

**Critical Review:
Effects of Music Therapy on the Social Skills of
Children with Autism Spectrum Disorder (ASD)**

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Abstract: This critical review seeks to determine the effects of music therapy on the social communication of children who are on the Autism Spectrum Disorder (ASD). Study designs include, Randomized Clinical Trials (RCT), Non-Randomized Clinical Trials, and Within-Subject Design Studies. The results from these studies suggest that music therapy does improve the social communication skills in children with ASD. We will also discuss the implications of such results and our recommendations for clinical practice and future research.

Introduction

The National Institute of Neurological Disorders and Stroke (2019) defines Autism Spectrum Disorder (ASD) as a “complex neurodevelopment disorder characterized by repetitive and characteristic patterns of behavior and difficulties with social communication and interaction.” Those diagnosed with ASD may present with varying degrees of severity, and may struggle with expressive and receptive language, understanding nonverbal behaviours, changes in routine, and participation in daily living independently. Social communication is defined by The American Speech-Language-Hearing Association (ASHA) (2020) as, “the use of language in social contexts [and also] encompasses social interaction, social cognition, pragmatics, and language processing”. For the purposes of this critical review, we will focus on social communication behaviours, such as joint attention and eye contact. Joint attention is demonstrated when a child engages and shares a particular interest (e.g people, objects) with another person. Eye contact, on the other hand, allows a child to express interest and show attention to his/her communication partner. Both are important social skills for carrying out social communication.

There is a need for effective evidence-based interventions for children with ASD. Such information is vital in allowing therapists to work with families in making informed choices when it comes to choosing effective treatment options for their children. Music therapy has become an extremely common option to be incorporated into the overall treatment plan of targeting social skills in children with ASD. Social skills are imperative for life participation. The American Music Therapy Association (1998) defines music therapy as “an established health profession in which music is used within a therapeutic relationship to address physical, emotional, cognitive, and social needs of individuals. After assessing the strengths and needs of each client,

the qualified music therapist provides the indicated treatment which includes, creating, singing, moving to, and/or listening to music.” Music therapy uses music-based interventions to help children achieve non-music goals, such as the communication behaviours discussed in this critical review.

The use of live music is beneficial for a child with limited or no social skills because the certified musical therapist will make the necessary changes to the songs in order to provide optimal opportunities for the child to participate in social interactions. On the other hand, music therapy can also be highly structured. For example, pause times and tone of voice can be adjusted, and prompts and cues can be incorporated into songs to encourage turn-taking and participation. Interventions are always individualized to the child’s needs and Speech-Language Pathologists often work side by side with musical therapists to set and achieve goals.

Objectives

The purpose of the critical review is to present existing research findings on whether music therapy has positive effects on the social communication of children diagnosed with ASD and whether it is a viable option for families seeking intervention strategies for their child.

Methods

Search Strategy

All articles reviewed for this paper were found on PubMed and Google Scholar. The keywords that were used to search for these articles were “autism spectrum disorder”, “music therapy”, and “social communication”.

Selection Criteria

For the purposes of our critical review, we only selected articles where the participants in the research

studies were children with a diagnosis of ASD. We also selected articles that measured changes in the participants' social communication as a result of the music therapy they received. Social communication, for the purposes of this critical review, included joint attention and eye gaze.

Data Collection

Results of the literature yielded seven articles that met the selection criteria including four level 1 randomized control studies (LaGasse, 2014; Ghasemtabar *et al.*, 2015; Thompson *et al.*, 2014; Shwartzberg & Silvermant, 2013), and three level 2a non-randomized design studies (Arizen, 2011; Davis, 2016; Kalas, 2012).

Results

Davis (2016)

This study consisted of a non-randomized clinical trial, which investigated whether children with ASD showed more joint attention behaviors during music therapy, cooperative play, or independent play conditions. Four participants engaged in all 3 session types. This study used a 15-second observation, 5-second record time sampling method, and intervals were coded for the presence or absence of interacting and requesting behaviors. Visual analysis and graphing of data revealed that a higher percentage of interacting behaviors occurred during music conditions than both cooperative and independent play conditions across participants.

The study found that overall, music therapy is more effective in eliciting interaction than both cooperative play and interactive play. Participants that interacted less during independent play conditions tended to have greater differences in interactions between music and play conditions than those who scored higher in independent play. This study suggests that children who demonstrate less interaction skills during independent classroom play should be a higher priority for music therapy when funding is limited because they may attain more benefit from music therapy. The requesting for joint attention was inconclusive, as two of the participants in the study requested for joint attention to a higher degree in the independent play condition, while the others demonstrated the highest degree of requesting joint attention in the music therapy conditions. Overall, this study shows suggestive evidence that play conditions that incorporate music does have a positive effect on the joint attention skills of children with ASD.

Ghasemtabar, Hosseini, Fayyaz, Arab, Naghashian, and Poudineh (2015)

These authors looked at the effectiveness of music therapy in improving the social skills of children with ASD and it's stability. This study consisted of a randomized clinical trial that included 27 children with a mild to moderate diagnosis of autism. They were either placed in the experimental group, which ran the musical therapy program Orff-Schulwerk for 45 days and consisted of 12 sessions (two sessions 1 hour/week), or the control group which had no intervention.

Results showed that music therapy was an effective intervention to improve the social skills of children with ASD. Since children with autism have difficulties with direct social engagement, music activities in the group sessions provide additional opportunities for engaging in predictable and comfortable interactions with others. Such group musical environments give participants opportunities to learn social skills such as imitation, turn taking, social reciprocity, joint attention, shared affect, and empathy. Overall, this study shows suggestive evidence that music therapy is an effective way to improve the social skills of children with ASD.

LaGasse (2014)

This study examined the effects of music therapy on social skills, such as joint attention, eye gaze, and communication. In a randomized control trial, seventeen children, ages six to nine, who were diagnosed with ASD were randomly assigned to the music therapy group (MTG) (n=9), or the social skills group (SSG) (n=8) with no music. The MTG was led by a Board-Certified Music Therapist, while the SSG was led by a certified educator of children with ASD. The two groups participated in two 50 minute sessions per week, over a five week period. The Social Responsiveness Scale (SRS), Autism Treatment Evaluation Checklist (ATEC), and behavioural observations with the use of video recordings were utilized to assess any potential changes in the participants' social skills.

Statistical analysis revealed that participants in the MTG showed a higher degree of improvement in their social skills, specifically, their joint attention and eye gaze, by the end of the sessions than those in the SSG. Parent reports also showed that a greater improvement was observed for children in the MTG, compared to the SSG. In terms of communication, there were no improvements between the two groups. Overall, this study shows suggestive evidence that music therapy improves the social skills of children with ASD.

Thompson, McFerran, and Gold (2014)

This study investigated the impacts of family-centered music therapy (FCMT) on the social engagement abilities of children with severe ASD. In a parallel-randomized control trial, twenty-three children were randomly split up into the group that received FCMT and early intervention programs (n=12), or the group that received only the early intervention program (n=11). For 16 weeks, those in the treatment group participated in one, 30-40 minute FCMT session per week, which was conducted by a music therapist. Change in social engagement was measured with standardized parent-report assessments, parent interviews and clinician observation. Intention-to-treat analysis for the Vineland Social Emotional Early Childhood Scale indicated a significant effect in favour of FCMT.

Statistical analysis revealed that parents reported an improvement in the social engagement abilities of their children who received FCMT. As the FCMT sessions progressed, it was also reported that the interpersonal engagement of the children improved. Some of the limitations of this study include a small sample size, which may impact the generalizability of the effects of music therapy on this population, and the use of parent-report assessments, which may often be skewed due to parental biases. Overall, this study shows suggestive evidence that family-centered music therapy improves the social engagement of children with severe ASD.

Schwartzberg and Silvermant (2013)

This randomized controlled study was done to examine the effects of music-based social stories on comprehension and generalization of social skills for children with ASD. Thirty participants were randomly assigned to non-music control groups or music therapy groups. Participants' parents completed the Autism Social Skills Profile (ASSP) at pre- and post-test and five comprehension check questions.

The lack of significant main effects was likely due to minimal treatment dose. Numerous significant two- and three-way interactions may have confounded results. Main effects for comprehension were significant, with scores highest at posttest. Although results of the study were confounded by numerous significant interactions, clinicians might pair social stories with music to facilitate comprehension, generalization, and on-task behaviors conducive to learning social information. Implications for clinical practice, limitations, and suggestions for future research are provided. Overall, this study is equivocal that music-based social stories positively affect

comprehension and generalization of social skills for children with ASD.

Kalas (2012)

This study was done to examine the effect of simple versus complex music on joint attention of children with ASD. Thirty children diagnosed with ASD participated in this study. Fifteen of the participants were diagnosed with severe ASD and 15 were diagnosed with mild/moderate ASD. Each participant took part in 6, 10-minute individual music conditions (3 simple and 3 complex).

Results showed a statistically significant interaction between music modality and functioning level. Therefore, the effect of simple versus complex music was dependent on functioning level. For children in the severe range of functioning, music that is simple, with clear and predictable patterns, may be most effective in eliciting Responses to Joint Attention (RJA). For children in the mild/moderate range of functioning, music that is more complex and variable in the Complex Music Condition may be most effective in eliciting RJA.

Overall, this study demonstrates compelling evidence that music therapy does have a positive effect on the joint attention skills of children with ASD. However, depending on the degree of functioning, children may benefit from having some of the variables manipulated. For example, simple and predictable versus complex and unpredictable patterns.

Arezina (2011)

This study looked at the effects of interactive music therapy on the social skills, specifically joint attention, in children with ASD. Six participants between 36 and 64 months old were included in the within-subject design study. Each participant took part in each of the three treatment conditions, which included interactive music therapy, non-music interactive play, and independent play. Each session was 10 minutes and the clients took part in each treatment condition six times for a total of 18 sessions, over a five-week time period. The videotaped sessions were analyzed to determine whether there were changes in responding and initiating joint attention. Another person was randomly selected to watch the tapes to ensure inter-observer agreement on the behaviours observed.

Results of this study showed that interactive music therapy led to increased joint attention in all participants involved in the study. The improvements were most significant in the interactive music group, while least significant improvements were observed

in the independent play sessions. Between the interactive music group and non-music group, no difference was found in the initiation (requesting) of joint attention, but participants in the music group did show higher engagement. Overall, this study is suggestive that music therapy improves the social skills of children with ASD.

Discussion

The results of the literature reviewed for this critical review show a possible link between music therapy and improvement in social communication skills of children with ASD. When compared to control groups where the participants were not exposed to music therapy, or when comparing the responses of the participants within the different conditions, those in the music therapy group consistently demonstrated increased joint attention, eye gaze, and/or interaction within the sessions and with their caregivers.

There are some limitations to the studies that should be addressed. The small sample sizes in the studies make it difficult to generalize results to the wider population and decreases the strength of the results. Not all of the studies reviewed mentioned the severity of the children's ASD. Children with mild ASD may have more functional skills than those with a moderate and severe diagnosis, possibly giving them an advantage in their performance in the groups. Another factor that was not mentioned in the studies was whether the participants have previously participated in other types of therapy or was attending private therapy in conjunction with the music therapy that they were receiving as part of the study, which could have also skewed the results. The studies also varied in the methods that they used to conduct the music therapy programs. Lastly, the number and length of each session may also play a role in the progress that the participants make in the studies. For example, those who had the opportunity to participate in a longer and/or higher number of sessions may be receiving more benefit than those with a shorter and/or lower number of sessions.

Future considerations include recruiting larger sample sizes to increase the strength of the effects of music therapy on social communication skills of children with ASD. Recruiting participants with the same level of severity can also increase reliability of the results.

Conclusion and Clinical Implications

As Speech-Language Pathologists, knowing the effectiveness and research behind other therapies is

crucial. This information shows what clients may benefit from music therapy. This is also useful for using musical components to therapy as an SLP. Clinicians may choose to pair social stories with music. This information is also useful to consider when deciding what type of music to engage clients with. Songs that are used for joint attention may be too simple or too complex depending on the individual. This shows the research behind why it is important to choose appropriate songs for engaging the child during therapy. Another implication is that group musical environments are useful for developing social skills. As a clinician, group therapy and using peers is an effective way to target social skills such as imitation, turn taking, social reciprocity, joint attention, shared affect, and empathy. As practices become increasingly interdisciplinary, understanding the roles of other professionals, such as a music therapist, can allow us to better support our colleagues and our clients during joint sessions.

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