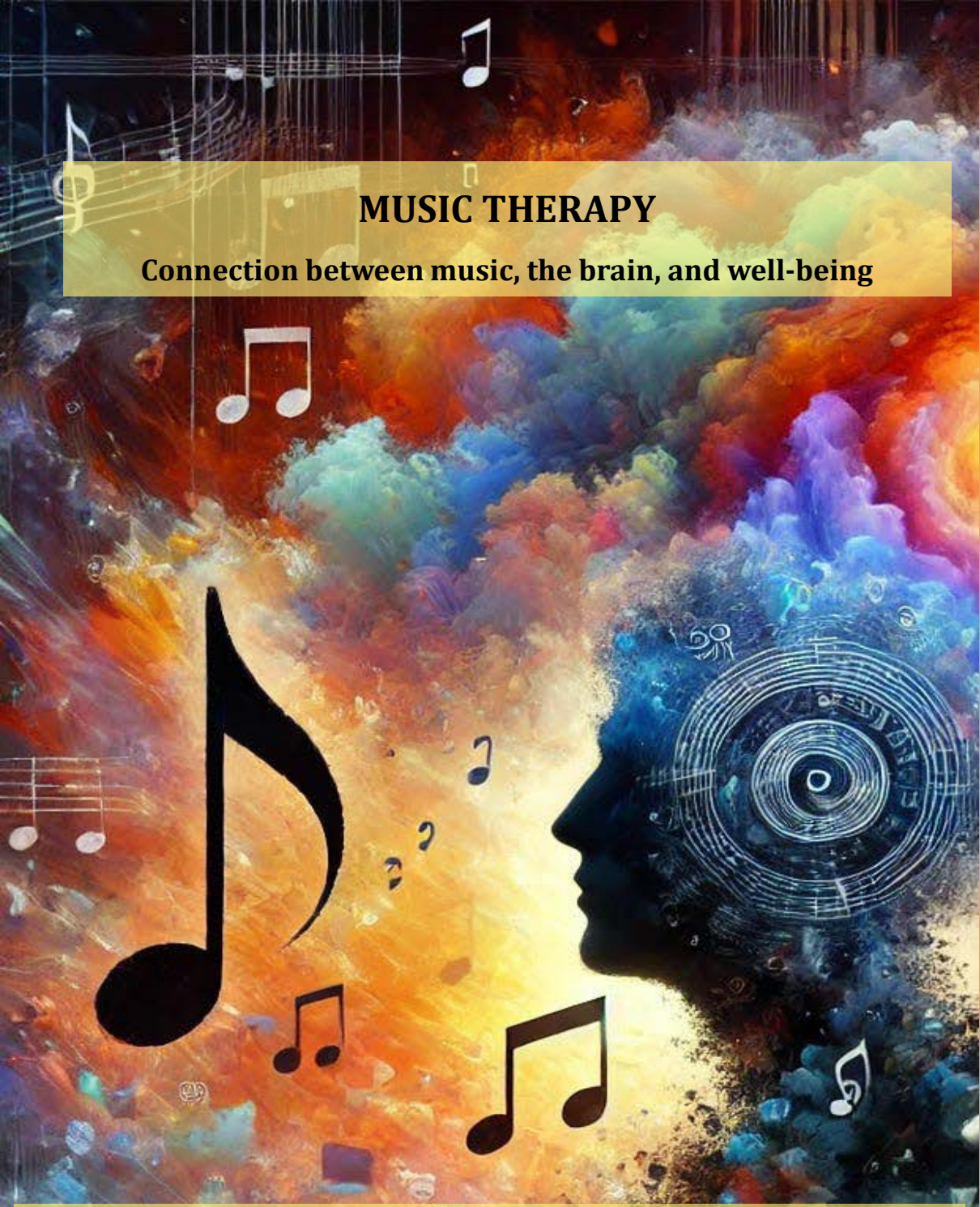
MUSIC THERAPY

Connection between music, the brain, and well-being



Editor

Prof. Dr. Sibel KARAKELLE

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Editor: Prof. Dr. Sibel KARAKELLE

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Editor's Note…

Music therapy stands as a dynamic and interdisciplinary field, uniting the power of music with the science of healing to enhance emotional, cognitive, and physical well-being. This book, *Music Therapy: Connection Between Music, the Brain, and Well-being*, delves into the intricate interplay between music and the human brain, showcasing how music can serve as both a therapeutic tool and a profound means of personal expression. It is a comprehensive exploration of music therapy's theoretical foundations, practical applications, and transformative potential.

The chapters in this book span a wide array of topics, reflecting the depth and diversity of music therapy. From its historical origins and theoretical models to its role in addressing specific challenges such as autism spectrum disorder (ASD) and attention deficit hyperactivity disorder (ADHD), the contributors bring their unique expertise to the forefront. The inclusion of innovative methodologies, such as functional neuroimaging, and the exploration of music as a tool for self-expression highlight the expanding horizons of the field. These contributions not only enrich academic discourse but also provide actionable insights for practitioners working with diverse populations.

This book is a testament to the dedication and expertise of its contributors, who represent a wide range of disciplines, including pedagogy, neurology, psychology, and musicology.

Each chapter is thoughtfully crafted to bridge the gap between research and practice, offering both theoretical perspectives and real-world applications. By focusing on interdisciplinary collaboration, the authors demonstrate how music therapy can address complex needs, particularly in early childhood development, neurological disorders, and emotional well-being.

As the editor, I am deeply grateful to the authors who have shared their knowledge and experience. I hope that this book serves as a valuable resource for researchers, educators, therapists, and anyone with a passion for music's healing power. By shedding light on the profound connection between music and well-being, this work aspires to inspire further exploration and innovation in the field of music therapy, fostering a deeper understanding of how music enriches and transforms lives.

8.12.2024

Prof. Dr. Sibel KARAKELLE

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THE ORIGINS AND EVOLUTION OF MUSIC THERAPY: ITS ROLE, IMPORTANCE, AND FUNCTIONS

Marzenna MAGDA-ADAMOWICZ[1]

1. INTRODUCTION

Music is an essential art for humans, as it allows them to shape their own world of experiences and emotions that enrich their lives. As one of the most refined forms of artistic expression, music has a profound and immediate influence on individuals. It supports emotional, physical, mental, and social development. It becomes a valuable and engaging tool in preschool education when combined with play.

Among music's many roles are its therapeutic and educational functions. While the connection between music and medicine was recognized in ancient times, scientific research has recently delved into its therapeutic benefits. Studies have shown that music positively affects both the body and mind. Carefully chosen compositions can alter muscle tension, ease anxiety, promote relaxation,

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or even boost cognitive performance. Additionally, music can aid in combating illness, helping individuals to unwind and restore their strength.

Music enhances sensitivity, fosters imagination, encourages independent thinking, and fulfills the need for self-expression. Its dynamics, tempo, and rhythm cultivate attention span, memory, and both active and creative imagination. Engaging with music develops cognitive skills, ranging from basic perception and classification to aesthetic evaluation. By heightening sensitivity to beauty and deepening musical experiences, music also shapes children's moral development. The belief in music's therapeutic effects has been a part of human culture since ancient times. At first, we will explore some key concepts, such as *art therapy* and *music therapy*, examining their significance and historical evolution.

1.1. The essence of art therapy and its types

The term *art therapy* is derived from two components: *art* (from the Latin *ars*), meaning art, craft, or fine arts, and *therapy* (from the Greek *therapeuein*), signifying treatment (Bańko, 2003. It can be defined as a specialized form of psychotherapy that employs artistic expression to enhance an individual's mental and physical well-being (Konieczna, 2007). Art therapy is applicable to all ages and various groups, addressing issues like depression, anxiety, neurosis, affective disorders, addictions, problems in family relationships, cases of sexual abuse, domestic violence, emotional difficulties related to disability and illness, traumas and experiences, physical, cognitive and neurological problems, and

psychosocial difficulties related to somatic diseases (e.g. cancer), as well as social prevention (especially in work with people at risk of social exclusion) (Rojewska-Nowak, 2012).

Art therapy is a powerful therapeutic approach that fosters creativity and addresses emotional deficits. It aids individuals in self-acceptance and in articulating their thoughts and feelings. The therapeutic activities focus on inspiring intellectual, spiritual, and aesthetic experiences while allowing participants to create diverse forms of expression. This form of therapy is particularly beneficial for individuals with disabilities, as it fulfills essential needs such as acceptance, safety, participation, and the feeling of being understood and valued (Godawa, 2007).

Art therapy can be categorized in two ways: 1) broadly, which encompasses various forms, such as choreotherapy, music therapy, bibliotherapy, theater therapy, film therapy, and art therapy; and 2) narrowly, focusing specifically on the application of artistic techniques and their outcomes in diagnosing and treating mental and emotional disorders (Marek, 2004). Various types of art therapy methods include music therapy, choreotherapy, bibliotherapy, graphotherapy, theater therapy, and film therapy (Konieczna, 2007). Another classification further delineates these methods into therapy through visual arts, music therapy, drama therapy, choreotherapy, and bibliotherapy, each serving unique therapeutic purposes (Bartel, 2016). Notably, music therapy appears in both classifications.

2. NATURE OF MUSIC THERAPY

E. Galińska (1990, 25-26) defines music therapy as a "systematic, methodical, and scientifically grounded clinical application of music." It is described as a "multifaceted procedure that utilizes music's diverse influences on an individual's psychosomatic system" (Natanson, 1992, 13). The therapeutic effects are observed through psychophysical reactions to sound, which the music therapist deliberately evokes and manages in alignment with the patient's needs for their benefit (Natanson, 1979).

Krzysztof Stachyra describes music therapy as "a process in which a qualified music therapist utilizes music or its elements to restore health, enhance functioning, or support the development of individuals with various emotional, physical, mental, social, or spiritual needs" (Stachyra, 2012a, 27). This definition highlights five key aspects: 1) it is a structured process with a clear beginning, end, and goals; 2) it follows a planned, logical sequence; 3) it is conducted by a qualified therapist; 4) it aims to improve health and functioning; and 5) it addresses the specific needs of the individual.

The American Music Therapy Association (AMTA) adds that music therapy involves the clinical and evidence-based use of musical interventions to achieve individualized goals within a therapeutic relationship with an accredited therapist who has completed an approved course in music therapy" (Konieczna-Nowak, 2013, 18). While many definitions exist, they generally

emphasize the role of music, the music therapist, and the relationship formed between the therapist and the patient.

The semantic interpretation of *music therapy* reveals a specialized practice that leverages the therapeutic power of music. Among the arts, music uniquely conveys a broad range of emotional and intellectual meanings, with each piece embedding symbols that resonate with listeners. From the perspectives of music theory and philosophy, this suggests immense potential for therapeutic impact. In therapy, music functions as a versatile tool, employing various techniques based on theoretical frameworks. Engagement with music occurs through both reception, using projection techniques, and performance, involving movement and instrumentation. This multifaceted interaction not only elicits emotional responses but also influences physiological processes, harmonising the autonomic nervous system and promoting states of activation or relaxation, tailored to the individual's psychophysical unity and condition.

While numerous definitions of music therapy exist, they generally share common features. The fundamental elements include the use of music, the involvement of a qualified music therapist, and the dynamic relationship between the therapist and the patient. Additionally, music is often regarded as a form of medicine, reinforcing its role as a powerful tool in sound therapy. These core aspects highlight the therapeutic potential of music in addressing emotional, physical, and psychological needs.

Music as medicine can be administered by trained professionals, such as medical personnel, teachers in

special education, speech therapists, and psychotherapists, without necessarily requiring a musical background. In some methods, patients can even utilize pre-designed music programs to enhance their therapy. MacDonald, Kreutz, and Mitchell (2012) succinctly define music as medicine as i.e. "the use of recorded music to improve the functioning of the patient and support the treatment process". Musical medicine is used in many hospital wards, and accompanies medical procedures, improving and supporting the treatment process (MacDonald, Kreutz, and Mitchell, 2012). Christian Gold (2008) argues that as music therapy gains global recognition as a legitimate science, music medicine is increasingly regarded as a distinct therapeutic field. This approach focuses more on the direct, receptive experience of music rather than the dynamics of the therapeutic relationship, allowing professionals beyond music therapists to implement it. In this context, the influence of music on individuals is prioritized, often rendering the therapeutic relationship secondary or even unnecessary.

Sound therapy is a field that has only been noticed since the 1980s, primarily due to Fabien Maman's research on the effects of sound waves on human cells. In 2000, Liz Cooper established the British Academy of Sound Therapy (BAST), which later underwent scientific investigation. Recent years have seen a rising interest in sound therapy; however, it is often mistakenly categorized as music therapy. Sound therapy involves utilizing sound as a therapeutic agent to promote hormone secretion and harmonize various physical factors, such as breathing, blood pressure, heart rate, and muscle tension. It is also

beneficial for the rehabilitation of Alzheimer's patients and in palliative care. Unlike music therapy, sound therapy focuses solely on the quality of sound itself, often independent of musical context.

3. DEVELOPMENT OF MUSIC THERAPY THROUGHOUT HISTORY

In the first Book of Samuel from the Old Testament, the author illustrates the therapeutic power of music through the story of David playing the lyre for King Saul, alleviating his distress caused by an evil spirit: "And when the evil spirit from God came upon Saul, David took the lyre and played. Then Saul was relieved and felt better, and the evil spirit departed from him" (1 Samuel). This passage resonates with many music therapists, serving as a professional credo that emphasizes music's potential to enhance the quality of life for individuals facing emotional and psychological challenges.

Music has been employed for therapeutic and healing purposes for centuries, with early cultures attributing mystical and magical significance to it. For primitive peoples, music played a vital role in daily life and was integral to healing rituals, often combined with dance and spoken word as a means of fostering recovery and well-being.

The therapeutic aspects of musical experiences have been the focus of scholarly research for centuries, predating our era. Notably, the 5th-century BC text, the Book of Customs, highlights that "music affects the

interior, custom affects the external attitude, therefore care should be taken to limit the effects of custom and to intensify the influence of music" (Hanke, 1978, 8).

Ancient Chinese and Hindu texts, including those of Confucius and Lao-Tse, emphasize the profound impact of music on human thought and behavior. This understanding of music's influence permeated ancient Middle Eastern cultures as well. In the philosophical works of Danton, Socrates' teacher, the theory of ethos was articulated, highlighting the educational and ethical values of music in shaping character and moral development. This historical acknowledgment underscores music's enduring significance in the realms of education and ethics.

In the Pythagorean system of mathematical bases of intervals, music was viewed through a mathematical lens, intertwining aesthetics with metaphysics. It was conceived as a fundamental element of the universe, embodying the inherent order and harmony within it. This cosmological perspective led to a division between two forms of harmony: *mundana harmony*, or the music of the spheres, which governs celestial bodies, and *human harmony*, reflecting the balance within the human body that harmonizes spirit and matter.

Iamblichus, a student of Pythagoras, emphasized the significance of music in health, formulating a thesis that is essential to this day: "[...] music contributes to health in a significant way when used in the right way" (Möller, 1984, 26). He described therapeutic sessions conducted by Pythagoras that incorporated elements of

medical terminology, group psychotherapy, and singing therapy, illustrating a holistic approach to healing. Education through music was paramount, as Iamblichus believed that certain rhythms and melodies had an "educational and healing effect on the nature and emotions of man" (Möller, 1984, 31).

Evidence of the social and educational function of music can be found in the philosophical writings of Plato, who highlighted its creative significance in ethics, stating, "[...] for it finds a direct path to the soul of the listener, influences it and evokes appropriate spiritual evaluations. Just as gymnastics educates the body, so music should nurture the soul" (Möller, 1984, 31). He asserted that music impacted customs and political order, declaring, "Violating musical melodies interferes with the most important political rules" (Möller, 1984, 31), emphasizing the necessity for aesthetic education through music. Plato proposed that only music eliciting noble and moderate feelings was suitable for listening. Aristotle later expanded on this by shifting the focus of musical analysis from metaphysical principles to a sensual-empirical approach, examining the structure and meaning of individual musical elements. He found particular interest in the characteristics of modes as carriers of specific effects, deeming the Dorian scale the most ethical and educational, while the Mixolydian scale evoked feelings of sadness and depression. He classified musical expression from "mournful" tones to calming, spiritual sounds and attributed ethical significance to tones, rhythms, and instruments, asserting that carefully selected musical

material could consciously shape personality and develop socially beneficial character traits.

The therapeutic significance of music is closely linked to the type of affect it evokes, along with its rhythmic structure, including the nature of the mode and melodic phrases. Catharsis involves provoking an emotional shock through words or sounds, which elicits intense feelings and facilitates their release. This process of relief leads to internal purification, creating a state that ultimately becomes a source of aesthetic pleasure.

In the realm of ancient musical aesthetics, there were also perspectives that questioned the soothing effects of music. The Epicureans, for instance, contended that music is merely a combination of sounds and rhythms, devoid of emotional significance and primarily imitative in nature (Möller, 1984).

The Middle Ages did not introduce new insights into the influence of music on humanity; instead, it largely reinterpreted the musical aesthetics of antiquity through a Christian philosophical lens. Scholasticism emphasized the divine origin of music, as articulated by Thomas Aquinas, who described it as an incarnation of the Holy Spirit. The Pythagorean concept of the harmony of the spheres was reinterpreted as a reflection of divine order. Church music was equated with *mundana* music, fostering piety and transcendence, while secular music was seen as sinful chaos. Yet, some medical perspectives acknowledged music's healing potential, drawing on ancient traditions, exemplified by the biblical story about the subsidence of Saul's depressive illness under the

influence of David's playing on the lyre: "And when the evil spirit sent from God came upon Saul, David took the lyre and played. Then Saul would experience relief, he would feel better, and the evil spirit would depart from him" (1 SM, 16, 23).

The Renaissance brought significant changes to musical aesthetics, emphasizing the relationship between music and text, which in turn highlighted the complexities of musical expression. Central to discussions among composers and aestheticians was the concept of *musica reservata*, which aimed to express textual content. Despite this focus, literature from the period also acknowledges the therapeutic value of music. Marcelius Ficinus, an Italian theorist and member of the Platonic Academy in Florence, explored the acoustic and psychological effects of music in his treatise ”De vita triplice”, correlating musical scales with human temperaments (sanguine, mixolydian melancholic, phlegmatic). He also likened different vocal ranges to the four elements: bass to earth, tenor to water, alto to air, and soprano to fire. In the Romantic period, while music epitomized the ideal of beauty, its medicinal uses diminished, although the belief persisted that music could liberate individuals from obsessive thoughts and foster internal cleansing.

In the 16th century, the Italian theorist Gioseiffo Zarlino emerged as a key figure in music history, notably for his analysis of major and minor triads. He characterized the major triad as "cheerful" and the minor triad as "sad," emphasizing their expressive qualities. Zarlino argued that *musica humana*, representing the

balance between spirit and body, could be disrupted by improper use of musical formulas in therapy, leading to various ailments. He advocated for the education of physicians in musical principles to ensure an effective treatment that acknowledges the proportions and the emotional impacts of music.

During the 17th and 18th centuries, various medical schools emerged, including those focused on iatrochemistry, iatromechanics, iatrophysics, and iatromusical theory. The latter drew upon ancient Greek ideas of harmony between humans and the cosmos, positing that transcendental forces influence the human soul. This period saw the rise of the theory of affects, which suggested that specific emotional states could be expressed and evoked through music, depending largely on the listener's temperament. Music was believed to direct bodily mechanisms through skin-penetrating vibrations, thus gaining therapeutic significance. Due to the fact that music is supposed to direct the mechanisms of the body through vibrations penetrating the skin, further introducing spiritual vibrations, and through them influencing muscles and other anatomical structures, it gained therapeutic significance. In this approach, the listener's feelings and effects depend on the type of air vibrations (Galińska 1992, 41-57).

In the 18th century, the music theorist and naturalist Adam Kircher explored the psychological aspects of affect, theorizing that music influences a unique spiritual energy in humans. He argued that music's acoustic impulses likened to the soul, transmit to the

brain, triggering various sensations. Increased energy levels fostered feelings of joy and excitement, while diminished energy corresponded to sadness and depression. Kircher presented sample themes for musical improvisation, often used to treat illnesses resulting from bites by poisonous spiders. This form of therapeutic use of music in the history of music therapy was called tarantism or iatro-music.

By the late 18th century, efforts were made to systematize musical modes and melodic phrases, leading to the creation of a dictionary of musical figures known as ”loci topici”. This resource represented and illustrated various affects, facilitating the selection of appropriate melodic formulas to convey specific emotional states.

During the Romantic period of the 18th and 19th centuries, a notable shift toward metaphysical perspectives emerged in musical aesthetics. Philosophers such as Arthur Schopenhauer and Georg Friedrich Hegel viewed music as a profound reflection of absolute being, suggesting that it transcends mere sound and taps into deeper truths.

In the 19th century, a rich tapestry of aesthetic movements emerged, fostering a deeper exploration of music's influence on the human psyche and vegetative functions. The research highlighted the therapeutic applications of music in treating mental illnesses, aphasia, paresis, and cardiological conditions, underscoring its healing potential and the mechanisms behind its effects. Prominent composers like Robert Schumann, Franz Liszt, and Richard Wagner viewed music as a powerful medium

for expressing the creator's subjective experiences, particularly their emotions.

At the turn of the 19th and 20th centuries, various aesthetic movements played a crucial role in shaping the theoretical foundations of music therapy, including its methods and techniques. Notably, psychological aesthetics focused on the essence of musical experience and the listener's engagement with the work, while biological aesthetics linked creativity and perception to fundamental biological laws governing the human organism. This line of thought was further developed by Pavlov, who associated basic perceptual actions with the neurophysiological processes occurring within the human brain.

Contemporary music therapy integrates insights from key psychotherapeutic trends, including psychoanalysis, learning theory (behavioral psychotherapy), and existential philosophy, particularly Heidegger's humanistic approach. In the 20th and 21st centuries, music therapy is increasingly linked to scientific exploration of music's effects on humans, leading to a wealth of empirical studies in music, music psychology, and music therapy. This interdisciplinary approach aims to provide a deeper understanding of how music can influence emotional and psychological well-being.

In psychoanalytical approaches, music serves as a powerful tool for enhancing emotional experiences and stimulating imaginative thinking. By addressing unresolved tensions that contribute to neurotic symptoms, music facilitates relaxation and enables patients to

confront intense emotional reactions. The extreme moods conveyed through music can aid in revealing underlying conflicts and pathological experiences, contributing to feelings of anxiety or sadness. This method echoes the ancient concept of catharsis, as it promotes emotional release and personal insight.

The second approach in music therapy emerges from learning theory, particularly within American behavioral psychotherapy. This perspective posits that human behavioral disorders are learned responses that can be modified through the principles of learning and unlearning. While this method primarily targets symptomatic relief rather than addressing root causes, it recognizes the role of art, including music therapy, as a supportive tool in treatment. However, its contribution is often viewed as supplementary rather than central to the therapeutic process.

The training methods in music therapy are heavily influenced by learning theory, particularly Pavlov's concept of conditioned reflexes. In Poland, researchers J. Aleksandrowicz and Stanisław Cwynar pioneered efforts in this area, leading to the creation of a unique relaxation CD that incorporates Schultz's autogenic training alongside musical accompaniment. These training methods are implemented in various Polish centers, including the Neurosis Clinic at the Psychoneurological Institute in Warsaw, the psychiatric hospital in Stronie Śląskie, Branice, and the Silesian Rehabilitation Center in Repty Śląskie.

The third approach to humanistic psychotherapy, grounded in existential philosophy, explores themes of human existence, meaning, conscience, and responsibility. A key aspect of this approach is existential analysis, which encourages patients to broaden their value systems, including their appreciation of experiential values like art. This framework highlights the therapeutic potential of music.

4. CONTEMPORARY MAIN DIRECTIONS AND AREAS OF MUSIC THERAPY

The **main approaches to music therapy** outlined offer an attempt to address broad theoretical issues within the fields of music therapy and psychotherapy. However, a cohesive theoretical framework is still lacking, as most literature tends to focus on practical techniques rather than fundamental principles. Additionally, some therapeutic effects seem to occur independently of existing theoretical models, suggesting that the field may still be evolving beyond its current conceptual boundaries.

In broad terms, music therapy can be divided into four **primary areas of impact** (Galińska, 1990). The **psychological** domain focuses on emotional effects. The **pedagogical** area involves using music therapy to treat psychophysical disorders and address children's educational challenges. The psychosomatic aspect emphasizes mental support and the regulation of the body's vegetative functions. Finally, the psychomotor field concentrates on therapy for motor disorders, aiming to

improve physical coordination and movement through musical interventions.

5. GOALS AND TASKS OF MUSIC THERAPY

As in the past, many music therapists today emphasize the profound spiritual experience that music can evoke, believing it can reach the deepest layers of a person's personality. Others focus on music's multidirectional impact on the psyche, using it to help patients release emotions or improve communication. Additionally, some therapists harness music for developmental stimulation, applying it to support cognitive and emotional growth. These varied approaches reflect the broad and adaptable nature of music therapy in addressing diverse therapeutic needs.

Music therapy **goals** vary based on the age group and specific needs of the participants. For adults, the focus may be on addressing emotional, psychological, or social challenges, while for children, therapy often centers on developmental and behavioral issues. These goals are tailored to specific disorders, illnesses, or deficiencies, taking into account the participants' unique abilities, needs, and desires.

The **first and most important** is to promote positive changes in a person's behavior and their relationships with others, fostering improved self-awareness and social interactions. The goals of music therapy may concern:

- diagnosis – it allows for the recognition of cognitive-developmental, emotional, and manual needs of participants regardless of age;
- therapy – because it focuses on the externalization of experiences, the increase of socialization, emotional-social, perceptual-cognitive abilities, and the improvement of movement capabilities;
- relaxation – it allows for the release of aggression and internal tensions (Arciszewska-Binnebesel, 2003).

Intermediate goals in music therapy serve as steps toward the primary objective of promoting positive changes in behavior and relationships. These goals focus on emotional expression and the release of tension, addressing specific aspects of a participant's condition or problem. They outline pathways to the main goal, clarifying the desired outcomes. Broadly, music therapy goals can be categorized into therapeutic, developmental, musical, educational, and social areas, each focusing on aspects such as emotional regulation, skill development, and social integration. Examples in these areas include:

a) musical:

- developing interests, predispositions, and musical talents;
- developing hearing, melody, rhythm;
- creating situations for personal expressions by means of using music and movement;

- providing knowledge in the field of music;
- familiarisation with various types of musical materials;
- preparation for participation in and reception of culture;

b) therapeutic:

- stimulating the all-round development of a person;
- relieving negative emotions;
- shaping the emotional sphere (mood, emotions, feelings);
- raising self-esteem;
- familiarisation with safety rules that are worth following in the process of creation;
- exercising concentration and discipline;
- developing the ability to communicate with peers and adults;
- working on expressing one's own "self" through music;
- relieving negative emotions;
- shaping the ability to express one's own feelings;
- improving the child's general well-being (Bea-Bleja, Arciszewska-Binnebesel 2003);

c) educational and social:

- learning independence,
- opening students to social contacts,
- developing proper interpersonal communication (initiating contacts),
- influencing the state of psychomotor arousal, as well as emotional and muscular tension,
- enriching and supporting diagnostic methods,
- positively influencing the patients' mental and physical state,
- arousing specific physiological reactions,
- shaping patients' personality (affects behavior, gaining new emotional and intellectual experiences (Natanson 1992).

The overarching goal of music therapy is to facilitate the patient's optimal adaptation within their social environment. The most frequently implemented goals of music therapy include: motivating for cognitive and motor activity, improving psychomotor skills, correcting body defects, reducing psychophysical and emotional tension, channeling and sublimating aggression, improving the senses and balance, practicing self-orientation and orientation in space, developing creative expression, reducing fears and tensions, increasing the sense of security and building trust, facilitating and deepening self-acceptance, awakening the feeling of agency, strengthening faith in oneself and one's

own strengths, developing confidence in action, improving communication and cooperation, providing pleasure, joy and satisfaction, influencing the child's motor sphere; developing the social, emotional sphere, improving awareness of one's own body; developing concentration of attention, memory, imagination, shaping eye-hand coordination, stimulating the body in the scope of voluntary movements, allowing for the reception of pleasant and enjoyable experiences, sensitising to the reception of stimuli from the environment, shaping the grace of movements, a sense of agency, a source of relaxation, developing the ability to cooperate in a group, eliminating undesirable activities and allowing for non-verbal self-expression. The goals of music therapy give rise to tasks that define the activities to be performed by therapists. In this context, the two main tasks of music therapy include:

1. observation, in which attention is paid to the patient's behavior during the therapeutic session using music;
2. intentionally triggering specific reactions that are controlled and directed towards a specific therapeutic goal (Szulc, 2011).

The interpreted main goal and the resulting intermediate goals and tasks result from the adopted type of music therapy.

6. CLASSIFICATION OF MUSIC THERAPY

Music therapy can be categorized into two primary groups. The first is **clinical music therapy**, designed for individuals with health issues, operating under the premise that its activities contribute to treatment and aim for specific health outcomes. The second type is **preventive music therapy**, which manifests in two forms, the first being a**ctive music therapy**, encompassing activities like singing, playing instruments, and movement to music, which require full engagement from participants. This approach allows individuals to express their emotions and enhance communication through sound creation; and the second form is **receptive music therapy**, which focuses on passive listening to diverse music styles aimed at psychophysical relaxation, invigoration, and emotional regulation. This often involves combining music with visual stimuli, such as slides or photographs, as well as scents, making it particularly beneficial in hospital and sanatorium settings.

Active music therapy also promotes expressive activities that respond to music being played. Key elements of this approach include 1) games that stimulate movement and expression (music and movement; stimulating and inhibiting; staging and illustrating; in the field of somatognosis: shaping orientation in the schema of one's own body and integrating), 2) exercises aimed at speech disorders (logarithmic, supporting speech disorder therapy), 3) movement and art inspired by music, including dance, painting, and improvisation (movement, movement stories, dance); art inspired by music (painting,

modeling, modeling); singing (learning the words and melodies of songs, breathing exercises, creating own melodies and words, singing together), 4) playing musical instruments, and 5) creating music through rhythmic structures and improvisation with instruments or everyday objects, including the use of the body as an instrument.

By applying a different criterion based on the number of participants in therapy, we can identify two distinct types of music therapy. The first type is **individual music therapy**, which is employed only in exceptional cases with a single participant. This personalized approach tailors the musical experience to each individual, allowing for the selection of specific timings and methods that suit their needs. Creative techniques are employed to help clients overcome fear, boost self-esteem, and engage with music more consciously. Individual music therapy can also incorporate complementary activities such as drawing, painting, or poetry recitation (Lewandowska, 2001). This form of therapy typically utilizes two main methods:

- symptomatic – also known as superficial, which belongs to the group of general impact methods and is often of a supporting nature.
- deep – in which the patient undergoing therapy is led to deep disorders in the psyche, attitude, and behavior.

The second type of music therapy is most often used, i.e. **collective**, which allows for the creation of a

therapeutic group and creates a basis for various interactions. **Group music therapy** is divided into:

- directed (also known as directive) – in which, through a group, all activities are directed at a specific person and a specific problem.
- undirected (non-directive) – which does not assume individual goals.

Group music therapy operates on the principles of group psychotherapy, fostering mutual relationships among participants. This interactive environment cultivates empathy and enhances social functioning, enabling individuals to connect and communicate more effectively with one another (Lewandowska, 2001).

Perceptual music therapy primarily involves the act of listening to music, whether entire compositions or selected excerpts. Patients may engage in this experience in a freeform manner or through guided sessions led by the therapist.

When selecting music for therapeutic activities, it's essential to differentiate between soothing and activating music. Soothing music typically features a short duration, slow tempo, and low volume, characterized by a limited number of musical accents and a consistent progression, avoiding bright or intense instruments. In contrast, activating music is marked by a fast, contrasting tempo, diverse melodies, and dynamic variations, effectively stimulating energy and engagement in participants (Śliwka, Jarosz, Nowobilski, 2006).

Music therapy also incorporates carefully selected sounds of nature and specially composed melodies. Natural sounds, such as birdsong, flowing streams, crashing waves, rustling wind, and falling rain, positively influence mental well-being, promoting relaxation and a sense of calm. Additionally, listening to relaxing music has been shown to enhance the ability to acquire knowledge and develop new skills (Wilczek-Różyczka, 2007).

One of the criteria that determines the selection of techniques used during music therapy is the **age of the participants.** Therefore, we will distinguish music therapy for children, adults, the elderly, etc. Another criterion for classifying music therapy is its **duration**. In this case, we divide it into short-term (i.e. short duration, e.g. 1-2 therapy sessions) and long-term (lasting longer than a month).

Each of the above types of music therapy fulfills specific functions.

7. FUNCTIONS OF MUSIC THERAPY

Each form of music therapy serves specific functions for its participants. Rozmysłowicz (2005) outlines three primary functions: 1) Recreational, which provides an environment for relaxation and relief from stress and daily worries; 2) Educational, offering new knowledge that enhances a person's wisdom and helps them navigate life with greater awareness; and 3) Corrective, aimed at reshaping harmful habits and

psychological structures into more positive and beneficial ones, fostering personal growth and emotional well-being.

A. Araszkiewicz and W. Podgórska highlight three key functions of art and music therapy: 1) It helps patients gain insight into their own problems, releasing strong emotional experiences; 2) It facilitates changes in attitudes and behaviors, improving interactions with oneself, others, and the world; and 3) It supports the process of internal integration, promoting a sense of wholeness. Therefore, art and music therapy are not only beneficial for personal growth but also enhance one's relationships and overall environment (Gładyszewska-Cylulko, 2007).

In turn, G. E. Kwiatkowska, drawing attention to patients participating in therapy through art and music, lists four of their functions:

- sublimation – allowing for the release of negative emotional states through creative activity, thanks to which the external manifestations of these states, e.g. self-harm, and suicide attempts, are reduced,
- creative and integrative – leading to the integration of the human personality, strengthening patients' tendencies towards self-fulfillment,
- projection – stimulating creative activity, in which patients expose their feelings, motives, and attitudes in order to better self-knowledge, interpret, and work through their own problems,

- functional – using creative activity as one of the methods allowing for the liberation of art therapy patients from their pathological state and thoughts (Kwiatkowska, 1991).

E. Konieczna (2007) outlines the functions of music therapy in a framework consistent with previous classifications. 1) expressive – uncovering and releasing suppressed emotions, alleviating tension; 2) compensatory – fulfilling unmet needs; 3) cognitive – learning to recognize, articulate, and express emotions; 4) regulatory – addressing personal shortcomings, failures, and the need for self-fulfillment. From a broader perspective, music therapy serves several key roles in pragmatic, scientific, and therapeutic contexts. These **functions** emphasize its capacity to improve emotional well-being, enhance self-awareness, and foster personal growth:

- adaptive, which concerns situations when one has to accept a state or situation,
- physiotherapeutic, which concerns improving and compensating for lost psychomotor skills and somatic deficiencies,
- psychotherapeutic, which involves building a positive self-image, which leads to alleviating fears, worries, and anxieties, and also preparing to cope with various situations,
- developmental, which has an impact on overall development,

- cognitive-stimulating, which provides information about oneself, but also about the surrounding world,
- diagnostic, which allows one to examine various developmental aspects. Educational, which provides positive role models, worthy of imitation,
- expressive, securing natural needs for action and movement,
- emotional, which provides positive emotional experiences,
- aesthetic, stimulating interests in musical spheres,
- recreational-ludic, i.e. satisfying the need for play, creating appropriate situations for spending free time,
- integrative, which prepares for life and work in a group, teaches and facilitates establishing contacts and develops cooperation,
- readaptation, which is preparation for leaving, for example, a facility or preparation for returning "to life".

During music therapy sessions, children engage in four fundamental therapeutic experiences: release, rhythmisation, relaxation, and activation. Above all, these activities foster joy and shared fun. While music therapy promotes relaxation, it also stimulates mental, intellectual,

and emotional engagement, making children more receptive and sensitive. Music plays a significant role in a child's developmental journey, as they primarily explore their environment through visual, auditory, and tactile sensations. Working with music aids in cultivating clear thinking, enhancing self-awareness, and deepening understanding of the world around them.

8. MODELS OF MUSIC THERAPY

There are numerous models of music therapy, each offering distinct approaches. It is essential to recognize that many music therapists take an eclectic path, combining various solutions, incorporating both active and receptive techniques, and employing improvised, composed, or recorded music. In this discussion, we will focus on the most common and widely practiced models.

Vibroacoustic therapy (VAT) is a well-documented therapeutic technique that uses specially designed furniture to expose patients to low-frequency acoustic waves. This method emerged in Scandinavia in the late 1970s and early 1980s, pioneered by Norwegian therapist Olav Skille, who observed its effectiveness in children with severe physical and intellectual disabilities. The therapy involves sinusoidal waves ranging from 20 to 120 Hz, which help reduce limb spasticity, induce deep relaxation, and lower stress levels. The vibrations provide a strong sensory stimulus, beneficial particularly for individuals with multiple disabilities. Vibroacoustic therapy is versatile, and applied across a broad population—from children to the elderly, in hospitals,

rehabilitation centers, and even at home. It complements the work of medical personnel, physiotherapists, and caregivers, enhancing various forms of care (Boyd-Brewer 2003; Grocke, Wigram 2007).is a very well-documented technique. It involves the use of specially designed furniture to expose the patient to low-frequency acoustic waves.

In the Tomatis Method, patients use headphones to listen to specially modified classical music programs. This music is processed through a patented algorithm that extracts specific frequencies designed to positively affect brain function. The method, developed by Dr. Alfred Tomatis in 1946, is used to treat children with learning difficulties such as dyslexia, dyscalculia, hyperactivity, and memory problems, as well as individuals suffering from depression, anxiety, and chronic stress. The stimulation of non-musical brain centers through musical stimuli is key to the method, particularly involving the middle ear. Despite its popularity, the effectiveness of the Tomatis Method remains controversial, with some studies questioning its efficacy (Stillitano, Fioretti, Cantagallo, Eibenstein 2014; Corbett, Schickman, Ferrere 2008).

The next models in **sound therapy** fall under alternative medicine, and practitioners sometimes align with the New Age movement, as highlighted in Polish publications by Matela and Sakowska (2003) and Romanowska (2004).

Tuning fork therapy is a "new method of alternative treatment, supported by scientific research in the USA, restoring mental and physical health with sound

waves of tuning forks, selected appropriately for diseased organs and diseases" (Romanowska 2004, 34). Practitioners assert that each organ in the human body resonates at its unique frequency, essential for optimal functioning. By placing the appropriate tuning fork on specific points of the body, these vibrations harmonize the organs with the emitted tones. The efficacy of this therapy is enhanced by the body's high water content, which facilitates the transmission of these healing vibrations (Romanowska, 2004).

Tibetan bowls, historically used for therapeutic purposes, have roots dating back to the 12th century BC. Initially utilized as vessels for monks' meals (Humphries, 2010), these bowls vary in size and are crafted from metal alloys or crystals. Typically weighing between 0.6 and 2.4 kg and measuring 9 to 12 inches in diameter, they produce resonant sounds when their edges are rubbed or struck with a specialized mallet. The captivating sound quickly envelops the space, allowing therapists to create improvisational music during sessions (Goldsby et al., 2016).

In the 1980s, composer and acupuncturist Fabien Maman introduced a method that builds on sound wave research's effects on human cells. His **Maman Method** focuses on tuning and harmonizing dysfunctional organs, utilizing tuning forks, vibroacoustic beds, and specially designed instruments (Tama-Do, paragraph 1).

The **Mobile Model of Musical Recreation** is interesting, as it is a system of movement, breathing, and exercise exercises of various forms.

- Bravolution - short and fast movement or emission exercises with music, psychophysical tension is reduced.
- Rhythmisation - short music and movement exercises or tasks with the participation of percussion instruments, subject to musical discipline, used to organize and integrate the group.
- Sensitisation - implementation of the main content of the topic with the inclusion of therapeutic exercises, e.g. elements of pantomime and exposure of tasks related to the perception of music and sensitivity to its elements, expression, and music and movement exercises, plasticity/
- Relaxation - includes isometric exercises and relaxation training with elements of visualization, with calm and quiet music.
- Activation - of a gentle or dynamic nature, movement exercises with music at a lively pace, pleasant atmosphere, aimed at restoring natural life activity and motivation to act. The models and methods in music medicine are interesting, although it is a young and developing field in music medicine. It should be noted, however, that there is a lack of theoretical studies on the subject.

Today, music is widely employed as a therapeutic tool in hospitals to help alleviate a range of conditions,

including neurological, cardiological, and respiratory disorders, as well as during post-traumatic rehabilitation. Additionally, music occupies a significant role in education, serving both therapeutic and didactic purposes.

9. SUMMARY

Numerous authors highlight the significance of music therapy in alleviating the psychological effects of illness, viewing it as a vital source of emotional and spiritual support. They also note the challenges involved in researching and evaluating music's impact on the human body. Music therapy, a specialized form of therapy utilizing music as its primary medium, falls under the broader umbrella of art therapy. Unlike other art forms, music is abstract and asemantic, lacking specific extramusical content, which enhances its ambiguity. This unique quality enables music to directly influence emotions and physiological processes, harmonizing psychomotor skills. Consequently, music therapy fosters interdependence between mental and physiological processes. Its interdisciplinary nature draws from medicine, music psychology, musicology, and aesthetics. Recently, there has been a marked increase in interest in music therapy, particularly concerning its practical applications in therapeutic, educational, and social reintegration settings.

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THEORIES AND MODELS OF MUSIC THERAPY: THEORIES ON HOW MUSIC AFFECTS EMOTIONAL, MENTAL, AND PHYSICAL HEALTH

Aynur TEPE[1]

1. INTRODUCTION

Music therapy is associated with the three fundamental intervention levels proposed by Dileo for clinical applications: supportive, specific, and inclusive interventions. Supportive intervention aims to distract the patient's attention through the relaxing effect of music. Specific interventions are applied using techniques such as improvisation, guided imagery, and music to help the patient understand and confront their discomforts. Inclusive interventions, on the other hand, involve methods that require expertise and training to address the patient's problems" (Torun, 2020, p.24).

There are two main categories of music therapy methods: active and receptive approaches. The active music therapy approach is a process that allows individuals to express their inner world through music. In this process, the individual experiences music not only as

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a listener but as an active participant. One of the most commonly used techniques in active music therapy is improvisation. Improvisational music therapy is used as a therapeutic tool to reveal individuals' emotional insights and unconscious processes. A free musical environment is provided through improvisation, especially to help patients express their difficult-to-access inner emotions and experiences. This type of approach allows the patient to express strong emotions, such as anger and frustration, through musical means.

The musical play method is another effective technique used by music therapists to observe individuals' musical behaviors. In this method, patients are musically liberated and involved in a spontaneous musical expression process. This allows the individual's inner experiences to emerge more easily. Another important technique is songwriting. Songwriting is applied by having the individual verbalize the difficulties they are experiencing and combine these words with either a familiar melody or improvised music. If the individual has difficulty expressing their experiences, a list of words prepared by the therapist can be used, and these words can be sung to familiar melodies, contributing to the therapeutic process. These methods help the individual express their emotions, thoughts, and inner conflicts more easily through music, enhancing the effectiveness of the therapeutic process. Especially when the individual struggles to verbally express their emotions, externalizing them through musical means facilitates the achievement of the therapy's goals (Torun, 2020, pp. 24-25).

Receptive music therapy is a therapeutic method where participants' interactions with music are passive. In this approach, instead of actively producing music or directly engaging in musical processes, individuals participate in therapy by listening to music or through techniques such as guided imagery. In receptive music therapy, carefully selected music pieces are played by the therapist, and the focus is on the impact of these pieces on the individual's emotional or mental processes. The main techniques used in this therapy method are:

1. **Guided imagery exercises**: The therapist guides the individual to evoke certain images in their mind while listening to music. This imagery process allows the individual to access unconscious thoughts and work through them. Music serves as a catalyst to evoke deep emotional and mental responses in the individual's inner world.

2. **Muscle relaxation exercises**: When combined with muscle relaxation techniques, receptive music therapy aims to reduce stress, induce relaxation, and help the individual achieve physical comfort. In these sessions, individuals, with the therapist's guidance, perform relaxation exercises in sync with specific rhythms and melodies.

3. **Music listening exercises**: In this method, individuals listen to specific music pieces under the therapist's direction. Music listening triggers emotional and mental responses, helping the individual connect more deeply with themselves. Music selections are tailored to the individual's therapeutic needs, and

emotional responses that arise during the listening process are addressed within a therapeutic framework.

Receptive music therapy can be particularly effective in managing issues such as stress, anxiety, and emotional tension. The participant's passive experience of music can enhance self-awareness, facilitate emotional regulation, and allow for a deeper connection with their inner world (Lundmark, 2020, p. 43).

2. THEORIES AND MODELS OF MUSIC THERAPY

It is evident that the emotional, physical, bodily, and social benefits of music have led to the development of numerous models and approaches in therapeutic processes. In particular, the United States employs 15 different models and over 100 music therapy techniques. This diversity has caused some confusion within the field and highlighted the need for organization. In this context, the 9th World Congress of Music Therapy, held in Washington in 1999, aimed to introduce widely used models and establish a standard. During the congress, various internationally recognized models were presented in detail by their developers. This step is considered a significant development towards making music therapy practices more systematic and comprehensible. Most models combine active music therapy, where participants actively create music, with receptive/passive music therapy methods, in which participants are more engaged in listening.

2.1. Creative Music Therapy: The Nordoff-Robbins Model

The Nordoff-Robbins Music Therapy Model was developed between 1959 and 1976 as a result of a 17-year collaboration between special educator Clive Robbins and composer-pianist Paul Nordoff. This model stands out as a therapeutic approach in which the individual actively participates in musical activities. During the treatment process, the music therapist and the individual work together, using music as a therapeutic tool. This process is referred to in the literature as the "Nordoff-Robbins model." The music used in therapy can be performed both as pre-composed pieces and through improvisation. This approach allows individuals to explore their creativity, recognize their productive potential, and establish stronger connections with life.

In Öztürk's work "Makamdan Şifaya" (From Maqam to Healing), the description of this approach, as applied at the Nordoff-Robbins Music Therapy Center at New York University, is presented. According to this model, it is argued that every individual possesses an inherent musical ability that can be effectively utilized in the process of personal growth and development. The Nordoff-Robbins model emphasizes that an individual's potential for self-actualization can best be revealed through improvisational music. In this context, the creativity inherent in the individual is used as an effective tool for overcoming emotional, physical, and cognitive challenges. During the therapy process, the patient and therapist create music together, a process defined as "co-

creative effort." The instruments used in therapy are aesthetically satisfying and easy to express, requiring no special musical skills. Therefore, no prior musical education or experience is necessary for individuals to participate in music therapy (Öztürk, Erseven, & Atik, 2015, p. 106). This makes the therapy accessible and applicable to a broad audience.

The Nordoff-Robbins Music Therapy Model particularly focuses on the impact of music in revealing the potential of individuals with disabilities. Initially implemented in the United Kingdom, this model gradually spread to various countries across Europe and the United States. Paul Nordoff's observations of the positive effects of music on children with disabilities laid the foundation for a new approach to music therapy. Notably, studies conducted at the University of Pennsylvania Day Care Unit for Autistic Children demonstrated the effectiveness of this model and led to the development of songs, instrumental activities, and games aimed at fostering the development of children with disabilities.

2.2. Analytical Music Therapy: Mary Priestley Model

The Analytical Music Therapy (AMT) model was developed in the early 1970s by Mary Priestley. Associated with the Creative Music Therapy and Active Music Therapy approaches, Analytical Music Therapy employs music not as an aesthetic pursuit, but rather as a functional tool for revealing and addressing the individual's internal issues. Priestley designed a model in

which musical symbols are used in non-verbal, improvisational interactions between the therapist and the patient, which transform into a therapeutic dialogue. In this method, the therapist and the client engage in a musical dialogue, sometimes through singing or by playing an instrument chosen by the client. The therapist's role is to encourage the client to explore their self-healing potential and to help the client focus on their mental resources (MacDonald, Kreutz, & Mitchell, 2012). In this context, music functions not only as a medium of expression but also as a means to access the client's unconscious and to reveal deep emotional processes.

This therapy model is particularly preferred in the fields of psychiatry and psychosomatic medicine and is also known as "Analytically Oriented Music Therapy." One of the fundamental principles of the model is the establishment of a trust-based relationship between the therapist and the patient. This trust relationship is crucial for enabling the individual to express themselves freely and to reveal complex psychological issues through music. The therapeutic process is built on improvisational music that directly reflects the patient's emotional and psychological state. Before the session begins, discussions between the therapist and the patient determine the topics to be addressed in therapy. These topics are addressed through improvisational music throughout the sessions, allowing the patient to express emotions non-verbally through music.

In Analytical Music Therapy, the improvisation process develops through collaboration between the

therapist and the patient. While the patient uses music to express themselves, the therapist may take on a supportive role based on the patient's needs or may even inhibit further emotional progression. During therapy, the patient may not always want to actively produce music; in such cases, the therapist may improvise on behalf of the patient, guiding the process. Another crucial phase of the session is the verbal reflection that occurs after the musical experience, where the emotions evoked through music are expressed and discussed. This phase allows the patient to recognize the unconscious emotional processes that surfaced during the musical interaction and to consciously evaluate these processes (Öztürk et. al., 2015, p. 112).

To better understand the process of Analytical Music Therapy, some examples can illustrate how this therapeutic method is employed to address various psychological and emotional challenges. For instance, after experiencing a severe traumatic event, an individual may struggle with post-traumatic stress disorder (PTSD). In this case, Analytical Music Therapy may use improvisational music as a medium for the individual to work through traumatic memories and emotions. At the start of the session, the therapist may encourage the patient to express their feelings about the trauma through an instrument, without the need for verbal explanation. For example, while improvising at the piano, the patient might use intense rhythms to express feelings of anger or anxiety. The therapist, observing the music, may notice the emotional tension and respond by altering the tempo of the music, creating a calmer atmosphere. This unconscious emotional release through music allows the

patient to confront the destructive effects of the trauma. After the session, the therapist discusses the musical process with the patient, exploring how the emotions were expressed and how they can be understood on a conscious level. In this way, the patient can bring unconscious emotional processes to the surface through music and work through them.

2.3. Cognitive-Behavioral Music Therapy

Behavioral music therapy is an approach rooted in the behavioral school of thought, based on the premise that pathological behaviors can be altered by intervening in the environmental stimuli that trigger these behaviors (Karahasanoğlu & Çevirme, 2020). This model does not aim to eliminate negative behaviors directly through the influence of music, but rather to foster and reinforce positive and desirable behaviors once the negative behaviors are identified and analyzed (Aydın, 2013; Yılma, 2014). Therefore, in this therapeutic approach, it is assumed that behavioral disorders can be treated once the stimuli are controlled.

The primary goal of behavioral music therapy is to ensure the continuity of desired behaviors by supporting them through a reward system. The methods used in therapy include improvisation with instruments, singing, listening to music, and musical games. Music functions in this process as a signal, time structure, focus of attention, and reward (Öztürk et al., 2015, p. 113). The therapist encourages the client's positive behaviors through music, using a reinforcement strategy to ensure the repetition and consolidation of these behaviors. As this approach aims to

modify behavior, it focuses more on changing unwanted behaviors and alleviating symptoms rather than deeply analyzing the underlying causes of the behavior. In this context, music serves as an essential tool both for structuring the therapy process and for focusing the client's attention on the desired behaviors.

Behavioral music therapy has become particularly widespread in applications for children with autism spectrum disorders, attention deficit hyperactivity disorder (ADHD), and other behavioral disorders. For example, a child diagnosed with ADHD may experience difficulties in concentrating in class, completing homework consistently, and displaying appropriate social behaviors. The child may frequently leave their seat, talk to peers, and disrupt the teacher during lessons. Behavioral music therapy can be employed to address these negative behaviors.

In therapy, a specific goal is set with the child: "To remain seated for 10 minutes during class." To facilitate achieving this goal, music is used as a reward system. After each successful period of sitting, the child is given the opportunity to improvise with an instrument chosen by the therapist or to sing their favorite song. Positive behaviors displayed by the child during class (staying seated and concentrating) are thus reinforced through music, encouraging repetition. Over time, the use of music helps the child maintain these positive behaviors for longer durations. Music in this process serves as a tool to help the child focus on the desired behavior. The therapist can measure the child's attention span through musical

activities and use music as a reward to encourage positive behaviors. Over time, the child reinforces positive behaviors through musical rewards, gradually replacing negative behaviors. In conclusion, behavioral music therapy targets behavior modification based on environmental factors, using music as a central component of the process. In this therapy, music functions as an effective tool for motivating the client and reinforcing positive behaviors.

2.4. Guided Imagery and Music (GIM) – The Bonny Method

Imagination is one of the most powerful tools of the human mind. The ability to recall images from memory, create them through imagination, or combine both can elicit sensory and physiological reactions. Imagery not only involves producing mental images but also stimulates multisensory perceptions such as sound, smell, taste, movement, and vision. For example, when we imagine cutting a lemon and seeing its juice flow, we might experience salivation as a physiological response. This phenomenon illustrates the deep connection between the mind and body. In this context, guided imagery emerges as a profound and comprehensive approach to music psychotherapy.

The Guided Imagery and Music (GIM) method was developed by Helen Bonny in the 1970s while she was working as a music therapist at the Maryland Psychiatric Research Center in the United States. Bonny believed that the therapeutic experiences facilitated by drugs at that time could also be achieved through music, aiming to use

music as a substitute for medication. This model enables patients to have deep inner experiences and explore unconscious emotions without the use of drugs (Wigram, Pedersen, & Bonde, 2002, p. 116). It has been proven effective, particularly in cases of trauma, anxiety disorders, addictions, and chronic illnesses (Wigram, Saperston, & West, 2009, pp. 112-114). GIM continues to be applied today as an approach that seeks to reach the unconscious and reveal emotional, mental, and spiritual elements in a therapeutic context.

One of the primary goals of Bonny's GIM method is to unlock emotional blockages by accessing the unconscious with the guidance of music. During this process, clients listening to music can access emotions that they may have suppressed or been unaware of with their conscious mind. Music helps to bring out metaphorical images and symbols from the client's inner world, assisting them in confronting deep fears, traumas, or desires present in the unconscious. These images that emerge through music serve as important tools in therapy, and the therapist guides the client on how to work with them. GIM can be used for clients dealing with drug addiction, neurotic disorders, and life-threatening diseases such as cancer and AIDS, as well as for personal development, creativity exploration, and fostering deeper self-awareness. Music in this context relaxes the individual's conscious defenses, allowing for a more profound inner journey and spiritual transformation.

The Bonny GIM method consists of a five-stage process. Each stage is carefully structured to help the

individual explore their inner world and contextualize their experiences in a therapeutic setting. These stages are:

1. Beginning Stage: The session starts with a preliminary conversation between the therapist and the client. This dialogue allows the client to prepare for the session and express themselves before entering the therapeutic process. The therapist gathers information about the client's emotional state, mood, and the purpose of the session.

2. Induction Stage: The client lies down and closes their eyes. The goal of this stage is for the client to relax their consciousness and set aside their ego. The client prepares to delve into the depths of the unconscious, away from the external world and daily concerns. The therapist may suggest breathing exercises or brief meditations to help the client relax.

3. Music Journey Stage: The therapist plays selected music for the client. While listening, the client is asked to describe the images that the music evokes in their mind. The therapist listens attentively and takes notes as the client narrates these images. These images are often interpreted as metaphorical representations of the client's emotional and psychological processes. Throughout the session, music guides the client on a journey, enabling them to access deep thoughts and emotions.

4. Return-Reintegration Stage: After the music ends, the client is asked to open their eyes. At this stage, the client recounts the experiences from their music journey while readjusting to the external world. To help the client make their experiences more tangible, various

forms of artistic expression may be used. For instance, the client may be asked to create sculptures from clay, draw mandalas, or write poetry. This creative process aids in making sense of the internal experiences.

5. Verbal Processing Stage: In the final stage, the client explains their music journey experiences to the therapist. The therapist analyzes the unconscious images that surfaced and explains how these experiences might relate to the client's daily life. This stage is crucial for the deep analysis of the therapeutic process and for helping the client gain awareness of how these unconscious processes manifest in their everyday life (MacDonald, et. al., 2012, p. 44).

This method continues to be an influential approach in music therapy, offering a unique way to explore the unconscious and foster personal growth through music and imagery.

2.5. Benenzon Music Therapy

Benenzon Music Therapy was developed in 1966 by psychiatrist, musician, and composer Roland Benenzon in South America and later spread across Buenos Aires, Argentina, and other countries in Southern Europe. This therapeutic method aims to successfully treat clinical cases through music (Wagner, 2007). Based on a psychoanalytic foundation, this method consists of three main stages: preparation and purification, perception and observation, and vocal dialogue. Benenzon's approach seeks to deeply explore the behavioral and mental processes of individuals, progressing through genetic and biological foundations.

Benenzon Music Therapy uses music as an active tool of participation, encouraging clients to channel their creative energy toward communication with others. Unlike passive music listening, this therapy involves active participation from the client. Positive effects and other therapeutic outcomes are then addressed through various approaches like physical therapy, psychomotor therapy, and sound therapy. Music therapy is grounded in the capacity to form relationships and connections without verbal communication, with the aim of fostering meaningful interactions between individuals. It seeks to access symbolic values embedded in the unconscious as well as the subjective cues discovered during the therapeutic process. This process involves analyzing how genetic and biological structures influence behavioral and mental thought patterns. The therapy consists of three main stages:

1. **Preparation and Purification**: In this stage, the individual's initial reactions to music are observed. The preparation phase aims to balance the client's emotional and mental state. Through music, emotional burdens hidden in the unconscious are brought to the surface, facilitating emotional purification.

2. **Perception and Observation**: In the second stage, the client's perception of and response to the music are carefully observed. This stage focuses on uncovering both the conscious and unconscious reactions of the client. The therapist analyzes these responses and adjusts the direction of the therapy accordingly.

3. **Vocal Dialogue**: In the final stage, a vocal dialogue is established between the therapist and the client through music. This stage allows the client to externalize their inner world through music, with the therapist interpreting these expressions (MacDonald et. al., 2012, pp. 54-55).

To illustrate Benenzon Music Therapy through a case study: A 35-year-old woman sought therapy for severe anxiety and post-traumatic stress disorder (PTSD). The trauma stemmed from childhood emotional neglect and instances of domestic violence. The client exhibited deep withdrawal and had difficulty expressing herself. In the initial sessions, she struggled to connect with the music and felt distant and unresponsive even in the sensory environment created by the music.

- **Preparation and Purification Stage**: In the initial sessions, the client was introduced to calming, slow-tempo music. During this phase, the therapist observed the emotional reflections of the client and noted the calming effects of the music on her. Gradually, the client showed improvements in deep breathing and physical relaxation, indicating that the music was aiding in her mental purification.
- **Perception and Observation Stage**: In subsequent sessions, the client's unconscious reactions to the music became more evident. Particularly, specific melodies that reminded the client of her childhood traumas heightened her anxiety levels, causing visible tension. These

reactions were carefully observed by the therapist, and the association between these traumatic memories and the music became a central focus of the therapeutic process.

- **Vocal Dialogue Stage**: In the final stages, the therapist initiated a non-verbal dialogue with the client through music. Over the course of therapy, the client began to express the emotions evoked by the music more openly, forming a connection with the therapist, particularly through specific melodies. This dialogue offered significant insights into the client's inner world and allowed the therapy to progress to a deeper level.

Benenzon Music Therapy is an effective treatment model that combines a psychoanalytic approach with the power of music to access unconscious processes. Especially in cases of trauma and anxiety, meaningful therapeutic progress can be achieved by accessing the individual's inner world through music. As seen in this case, symbolic values in the unconscious were uncovered through music, and the therapy was successfully advanced.

2.6. Improvisational (Free) Music Therapy (Alvin Model)

Between 1950 and 1980, Juliette Alvin developed the "improvisational music therapy" model as a method applicable in the field of music therapy. Alvin focused particularly on how music therapy could be applied to children with intellectual and physical disabilities, including those with autism, while also enhancing her

expertise in psychiatry. In defining music therapy, Alvin envisioned music as a tool for the healing, rehabilitation, and education of adults and children, especially those with physical, emotional, and mental issues (Brian, Wigram, Pedersen, & Bonde, 2002 p.130). According to Alvin, music and instruments play a more significant role in the music therapy process than the therapist. This is because the patient reflects their negative emotions onto the music and instruments rather than directly onto the therapist (Wigram, 2004, p. 206). Moreover, improvisational music provides a space where both the patient and therapist can freely express their imagined musical ideas. In this context, improvisational music is created and heard without any prior planning.

Improvisational therapy is a method that allows the patient to participate without needing musical skills or education, as the patient is not evaluated based on any musical criteria. The therapist does not guide the patient unless requested, does not interfere with musical rules, and does not structure the music. The patient is entirely free to create musical elements (melody, rhythm, harmony, etc.) or not, and the natural flow of the process is encouraged.

Bruscia suggested that the improvisational music therapy model occurs in three stages. In the first stage, the patient begins to relate to their physical environment, particularly objects. This allows the patient to connect with their surroundings and adapt to the physical setting. In the second stage, the patient starts to develop a relationship with the therapist and accepts the therapist

into their world. Building trust at this stage enables the therapist to enter the patient's inner world. In the third stage, the patient uses the trust and relationship-building skills developed in therapy to interact with others. During these stages of therapy, the patient learns to communicate more comfortably and effectively in social interactions (Bruscia, 1987, pp. 90-95). This process is supported by the confidence gained through therapy, allowing the patient to develop skills for addressing problems in social relationships.

Alvin's improvisational music therapy model emphasizes the importance of the relationship between the patient and the instrument, particularly in her work with patients who have autism and developmental disorders. In this context, the instrument becomes a "safe intermediary" in therapy, reflecting the patient's negative emotions. The patient expresses their emotions through the instrument, and the musical interaction with the therapist develops. According to Alvin, this musical interaction facilitates the establishment and progress of the patient-therapist relationship. Thus, music therapy creates an "equal relationship" between the patient and therapist, helping the patient to express themselves and discover their strengths and weaknesses (Thompson, 2014, p. 772). For instance, an autistic patient may start playing a drum in therapy, using the instrument as a tool to externalize negative emotions. As the therapist participates by playing an instrument as well, the patient begins to develop a sense of trust through this musical interaction. This trust eventually enables the patient to be

more open and communicative with the therapist and, ultimately, with others.

3. THEORIES ON HOW MUSIC AFFECTS EMOTIONAL, MENTAL, AND PHYSICAL HEALTH

Throughout history, music has stood out with its healing effects on human health, and modern scientific research has revealed the neurobiological foundations of these effects. Through its impact on the brain, music supports sensory, cognitive, emotional, and motor functions and is recognized as an important therapeutic tool contributing to both physiological and psychological recovery processes in clinical settings. Additionally, music is believed to play a positive role in the development of moral values. The French saying, "Music beautifies morality," supports this notion that music can create positive moral changes in individuals.

3.1. Music and Neuroplasticity: Effects on the Brain

Functional neuroscience studies have shown that music perception and production are processed in widespread neural networks in the brain, and these processes involve the integration of auditory, tactile, kinesthetic, and visual information. These processes are also closely linked to memory, attention, mood, and higher-level cognitive functions (Altenmüller, & Schlaug, 2013). These findings suggest that music is not just a form of entertainment but can also contribute to the regulation

of non-musical functions by stimulating the brain's neuroplasticity mechanisms. Clinical research has shown that music can create generalized effects in the brain, triggering therapeutic processes and thus contributing to the improvement of physical and mental functions (Schlaug, 2011).

3.2. Clinical Use and Effects of Music Therapy

Music therapy, through an interdisciplinary approach, supports patients' health and well-being and is applied across a wide range of fields such as neurology, psychiatry, pediatrics, oncology, and palliative care. Various studies have shown that music therapy is effective for different age groups and various health issues (Lou, 2001). Music is known to reduce stress, facilitate emotional expression, enhance social interaction, and improve quality of life (Low, McFerran, Viega, Carroll-Scott, McGhee Hassrick, & Bradt, 2022). Additionally, music therapy is used to reduce pain, anxiety, and stress before and after surgical interventions (Biley, 2000; Scouarnec, Poirier, Owens, Gauthier, Taylor, & Rodeheaver, 2001).

3.3. Music Therapy in Neurorehabilitation

Music therapy is used as an effective complementary method in the treatment of neurological disorders. Music activates not only the auditory cortex but also extensive neural networks that manage motor, cognitive, emotional, and social functions. Therefore, music therapy plays a significant role in the rehabilitation of neurological disorders such as aphasia, stroke, and Parkinson's disease (Torun, 2018). Particularly, active

musical activities like playing an instrument have been proven to create widespread activation in the brain, positively affecting sensory, motor, and cognitive functions (Çarıkcı, Ünlüer, & Torun, 2020). As Farabi pointed out, the effects of Turkish music modes (makams) on the human psyche also support the therapeutic power of music. For instance, the Rast mode provides peace, the Hicaz mode inspires humility, the Neva mode brings joy and relaxation, and the Saba mode instills courage (Sezer, 2011).

3.4. Physiological and Psychological Effects of Music Therapy

The effects of music on physiological functions are well documented. Music improves sleep patterns, increases the release of endorphins in the brain to facilitate pain management, and regulates the neuroendocrine response of the body in coping with stress (Qiu, Jiang, Li, Tong, Rong, & Cheng, 2017). Additionally, the use of music therapy before and after surgery as a side-effect-free alternative to pharmacological anxiolytics highlights its clinical advantages (Dong, Zhang, Chen, & Luo, 2023).

3.5. Social and Cognitive Effects of Music Therapy

Music therapy reduces social isolation, improves communication skills, and enhances patients' social functions. Research conducted on Alzheimer's patients shows that music therapy reduces agitation and improves quality of life. It is also noted that music therapy is effective in alleviating psychological issues such as depression and anxiety (Birkan, 2014). Music therapy has also been shown to help premature babies develop their

sucking reflex, aiding in weight gain and facilitating quicker discharge from the intensive care unit (Standley, 2002).

Music therapy is an effective therapeutic method offering a wide range of clinical benefits by stimulating neuroplasticity. Music plays a significant role in regulating both physiological and psychological functions and is actively used in areas such as anxiety management, pain control, and cognitive rehabilitation. Additionally, music's ability to support the development of moral values brings positive contributions to human life.

4. CONCLUSION

Music therapy is based on the supportive, specific, and inclusive intervention levels proposed by Dileo for clinical applications. Supportive interventions aim to distract the patient's attention through the relaxing effects of music, while specific interventions help the patient understand their emotional difficulties using techniques like improvisation and guided imagery. Inclusive interventions involve more comprehensive problem-solving methods that require expertise. These therapy methods are divided into two main categories: active and receptive. Active music therapy allows individuals to engage directly with music, enabling them to express their inner world, while receptive music therapy focuses on emotional and mental processes through passive listening and techniques like guided imagery or muscle relaxation.

In the field of music therapy, there are various theoretical models and techniques that aim to support individuals' emotional, physical, and social development. These approaches were systematically presented during the 9th World Music Therapy Congress in 1999, with the goal of standardizing music therapy practices. Some of the prominent therapeutic models include:

- ✓ **Nordoff-Robbins Creative Music Therapy:** Developed by Nordoff and Robbins, this model aims to help individuals discover their creativity and unlock their inner potential through active participation in musical activities. It has been found particularly effective in working with individuals with disabilities.
- ✓ **Analytical Music Therapy (AMT):** Developed by Mary Priestley, this model aims to reveal unconscious processes through music. The therapeutic process uses improvisation to express and evaluate emotional states at the conscious level.
- ✓ **Cognitive-Behavioral Music Therapy:** Based on behavioral theory, this approach focuses on analyzing negative behaviors through music and reinforcing positive behaviors through rewards. It is commonly used with children who have Autism Spectrum Disorder (ASD) and Attention Deficit Hyperactivity Disorder (ADHD).

- ✓ **Guided Imagery and Music (GIM) – Bonny Method:** Developed by Helen Bonny in the 1970s, this method aims to access unconscious emotions and experiences through music and mental imagery. It helps process emotional issues such as trauma and anxiety.
- ✓ **Benenzon Music Therapy:** Developed by Roland Benenzon in 1966, this psychoanalytic model aims to access symbolic values in the unconscious through non-verbal musical dialogues.
- ✓ **Improvisational (Free) Music Therapy – Alvin Model:** Developed by Juliette Alvin, this model allows individuals to express their emotions freely without requiring musical skills. It is particularly used in working with children with developmental disorders.

Music therapy also has significant neurobiological effects. It supports the brain's sensory, cognitive, emotional, and motor functions, contributing to both physiological and psychological healing processes. Music is shown to trigger neuroplasticity mechanisms in the brain, influencing not only musical functions but also non-musical functions. This demonstrates that music therapy has healing effects on memory, attention, mood, and higher-level cognitive functions.

Music therapy is applied in various clinical fields such as neurology, psychiatry, pediatrics, oncology, and palliative care. Research shows that music has effects like reducing stress, facilitating emotional expression,

increasing social interaction, and improving overall quality of life. Moreover, music therapy has proven effective in reducing pain and anxiety before and after surgery, making it a valuable method in clinical settings. In neurorehabilitation, music therapy is used as a complementary treatment for neurological disorders such as aphasia, stroke, and Parkinson's disease.

In terms of physiological and psychological effects, music improves sleep patterns, increases endorphin release to assist with pain management, and regulates the body's neuroendocrine response to stress. Socially and cognitively, music therapy reduces social isolation, improves communication skills, and enhances social functioning. In patients with Alzheimer's disease, music therapy reduces agitation and improves quality of life. It is also effective in relieving psychological issues such as depression and anxiety. In premature infants, music therapy can help develop the sucking reflex and accelerate weight gain, leading to a faster discharge from intensive care.

In summary, music therapy plays an important role in regulating both physiological and psychological functions through neuroplasticity. It is an effective therapeutic tool in areas such as anxiety management, pain control, cognitive rehabilitation, and psychological support.

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RECOMMENDATIONS AND CASE ANALYSIS FOR USING CLARINET IN MUSIC THERAPY

Güldane EVGİNER[1]

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1. INTRODUCTION

One of the most distinct features of active music therapy is creativity, which requires students with special educational needs to participate in music in various roles. I am a clarinetist and work as a music teacher with gifted students at the Çanakkale Science and Art Center in Turkey, where I frequently use the clarinet for various purposes in my lessons. The children studying at this center have been diagnosed as musically gifted, and the curriculum we use includes fundamental elements of music therapy practices. Additionally, I am an instructor who works with children of all ages using the ORFF SCHULWERK approach and actively incorporates the clarinet in my ORFF lessons. Gifted music students also require social and cognitive musical support, and in these cases, I utilize the active therapeutic effects of the clarinet.

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In this study, I collaborated with my dear friend Nataliya Krachanova, a music therapist working with children with neurological disorders at the Sofia Music Academy, and we planned this work in two parts.

In the first part of this research, we discuss the fundamental playing techniques of the clarinet and later the extended techniques, including essential recommendations for their use by music therapists. The purpose of the text is to provide information about the advantages and disadvantages of using the clarinet in music therapy, what movements a therapist can easily apply with clarinet techniques, and to encourage therapists to use the clarinet.

The second part presents an objective and multifaceted analysis of the case, including theoretical proposals as well as practical applications from two music therapy sessions conducted with children with ASD, utilizing the clarinet and piano.

2. WHAT ARE UNEXTENDED AND EXTENDED MOVEMENTS IN CLARINET?

The clarinet is a member of the woodwind group in orchestral instruments and was invented in the 1680s. Due to its cylindrical wooden body structure, it exhibits a different frequency distribution compared to all other woodwind instruments. While all woodwinds skip a full octave when transitioning between register notes, the clarinet skips an interval of 8 + 5 tones when moving from lower to higher sounds. This results in some differences in

the sound produced by the clarinet as it exits the air column compared to other woodwind instruments[3].

Since its invention, the clarinet has developed within classical repertoire while also comfortably fitting into jazz, pop, foxtrot, and various gypsy music styles in different countries. The technical reason for this is that players, feeling extremely comfortable with combinations of mouthpieces, reeds, and ligatures, prefer the clarinet in different free styles. Additionally, as the heights of the keys move away from the body, much smoother and freer sounds are obtained. This allows players to achieve different timbres in their free expressions, resulting in a colorful and diverse sound world from the clarinet.

When learning to play the clarinet, we can generally talk about two phases:

a) Basic (unextended) clarinet playing techniques;
b) Extended clarinet playing techniques.

In this article, aimed at encouraging therapists who want to add the clarinet to their instruments, we can list the movements that should be applied in basic (unextended) clarinet playing techniques as follows:

a) Correct selection of mouthpiece, reed, and ligature;
b) Mastery of long tones and embouchure control with breath;
c) Mastery of finger positions;
d) Mastery of articulation in tonguing movements (legato, non-legato, staccato, detaché)

[3] https://andrewhugill.com/OrchestraManual/clarinet_construction.html

e) Playing in the registers of Chalumeau, Clarino, and Altissimo.

The correct choice of mouthpiece, reed, and ligature should be made from extremely comfortable, open-mouthed mouthpieces, selecting the most comfortable reeds suitable for the mouthpiece, unlike orchestral players in professional classical music. Generally, as the reed number decreases Blowing, maintaining breath, and producing sound become easier. A sharp, piercing timbre is achieved, but it also allows for more colorful and varied sound production. It would be appropriate to try out many reeds to choose one that does not tire the player and allows for different sounds. The mouthpiece is a very personal choice. However, as a general rule, open or half-open mouthpieces will provide comfort for the player. In terms of ligature, the most important point is that it fits well on the mouthpiece and sits comfortably on the reed, allowing it to vibrate freely. There are many different ligatures available, and the player should try them out individually.

Breath control will require special practice. A therapist will find it easy to control their breath. For this, utilizing breathing exercises such as yoga and meditation, alongside medical devices that enhance breath control, can be beneficial. Blowing long tones on the clarinet will develop both breath and embouchure (the muscles around the mouth and lip position) and will elevate control to a higher level.

In finger exercises, gradual progress from slow to fast can be planned. Knowing chromatic scales and scales

will help speed up finger movements. Additionally, playing arpeggios correctly will also relax the therapist in basic movements. The right-hand thumb must support the weight of the clarinet. Therefore, managing the load on the finger while moving the other fingers correctly will require some practice. A clarinet strap can also be used to lighten this load.

Articulation on the clarinet is quite similar to the act of speaking. Therefore, specific exercises to develop tongue movements for articulation will respond quickly. Clear transitions in staccato and legato, as well as detaché and non-legato articulations, will initially be sufficient for a therapist. All of these articulations come from the relationship between the tongue and lips when expressing musical phrases.

The clarinet has a very wide range of sounds. A therapist who can master transitions between the Chalumeau, Clarino, and Altissimo registers will be able to easily play a melody in the desired octave. The register key behind the clarinet allows for skipping 13 notes at once with the same finger position. Therefore, even though the finger positions for the upper octave and the lower octave are the same note's octave, they differ. The clarinet allows for very precise nuances. In this single-reed instrument, transitioning from ppp to fff nuances or vice versa is quite easy. Properly controlling and adjusting the breath translates into easily applied dynamic nuances on the clarinet.

The extended playing techniques and finger usage on the clarinet can be considered extremely complex.

However, in the hands of a developing therapist, it can transform into a colorful instrument that imitates natural sounds, similar to simple ORFF instruments preferred in music therapy. With its wooden body and single reed, the clarinet can be used in many sound-producing mechanisms such as percussive, rubbing, air sounds, and shaking. The extended techniques for professional playing on the clarinet can be outlined as follows[4]:

1. **Multiphonics**
2. **Microtones**
3. **Circular Breathing**
4. **Flutter Tonguing**
5. **Slap Tonguing**
6. **Growling**
7. **Glissando**
8. **Key Clicks**
9. **Altissimo Register**
10. **Overblowing**
11. **Pitch Bending**
12. **Quarter Tones**
13. **Singing and Playing**
14. **Air Sounds**
15. **Bisbigliando**

[4] https://www.pdmusic.org/clarinet-extended-techniques/#Altissimo_Register, Klarnette extendet teknikler ve videolar

While applying some of the extended clarinet techniques commonly used in contemporary clarinet repertoire requires professionalism, others do not necessarily require professional skill. The basic clarinet playing movements that a music therapist can perform will be comfortably sufficient for some of the extended techniques.

3. WHAT IS ACTIVE MUSIC THERAPY?

Although music therapy has existed as a complex therapeutic practice since the 'dawn of time,' it has only established itself as a scientific discipline and clinical profession at the end of the last century. The accumulated experience in music therapy has led to the emergence of various definitions of music therapy. Here, we will provide the definition by Kenneth Bruscia—one of the most prominent specialists in this field: „*Music therapy is an interpersonal process in which the therapist uses music and all of its facets-physical, emotional, mental, social, aesthetic, and spiritual---to help clients to improve, restore or maintain health. In some instances, the client's needs are addressed directly through the elements of music; in others, they are addressed through the interpersonal relationships that develop between client and therapist or group. The music used in therapy may be specially created by the therapist or client, or it may be drawn from the existing literature in various styles and periods*"[5].

Music therapy is divided into two main directions—active and receptive (passive). In receptive

[5] **Bruscia,** Kennet. Case Studies in Music Therapy. Barcelona: Barcelona Publishers, 1991, p. 5.

music therapy, the patient listens to selected musical works based on various criteria, which are later discussed with the therapist. Active music therapy is defined as a combination of music and therapy, where patients actively participate in making music rather than being passively exposed to it. Active music therapy can include several musical activities, including rhythmic exercises, musical instruments, and singing[6]. In more explicit terms, a general classification criterion frequently used in music therapy applications is related to 'the relationship between the patient/client and music during therapy' or 'how the patient/client experiences music during therapy'. Accordingly, while the musical dimension in receptive music therapy practices is essentially limited to 'listening to music and carrying out the therapy process within the framework of this action', in active music therapy practices, clients actively participate in various musical actions within the framework of the session plan prepared in line with therapeutic goals. These creative musical interactions shared with the therapist may include a wide range of activities such as meeting instruments, playing instruments, making vocal and/or instrumental improvisations, writing songs, reviving known songs with different lyrics or melodies, and playing music-movement based games.[7]

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6 **Schneider**, Lydia, Louisa **Gossé,** Max **Montgomery,** et. al. Components of Active Music Interventions in Therapeutic Settings – Present and Future Applications. – In: *Brain Sci*., Vol. 12, Issue 5, 2022 May, p. 2 – 13.

7 **Torun, Ş** (2020). Active approaches in music therapy and neurocreative music therapy [in Turkish]. Torun Ş, editor. Music Therapy, Music Medicine and Other Music-Based Applications. Ankara: Turkey Clinics; 2020. p.20-30.

In this study, we aimed to create a new world of instruments and sounds for therapists looking for new tools in active music therapy. In this context, we sought answers to the questions of what the therapeutic benefits of using the clarinet in active music therapy could be, which features of this instrument could be emphasized as advantages compared to other musical instruments, and how these could encourage music therapists to use the clarinet. In this context, to provide objective answers, we decided to conduct experimental music therapy sessions focusing on the active participation of the clarinet in the process.

As emphasized in the relevant literature, active music therapy aims to solve concepts, produce music in the communication and interaction process, look at objects and events differently, and produce new solutions, in other words, to activate creativity, which is a very important dimension[7]. Therefore, in this study, we preferred not only musical materials that include basic clarinet playing movements, but also extension clarinet techniques that will strongly support creativity.

4. METHODOLOGY

4.1. Participants

The study was designed in two consecutive music therapy sessions, in which two children participated. The first is 8 years old and has a diagnosis of intellectual disability. The second is 12 years old and has been diagnosed with autism spectrum disorder (ASD). The

music therapy sessions took place in Sofia, Bulgaria, on October 12, 2024.

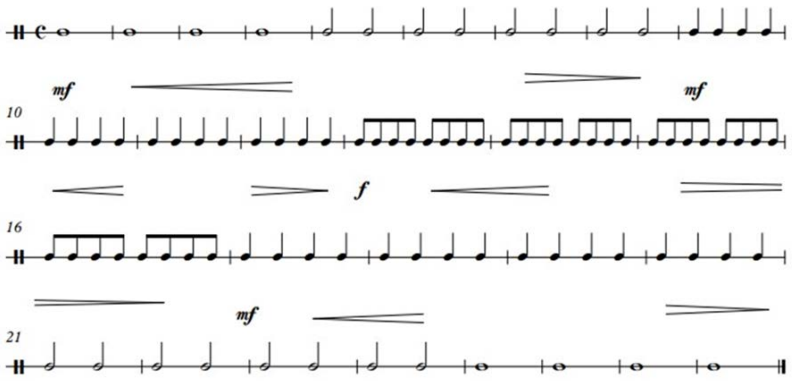
4.2. Structure and Content of the Music Therapy Sessions

4.2.1. Exercise 1

"Introduction"

The first exercise involves performing three rhythmic-motor tasks against the backdrop of music from three short piano pieces titled "*Introduction*", "*Canon*" and "*Vals*." It is important to clarify that in previous sessions, the children performed these tasks in their original form, that is, played on the piano. For the purpose of this study, the pieces were adapted, performed, and recorded on the clarinet. In the clarinet interpretation of the pieces for this exercise, basic playing techniques such as legato, non-legato, and rhythmic patterns with staccato technique were used. The goal was to check whether the children recognized the musical content of the pieces, despite them being played on the clarinet; whether they liked the timbre of the clarinet; and whether the clarinet helped them perform the rhythmic-motor tasks more successfully.

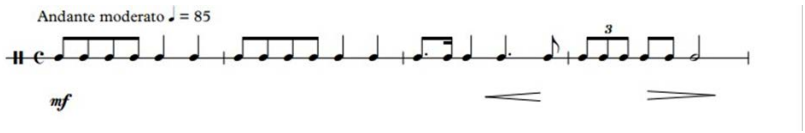
Performance: The therapist holds the child's hand and shows them how to synchronize their steps to the different note values of the rhythmic pattern of the piece:



* The therapeutic goal of this task is to develop the child's sense of different durations of time. This is closely related to the perception of past, present, and future, which is often disrupted in children with ASD.

4.2.2. *"Canon"*

Performance: The exercise consists of a motor canon, where the rhythmic pattern is played through various movements of body parts. The canon is learned by layering each subsequent measure until the entire rhythmic pattern is mastered. The therapist selects the movements according to the physical abilities and condition of the patient. The rhythmic pattern of the piece „*Canon*" is as follows:



* The therapeutic goal of the exercise is to develop the child's motor memory and to address cognitive deficits, such as learning directions like left-right, up-down, forward-backward, and others.

4.2.3. "Vals"

Performance: The exercise consists of marking the strong metric beats of the waltz using various musical instruments – triangle, tambourine, maracas, and others.

*The therapeutic goal of the exercise is to enhance the child's tactile awareness, as well as the ability to play in a duet, which improves communication and the therapist-patient relationship.

4.2.4. Exercise 2

The second exercise was performed in two variants.

A) The first variant develops the patient's ability to perceive, memorize, and reproduce rhythmic patterns of varying durations, which in turn influences the development of different types of memory. The exercise is based on research that proposes the hypothesis that the initial perception of rhythmic stimuli is stored in *sensory memory*, meaning that events are remembered more as sensations than as auditory perceptions. Following sensory memory is *echoic memory*, which captures rhythmic stimuli lasting about two seconds. Once the limitations of echoic memory are exceeded, it is the turn of *short-term* or *working memory*, which can now integrate the musical content of a musical phrase or musical sentence[8].

Performance: The therapist plays various rhythmic patterns of different lengths that the patient must repeat

[8] **Brower,** Candace. Memory and the Perception of Rhythm. – In: *Music Theory Spectrum*, Spring, 1993, Vol. 15, No. 1, p. 19 – 35; електронен източник: https://www.jstor.org/stable/pdf/745907.pdf

after them. In this case, the rhythmic patterns were pre-recorded and played on a single pitch on the clarinet. The patterns used were as follows:

a)

b)

c)

*The therapeutic goal of the exercise is to improve concentration and develop echoic and short-term memory.

B) The second variant of the exercise builds upon the first. It involves playing the specified rhythmic patterns, alternating them between the upper and lower registers of the musical instrument (in this case, the clarinet).

Performance: The therapist plays the rhythmic patterns, and the patient must repeat them, with the upper register executed by clapping hands high above the head, the middle register at chest level, and the lower register by tapping hands on the thighs or stomping feet.

4.2.5. Exercise 3

Students listened to various effects produced using extended techniques on the clarinet.

a) Key Clicks – Train Sound Effect

This extended technique allows sound production by tapping on the keys of the clarinet, creating different notes along the body of the instrument. In the session, I played a train movement effect by tapping the keys gradually from slow to fast.

b) Air Sound Blowing Technique – Wind Sound Effect

This technique involves taking a blowing position with the reed attached to the mouthpiece but producing sound without applying pressure on the reed. Using this technique, I created a sound effect resembling wind.

c) Without Mouthpiece Technique – Cow Sound Effect

These sounds were played for both students, and they were asked what they resembled. The goal was to stimulate the student's imagination and make them aware of the impact of unusual sounds. This technique involves removing the mouthpiece and pressing the barrel with just the lips to create a buzzy sound, resulting in a thick tone that mimics a cow's sound effect.

4.2.6. Exercise 4

To see the effect of the clarinet sound on the students, they were asked to describe their emotions using colored cards. In another activity, they were encouraged to imagine what kind of instrument the clarinet is and to draw it. This exercise was designed to stimulate their imagination and enhance emotional expression.

5. FINDINGS

In the second part, exercises with the clarinet yielded different findings for both students. The songs selected and the responses given by the students for exercises 1, 2, 3, and 4 are summarized in the table below.

Table 1. ***Comparison two childrens reactions in the session***

	Methods	**1st. Child**	**2nd. Child**
Exercise 1	Introduction, Vals, Canon melodies with, as first piano and second with clarinet	Synchronization with both piano and clarinet is very good. She said that she loved both instruments very much. In the third exercise - Waltz - the girl was noticeably in a very good mood and shared that, in his opinion, the clarinet has a very "beautiful sound".	The kid likes the sound of the clarinet much more than the sound of the piano because, according to him, it shows him much more clearly what to do.
Exercise 2	Rhythmic patterns with first clave and second clarinet for realizing the low, middle, and high register differences	The rhythmic exercise made the children's job even more difficult. It took quite a few repetitions for him to start repeating them correctly. Once we knew them, we moved on to distinguishing between different registers. The exercise was carried out as follows: middle register - repetition of the rhythmic pattern by clapping hands in front of the chest, low register - clapping hands on legs, and finally upper register - clapping above the head. When she was presented with the same patterns on the piano, she said that both paths were open.	He likes to play flute and wants to show the flute seems like a clarinet and stick body shape and wind instrument. However, he can easily distinguish the difference between the register in the rhythmic patterns played on the low, middle, and high registers with the clarinet and plays by raising his hands to different heights.

Exercise 3	Extended clarinet techniques with key clicks, air sound blowing, without mouthpiece sound imaginations	Practicing with the effects was a lot of fun and added to the enjoyment of the session. She recognized the wind, the voice of the cow said that it was a lion, but she could not recognize the sound of the train	He also recognized the wind from the effects, and at the sound of the cow and the train, he just smiled and shook his head.
Exercise 4	Clarinet sound and the description of their effects by drawing the picture and choosing color cards for emotions	The color the boy chose for the clarinet was GOLD because for him the clarinet is a TREASURE!	He chose a yellow color, like the sun, and drew an ANGEL!

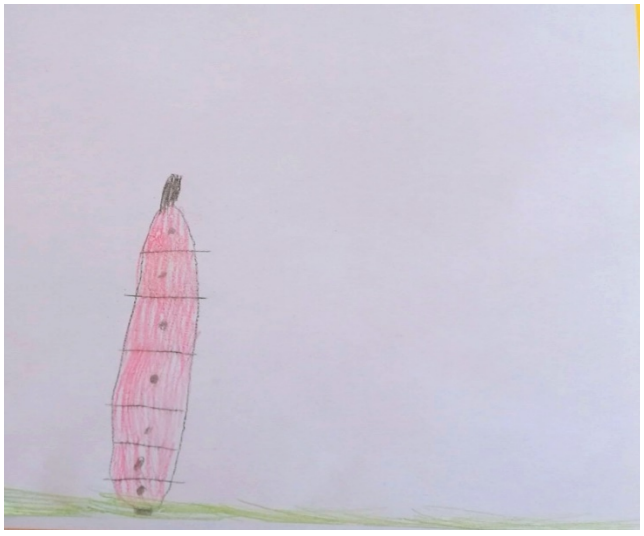


Figure 1. ***Cognitive deficite diagnosed child's clarinet image***

Figure 2. ***Autism diagnosed child drawed an angel for sound of clarinet***

6. CONCLUSION

This study aims to encourage therapists to play the clarinet, which is less conventional compared to instruments like the piano, percussion instruments, and guitar. There is no direct source describing a therapy solely focused on working with the clarinet. This study is the first to combine professional clarinet recordings with melodies and rhythmic structures using unextended and extended clarinet techniques. In the literature review, an important source discussing similar studies conducted by music therapists, either professionally or at a basic level, with children and adults with various special educational needs is the book "Flute, Accordion or Clarinet." The experiences described here generally narrate interactions with clients who have different needs, emphasizing how the clarinet, when the therapist's main instrument, allows for mobility and comfort in playing, which positively

reflects in therapy, including evoking emotions not only in the client but also in their families during difficult processes like grief. Furthermore, it is noted that the sound of the clarinet can evoke the tenderness of a "mother's voice," and scientific studies also mention its similarity to the human voice.

In another study, research indicated an increase in the number of alpha waves in the parietal lobe of students listening to Mozart on the clarinet using Finale music software, associated with attention, mental calmness, and relaxation[9]. This may explain the positive therapeutic effects of the clarinet's sound.

The clarinet produces warm tones and smooth transitions, making it suitable for dramatic solos or lively melodies characterized by scherzo. Creating different characters during improvisation is particularly easy. Additionally, there are general advantages for both therapists and students when using the clarinet in music therapy. A therapist playing the clarinet at a basic level can move within the classroom, enabling eye contact with the students, accompanying their movements, and providing a close auditory experience of the music.

A music therapist's ability to play the clarinet at a basic level (unextended) and incorporate simple extended techniques into their sessions can help achieve therapeutic goals while allowing the student to produce a wide variety of sounds from an instrument known for its agility among wind instruments. Even a music therapist with no

[9] **Shih**, Y.-N., & Chiang, H.-S. (2004). Effects of different musical wave types on the EEG: A pilot case study. *Fu-Jen Journal of Medicine*, 2(3), 213-217

prior experience with the clarinet can quickly apply the three extended techniques mentioned in this study and use them for sound imagination and improvisation in their therapy sessions.

Moreover, the clarinet has sensitive musical dynamics, allowing for nuanced playing, changes in tempo, and the ability to adopt a very entertaining or dramatic playing style. It is quite suitable for showcasing different characters in music. For a therapist, producing clean sounds from the Chalumeau register (starting at E3) and the Clarion register (ending at C6) and being able to play melodies may initially be sufficient. The clarinet has a wide range of sounds however, so it operates at maxima in impedance, and with a similar closed length of bore, it plays C4, an octave lower than the flute as an alto instrument [10]and producing a C6 sound will not be difficult for a music therapist in terms of both lip and finger positioning.

There are many factors influencing the therapist's choice of instrument, and there seems to be no research focusing on professional clarinet players who participate in therapy sessions. This study is the first to introduce students to the clarinet through professional recordings, combining extended and unextended techniques in playing rhythmic structures and melodies.

The three techniques mentioned (1. Key Clicks, 2. Air Sound Blowing, and 3. Without Mouthpiece) have two fundamental common features that enable their use in

[10] **Wolfe,** J. (2018). The acoustics of woodwind musical instruments. *Acoustics Today*, 14(1), 50–55.

music therapy. The first is that they do not produce very loud sounds, making them easily applicable for students with sensitive hearing who need to avoid loud noises. The second feature is the ability to produce melodies using sound keys and play like percussion instruments. The three types of techniques selected from the extended techniques can be easily played by therapists who have no prior experience with the clarinet, which can be encouraging for them.

The only apparent disadvantage of using the clarinet in therapy is that the therapist cannot simultaneously play the clarinet and sing the lyrics to a song. Aside from this drawback, the advantages it provides in non-verbal musical and sound experiences make extended or basic playing techniques important in music therapy for fostering students' development, love of music, awareness of musical qualities, and the ability to establish physiological and emotional connections with therapists. All of these techniques involve basic (unextended) movements, enabling the presentation of many melodies, improvisation, and melodies of different characters.

Currently, in active music therapy, musical instruments are primarily divided into professional and non-professional categories. Among the professional instruments, the most commonly used are the piano, guitar, and percussion instruments. We notice that there is a lack of instruments from the wind group. Brass instruments are not suitable, as they are quite heavy and playing them requires a significant amount of air, leading

to quicker fatigue. For this reason, the woodwind section seems much more promising. First and foremost, we would place the clarinet, as it is highly technical, has a wide range, and offers excellent possibilities for producing attractive sounds that capture children's attention, thus developing their sensory system through a fun and joyful creative process.

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CHILDREN AND MUSIC THERAPY: BENEFITS OF MUSIC THERAPY FOR CHILDREN, ESPECIALLY THOSE WITH AUTISM SPECTRUM DISORDER AND ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD)

Katarzyna MIŁEK[1]

Tomasz ALBIŃSKI[2]

1. BENEFITS OF MUSIC THERAPY IN CHILD DEVELOPMENT AND UPBRINGING

The beauty of music gives meaning to the environment. The relationships created in the structure of music sensitize and allow us to establish a relationship with the outside world and with ourselves. The world around us is full of sounds. Sounds also come from inside the body, they are made by the body. Speech formed during the first years of life is a response to the sounds heard. Expression through the voice it makes, crying, screaming, is not immediately conscious. It stimulates behaviors that are increasingly aware of the child. Some sounds irritate, and some calm down. A child is born and

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develops in a family strongly situated in the structure of society, whose history is shaped by music.

These two aspects of music were noticed and analyzed very early. As Edward Lippman (Lippman, 1992, 3) notes, the ancient Greeks already distinguished two basic ideas related to the importance of music; ideas that shaped the understanding of music in European culture in the following centuries. The Pythagoreans indicated the metaphysical plane of music, which is perceived as an expression of the harmony of the world, its order, and beauty. The laws and structure of music correspond to the laws of the world, the cosmos. In this metaphysical approach, music is the soul of the world, it expresses its orderly character. Man, being an element of the world, is also subject to the requirements of harmony. Meeting these requirements allows a person to find peace and inner balance, and "tunes" him morally. This gives the opportunity to indicate the second idea – the ethical one. This aspect was studied by Plato and Aristotle, who strongly emphasized the didactic value related to the formation of sensitivity through the formation of musical sensitivity (as Plato states directly: "[...] the well-educated man will be able both to sing and dance well' (Laws 2.654b)). Plato was convinced that music fundamentally influences (both positively and negatively, depending on the nature of the music) the education of the youth (Republic 4.424 b-d). It clearly refers to the influence of music on human emotions and indicates its importance for the upbringing of children (Republic 3.397d - 399c). Although it should be emphasized that Plato focused on educating boys to be warriors, the idea itself is of a general

nature. Plato was the first to state that musical expression mimics human expression, in other words, that human expression can be expressed through musical expression (Laws 2.654c – 655a). Aristotle, although he himself was critical of the Pythagorean-Platonic concept of the metaphysics of music, also exposes the didactic values of music and emphasizes the ability of music not only to imitate emotions but above all to arouse them. So music is not just an image of expression – it is its medium. The song is not only a testimony of our joy; the song causes us to rejoice (Politics 8.1340a). Music is also, according to Stagyrite, able to help emotionally disturbed people return to a stable, balanced state (Politics 8.1342a). The idea of the ancients that music evokes emotions and shapes the character of man was perpetuated in European culture by Boethius in the fundamental work for the thought of the Middle Ages , *De institutione Musica.* Music became part of the *quadrivium* (along with arithmetic, geometry, and astronomy) and became one of the liberal arts.

Music is a powerful cultural resource in the development of societies, both national and continental. It is also a force that is not only of historical significance but also acts in the present time on the entirety of stimuli and values shaping the personality, being a structural as well as a destructive element (Konaszkiewicz, 2008).

To the value of music as a factor in constructing society, we should add the educational significance it plays in personal development. Each piece has an aesthetic value, and thus also a general developmental, health, and therapeutic value. In dynamically developing

societies, the demand for psychotherapy is growing, which in particular opens the way not only for treatment but also makes people aware of the possibilities of prevention with the use of music. Listening to music itself allows you to improve cognitive functions and modify the child's mood (Wilsz, 2012). Various musical techniques reduce emotional tension, making it easier to access thoughts, inner experiences, and their expression. Władysław Dykcik called music an educational intervention, which in an individual way supports the processes of learning, education and upbringing, enabling harmonious development in every sphere of life at every stage of life (Dykcik, 2001).

Music used in psychotherapy suggests the use of specific methods:

- Training – by using autogenic training to relax, relax muscles and internal organs, regulate states of emotional tension;
- Reacting and imaginative – based on imagination, associations with the sound of sound harmony and evoking positive emotions and experiences;
- Communicative using music to develop social behavior, establish relationships, practice empathic skills, cooperation, cooperation, understanding other people and their states;
- Creative – through musical, movement, and vocal improvisations developing self-esteem,

and self-confidence, learning about one's own abilities and agency;

- Relaxation – the intended use of music to support pharmacological treatment and as an addition to other psychotherapies;
- Musical training – discovering the sounds of life in music and manifestations of music in nature;
- Contemplative – initiating the experience of music along with strong aesthetic emotions leading to ecstasy, the feeling of sublimity, and beauty (Lewandowska, 2000).

The child reacts spontaneously to music, naturally, unforced. This allows the child to observe how he feels it, how music affects him, at what stage of development he is (Szulc, 2005). This is one of the reasons for the interest in the art of music by psychologists, pedagogues, and therapists in the process of supporting the development of children with disorders in development and functioning. Therapy through music is the oldest form of art therapy. Therapeutic values related to music are still an open issue, but undoubtedly, music therapy leaves the door open to the child's subjectivity, respect for his or her person, serving a non-directive approach to the therapy process. This also results in a different understanding and treatment of the child in the educational process and the creation of different relationships in education and therapy. Music can support physical rehabilitation, participate in pain therapy, and regulate blood pressure. It is also used in the comprehensive therapy of children with disabilities - blindness, deafness, mental retardation,

behavioral disorders, fragmentary defects, and early childhood autism.

The use of music therapy in education and therapy of children is also supported by the roles played by music:

- Cognitive – provides experiences that lead to interest in music;
- Emotional – provides and evokes emotional experiences;
- Therapeutic – changes the patient's mood and well-being thanks to the exercises performed in the disturbed spheres of development and functioning;
- Community – creates conditions for integration with the environment and initiating social relations;
- Ludic – providing opportunities for experiences in play while experiencing difficult shocks;
- Culture-forming – it serves to disseminate music among people (Konieczna, 2006).

Paweł Cylulko described music therapy as the basic and key form of psychotherapy embedded also in education, as well as in supporting and improving impaired development. The author also divided the functions of music, defining them as psychotherapeutic, developmental, integrative, recreational and ludic, educational, diagnostic, and physiotherapeutic (Cylulko, 2006). In the case of therapeutic work with children, the

impact of musical art takes place in appropriately selected, planned forms:

- Listening to music – we include here melody, rhythm, and listening as the perception of the work;
- Creating music – individually or in a team;
- The use of music in action – dancing, playing instruments, singing, drawing, painting to music (Kumik, 2011).

Music therapy is, therefore, a deliberately organized and conscious action, aimed at multifaceted and multidimensional stimulation of the patient's functioning. The use of the medium of music facilitates the conduct of therapy in a non-directive way, stimulating the subconscious and consciousness through self-expression, developing identity, self-awareness, expressing emotions, and establishing relationships with the environment. The sense of art therapy is to follow the patient, and the child during the therapeutic process, and not to trigger reactions to stimuli from the field of music. The use of music cannot have an arbitrary effect, it cannot dictate behavior, or impose suggestions in reception. Music is supposed to be an element of subjective influence. In the therapeutic process, privacy must be respected, there must be room for subjective reception and the personal nature of experiences.

Limitation of emotional efficiency disturbs the child's well-being, intensifies the feeling of isolation, and increases depression. It has been noticed that

administering a dose of music therapy arouses interest in the art of music and brings relief. The beneficial effect of music during therapy is particularly related to the fact that verbal psychotherapeutic techniques are difficult to apply among children, especially those affected by disorders or with a depressed mood. Sound techniques make it easier for the child to communicate and allow the therapist to analyze his or her reactions (Lecourt, 2008). Sound stimuli enrich the child's imagination and experiences (Lewandowska, 2001).

According to the promoter, Zofia Konaszkiewicz, music therapy is used not only for children with disorders. It has general developmental advantages, also for a disabled and non-disabled child. It has a musical effect by encouraging the use of the field of art, and only the adaptation of the therapeutic process to the degree and type of disability or disorder is a process aimed at improving the deficit (Konaszkiewicz, 1993). General development values consist of awakening the child's creativity and imagination and stimulating his activity. In the case of deficits, the child has a chance to discover his strengths during music therapy, which are hidden in every person. The impact of music makes it easier to identify talents that fill the place of deficits and allow for compensation for self-esteem. A disabled child gains experience with a therapist and people participating in the process, which eliminates his or her exclusion and isolation. The perceived deficiencies in functioning weaken in the light of the acquired new skills and agency. Music gives a different self-image, allowing the child to

forget about his or her inability and see himself as a person capable of directing events (Salas, Gonzales, 1991).

The sounds of music open the door to the child's emotions and motor skills. They evoke joy and spontaneous activity in the child. In music therapy, a distinction is made between active and passive therapy. During receptive or passive music therapy, the patient's task is to receive music and express their opinion on the resulting feelings, experiences, and associations. An expressive form of music therapy, i.e. active, uses forms of movement, drawing, painting, playing instruments, and conversation. Both forms activate the child in the maximum way and affect his cognitive and emotional sphere. Edith Lecourt believed that the child is active in any form of music therapy (Lecourt, 1988). The key factor in music therapy is the individual adjustment of the conditions of music therapy to the type of disorders, the degree of the child's functioning, and the ability to focus on the child's needs and abilities (Cylulko, 2010). Each child's contact with music improves the patient's emotional state, and this evokes emotions of joy, satisfaction, and smile and eliminates negative emotions. Acting toward meeting emotional, aesthetic, mental, and physical needs has an educational impact and contributes to development.

In the literature, there are many suggestions for works to listen to and use in therapy. There are developed sets dedicated to various diseases and ailments that interfere with functioning. It is believed that properly selected music can restore the harmony of the functioning

of the appropriate internal organs, and eliminate deficits by listening to the works of selected composers. The choice of works should be determined by the purpose of the action. The diagnosis and development of the psychotherapy process creates the development of the music therapy process. It all depends on the condition of the person participating in music therapy classes and the desired, intended end result (Matuszak, 2018). Students starting school education are exposed to a lot of stress resulting from school failures. Aroused curiosity about school learning can be disturbed by many factors demobilizing appropriate behavior and the learning process. School failures may not be due to problems related to developmental disorders. Positive experiences of students have a mobilizing and activating effect on the student to activities related to education. Early encounters with music and its therapeutic and preventive properties can affect the development of interest and awaken cognitive curiosity. Focusing attention on music is a mental operation, so the development of other cognitive functions – the processes of perceptiveness, attention, memory, imagination, speed, and quality of thinking – has a developing effect. In connection with the development of the factor related to knowledge and related processes, and by combining the emotional sphere in this, music leads to the modification of attitudes, determining the positive impact on behavior. The power of music is therefore also a determining factor in the development of attitudes and values (ibid.).

Educational practice involves, among other things, looking for the causes of school failures and identifying

their sources. Proper recognition accelerates the possibility of improving the functions disturbed in the student to stop the sequence of failures of the student and improve the spheres responsible for effective learning. The education process is tailored to the needs and abilities of each student, especially those with atypical development. This action is a diagnosis that makes it easier to select children with deviations and developmental disorders. There is a need to include the student in therapy. The educational system should also include preventive measures to prevent learning disorders. They may contribute to taking action to diagnose the pupil's problems and disturbances in activities and difficulties in the pupil's social adjustment (Matuszak, 2002).

Music therapy specialist Lucyna Matuszak said that the receptive form of therapy through music is related to emotions and feelings arising while listening to songs. The active form of music therapy is associated with creativity on various instruments. The choice of instrument and the course, manner, and shape of behavior during creation help determine the child's personality. Due to the need to undergo a process of therapy through music, the patients are children who need emotional and emotional stimulation and help in social functioning. These are children with increasing negative feelings, and aggressive behavior, whose psyche requires respite and regulation, they do not have a fulfilled need for acceptance and recognition. Increasing mental problems also determine disturbed social functioning. Music offers non-pharmacological treatment, and is effective, leading to the

goals of openness and expression. Daniela Colonna-Kasjan defined the goals of music therapy:

- Unblocking and activating emotions;
- Regulation of psychophysical tensions;
- Triggering and activating social and communication relations;
- Improvement of motor disorders;
- Shaping aesthetic sensitivity.

The above-mentioned goals focus on the emotional side of functioning, omitting intellectual regulation, because the purpose of music therapy is not to support intellectual development but to transmit and regulate the emotional charge (Collona-Kasjan, 2000).

In a broader and more detailed way, Paweł Cylulko presented the goals of music therapy used in child therapy:

- Arousing cognitive, motor, and social motivation;
- Improving the psychomotor sphere;
- Improving self-service activities;
- Correcting negative and shaping positive social behaviors;
- Shaping spatial orientation;
- Developing proper communication with children and the therapist;
- Shaping the correct body posture;

- Stimulation and development of the emotional sphere of development;
- Anxiety reduction;
- Correcting inappropriate movement habits;
- Improved well-being;
- Improving cognitive processes;
- Improving the senses;
- Development of cognitive processes (Cylulko, 2001).

The author defined goals based on the aspects of stimulating the child's development, taking into account their needs and individual differentiation of influence on the child. Among the means of music therapy, which must be used in a polysensory way, taking into account the emotional, motor, cognitive, and social side of the child, he distinguished:

- Acoustic material – musical pieces, silence, individual sounds of nature made by instruments, produced by the child's body;
- Music therapy techniques – singing (dance, illustrative and staging songs), playing instruments, listening to music, movement to music (eurhythmics, movement games, inhibition and citation exercises, gymnastic exercises, elements of dance);
- Conditions for the use of therapy through music – purposefulness, choice of appropriate

techniques, time of day, frequency of use, duration, housing conditions, equipment;

- The therapist is a qualified therapist who can properly select techniques and proportions of their use, with an open, authentic, kind personality, and full acceptance of another person (ibid.).

Interest in music therapy has resulted in an increasingly wide use in the therapy of:

- Mentally ill;
- Treating aggression;
- Rehabilitation of children with neurological diseases – epilepsy and cerebral palsy;
- Rehabilitation of children with heart diseases;
- Treatment of dyslexia;
- Rehabilitation of people after paralysis and hand injuries;
- People suffering from depression and psychomotor inhibition;
- Socially passive and shy people;
- Children with psychomotor hyperactivity disorder (Gładyszewska-Cylulko, 2010).

2. BENEFITS OF MUSIC THERAPY FOR CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD)

Attention deficit hyperactivity disorder is a complex and multifactorial phenomenon, the etiology of which is not fully identified. It is characterized by the occurrence of a set of features of the child's behavior in terms of motor and mental health, in which excessive motor stimulation, emotional reactivity, and cognitive disorders, especially in concentration, are distinguished. Among the biological factors determining the occurrence of the problem are maternal diseases during pregnancy, substance abuse during the mother's pregnancy, perinatal hypoxia, infectious diseases, and meningitis. Social factors include educational irregularities, a tense emotional atmosphere in the family, lack of satisfaction of the child's physiological and mental needs, and overstimulation by digital media. Attention deficit hyperactivity disorder is defined as a set of features associated with the child's behavior characterized by excessive arousal in the sphere of movement and emotions with simultaneous impairment of cognitive functions, in particular attention deficit disorders. Russell Barkley defined the disorder as attention deficit hyperactivity disorder, identifying it as a disorder of impulse and reaction self-control, the level of excitation, and disturbances in the attention deficit process. The first symptoms of the disorder appear before the age of 7. The child seems impulsive, agitated, and observable by those around him, who have trouble tolerating such behavior (Berkley, 2009). A child with such

a disorder shows problems in cognitive and behavioral functioning and also has developmental difficulties.

2.1. Behavioral traits and functioning of a child with ADHD

Excessive motor activity in a disturbed child seems to be devoid of a specific purpose. He still has excessive limb activity, he is constantly moving, and running, and he is everywhere. Forced to be in one place, most often they are still manipulating their arms and legs, and with limited motor activity, tics are observed.

The child spontaneously acts according to the idea that comes to mind. The child cannot inhibit reactions and subordinates his actions to impulses. He is unable to plan, organize, order, or control activities. His statements and actions are full of chaos. Cognitive disorders, especially memory and concentration, are observed. The child does not finish speaking, uses interjections, and also interrupts other people's conversation. It is difficult for the child to start work, and the task entrusted to him, and it is also difficult to stop the activity being performed. A specific behavior is that psychomotor hyperactive children easily succumb to the persuasion of other children, they quickly accept, without thinking, other people's ideas. They are not aggressive children, but they are often attributed to this trait because they immediately seek to meet their needs.

In the sphere of cognitive process disturbances, a child with hyperactivity has difficulty concentrating on an activity or task. This is due to rapid distraction due to external, irrelevant stimuli. The child is inattentive in

listening, not very perceptive, has problems remembering, and is tired. It is difficult for a child to act according to a plan, and instructions, and organize the necessary utensils to perform the task (Borkowska, 2006).

The process of attention develops from the stage of involuntary attention to the deliberate direction of attention. During personal development, the aspect of attention changes:

- Attention control, which regulates susceptibility to distraction, allowing it to be increased;
- Attention planning is responsible for organizing the process of solving the task and increasing the regularity and intensity of attention;
- Adaptation of attention, which determines the performance of the task and eliminates concentration on unimportant things;
- The ability to use appropriate attention strategies (Wolańczyk et al., 1999).

The following features related to the attention process are also important in the functioning and development of the child:

- Persistence – responsible for the continuation of the attention process even in a boring situation;
- Selectivity – responsible for the ability to choose significant stimuli;
- Divisibility – a feature responsible for the ability to perform several actions at the same time;

- Shifting – the ability to search for an active stimulus;
- Span – the number of stimuli on which attention can be focused simultaneously (Radziwiłłowicz, 2004).

In light of the above features and aspects, a child with attention deficit hyperactivity disorder often cannot engage in a given activity or engages unproductively. He has no ability to focus on one thing. He is distracted in action, and even his thoughts can be a distracting stimulus. They cannot work long and persistently on one task, they are characterized by short attention spans. He often loses his things, and he is not always able to complete the tools and aids to perform the entrusted task. It shows delays in terms of the internal sense of time.

The child also has greater emotional sensitivity than his peers, he is even emotionally unstable. This is accompanied by mood changes to stimuli that other children are indifferent to. The child is overly talkative, verbalizing his dissatisfaction. He has difficulty maintaining relationships with his peers. The features also include the lack of planning of activities. In the case of the negative sides of the functioning and behavior of a child with hyperactivity, its advantages should be mentioned: various interests, developing passions, exceptional good perceptiveness, extensive knowledge of the world, above-average intellect, ease in initiating contacts with the environment (Wolańczyk et al., 1999).

2.2. The use of music therapy in working with children with attention deficit hyperactivity disorder (ADHD)

Therapeutic work with a child requires particularly individual adaptation of methods and techniques to the needs and abilities of a given child diagnosed with ADHD. The child's difficulties, his specific features, and the level and nature of the disorder should be identified. Effective psychotherapy for cognitive, emotional, and social functioning can be conducted using various methods, depending on the diagnosed deficits. Music therapy has a wide range of applications in the case of a child with attention deficit hyperactivity disorder. Children with ADHD function as naughty children, not accepted by the group, class, and sometimes even the teacher. As a result, such a child has unstable self-esteem, a lack of resistance to social failures, problems with self-acceptance, and a negative mood. In such a situation, music that the child likes is accepted by them, improving their well-being. Harmonious and rhythmically composed sounds provoke associations and images, which, by stimulating the auditory centers, allow concentration. Auditory stimuli make it easier to bring out emotions and sensations suppressed by the child and thus allow reacting to problems. The behavior of a hyperactive child causes a lot of negative emotions in him due to behaviors not accepted by the environment. During a session of therapy through music, there is a circumstance to relieve anger, the disappointment of the child, and discouragement (Gładyszewska-Cylulko, 2010).

Music therapy allows the therapist and the child and the child to establish a dialogue with themselves. Deepening knowledge about one's needs and emotions allows increasing self-acceptance. Unstable self-esteem has the opportunity to develop and increase resistance to the judgment of others. Therapy through music for a child with ADHD is closely related to the goals of therapy:

- Enabling the release of psychomotor tension
- Enabling the acquisition of appropriate emotional experiences during therapy;
- Gaining knowledge on how to deal with emotional and physical distress;
- Shaping the skills of specific social and communication skills (Pawlak, 2005).

During therapeutic meetings, it is important to ritualize the classes. It should serve to discipline the child, to come to terms with the need for exercises of different types and with different attention of the child. Among the methods used in the treatment of attention deficit hyperactivity disorders, the following support methods are used:

- Therapeutic and medical;
- Psychoeducational;
- Stimulating development.

In each of these groups, there is room for the use of music therapy techniques. The choice depends on the goal to be achieved and the needs of the child.

Music therapy techniques open up a range of varieties that can be used to improve the functioning of a hyperactive child. Fine arts combined with music are an excellent tool to strengthen the child's development. They help in the area of communication with peers and the expression of feelings and awareness of emotions. The visualization of thoughts and feelings can be illustrated by means of using colors, lines, and plastic material. It also allows you to develop your interests and gain new experiences. While painting, drawing, and sculpting, children gain the ability to express themselves, resolve conflicts, and feel subjectivity. At the same time, the physical, cognitive, and social spheres of functioning develop. The sense of agency, satisfaction, and achievement is strengthened (Andrzejewska, 2003).

Dance therapy, or choreotherapy, ensures that the child fulfills the need for movement and satisfaction, establishing relationships with other children. Affecting all spheres of functioning strengthens the development forces. The child gets rid of the feeling of isolation, and the organization of dance elements supports the increase in concentration and decision-making (Szafraniec, 2003). The child is also provided with a large dose of relaxation from stimuli that unnecessarily engage his attention by organizing excessive arousal.

The form of improvisation in music therapy also provides the child with the possibility of non-verbal expression. Playing instruments, and creating melodies and rhythms on your own gives you a feeling of satisfaction, concentrating on motor activities, controlling

your body, and thus controlling your body and behavior. Self-control in dance gives the child the opportunity to control the space around him, which the child has a problem with due to the disorder.

The key message of using music in the therapy of a child with attention deficit hyperactivity disorder is the need to bring out what the child thinks, feels, and experiences. Showing spontaneity is the need of every child. The sense of belonging and security becomes facilitated by the natural primary means of communication with people, which is music, which has always existed in everyone's life. Working with a hyperactive child requires commitment and dedication to helping others, so the use of any method of therapy requires a wise, empathetic, free from directiveness, therapist.

3. BENEFITS OF MUSIC THERAPY FOR CHILDREN WITH AUTISM SPECTRUM DISORDERS

The 21st century has brought a deepening of knowledge about autism spectrum disorder, which is currently one of the most recognizable phenomena among children's developmental problems. Ewa Pisula described the picture of the disorder by emphasizing the symptoms of inadequacy in social development. A symptom of this is deficits in the ability to participate in alternating social interactions. These can be both verbal and non-verbal deficiencies in communication. A child diagnosed with autism spectrum disorder is characterized by a rigid

pattern of interests, behaviors, and showing their activity. The difficulty in characterizing the disorder is added by the diversity of disorders and the composition of the way the child with autism develops (Pisula, 2010).

Autism spectrum disorders cover two areas of disorders in particular. The aforementioned deficiencies in the sphere of communication and establishing social relationships is the basic abnormality of the observed behaviors of children on the autism spectrum. The second sphere is behavior consisting in repeating behaviors. A child with autism has selective interests. The recognized APA – DSM-V classification determines the occurrence of disorders and their severity based on existing symptoms (Krzysztofik, Otrębski, 2018). The diagnosis requires determining this degree, indicating sensory disorders and the degree of support needed for the diagnosed child (Rymkiewicz, Kulik, 2010).

3.1. Behavioral traits and functioning of a child on the autism spectrum

A child with autism spectrum disorder develops in a different way than his peers from the first months of life. It does not babble, which affects delayed speech development. It shows reluctance to be stroked, or hugged by parents, and does not like touch. A symptom of not maintaining eye contact is also common, as well as an unwillingness to establish social interactions. In later development, the feature of a deficit in understanding the thoughts and intentions of people around them emerges. He isolates himself from the outside world and does not show bonds with his closest people and living beings,

such as animals. A typical symptom of disturbed behavior is schematic behavior, and isolation should be understood as self-defense against the environment. Everyday life is interspersed with schematized co-movements and gestures, the so-called stereotypes. Often amplified by repetitive words, sentences, monotonously repeated, not situationally related. The child avoids unexpected behaviors, defends himself against the environment and participation in it, and reacts specifically to many sound, smell, and visual stimuli, showing particular sensitivity to them (Abrahams, 2010).

A child on the autism spectrum usually does not understand jokes. He does not use gestures and rarely uses non-verbal messages. He repeats specific words, devoid of sense or connection to the situation, as well as sentences, heard much earlier, which indicates increasing emotional and muscle tension. The speech of a child with autism has a specific intonation, speed, and volume. It is usually qualitatively and quantitatively poor, which may be the result of delayed development or specific inhibitions in its use. The child compensates for these deficiencies with motor stimulation (Bobkowicz-Lewartowska, 2000).

The basis of communication is the process of thinking. Maintaining communication depends on the level of speech and mental abilities. Both spheres in a child with autism are disturbed. The ability to start a conversation and maintain it is disturbed. The subject matter raised by a child with autism is narrow, which

makes it difficult for both adults and peers to interact with it (Yates, Couteur, 2009).

A child with autism is characterized by monotony and selectivity of his interests. Inadequately, it pays more attention to stimuli of strong intensity or characteristics of non-functional properties of toys and other objects. The child manifests a lack of creativity and imagination (ibid.). A child with autism plays with a toy, puts it in his mouth, and makes him spin. He avoids plush toys, preferring mechanical toys that make sounds. He does not use toys for typical children's play consisting of duplicating the activity of adults (Bobkowicz-Lewartowska, 2000).

Along with development, mannerisms and stereotypes appear - behaviors consisting of spinning around one's axis, hitting one's head, waving hands, snapping fingers, and swinging. Problems with hyperactive behavior, and even aggressive or frustrated behavior are noted (Cieszyńska, 2011). Characteristic symptoms of behavior in children with autism also include hypersensitivity to touch or high resistance to pain (Błądek, 2013). C. Delacato concluded that brain damage to a child with autism causes disturbances in sensory channels manifested by hypersensitivity, insufficient sensitivity, malfunction of sensory channels, perceptual dysfunctions, and strange, repetitive behaviors of the child.

The child has many objects out of the corner of his eye, without looking directly. He or she has either too little muscle tone or too much. It does not distinguish the smells and taste of many dishes. He cannot control his

body, he also has no awareness of his body, and no self-control. It is usually characterized by a low level of precision movements (ibid.).

3.2. The use of music therapy in working with children on the autism spectrum

The approximate symptoms of the dysfunction in children with autism spectrum disorders explain the detailed development of therapy techniques in the field of facilitating children's experiences in the field of sound perception. During music therapy, the child has the opportunity to listen to the sound, and its vibrations, and compare strength and intensity. Elements of music make it easier to expand knowledge and skills. The space of music allows for development in a closed and safe world. Playing instruments facilitates the possibility of dialogue, looking for answers to sound, which creates a platform for social interaction. Imitation, repetition of sounds, acting according to a pattern, and participation in building a certain structure allow for intervention in the world of a child on the autism spectrum (Knapik-Szweda, 2017).

Great importance should also be attached to music, which supports the child's motor skills. Manipulating musical instruments improves visual-auditory-motor coordination. It also provides muscle strength exercises and increases the range of the child's abilities. Memorizing musical patterns supports mental development (Wheeler, Shultis, Polen, 2005).

Communing with music in a group, even if only for two with a therapist, allows you to establish a relationship, and as a result, it is a probability that the

child will be satisfied with working with someone. In the process of therapy through music, receptive and active techniques are used.

Receptive techniques involve listening to live music played by the therapist while the patient's child listens. Some children enjoy digital music, get involved in adjusting the volume, and even enjoy being able to pause when they need to. A child who likes live music wants to touch the therapist and the instrument and processes the stimuli from the music in an individual way. The children's reactions are unusual, specific, and individual, but they show awareness that the child is participating in the therapeutic process. The variety of reactions in the form of body behavior, its individual parts, and the appearance of clumsy facial expressions, testify to the child's contact with the mysterious reality of music (Alvin, Warwick, 1991).

As part of active techniques, music becomes part of the child's creative act based on singing or playing an instrument. Therapists who experience this claim that the child starts the process of using speech when using this technique. The child either tries to sing, or purr, but above all abandons his schematic consonances, mannerisms, and stereotypes, establishing a relationship through music. A similar situation occurs when it is possible to play an instrument. The child interrupts his stay in his isolated cape and, crossing the border of sound makes contact with a therapist. He becomes ready to perform a task, to do something differently organized than his previous world. Playing is not a pattern of a piece of music – it can be

pressing a piano key, plucking a string, or hitting a drum. An active form of music therapy gives the child a sense of freedom and a sense of commitment. The creators of this therapeutic form, Juliette Alvin and Auriel Warwick, believe that it is a way to follow the child and his needs. They concluded that such a technique gives a child with autism the ability to shape mental operations, memorize sounds, feel pauses, rhythmic patterns, and melodies. The sounds proposed by music make it possible to reduce stereotypical behavior, and thus reduce unconscious fear. The child also has the opportunity to control his movements and, above all, to establish cooperation (ibid.).

The founders of creative music therapy, Paul Nordoff, and Clive Robbins, based their activities on the search for therapeutic paths on improvisation. They developed a process leading to reaching a child on the autism spectrum. Gradation of the child's stability and trust is the foundation of the technique. Then a gradually increasing musical activity is proposed, from individual elements to arouse interest until the child is satisfied with the activity. Eventually, there is an intensity and intensification of sensations up to self-expression (Nordoff, Robbins, 2008). The technique begins with chaotic, arbitrary, free production of spontaneous sounds. Then, a thorough analysis and observation of therapeutic sessions leads to tedious experiences in establishing contact between the therapist and the patient. The path to contact is full of manifestations of rejection and reluctance on the part of the child. After repressing the rejection behavior, the child's interest and involvement occur, integrating into a common activity with the therapist.

Experiences and intensification lead to a shared commitment. Communication with the child increases, musical expression appears, and then reciprocation of interaction. The patient's self-confidence varies, which allows for the release of the experience of satisfaction, reciprocity, and shared pleasure. After reaching the level of partnership agreement, the therapist takes away the child's confidence and stability. The authors call it the process of discovering new communication paths. The goal is to gain the ability to interact communicatively. The dialogue is based on the exchange of musical elements, joint improvisation, and sharing of musical experiences. Improvisation encourages a child with autism to use the benefits of the outside world, such as various instruments that also help to learn, remember, and play.

Anyone who has met a child with autism disorder at work or in everyday life and has become familiar with the most well-known techniques used in psychotherapeutic work has now once again felt the power and power of music. Her great agency in interpersonal communication and opening hearts and souls.

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FUNCTIONAL swLORETA qEEG NEUROIMAGING OF THE EFFECTS OF RHYTHM MUSIC THERAPY ON BRAIN CONNECTIVITY IN A CHILD WITH AUTISM SPECTRUM DISORDER

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1. INTRODUCTION

Music therapy is a relatively new and evolving field, with distinct branches emerging only in recent years. An important factor in this process is the increasing number of scientific studies and undeniable data demonstrating the effectiveness of music therapy in treating specific conditions and deficits. For instance, the developments in applying music therapy for children with ASD have grown significantly in recent years, providing a solid foundation for establishing a distinct therapeutic approach focused on the specific impact on this condition.

Globally, contemporary music therapy approaches are increasingly presented as part of multidisciplinary

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practices that encompass diverse therapies. Music therapists collaborate in creating comprehensive therapeutic programs alongside specialists from other fields. Their combined knowledge and efforts form the overall puzzle of a consolidated treatment practice that addresses the patient's needs in various aspects and seeks to mobilize their inner strengths and develop their personal potential.

This study is a result of applying an interdisciplinary approach based on active professional collaboration between specialists in music therapy and cognitive neuroscience.

2. RHYTHM AS A CROSSPOINT BETWEEN MUSIC THERAPY AND COGNITIVE NEUROSCIENCE

The functional neuroimaging with swLoreta qEEG presented in this article registers the changes that occur in the brain regions of a child with ASD undergoing rhythm-based music therapy. In this process, rhythm serves as a significant connecting factor between music therapy and cognitive neuroscience. As a meta-category extending across various fields of activity, rhythm, and particularly musical rhythm, sparks the interest of specialists in the field of neuroscience. Numerous contemporary neuroscientific studies reveal that music is a powerful and complex sensory stimulus that impacts multiple levels. The musical experience provides the human brain with various layers of information related not only to sensory perception and the processing of individual musical

elements but also to the perception of music in an emotional and temporal context. Specialists note that in order to achieve more detailed, precise, and data-supported information, it is necessary to conduct experimental studies for each individual component of music. Several studies have traced the processing in brain regions of components such as rhythm, melody, harmony, tempo, and others. The research focused on the perception and processing of rhythm in specific brain structures is pioneering in neuromusical studies and constitutes a solid part of their overall volume. In turn, this knowledge offers promising prospects for a theoretical and empirical scientific basis for music therapy.

2.1. Rhythm as a diagnostic and therapeutic tool in music therapy

One of the fundamental questions that is invariably present in the process of musically therapeutic diagnosis of the patient is which elements of music could engage the patient in such a way that it would allow for a *spontaneous response with little or no need for mental planning*. It is necessary to clarify that the spontaneous response in music therapy – especially one associated with some form of body movement – is intentionally sought and deliberately provoked because it results from the innate and/or currently available skills of the individual at the time of diagnosis, rather than from the performance of cognitive tasks following predefined verbal instructions[3]. The issue of the role of rhythm in eliciting spontaneous

[3] **Tomaino,** Concetta M. Music Therapy and the Brain. – In: *Music Therapy Handbook*. New York: The Guilford Press, 2015, p. 47.

motor responses was raised and described, albeit as a subjective observation, back in the 1950s during the emergence of music therapy[4]. Only after the 1990s, primarily due to advancements in technology, did several studies provide accurate information on quantitative and qualitative measurements of the impact of rhythm, conclusively demonstrating that of all the elements of music, only rhythm has the ability to elicit spontaneous motor responsiveness in patients. This defines rhythm as a primary diagnostic tool – rhythmic stimuli serve as a foundation and entry point for the phenomenon of sensory-motor synchronization (SMS), and through the level of SMS, one can track the physical and mental development of an individual and identify potential deficits[5]. In contemporary music therapy rehabilitation practices, rhythm is successfully utilized as both a monitoring and therapeutic tool. Among such practices, Neurological Music Therapy (NMT), developed in 1999 by Michael Thaut[6], particularly stands out. NMT consists of over 20 standardized clinical techniques with diagnostic

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4 Some of the earliest research in the field has been conducted by Mary Martha Murphy. For more information: **Murphy,** Mary Martha. Rhythmical Responses of Low Grade and Middle Grade Mental Defectives to Music Therapy. – In: *Journal of Clinical Psychology*, Vol. 13, Issue 4, 1957, p. 361 – 364.

5 For more information: **Repp,** Bruno H. Sensorimotor Synchronization: A review of the tapping literature. In: Psychonomic Bulletin, Vol 12, Issue 6, December 2005, p. 969 – 992; **Repp,** Bruno H., Yi-Huang **Su.** Sensorimotor Synchronization: A Review of Recent Research (2006 – 2012). – In: *Psychon Bull Rev*, No 20, 2013, p. 403 – 452; https://link.springer.com/article/10.3758/s13423-012-0371-2#Sec24

6 Michael Thaut is a musician, psychologist, professor at the University of Toronto, and director of the Research Center for Music and Health Sciences at the university. The Center's work focuses on research related to music and clinical neuroscience.

and functional goals that make use of the powerful therapeutic potential of rhythm to improve and/or restore sensorimotor skills, speech, cognitive development, and social communication[7].

2.2. Rhythm as an object of neuromusical research

There is no single, distinct center in the human brain for processing music. The processing of musical information involves many areas distributed throughout the brain network, including those that typically participate in other cognitive activities. Recent neuromusical studies reveal that a (bilateral) network involving the temporal, frontal, parietal, cerebral, and limbic/paralimbic brain regions is associated with auditory perception, language, syntactic and semantic processing, attention, working and episodic memory, rhythmic and motor functions, and emotions underlying music processing[8]. Another study complements the available information by finding that musical stimuli activate brain networks in the prefrontal and inner frontal cortex, the temporal lobe, and the cerebellum. When music engages the listener emotionally, it also activates the ventral tegmental area, the striatal nuclei, and the

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7 **Hurt-Thaut,** Corene P., Sarah B. **Johnson**. Neurologic Music Therapy. – In: *Music Therapy Handbook*. New York: The Guilford Press, 2015, p. 220;

Thaut, Michael N. Rhythm, Music, and Brain. New York and London: Routledge, 2008.

8 **Sarkamo,** Teppo, Eckart **Altenmuller,** Antoni **Rodrigues-Fornells.** Editorial: Music, Brain and Rehabilitation: Emergigng Therapeutic Applications and Potential Neural Mechanisms. – In: *Frontiers in Human Neuroscience*, Vol. 10, 2016, p. 1 – 5; https://www.frontiersin.org/articles/10.3389/fnhum.2016.00103/full

hypothalamus. Music can also activate neurons in the insula, cingulate gyrus, hippocampus, and amygdala[9].

The studies presented indicate that various aspects of music, along with its ability to affect the listener, are processed by different neural systems. Rhythm, as a component of music, activates multiple brain structures. Data show that the neural systems responsible for perceiving and producing rhythmic patterns are distinct from those underlying the processing and reproduction of pitch, melody, timbre, and others[10]. Additionally, rhythm is examined as consisting of several sub-components that contribute to the perception of music as a temporally unfolding event:

1) Rhythmic phrases (the alternation of various note values, arranged in shorter or longer patterns);
2) Meter;
3) Tempo.

The question arises as to which neural systems are responsible for the individual subcomponents of rhythm. The cortical neural circuit underlying the perception and processing of rhythm in music has been thoroughly studied and described. It encompasses areas that overlap with those for perceiving and reproducing the temporal

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9 For more information: **Akhtar,** Anees, Nasim **Khan.** Neuroscience of Mind Empowerment. Islamabad: Auraq Publications, August 2020, p. 107.

10 For more information: **Alluri,** Vinoo, Petri **Toiviainen**, Iiro P. **Jääskeläinen,** et. al. Large-Scale Brain Networks Emerge from Dynamic Processing of Musical Timbre, Key and Rhythm. – In: *Neuroimage*, Vol. 59, Issue 4, February 2012, 3677 – 3689; https://www.sciencedirect.com/science/article/pii/S1053811911013000?via%3Dihub

structure of auditory signals in general. Along with the dorsolateral prefrontal area, other areas such as the anterior cingulate, insula, supplementary motor area, temporal cortex, thalamus, basal ganglia, cerebellum, and inferior parietal cortex play important roles in rhythm processing[11].

Research on non-musician volunteers, conducted using positron emission tomography, shows that when perceiving rhythmic sequences consisting of 5-10 notes lasting 2.5 seconds, there is isolated activity in the left insula and Broca's area. A study on the role of musical rhythm in the perception and reproduction of speech suggests the hypothesis that the perception and processing of sound, as well as synchronization through engagement with a rhythmic stimulus, may help stimulate various brain networks, including auditory afferent, subcortical-prefrontal, striatal-thalamic-cortical, and cortical motor afferent circuits, which form the basis of human communication[12].

In another study, again involving non-musicians but conducted using magnetic resonance imaging during passive listening to musical rhythms, activities were observed in bilateral planum temporale—Brodmann areas

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[11] For more information: **Kotz,** S. A., A. **Ravignani,** W. T. **Fitch.** The Evolution of Rhythm Processing. – In: *Trends in Cognitive Sciences*, Vol. 22, Issue 10, October 2018, p. 896 – 910; https://www.sciencedirect.com/science/article/pii/S1364661318301918?via%3Dihub

[12] For more information: Fujii, Shinya, Catherine Y. Wan. The Role of Rhythm in Speech and Language Rehabilitation: the SEP Hypothesis. – In: Frontiers Numan Neuroscience, Vol. 8, October 2014, p. 1 – 15; https://www.frontiersin.org/articles/10.3389/fnhum.2014.00777/full

21, 22, 41, and 42, which form the core of Wernicke's area—one of the most important functional areas for language; left supplementary motor area (part of the motor cortex); bilateral premotor cortex and cerebellum[13]. Additionally, in an MRI study of non-musicians passively listening to isochronous, metric, and non-metric patterns produced by a drum, activity was observed in the dorsal premotor cortex; supplementary motor area; and both hemispheres of the cerebellum for predictable sequences[14].

The data presented in the studies are primarily drawn from participants without musical education. The observed complex processes occurring in the human brain under the influence of rhythm lead researchers to conduct experiments comparing the perception and processing of rhythm in the brain structures of musicians and non-musicians. These studies aim to reveal whether the development and enhancement of the sense of rhythm through musical activities, and consequently through musical therapy, could change the structure of the neural systems responsible for rhythm.

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[13] For more information: **Chen,** Joyce L, Virginia B. **Penhune,** Robert J. **Zatorre.** Listening to Musical Rhythms Recruits Motor Regions of the Brain. – In: *Cereb Cortex*, Vol 18, Issue 12, December 2008, p. 2844 – 2854; https://academic.oup.com/cercor/article/18/12/2844/362955

[14] For more information: Bengtsson, Sara L, Fredrik Ullén, H. Henrik Ehrsson. Listening to rhythms activates motor and premotor cortices. – In: Cortex, Vol. 45, Issue 1, January 2009, p. 62 – 71; https://www.sciencedirect.com/science/article/pii/S0010945208002438?via%3Dihub

2.2.1. Perception and processing of rhythm in musicians and non-musicians

Musical performance is considered one of humanity's most impressive achievements. Studies using brain scans of musicians and non-musicians show that the brain areas involved in the perception, processing, and (re)production of complex sound patterns are significantly larger (in volume) in musicians, and that systematic musical training leads to an increase in the corresponding brain regions.

To support the benefits of engaging with music, particularly activities based on rhythm, three studies will be presented that compare the processes of perceiving and processing rhythmic stimuli in the brain networks of musicians and non-musicians.

The first study, led by Michael Thaut, focuses on distinguishing the perception of rhythm in its components—rhythmic phrasing, musical meter, and tempo—combined with an additional criterion for the duration of rhythmic patterns. The results show that certain brain structures, such as the putamen and cingulate cortex, are activated during all rhythmic tasks. In non-musicians, distinguishing meter, tempo, and rhythmic patterns (but not the duration of the patterns) strongly activates the cerebellum and the superior colliculi (which help orient the head and eyes toward seen and heard stimuli). Specific activations are observed in the left medial frontal cortex and anterior cingulate gyrus for rhythmic phrasing, in the right frontal cortex for musical meter, in the basal ganglia for tempo, and in the right

frontal and posterior cingulate cortex for the duration of rhythmic stimuli. In contrast, musicians show low activation in the cerebellum and inferior colliculus but exhibit strong specific activities in the left medial frontal and cingulate gyrus for processing rhythmic phrases, the left parahippocampal gyrus for meter, and the right hemisphere for the duration of patterns. The differences in activated brain areas between musicians and non-musicians reflect variations in strategy, skills for perceiving different aspects of rhythm, and cognitive abilities for representing them[15].

The second study complements this information by analyzing both regional activation and the connectivity of individual regions in the perception of rhythm. The difference in connectivity between musicians and non-musicians aligns with differences in behavioral assessments: musicians distinguish rhythmic examples with temporal accents (meter) much more than non-musicians, while both groups evaluate examples with dynamic accents similarly. The study emphasizes that rhythmic examples with temporal accents are similar to those that musicians study during their musical training, suggesting that musicians' ability to organize (fragment) and anticipate the onset of strong and relatively strong metric times is better than that of non-musicians. This ability may influence expectations of what will be heard later. It is suggested that the role of the basal ganglia in rhythm perception, as in other areas, is in prediction—

[15] For more information: **Thaut,** Michael. Functional Neuroanatomy of the Perception of Musical Rhythm in Musicians and Non-Musicians. – In: *Neuroimage*, Vol. 13, Issue 6, June 2001, p. 925.

when a discoverable structure is present in rhythm, predictions can be made about the timing of future onsets. Successful predictions may enhance the speed of perceiving rhythmic sequences, reducing the load on working memory. These findings have significant clinical implications, as the basal ganglia are compromised in individuals with neurological disorders. Studies in patients with Parkinson's disease show deficits specifically in temporal tasks. Rhythmic signals with a strong external beat help overcome gait issues in Parkinson's and Huntington's disease. Thus, rhythmic therapy may depend on common neural systems, including the putamen, which underlie rhythm perception and movement. It is hypothesized that the cortico-subcortical network, sensory-motor areas, and the prefrontal region are involved in analyzing temporal sequences and predicting or generating frontal and left parahippocampal gyrus activity for tempo; the right medial frontal cortex for presumed metric times. Under these conditions, the connectivity between the cortical motor and auditory areas is facilitated in musically trained individuals[16].

Results from tests in the third study indicate that musicians engage brain structures in the medial temporal cortex, while non-musicians utilize mechanisms that involve more sensory-motor representations, the basal ganglia, the cerebellum, and the prefrontal cortex. The activity pattern in the supplementary motor area,

[16] For more information: **Grahn,** Jessica A., James B. **Rowe.** Feeling the Beat: Premotor and Striatal Interactions in Musicians and Nonmusicians during Beat Perception. – In: *The Journal of Neuroscience*, Vol. 29, Issue 23, June 2009, p. 7540 – 7548; https://www.jneurosci.org/content/29/23/7540

putamen, cerebellum, and insula in non-musicians suggests a strategy of implicit counting (timing), which is absent in musicians. This indicates the use of elementary strategies by non-musicians rather than expert, higher representations. Non-musicians activate the right superior and middle temporal cortex, while musicians primarily activate the left superior, middle, and inferior temporal cortex. An important conclusion from the study is that in each task condition, brain activity was heightened, with the condition for distinguishing musical meter showing increased engagement of brain representations responsible for cognitive and abstract concepts compared to the other two conditions (those for rhythmic patterns and tempo-changing patterns). This makes it clear that distinguishing musical meter engages both older and newer neural systems[17].

3. FUNCTIONAL NEUROIMAGING STUDY WITH swLORETA qEEG ON BRAIN PROCESSES IN A CHILD WITH ASD

Many clinical studies investigating neurophysiological mechanisms in states of health and disease use functional magnetic resonance imaging (fMRI) as an imaging technique. For years, fMRI has been the gold standard for functional neuroimaging in clinical

[17] For more information: Thaut, Michael H., Pietro Davide Trimarchi, Lawrence M. Parsons. Human Brain Basis of Musical Rhythm Perception: Common and Distinct Neural Substrates for Meter, Tempo, and Pattern. – In: Brain Sci., Vol. 4, Issue 2, January 2014, p. 428 – 452; https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4101486/

research. It has a significant advantage due to its high spatial resolution, but at the same time, it has low temporal resolution, which does not allow for the investigation of neuronal processes occurring in under 1–2 seconds. In this context, the recently implemented swLORETA qEEG methodology in clinical practice stands out with a spatial resolution comparable to fMRI but with a temporal resolution that exceeds it by ten times. This specificity provides the unique opportunity to visualize brain processes under 50 ms. For this reason, the neuroimaging method swLORETA qEEG – standardized weighted Low Resolution Electromagnetic Tomography quantitative EEG – was used for the present study.

3.1. Technical parameters

The electroencephalographic recording for the study was conducted using a 19-electrode cap (AgCl EasyCap) according to the international 10-20 system. The montages used for the recordings were *Link ears* and *Laplacian*. The hardware was provided by the *Neuron Spectrum 4/P system* from *Neurosoft, RF*, while software processing was performed using *Neuroguide Deluxe 3.2.5* from *Applied Neuroscience*, Inc., USA.

Two recordings were made: one before the music-rhythmic session (T1) and one after (T2), each lasting 5 minutes with eyes closed and open. *Test/retest reliability* for each recording was at least 0.92.

Through fast Fourier transformation (FFT), the following frequency ranges were determined: delta (1–4 Hz), theta (4–8 Hz), low alpha (8–10 Hz), high alpha (10–13 Hz), beta (14–18 Hz), high beta (18–25 Hz), and gamma

(30–35 Hz). The flow of information for all these frequencies was examined using Z-score standardized electrophysiological parameters: absolute and relative power, coherence, spatial asymmetry, phase locking, phase shift, and phase slope index for each of the 49 Brodmann areas in both brain hemispheres. The normative database integrated into the software compares each electrophysiological parameter with its standard values for the respective age.

The statistical analysis of the data was performed using specialized software for processing swLORETA qEEG data – *Navistat* from *Applied Neuroscience*, USA. The quantitative variables in T1 and T2, whose statistical significance was examined using the paired-samples T-test (*Paired-Samples T-test*) and *Percent difference*. P values below 0.05 were considered statistically significant.

3.2. Participants in the study

The study was conducted with a 12-year-old child diagnosed with Autism Spectrum Disorder. The child has been attending music therapy sessions once a week for eight years. For the past three years, the child has also participated in group music therapy sessions with children with special needs twice a month.

3.3. Study design

Unlike the design of most studies that examine intergroup statistical patterns, this study's design focused on personal changes in brain function occurring immediately after the applied rhythm music therapy. The

session lasted 45 minutes. The rhythm music activities were organized in the following sequence:

- Preparatory (warm-up) exercise to introduce the session, enhancing social connection and communication skills;
- Exercises to develop the ability for sensory-motor synchronization with various note durations;
- Motor coordination exercises;
- Exercises to enhance short-term memory;
- Exercise to develop the sense of touch;
- Exercise to improve the awareness of changes in movement speed;
- Concluding exercise.

4. RESULTS

SWLORETA QEEG MARKERS BEFORE AND AFTER RHYTHM MUSIC SESSION IN A CHILD WITH ASD

The presentation of the results will follow the principle from general to specific. Figures 1 and 2 depict effective brain connectivity in the 49 Brodmann areas:

Figure 1. *Effective connectivity in the 49 Brodmann areas in both hemispheres of the brain of a child with ASD before therapy*

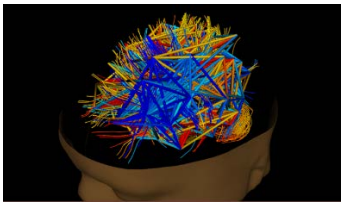
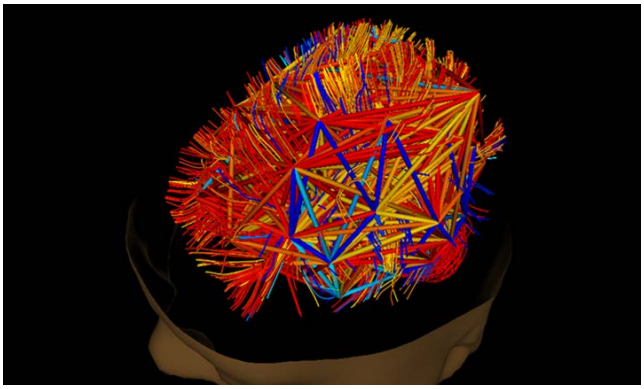


Figure 2. ***Effective connectivity in the 49 Brodmann areas in both hemispheres of the brain of a child with ASD after therapy***

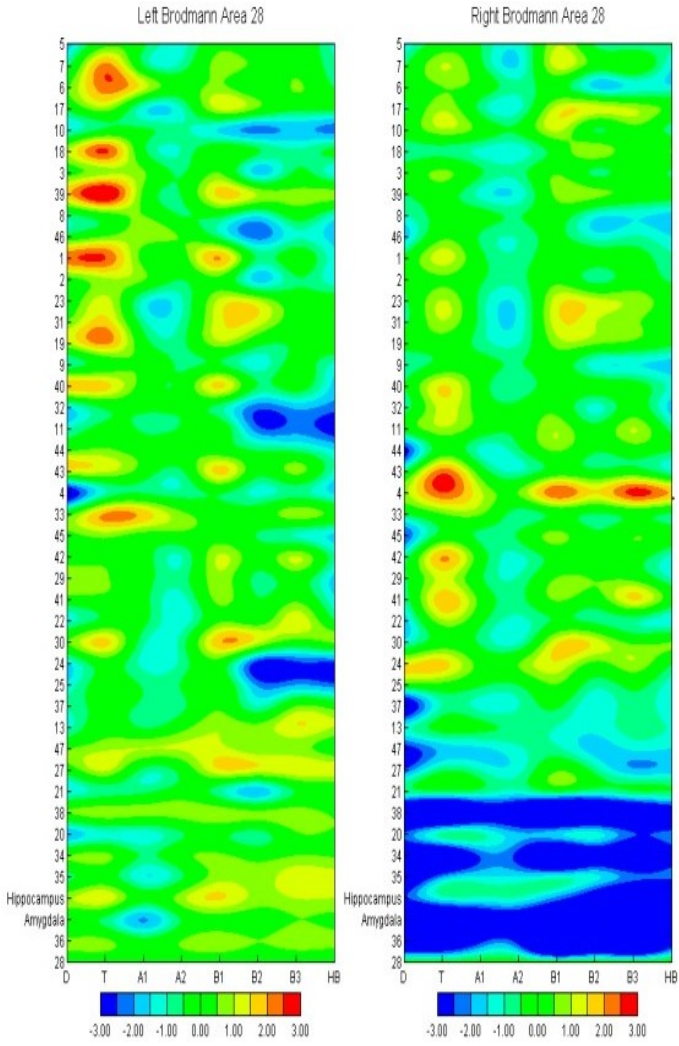


Due to the impact of rhythm on the perception of time (one of the most important cognitive domains), our focus was primarily directed towards the brain structures related to the sense of time. Recent scientific discoveries demonstrate that the parahippocampal and entorhinal gyri play a crucial role in the perception of time and rhythm. Brodmann areas 28, 34, and 35 belong to these regions of the brain.

Brodmann area 28 functions as a key hub for multiple neural networks related to memory, spatial navigation, and the sense of time. This area serves as the main interface between the hippocampus and the neocortex. The reciprocal connections between the hippocampus and BA 28 play an important role in declarative memory, particularly spatial memories, in the formation of memory traces, in memory consolidation,

and in optimizing memory during sleep. Stimulation of BA 28 enhances spatial memory[18].

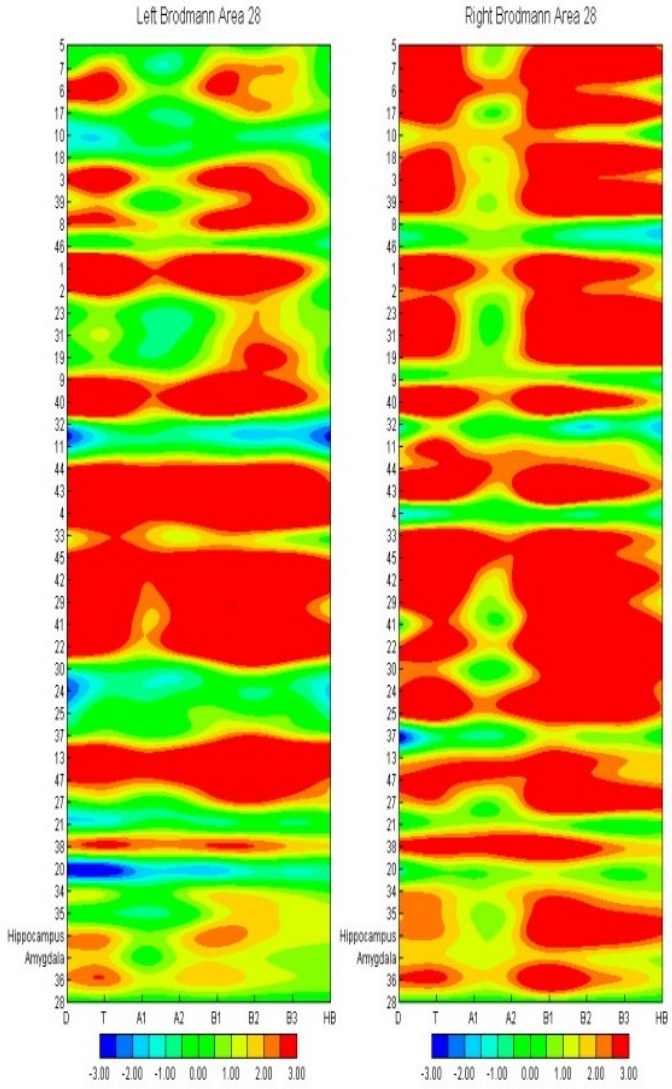
Figure 3. Z *score functional connectivity in the entorhinal cortex – BA 28 before therapy*. (Vertical: Brodmanna)



(Areas, Horizontal: frequency range of brain waves)

[18] **Kolev,** Dimitar. Atlas po povedencheska i kognitivna nevroanatomia. Plovdiv: "Inprint – AD", 2019, p. 210.

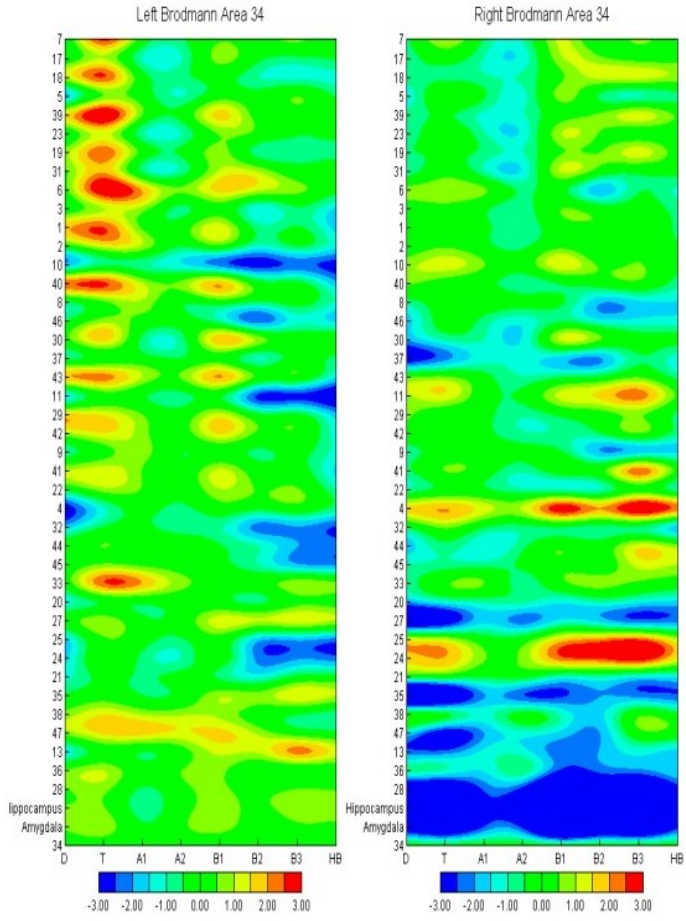
Figure 4. Z *score functional connectivity in the entorhinal cortex – BA 28 after therapy*



Brodmann area 34 is located in the superior temporal gyrus and is part of the entorhinal cortex, along with BA 28. Brodmann area 34, together with BA 28, functions as an intersection for multiple neural networks related to spatial navigation and the perception of time.

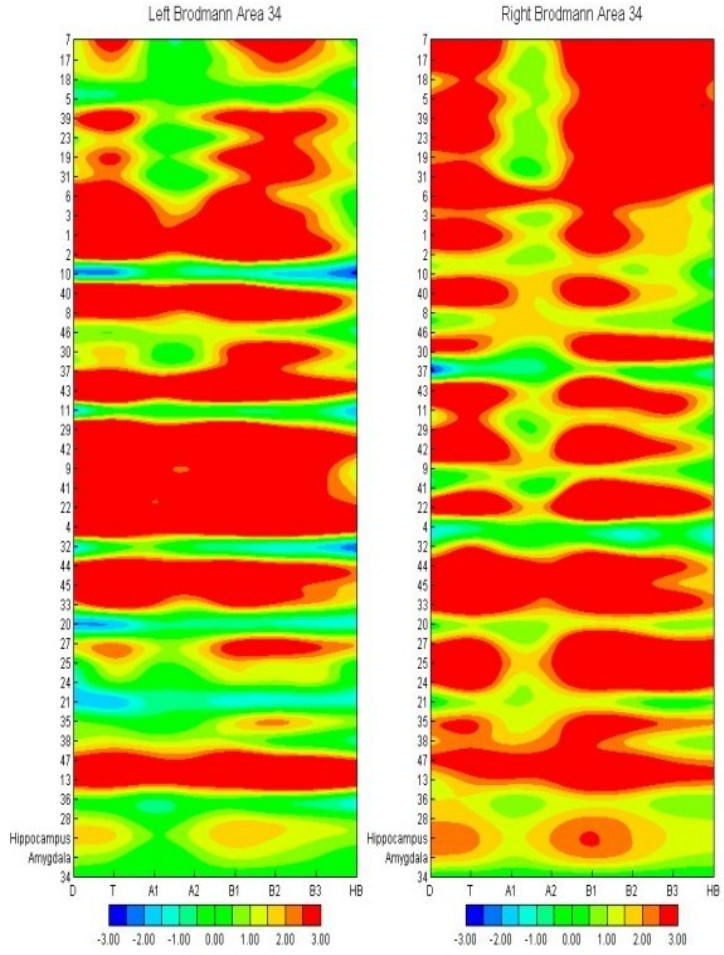
This area connects the hippocampal formation with the evolutionarily newer structures of the cerebral cortex. The reciprocal connections between the hippocampus and BA 34 play an important role in declarative memory, participating in memory encoding, consolidation, and optimization[19].

Figure 5. ***Z score functional connectivity in the entorhinal cortex – BA 34 before therapy***



19 Ibid…, p. 227 – 228.

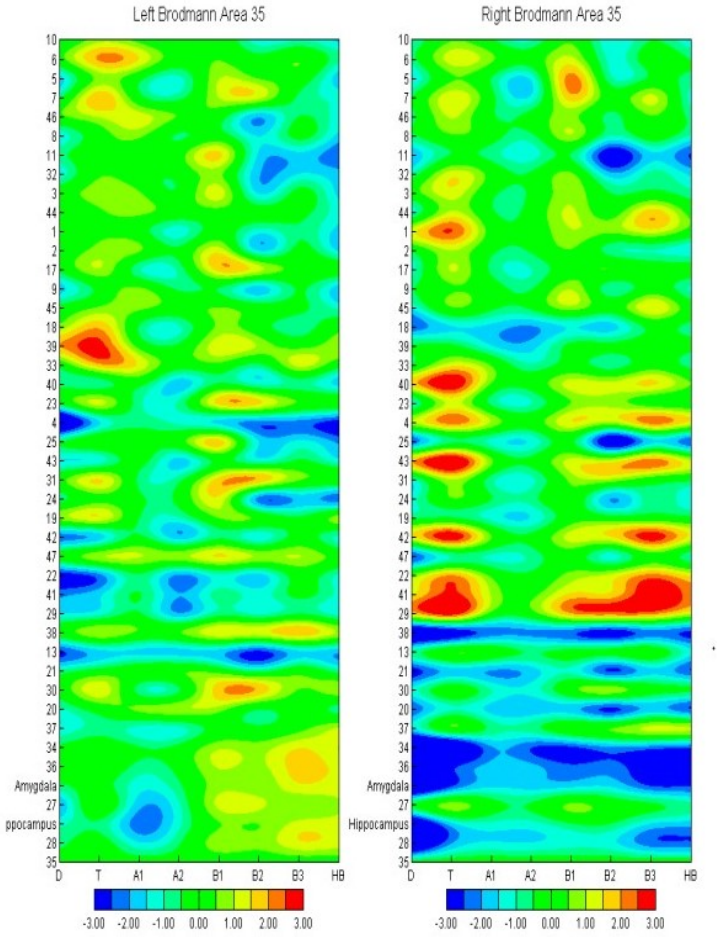
Figure 6. ***Z score functional connectivity in the entorhinal cortex – BA 34 after therapy***



Brodmann area 35 is considered together with BA 36 due to their anatomical proximity and functional connectivity. They have numerous projections to all sensory areas, which determines their key role in registering new events and impressions. The unique anatomical location of BA 35 and 36, near the medial temporal cortex, places them at the center of semantic processes and in the creation of associations between

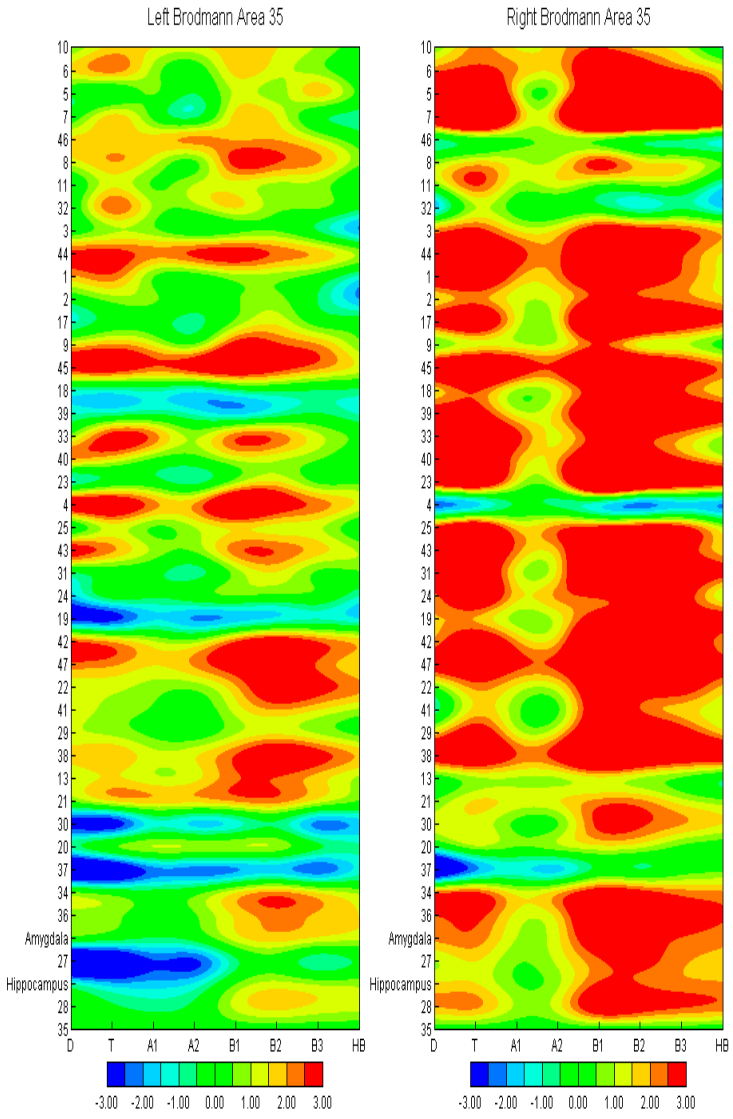
stimuli and meanings, based on experience and contextual environment. In addition to their role as the brain's "Librarian," these two regions also manage the temporal context of events, ensuring their relevance to the past, present, and future[20].

Figure 7. ***Z score functional connectivity in the parahippocampal cortex – BA 35 before therapy***



20 Ibid…, p. 230 – 231.

Figure 8. ***Z score functional connectivity in the parahippocampal cortex – BA 35 after therapy***



In Brodmann area 10, no functional connectivity is observed, which confirms findings from previous studies indicating that musicians exhibit the ability to inhibit the

influence of the frontal cortex on the subcortical structures in the medial temporal cortex.

Figure 9: ***Z score functional connectivity in the frontal lobe before therapy***

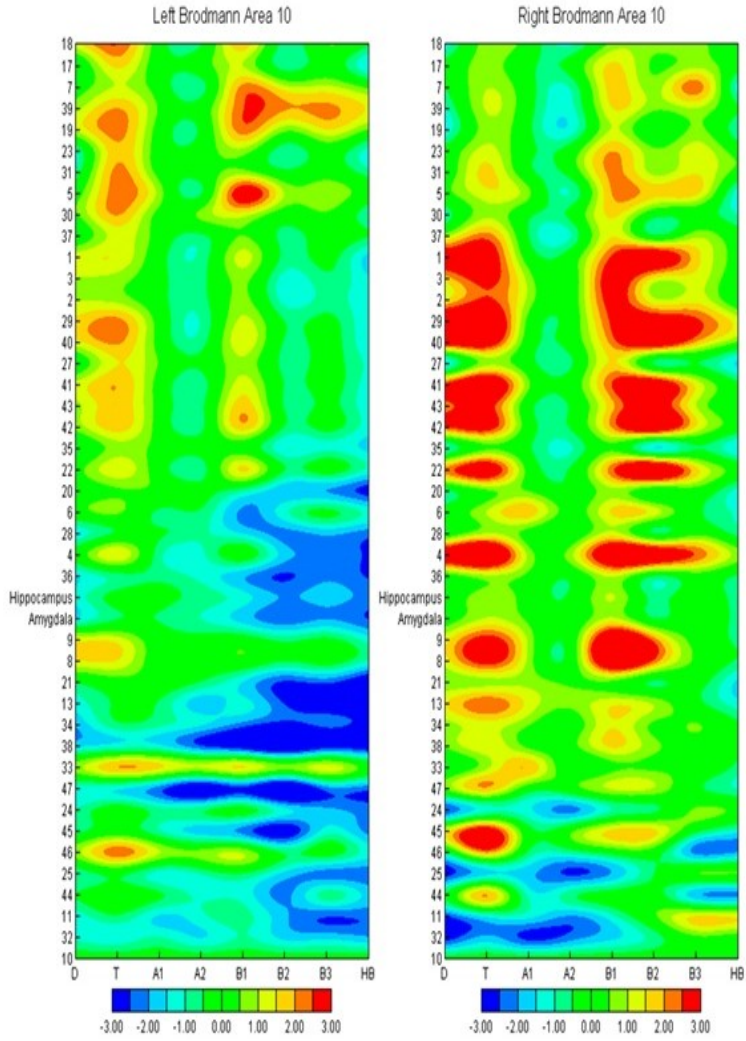
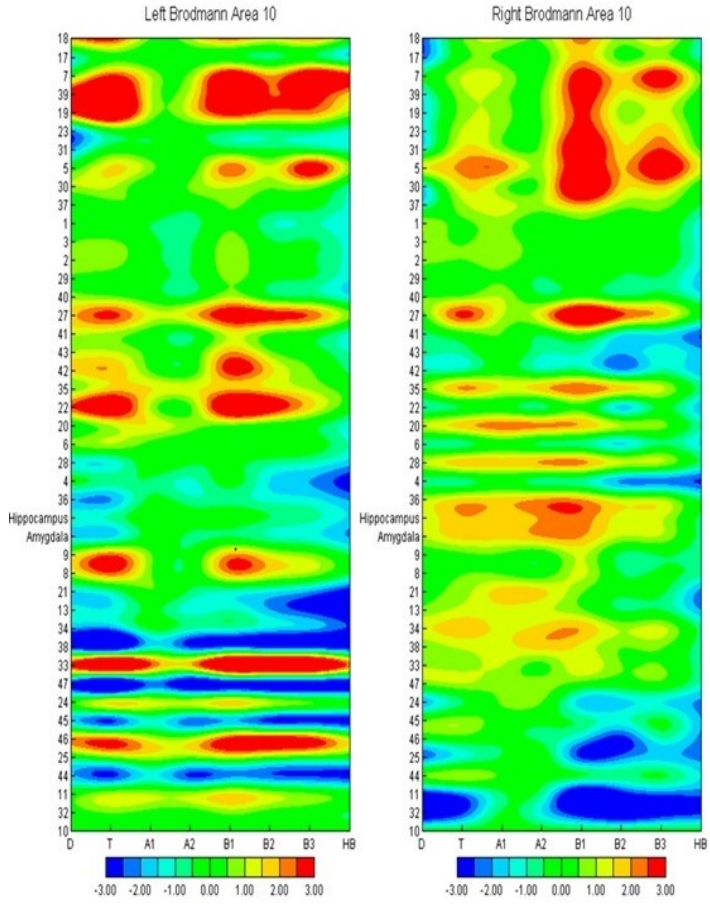


Figure 10. ***Z score functional connectivity in the frontal lobe after therapy***



5. CONCLUSION

The results of functional swLORETA qEEG neuroimaging on the effects of rhythm music therapy on brain connectivity in a child with autism spectrum disorder lead to the conclusive finding of increased functional connectivity in the entorhinal and parahippocampal gyri – structures corresponding to all

other areas of the cerebral cortex. The observed change is generalized but specific, with the strongest emphasis registered on the structures of the parahippocampal gyrus, which are related to the perception of time. Another extremely important result of the study is the lack of change in functional connectivity in the frontal lobe of the child with ASD following the rhythm music session. This confirms the cited studies in section **2.2.1**, which demonstrate that musicians use different strategies for perceiving rhythm compared to non-musicians. From this, it follows that rhythm music therapy has the potential to influence and modulate the brain structures of individuals with ASD.

The findings provide new directions for work in the field of rhythm-based music therapy and cognitive neuroscience. Every successful study that offers new information on the approaches and treatment of ASD – a complex, increasingly prevalent condition facing numerous unknowns – is beneficial in the fight against it.

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MUSIC THERAPY IN EARLY CHILDHOOD DEVELOPMENT SUPPORT

Anna ZIÓŁKOWSKA[1]

1. INTRODUCTION

Nowadays, there is an increase in the number of children requiring developmental support, right from birth. The diagnosis of a disability in an unborn child or just after birth is a critical moment for parents. From now on, not only the parents but also other family members (siblings, grandmother, grandfather) will be confronted with problems of which they were previously unaware. The emergence of a child's disability in the family system has a significant impact on all family members. This is why it is so important to provide professional support to a child with a disability as soon as possible. In my experience, as a pedagogue and speech therapist, music therapy gives positive results in the therapy of this group of patients.

1.1. Basic Concepts

The attempt to clarify terms by defining or specifying their meaning is quite an important step when writing an article. This is because they may be understood

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differently by specialists in the relevant fields.[2] Defining them avoids the danger of ambiguity and unclear terms. The function of terms, on the other hand, is to enable communication between scientists by providing them with a common language.[3] Such an opportunity is also given to other interested parties, i.e. the recipients of the article content.

The following basic concepts are associated with the undertaken topic "Music therapy in early childhood development support." involve the following basic concepts: music therapy, early development support, and disability.

1.2. Musicotherapy

As L. Konieczna-Nowak [4] emphasizes defining music therapy is not an easy task due to the multifaceted nature of its use, the wide spectrum of effects, and the bridging nature of the discipline, which integrates elements of many scientific fields (such as psychology, pedagogy, medicine, musicology, sociology, etc.) with artistic influence. Furthermore, music therapy in a scientific context is a relatively young discipline, undergoing intensive development. This makes it all the more difficult - with the ever-emerging new research related to music therapy itself or its related disciplines, whose achievements, however, remain in close relation to

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[2] S. Nowak, *Metodologia badań społecznych*, Wydawnictwo Naukowe PWN, Warszawa 1985, p. 132.

[3] Ch. Frankort-Nachmias, D. Nachmias, *Metody badawcze w naukach społecznych*, Wydawnictwo ZYSK i S-ka, Poznań 2001, p. 44.

[4] L. Konieczna-Nowak, *Wprowadzenie do muzykoterapii*, Oficyna Wydawnicza IMPULS, Kraków 2013, p. 7.

it - to propose a complete definition of it. Creating a coherent and comprehensive description requires generalizations or the danger of being too detailed. Attempts to construct an adequate definition of music therapy have been and continue to be made individually by specialists in the field - practitioners as well as theoreticians or researchers.

Originally used in various fields of medicine, music therapy now plays an important role in the treatment, rehabilitation, and therapy of children with disabilities. The term is derived from the Greek word 'mousike' and the Latin 'miusica', which means music, the art of singing and playing instruments. The second term 'therapeutic' means healing in a broader sense.[5]

K. Bruscia [6] states that music therapy as a discipline is an organized knowledge, consisting of practice, theory, and research on the therapeutic uses of music. As a profession, it defines an organized group of people using this knowledge in their profession. One of the fundamental issues that mark the direction of these considerations is, besides the theoretical perspective, the problem of the primary medium, the tool for achieving therapeutic results. Music therapy is constituted by the presence of the therapist and music.

Music therapy - as defined by the World Federation of Music Therapy - is the use of music or its elements

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5 E. Paszkiewicz-Pes, *Muzykoterapia jako metoda wspomagająca leczenie*, Hygeia Public Health 2013, 48(2): 168-176, p. 168.

6 K. Bruscia, *Defining music therapy*, Gilsum: Barcelona Publishers, Barcelona 1998.

(sound, rhythm, melody, and harmony) by a music therapist and a patient or group in a process designed for or to facilitate communication, learning, mobilization, expression, physical, emotional, intellectual and cognitive concentration for the development of inner potential and the development or restoration of an individual's functions so that he or she can achieve better intra- and interpersonal integration and, consequently, a better quality of life.[7]

The most recent definition from the American Music Therapy Association states that music therapy is the clinical and evidence-based use of music interventions to achieve individualized goals within a therapeutic relationship by a licensed professional who has completed an approved music therapy program. Music therapy interventions can address a variety of health and educational goals.[8]

The World Federation of Music Therapy adopts an explanation that can be considered a summary of the elements appearing in the above proposals. Music therapy is the professional/professional use of music and/or its elements (sound, rhythm, melody, harmony) as an intervention in medical, educational, and natural/daily settings with individual clients, groups, families, and communities seeking to optimize quality of life and improve physical, social, emotional, intellectual and spiritual health and well-being. Research, practice and

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7 E. Paszkiewicz-Mes, *Muzykoterapia jako metoda wspomagająca leczenie*, op. cit., p. 168.

8 https://www.musictherapy.org/about/musictherapy/, *accessed 02.10.2024.*

education, and clinical training in music therapy are based on professional standards appropriate to cultural, social, and political contexts.[9]

Summarizing the theme of music as therapy in its various definitions and approaches, it can be considered that what is healing, supporting and improving are almost all aspects of the existence of music, understood as a temporally structured course of acoustic phenomena - from the properties of the sound itself [10], through the characteristics of the individual elements of a musical work, to the complete products of that work while maintaining a therapeutic relationship.

The definitions indicated were presented in two groups - one included those emphasizing music as a primary therapeutic factor, the other seeing it in the context of a therapeutic relationship.

1.3.Early development support

The arrival of a child with developmental delays usually radically changes the functioning of the family. After the diagnosis, parents experience a life crisis. The initial problem of developmental disorders leads over time to additional difficulties of a social nature. Parents are forced to care for their disabled children without the necessary knowledge and experience. In addition, they experience difficulties in accessing important information and specialized medical care. The family goes through a difficult and long journey from despair and pain, from

9 L. Konieczna-Nowak, *Wprowadzenie do muzykoterapii*, op. cit. p. 12.

10 Ibidem, p. 11.

searching for blame and trying to find all available sources of help to pessimism and helplessness. Having to provide care and take care of other responsibilities, as well as functioning in a state of constant stress, can lead to physical and emotional burnout for parents after a few years.[11] It is therefore necessary to plan activities that include support from professionals right from the child's birth.

Children with disabilities experience many difficulties and various limitations. However, their status in Polish society is currently changing favorably. More and more attention is being paid to improving their quality of life. This is increasingly accompanied by the conviction of decision-making centers that the needs of every individual are equally important and that disability is not so much a deviation from the norm as a specific developmental orientation.[12] Creating conditions for the full participation of less able children in various areas of life is one of the challenges of today. Children with disabilities are individuals in society and should receive the support they need as early as possible - from infancy. In Poland, such support is provided, inter alia, within the framework of early childhood development support.

Early development support is an interdisciplinary approach that enables a child and his or her family to

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11 Z. Palak, M. Wójcik, *Terapia pedagogiczna dzieci ze specjalnymi potrzebami rozwojowymi i edukacyjnymi. Nowe oblicza terapii w pedagogice specjalnej*, Wydawnictwo UMCS, Lublin 2016, p. 73.

12 A. Franke, *Europejska polityka niepełnosprawnych zmierzająca do poprawy jakości ich życia*, [w:] *Jakość życia dzieci i młodzieży niepełnosprawnej w Polsce i w krajach Unii Europejskiej*, (ed.) Patkiewicz J., Wydawnictwo TWK Wrocław, Wrocław 2004, p. 54.

receive specialized care from the moment the first worrying symptoms of a disorder are recognized until the child starts school.

The aim of the interventions here is the earliest possible detection and elimination or correction of developmental abnormalities observed in the child, as well as the appropriate selection of exercises to meet the child's individual needs; prevention of developmental abnormalities that can be identified during the diagnosis of the child's functioning and the conditions under which the child develops; setting up a multi-profile program for the improvement of a child with multiple disorders; early - comprehensive prevention of disabilities, preparing and assisting families in rehabilitating their child at home and in conscious, proper care of the child (prevention); forming positive parent-professional relationships.[13] As can be deduced, early intervention is intended to support the development of children with disabilities through a variety of interventions and therapies. One of the methods used at the Psychological-Pedagogical Clinic in Polkowice (where I worked) to improve the development of children with disabilities was music therapy.

1.4. Disability

This concept is one of the key, widely known and used concepts in special education. It can be understood in many ways, not least because it is quite general. The various ways of defining it indicate the complexity of the

[13] R. Piotrowicz, https://www.naszaklinika.com.pl/pliki/Dla%20Rodzicow%20wczesne%20wspomaganie%20rozwoju%20dziecka.pdf, *accessed 02.10.2024.*

phenomenon and the need to consider it in different aspects. There are numerous classifications in the literature based on diverse criteria.

There is no common definition of disability in the countries of the European Union.[14] The relative nature of the term is influenced by historical period, latitude, and social and cultural context.[15] There are many synonymous terms that are used interchangeably. This arbitrariness of terms due to the lack of a single precise definition of disability causes problems in naming. There are also terminological doubts of a linguistic nature. These are due to linguistic differences that make it difficult to unambiguously specify a term that is accepted and interpreted in the same way by all researchers. English-language terms sometimes lack proper Polish equivalents. In view of the multiplicity of meanings and terminological approaches and the existence of various classifications of disability, an attempt has been made to organize, systematize, and make more precise the functioning terms.

In 1980, the World Health Organization (WHO) developed the International *Classification of Impairments, Disabilities and Handicaps*. It provides an international standard for defining the various consequences of congenital or acquired health defects. According to this definition, a disability is defined as any limitation or

[14] A. Zielak, *Niepełnosprawni w świecie Internetu*, Wydawnictwo SBP, Warszawa 2005, p.17.

[15] E. Zasępa, Cz. Czabała, M. Starzomska, *Postawy wobec niepełnosprawności i osób niepełnosprawnych, „Człowiek- Niepełnosprawność- Społeczeństwo”,* 2005, no. 1, 24.

resultant inability to perform an activity in the manner or to the extent considered normal for a human being.[16] According to the terminology adopted by the WHO, a distinction can be made:

- damage (*impairment*),
- *disability*,
- *handicap*.

The relationship between the two is as follows: impairment leads to disability, which in turn worsens a person's social situation (handicap). The above distinction makes it possible to see the consequences of disability in three dimensions, i.e. organic, psychological, and social.[17]

However, the classification adopted by the World Health Organization in 1980 was not accepted by all. It was criticized for placing too much emphasis on the biomedical aspect and suggesting that the disabled person had to adapt to the situation. It overlooked the need to adapt the social and physical environment to the needs and expectations of individuals with disabilities.

In the UK, US, and Scandinavian countries, the social model of disability has emerged in response to these criticisms.[18]

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16 G. Dryżałowska, *Niepełnosprawność*, [w:] Encyklopedia Pedagogiczna XXI wieku, Tom III, Warszawa 2003, p. 646.

17 W. Dykcik, *Wprowadzenie w przedmiot pedagogiki specjalnej jako nauki*, [in:] *Pedagogika specjalna*, (ed.) Dykcik W., Wydawnictwo Naukowe Uniwersytetu im. Adama Mickiewicza, Poznań 2001, p. 18.

18 T. Majewski, *Biopsychospołeczna koncepcja niepełnosprawności*, *„Szkoła Specjalna"*, 1999, no. 3, p. 131.

According to it, it is accepted that it is not individual limitations that are the cause of disability. It is the lack of appropriate services and services that adequately meet the needs of those affected (in other words, it is the limitations imposed by society).[19] It considered the essence of the social and physical environmental conditions that cause difficulties and limitations for the disabled. Among the more important of these are: social, architectural, economic, and legal barriers. The responsibility for solving these problems was placed on society as a whole.

The lack of full acceptance of this interpretation of disability led to further modification of the concept. In 1997, the World Health Organization presented the biopsychosocial concept of disability. It takes into account both biological and social aspects. In addition, it adopts the concept of personal and technical aids and introduces so-called *contextual factors*. These include environmental factors (attitudes of the social environment, education system, rehabilitation, disability support) and individual factors (personal characteristics, e.g. age, gender, education, occupation, upbringing, current life situation).[20] They affect a person's functioning in personal and social life.

Given the specificity of the issue, it seems appropriate to adopt a broad understanding of the concept of disability. It follows from what has been said so far that the term denotes not only a lack, damage,

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[19] A. Nowak, *Bezrobocie wśród niepełnosprawnych. Studium pedagogiczno-społeczne*, Wydawnictwo Uniwersytetu Śląskiego, Katowice 2002, p. 18.

[20] Ibidem, 132.

restriction of an organism or disturbance of some organism's function and efficiency but also psychosocial consequences of these limitations and disturbances. In this sense, a disabled person is a person whose performance of life tasks is limited or prevented as a result of a reduced state of fitness. As a consequence, their participation in many activities on an equal footing with non-disabled people is hindered. The reasons for this situation do not lie solely with the individual, but also with the limitations of the environment and existing social, economic, and physical barriers.

The literature on the subject distinguishes between types of disability, which may exist separately or in interconnection and in various combinations, with the boundaries between them being quite fluid.[21] Therefore, I will make it clear that in the topic I am addressing, I understand disability broadly (these are children who are deaf, hard of hearing, blind, visually impaired, with motor disabilities including aphasia, with mild, moderate or severe intellectual disabilities, with autism including Asperger's syndrome, and with multiple disabilities).

2. EXAMPLES OF USE OF MUSIC THERAPY IN EARLY DEVELOPMENT SUPPORT

The next part of this article will deal with music therapy in practice. Here I will also present some issues that determine and structure the therapeutic process.

[21] J. Stochmiałek (ed.), *Rozwój systemu opieki i resocjalizacji*, Wydawnictwo Wyższej Szkoły Pedagogicznej, Częstochowa 1994, p. 168.

2.1. Stages of music therapy interventions

As a practitioner, I know that the course of therapy, as a dynamic phenomenon, is not one hundred percent predictable. However, careful planning can lead to the full realization of the therapeutic potential inherent in the music-therapeutic procedure. This is why it is so important to plan the following stages of music therapy interventions well: recognition, goal-setting, therapy planning, therapy implementation, and evaluation of results.

The music-therapeutic diagnosis consists of two areas: a general one and a musical profile. First, the therapist reads the child's records and interviews the parents. During this interview, basic biographical data is collected, information on the child's developmental trajectory since birth, and information on how the child functions. The second area, music, should provide knowledge about the child's musical behavior, preferences, and habits. The source of such information is the activities based on the types of music therapy experience (improvisation, performing, creating, listening) proposed during the first, initial session.

The goals of music therapy activities may be defined differently, depending on the music therapist's approach, the theoretical perspective they adopt, and the rules of the institution where they work. My practice is derived from humanistic assumptions - initially the goals are very general, they evolve in the therapeutic process, they are not a rigid determinant of the course of action. I follow the child in my actions.

General goals are long-term and relate to the therapeutic process as a whole. Therefore, the therapist often formulates specific goals that relate to short cycles of activities or are formulated for specific activities.

The formulation of the therapeutic plan is closely linked to the set goals. The questions that the music therapist must answer in turn before starting the therapy process are:

1. What are the child's needs?
2. How to formulate the general aims of the therapy?
3. Which needs can be met by music therapy activities? Which general aims seem feasible?
4. Which musical activities can support this?
5. Under what conditions can they be realized?[22]

The next stage of the activity is to formulate a session plan. Its shape depends on the nature of the work and the therapist's experience. For example, the plan can be in general outline (the therapist relies on his/her own experience, skills, and knowledge). However, it is worth spending more time preparing a detailed version of the plan (it allows us to avoid unnecessarily difficult situations and to use the session time as effectively as possible).

As the aim of this chapter is mainly to present examples of the use of music therapy with children in early development support - I will focus in particular on the stage: implementation of the therapy.

[22] L. Konieczna-Nowak, *Wprowadzenie do muzykoterapii*, op. cit. p.52.

2.2. Supporting the development of children with disabilities through music therapeutic interventions

Music therapeutic interventions aimed at children with various problems form a significant part of music therapy applications in general. The therapeutic elements of music have a well-established place in special education in its broadest sense, in pedagogical therapy, in speech therapy, and in many of its forms, i.e. song or sound phenomena are a key component.

One of the main aims of early development support is to support the psychomotor development of the child and to shape his or her personality. Music therapy fulfills its role in this respect as it enriches the child's experience with musical pieces. For young children, the reception of a piece of music is spontaneous and can awaken emotions and interests.[23] To make the most of the children's potential during my lessons I apply the principles, and pedagogical guidelines by Sacher :

- I try to bring the child into contact with music several times a week,
- I repeatedly return to the same piece of music,
- the repertoire I choose to listen to includes many styles of music, all genres of music, but an important factor limiting the choice of e.g. melody is the duration of the piece,

[23] W. A. Sacher, *Słuchanie muzyki jako forma ekspresji muzycznej dzieci*, [w:] *Sztuka i ekspresja dziecka – w poszukiwaniu sensu tworzenia*, K. Krasoń (ed.), Katowice 2003, pp. 68-69.

- I accept children's reactions without reservation (of course, if they are related to the music they are listening to), hence simulating the playing of instruments, simulating the conductor's movements or other involuntary movements in accordance with the tempo and rhythm of the music are not evidence of bad behavior on the part of the child, but indicate that he or she is following the music, that he or she is really listening to it.

In my practice with children, the choice of methods and techniques, as well as the decision on the objectives of the interactions, are directly related to the child's development process, including his or her musical development. Focusing on the development of young children, C. Briggs divides musical development into the following phases:

1. 0-9 months - reflex phase - the infant's attention is drawn to sounds, he calms down in response to music, distinguishes pitch, vocalizes, sways, perceives rhythmic changes, and responds with whole body movement.
2. 9-18 months - intention phase - the child looks for the source of sound, moves parts of the body in response to music, recognizes familiar songs, and babbles musically.
3. 18-36 months - control phase - the child can listen to music in silence, musical babbling develops into singing, melodic contours appear, and the child moves purposefully to the rhythm of music.

4. 36-72 months - integration phase (integration phase) - the child begins to distinguish the characteristics of sound (loud - quiet, high - low), sings spontaneously, assimilates songs, and develops rhythmic synchronization.

Each phase is characterized by C. Briggs characterizes by specific musical behavior in four spheres: auditory, vocal-tonal, rhythmic, and cognitive.[24]

The characterization of musical development presented above applies to normally developing children. In early development support, however, music therapy is used primarily to work with children displaying developmental problems, disorders, delays, and disharmony. In my experience, in the case of general developmental disorders, the development of musical skills is also not typical. In this case, the awareness of sequentially, the consequences of musical development, is an important point of reference at the stage of diagnosis, goal formulation, and the course of therapy.

In my work at the psychological-educational counseling center, I have conducted therapy within the framework of early development support mainly with children with disabilities, but also with autism and chronic diseases. Due to the developmental difficulties of the above-mentioned groups of children, I used the therapeutic elements of music. While looking for a music therapy program for my young patients, I came across 'Auditory Training' by Magdalena Krawczun. It is an

[24] L. Konieczna-Nowak, *Wprowadzenie do muzykoterapii*, op. cit. p.58.

instructional booklet in which the author shares practical games for the suggested sounds and music. The manual is accompanied by a CD, which is a set of melodies, sounds, mimic noises, songs, and their instrumental versions. In addition, the instruction is accompanied by photographs and sample activity scenarios next to the CD. "I have used Magdalena Krawczun's 'Auditory Training' with children aged 1 year to 6 years, mainly during speech therapy classes. A great value of the indicated training is the combination of music and movement. In this way, not only auditory but also motor functions are shaped. When working with children with special needs, the improvement of motor functions is particularly important for daily functioning, for speech development, and for the children's later educational success. The author has not forgotten the emotional aspect either, hence the developed materials also include musical games to trigger basic emotions (joy, sadness anger). In summary, Magdalena Krawczun's 'Auditory Training' is a planned activity with music, which I have used to improve the auditory concentration, physical fitness and development of the social and emotional sphere of children with disabilities.

As an educator and speech therapist wanting to be successful, I followed M. Krawczun's guidelines for organizing activities with therapeutic elements of music.[25]

a) Conditions (when conducting the activity, I remembered to respect the appropriate acoustic

[25] M. Krawczun, *Trening słuchowy Magdaleny Krawczun 2. Melodie. Dźwięki. Piosenki*, Wydawnictwo Continuo, Wrocław 2015, p. 7.

conditions and prepared the space so that nothing distracted the child's auditory attention).

b) Introduction/introduction (I always used a CD during one-to-one meetings, so on the author's advice I started with an introduction sitting down, on the carpet; I always remembered to welcome the child, talk, and explain what we would be doing).

c) Adaptation to needs and abilities (I adapted the type of activity, the length of the activities, and the level of difficulty of the musical games to the child's needs and abilities).

d) Atmosphere (I took care to create an atmosphere of friendliness, acceptance, and a sense of security).

e) Attire (I made sure to wear loose clothing during the activity, and often practiced with the child barefoot or in socks).

f) Reward (I applauded after each activity - this way I gave the child a signal that the activity was completed and praised the child's work).

g) Leader (I always participated in the activity with the child, in this way we built a therapeutic relationship).

h) Simple instruction (on the author's advice I gave short and simple messages).

Classes with children with disabilities, in early childhood development support, are long-term activities.

A child qualified for this form of support may benefit from 4 to 8 hours of therapy per month.[26] In the table below, I have summarized examples of the use of melodies for skill gains in children with disabilities.

Table 1. ***Examples of the use of melodies from Magdalena Krawczun's 'Auditory Training' in therapy with children with disabilities.***

Melody	Objective
is - is not	– teaching imitation, – teaching reactions to sound, – teaching to control one's own behavior;
high - low	– distinguishing high and low sounds, – learning the terms high, low, – stimulating imagination (high - butterfly, low-heavy elephant);
short - long	– distinguishing sounds by their duration, – learning the terms long and short, – training the sense of balance;
fast - slow	– distinguishing sounds by their speed, – learning concepts: fast, slow, – stimulating imagination (fast - hare, slow - tortoise);
quiet - loud	– controlling speech in terms of volume, – modulating with the voice, – learning concepts: quiet, loud;
sad - happy	– learning concepts: sad, happy, – paying attention to changes in facial expressions, – looking at another person, – practising concentration, – learning to name and express emotions;
heavy - light	– distinguishing between sounds, – becoming sensitive to the change of melody in music, – learning the terms heavy, light, – physical activity: light - walk on tiptoe, heavy - crawl;
strong - soft	– sensitizing to change of dynamics in music, – learning the terms strong, soft, – regulating tension, during a rhythmic melody we stomp, during a soft melody we dance like a ballerina;
little - a lot	– sensitizing to the number of sounds and instruments in a melody, – learning the concepts of little and much, – motor self-control, little sounds - we walk slowly, a lot of sounds - we run;

Based on the music-therapeutic diagnosis (first, initial session) and the evaluation of the therapeutic

[26] After M. Krawczun and from personal experience.

results (after at least 6 months of working with the child with a disability "Auditory Training" by Magdalena Krawczun), the following benefits were obtained:[27]

- support for speech therapy, stimulation of speech,
- stimulation of verbal communication and body language,
- improvement of auditory functions, sensitization to auditory stimuli,
- improving understanding and responding to verbal and auditory commands,
- stimulating physical activity, playing with movement,
- improving breathing,
- strengthening gross and fine motor skills and improving muscle tone,
- improving self-care activities,
- improving attention and concentration on an activity,
- stimulating the cognitive sphere by learning and consolidating concepts, e.g. parts of the body, directions in space,
- stimulating imitation,
- improving the integration of vision, hearing and movement,

[27] A total of thirty children with disabilities were examined.

- stimulation of the senses (hearing, vision, deep sensation, balance),
- school maturity for learning to read and write (correct handwriting),
- better preparation for language learning,
- stress relief, relaxation, enjoyment of one's actions and activities,
- evoking and experiencing emotions, stimulating the imagination,
- greater self-confidence, self-confidence in their abilities.

My observations further showed that children with disabilities were keen to participate in activities with therapeutic elements of music, and demanded that musical elements be a regular part of therapy.

3. CONCLUSION

The discussed benefits of music therapy in working with children with disabilities exemplify the multifaceted use of music therapy in the treatment of this group of people. Music therapy is now a rapidly growing discipline to support the development of children with disabilities. Whether we use Mozart's music or our child's favorite piece of music, this therapy is only able to provide us with the positive effects of its action, without any unwanted side effects. Of course, music is not a miracle panacea for all illnesses, ailments, and problems of everyday life, but as research shows, it

is a very good aid in therapy for children with disabilities. Auditory stimulation is an important factor in compensating for developmental deficits in both the physical and mental areas of the above-mentioned group of children. [28]

[28] E. Topor, *Wpływ muzyki oraz rola muzykoterapii w rozwoju dziecka*, op. cit., p. 170.

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MUSIC AND SELF-EXPRESSION: HOW MUSIC CAN BE USED AS A TOOL FOR SELF-EXPRESSION AND PROCESSES TO HELP INDIVIDUALS BETTER UNDERSTAND THEIR EMOTIONS

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Mykola ORLYKOVSKYI[2]

1. MUSIC AND ITS FUNCTIONS IN HUMAN LIFE

Music has always accompanied man. It also accompanies the individual's life. It is an impression, a stimulus, a background of everyday life, a way, a reason for activity. It accompanies us in everyday life and in special moments, it still reaches through the senses in shops, cars, schools, and from the media. It is available and universal wherever there is a person. As art, it is clear to everyone, regardless of where they are on the globe. The perception of music begins in fetal life, and in infancy, it also reaches the child. During the development of motor skills, it is closely related to an exceptionally spontaneous reaction to it. As it develops, it becomes a tool for

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cognitive and emotional development, relaxation, self-disclosure, and triggering self-expression (Stachyra, 2012).

The ability of human perception of sound allows us to activate our imagination, develop a sense of joy, and stimulate sensitivity. The history of mankind has assigned great significance to the sound due to its significance related to survival, and the defense of life. An important role should also be emphasized for the values associated with the medium that music plays in human societies. It has been a part of tradition and customs since all times, accompanying the cultivation of traditions, sublime elements of the life of society, and ethnic groups.

For centuries, music has been appreciated as a means of transmitting stimuli and harmonizing the soul and body. Music gives you the opportunity to express your feelings and trigger them in the listeners. It was also treated as a medicine in the treatment of hearing disorders, cardiovascular disorders, pain, and mental disorders. The use of music as a medium to increase resistance to diseases was also noted (ibid.). Music, along with the cultural message, was also associated with healing with the use of dance, rhythm, and song even 1500 years before our era. Melodic and rhythmic values were accompanied by a specific ritual that intensified the treatment of psychosomatic ailments (Benenzon after Stachyra, 2012). In Europe, about 200 years ago, music and its qualities were used to treat people with mental illnesses. The development of pharmacology has reduced the tendency to use music in therapy. Contemporary tendencies in music therapy are rooted in psychological

concepts: psychoanalysis, behavioral psychotherapy, and humanistic psychotherapy.

In the discourse, the issues of the function of music are approached in various ways. Maria Gołaszewska recalled the following functions:

- Cultural – the field of music, especially classical music, introduces a person from childhood to the world of culture, initially on the basis of relaxation, unwinding, and gradually towards exploring the cultural heritage of societies;
- Cognitive – while learning songs, melodies, rhythm, and mood of musical pieces, the mind, knowledge about the world, reality, emotions, and moods, as well as one's movement, dance, and emotional abilities are exercised;
- Motor – listening to music provokes movement by activating the body to swing, dance, develop gross and fine motor skills;
- Social – thanks to music, listening to it, singing, and dancing, situations are created to create interpersonal relationships, allowing for spontaneity, joy and overcoming shyness;
- Therapeutic – properly selected music allows for spontaneity and emotional development, giving rise to the need for psychomotor activity, affects the imagination, helps in expressing feelings, reduces emotional tensions, improves concentration and attention and speech processes, enriches vocabulary, allows to divert

attention from somatic ailments and internal problems (Gołaszewska, 1973).

Music has both a therapeutic and a preventive function. Music accompanies a person already in fetal life. A small child reacts spontaneously to the sounds of music, and the reaction intensifies at preschool age when formalized education begins. For every person, music contributes to the creation of moods, allows freedom of movement and spontaneity, and thus triggers creativity. From childhood, contacts with music are formed, and an organized interest from an early age supports the experience and desire to commune with this field of art (Sacher, 2004). Music classes serve cognitive, emotional, and social development. The proposed forms allow you to relax and unwind. Music acts as a regulator of feelings, both positive and negative, allowing for the expression of emotions, often unconscious. Relaxing properties are noted in somatic parameters such as heart rate, blood pressure, pain weakness, muscle tension, and pupil dilation (Konieczna, 2007). The use of music in pain therapy was described by Henryk Gaertner, who conducted research on the dependence of deviations of blood pressure parameters on the type of music listened to. Adrian Demianowski searched for symptoms of the influence of music in neurotic disorders, the impact on emotional tension, the regulation of negative moods, mood changes, and the feeling of relaxation (Śliwka, Jarosz, Nowobilski, 2006).

2. ABOUT MUSIC THERAPY

The second half of the 20th century in the 1970s brought the culmination of activities on the inclusion of music therapy in academic sciences. Tadeusz Natanson showed the approach to music as the most understandable art. He attributed to it the reduction of semantics by means of strongly emotional stimuli and the occurrence of a rational factor in the reception of musical works. This creates accessibility for everyone and allows them to establish contact with the environment, shape self-esteem, discover the meaning of life, understand the meaning of suffering, and oppose illness. The author also emphasized the role of this field of art in supporting intellectual and emotional development. He saw such qualities in the role of music in therapy and:

- influencing man in preparing him for life through aesthetic experiences, closely related to other important experiences in life;
- enriching mental life;
- ensuring communication skills in society and between generations;
- values supporting cognitive, intellectual, and emotional development (Natanson, 1979).

T. Natanson saw music therapy as a field that would answer the question about the effectiveness of the type of form of music in therapy. The Music Therapy Department at the State Higher School of Music in Wrocław, established thanks to it, resulted in further activities on the creation of further scientific institutes

working on research in the field of music therapy (Łazowska, 2012). Scientific activities shaped issues related to the definition of therapy through music. Wita Szulc defined music therapy as the use of music in a planned process, made aware of by both the patient and the therapist, in order to develop internal potential, mobilize to rebuild the psyche by facilitating cognitive, emotional, and physical concentration, the learning process, and facilitating communication and expression (Szulc, 2005).

The author drew attention to various philosophical and psychological concepts of music, on which music therapy based its development and aspects of influencing the patient. The psychoanalytic concept treated music as a medium to stimulate thinking and imagination by strengthening experiences and emotions, causing the release of hidden tensions. Contemplation and meditation intensely experienced while listening to music leads to the awareness and purification of emotional tensions and the regeneration of personality. Among the methods related to the behavioral concept, group, and regulatory therapy are highlighted, which are based on training to react and imagine, through verbal and non-verbal communication techniques. On the other hand, based on the theory of learning, they use music as a stimulus to strengthen the learning process and strengthen emotional experiences, mainly using the mechanisms of control and manipulation of the individual's reactions. Existential philosophy, emphasizing the place and role of man in the world, emphasizes the system of values of the individual, influencing the system of experiential values. Humanistic

psychology, developed on such a foundation, drew attention to stimulating the patient's independence during therapy, the development of his abilities, and the free development of his personality. Every human being strives for self-development, self-realization, and the growth of his mental and spiritual abilities may be subject to special treatments aimed at revealing these possibilities during therapy (Szulc, 2011).

Psychotherapy through music is used with the use of specific methods, forms, procedures and models depending on the functions attributed to music in treatment. Elżbieta Galińska distinguished groups of music therapy methods:

- Training – conducted on the basis of Schultz's autogenic training, during which the patient is taught to self-reduce psychophysical tension with the use of music and initially introduced pharmacological agents;
- Emotionally activating and reactive-imaginative during which the music used intensifies and accelerates the process of projective visual images and extra-musical associations;
- Communicative – used to teach communication in the environment, based on tasks in the field of emotional and social behavior, involving empathy, ways of expressing emotions, intentions, opposition, and cooperation;
- Relaxation – involving the use of sets of music recordings that provide relaxation, relief, stress

relief, lowering the patient's heart rate and blood pressure;

- Activating – consisting of exercises aimed at stimulation, activation with music in the form of games, playing instruments, and movement games;
- Creative – using dance, movement, vocal and rhythmic improvisations;
- Contemplative – introducing special pieces of music that evoke a solemn mood, stimulating sensitivity to the aesthetics of feelings and contemplation (Galińska, 2005).

The key aspect in the forms and methods of music therapy used is the lack of need to prepare the patient in terms of the content, abilities, and skills developed in him. Age is irrelevant, nor are the problems or diseases that his soul and body are struggling with. The aim of music therapy is:

- Influencing verbal and non-verbal expression;
- Physical stimulation;
- Influence on memory processes;
- Impact on concentration levels;
- Improving coordination and motor skills;
- Shaping creativity;
- Effect on improving attention span;
- Developing and enriching vocabulary;

- Developing social experiences;
- Learning to properly express feelings and states;
- Learning to understand other people's states;
- Improving satisfaction with one's own activities;
- Developing a sense of identity;
- Influencing the formation of awareness of one's own body and movement;
- Promotion of emotional and motor expression;
- Improving the quality of life (Strzelecki, 2010).

The tasks of music therapy described by T. Natanson concern:

- Stimulating creative attitudes;
- Supporting psychomotor activity;
- Stimulating and directing the desired emotions;
- Regulation of muscle and emotional tension;
- Developing personality;
- Shaping readiness for social contacts;
- Stimulate interpersonal communication;
- Provide intellectual and emotional experiences;
- Stimulate physiological and biochemical reactions of the body;
- Inspiring social contacts (Natanson, 1992).

3. MUSIC IN THE PERSPECTIVE OF SELECTED CONCEPTS AND MODELS OF MUSIC THERAPY IN PRACTICAL APPLICATION

The history of music and its application in the fields of culture, psychology, pedagogy, and medicine prompts the analysis of concepts that refer to the values of its use. Many concepts of the use of music in therapy provide premises for what purpose music therapy is used. One of the promoters of the concept of culture therapy, Andrzej Janicki, recognized the great importance of music in the prevention of somatic diseases and considered it to be a way to relieve tension in the human psyche. The concept suggests that music:

- It allows for the experience of belonging and a sense of community;
- It gives the opportunity to feel meaning in action;
- It allows you to feel unity;
- It strengthens the sense of body awareness and vitality (Janicki, 1990).

The concept of Even Ruud, who defined music therapy as a contribution of work aimed at increasing the possibilities of action, testifies to the use of music in improving the material and mental well-being of people undergoing therapy through music. E. Ruud believed that any use of musical elements in the planned music therapy process allows to achieve the goal of intra- and interpersonal integration, which gives a better quality of life. The indirect goals of therapeutic interventions are: influencing emotional, cognitive, intellectual, and physical

concentration, activation of expression and internal potential (Ruud, 1997). The author professed the conviction that human well-being is based on one's emotional experiences, seeing in music harmony that enhances such a quality of life, activates self-realization, a sense of freedom and energy (ibid.).

Awareness, cognition, and identification of one's own feelings are the basic skills for expressing one's emotions and oneself. Such a skill is an opportunity to understand not only oneself but also other people, which in turn makes life easier in a human community and allows you to cope with problem situations. This is the most important aspect of the personal development of a human being. Such an approach presented by the analytical music therapy trend activates the search for the sources of fears, trauma, internal conflicts, inappropriateness of the mother's family structure, and sources of personal and social tragedies.

The concept of holistic music therapy draws attention to the aspect of emotional experiencing of music, which, by providing strong feelings, leads to a feeling of inner harmony, while giving awareness of one's identity, agency in self-realization, and strengthening one's potential. Proponents of this approach to music therapy report the advantages that are the result of the therapists' activities. Among them are experiences of moments of strong change, joy, and excitement that give a sense of understanding oneself, one's aspirations, emotions, and joy (Szulc, 2005). As part of the discourse, polemics are held in the field of the effects of music during therapeutic

sessions. There is a belief that it is music that has the power to induce emotional purification, and awareness, and unravel one's own emotional processes. There are also voices that qualified psychotherapists should enjoy merit in this matter, as they lead patients to such experiences during therapeutic conversations. Wita Szulc expressed the opinion that music in itself is a method of expressing oneself, of demonstrating one's experiences and emotions. These can be both verbal and non-verbal expressions, very personal reflections with very strong emotions experienced in life (ibid.).

The aforementioned researcher and promoter of music therapy also considered music from the point of view of activating life through music. In this approach, it should be recognized that music contributes to the formation, and thus to the increase of self-esteem. Experiencing one's abilities in using the medium of music, a kind of perfection in using its field, gives rise to a sense of self-respect and even admiration for oneself. This implies a sense of competence, especially in interpersonal relationships, and a sense of satisfaction in personal life. The author writes that listening to music promotes the development of social behavior, and also causes the comprehensive development of motor, cognitive, and communication skills. In musically literate people, social, emotional, and physical involvement increases. Brynjulf Stige, the author of the concept of music focused on culture, noted that through music, man expands his contacts with the world, and expands the cultural area, strengthening his empathy towards humanity and the whole world (Stige, 2004). Thanks to music, a sense of

belonging is born, and thus social, historical, and geographical identity develops. Music opens the way to identification with belonging to the historical fate of a community, nation, or subculture (Szulc, 2005). It should be remembered that identity is a structure that contains emotional attitudes and awareness of such feelings.

It is also worth mentioning creative music therapy, which is used on a larger scale in working with children with learning difficulties. The concept created a method of creating and composing music, most often by means of musical improvisations. Sessions are supervised by a therapist or therapist's co-worker. Among those used in Poland, the concept of combining the humanistic approach in modification with elements of behaviorism and cognitive perspective is interesting. A properly adapted model of therapy through music is addressed to people with hyperkinetic disorders, depression, anxiety, lack of behavior control, and behavioral and emotional disorders. The practice has revealed and proven successes in the field of therapy in the following cases:

- Hostility, impulsivity;
- Verbal and aggressive behavior, also physical;
- Lack of tolerance for failure;
- Outbursts of frustration and anger;
- Quarrelsomeness, manipulation, extortion;
- Sadistic behavior;
- Destruction, fear, timidity, withdrawal;
- Panic attacks (Konieczna-Nowak, 2012).

The listed selected symptoms of disorders testify to the use of music therapy as a means of learning to express oneself and get to know one's own emotional processes, identification, and awareness of their processes, as well as the possibility of controlling them.

In recent decades, music therapy techniques have been used, which can be divided into:

- spontaneous music therapy used as an expression of feelings;
- clinical and diagnostic music therapy used by medical specialists;
- natural music therapy using sounds from the surrounding nature;
- adapted music therapy, used accidentally as a relaxing element;
- prophylactic music therapy is used for relaxation and activation purposes (Wójcik-Standio, Standio, 1999).

The most popular are methods and models based on musical co-improvisation. The goal of the therapy is the aspect of self-expression, self-expression, and release of emotions. Shaping communication is also an important goal. This approach is considered creative music therapy. The music is created during the therapy session. This allows the therapy to be adapted to the capabilities and needs of patients. It has a wide range of applications in people with mental disabilities, autism, people with various types of problems, with mental disorders. It is also

a therapy for people who do not function verbally (Stachyra, 2014).

Ewelina Konieczna sensitized that music therapy is a psychosomatic form of regulation. The healing properties of music on the somatic sphere are visible in parameters such as heart rate, blood pressure, muscle weakness, pupil size, and the level of pain perception (Konieczna, 2007). The use of music therapy reaches even wards with oncological and cardiac disorders. However, the most common use of music therapy is for patients with mental, eating, and personality disorders.

Patients do not have to be musically prepared for therapeutic sessions, they are free of concerns about understanding music from different genres. Therapy methods are adapted to the needs and abilities of patients They are always conducted in such a way that each type of music reaches patients and is assimilated by them, understood, allowing them to express themselves and learn about the processes governing their emotional lives (ibid.).

The receptive model of music therapy is based on the reception of music. The intention is to reach the subconscious in a state of relaxation and relaxation. Carefully selected songs support emotions and experiences. Then attempts are made to verbalize or present in a visual form, improvisation, or poetry by the patient. The form used is addressed to patients with trauma. These are sick or unhappy people in need of support in life experiences, suffering, anxiety, depression, and for healthy people for preventive purposes. It is also a

model that is used in the preparation of future psychotherapists (Galińska, 1997).

The goal of any type of music therapy used is to change the patient's interior, in one of the aspects: mental and physical, or only mental. During a music therapy session, active or receptive action is distinguished. The activity can involve singing, playing instruments, movement to music, and improvisations. Among the receptives, listening to music, relaxation, and visualization stand out. Each form of music therapy can be group or individual. Music therapy can be used individually according to a therapeutic program created for one patient, lasting for a period of time long enough as the patient requires, to achieve satisfactory results, increase self-esteem, and get rid of fears. Group therapy triggers cooperation in the group, triggers social interactions and uses them to improve the quality of interpersonal relationships and consolidate appropriate behaviors (Śliwka, Jarosz, Nowobilski, 2006).

The standards for activities in the field of therapy through music have been developed in order to:

- developing the emotional side – evoking the desired feelings, moods, states, identifying them, regulating and controlling emotions;
- impact on psychophysical functioning;
- shaping relationships and communication – arousing readiness for social contacts;
- the impact of self-development – by influencing attitudes, experiences, creative activity;

- influencing psychophysical activity and the state of muscle tone;
- stimulating physiological changes, biochemical changes in the body;
- enriching diagnosis and diagnostic methods (Galińska, 1990).

The music therapy used mainly concerns disturbed mental functions, support, and stimulation of functions responsible for access and reception of stimuli from the environment, especially auditory ones. It is necessary when there is undesirable psychophysical tension. It plays an important role in therapy when it comes to providing the necessary experiences of social relationships (Dobson, 1999). Always aimed at improving well-being, mood, relaxation, and stimulation of imagination. The emotional experiences of the uncle branch on the state of the level of cognitive activity. Hence, it applies to all age groups of people (Krzywoń, 2008). In many diseases and disorders, there is a need for liberation and initiation of an expressive gesture and movement. During such activity, the process of perception and processing of stimuli from the environment is dynamized and directed to the expected goal (Lewandowska, 2001).

Music therapy is used to activate cognitive, emotional, and social resources. The purpose of use is not only to treat diseases and disorders but to improve overall functioning and well-being (Stachyra, 2014). The main goal is to support the patients with emotional disorders, social deficits, with limited access to stimuli, and emotional imbalance (Wilczek-Rużyczka, 2007). Music

therapy is increasingly used in the treatment of neurotic diseases that have a wide spectrum of disorders (Borecki, Ochmanowska, 2005).

4. SELECTED FORMS OF MUSIC THERAPY

4.1. Singing as melotherapy

Singing is one of the oldest forms of music-making, it has an extraordinary impact on human functioning and development. It allows you to shape self-confidence and develop communication skills. During singing, the way of producing breath, voice, stress regulation, general concentration of the mind, body posture, as well as expressing emotions and communicating with other people is controlled. Learning to sing teaches discipline, perseverance and cooperation. These qualities support the processes that make up the way of expressing oneself and understanding one's emotions.

Practicing singing makes it easier to express emotions and break blockages. Feelings are conveyed through melodic emphasis, loudness, accentuation of intervals or specific melodic phrases, and above all through the use of words. Singing opens the human psyche to inner experiences and releases the emotions trapped inside. Vocal activity develops self-confidence, and courage by overcoming stress and fears, and gives the opportunity to authentically show oneself.

Vocal activity is also associated with externalized feelings and well-being, which gives the opportunity to relax, and thus improve the mental condition. Singing

requires muscle relaxation, regulation reduction of stress, and improvement of well-being. Regularly practicing singing has a strong impact on the way you express yourself, shape your personality, and increase your self-confidence. With practice, there is increased control over stressful situations and tensions during public speaking. Regularity in exercise teaches determination in pursuing a goal and the ability to persevere. This translates into the belief that the set goals can be achieved, and even the smallest success can be achieved through diligence. Melotherapy, or singing therapy, also emphasizes an important factor of music, which is melody. It is an extremely creative and therapeutic factor (Szulc, 2011).

Learning to sing in a band, or choir, singing together gives you the opportunity to work on your own interpersonal skills. Collaborators must cooperate while singing, and communicate about the effectiveness of their ideas, as well as everyday situations. The ability to communicate and coordinate one's activity in a team improves self-knowledge, and self-esteem, thus increasing self-confidence and shaping communication skills. Singing requires trust in oneself and one's own abilities. Participants in meetings consisting of singing together gain self-confidence and feel their value. They improve and develop their relationships with other people. Singing training is also an exercise in expressing emotions and breaking barriers and blockages. To sum up, singing not only develops vocal skills but also creates situations for learning in a team, shaping communication skills. Soft skills help to increase self-confidence and a sense of fulfillment.

Regular work during singing lessons encourages the individual to control typically somatic activities related to controlling voice, breathing, body language, and body posture. This affects the ability to present oneself in everyday life and gets rid of barriers related to stress and shame, which increases self-esteem and increases self-confidence and the ability to express oneself. Singing training is therefore a tool not only for the art of music, but also for personal development. The benefits of singing include building a positive self-image, increasing your confidence, and expressing your emotions.

An important and extremely important aspect of singing is the fact that it allows you to express your emotions in an authentic and natural way. Singing is learning to express yourself in a clear, confident, and lucid way. Singing releases hidden emotions, allows us to become aware of them, name them, and then show them during the interpretation of the sung piece (Szulc, 2000).

4.2. Music in dance

Dance is a system of body movements adapted to rhythm, and melody, it is a spontaneous expression of emotional states. It is a routine that consciously expresses the emotional state of the dancer or is created spontaneously under the influence of emotional stimuli. It is the oldest cultural form found in almost every community. It derives from movement, which is, apart from speech, the second way of interpersonal communication. It is an expression of emotions. It can be historically related to culture, religion, epoch, nation, ethnic group, or profession

(PWNEncyclopedia,https://encyklopedia.pwn.pl/haslo/taniec;4010210.html). The essential and decisive factor of dance is music, which supports the expression of emotions through rhythm and dynamics. The background music and the content of the dance combine into a narrative of expressiveness. Deepening the emotions becomes more effective when instruments are used, emphasizing energy, and giving sensitivity and melancholy. The motive for interpretation can be strengthened by the words in the song to which the dance is created.

Choreotherapy is the name of dance therapy, or therapeutic dance, which is one of the main forms of art therapy. She uses the dynamics of musical pieces to support the treatment of the senses and the emotional, motor, erotic, aesthetic, and social spheres. It is used in therapy after traumas and strong experiences (Pędzich, 2009).

5. APPLICATIONS

Music therapy and its key tool – music – have a message to mobilize well-being, and health, and achieve a better quality of life. Most models of music therapy theory treat health as a reduction of human suffering that determines human activity in the cognitive, emotional, social, and physical areas. Personal problems, emotional tensions accompanying health, and existential problems focus on closing oneself off from the world, getting rid of recognized ways of expression, and hiding one's identity and the image of one's own feelings towards others. Meanwhile, for several decades, a non-pharmacological

vision has been emerging to improve the functioning of every human being. Cultural heritage, which is within the ears of every human being, offers help in expressing oneself and helping to understand one's emotions and experiences. The most accessible field of the cultural heritage of every nation and society is a medium for receiving, giving new meanings, creating images, discovering the layers of one's personality, discovering oneself and the world.

The area of life of every human being and the entire public sphere in which they develop and function is filled with music. It is bombarded with stimuli from music, which are a factor determining emotional states. It is a field of art that most enters the most personal sphere of man. It is considered to be a factor that triggers emotions that play a role in stimulating self-reflection and shaping self-awareness. These emotions result in the possibility of developing the identity of the individual, developing a sense of belonging, and one's own place in the group and community. Induced states contribute to finding the meaning of life, multiplying subjective resources to build and experience oneself (Frijda, Sudararajan, 2007).

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