

ABSTRACT
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**Using a Music Therapy Collaborative Consultative Approach for the Inclusion of
Young Children with Autism in a Childcare Program**

BACKGROUND. Young children diagnosed with Autism Spectrum Disorder (ASD) are increasingly being included in childcare programs and receiving their therapeutic services in the context of ongoing class activities and routines. The rationale for this approach is at least threefold: (a) to minimize stigma and isolation; (b) to capitalize on children's naturally occurring learning opportunities; and (c) to increase the number of experiences that promote learning. Despite widespread studies of preschool inclusion, thus far there exists no scholarly research specifically evaluating the effectiveness of music therapy interventions – particularly the collaborative consultative model of service delivery – for the inclusion of young children with autism in childcare programs.

PURPOSE. The purpose of this cumulative study is to examine the effects of embedded music therapy interventions on the functioning of young children with autism during challenging classroom routines within an inclusive childcare program. The key research questions are: (1) Will individualized music therapy interventions increase target children's independent performance during specific routines; and (2) Can classroom teachers implement interventions based on music therapy principles in ongoing classroom activities and routines, when music therapy collaborative consultation is provided?

INTERVENTIONS. Each of three interventions addresses a key difficulty targeted children face. These correspond to (a) the morning greeting routine (Experiment I); (b) multiple-step tasks within classroom routines (Experiment II); and (c) peer interactions on the childcare playground (Experiment III), respectively. To increase target children's independent performance, seven uniquely composed songs and two pre-composed songs are used and an outdoor music center is added to the childcare playground. Children's individual educational goals, coupled with the strategies commonly used with children with autism, are taken into consideration in the design of the intervention and song development. Collaborative consultation, including staff development activities, are provided prior to and during each intervention.

METHOD. The effects of the song interventions are evaluated by using single-case experimental designs. These are cumulated as a "case study design."

Experiment I: Participants in this study are two three-year old children, diagnosed with ASD (n=2), who exhibit difficulties with the classroom's morning greeting routine, and their peers with and without special needs (n=13), classroom teachers (n=5), and the target children's respective caregivers (n=2). The aim of the intervention is to increase the independent performance of target children during the morning greeting routine by way of unique greeting songs implemented by classroom teachers and the inclusion of peers and caregivers. Using an A-B-A-B withdrawal design for subject 1, and a modified version of this design (A-B-C-A-C withdrawal design) for subject 2, the effectiveness of the song interventions is evaluated. Categories of behaviors are coded through direct observation using an event recording system. The experimental design involves two conditions for

subject 1 (Baseline-Intervention) and three conditions (Baseline-Intervention-Modified Intervention) for subject 2.

Results: Results of this study indicate that during baseline (Condition A) subject 1 has a low level of independent performance (\underline{M} =33.3%). With the introduction of the song intervention (Condition B), he steadily becomes more independent (\underline{M} =54%). The withdrawal of the song intervention immediately decreases his performance (\underline{M} =46.7%), while re-introducing the song increases his independence once again, this time on an even higher level (\underline{M} =77.8%). During baseline (Condition A), subject 2 also exhibits a low level of independent performance (\underline{M} =23.3%). The initial implementation of the song intervention (Condition B) does not change his performance significantly (\underline{M} =30%), while the modified song intervention (Condition C) increases subject 2's independent actions significantly and immediately (\underline{M} =60%). After withdrawing the song, subject 2's independent behavior decreases (\underline{M} =40%), re-introducing the modified song intervention produces a high level of independent performance (\underline{M} =80%). As evaluated in subject 2, the song intervention changes the classmates' greeting behavior toward the target child and increases peer interaction. As for the positive outcomes of the interventions, it can be concluded that classroom teachers successfully implement interventions based on music therapy principles into the ongoing classroom routine.

Experiment II: A three-year old boy, diagnosed with ASD (n=1), who has difficulties managing the sequences required for the multiple-step tasks (i.e., hand-washing, toileting and cleaning-up independently) is the subject of this study along with his classroom teacher (n=1). The intentions of this investigation are to evaluate the effectiveness of songs embedded by the classroom teacher as structural prompts in increasing the independent performance for the target child during these classroom routines, and to evaluate whether the musical presentation or the verbal presentation of the sequencing is more effective. Using an alternating treatment design replicated across these three tasks, the effectiveness of the song intervention (Condition A) versus lyric intervention (Condition B) is compared. Six categories of behaviors for each multiple-step task are coded through direct observation using event recording.

Results: Results of this study indicate that the implementation of either form of the intervention (song intervention - lyric intervention) is successful in increasing the target child's independent performance for each multiple-step task. However, the song intervention is more effective than the lyric intervention for the hand-washing (song intervention \underline{M} =66% versus lyric intervention \underline{M} =57.1%) and cleaning-up procedures (song intervention \underline{M} =66.6% versus lyric intervention \underline{M} =36.7%), whereas for toileting the lyric intervention (\underline{M} =38.2%) is slightly more effective than the song intervention (\underline{M} =32%). As for the child's positive learning progress, it can be affirmed that the teacher embeds both forms of the presented sequencing in the ongoing classroom routines effectively.

Experiment III: This investigation involves four boys, ages three to five, diagnosed with ASD (n=4), who display a lack of peer interaction on the playground, typically developing children as well as children with other disabilities (n=32), and their classroom teachers (n=6). Two peers for each target child are trained as formal peer helpers. The goal is to improve the target children's interactions with peers and play and engagement on the childcare playground. Using a multiple baseline design across four subjects, the effectiveness

of the intervention is evaluated. Categories of interaction behaviors are coded through direct observation using a 15-second momentary time sampling recording procedure. Procedural fidelity data on the teachers and peers task behaviors are recorded as well. Four sequential conditions (Baseline [Condition A]; Adaptation of the playground [Condition B]; Teacher-mediated intervention [Condition C]; Peer-mediated intervention [Condition D]) are implemented for all subjects, except condition D, where only three subjects participated.

Results: Results of this study indicate that prior to the musical adaptation of the playground, the targeted children have few positive peer interactions on the playground ($\bar{M}=3.2\%$). The musical adaptation of the playground enhances positive peer interactions slightly but not significantly ($\bar{M}=7.1\%$). The teacher-mediated intervention results in an immediate and significant increase in positive peer interactions ($\bar{M}=66.2\%$). With only one exception, a high level of the teacher's ability to implement the intervention is observed ($\bar{M}=84\%$). Peers participate and model the tasks on a high level ($\bar{M}=85.3\%$). Peer interaction, meanwhile, decreases during the peer-mediated intervention ($\bar{M}=21.1\%$) but significantly improves compared to both the playground adaptation and especially the baseline. Play and engagement increase significantly for three subjects and remain the same over conditions for one subject.

CONCLUSION. These studies demonstrate the potential benefits of a cumulative case study design for music therapists working in early intervention. Single-case experimental designs enable professionals to evaluate clinical practice and consultation with other professionals and to ask important questions about the practices and principles of music therapy in a quantitative and experimental way. The results of each study shed light upon the broader project while the individual results can be cumulated in a singular discussion.

This cumulative case study supports the contemporary model of service delivery in early intervention/early childhood special education, and shows that music therapy interventions can be meaningfully embedded in ongoing classroom activities and routines. The music therapy collaborative consultative approach was effective in enabling teachers to implement the interventions successfully. Through individualized song interventions, target children acquired new skills and/or improved in key deficit areas of autism, such as transitioning, following multiple-step tasks, and social interactions with peers in the natural environment.

Collaborative consultation, widely employed elsewhere in early intervention/early childhood special education to promote program sustainability, is an appropriate and effective way of providing music therapy treatment as well; indeed, it allows for the expansion of music therapy services more broadly. Overall, music therapy enhances services for young children with autism, and should be considered as a routine treatment option. However, training for music therapists in collaborative consultative methods of service delivery, along with continued research into the effects of embedded music therapy interventions in inclusive childcare programs, continues to be warranted.