Music therapy - an effective tool in treating various condition specific to children and adolescents

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ABSTRACT:
Scientific literature shows a considerable positive effect of music therapy on the stages of development and behavioural problems, and a medium positive effect on self-concept and social skills of children and adolescents with emotional problems and/or developmental disorders. The article summarizes the effectiveness of music therapy in the treatment of various disorders of children and adolescents including several categories of beneficiaries: from those with learning disorders, developmental and behavioural disorders and stressful life events, to those with "emotional disorder and related psychopathology" or those with acute and/or chronic physical illness. The article concludes that the results of numerous studies regarding the effectiveness of music therapy on children and adolescents with varied pathology, provides qualitative evidence and shows that music therapy proves to be a useful tool in treating children with learning and developmental problems and acute and/or chronic mental illness but also children facing stressful life events. Music can be used to influence cognitive functioning and to develop cognitive skills in order to facilitate verbal and nonverbal communication. Music also reduces the effects of trauma and facilitates strategies needed to cope with stress and difficult environments. Also, music therapy can reduce somatic and psychosomatic symptoms, improve social skills and correct maladaptive behaviours but also dysfunctional beliefs.

Key words: music therapy, child and adolescent psychopathology

INTRODUCTION

Music therapy represents the systematic use of music and musical elements - within an interpersonal relationship with a therapist with experience in music - in order to achieve optimal results in health (Bruscia, 1998). Music interventions include passive listening (receptive music therapy) of a previous recorded music and/or making of active music (active music therapy) (Dileo & Bradt, 2005). Both types of interventions have been applied to different types of subjects or patients of all ages. Music is considered an "universal language" that can be perceived relatively early in development (Trehub, 2003), having a non-invasive nature, and being pleasant, flexible and dynamic, it becomes advisable to use it in order to treat various medical and developmental problems of children and adolescents (Hartling et al, 2009; Standley, 2002; Gold, 2004, Standley & Whipple, 2003).
Several studies have examined the use of music in the context of paediatric medical care (Whipple, 2004; Gold et al 2006, Klassen et al, 2008). Some focused exclusively on the efficiency of music in reducing procedural pain. Several studies (Standley& Whipple, 2003; Klassen et al, 2008) involving paediatric patients suffering invasive and non-invasive medical procedures concluded that medical interventions performed with music in the background reduce pain, anxiety and distress. These findings are consistent with meta-analyses examining the effects of music on pain, anxiety, and other indicators of stress in hospitalized adults (Cepeda et al, 2006; Bechtold et al, 2009, Nilsson, 2008).

According to reviews in mental health in adults (Gold et al 2009; You & Wang, 2002; Vink, 2004), Gold et al. noted a considerable positive effect of music therapy on developmental stages and behavioural problems, and a medium positive effect on self-concept and social skills of children and adolescents with emotional problems and/or developmental disorders (Gold et al, 2004; A high effect of music interventions on cognitive skills and behaviour in autistic children was presented by Whipple (2004). Gold et al. (2004) reported an average effect of music therapy in nonverbal communication and a small to medium effect in verbal communication in children with autism or with general developmental disorders (Gold et al, 2006).

Various disorders and diseases described are generally recognized and diagnosed in childhood but can also affect adolescents and in some cases even adults. Many music therapists specialize in treating adolescents and have the knowledge required to meet the specific challenges that individuals face in this stage of development. Some use a model of family therapy, helping parents and children communicate about musical preferences and musical significance. Another technique used for adolescents is family improvisation, used as a metaphor for understanding patterns of interpersonal interaction within a family or between individuals. Music therapists also assist adolescents in solving some problems such as eating disorders, helping them become more aware of their feelings through expressive musical activities.

According to the American Association of Music therapy, music therapists can help children and adolescents with the following disorders and disabilities:

- developmental disabilities
- behaviour disorders
- emotional problems
- physical disabilities
- schoolchildren
- verbal deficiencies
- autism
- impaired vision and hearing
- neurological disabilities
- addiction problems
- physically or sexually abused.

Other groups may include children with Rett syndrome, AIDS, eating problems, medical needs, burns, mourning, Down syndrome, premature babies and with neonatal needs, with spinal cord injury, Williams syndrome. In some cases, even children who do not suffer any disability can benefit from music therapy. Also, children with special needs might appeal to music therapy to develop their communication, cognitive, sensory-motor, perceptual-motor, social, emotional and psychological skills. Music therapists can correct skills, change dysfunctional behaviours, improve the progress of some existing diseases or develop new skills through musical experiences, whether we talk about active or passive music therapy.

Most studies (Naylor et al, 2011) regarding the efficiency of music therapy in treating various disorders of children and adolescents include four categories of beneficiaries:

1. Those with learning disorders, developmental and behavioural disorders including autistic children, attention deficit, hyperactivity disorder, learning disabilities and developmental retard.
2. Those with stressful life events, including children facing loss or trauma such as loss of a close person, divorce or refugee status.
3. A third category - those with “emotional and related psychopathology” - includes children diagnosed with depression or other psychiatric conditions.
4. The last category “acute and / or chronic physical illness “ includes children with somatic diseases or conditions.

**LEARNING, DEVELOPMENTAL AND BEHAVIOURAL DISORDERS**

One of the most common clinical problems among children is development disability. This diagnosis refers to disorders stemming from childhood and which can continue indefinitely, substantially affecting functional abilities. A common disability is mental retardation. For a child with mental retardation, music therapy tries to create an environment of fun, enjoyment and relaxation. While patients learn a simple melody or rhythmic movement of the fingers, they simultaneously improve their attention, ability to establish eye contact, ability to follow a direction, imitation verbal memory, fine motor skills and auditory stimuli difference. These aims are often pursued in music therapy. By associating some sounds to words and some musical passages to phrases music therapists can improve speech and language communication.
This type of therapy can also help children with mental retardation learn social and motor behaviours. They can develop self-awareness through movement to music and social interaction through music therapy group. In this case, music therapists aim to increase responsiveness to the environment. The therapist might pay attention to details such as head back towards a sound, directing eyes to a bell and imitating the rhythm of a bell that sounds.

Scientific works are full of examples of successful application of music therapy techniques to help children and adolescents with a potential disability. Even in the most difficult developmental disorders, music therapy succeeds in increasing the functional capacity of subjects as well as stimulating creativity and capacity for expression. Non-invasive and non-hazardous characteristics of musical exploration and auditory stimulation might be the easiest techniques applied to a child with a major universal disability. For example, a child with autism who previously avoided interaction with other individuals could begin to communicate with the therapist that provides him positive musical experiences. In music therapy they could experience their first close relationship with an individual who is not a member of his family. Many references in supporting the effectiveness of music therapy among children with special needs, demonstrate the importance of continuing research in order to serve children with disabilities.

Learning disorders include difficulties in specific academic areas. A method to correct deficiencies is the model of learning through music, working in parallel with learning musical skills. For example a child who experiences difficulties in coordinating extremities on the right and left side of the body, can develop this skill through movement to music and using both upper and lower limbs synchronously. Playing increasingly complex songs on the piano, performing different tasks with their hands may develop such coordination skills. Required visual tracking in translating written music to keyboard is similar to eye movement from left to right, necessary to read words. The ability to listen to others and to respond by playing a musical passage previously learned is necessary for a child to participate in a musical group. Music might give children the opportunity to process auditory stimuli and respond to them in a proper way. This auditory-motor couple, as a person’s response to a pronounced question, can be developed effectively through aural discrimination training with music. So, children with learning disorders may benefit in many ways by the requirements of structured musical experiences.

Several studies have investigated the influence of music therapy on normative development and cognitive functioning in children with growth retardation (18, 19). Results have been contradictory, some studies (Aldridge, 1995) reporting an insignificant effect of improvisational music therapy on the achievement of communication development, while other studies (Claussen&Thaut, 1997) have found, for example, that exposure to familiar music resulted in a memory of a higher accuracy in multiplication table.

Other studies (Colwell, 1994; Register, 2001; Standley & Hughes, 1997) demonstrate the effectiveness of music used in school curricula to improve literacy skills (reading). Musical interpretation is effective in improving speech recognition, logo identification and initiation of writing skills in early intervention programs. Reading associated with repeating texts of songs facilitates more text comprehension than repeating speech with kindergarten pupils.

Also, some studies (Claussen&Thaut, 1997; Peterson et al, 2004; Thaut et al, 2005; Wolfe & Hom, 1993) support the use of music to structure and organize information in order to increase learning and retention of numbers. Information Sequences, such as phone numbers and multiplication tables, patterns of melodic and rhythmic kits are better retained and verbally played back than presentations without music.

Other studies examined the effect of music on cognitive functioning and social behaviour in children with autism (Buday, 1995; Kim et al, 2008). Buday (1995) showed that children exposed to recorded music could better remember and imitate signs and words than those who were given only rhythmic clues. The difference, however, increased to an average of only one word. Kim (2008) examined the effectiveness of music therapy compared to play sessions on attention behaviours in boys with autism and showed a significant effect on the size of early social communication - which requires a structural assessment of individual differences in nonverbal communication skills, demonstrated by the positive impact of music therapy on the quality and quantity of eye contact and behaviour indicating inattention.

Other studies (Pratt et al, 1995; Rickson & Watkins, 2003; Rickson, 2006) focused on the effectiveness of music therapy in the case of young people with attention deficit disorder. Results are again contradictory. For example, Pratt who examined the effect of neurofeedback training with or without pre-recorded classical music on physiological responses, disease severity and the impulsive behaviour in children with ADHD, found no significant differences in symptoms (Pratt et al, 1995). Rickson and Watkins found no differences between the effectiveness of music therapy (composition of songs, instrumental music and rhythm-based activities) and control group on antisocial behaviour in adolescent boys with various deficits including ADD and ADHD (Rickson & Watkins, 2003).
On the other hand, Rickson (2006) examined the effects of instructional music therapy versus improvised music on several adolescent boys with ADHD and other comorbid disorders. Both types of music therapy (instructional and improvised) led to a significant increase in the accuracy of a motor task and a significant reduction of impulsivity.

**BEHAVIOUR DISORDERS**

According to frequency, the next category of people treated by music therapists is represented by children with behaviour disorders. These disorders include children with attention deficit or disruptive behaviour disorders that have behaviour problems in society so serious that they interfere with learning. Classification of behaviour disorders refers to children who have conduct disorders, oppositional defiance disorders, hyperactivity and other non-specific disorders. These children are often guided to music therapy to develop self-awareness, expressivity and self-esteem. Active musical behaviour such as playing a particular instrument and singing requires the use of voice and body in a clearly structured manner to produce the desired effect. While the child is engaged in creative efforts, he/she acquires a better self-control and a specific emotional expression.

On another level, feelings that are misunderstood or difficult to be verbally described can be experienced through music. Children may turn to music therapy to assess their emotional nature. Asking a child to express a certain feeling by playing a musical instrument can reveal a degree of emotional arousal, which can be observed, explored and controlled. Facial expression, nonverbal behaviour or “body language” during the interpretation of a musical passage provides a beginning to understand the feelings and the emotions of that child. Studies (Bryan et al, 1998, Ulfarsdottir 1999) have shown that music therapy - through facilitated interactions and organized instrument playing is effective in improving pupils social skills. For a five years old, social problems are treated through music and creative activities on the long term. In case of middle school students, the benefits of music data help improve social skills.

Another study (Choi et al, 2010) investigated the effects of music intervention group on aggression and self-esteem in children with excessively aggressive behaviour. After 15 weeks, the music group showed a significant reduction of aggression and an improvement of self-confidence compared to the control group. The level of all measured results was significantly lower in music group than before treatment, while in control group there was no change. These findings suggest that music can reduce aggressive behaviour and improve self-esteem in children with highly aggressive behaviour. The intervention through music therapy is easily accepted for children and therefore may be an effective intervention for aggressive behaviour.

**MOTOR DISORDERS**

Children with motor disorders may be delayed in motor development and present problems of small and exquisite movements requiring coordination. They can appeal to music therapy (Brown & Dilip, 2005) because playing a musical passage requires varying degrees of limb and eye coordination as well as breath control, when they use wind instruments. To dance, an individual must move in specific ways, integrating different parts of the body in a smooth and rhythmic manner. Music listening may involve the development of self-discipline and skills of discrimination, while active music therapy involves learned answers (such as hand flapping after a certain rate), or individual creative responses (such as improvisation of movements). Therapists can also assist to the rehabilitation of some neuromuscular or skeletal disorders more severe. A technique is using rhythmic musical pieces for certain specific movements and body relaxation.

**COMMUNICATION DISORDERS**

Children with communication disorders benefit from music therapy in several ways. Clearly singing involves a language and an aural memory, equalling the height of notes as well as fluency. Lessons involving wind instruments or voice provide a creative context for specific exercises that can be used with speech therapy. The aims include improving diction, inflection, breathing and speech rhythm. Nonverbal children are very good candidates for music therapy. Without clear communication methods that we use, they need to learn other ways of expressing. Music therapists are keen on providing augmentative communication or use of computer-assisted musical ways to give those children the opportunity to express their feelings and thoughts through music. Some studies (Braithwaite & Sigafoos, 1998) show that speech and verbal communication skills are improved through musical activities in special education of population. Musical presentation of new words increases the percentage of learned and understood words among children in elementary school. Music creates a prompt and efficient response to increase verbal response in pre-schoolers with communication disabilities.
SENSORY DISORDER

Children with sensory disorders may have problems with sight, hearing or both. Children with hearing deficit are helped by sensory stimulation of music and vibratory or rhythmic clues offered in music for speech or body movement. As unlikely as it may seem, there is considerable clinical evidence showing the effectiveness of music therapy in children who are deaf and dumb (Gourgey, 1998). Children that have visual disturbances may benefit from music therapy (Gourgey, 1998; Robb & Sheri, 2003) because they can develop their auditory and musical skills. Their therapists also help them train their movements so that they change from being insecure and rigid to becoming fluid and natural, using music intervention.

STRESSFUL EVENTS IN LIFE

Some studies (Baker & Jones, 2006, DeLucia-Waack & Gellman, 2007; Hilliard, 2007) focused on measuring the influence of music on the coping capacity of children who have experienced a major change in their lives. And these studies showed conflicting results. For example, Baker and Jones (2006) showed that music therapy involving composing songs and singing have significantly reduced externalized behaviours such as aggression, hyperactivity and conduct problems among young immigrants compared with a control group. However, the study hasn’t found significant differences regarding internalized behaviour, school problems or coping skills. On the other hand, LeLucia-Waack and Gellman (2007) reported no significant effects of an intervention based on music regarding anxiety, depression and irrational beliefs compared to traditional psycho-educational approaches in a large study with 134 children going through a parental divorce. However, positive effects were reported by Hilliard in a comparison between active therapy through music (songs and instruments) and social assistance approaches (art and play therapy) regarding symptoms of anger. While both groups experienced a significant decrease in behavioural distress, only music therapy group experienced a decrease in symptoms of anger (Hilliard, 2007).

MOOD DISORDERS AND RELATED PSYCHOPATHOLOGY

Two studies on adolescents with mood disorders gave unclear results regarding the efficiency of music therapy (Field et al, 1998; Wooten, 1992). Field examined the effect of popular music on the mood of adolescents with chronic depression. Compared to a control group, the music group showed a significant decrease in salivary cortisol and EEG activity, however, no differences were found in the emotional behaviour observed or in self-reported mood (Field, 1998). Similarly, no major effects were reported regarding popular music (heavy metal against rock) on auto affect reported (Wooten, 1992).

ACUTE AND/OR CHRONIC PHYSICAL DISEASE

Physical challenges include conditions with inadequate physical development or malfunction, including sensory disturbances are severe enough to interfere with the normal functioning of the individual. When a child or an adult with physical disorders resorts to music therapy, the aim is often to demonstrate to the patients that they are capable to create or interpret music, which were impossible activities until then. By modifying musical instruments and using adaptive music technology music therapists showed that the patients’ sense of self-worth may considerably increase when they can produce pleasing sounds through music. Therapists have noticed the joy with which people with tetraparesis play specially adapted guitars for an enthusiastic audience, or the pride with which patients in wheelchairs learn to dance using those parts of their bodies they can move.

A certain manipulation of physical therapy containing several repetitive movements superimposed on a musical passage provides patients a joyful experience that is closer rather to playing a game than to work. Music provides stimulants for uncomfortable physical exercises that patients need to perform making these movements more rhythmic and fluent. Music therapists work together with physiotherapists to develop creative treatments for their patients. Children with multiple disabilities can also make the exercises with a creative approach, focusing on skills and powers, in opposition with their disabilities and weaknesses.

Throughout years there have been a few studies that have examined the effects of music therapy on hospitalized children (Colwell et al, 2005; Robb et al, 2008; Froehlich, 1984). Two interesting studies have focused primarily on children with cancer (Colwell et al, 2005; Robb et al, 2008). By comparing the effects creating visual art and electronic music no significant difference was found between groups in terms of self-concept from pre to post test (Colwell et al, 2005). Contrary to this, Robb examined the effect of active music (consisting of songs and instrumental activities) on observable behaviours related to adaptation, compared to children listening to recorded music or using audio recorded storybooks. Only active music therapy resulted in a significant increase of positive
effects and active engagement (Robb et al, 2008). Positive effects have been reported by Froehlich among children with different diagnoses. Significantly more verbal expressions about the experience of being hospitalized were made during music therapy than during game therapy (Froehlich, 1984). Grasso examined the effects of “treatment” through music (especially composed by a music therapist) or music familiar to children compared to therapy without music on children undergoing chest physiotherapy for cystic fibrosis. This study found that using music specially composed for treatment was a significantly positive experience for parents and children, compared to the group that listened music that was known to them or to the group that did not listen to music (Grasso et al, 2000).

CONCLUSIONS

This introduction in paediatric music therapy presents applications of music therapy in extremely varied clinical areas. For children with developmental disorders, music therapy helps develop social skills, motor skills, or academic and conceptual skills. It offers the opportunity to develop expressiveness, self-esteem, self-control for children with behaviour disorders. Acquiring musical skills helps a child with learning disorders to also develop perceptual-motor skills as well as cognitive ones. Positive and creative aspects of learning through music stimulate children with motor disabilities to perform movements more easily and to appreciate their value more. Melodic and rhythmic elements of speech are developed in individuals with communication disorders, while people who are unable to use speech learn new ways to express themselves. Children with sensory or physical disabilities develop their talents and strengths in music therapy. Paediatric patients will be distracted from the pain while they try to face the disease they have. People with mental disorders also respond positively to music therapy determined by nonverbal metaphor.

In conclusion, the results of numerous studies on the effectiveness of music on children with diverse pathology provides qualitative evidence and show that music therapy proves to be an useful tool in treating children with learning and developmental problems and acute and/or chronic mental illness and children facing stressful life events. Music can be used to influence cognitive functioning and develop cognitive skills to facilitate verbal and nonverbal communication. Music also can reduce the effects of trauma and facilitate strategies to deal with stress and difficult environments. Music can reduce somatic and psychosomatic symptoms, improve social skills and correct maladaptive behaviours and dysfunctional beliefs.

REFERENCES


