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AN INVESTIGATION OF MUSIC THERAPY FOR IMPROVING REQUESTING SKILLS IN A CHILD WITH AUTISM SPECTRUM DISORDER: A SINGLE–CASE RESEARCH DESIGN

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Abstract

The purpose of this study was to investigate the effectiveness of music therapy on requesting skills in a seven-year-old child with autism spectrum disorder [ASD]. ABAB single-case design was used to examine music therapy in two situations of requesting skills, including requesting objects and snacks between baseline condition (A) and music therapy interventions (B). The music therapy interventions consisted of singing, instrument playing, movement with music, and music with social stories. The research instruments were: 1) initial assessment, 2) interview protocol, 3) assessment of communicative requesting skills, and 4) observational protocol. The data was analyzed using visual inspection and qualitative data analysis. The results revealed that during the baseline A1 phase, the mean scores of requesting skills revealed to be 3.08 for objects and 3.52 for snacks. In the intervention B1 phase, the mean scores were 3.64 for objects and 3.35 for snacks. At the baseline A2 phase, the mean scores were 4.00 for objects and 3.88 for snacks. The mean scores in the B2 intervention phase were 4.5 for objects and 4.6 for snacks, respectively. According to the findings, music therapy significantly enhanced the requesting skills of a child with ASD.

Keywords: Music Therapy/ Requesting Skills/ Autism Spectrum Disorder

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Introduction

Autism Spectrum Disorder (ASD) refers to a group of complex neurodevelopmental disorders. Children on the spectrum often have difficulties in social communication and interaction and demonstrate restricted, repetitive patterns of behaviors which is defined as a lifelong neurodevelopmental condition[1]. This condition may affect their daily performance, especially in social and communicative ways. The deficit in communication skills is one of the core deficits for children with autism. One of the deficits in the communication domain is requesting skills. According to research, children with ASD present deficits in requesting skills in both verbal and nonverbal ways through a lack of eye gaze, gesture, language, and expressive communication skills[2]. In addition, children with ASD may show inappropriate behavior due to a lack of requesting skills, such as taking a desired item from another's hand without permission, or enacting a tantrum or aggressive behavior if their needs are not met. According to the social communication characteristics, some children with ASD may show difficulties in communicative functions such as commenting, requesting, protesting, directing attention, showing, and rejecting[3] in both verbal and non-verbal ways. Requesting skills consist of 1) requesting objects, 2) requesting attention, and 3) requesting their need[4].

It is argued that music therapy can increase requesting skills for children with ASD and promote expressive communication and understanding[5]. Music interventions can also be used based on behavior principles, such as music with Mand training to give a child an experience of how to request by saying the words associated with their needs. In addition, musical instruments can help increase initiation response in free, or structured improvisational vocal and instrumental music.

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[1] American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders: DSM-5-TR*, 5th ed. (Washington, DC: American Psychiatric Association Publishing, 2013).

[2] "Social Communication and Social Interaction Issues - Autism Spectrum Disorder," Patricelli, last modified 2021, https://www.gracepointwellness.org/20-autism-spectrum-disorder/article/8764-social-communication-and-social-interaction-issues.

[3] Sarita Austin, "Communicative Functions," in *Encyclopedia of Autism Spectrum Disorders* (New York: Springer, 2013), 751-52, https://doi.org/10.1007/978-1-4419-1698-3_964.

[4] Heather K. Jennett, Sandra L. Harris, and Lara Delmolino, "Discrete Trial Instruction vs. Mand Training for Teaching Children with Autism to Make Requests," *The Analysis of Verbal Behavior* 24, no. 1 (April 2008): 69-85, https://doi.org/10.1007/bf03393058.

[5] Hayoung A. Lim, "Use of Music in the Applied Behavior Analysis Verbal Behavior Approach for Children with Autism Spectrum Disorders," *Music Therapy Perspectives* 28, no. 2 (2010): 95-105, https://doi.org/10.1093/mtp/28.2.95.

According to the review of related literature, several studies using music therapy focused on requesting skills for children with autism. Gattino et al.[6] used improvisational music therapy to establish communication skills in children with ASD, which also related to the requesting skills in both verbal and non-verbal communication. In Thailand, there were no previous studies solely focusing on music therapy for enhancing the requesting skills in children with ASD. Most studies focused on communication skills, including requesting skills as sub-indicators. Kawinnithiporn[7] studied the effect of music therapy on expressive communication skills in a child with Autism Spectrum Disorder. The result was that a child had improved expressive communication skills, including requesting skills as a domain. Charoenphol, Chiengchana, and Tayrattanachai[8] also studied the effect of using parent-child interactive music therapy on sentence verbalization in a child with ASD. The result improved a child's verbalization as a sentence, including the sentence related to making a request.

Moreover, requesting can make a child more socially appropriate if the child can obtain consent from others by making a relevant request[9]. Therefore, the researcher was interested in using music therapy to investigate the effect on requesting skills in a child with autism, which could benefit music therapists who utilized music therapy to improve requesting skills in children with autism. In addition, it benefits the parents of an autistic child because inappropriate behaviors (such as tantrums) are decreased through the new demonstration of appropriate requests for desired items or needs.

This study aimed to investigate the effect of music therapy on requesting skills in a child with autism spectrum disorder, which included two situations: 1) requesting an object and 2) for a snack.

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[6] Gustavo Schulz Gattino et al., "Effects of Relational Music Therapy on Communication of Children with Autism: A Randomized Controlled Study," *Nordic Journal of Music Therapy* 20, no. 2 (2011): 142-54, https://doi.org/10.1080/08098131.2011.566933.

[7] Chwanphatz Kawinnithiporn, "The Effect of Music Therapy on Expressive Communication Skill in a Child with Autism Spectrum Disorder," *Journal of Ratchasuda College for Research and Development of Persons with Disabilities* 14 (January-December 2018), https://rs.mahidol.ac.th/rs-journal/eng/vol.14/vol.14-002.php.

[8] Chanyanit Charoenphol, Natee Chiengchana, and Ni-On Tayrattanachai, "The Effects of Parent-Child Interactive Music Therapy on Sentence Verbalisation in a Child with Autism Spectrum Disorder: A Case Study," *Malaysian Journal of Music* 8 (2019), https://doi.org/10.37134/mjm.vol8.5.2019.

[9] "What to Do When a Tantrum Happens," Organization for Autism Research, accessed December 21, 2020, https://researchautism.org/what-to-do-when-a-tantrum-happens/.

Methodology

1. Research Design

This study was part of a master's thesis, College of Music, Mahidol University, and received ethical approval from The Committee for Research Ethics (Social Sciences), Faculty of Social Sciences and Humanities, Mahidol University [MUSSIRB No.2022/119 (B1)]. In terms of research design, ABAB single case design was employed in this study to investigate the effectiveness of a music therapy intervention concerning the requesting skills of an individual child with ASD through the measurement of the results between the baseline phase (non-music intervention condition) (A) and the music intervention phase (music condition) (B). For baseline A1, this phase was used to examine the actual scores of a child's requesting skills before receiving the interventions. After the intervention (B1), baseline A2 was employed to measure the treatment effects to study whether the child's requesting skills remained in a non-music condition. The assessment methods used in an ABAB single-case research design provide the evaluation of individual change in the data patterns, which would be beneficial for the researcher to adjust the music intervention to support a child's requesting skills. The necessary method for a single-case research design is repeated dependent variables across study phases[10]. There were six steps in the research procedure: 1) Recruiting the participant. 2) Interviewing the mother before the baseline A1 data collection. 3) Collecting baseline A1 data from the 1st to 3rd sessions. 4) Providing music therapy intervention (B) from the 4th to 7th sessions. 5) Collecting baseline A2 data from the 8th-10th sessions. 6) Collecting music therapy intervention (B2) from the 11th to 15th sessions. Moreover, the study employed qualitative interviewing methods and observational protocol.

2. Participant

The participant was a seven-year-old boy who was diagnosed with autism spectrum disorder by a doctor based on the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition[11]; the inclusion criteria consist of a child-represented problem in requesting skills and never attended music therapy on requesting skills. The child's mother found an online invitation poster from Mahidol University's National Institute for Children and Family Development and

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[10] Dean McKay, *Handbook of Research Methods in Abnormal and Clinical Psychology* (Thousand Oaks, CA: SAGE Publications, Inc, 2007).

[11] American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders: DSM-5-TR*, 5th ed. (Washington, DC: American Psychiatric Association Publishing, 2013).

contacted the researcher to participate in this study. The child was the youngest in his family. He used to attend a kindergarten and studied in the kindergarten level two (K2) program. He usually conversed with others using gestures to point to his desired item when needed. However, if he could not obtain something he wanted, he would engage in tantrum behaviors with a loud voice until his needs were met.

3. Baseline (A)

The baseline data collection assessed a child's communicative requesting skills based on their daily routine at home without music intervention. In terms of an assessor, during the baseline phase, his father and mother assessed the child's requesting behavior using the assessment of communicative requesting skills tool. There were two baseline phrases, including A1 and A2. Each baseline phase was collected for three days, 30 minutes per day.

4. Music therapy intervention (B)

Music therapy intervention was developed based on two approaches. Firstly, music therapy was used for the child with a client-centered humanistic approach and contained four music therapy components which consist of 1) clients, 2) music, 3) therapeutic goal, and 4) therapeutic process, and four core humanistic constructs: 1) being, 2) holism, 3) agency, and 4) relationship. This allowed the child to have free will without forcing them to do an activity and focused on establishing a therapeutic relationship between a music therapist and the child in the early sessions[12]. Secondly, music therapy with behavioral interventions was used to apply the method for teaching requests to children as a technique which consists of 1) Mand training, 2) pivotal response training, and 3) social stories applied with music therapy in terms of establishing verbal operant requesting skills based on rewards and fading prompts through the use of musical cues to say an item's name. Examples of the child's desired item are a glass of water, a musical instrument, and a specific need.

The child attended 30-45-minute music therapy sessions nine times for both treatment B1 and B2 phases. The researcher was responsible as the music therapist in all the treatment sessions.

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[12] Barbara L. Wheeler, "Humanistic Approaches," in *Music Therapy Handbook* (New York: The Guilford Press, 2015), 148-56, https://digitalcommons.montclair.edu/all_books/85/.

According to an interview with a child's parent and observations from the fourth music therapy session, the music therapist selected music based on the child's musical preferences and age appropriateness. The music was mainly live because its elements can be changed during a session. Tempo and dynamics were altered by the child's emotional expression and movement. Live music allowed the child to interact with the therapist in a session[13].

Every session included the following strategies: Before beginning the session, the researcher explained the activities and the role of the mother in the session. Sessions were regularly divided into three parts. The first part started with greetings. The researcher uses the Hello song as the greeting song and cues participants to say "Sawasdee" (hello). Greeting songs are used to adjust a child into a welcoming atmosphere, which helps the researcher create a therapeutic relationship with a child through using music as a social greeting routine[14]. The second part was music-making, which consisted of instrumental playing, singing, movement with music, and storytelling. During singing and movement with music, a child can control the musical element by requesting their needs in music, such as requesting a song or asking the therapist to play louder or softer using the Mand technique[15]. As a music therapist, the researcher demonstrated how to give an instrument to a child by saying an item's name and used music with Mand training. During an activity, changing the element of music may enhance the activity to become more attractive and allow a child to make a request during an activity with the Manding technique[16] and pivotal response technique[17]. For music and social stories, the researcher composed a song related to a child's daily life, such as a situation for requesting snacks combined with composed music. The researcher prompted the child to request an item's name, which was included in the lyrics of a song. Each song contained repeated lyrics to provide multiple opportunities for the child and pictures of the desired items were utilized

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[13] Sheri Robb, Debra Burns, and Janet Carpenter, "Reporting Guidelines for Music-Based Interventions," *Music and Medicine* 3, no. 4 (2011): 271-79, https://doi.org/10.1177/1943862111420539.

[14] Petra Kern, Mark Wolery, and David Aldridge, "Use of Songs to Promote Independence in Morning Greeting Routines for Young Children with Autism," *Journal of Autism and Developmental Disorders* 37, no. 7 (August 2007): 1264-71, https://doi.org/10.1007/s10803-006-0272-1.

[15] "Early Mand Training in Special Education," Watson Institute, accessed September 6, 2021, https://www.thewatsoninstitute.org/watson-life-resources/situation/teaching-requesting-early-mand-training/.

[16] Hayoung A. Lim, "Use of Music in the Applied Behavior Analysis Verbal Behavior Approach for Children with Autism Spectrum Disorders," *Music Therapy Perspectives* 28, no. 2 (2010): 95-105, https://doi.org/10.1093/mtp/28.2.95.

[17] "Pivotal Response Treatment (PRT)," Autism Speaks Organization, accessed September 27, 2021, https://www.autismspeaks.org/pivotal-response-treatment-prt-0.

as visual models[18]. In the third part, the researcher sang a farewell song without cues and finished the session with identification and sequencing[19]. After the session, the researcher gave feedback to a parent and discussed the child's behavior, specifically about requesting skills, and advised the parent to use music intervention or songs with children as a daily routine at home.

5. Dependent Measures

1) Assessment of communicative requesting skills

The researcher used an "Assessment of Communicative Requesting Skills" developed by Mr. Chatchawan Intawan[20]. The researcher wrote an official letter to seek permission to use the assessment tools in this study. This assessment was applied for conducting an assessment for communicative requesting skills in each activity. This assessment was developed from the Individualized Music Therapy Assessment Profile (IMTAP) and Verbalization of Minimally Verbal Children, which consists of three aspects: 1) vocalization (saying an item's name, having a verbal request in an appropriate situation, tempo, and dynamics of a verbal request), 2) gesture (appropriate gesture and facial expression), and 3) social communication (social initiation, eye contact, non-harmful behavior).

According to the score of the assessment tools, the score from 0-5 depends on how the child can request with prompts from the music therapist; in this study, each score from the researcher and music therapist (in the treatment phase) and both of a child's parents (in the baseline phase) was calculated by using Pearson product-moment correlation to evaluate the consistency between the two observers' scores from record 30% of all sessions from observation and video recording. The inter-rater reliability of the Assessment of communicative requesting skills tests showed an enormously significant correlation ($r = 0.83$, $p < .01$) for the researcher and music therapist (in the treatment phase) and ($r = 0.84$, $p < .01$) for both of a child's parents (in baseline phase). Therefore, the result showed a high relation ($r = .70$ to $.90$)

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[18] Katharine Still et al., "Facilitating Derived Requesting Skills with a Touchscreen Tablet Computer for Children with Autism Spectrum Disorder," *Research in Autism Spectrum Disorders* 19 (November 2015): 44-58, https://doi.org/10.1016/j.rasd.2015.04.006.

[19] Cacia King, "More Than Just Greeting Songs," Listen & Learn Music, last modified September 21, 2018, https://listenlearnmusic.com/more-than-just-greeting-songs/.

[20] Chatchawan Intawan, Natee Chiengchana, and Teerasak Srisurakul, "Use of Video Modeling to Promote Learning Skills in Children with Autism Spectrum Disorder: A Literature Review," *Journal of Ratchasuda College for Research and Development of Persons with Disabilities* 18, no. 1 (January-June 2022): 21-36, https://so03.tci-thaijo.org/index.php/RSjournal/article/view/261520.

between the researcher and music therapist (in the treatment phase) and in both of the child's parents (in the baseline phase)[21].

2) Interview and Observational protocols

Interview and observational protocols were used to collect the qualitative data. A semi-structured interview was used to collect the child's data from his mother, including content related to the participant, behaviors of communicative requesting skills, and musical background. The researcher interviewed the parents before the baseline was initiated. This information was used as the guideline for creating requesting activities. The observational protocol collected the participant's requesting skills, behaviors, musical responses, and abilities in every music therapy session.

6. Procedure

According to the procedure, there were six steps of the data collection process which consisted of 1) Recruitment of the participant from the online invitation poster referred from a child's parent. 2) In the interview phase, the child's parent was asked to sign a consent form and was interviewed to gather information about the child's requesting skills and behavior. 3) Baseline A1 phase which data was collected by both parents considering the child's daily routine at home without music intervention by using the assessment of communicative requesting skills tool. 4) Music therapy intervention B1 phase in which the data was collected by the researcher and trained music therapist in the music therapy room through the use of the assessment of communicative requesting skills tool and the observational protocol. 5) the Baseline A2 phase has the same process as the baseline A1 phase and 6) the Music therapy intervention B2 phase, which has the same process as the music therapy intervention B1 phase as shown in Figure 1 below.

[21] Martin Bland and Douglas G. Altman, "Applying the Right Statistics: Analyses of Measurement Studies," *Ultrasound in Obstetrics & Gynecology* 22, no. 1 (July 2003): 85-93, https://doi.org/10.1002/uog.122.

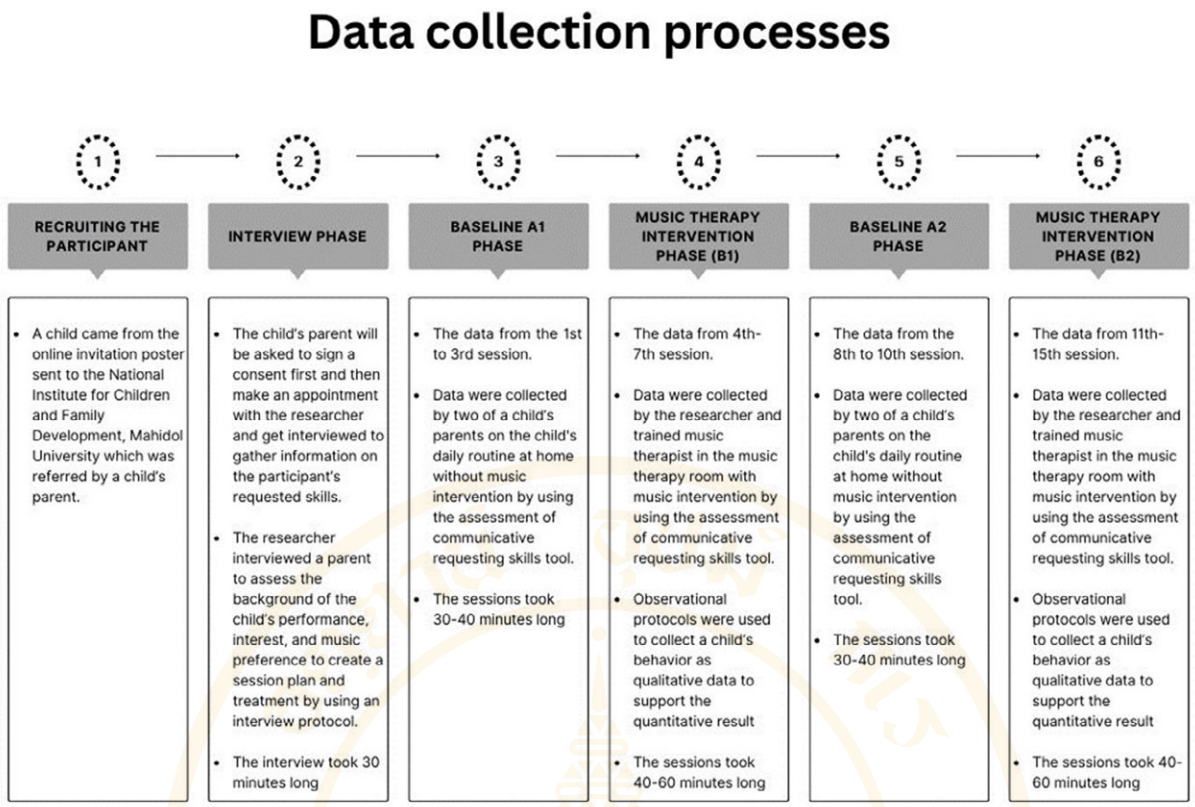

Figure 1 The data collection processes during the baseline and treatment phases.

Source: by author

7. Data Analysis

1) Visual Inspection was used to analyze the quantitative result by observing the communicative requesting skills during the baseline phase (A) and the music intervention phase (B) and presented as the linear graph displaying the levels of changes and trend of communicative requesting skills.

2) Qualitative data analysis: Content analysis was used to analyze the qualitative data from interviews and observation. The interview analysis consisted of four steps: 1) transcribing the data, 2) reading to understand all data, 3) categorizing and analyzing the data, and 4) Interpreting and presenting the findings. The observational analysis consisted of three steps: 1) observing the sessions to understand the child's requesting skills and overall behaviors in music therapy sessions from video records, 2) analyzing the data, and 3) Interpreting and presenting the findings.

Results

The results were divided into three parts: 1) The background of the participant, 2) The visual analysis of requesting skills, and 3) The result of observation.

1. Background of the participant

The participants of this study consisted of a child with autism spectrum disorder. A child came from the online invitation poster sent to the National Institute for Children and Family Development, Mahidol University. The information from the participant was collected before the baseline phase began by using an interview protocol from the researcher, which consisted of 1) content related to the participant, 2) content related to the behavior of communicative requesting skills, and 3) content of the musical background.

According to the information from an interview with his mother, the child who participated in this research study was a seven-year-old boy with an autism spectrum disorder diagnosis who had difficulty communicating and demonstrating requesting skills in his daily life, as mentioned in the interview below.

> *"Before he attended school, he attended a DIRFloortime® and sensory integration practice. He just started to communicate with other people 3-4 months ago with verbal communication; he can make requests in only a few words, and he usually takes the item from other people's hands without any permission or in an inappropriate way. In musical responses, a child usually responds to the music by rocking his body and dancing to songs from the music radio or children's traditional music such as 'ABC,' 'Twinkle Little Stars,' and 'The Smiley Suns.'"*

To conclude, the requesting skills are some of the primary skills most related to a child's needs: vocalization, gestures, and social communication skills. Moreover, the child benefited from the improvement of their requesting skills because 1) he could request appropriately with others and 2) had less inappropriate behavior during the request (e.g., tantrums and aggressive behaviors).

2. Result of visual analysis of requesting skills

The Assessment of Communicative Requesting Skills scores were analyzed in all sessions using visual analysis.

Each score is the average of the overall requesting score from the average score of the researcher, the trained music therapist (in the treatment phase), and both of the child's parents (in the baseline phases). Graphing lines between points were used to show changes in the requesting score's level, slope, and trend. The line graph below shows the results from the first baseline session to the last treatment session.

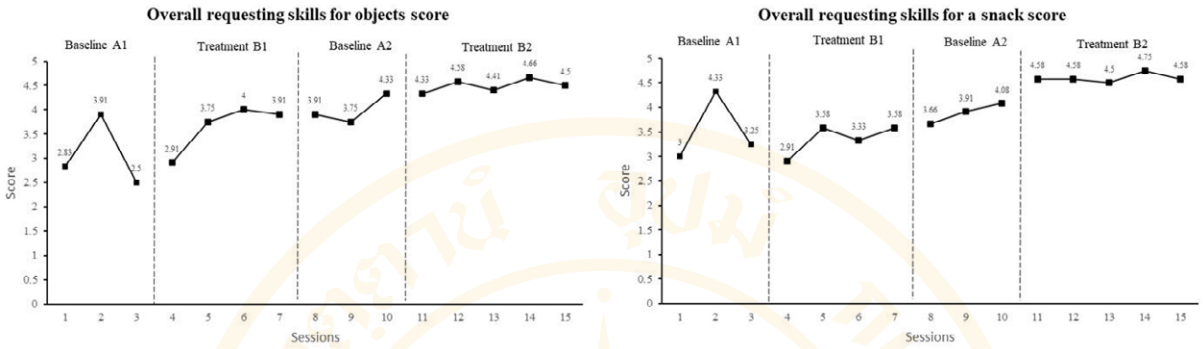

Figure 2 The score of an overall request for objects and snacks skill during the baseline and treatment phases.

Source: by author

As shown in Figure 2, the graph presents changes in requesting skills for objects from the first session (baseline). The mean score of requesting skills was 3.08 out of 5, assessed by both of the child's parents.

After the treatment phase began, the score of requesting skills for objects in the 4th session was 2.91, rose to 4 in the 6th session, and then decreased to 3.91 in the 7th session. The mean score of overall requesting skills for objects across the sessions was 3.64, ranging from 2.91 to 4.

During the baseline A2 phase, the mean score of requesting skills was 4 out of 5, assessed by both of the child's parents. In the treatment B2 phase, the score of requesting skills for objects increased dramatically higher than the mean of the 2nd baseline phase. At the beginning of the 11th session, the score was 4.33, and it rose to 4.66 in the 14th session and decreased to 4.5 in the 15th session. The mean score of overall requesting skills for objects across the sessions was 4.5, ranging from 4.33 to 4.66, assessed by the researcher and trained music therapist.

As shown in the requesting skills for snacks scores, the graph presents changes in requesting skills in the situation of snack requests from the first session (baseline) to the

last intervention session (treatment phase). During the baseline A1 phase, the mean score was 3.52 out of 5.

After the treatment phase began, the score of the 4th session was 2.91, rose to 3.58 in the 5th session, and then decreased to 3.33 in the 6th session and 3.58 in the 7th session. The mean score of overall requesting skills for objects across the sessions was 3.35, ranging from 2.91 to 3.58.

During the baseline A2 phase, the mean score was 3.88 out of 5. In treatment phase 2, the score of requesting skills for snacks increased dramatically higher than the mean of the 2nd baseline phase. At the beginning of the 11th session, the score was 4.58, which rose to 4.75 in the 14th session and decreased to 4.58 in the 15th session. The mean score of overall requesting skills for objects across the sessions was 4.6, ranging from 4.58 to 4.76.

The positive trendlines in the graphs show that the music therapy intervention improved the overall requesting skills in both situations of requesting objects and snacks.

3. Results of Observation

During the intervention phases, the child moderately engaged with the music therapist throughout the sessions. The child led the activities by himself and let the music therapist follow the child's actions. He needed some prompts (verbal and non-verbal) from the music therapist to guide him in establishing a requesting skills process from the music activities.

In vocalization, the child could say "I want" or "I don't want" in terms of requesting an object as a musical instrument or saying the name of a song such as "ABC," which requires less than 1-2 verbal prompts from a music therapist. Sometimes the child sang the song's melody when he needed the music therapist to play the music that he wanted to hear during the activities.

Through gestures, the child can request to play a musical instrument by using gestures, such as pointing his finger to his desired item without any prompt from the therapist. Sometimes, the child pulls the therapist's hand away in terms of a request to play the instrument alone or rejects to play one of these instruments (from two things).

In social-communication skills, the child showed social initiation behavior in both vocalizations by singing the melody of his preferred songs to request the song in the "movement with music activity". The child would verbalize "I want a snack" during the musical "social stories activity" to the music therapist, and utilized gestures through orienting his gaze on the object and pointing his finger to the musical instrument that he wanted to play in the

instrumental playing activity without any prompting from the music therapist.

In the musical response, the child responded to the music in many ways, such as by echoing the song lyrics in the music and social stories activities. His movement's response to rhythmic patterns is related to the tempo and the dynamics of the music that the music therapist used in both live and recorded music. The child showed that he responded to the music by humming the melody that he had heard before in terms of requesting songs such as "ABC" and "Let's Play Drum Together" songs.

The visual analysis and parent interviewing findings indicated that the child had a positive outcome after attending the music therapy intervention sessions. He had better-requesting skills in both situations of requesting objects and snacks.

Discussion

Data points were inconsistent during baseline A1 sessions, and the score of the overall requesting skills gradually increased above the mean of the baseline sessions after the child received intervention sessions.

According to the result, the mean score of an overall requesting skill for an object and for a snack was improved after the child received music therapy interventions (4.5 and 4.6) compared to the baseline phase (3.08 and 3.52). The mean occurrence of both requesting skills during the 2nd treatment phase (B2) session was above the norm during the 1st treatment (B1) sessions. These results showed that after the child attended the music therapy sessions, he responded positively to the interventions. He had developed requesting skills, therefore gradually increasing the score.

The songs selected in this research were folk songs, which are related to the child's daily life, and the child's preferred music, which is simple and repeated lyrics and melody because these elements of music can encourage children to speak and sing, further motivating him to learn along with social narratives by using lyrics as a script about situations. It encourages children to practice, memorize, and internalize concepts for people with autism spectrum disorder.[22]

For the music activities used in the sessions, the researcher started the sessions with a greeting song to create a welcoming atmosphere, which helped the researcher form a positive

[22] Petra Kern and Marcia Humpal, *Early Childhood Music Therapy and Autism Spectrum Disorders: Developing Potential in Young Children and Their Families* (London: Jessica Kingsley Publishers, 2012).

therapeutic relationship with the child. The results of this phrase matched Kern et al.[23] which states that a greeting song can be established and increase social greeting routines.

During the singing and movement with music activity, the researcher provided live music by singing and playing ukulele and guitar with the child. Cues were also given to the child so he could sing together along with the music therapist. The melody was based on his favorite traditional song, and the lyrics were similar to a child's daily life music. It was related to Lim[24] that used music with Mand training technique from Jennett et al.,[25] which consists of vocabulary words such as "song," "play it again," or the name of the songs as the reinforcer, and then the music therapist must provide the musical experience with them as music rewards to increase social interaction and social communication. These tasks include the behaviors of joint attention and verbal communication for children with autism, and that was also related to Austin's[26] studies that described the communicative function process and how a child with ASD could understand how to establish a communicative requesting skill.

According to the Instrument playing activity, the researcher provided live music by using an improvisation technique, which was based on the child's rhythmic pattern and the child's preferred song, and also used a piece of recorded music to facilitate the child to play along together as a rhythmic pattern. After the song had been stopped, the child began to understand how to communicate requests as social initiations later by using the fading prompt as a Mand training technique. It was consistent with Gattino et al.[27] that using improvisation in the music activity based on the observation of the participant in each session, and Lim[28] about providing the musical experience as the motivation to facilitate a child to make a request. It is also

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[23] Petra Kern, Mark Wolery, and David Aldridge, "Use of Songs to Promote Independence in Morning Greeting Routines for Young Children with Autism," *Journal of Autism and Developmental Disorders* 37, no. 7 (August 2007): 1264-71, https://doi.org/10.1007/s10803-006-0272-1.

[24] Hayoung A. Lim, "Use of Music in the Applied Behavior Analysis Verbal Behavior Approach for Children with Autism Spectrum Disorders," *Music Therapy Perspectives* 28, no. 2 (2010): 95-105, https://doi.org/10.1093/mtp/28.2.95.

[25] Heather K. Jennett, Sandra L. Harris, and Lara Delmolino, "Discrete Trial Instruction vs. Mand Training for Teaching Children with Autism to Make Requests," *The Analysis of Verbal Behavior* 24, no. 1 (April 2008): 69-85, https://doi.org/10.1007/bf03393058.

[26] Sarita Austin, "Communicative Functions," in *Encyclopedia of Autism Spectrum Disorders* (New York: Springer, 2013), 751-52, https://doi.org/10.1007/978-1-4419-1698-3_964.

[27] Gustavo Schulz Gattino et al., "Effects of Relational Music Therapy on Communication of Children with Autism: A Randomized Controlled Study," *Nordic Journal of Music Therapy* 20, no. 2 (2011): 142-54, https://doi.org/10.1080/08098131.2011.566933.

[28] Hayoung A. Lim, "Use of Music in the Applied Behavior Analysis Verbal Behavior Approach for Children with Autism Spectrum Disorders," *Music Therapy Perspectives* 28, no. 2 (2010): 95-105, https://doi.org/10.1093/mtp/28.2.95.

related to Patricelli[29] who explained how children display less inappropriate behavior if they can reach their needs through their requesting skills, as well as through the playing of their preferred song and using any musical elements (loud, soft, fast, slow, etc.) within a session.

According to the music with social stories activity, the child observed the researcher at the beginning of the intervention session. The researcher gave him a musical cue to let the child understand the words in the picture of the social stories book which allowed the child to echo the words from the researcher first, and then adapt with the image of an object. This was to demonstrate how to receive desired items in later sessions with the shorter dialogue of the words so he could be engaged to learn and understand the terms in each situation. This is related to the previous studies which described that musical lyrics provide cues and reminders to encourage a child to make a request appropriately, as shown in the songs in the stories and music-delivered attention from melodies, timbre, and rhythm to make a child concentrate on memorizing the words during the activity.[30]

The child led the session by himself, and the music therapist needed to follow the child throughout the activities. This showed that the child had free will and did not want to follow the structure at all. The music therapist used a strategy of providing free will during the activities related to the characteristics of the child in this study. This was associated with Wheeler's humanist approach,[31] in which music therapists allow a child-free will without forcing the child, and focus on establishing a therapeutic relationship between the researcher and the child in the early sessions. One limitation is that the music therapy room, where the child can see the outside, can distract their attention during activities.

Conclusion

Music therapy can enhance the requesting skills of the child with autism spectrum disorders. This child could improve his requesting skills by requesting objects and snacks through various musical activities, including instrument playing, singing, movement through music, and music with social stories. The music therapist must establish a therapeutic relationship

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[29] "Social Communication and Social Interaction Issues - Autism Spectrum Disorder," Patricelli, last modified 2021, https://www.gracepointwellness.org/20-autism-spectrum-disorder/article/8764-social-communication-and-social-interaction-issues.

[30] Brenda L. Swaggart et al., "Using Social Stories to Teach Social and Behavioral Skills to Children with Autism," *Focus on Autistic Behavior* 10, no. 1 (April 1995): 1-16, https://doi.org/10.1177/108835769501000101.

[31] Barbara L. Wheeler, "Humanistic Approaches," in *Music Therapy Handbook* (New York: The Guilford Press, 2015), 148-56, https://digitalcommons.montclair.edu/all_books/85/.

with the child and use an appropriate prompt. The use of familiar music along with simple melodies and lyrics motivated the child to develop requesting skills through a structure in the musical activities. However, alterations in the intervention and assessment tools can cause differences in the interpretation of the data that is collected. A child's attention can easily be distracted during activities; therefore, it is imperative the researcher considers the location of the music therapy room in order to help maintain the attention of a child with autism.

Suggestions

This study examined the effects of music therapy on the requesting skills of a child with autism spectrum disorder. Future research could be conducted with children with autism of the same age, behavior, and ability in the detail of the requesting skills in the communicative domain. Also, future research could be conducted on other areas of requesting skills as regarding the social domain, including the improvement of joint attention to impact a child's requesting skills.

The result showed that music therapy could improve the requesting skills of the child with autism. However, the result of the study could not be generalized to all children with autism according to the differences between individuals with varying levels of severity, symptoms, and abilities. This may cause different outcomes from the interventions, further proving that music therapists should always make an initial assessment of children with ASD.

Bibliography

American Music Therapy Association. "What Is Music Therapy?" Last modified 2005. https://www.musictherapy.org/about/musictherapy.

American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders: DSM-5-TR*. 5th ed. Washington, DC: American Psychiatric Association Publishing, 2013.

Applied Behavior Analysis Edu. "What Is Applied Behavior Analysis?" Accessed July 19, 2021. https://www.appliedbehavioranalysisedu.org/what-is-aba/.

Applied Behavior Analysis Edu. "Why Do Autistics Have Issues with Social Skills?" Last modified 2017. https://www.appliedbehavioranalysisedu.org/why-do-autistics-have-issues-with-social-skills/.

Austin, Sarita. "Communicative Functions." In *Encyclopedia of Autism Spectrum Disorders*, 751-52. New York: Springer, 2013. https://doi.org/10.1007/978-1-4419-1698-3_964.

Autism Speaks Organization. “Pivotal Response Treatment (PRT).” Accessed September 27, 2021. https://www.autismspeaks.org/pivotal-response-treatment-prt-0.

Bland, Martin, and Douglas G. Altman. “Applying the Right Statistics: Analyses of Measurement Studies.” *Ultrasound in Obstetrics & Gynecology* 22, no. 1 (July 2003): 85-93. https://doi.org/10.1002/uog.122.

Brownell, Mike D. “Musically Adapted Social Stories to Modify Behaviors in Students with Autism: Four Case Studies.” *Journal of Music Therapy* 39, no. 2 (Summer 2002): 117-44. https://doi.org/10.1093/jmt/39.2.117.

Cambridge Dictionary. “Request Definition.” Accessed August 11, 2021. https://dictionary.cambridge.org/dictionary/english/request.

Charoenphol, Chanyanit, Natee Chiengchana, and Ni-On Tayrattanachai. “The Effects of Parent-Child Interactive Music Therapy on Sentence Verbalisation in a Child with Autism Spectrum Disorder: A Case Study.” *Malaysian Journal of Music* 8 (2019): 86-95. https://doi.org/10.37134/mjm.vol8.5.2019.

Davis, William, Kate Gfeller, and Michael Thaut. *An Introduction to Music Therapy: Theory and Practice*. 3rd ed. Silver Spring, MD: The American Music Therapy Association, 2008.

Gattino, Gustavo Schulz, Rudimar dos Santos Riesgo, Dânae Longo, Júlio César Loguercio Leite, and Lavina Schüler Faccini. “Effects of Relational Music Therapy on Communication of Children with Autism: A Randomized Controlled Study.” *Nordic Journal of Music Therapy* 20, no. 2 (2011): 142-54. https://doi.org/10.1080/08098131.2011.566933.

Intawan, Chatchawan, Natee Chiengchana, and Teerasak Srisurakul. “Use of Video Modeling to Promote Learning Skills in Children with Autism Spectrum Disorder: A Literature Review.” *Journal of Ratchasuda College for Research and Development of Persons with Disabilities* 18, no. 1 (January-June 2022): 21-36. https://so03.tci-thaijo.org/index.php/RSjournal/article/view/261520.

Jennett, Heather K., Sandra L. Harris, and Lara Delmolino. “Discrete Trial Instruction vs. Mand Training for Teaching Children with Autism to Make Requests.” *The Analysis of Verbal Behavior* 24, no. 1 (April 2008): 69-85. https://doi.org/10.1007/bf03393058.

Kawinnithiporn, Chwanphatz. “The Effect of Music Therapy on Expressive Communication Skill in a Child with Autism Spectrum Disorder.” *Journal of Ratchasuda College for Research and Development of Persons with Disabilities* 14 (January-December 2018). https://rs.mahidol.ac.th/rs-journal/eng/vol.14/vol.14-002.php.

Kern, Petra, and Marcia Humpal. *Early Childhood Music Therapy and Autism Spectrum Disorders: Developing Potential in Young Children and Their Families*. London: Jessica Kingsley Publishers, 2012.

Kern, Petra, Mark Wolery, and David Aldridge. "Use of Songs to Promote Independence in Morning Greeting Routines for Young Children with Autism." *Journal of Autism and Developmental Disorders* 37, no. 7 (August 2007): 1264-71. https://doi.org/10.1007/s10803-006-0272-1.

King, Cacia. "More Than Just Greeting Songs." Listen & Learn Music. Last modified September 21, 2018. https://listenlearnmusic.com/more-than-just-greeting-songs/.

Leung, Jin -Pang. "Teaching Spontaneous Requests to Children with Autism Using a Time Delay Procedure with Multi-Component Toys." *Journal of Behavioral Education* 4, no. 1 (March 1994): 21-31. https://doi.org/10.1007/BF01560506.

Lim, Hayoung A. "Use of Music in the Applied Behavior Analysis Verbal Behavior Approach for Children with Autism Spectrum Disorders." *Music Therapy Perspectives* 28, no. 2 (2010): 95-105. https://doi.org/10.1093/mtp/28.2.95.

McKay, Dean. *Handbook of Research Methods in Abnormal and Clinical Psychology*. Thousand Oaks, CA: SAGE Publications, Inc, 2007.

Oldfield, Amelia. "Parents' Perceptions of Being in Music Therapy Sessions with Their Children: What Is Our Role as Music Therapists with Parents?" In *Music Therapy and Parent-Infant Bonding*, Edited by Jane Edwards, 58-72. Oxford: Oxford University Press, 2011. https://doi.org/10.1093/acprof:oso/9780199580514.003.0005.

Organization for Autism Research. "What to Do When a Tantrum Happens." Accessed December 21, 2020. https://researchautism.org/what-to-do-when-a-tantrum-happens/.

Paparella, Tanya, Kelly Stickles Goods, Stephanny Freeman, and Connie Kasari. "The Emergence of Nonverbal Joint Attention and Requesting Skills in Young Children with Autism." *Journal of Communication Disorders* 44, no. 6 (November-December 2011): 569-83. https://doi.org/10.1016/j.jcomdis.2011.08.002.

Patricelli. "Social Communication and Social Interaction Issues - Autism Spectrum Disorder." Last modified 2021. https://www.gracepointwellness.org/20-autism-spectrum-disorder/article/8764-social-communication-and-social-interaction-issues.

Play Therapy Ireland. "Axline's Basic Principles of Non-Directive Play Therapy." Accessed 2023. https://playtherapy.ie/axlines-basic-principles-of-non-directive-play-therapy.

Robb, Sheri, Debra Burns, and Janet Carpenter. “Reporting Guidelines for Music-Based Interventions.” *Music and Medicine* 3, no. 4 (2011): 271-79. https://doi.org/10.1177/1943862111420539.

Still, Katharine, Richard J. May, Ruth Anne Rehfeldt, Robert Whelan, and Simon Dymond. “Facilitating Derived Requesting Skills with a Touchscreen Tablet Computer for Children with Autism Spectrum Disorder.” *Research in Autism Spectrum Disorders* 19 (November 2015): 44-58. https://doi.org/10.1016/j.rasd.2015.04.006.

Swaggart, Brenda L., Elisa Gagnon, Stacey Jones Bock, Theresa L. Earles, Colleen Quinn, Brenda Smith Myles, and Richard L. Simpson. “Using Social Stories to Teach Social and Behavioral Skills to Children with Autism.” *Focus on Autistic Behavior* 10, no. 1 (April 1995): 1-16. https://doi.org/10.1177/108835769501000101.

Watson Institute. “Early Mand Training in Special Education.” Accessed September 6, 2021. https://www.thewatsoninstitute.org/watson-life-resources/situation/teaching-requesting-early-mand-training/.

Weisberg, Holly R., and Emily A. Jones. “Individualizing Intervention to Teach Joint Attention, Requesting, and Social Referencing to Children with Autism.” *Behavior Analysis in Practice* 12, no. 1 (March 2019): 105-23. https://doi.org/10.1007/s40617-018-0265-5.

Wheeler, Barbara L. “Humanistic Approaches.” In *Music Therapy Handbook*, 148-56. New York: The Guilford Press, 2015. https://digitalcommons.montclair.edu/all_books/85/.

World Federation of Music Therapy. “What is Music Therapy?” Last modified 2011. https://wfmt.info/wfmt-new-home/about-wfmt/.

World Health Organization. “Autism Spectrum Disorders.” Accessed June 1, 2021. https://www.who.int/news-room/fact-sheets/detail/autism-spectrum-disorders.

Yum, Yen Na, Way Kwok-Wai Lau, Kean Poon, and Fuk Chuen Ho. “Music Therapy as Social Skill Intervention for Children with Comorbid ASD and ID: Study Protocol for a Randomized Controlled Trial.” *BMC Pediatrics* 20, no. 1 (December 2020). https://doi.org/10.1186/s12887-020-02454-6.