

THANK YOU FOR THE MUSIC

Musical Activities as Therapy for Autistic Children

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MUSIC THERAPY, DEVELOPED OVER THE YEARS BY NUMEROUS MUSICIANS AND EDUCATORS, SUCH AS CARL ORFF, JACQUES-DALCROZE, AND KODALY, HAVE PROVEN TO STIMULATE SOCIAL INTERACTION, IMPROVE SELECTIVE ATTENTION AND AID IN NUMEROUS OTHER DEVELOPMENTAL MILESTONES. THESE FINDINGS ARE NOT ONLY IMPORTANT FOR PARENTS AND SCHOOL CURRICULA, BUT ALSO HAVE PROFOUND MEANING FOR CHILDREN WITH AUTISM. NUMEROUS STUDIES, INCLUDING WORK DONE BY KOELSCH, AS WELL AS WINSLER, DUCENNE, AND KOURY, FOUND THAT CHILDREN WHO PARTICIPATED IN A MUSIC AND MOVEMENT PROGRAM DEVELOPED GREATER SELF-REGULATION SKILLS, SUCH AS PRIVATE SPEECH, SHOWED GREATER IMPROVEMENT IN COORDINATION, AND FOSTERED POSITIVE SOCIAL INTERACTION BETWEEN RESEARCHER AND SUBJECT. AUTISTIC CHILDREN WHO WERE EXPOSED TO MUSIC THERAPY HELD EYE CONTACT LONGER, ENGAGED IN DIALOGUE, AND REDUCED NEGATIVE BEHAVIORS SUCH AS HEAD-BANGING, AVOIDANCE, OR SELF-STIMULATORY BEHAVIORS. DIVERSE METHODS OF MUSIC THERAPY, INCLUDING PLAYING INSTRUMENTS, LISTENING TO SOUNDS, AND OTHER MUSICAL ACTIVITIES, COULD GREATLY IMPROVE THE SOCIAL, EMOTIONAL, AND EDUCATIONAL DEVELOPMENT OF AUTISTIC CHILDREN.

Music is an extraordinary medium because of its rare capacity to affect both young and old, to connect people from different cultures, ethnicities, and backgrounds, and even to shape behavior. The music therapy movement began in 1892 with Emile Jaques-Dalcroze, a professor who created the practice of Eurhythmics—a combination of improvised and structured movement in response to music. Soon after, composer Carl Orff applied Jacques-Dalcroze’s principles to his own method; children learned musical concepts such as rhythm, melody, harmony and texture through the use of basic instruments such as drums, triangles, and voice. These exercises not only helped children in their musical context, but also taught them how to regulate their behavior and emotions in other settings, such as at school or in public spaces. Numerous other musical approaches developed in following years, including the Kodaly concept, the Bonny Method of Guided Imagery and Music, and more recently, the Nordoff-Robbins technique.

Studies over the years, including work done by Winsler & Ducenne and Lobo & Winsler, have proven that music fosters social interaction, phonological processing, memory, selective attention, and many other developmental milestones in children.¹ This knowledge influences the way education systems are—or should be—structured, how parents raise children, and how interventions are used in clinical practice. Music therapy, particularly involving both improvisation and structured activities, is especially important and beneficial for children with autism. Listening to music, playing an instrument, and other musical activities help autistic children develop emotion recognition, experiences with others, and motor coordination.² This paper will address common music therapy techniques, their effects on a control population (children who develop normally and are not diagnosed with any disorder), and conclude with the positive impact music therapy can have on autistic children’s social behavior and development.

EFFECTS OF MUSIC THERAPY ON CONTROLS (CHILDREN WITH NO DIAGNOSED DISORDER)

Music is an indispensable mode for promoting better language, motor, and spatial development in children. Most music therapies use a combination of songs appropriate for a given age group (“Row Your Boat” for children) as well as advanced, classical music (Dvorak’s “Slavonic Dances” or Beethoven’s “Piano Sonatas” for

more mature ages). Coordinating movement to musical pieces and sounds produces better motor performance and precision; movements such as running, jumping, and walking can all be expressed through music. Children learn to listen to the tempo, dynamics, and pitch, then adjust their movements accordingly. Unlike spoken or demonstrated directions to jump, run, or move a certain way, music forces the child to listen, differentiate between sounds, and change their movements according to what they hear. For example, children tiptoe or move slowly when they hear a soft, slow passage; they run, skip, or twirl when they hear a fast, loud sequence. In this way, children become aware of their own body within space and in relation to the peers around them; they adapt to others’ movements and learn to inhibit their own actions (e.g. knowing when to wait their turn to sing/play an instrument, or dance with/mimic others).

By listening, children become attuned to emotional colors expressed through the music and can then use the sound to identify their own affective state. Koelsch found that music activates key regions in the amygdala, like the nucleus accumbens and hippocampus.³ As the brain’s center for emotion regulation, the amygdala is a powerful component for reward, motivation, and learning. Koelsch’s findings prove that music is not only a highly rewarding stimulus, but that the brain can detect changes in the music’s tone color (sad vs. happy). If music stimulates shared experiences, promotes emotional identification, and improves motor coordination, then it can immensely benefit children with autism.

In a study done by Winsler, Ducenne, and Koury, children who participated in a music and movement program based



CHILDREN GATHERING FOR A MUSIC LESSON (COURTESY OF WIKIMEDIA COMMONS)

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on Orff’s method (called Kindermusik), which included “percussion movements (clapping, tapping floor with foot), readiness and reaction movements, and improvisation and creative movement,” showed greater improvement in balance and coordination than the control group.⁴ Furthermore, children who participated in Kindermusik developed greater self-regulation skills, such as private speech, where children give themselves verbal directions in order to complete a task. For example, when trying to figure out a game or puzzle, the children in the study often muttered to themselves to remember details or unscramble clues.⁵ Another component of the study included leaving the subject in the room with a goody bag in the corner (behind the child) for several minutes, and telling the child to wait quietly for the researchers’ return without looking in the bag. Children who participated in Kindermusik hummed or sang songs and only peeked at the bag from a distance. Those who had no music training often called out to the researcher several times and even approached the bag several times. This shows a marked difference in inhibitory control and executive function between children who participate in music activities and those who do not. This study among hundreds of others demonstrates the positive and valuable effects of music on children’s cognition and behavior.

EFFECTS OF MUSIC THERAPY ON CHILDREN WITH AUTISM

As previously mentioned, music therapy can have profound effects on building interpersonal relationships and increasing emotional expression, particularly in autistic children. Children with autism often display unusual behaviors, such as performing repetitive movements (e.g. hand flapping, rocking back and forth), self-injurious actions, and/or extreme tantrums if a set routine is interrupted or changed. They often do not make contact or engage socially with peers and adults (even family members), and have minimal or delayed development of speech. These developmental delays not only affect intellectual functioning, but also make it difficult to form meaningful social relationships. Through

music therapy, autistic children can learn to connect emotionally with others and replace self-injurious or stimulatory behaviors with songs or rhythms.

The infant-caregiver attachment is a critical step in early development; the mother and child interact in numerous different ways, with the child learning to reciprocate and understand emotions as well as initiate communication. Music therapy strives to mimic this back-and-forth exchange to teach autistic children how to effectively communicate in social settings. In Kim, Wigram, and Gold’s study, the researchers studied ten autistic male children and an equal number of control participants to evaluate their emotional engagement after therapy with toys or music.⁶ Each child participated in both types of therapy, but were randomly assigned to have toy therapy first and music therapy second, or vice versa. Sessions of music/toy therapy were divided into two 15-minute periods of free play (directed by the child) and activities directed by the therapist. The therapist would introduce new games or turn-taking activities by modeling the desired behavior (e.g. saying “Sarah’s turn” and playing on a keyboard). The researchers evaluated five target behaviors: joy, emotional synchronicity, initiation of engagement, compliant response, and no response.⁷

Kim, Wigram, and Gold found that the frequency of joy events steadily increased over the course of 12 sessions in music therapy conditions, whereas joy events remained stable at zero in toy play sessions.⁸ Similarly, children initiated engagement with the therapist more in music therapy than in toy therapy. Emotional synchronicity was measured by observing moments when “the child smiles and laughs, and the therapist simultaneously shows congruent behavior.”⁹ These synchronized moments occurred more often in the undirected music condition, when children could guide play. Thus, music proves to be a powerful medium to share experiences and affective states. Since autistic children often do not respond with warmth and intimacy to their parents, music serves as a perfect mode to connect with their parents, understand emotions, and become familiar with patterns of social engagement.

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In a case study done by Elizabeth Ron Fang, the researcher worked closely with an autistic child, Mike, to assess his functioning and monitor improvement. Mike’s life revolved around music; he played piano in the school orchestra, completed theory assignments on the computer, took piano lessons, and played several other instruments. The researcher stated: “Mike is very responsive and attentive during musical engagement in comparison to his normal responses at lunch or non-music classes.”¹⁰ Although Mike was usually reserved and unemotional, he became more social and motivated when music was involved. The researcher observed Mike playing video games that used instruments (guitar, keyboard, etc) with friends. Despite the subject’s predominantly nonverbal communication, he made eye contact more frequently and smiled at their collective success in the game.¹¹ Because of music, Mike could connect with peers and share experiences with them.

Ron Fang also conducted a case study on Ryan, a six year old boy with autism. The subject’s parents reported that Ryan had difficulty recognizing and understanding facial expressions. To help with this challenge, Ryan’s parents used a combination of words and songs to help him understand directions, as well as their emotions. The parents noted that, “not only did music help others understand him, music also provided a way for him to understand the speech of others. Music helped Ryan grasp the meaning of words.”¹² Though no direct clinical intervention was used in either of these case studies, Ron Fang’s observations proved how beneficial and even crucial music can be in helping autistic children understand others’ emotions and regulate their own.

Music therapy not only facilitates emotional awareness and communication in autistic children, but it can also directly promote positive social behaviors such as eye contact and taking turns in an activity. Finnigan studied frequency and duration of positive social response behaviors (eye contact for at least 3 seconds, imitation of researcher’s behavior, and turn-taking) versus avoidant behaviors (gaze aversion, pushing toys or adults away, or getting up and

leaving) in Anna, a four year old autistic female.¹³ The therapist and Anna met twelve times, alternating between music and non-music sessions. During music sessions, the therapist engaged Anna with three toys, accompanied by singing simple melodies, playing guitar, or showing her games, such as taking turns playing a drum. For example, the researcher would say “Emily’s turn”, play, and then hand the mallets to Anna to see if she would engage in the social activity.¹⁴ The non-music condition used three similar toys and two-person activities as well, with the exception of musical factors.

During baseline testing, where Anna and the researcher played freely and in non-music conditions, eye contact did not occur. In 5 of 6 music sessions, however, one to three instances of eye contact were observed. Eye contact increased when music was used, but returned to baseline zero eye contact during non-music sessions. The researchers also found that “imitation increased steadily from 36.7% to 100% and remained stable at 100% for the final four [music] sessions,” which indicates that music conditions were successful in increasing imitative behaviors.¹⁵ Lastly, though the non-music condition helped Anna with turn-taking behaviors, her positive turn-taking interactions increased from 37% (no music) to 100% when music was introduced. “Anna displayed a higher frequency of all three social responsive behaviors (e.g. eye contact, imitation, and turn-taking) during the music condition com-



CHILDREN LEARNING HOW TO PLAY THE GUITAR
(COURTESY OF WIKIMEDIA COMMONS)

pared to the non-music condition.”¹⁶ This shows that music is an effective, positive intervention for children with autism; it can teach them not only to regulate and recognize emotions, but also to improve positive social behaviors and interactions while minimizing avoidant ones.

Though each of these studies have shown the benefits of music therapy interventions with autistic children, each of the studies also concede that the results were only temporary and depended on continual music engagement to maintain the child’s development. The therapist or caretaker must always remember to tailor music therapy methods to the child’s personal needs; each individual responds better to certain activities than others, and has different abilities and attention span. Nevertheless, music has proven to be an effective way of teaching and connecting with children with disabilities. As shown in the above-mentioned research and case studies, improvisation combined with structured musical activities work best in fostering appropriate social and emotional growth in autistic children.

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