

Music Therapy as Communication Melioration for Individuals with Autism

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Abstract

This research review examines music therapy as a viable strategy to improve the communication competencies of individuals with autism. It also seeks to validate music as a common code where specific meaning can be attached to musical patterns, creating a co-language that enables greater message sending capabilities by nonverbal autistic persons in order to communicate more effectively with others (Markworth, 2014). With communication deficits being a primary indicator of someone with autism spectrum disorder, research continues to focus on ways to improve communication skills (DeWeerd, 2013). Several criteria for a viable therapy include measurable progress in both verbal and nonverbal competencies, as well as improved interpretation of nonverbal feedback, all of which are deficits in autistic individuals (Simpson, 2011). This research examines whether or not music therapy meets the criteria as a legitimate communication melioration strategy for autistic individuals based on these benchmarks.

Music Therapy as Communication Melioration for Individuals with Autism

In the last several decades, researchers studying autism spectrum disorder (ASD) have seen steady progress in understanding this disorder and grappled with many outstanding mysteries yet to be solved. Though much more is known about the characteristics of those on the autism spectrum than when Leo Kanner first labeled it in 1943, much is still to be learned about its causes, variations, severity, and the most effective interventions (Grandin, 2010). A recurring thread of discourse among researchers, educators, and medical professionals, centers around improving communication competencies, as communication deficits contribute to isolation in autistic individuals and hinders their emotional, social, and intellectual development (Herman, 2010).

The purpose of this research is to answer the following question: does music therapy increase communication competencies in autistic individuals? After examining the most current work by researchers on this topic, this researcher has concluded that music therapy is a promising and effective intervention for increasing communication competencies in individuals with autism, establishing music as a common code for the verbal and nonverbal expression of ideas, desires, and values.

Review of the Literature

Communication Deficits for Individuals with Autism

When a child reaches their third birthday with communication deficits, being diagnosed with autism spectrum disorder becomes a possibility, as the lack of verbal language development remains a principal indicator of this neurological condition (DeWeerd, 2013). This lack of oral communication skills, often coupled with receptive and expressive processing deficits, causes autistic children to struggle to send messages and receive messages from others (Dimitriadis &

Smeijsters, 2009). Though many children respond to early intervention therapies, many do not, and so researchers over the years have continued to examine the reasons for this.

Language and Motor Skill Connection. Possible explanations for this discrepancy have moved away from focusing on word formation to focusing on motor skill and motor resonance deficits that contribute to language formation (McCleery, Elliott, Sampanis, & Stefanidou, 2013). Children with autism also are often unable to engage in joint attention, where the eye movements of another cause them to look at the same object, a skill which is compulsory in language development as way of reading nonverbal communication in others (DeWeerd, 2013). These skill deficits hinder language development, so therapies that work on motor skills, motor resonance (mirror neuron) skills, and joint attention offer the potential of more effective interventions that will result in communicative competency progress in autistic individuals (DeWeerd, 2013).

Verbal Deficits. One of the primary ways that human beings learn language is from imitation (Wan, Demaine, Zipse, Norton, & Schlaug, 2010). Parents and caregivers speak to infants constantly, and over time, they begin repeating words, even before meaning is attached. Normal verbal skills begin with babbling and progress to more concrete imitation of syllables and words, culminating in stringing words together into sentences. For the autistic child, imitation is inhibited by their neurological condition, so often the connection between what they see and hear and what they need to do with their mouth to form the sound is not possible (DeWeerd, 2013). Language development is dependent on coordinating what message is received to what the child can imitate, then eventually attach meaning to through sight and repetition. A child with autism cannot coordinate these mechanisms fully, making language acquisition delayed or even completely undeveloped. Though seventy-five percent of autistic individuals do communicate verbally in some manner through a small vocabulary, sporadic

words, or grunting sounds, a full twenty-five percent are completely nonverbal and do verbalize at all when attempting to communicate (DeWeerd, 2013).

Nonverbal and Theory of Mind Deficits. In addition to verbal language acquisition difficulties, autistic individuals possess insufficient abilities in interpreting nonverbal messages, which create what researchers refer to as inadequacy in Theory of Mind. Theory of mind refers to the inability to understand the point of view of others as separate from one's own experiences (Wan, Demaine, Zipse, Norton, & Schlaug, 2010). Nonverbal communication accounts for nearly seventy percent of messages between human beings, so the inability to interpret these signals means that autistic individuals often have difficulty predicting others' behavior, knowing what is a held norm in a social situation, or being able to distinguish between fact and fiction in conversation in order to respond appropriately (Wan, Demaine, Zipse, Norton, & Schlaug, 2010).

Reading body language, facial expressions, contextual clues in conversation such as looking at a clock momentarily (indicating that the person may need to leave), or even more overt nonverbal expressions involving proxemics, such as turning away in anger or standing too close, violating personal space, may not be interpreted correctly by an autistic person. This core deficit means that social isolation frequently occurs, and relationships are often built and nurtured through these "meeting moments," where eye contact and body language communicate important connective emotions (Raglio, Traficante, & Oasi, 2011).

Imitation. Though not always necessary for more mature communication, imitation forms the basis of early language acquisition (Wan, Demaine, Zipse, Norton, & Schlaug, 2010).

Imitation and theory of mind have been shown to have strengthened in music therapy, as individuals are challenged to follow musical rhythms and match them. This ability to copy musical sequences creates an enhanced interest in following facial expressions, which

communicate varying levels of emotion, thereby showing an individual with autism the connections between music and emotion and tying these feelings to another person outside of themselves. This imitation provides a small step to understanding others and strengthening theory of mind competencies (Wan, Demaine, Zipse, Norton, & Schlaug, 2010).

Social and Behavioral Consequences. The lack of overall communication competency creates social isolation for those with autism, often leading to behavior difficulties that are a response to the frustration of not being able to express their ideas and desires. Dr. Temple Grandin, professor at Colorado State University and an outspoken advocate for those on the autism spectrum, summarizes this problem well:

Frustration with not being able to communicate is a very common problem in nonverbal individuals with ASD; they *must* have a way to express their needs and wants. If a functional communication system has not been put into place with a child, his only recourse is behavior (Grandin, 2011 p. 131).

As research progresses, addressing communication issues and finding alternative ways for those with nonverbal autism to engage with those around them is crucial to helping them create meaningful, productive lives (Silverman, 2008). Multimodal therapies that attempt to form a link between motor skills and language acquisition are providing the most hope for improved communication in the autistic population (DeWeerd, 2013). More and more, researchers are finding that nonverbal autistic individuals can learn to communicate with some form of augmentation even if full speech fluency is never achieved, providing a functional communication system that still enables an individual to grow and develop in other areas important to independence (DeWeerd, 2013).

Motivation. Traditionally, children diagnosed with nonverbal autism undergo regular speech therapy to help with language acquisition. However, a weakness to this approach is its milder affect on a person's motivation to communicate (Sandiford, Mainess, & Daher, 2013). Nonverbal autistic individuals need to respond to a given message in order to create interaction with others, but without the desire to initiate communication, a nonverbal autistic person remains effectively locked in their own mind without a way to express themselves in an understandable way. Effective therapies will show improvement in this important element of communication, evidenced by the initiation of the message on the part of the autistic individual (Sandiford, Mainess, & Daher, 2013).

According to Michael Silverman, intention is vital, and there are standard ways that individuals can be taught to demonstrate intentional communication: vocalizing (using sounds), sign language (using conventional sign language systems), objects (handing objects to a person to communicate), motor (direct physical manipulation of a person or object), gestural (pointing, showing), photo (pointing at photographs or pictures to communicate), and written communication using words (p.10). In music therapy, increased activity in all of these forms grows, as the music promotes greater responses and enhances motivation, so incorporating music into the overall therapies for autism leads to greater gains in intentional communication (Silverman, 2008).

Music as a Common Code

Music follows certain rules which seem to fit the needs of an autistic individual. Music is mathematical and consistent, predictable, based on patterns, and repetitive--all of which typically are characteristics of appealing activities to those with autism. These individuals often think in pictures and patterns, rather than in words (Grandin, 2010). Musical phrasing mimics nonverbal

speech components such as pitch, volume, rate, and rhythm, creating the basis for a co-language in which an autistic individual could borrow these nonverbal competencies from the music to relate their own feelings and ideas (Clarkson, 1994). More importantly, music has been seen as a consistently pleasurable and engaging way to motivate autistic children, which helps to overcome the barrier of motivation to communicate (Simpson & Keen, 2010).

Common Code: Attribution of Meaning. The complexities of communication with words often means that when music is used as a language, just as when a Russian novel is translated to English, there will be something beyond the words that is lost. What is lost could be culturally or contextually understood in the original language, but removing it from its original source means there are nuances that are beyond translation. Music, as it becomes the vehicle of communication for a nonverbal autistic individual, becomes the vehicle for expressing something happening in the present moment that is often transcends words (Raglio, Traficante, & Oasi, 2011). In order for message transmission to be clear, a word must be assigned to a rhythm or musical phrase, but this is difficult because what is being expressed may be outside the words (Dimitriadis & Smeijsters, 2009). If meaning can be assigned to rhythms and musical phrasing, then it become a vessel used to cross the chasm most nonverbal autistic individuals suffer with daily, offering a needed path to connect the transmission clearly to the receiver (Silverman, 2008).

During music therapy sessions, many researchers have established rhythms and patterns with a client that enable them to express both concrete concepts like "animal" to more abstract concepts involving emotions and ideas (Simpson & Keen, 2009). Music therapy communication over time has show several basic modes that emerge during sessions: music as language (statements, questions, conversations), musical expression (emotions, creativity), and music as a

shared experience (client and therapist mutual recognition) (Markworth, 2014). Repetition is often needed to know for sure what the meaning of the expressed musical sequence is, but once known, becomes a remembered "word" or emotion to be used again by that client to establish a conversation (Raglio, Traficante, & Oasi, 2011).

Researcher Michael Silverman further contends that music has a proven history of nonverbal communication for human beings, verbal and nonverbal, as music's ability to connect experiences with emotional reactions is commonly known and transcends age, culture, ethnicity, and gender (2008). When music therapists are able to get a nonverbal autistic individual to begin to assign meaning to music during a session, then it grows from being simply a vehicle of pleasure to a means for ideas and emotions to be directly communicated to the receiver. This establishes a useable augmentation to the individual's communication skill set and enables them to transmit messages they previously had been unable to (Silverman, 2008).

Attunement and Vitality. A voice of authority on the music therapy is Daniel Stern, who developed the connection between music and psychology through his affect attunement and vitality effects theories, which show that human beings use the elements of music to connect to the inner self, or core self (Dimitriadis & Smeijsters, 2010). His assertion that emotions are connection to thoughts of the core self, and that the intensity, time, and shape of music link us to what is happening inside our minds (Raglio, Traficante, & Oasi, 2011). When a human being is angry, the nonverbal communication associated with this emotion --rate of speech, intensity, and volume of delivery-- confirm the message of anger. If angry words are said in a sing-songy, high pitched, playful way then meaning changes, indicating that the anger may not be genuine. Stern's assertions that sounds represent the psychological state have been confirmed in studies where clients express their emotions and inner self by playing louder when happy or angry and slower

or softer when sad or perhaps afraid (Dimitriadis & Smeijsters, 2010). Researcher Lindsay Markworth (2014) concurs with this, adding that many therapists are seeing primary emotions like happiness and anger demonstrated, with many individuals using music combinations to express more complex parts of their inner selves such as humor, embarrassment, and pride (p.25). For an individual with autism, the ability to accurately express the core self eases frustration, so the use of music continues to be a focus of ongoing research as researchers experience clients using music to express their inner selves (Markworth, 2014). Interestingly, accurate demonstration does not depend on the beauty or aesthetic of the song, but more on the rhythm, intensity, tempo--crescendo and decrescendo--to bring the emotional message (Dimitriadis & Smeijsters, 2010).

Methods. Several music therapy methods are being used with varying results, one of which is Relational Music Therapy (RMT), where participants are given a selection of musical instruments and encouraged to use them by the therapist, but if the child does not want to participate, they are not forced to continue (Gattino, Riesgo, Longo, Leite, & Faccini, 2011). The value of this therapy is in improving joint attention skills, part of the language acquisition equation so often missing in autistic children. The therapist only joins the child once the child starts to use the given instruments, participating in a way that encourages the child to focus on the behavior of the therapist as he or she joins the music the child is making. If the child notices and responds, this helps increase joint attention skills, which are important for expressive language skills and relational interaction (Gattino, Riesgo, Longo, Leite, & Faccini 2011).

Other methods revolve around interactive songs and their use in facilitating labeling of ideas (Simpson & Keen, 2010). Using music imbedded into a PowerPoint presentation, (linking music to pictures) children were shown the symbols for the words on a screen. As expected,

imitation was higher when the music was used than when children were just asked to connect the pictures to the words without music (Simpson & Keen, 2011).

Communication Competency Outcomes

Additionally, music therapy methods involving improvisation to music has shown promise in increasing an individual's ability to use other forms of facilitated communication, spurring direct, intentional communication by gesture, sign language, and words typed on a special keyboard (Silverman, 2008). Though this is not always the case, it is clearly the desired outcome of all communication therapies. Attaching symbols to thoughts, whether independently or through facilitation, means that individuals can begin truly connecting with others because messages can be sent clearly (DeWeerd, 2013).

Many researchers have seen music become the catalyst for further communication, and music therapist Ginger Clarkson verifies this with a case study involving a nonverbal male, eighteen years old, who over a three year period went from a hostile, angry, nonverbal individual, to communicating actively through typing (Clarkson, 1994). For this individual, music helped to build trust and social skills first, and then progressed to sign language, gestures, and even vocalizations in an attempt to speak. Eventually, he began typing on a laptop brought into music therapy, and Clarkson discovered that it was not cognitive deficiency that kept her client from communicating, but possible apraxia, a physical inability to form words with the mouth (Clarkson, 1994). The keyboard enabled this young man to finally tell his thoughts, bottled up for many years. He described being autistic as, "plugging up a dam," (Clarkson, 1994 p. 34). Now having a means to communicate, his behavior has become gentle and calm, enabling him to interact with others, validating Dr. Temple Grandin's firm belief that every

autistic individual must have a functional communication system to maintain appropriate social behaviors (Grandin, 2011).

Generalization. Discussion about music therapy as an effective communication melioration for ASD individuals would not be complete without addressing whether or not the enhanced competencies seen in music therapy last and can be generalized in other contexts. Results during music therapy sessions often do not lead to generalized increases in competencies outside of therapy (Simpson & Keen, 2011). Some individuals do seem to remember symbols from previous sessions for many weeks, but often not beyond that or demonstrated at home or school to validate permanence (Simpson & Keen 2009).

Physiological Evidence Supporting Communication Outcomes

Using music to facilitate communication in individuals with ASD also has a proven medical basis. Several researchers have endeavored to show objective physiological evidence supporting years of positive results in music therapy (Lim, 2010). The Broca's area of the brain that is responsible for language acquisition also processes musical patterns, so using music to stimulate the language area of the brain has been consistently used for those with neurological conditions (Lim, 2010). Seeing other populations such as stroke victims and Alzheimer's patients benefit from music therapies further supports this route of helping cognitive abilities to improve (DeWeerd, 2013). Additionally, the complex physiology of the brain in an autistic individual shows that multiple impairments respond to regular exposure to music (Lim, 2010).

Brain Retraining

One of the physiological realities for children with autism is gap between that the right hemisphere of the brain, which processes music and rhythm, and the left hemisphere, which processes language for comprehension. The corpus callosum joins both hemispheres, and this

functioning is typically impaired in autistic children (Sandiford, Mainess, & Daher, 2012).

Studies have shown that autistic children can actually improve this functioning by regularly listening to music (Sandiford, Mainess, & Daher, 2011).

Mirror Neuron Studies. Further supporting this use of music, brain scans of autistic children who are engaged in music therapy have been shown that music actually help to repair connections in the mirror neuron and related brain systems (Wan, Demaine, Zipse, Norton, & Schlaug, 2010). Researchers have speculated that mirror neuron impairments affect behavior, and may be an underlying issue for those with autism, so this potential evidence in regards to music and the brain repairing itself are significant (Wan, Demaine, Zipse, Norton, & Schlaug, 2010). If the mirror neuron system function improves, then sensorimotor integration, or the ability to coordinate movements of the eyes, body, and mouth can be greatly enhanced, enabling autistic individuals to develop a greater expressive language ability. Currently, no traditional therapies have shown consistent progress on expressive language abilities, so music therapy could provide a key to more consistent progress in this area (Wan, Demaine, Zipse, Norton, & Schlaug, 2010).

Conclusion

Advancements in therapies for the autistic population continue to offer new and promising methods of increasing communication abilities for those long isolated by this neurological disorder (Simpson & Keen, 2011). Music therapy has not only offered measured increases, but more importantly, brought to light the need for multimodal approaches to treating this condition. Physiological components originally thought to be less important in language acquisition now are considered to be crucial elements in this process, pointing to the need to strengthen many systems of the body to increase language abilities (DeWeerd, 2013).

In the future, additional research will investigate other avenues to strengthening mirror neuron repair and explore further neurological processes that contribute to deficits seen in autistic individuals, as well as doing additional studies aimed at increasing generalization from therapy to daily life to make more permanent progress in the lives of this population (Simpson & Keen, 2011). In order to make desired gains in generalized communication competency, larger samples of this population will need to be involved in music therapy studies, and more in-depth follow up put in place (Sandiford, Mainess, & Daher, 2012).

The research question posed by this researcher affirms the use of music therapy to increase communication competencies in autistic individuals and does enhance the skills of many individuals to communicate their ideas, desires, and values, even if it is in a limited setting. Though research evidence suggests a great potential for music's use as a co-language, providing a common code for symbolic expression, more rigorous studies would help determine the most beneficial methods of music therapy. Studies may explore whether or not certain types of music have greater affect than others, and whether music therapy used consistently with other therapies proves most effective (Gattino, Riesgo, Longo, Leite, & Faccini, 2011). Additionally, further exploration of technology that would provide and enhance communication facilitation methods for nonverbal autistic individuals are also needed, as no one therapy or approach fits the whole population. Overall, researchers across the disciplines that are engaged in research regarding autism conclude that it will be the combination of physiological, psychological, and practical intervention therapies applied to each individual's specific deficiencies that offer the greatest opportunity for nonverbal autistic individuals to reach their maximum potential (Wan, Demaine, Zipse, Norton, & Schlaug, 2010).

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