurologists, teachers, art therapists who have successfully worked with children with disabilities E. Morrison (2013), R. Tipple (2011), E. Lekurt (1993), O. Derkach (2016), I. Dmitrieva (2001), L. Terletskaya (2016).

The program defined the purpose, objectives, structure and content of classes in colour music therapy for children 7-10 years. The goals and content of correctional and rehabilitation classes were formulated based on the children's physical, psychological, mental capabilities. We did not aim to develop the actual musical and artistic abilities of the program participants. Therefore, the main elements of the

classes were aimed at solving important problems for the child's development. Classes were held (necessarily accompanied by educators of the center or students' parents) 2 times a week for 30 – 40 minutes (depending on the group) for three months. The structure of classes was different for 'sun children' (4 people) and 'rain children' (5 people). It provided some variability (the ability to 'adjust' the child taking into account his / her characteristics, interests, fears, changes in emotional and physical condition).

We created special conditions and methods of influencing the personality to develop the child's views, self-development and creativity. In particular, there was an atmosphere of trust to establish contact. An individual approach was used taking into account the characteristics of each child, his / her interests, and fears, changes in emotional and physical condition. Repeated use of the same musical material and colour-sensitive touch games was used so that children could better assimilate, memorize and begin to work freely.

The lesson was divided into two parts, the activities of which differed from each other in the degree of activity, mood, pace, spatial location of participants. The first is light and hearing therapy. In a specially equipped room – a touch room with blinds (for dimming daylight) and special lighting devices (lamps) – it was listening to music using coloured lights (10 shades) to calm, relax, restore emotions or remove children's stress for 10-15 minutes.

It is known that the eye of a healthy person can distinguish up to ten million different shades. This property of a person to sensitive colour recognition allows him to navigate freely and quickly in space; to restore in memory the associative series associated with a certain tone, which to some extent affects the mental state, mood, behaviour, well-being, body function as a whole, changing its biochemical and psychological processes. It is due to the fact that colour has a wave energy nature. It is a quantum of energy coming from the outside world, and electromagnetic waves of different lengths act on the electromagnetic field of the body's cells, which means that we feel the colour often even unconsciously. The vibrant energy of colour affects mood, well-being can bring pleasure or anxiety, soothe or irritate. Thus, an unhealthy organism, for its recovery, will absorb more of the colour it needs. We consider this argument in the process of correctional and developmental work with children of the studied category.

It is known that all colours are divided into warm, cold, neutral (white, grey, black). The influence of cold colours on a person causes a feeling of cold, freshness, peace and purity, and the impact of warmth, joy, comfort. Warm colours are associated with the colour of fire. Red, pink, green, yellow, orange these colours increase the heart rate, improve the cardiovascular system, create optimal conditions for mental activity, have an activating effect, improve appetite.

Cold shades include blue, dark green, blue, and ruby, purple. Such colours have the opposite effect reduce blood pressure, reduce appetite, have a relaxing effect, promote good sleep. The range of cold colours ranges from blue to purple, and warm from red to green. Moreover, in some cases, dark green and purple belong to the neutral colours, and in others – to the cold, so these colours are intermediate.

For the proposed forms of color music therapy, we carefully selected the musical material, taking into account the individual characteristics of each type of children, protecting them from unwanted irritating rhythm, we tried to choose the material that

would bring them aesthetic pleasure and benefit. These were works by J. Verdi (overture to the opera 'La Traviata'), C. Debussy ('Tenderness', 'Moonlight', and 'Children's Corner'), W. Mozart ('Piano Concerto with Orchestra № 21. Andante', (Sonata for two pianos in C major)) by L. Beethoven ('To Eliza'), F. Chopin ('Waltz' (in C sharp minor, collection 64 №2), 'Fantasy-impromptu') by M. Leontovich (arrangements of folk songs 'Oh, gray cuckoo', 'Grits, Grits to work', 'Playing the bunny', 'Zhenchichok-brenchichok', 'Shchedryk'), melodies from modern cartoons. At first, we listened to a certain piece of music separately with each child, watching how she / he reacted to the music. If most of children positively perceived the offered musical composition, we had an opportunity to use certain music, working with a group of children. The colours of the lamps changed when listening to music, according to its theme, changes in rhythm, tempo, and sound dynamics.

We corrected the mental activity of the 'children of the sun' by activating the brain has left hemisphere and used rhythmic music and cold colours (blue, dark green, blue, and ruby, purple). Correction of mental activity of 'rain children' was carried out by activating the brain right hemisphere, using calm music, warm shades of temperature (red, pink, and green, yellow, orange). We have not used in our work brown and black colours, which are considered outsiders of colours for children, depressive mood, contribute to the emergence of depression.

Depending on the colour environment, the same colour can be perceived differently – warm or cold. Moreover, it should be noted that 'colour saturation and adding another colour to the main one, can change its temperature' (Prokopovich, 2016). Therefore, we also used several lamps at the same time. Yellow was added to the green so that it was perceived as warm or blue so that it was perceived as cold.

Scientists have proven that the influence of colour and its shades occur not only through the eyes but also through any contact with it (touch, wearing clothes, being in a certain area, where a certain colour predominates, etc.). Therefore, to diversify the correctional and developmental process of colour music therapy in the second part of the lesson, we engaged in creative and practical activities with children.

In addition to light-coloured drawing we used different types of touch games with the use of colour, in particular drawing with paints on paper (pebbles); colouring of water, formation of multi-coloured 'clouds', 'waves at sea' from coloured foam (formed by adding liquid soap to water); execution on a sheet of paper of certain colour applications of a lighter tone, in comparison with the main one while listening to music.

Non-traditional drawing techniques were usually used monotype, blotting, drawing with fingers, palm. It allowed the child not only to learn and perceive colours, using sight, but also using tactile sensations when listening to music, develop hearing and get aesthetic pleasure. Classes with loose materials (semolina) had a positive effect on the emotional state. We used a special table with lighting, which was very interesting for children.

During the classes, we tried to create a cozy, calm atmosphere, appropriate conditions in which the children would be comfortable and to which they would gladly return. "Rain children", which were initially characterized by some inertia, already in the fourth lesson, began to demonstrate a creative approach to the perception of integral musical works (often responded with movements, sounds, facial expressions). Their

drawings (applications) were more independent (often original) but not plot and not multifaceted (used one image, two or three colours).

'Sun children' usually portrayed familiar plots, often not caring much about their relationship with the piece of music. However, their works were immediately rich and colourful. Therefore, we tried to use simple melodies and with the help of verbal plots and drawings, carefully, without imposing our points of view, explained the content of the heard works. All forms of work with colour were simple and accessible, with gradual complication – from the most basic to the most complex. Children with different characteristics perceived this or that task differently. Therefore, during the classes we used an individual approach, which was accompanied by assistance to each child, in particular, prompting, repetition several times (if necessary), slowing down the process.

Thus, adhering to the basic conditions of correctional and developmental work with 'sun children' and 'rain children' we managed to adjust each child to active developmental activities and develop a desire to attend correctional and developmental classes; to form knowledge about the environment, to improve speech and communication skills; to stabilize the psycho-emotional state of children; expand the creative imagination; to activate the thinking process.

CONCLUSIONS

Summarizing the research on this issue, we note that art is an important factor in promoting inclusive education, a means of correctional and developmental work of children with special needs. 'Rain children' and 'sun children' who lag behind the development of the psyche as a whole or its individual functions (emotional, volitional, motor, sensory, speech) have sufficient potential for development and education provided favorable conditions for its implementation, including art. The prospect of research in this area is to develop guidelines for the use of diagnostic and corrective potential of color music therapy in a system of comprehensive care for children with multiple disabilities, which would unite and coordinate the specialists' activities in various fields.

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