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Music Therapy and the Treatment of Children Diagnosed with Autism Spectrum Disorder

Introduction

The prevalence of autism spectrum disorder (ASD) has increased in recent years, calling for professionals to develop more effective therapies for treatment. Music therapists have been working with children with autism since the 1940s (Reschke-Hernández, 2011) and design music interventions to meet specific non-musical needs for their clients (American Music Therapy Association, 2015b). The purpose of this paper is to describe the characteristics of ASD, define music therapy, and outline how music therapy can address the needs of children with ASD.

What is Autism Spectrum Disorder?

The name itself has changed over the years, but currently autism spectrum disorder (ASD) is a neurodevelopmental disorder with a diagnosis encompassing mild to severe levels of social, communication, cognitive, and behavioral functioning (Reschke-Hernández, 2011 & American Psychiatric Association, 2013). Using information from 2010, the Centers for Disease Control and Prevention (2014) reported that autism occurs in approximately 1 in 68 children in the United States. Broken down into gender, autism is more common in males (1 in 42) than females (1 in 189). Elsabbagh et al. (2012) reviewed literature on the prevalence of autism worldwide (with the exception of developing countries), with estimates of 17 in every 10,000.

While there are many different theories surrounding the etiology of autism, the cause is still unknown. What is known, though, are general characteristics, specifically regarding social, communication, and behavior skills (American Psychiatric Association, b). The deficits in these

skills are associated with social misunderstandings, decreased joint attention (related to social skills), communication deficits, and behavior inhibition (American Psychiatric Association, 2013). Social deficits are one of the hallmark characteristics of ASD. Children with ASD tend to withdraw from peers and lack the ability to comprehend social cue, including eye contact and body language. They also tend to engage in *instrumental* rather than *expressive* relations—only engaging when they need or want something that requires another person (Siegel, 1996). Joint attention, the process of engaging with another person to share in the experience of something, is also generally impaired (Kalas, 2012). In other words, individuals with ASD may socially behave in ways that seem unusual, miss important information in the social environment, and misunderstand subtleties of language.

Communication and language deficits are also a primary deficit often seen with this population. According to Wan et al. (2010), verbal delays can range from a complete lack of speech to insufficient linguistic knowledge. Such deficits make forming relationships more difficult, since communication is a basis for forming and sustaining those relationships. Frustration can also occur when the child tries to communicate their needs and desires in both verbal and non-verbal ways. Behavioral patterns are sometimes the most easily recognizable symptoms of ASD, especially for those on the more severe end of the spectrum. Individuals with autism may display repetitive patterns such as "hand flapping, twirling, rocking, finger flicking, or stiffening and shuddering" starting in early childhood (Chez, 2008, p. 20). Children with autism have an unusual capacity for sustained attention (e.g. staring at a stimulus for an extended period of time), yet struggle with attending to stimuli on demand (Sanders et al., 2009). Therefore, there are often deficits in orienting attention to a task (disengaging, shifting, then re-engaging) and set shifting (changing thoughts or actions when a situation changes). It is important to note that the intelligence of individuals with autism can be very difficult to gauge due to the nature of social, communication, and behavioral challenges, and therefore, the level of severity is not always an indicator of intelligence.

How Can Music Therapy Address the Needs of Children with ASD?

Through the National Standards Project (2015), the National Autism Center has been researching the various practices used to treat autism and looking at which interventions are established, emerging, or unestablished. Along with Augmentative and Alternative Communication Devices and Social Communication Intervention, music therapy is considered an emerging approach for working with this population. Evidence of its effectiveness is largely qualitative, although recently more quantitative research with strong designs has emerged (e.g., Kalas, 2012; Kim et al., 2008; LaGasse, 2014). Accordingly, there is reasonable evidence that music therapy may benefit those diagnosed with autism.

What is Music Therapy?

According to the American Music Therapy Association (AMTA), music therapy is "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." (2015b) Required training consists of a minimum of a bachelor's degree in music therapy, or the equivalent, that includes a minimum of 1200 hours of pre-internship to internship clinical training culminating in a final board-certification exam (American Music Therapy Association, 2015a, 2015b; Certification Board for Music Therapists, 2011). Once board-certified, music therapists work in settings such as hospitals, nursing homes, rehabilitation centers, schools, and in hospice care. Music therapists use music in a variety of ways. They use and manipulate musical elements to elicit specific responses, teach new skills, cue actions, and more while addressing non-musical goals (including physical, cognitive, emotional, social, quality of life) for many populations throughout their lifespan. Music therapy is not simply a recreational use of music; the music is intentional, responsive, and client-centered.

Music Therapy and Individuals with ASD

Kern and Davis (2013) surveyed over 300 music therapists who work with clients diagnosed with ASD to gather data on their assessment, goals, approaches, techniques, and more. The top three goal areas reported were communication skills (97.9%), social skills (90.6%), and emotional skills (43%). This set of goals lines up with the major deficits noticed in those clients diagnosed with ASD by the DSM-5 (American Psychiatric Association, 2013). The top four musical techniques utilized were singing (98.6%), instrument play (98.6%), movement (84%), and improvisation (75.3%). These techniques will be expanded upon and used in examples in the following sections.

Social Goals

Goals within a social domain may address interaction with peers (typically or non-typically developing), turn taking, or social behaviors such as appropriate eye contact. Kern et al. (2006) completed a study that addressed social interaction of children with ASD and their typically developing peers on the playground. Playgrounds are usually an intimidating time for children with ASD because of the lack of structure and predictability. By placing an outdoor music center in a playground, combined with individualized interventions led by a music therapist who addresses client-specific needs, positive peer interactions increased significantly. Music provided structure for those children with ASD, while a mutual attraction toward music placed peers next to each other for extended periods of time. The study also showed that the songs written for client-specific needs (turn taking, choice making, and appropriate body contact) were successful.

When desired behaviors are inputted into a musical context (e.g., songs), clients seem to understand and embed this behavior more easily. Pasiali (2004) also wrote songs for clients based on their specific needs, producing desired results. These songs were prescriptive therapeutic songs, similar to a musically adapted social story. A social story indicates

who, what, where, when, and why for a given situation, usually educating the audience on appropriate ways to respond in social situations. The only difference between a social story and a therapeutic song is the use of music as opposed to the use of images and a story being read aloud. The tunes of these songs are usually familiar with only the words changed, a technique called piggybacking. This technique is used regularly for a variety of goal domains.

LaGasse (2014) utilized the musical element rhythm, the timing aspect or "beat" of music, to provide anticipatory cues for turn taking. This rhythmic aspect helped prepare the client and assist him or her in completing the task. Various musical cues helped increase joint attention with peers, eye contact between peers, and responsive and initiative communication within a group setting.

Socially, music therapy can benefit clients in many other ways as well. Adamek and Darrow (2010) noted, "responding to others, taking turns, listening, sharing ideas, greeting others, and sharing equipment can all be practiced through music-making experiences" (p. 209). Music provides an unintimidating yet structured environment for these children to grow and progress.

Joint Attention Goals

Joint attention is a subtle social skill in which one party initiates communication via pointing or gazing (initiating joint attention), the other party accepts this invitation (responding joint attention), and they both share enjoyment in the situation (Kalas, 2012). For example, when a toddler's mother says, "Look! A bird!" a typically developing toddler will turn his attention to the bird, which generally leads to further social engagement between mother and child. This skill area is generally impaired in individuals with autism.

In order to address a variety of skills, including joint attention, Kim et al. (2008) used improvisation, an unstructured or loosely structured music making process. Half of each

music therapy session included undirected, client-led play followed by therapist-directed improvisation, utilizing modeling and turn taking exercises. Compared to non-musical play sessions, music therapy sessions significantly increased joint attention during and after the session.

Kalas (2012) has examined how the complexity of music affects joint attention. Focusing on responding joint attention (RJA), she compared simple versus complex music for preschool-aged children with severe and mild/moderate ASD diagnoses. Simple music was defined as a simple melody, few accompaniment chords, and a small melodic note range. This type of arrangement could be compared to "Mary Had a Little Lamb," sung and accompanied traditionally. Complex music was defined as a melody with differing note values, more chords, and an introduction and "outro" to the piece. This type of arrangement could be compared to a syncopated or "jazzy" version of "Mary Had a Little Lamb". Overall, music was effective in increasing joint attention; however, there was also a difference related to the complexity of the musical arrangement. Simple music was more effective in eliciting joint attention for children with a severe diagnosis of ASD, whereas complex music was more effective for children with a mild or moderate diagnosis of ASD. In combination, results of the studies by Kalas (2012) and Kim et al. (2008) indicate that music therapists can effectively utilize piggybacking or original songs to cue joint attention and vary the level of musical complexity to address the needs of children across the spectrum.

Communication Goals

Both receptive and expressive communication skills are commonly addressed during music therapy sessions and music is motivating enough for these children to respond verbally and non-verbally. For receptive communication, Adamek and Darrow (2010) found that music listening and instrument play can help with identifying different sounds, locating those sounds, and tracking them as they move. These skills are important for social and

communication skills because it is important to discern who is speaking, locate that person, and then follow that person if he or she moves.

Expressive communication is addressed in a few different ways. Similar to social goals, rhythm can be used to elicit these communicative responses and can influence speech patterns and pacing to elicit quicker and more fluid responses. Call-and-response songs, where the therapist sings something and the client copies, can be used to work on imitation and sentence structure. Purposefully written song lyrics can also assist in the knowledge and application of appropriate words and phrases, similar to social stories (Adamek & Darrow, 2010).

Musical improvisation is also commonly used to help with communication. Some children with ASD are nonverbal, so it is important to find ways for them to communicate nonverbally. Wigram and Gold (2005) note that music contains many elements that help make this kind of communication possible, including dynamics (changes in volume), tempo (pace), timbre (quality of sound), and form (verse-chorus or others). Within an improvisation intervention, music therapists frequently use the iso principle, in which the therapist "meets the client" where he or she is by imitating and reflecting their behavior, arousal level, communication, and improvisations, then uses the music to initiate change in a desired direction (Davis, 2003). By allowing the client to structure the music on his or her own, this method gives the client the opportunity to communicate his or her emotions and form a bond with the therapist. The client's musical expressions are also indicative of how he or she acts in everyday life. Therefore, a change in musical sound often expresses a change in their typical functioning (Pasiali, 2004). Other examples of effective interventions include language-based songs and movement (Whipple, 2004).

Behavior Goals

Disruption is one type of behavior that can be addressed through music therapy. Pasiali (2004) conducted three case studies for children with ASD who regularly displayed disruptive behaviors. One client had regular aberrant vocalizations, another had inappropriate TV etiquette (rewinding and fast forwarding many times), and the last one snuck snacks from the kitchen while no one was watching, causing problems in her diet and health. Pasiali used piggybacking to write therapeutic prescriptive songs specific to improving each behavior. Over a period of a few weeks, the family monitored the behavior outside the therapy session during baseline and treatment periods. The behavior of all three children decreased during each period, showing a generalized response outside of music therapy sessions.

In addition to teaching appropriate behaviors, behaviors can also be reinforced musically. An example is a group musical ensemble. For clients who exhibit an appropriate (and desired) behavior, the client may be rewarded with playing an instrument longer, choosing a song to listen to, or even performing for his or her peers (Pasiali 2004). This musical reinforcement helps with behaviors inside music therapy sessions, but also in other life scenarios.

Conclusion

Since its beginning, the profession of music therapy has developed significantly with the creation of national standards, evidence-based practice models, and an increase in the clientele served. An understanding of autism has also increased since it was initially reported in the 1940s. This includes more succinct diagnoses, national awareness, and research on effective treatments. Music therapy is emerging as a valid treatment option for children with autism and although there is still more research to be done, many studies demonstrate how effective and motivating music can be to help clients function across many domains. As more quantitative research is conducted in the field of music therapy for children with autism, music therapy may soon be recognized as an established treatment rather than an emerging one.

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