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Hani Raoul Khouzam

1. MD; MPH, FAPA,
Principal, Staff Psychiatrist,
Mental Health and Psychiatry
Services, PTSD treatment
program and General Mental
Health Clinic VA Northern
California Health Care System
(VANCHCS), Sacramento
Medical Center, 10535 Hospital
Way, Mather, California
95655, USA.

2. Clinical Professor of
Psychiatry and Medicine, UC
Davis Health, Sacramento,
California

Correspondence

Hani Raoul Khouzam

1. MD; MPH, FAPA,
Principal, Staff Psychiatrist,
Mental Health and Psychiatry
Services, PTSD treatment
program and General Mental
Health Clinic VA Northern
California Health Care System
(VANCHCS), Sacramento
Medical Center, 10535 Hospital
Way, Mather, California
95655, USA.

2. Clinical Professor of
Psychiatry and Medicine, UC
Davis Health, Sacramento,
California

Music therapy for children with autism spectrum disorder

Hani Raoul Khouzam

Abstract

Music therapy is gaining popularity as an intervention strategy for children with developmental disabilities, including autism spectrum disorder (ASD). This review describes the diagnostic criteria of ASD and its various specifiers. It then summarizes the role of the qualified music therapists in implementing the tenants of music therapy in the overall management of children with ASD. The review concludes with empathizing the importance of music therapy in enhancing cognitive functioning and promoting appropriate and meaningful social and interpersonal responses which are the core developmental deficits in children with ASD.

Keywords: Developmental disability, autism spectrum disorder, music, therapy.

Introduction

The prevalence of developmental disabilities in US children is steadily increasing ^[1]. Children with developmental disabilities often face many challenges specifically in the domains of social communication and basic education, and are prone to social isolation, and disturbing behaviors, which result in deficits and difficulties with academic learning ^[2]. Autism spectrum disorder (ASD) is among the developmental disabilities that can be associated with intellectual disability, difficulties in motor coordination and attention and physical health issues such as sleep and gastrointestinal disturbances. Some persons with ASD excel in visual skills, music, math, and art. Music has also been found to be a non-threatening media and an effective tool in the promotion of communication and social skills among children with developmental disabilities, including those with and without ASD ^[3, 4]. Music has also been beneficial in diminishing the impact of symptom severity, including nonverbal children with ASD ^[5]. The incorporation of music therapy with other treatment interventions in classroom settings enhance social skills in children with many developmental disabilities including those with ASD ^[6]. This review summarizes the diagnostic criteria of ASD and the role of music therapy in improving the appropriate and meaningful social and interpersonal responses which are the core developmental deficits in children with ASD.

Diagnosing ASD

Autism spectrum disorder (ASD) and autism are both general terms for a group of complex disorders of brain development. These disorders are characterized, in varying degrees, by difficulties in social interaction, verbal and nonverbal communication and repetitive behaviors. They include autistic disorder, Rett syndrome, childhood disintegrative disorder, pervasive developmental disorder-not otherwise specified (PDD-NOS) and Asperger syndrome. With the In May 2013, the American Psychiatric Association (APA) published the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), in which the subtypes were merged into one umbrella diagnosis of ASD ^[2], as illustrated. ASD can be associated with intellectual disability, difficulties in motor coordination and attention and physical health issues such as sleep and gastrointestinal disturbances. Some persons with ASD excel in visual skills, music, math, and art. The DSM-5 diagnostic criteria of ASD ^[2] are summarized in table 1.

In DSM-5, The severity specifiers as summarized in table 2 may be used to describe succinctly the current symptomatology (which might fall below level 1), with the

recognition that severity may vary by context and fluctuate over time ^[1].

An illustration of the autism spectrum disorder umbrella



Table 1: DSM-5 autism spectrum disorder diagnostic criteria

Core criteria (dimensions)	Severity levels	Specifiers	
A. Social communication impairment	<ol style="list-style-type: none"> 1. Requiring support 2. Requiring substantial support 3. Requiring very substantial support 	With or without accompanying intellectual impairment	
B. Restricted and repetitive behaviors		With or without accompanying language impairment	
Other criteria		Associated with a known medical or genetic condition or environmental exposure	
C. Symptoms are present in the early developmental period		Associated with another neurodevelopmental, mental, or behavioral disorder: ADHD Anxiety disorder Developmental coordination disorder Disruptive behavior disorder Impulse control disorder Conduct disorder Depressive disorder Bipolar disorder Tics Tourette's disorder Self-injury Feeding disorder Elimination disorder Sleep disorder	
D. Symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning			
E. These disturbances are not better explained by intellectual disability or global delay			
			With catatonia

Table 2: Severity levels for autism spectrum disorder

Severity level	Social communication	Restricted, repetitive behaviors
Level 3 "Requiring very substantial support"	Severe deficits in verbal and nonverbal social communication skills cause severe impairments in functioning, very limited initiation of social interactions, and minimal response to social overtures from others. For example, a person with few words of intelligible speech who rarely initiates interaction and, when he or she does, makes unusual approaches to meet needs only and responds to only very direct social approaches.	Inflexibility of behavior, extreme difficulty coping with change, or other restricted/repetitive behaviors. Markedly interfere with functioning in all spheres. Great distress/ difficulty changing focus or action.

Level 2 "Requiring substantial support"	Marked deficits in verbal and nonverbal social communication skills; social impairments apparent even with supports in place; limited initiation of social interactions; and reduced or abnormal responses to social overtures from others. For example, a person who speaks simple sentences, whose interaction is limited to narrow special interests, and who has markedly odd nonverbal communication.	Inflexibility of behavior, difficulty coping with change, or other restricted/repetitive behaviors appear frequently enough to be obvious to the casual observer and interfere with functioning in a variety of contexts. Distress and/ or difficulty changing focus or action.
Level 1 "Requiring support"	Without supports in place, deficits in social communication cause noticeable impairments. Difficulty initiating social interactions, and clear examples of atypical or unsuccessful responses to social overtures of others. May appear to have decreased interest in social interactions. For example, a person who is able to speak in full sentences and engages in communication but whose to-and fro conversation with others fails, and whose attempts to make friends are odd and typically unsuccessful.	Inflexibility of behavior causes significant interference with functioning in one or more contexts. Difficulty switching between activities. Problems of organization and planning hamper independence.

Music Therapy and Autism Spectrum Disorder (ASD)

The American Music Therapy Association (AMTA) defines music therapy as “the clinical and evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship by a credentialed professional who has completed an approved music therapy program” [7].

Many strategies have been recommended by AMTA to be employed for the use of music therapy in the overall management of ASD with their focus on three main areas [7] which include:

Awareness and Recognition: Informing and educating the public on the role and contributions of Certified Music Therapists in the treatment of individuals with ASD and their role in collaborating with the interdisciplinary teams that are delivering the various treatment interventions.

Training and Professional Development: Advancing the tools and providing the resources that are necessary for training of qualified music therapists to become equipped for the delivery of effective, valid, and reliable music therapy interventions.

Evidence-Based Practice and Research: Spreading, disseminating, and practicing the best available evidence-based research findings in music therapy in any music-based interventions for individuals with ASD.

Music Therapy Effects on Children with ASD

Music therapy is a treatment modality that is aimed at applying the benefits of music as an intervention between art and both physical and mental health. It focuses on improving the expressiveness of inner emotional experiences while facilitating body awareness. Music strong impact on emotions, could provide relief and regulate stress in children with ASD, and subsequently they would experience stillness and calm. When skilled, board certified music therapists [7] utilize appropriately selected music, the children would then experience a recovery from their various states of body tension along with enhancement of cognitive functioning and sensory processing. Musical compositions with soothing melodies, rhythms, and sounds have been found to be effective in regulating fluctuating mood patterns in ASD [8]. Certain music patterns have also been theorized to sustain children’s attention and to promote their language development [9]. Furthermore, children with intellectual disability and those with ASD are prone to be more attentive to auditory than visual cues, and particularly

auditory musical input [10]. Additionally, music has been described as an inherently social activity that could facilitate and enhance social interaction [11]. The unique manner by which children with ASD, process information is also manifested in relatively enhanced musical abilities [12]. It has also been demonstrated that even children with ASD who had no previous musical training or practice have an inherent ability for pitch discrimination abilities and remarkable long-term memory for melody, compared to IQ- and age-matched non-ASD controls [12].

Music Therapists usually incorporate the innate musical ability of children with ASD into the therapeutic interventions [13, 14, 15] to address the core communication and social interaction deficits that are inherent to their developmental disability [2].

Music Therapy Implementation for Children with ASD

There are two different categories of music therapy: the active improvisational and the receptive or passive music therapy.

Music therapists initially used the receptive form, where the children were simply listening to music. However, with recent advances in music therapy, the receptive or passive music format is applied alongside or in combination with the improvisational active format, thus allowing the children to improvise their own music compositions and to have the opportunity to freely express their feelings. During each music therapy session, the music therapists react and respond to the children body movements and to their expressed musical pitch by utilizing several musical instruments as suggested by the therapists or chosen by the children.

The length of sessions is variable. Sometimes they last only a few minutes, and then modified and extended, based on each child unique and individual reaction and expression of their own music pitch.

Sessions can be in an individual one-to-one or in group or family settings, depending on each child particular patterns of music appreciation and expression. Family centered music therapy, involves the whole family in the sessions, thus allowing the child with the entire family unit to maintain, and improve communication and interpersonal interactions.

Therapists would also empathize the salient aspects of music therapy as a dynamic combination of many disciplines that revolves around music and therapy and that music as storytelling [16]; is a universal experience of all cultures which encompass listening, creating, performing, and enjoying its sounds, its rhythms and its melodies .

It is of paramount clinical importance to empathize the fact that music therapy should always be conducted by well-educated trained therapists, who are board certified in music therapy with specialized skills in intellectual disability and ASD [17].

After assessing the strengths and needs of each child, the music therapist would provide the recommended treatment including creating music, singing, moving to, and/or listening to music. Through musical involvement in the therapeutic context, the children abilities are strengthened and transferred to other areas of their lives. Music therapy also provides avenues for communication that can be helpful to those who find it difficult to express themselves in words. Research in music therapy supports its effectiveness in many areas such as: overall physical rehabilitation and facilitating movement, increasing people's motivation to become engaged in their treatment, providing emotional support for children and their families, and providing an outlet for expression of emotions and feelings [17].

Depending on each child clinical presentation, the music therapist would formulate the goals and objectives of the therapy with the family or caregivers and then accurately document this intervention in the medical records to enable review of progress and long-term treatment planning. Each individual music therapist would also provide specific guidelines for each child's music therapy program.

Conclusion

Children with ASD have significant limitations in conventional forms of verbal and non-verbal communication. They could respond to music therapy intervention involving both active, improvisational methods and passive receptive music therapy approaches. Improvisational musical activity with therapeutic goals and objectives has been found to facilitate motivation, Communication skills and social interaction, as well as sustaining and developing attention [18]. Music effects on feelings and emotions could be explored in individual, group and/or family music therapy sessions. The structure and implementation of music therapy need to be provided by board certified music therapists [7], who are skilled in channeling the effects of music on facilitating reciprocal communication, social interactions, and cognitive enhancement which are the core deficits in children with ASD [2]. Music therapy that relies on a systematic treatment approach, has been found to promote appropriate and meaningful interpersonal responses and should be entertained as an adjunctive therapeutic intervention in children with ASD.

Disclaimer

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