



Autism Focused Intervention
Resources & Modules



EVIDENCE-BASED PRACTICE BRIEF PACKET: MUSIC-MEDIATED INTERVENTION

UNC Frank Porter Graham Child Development Institute
Autism Focused Intervention Resources & Modules
Nowell, S., Sam, A., Waters, V., Dees, R., & AFIRM Team, 2022

 **FRANK PORTER GRAHAM
CHILD DEVELOPMENT INSTITUTE**

 **The National Professional Development Center
on Autism Spectrum Disorder**

The National Clearinghouse on
Autism Evidence & Practice
NCAEP • BRIDGING SCIENCE AND PRACTICE

---Overview of Content---



1. **Table of MMI Contents:** This list details the specific EBP resources that apply to music-mediated intervention.
2. **What is MMI:** A quick summary of salient features of music-mediated intervention, including what it is, who it can be used with, what skills it has been used with, and settings for instruction.
3. **Evidence-base:** The evidence-base details the National Clearinghouse on Autism Evidence and Practice (NCAEP) criteria for inclusion as an evidence-based practice and the specific studies that meet the criteria for music-mediated intervention.
4. **Planning Checklist:** This checklist details the steps for planning for music-mediated intervention, including what prerequisite learning of practices are needed, collecting baseline data of the target goal/behavior/skill if needed, and what materials/resources are needed.
5. **Other Resources:** Other resources may include decision trees, checklists, and/or template forms that will support the use of music-mediated intervention.
6. **Step-by-Step Guide:** Use this guide as an outline for how to plan for, use, and monitor music-mediated intervention. Each step includes a brief description as a helpful reminder while learning the process.
7. **Implementation Checklist:** Use this checklist to determine if music-mediated intervention is being implemented as intended.
8. **Data Collection Form(s):** Use this form as a method for collecting and analyzing data to determine if the learner with autism is making progress towards the target goal/behavior/skill.
9. **Tip Sheet for Professionals:** Use this tip sheet, intended for professionals working with learners with autism, as a supplemental resource to help provide basic information about music-mediated intervention.
10. **Parent Guide:** Use this guide intended for parents or family members of learners with autism to help them understand basic information about music-mediated intervention and how it is being used with their child.
11. **Additional Resources:** This list provides additional information for learning more about music-mediated intervention as well as resources.
12. **CEC Standards:** This list details the specific CEC standards that apply to music-mediated intervention.
13. **Glossary:** This glossary contains key terms that apply specifically to music-mediated intervention.
14. **References:** This list details the specific references used for developing this MMI module in numerical order.



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---Music-Mediated Intervention---

MMI

WHAT IS MMI?

Music-mediated intervention (MMI) uses music as a key feature to address target skills and behaviors of a learner with autism. MMI includes music therapy (MT) in addition to the planned use of songs, melodic intonation, and/or rhythm to support learning in varied contexts.

EVIDENCE-BASE:

Based upon the 2020 systematic review conducted by the National Clearinghouse on Autism Evidence and Practice (NCAEP), music-mediated intervention is a focused intervention that meets music-mediated intervention criteria with 9 single case design studies. Music-mediated intervention has been effective for early intervention (0-2 years), preschoolers (3-5 years), elementary school learners (6-11 years), and middle school learners (12-14 years) with autism. Studies included the 2020 EBP report detail how music-mediated intervention can be used to effectively address the following outcomes for a target goal/behavior/skill: adaptive/self-help, challenging/interfering behavior, communication, motor, play, school readiness, and social.

HOW IS MMI BEING USED?

MMI is implemented by a certified music therapist (MT) or someone (e.g., teacher, parent, therapist) who has been guided by an MT to deliver the MMI program with a learner. Completing a university degree, including 1200 hours of supervised clinical training, and passing a national certification exam administered by the Certification Board for Music Therapists (CBMT) are required to practice music therapy.

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<https://afirm.fpg.unc.edu/music-mediated-intervention>

DISCLAIMER: This module is not intended to replace the university-based degree program and certification process of a music therapist, but rather, to introduce basic knowledge of MMI as an evidence-based practice for use with learners with autism in daily routines.



---Evidence-base---



The National Clearinghouse on Autism Evidence and Practice has adopted the following criteria to determine if a practice is evidence-based. The 2020 EBP report (Steinbrenner et al., 2020) provides more information about the systematic review process.

Efficacy must be established through high-quality, peer-reviewed research in scientific journals using:

- At least 2 randomized or quasi-experimental group design studies, or
- At least 5 single subject/case design studies, or a
- Combination of evidence of 1 randomized or quasi-experimental group design study **and** 3 single subject/case design studies

OVERVIEW:

Based upon the 2020 systematic review conducted by the National Clearinghouse on Autism Evidence and Practice (NCAEP), music-mediated intervention is a focused intervention that meets music-mediated intervention criteria with 9 single case design studies. Music-mediated intervention has been effective for early intervention (0-2 years), preschoolers (3-5 years), elementary school learners (6-11 years), and middle school learners (12-14 years) with autism. Studies included the 2020 EBP report (Steinbrenner et al., 2020) detail how music-mediated intervention can be used to effectively address the following outcomes for a target goal/behavior/skill: adaptive/self-help, challenging/interfering behavior, communication, motor, play, school readiness, and social.

In the table below, the instructional outcomes identified by the evidence base are shown by age of participants.

EVIDENCE-BASE:							
	ADAPTIVE	CHALLENGING	COMMUNICATION	MOTOR	PLAY	SCHOOL READINESS	SOCIAL
0-2	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3-5		Yes	Yes	Yes		Yes	Yes
6-11			Yes				Yes
12-14			Yes				



EARLY INTERVENTION (0-2 YEARS):

Kern, P., Wakeford, L., & Aldridge, D. (2007). Improving the performance of a young child with autism during self-care tasks using embedded song interventions: A case study. *Music Therapy Perspectives*, 25(1), 43-51. <https://doi.org/10.1093/mtp/25.1.43>

PRESCHOOL (3-5 YEARS):

***Dieringer, S. T., Porretta, D. L., & Sainato, D. (2017). Music and on-task behaviors in preschool children with autism spectrum disorder. *Adapted Physical Activity Quarterly*, 34(3), 217-234. <https://doi.org/10.1123/apaq.2015-0033>**

Kern, P., & Aldridge, D. (2006). Using embedded music therapy interventions to support outdoor play of young children with autism in an inclusive community-based child care program. *Journal of Music Therapy*, 43(4), 270-294. <https://doi.org/10.1093/jmt/43.4.270>

Kern, P., Wolery, M., & Aldridge, D. (2007). Use of songs to promote independence in morning greeting routines for young children with autism. *Journal of Autism and Developmental Disorders*, 37(7), 1264-1271. <https://doi.org/10.1007/s10803-006-0272-1>

***Sandiford, G. A., Mainess, K. J., & Daher, N. S. (2013). A pilot study on the efficacy of melodic based communication therapy for eliciting speech in nonverbal children with autism. *Journal of Autism and Developmental Disorders*, 43(6), 1298-1307. <https://doi.org/10.1007/s10803-012-1672-z>**

***Srinivasan, S. M., Eigsti, I. M., Gifford, T., & Bhat, A. N. (2016). The effects of embodied rhythm and robotic interventions on the spontaneous and responsive verbal communication skills of children with Autism Spectrum Disorder (ASD): A further outcome of a pilot randomized controlled trial. *Research in Autism Spectrum Disorders*, 27, 54-87. <https://doi.org/10.1016/j.rasd.2016.04.001>**

***Srinivasan, S. M., Park, I. K., Neelly, L. B., & Bhat, A. N. (2015). A comparison of the effects of rhythm and robotic interventions on repetitive behaviors and affective states of children with Autism Spectrum Disorder (ASD). *Research in Autism Spectrum Disorders*, 18, 51-63. <https://doi.org/10.1016/j.rasd.2015.07.004>**

ELEMENTARY SCHOOL (6-11 YEARS):

***Dieringer, S. T., Porretta, D. L., & Sainato, D. (2017). Music and on-task behaviors in preschool children with autism spectrum disorder. *Adapted Physical Activity Quarterly*, 34(3), 217-234. <https://doi.org/10.1123/apaq.2015-0033>**

Ghasemtabar, S. N., Hosseini, M., Fayyaz, I., Arab, S., Naghashian, H., & Poudineh, Z. (2015). Music therapy: An effective approach in improving social skills of children with autism. *Advanced Biomedical Research*, 4(157). <https://doi.org/10.4103/2277-9175.161584>

ELEMENTARY SCHOOL (6-11 YEARS; CONTINUED):

- *Sandiford, G. A., Mainess, K. J., & Daher, N. S. (2013). A pilot study on the efficacy of melodic based communication therapy for eliciting speech in nonverbal children with autism. *Journal of Autism and Developmental Disorders*, 43(6), 1298-1307. <https://doi.org/10.1007/s10803-012-1672-z>
- *Srinivasan, S. M., Eigsti, I. M., Gifford, T., & Bhat, A. N. (2016). The effects of embodied rhythm and robotic interventions on the spontaneous and responsive verbal communication skills of children with Autism Spectrum Disorder (ASD): A further outcome of a pilot randomized controlled trial. *Research in Autism Spectrum Disorders*, 27, 54-87. <https://doi.org/10.1016/j.rasd.2016.04.001>
- *Srinivasan, S. M., Park, I. K., Neelly, L. B., & Bhat, A. N. (2015). A comparison of the effects of rhythm and robotic interventions on repetitive behaviors and affective states of children with Autism Spectrum Disorder (ASD). *Research in Autism Spectrum Disorders*, 18, 51-63. <https://doi.org/10.1016/j.rasd.2015.07.004>

MIDDLE SCHOOL (12-14 YEARS):

- *Srinivasan, S. M., Eigsti, I. M., Gifford, T., & Bhat, A. N. (2016). The effects of embodied rhythm and robotic interventions on the spontaneous and responsive verbal communication skills of children with Autism Spectrum Disorder (ASD): A further outcome of a pilot randomized controlled trial. *Research in Autism Spectrum Disorders*, 27, 54-87. <https://doi.org/10.1016/j.rasd.2016.04.001>

HIGH SCHOOL (15-18 YEARS):

No studies as of the 2020 EBP Report

YOUNG ADULT (19-22 YEARS):

No studies as of the 2020 EBP Report

Note: * denotes the study has participants in at least two age ranges; **new studies since 2011 (2012 till 2017) are denoted in bold**

---Music Therapy Approaches---

MMI



Learn more about the types of music therapy approaches your understanding of music-mediated intervention.

For more information about the types of music therapy approaches please visit <https://afirm.fpg.unc.edu/>.

ORFF-SCHULWERK METHOD

- A derivative of the Orff music education program designed for German school children, the Orff-Schulwerk method is a naturalistic, developmental, and success-oriented music treatment for small groups of learners with autism or other developmental disabilities. Musical activities conducted based on Orff-Schulwerk use components of music hearing, singing songs and chants, clapping, movement and dancing, musical drama, working with instruments, and free and creative playing of instruments.

NORDOFF-ROBBINS APPROACH

- Developed by a composer and a special education teacher, the Nordoff-Robbins music therapy approach addresses learner goals by establishing therapeutic relationships through interaction with music. It uses a combination of improvised and pre-composed musical interactions with a variety of instruments, expressive movement, dramatic play to tap into the learner's "core musicality" and stimulate their self-regulation, communication, and social interaction skills.

NEURODEVELOPMENTAL APPROACH

- The Neurodevelopmental Approach to music therapy involves understanding of the developing brain across all domains (communication, motor, sensory), neurological differences in autism, and how music-based activities may impact that development.



---Assessment Worksheet---



Learner's Name: _____

Date/Time: _____

Observer(s): _____

Target Goal/Behavior/Skill (short): _____

Directions: Complete this worksheet to assess/determine if a learner with autism may benefit from music-mediated intervention.

SIGNS A STUDENT MAY BENEFIT FROM AN MMI ASSESSMENT:

1. Does the learner respond positively to music or music-based activities like singing, dancing, or playing instruments?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2. Does the learner have any spontaneous music-related behaviors like tapping or clapping rhythmically, singing to themselves, or preferring certain songs?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
3. Has the learner's progress toward certain goals slowed or plateaued?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
4. Are there any daily routines where the learner could practice their goals and where adding music would be appropriate?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
5. Has the learner's team, including family, brought up any musical abilities or preferences of the learner? Or an interest in music therapy services for the learner?	<input type="checkbox"/> Yes	<input type="checkbox"/> No



---Data Collection: Observations---



Learner's Name: _____ Date/Time: _____

Observer(s): _____

Target Goal/Behavior/Skill: _____

Directions: Collect data observations on the learner.

OBSERVATIONAL DATA:

Time	Activity	Behavior Observed	Notes

ANECDOTAL NOTES:



---Planning Checklist---



Learner's Name: _____

Date/Time: _____

Observer(s): _____

Target Goal/Behavior/Skill (short): _____

Directions: Complete this checklist to determine if this is an appropriate practice to use with the learner with autism as well as if music-mediated intervention is ready to be implemented.

GENERAL PLANNING:		
1. Has the target goal/behavior/skill been identified?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2. Has baseline data and/or a functional behavior assessment been collected through direct observation of the learner?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
3. Is the target goal/behavior/skill measurable and observable? Does it clearly state what the target goal/behavior/skill is, when it will occur, and how team members/observers will know it has been mastered?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
4. Is this selected practice appropriate for the learner's target goal/behavior/skill?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
5. Does the learner have needed prerequisite skills/abilities?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
6. Does the learner require additional adaptations/modifications/supports? Such as visual supports or a communication device?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
7. Have reinforcers/rewards for the learner been identified based on the learner's interests/preferred items and/or activities?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
8. Are additional materials and/or resources for using this selected practice ready and available?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

TARGET GOAL/BEHAVIOR/SKILL:



OBSERVATIONAL DATA:			
Time	Activity	Behavior Observed	Notes

MMI SPECIFIC PLANNING:		
1. Can the learner's IEP goals be supported by MMI?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2. Is additional support needed to address goals?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
3. Is music a learning strength for the learner?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
4. Are their music resources available?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
5. Has the learner's response to music-related activities been observed, reflected upon, and shared with a music therapist?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
6. Has a formal MMI assessment indicated the learner may benefit from MMI?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
7. Has the team, led by a music therapist, developed an MMI intervention plan?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
8. Is there a plan for opportunities for the learner to use MMI?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
9. Have MMI strategies been discussed with all team members?	<input type="checkbox"/> Yes	<input type="checkbox"/> No



SESSION PLAN:

Days: M Tu W Th F	Time:	Setting:	Leading:
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MATERIALS:

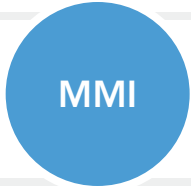
1. Individual MMI plan and data collection forms are ready and available?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2. Materials for MMI are ready and available?		
Instruments?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Music apps?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Microphone, Headphones, Device(s)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Songs?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Instrumental music?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
3. Designated learning space ready (classroom, outside, Zoom)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No

IDENTIFY ADDITIONAL EBPS TO BE USED WITH MMI:

<input type="checkbox"/> Reinforcement (R+)	<input type="checkbox"/> Prompting (PP)	<input type="checkbox"/> Modeling (MD)
<input type="checkbox"/> Video Modeling (VM)	<input type="checkbox"/> Time Delay (TD)	<input type="checkbox"/> Visual Supports (VS)
<input type="checkbox"/> Naturalistic Intervention (NI)	<input type="checkbox"/> Parent-Implemented Intervention	<input type="checkbox"/> Social Narratives
<input type="checkbox"/> Peer-Based Instruction & Intervention (PBII)	<input type="checkbox"/> _____	<input type="checkbox"/> _____

ANECDOTAL NOTES:

---Social Narrative: Using Music Materials---

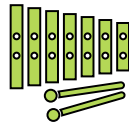


Learner's Name: _____ Date/Time: _____

Observer(s): _____

Target Goal/Behavior/Skill: _____

Directions: Use this social narrative with the learner to explain the expectations of using music materials.



During music time, I can use instruments to make music. Different instruments make different



noises. My teacher will let me know when and how to use each instrument. I will follow my



teacher's directions to use different instruments during music.



Sometimes I will make music by myself. Other times, I will listen to my teacher or classmate



make music. And sometimes we will play music together. I will follow my teacher's instructions

for playing and listening to music.



My checklist will let me know what activities will happen during music. I can check off each



activity after I complete it. I will follow my checklist so I can listen to my favorite song at the



end of music time.



---Generalization Plan---



Learner's Name: _____ Date/Time: _____

Observer(s): _____

Target Goal/Behavior/Skill (short): _____

Directions: Use this form to plan for supporting generalization of the learner's skills across settings.

GENERALIZATION PLAN:				
Time	Activity			



---Data Collection: Frequency---



Learner's Name: _____ Date/Time: _____

Observer(s): _____

Target Goal/Behavior/Skill: _____

Directions: Collect data on the frequency of the learner demonstrating the target goal/behavior/skill to determine if the learner is making progress.

MONITORING DATA:

Goal:				
Date	Engagement Observed	Tally of turns taken	Support Needed	Notes

Prompt Key: V = Verbal; G = Gestural; M = Model; P = Physical; I = No prompts needed/Independent

ANECDOTAL NOTES:

---Data Collection: Intervals---



Learner's Name: _____ Date/Time: _____

Observer(s): _____

Target Goal/Behavior/Skill: _____

Directions: Collect data at 5-minute intervals of the learner demonstrating the target goal/behavior/skill to determine if the learner is making progress.

MONITORING DATA:				
Goal:				
Music Activity Engagement:				
Date	Setting	Music Engagement Observed	Activity Engagement Observed (record at 5-minutes intervals)	Support Needed
		<input type="checkbox"/> Yes <input type="checkbox"/> No	5 min: <input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No	10 min: <input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No	15 min: <input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No	20 min: <input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No	25 min: <input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No	30 min: <input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No	5 min: <input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No	10 min: <input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No	15 min: <input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No	20 min: <input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No	25 min: <input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No	30 min: <input type="checkbox"/> Yes <input type="checkbox"/> No	

Prompt Key: V = Verbal; G = Gestural; M = Model; P = Physical; I = No prompts needed/Independent; 0 = No response

---Data Collection: Reflection---



Learner's Name: _____ **Date/Time:** _____

Observer(s): _____

Target Goal/Behavior/Skill: _____

Directions: Collect data on the frequency of the learner demonstrating the target goal/behavior/skill to determine if the learner is making progress.

MMI REFLECTION:

1. How do you think that went?
2. Did you encounter any challenges implementing MMI strategies?
3. At which points did you see MMI strategies working?
4. What could you have done differently?
5. Did you feel comfortable implementing the MMI strategies?
6. Did the learner respond positively to MMI activities?
7. Did the learner seem to enjoy the MMI activities?

---Step-by-Step Guide---

MMI



This step-by-step practice guide outlines how to plan for, use, and monitor music-mediated intervention.

BEFORE YOU BEGIN...

Each of the following points is important to address so that you can be sure this selected evidence-based practice is likely to address the target goal/behavior/skill of your learner with autism.

HAVE YOU FOUND OUT MORE INFORMATION ABOUT...?

- Identifying the target goal/behavior/skill...?
- Collecting baseline data through direct observation...?
- Establishing a target goal or outcome that clearly states when the behavior will occur, what the target goal or outcome is, and how team members and/or observers will know when the skill is mastered...?

If the answer to any of the above questions is 'No,' review the process of how to select an appropriate EBP (<https://afirm.fpg.unc.edu/selecting-EBP>).

For more information about this selected evidence-based practice, please visit <https://afirm.fpg.unc.edu/>.

Keep in mind that this selected practice can be used to increase learner communication, socialization, play, motor, and adaptive skills while reducing challenging behaviors.

STEP 1: PLANNING FOR MMI

The planning step details the initial steps and considerations involved to prepare for using this practice with a learner with autism.

1.1 Obtain music therapy degree and certification or collaborate with a certified music therapist

To practice as a music therapist professionally, individuals must first obtain a bachelor's degree in music therapy and sit for a national Board Certification exam. It is possible that someone may implement MMI as part of a team that includes a trained music therapist rather than receiving a degree themselves.

1.2 Determine if learner would benefit from MMI

If you have concerns about a learner's progress toward goals and know that they enjoy music, consider a referral to a music therapist.

- 📖 *Use the MMI Assessment Checklist to determine if a learner with autism may benefit from music-mediated intervention.*

1.2a Reflect/address concerns and observe learner

Assist in the MMI assessment process by collecting observational data on the learner's music-related activities and responses within the classroom setting.

- 📖 *Use the Observational Data Sheet to collect observations on the learner's behavior.*

1.2b Conduct a formal MMI assessment

A formal MMI assessment must be implemented by a music therapist. The goals of a music therapy assessment are to:

- document the learner's current skill level for intervention planning
- determine the type and intensity of the services needed

1.3 Plan an individualized MMI program

Use observational and formal data from the MMI assessment to plan an individualized program. The IEP team and the learner's music therapist should work together to create the MMI program.

- Identify when and how MMI will be used with the learner
- Plan for and obtain MMI materials
- Combine other EBPs to use with MMI
- Consider prominent music therapy approaches


STEP 1: PLANNING FOR MMI (CONTINUED)

1.4 Discuss program with team members

- All members of the learner's school team, including family members, will need some understanding of the learner's MMI assessment results and how to implement MMI.
- Include the learner's peers in discussion if they are affected by the learner's MMI.
- Include the learner as a leader of their own support team.

1.5 Have materials ready and available

Gather materials and tools to implement MMI.


- Individual MMI plan
 - Materials for MMI activities
 - Data collection forms
 - Other EBP supports the team has decided to use
-  *Use the Planning Checklist to determine if ready to use MMI.*

STEP 2: USING MMI

This step details the process of implementing this practice with a learner with autism.

2.1 Implement the MMI program

When beginning an MMI program, first, introduce the learner to the music-based materials and teach them what to expect.

-  *Use the Narrative with the learner to explain the expectations of using materials during MMI.*

2.2 Use other EBPs to support MMI

Once the learner is comfortable with the MMI materials and expectations, add the use of other EBPs to support the ongoing use of MMI.

2.3 Promote generalization of learner's target skills

Consider the following steps for promoting generalization of skills learned from MMI.

- Communicate regularly with the learner's team about consistently supporting the learner's goals with MMI across settings.
- Work with the learner's team to establish consistent use of EBPs supporting MMI as well as consistent responses to any of the learner's challenging behaviors using MMI.
- Honor the learner's music preferences and music-based activities they would like to practice across settings.

-  *Use the Generalization Plan Form to plan for supporting generalization of the learner's skills across settings.*

STEP 3: MONITORING MMI

The following step details how to monitor the use of this practice with a learner with autism and how to determine next steps based on the data.

3.1 Collect and analyze data

It is important to continuously collect and review data. Also use self-reflection when discussing collected data from using MMI. Collect data on:

- The setting of the MMI
- Engagement with music-based activities and materials
- Level of support needed to use the target skill
- 📄 *Use the Frequency Data Collection Form to collect data and monitor learner progress toward MMI goals.*
- 📄 *Use the Intervals Data Collection Form to collect data and monitor learner progress toward MMI goals.*
- 📄 *Use the Data Reflection Form to support your understanding of collected data.*

3.2 Fade prompting and thin reinforcement

In the process of monitoring MMI, keep in mind that the long-term goal will be to fade the level of support the learner needs and start this process as early as possible.

3.3 Determine next steps based on learner progress

If team members determine that the learner is not making progress, consider the following:

- Have team members received coaching by a certified music therapists or is additional training needed?
- Is the target goal/behavior/skill well defined?
- Is the target goal/behavior/skill measurable and observable?
- Has enough time been devoted to using this practice (frequency, intensity, and/or duration)?
- Is the behavior targeted during appropriate routines and activities?
- Is MMI appropriate or a 'good fit' for the target behavior?
- Are the MMI strategies addressing the target behavior?
- Was this practice implemented with fidelity (see Implementation Checklist)?
- Does the learner need additional supports?
- Are the selected reinforcers preferred items/activities for the learner?

If these issues have been addressed and the learner with autism continues not to show progress, consider selecting a different evidence-based practice to use with the learner with autism.



---Implementation Checklist---



		Observation:	1	2	3	4	5	
		Date:						
		Observer's initials:						
Before you start, have you...?		STEP 1: PLANNING						
<input type="checkbox"/> Identified the target goal/behavior/skill...? <input type="checkbox"/> Collected baseline data through direct observation...? <input type="checkbox"/> Established a target goal or outcome that clearly states when the behavior will occur, what the target goal or outcome is, and how team members and/or observers will know when the skill is mastered...?	1.1	Obtain music therapy degree and certification or collaborate with a certified music therapist						
	1.2	Determine if learner would benefit from MMI						
	1.2a	Reflect/address concerns and observe learner						
	1.2b	Conduct formal MMI assessment						
	1.3	Plan an individualized MMI program						
	1.3a	Identify when and how MMI will be used with the learner						
	1.3b	Plan for and obtain MMI materials						
	1.3c	Plan other EBPs to use with MMI						
	1.3d	Consider prominent music therapy approaches						
	1.4	Discuss program with team members						
	1.5	Have materials ready and available						
	If the answer to any of the above questions is 'No,' review the process of how to select an EBP.		STEP 2: USING					
		2.1	Implement the MMI strategies					
		2.1a	Introduce the materials to the learner					
		2.1b	Use other EBPs to support MMI program and promote engagement					
	2.2	Use other EBPs to support MMI sessions						
	2.3	Promote generalization of learner's target skills						
		STEP 3: MONITORING						
	3.1	Collect and analyze data						
	3.2	Fade prompting and reinforcement						
	3.3	Determine next steps based on learner progress						

---Tip Sheet for Professionals---



MUSIC-MEDIATED INTERVENTION IS...

- An evidence-based practice that uses music as a key feature to address target skills and behaviors of learners with autism
- Used to increase a target goal/behavior/skill and/or to decrease an interfering/inappropriate/challenging behavior



WHY USE WITH LEARNERS WITH AUTISM?

- Some learners with autism respond particularly well to music and show greater progress toward goals when music is integrated into their intervention.
- MMI strategies can address core autism symptoms like social communication and interaction or sensory and motor issues in a learner's natural environment.
- Music-based activities are familiar to learners, families, and practitioners and can be implemented with some guidance across settings (Kern, 2019).

TIPS:

- Collaborate with a certified music therapist to plan for and use MMI.
- Use other EBPs to support engagement in MMI programming.
- Support learners in generalizing skills learned from MMI across settings.

INSTRUCTIONAL OUTCOMES:

- The evidence-base for music-mediated intervention supports its use to address the following outcomes, according to age range, in the table below:

EVIDENCE-BASE:							
	ADAPTIVE	CHALLENGING	COMMUNICATION	MOTOR	PLAY	SCHOOL READINESS	SOCIAL
0-2	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3-5		Yes	Yes	Yes		Yes	Yes
6-11			Yes				Yes
12-14			Yes				



STEPS FOR IMPLEMENTING:

1. PLAN

- Obtain music therapy degree and certification or collaborate with a certified therapist
- Determine if learner would benefit from MMI
- Plan an individualized MMI program
- Identify additional EBPs
- Discuss plan with team members
- Have materials ready and available

2. USE

- Implement MMI strategies
- Use other EBPs to support MMI sessions
- Promote generalization of learner's target skills

3. MONITOR

- Collect data and analyze data
- Fade prompting and reinforcement
- Determine next steps based on learner progress

Music-Mediated Intervention (MMI)

This sheet was designed as a supplemental resource to provide basic information about this evidence-based practice for professionals working with learners with autism.

For more information about this selected evidence-based practice, please visit <https://afirm.fpg.unc.edu/>.

---Parent's Guide---

MMI



Music-Mediated Intervention MMI

This parent introduction to MMI was designed as a supplemental resource to help answer questions about this practice.

To find out more about how this MMI is being used with your child, please talk with:

For more information about this selected evidence-based practice, please visit <https://afirm.fpg.unc.edu/>.

WHAT IS MMI?

- An evidence-based practice that uses music as a key feature to address target skills and behaviors of learners with autism
- MMI includes music therapy and the planned use of songs, melodic intonation and/or rhythm to support learning. MMI may also include Melodic Based Communication Training and music-based activities that use technology aided instruction practices.
- Used to increase a target goal/behavior/skill and/or to decrease an interfering/inappropriate/challenging behavior

WHY USE MMI WITH MY CHILD?

- MMI can address core autism symptoms like social communication and interaction, sensory and motor issues.
- Learners with autism often find musical activities enjoyable.
- Music-based activities are accessible to diverse learners regardless of abilities, cultural background, or socioeconomic status (Kern, 2019).

WHAT ACTIVITIES CAN I DO AT HOME?

- Listen to music for enjoyment at home.
- Engage in music-making during family and community events (e.g., birthdays, holidays).
- Use digital instruments and music apps on mobile devices.





---Additional Resources---



Check out these resources, applications, books, and websites, to support your use of this evidence-based practice.

For more information about this selected evidence-based practice, please visit <https://afirm.fpg.unc.edu/>.

APPLICATIONS:

Developer	Available	Pricing
 Kids First Smile: Preschool Toddlers ABC Games Ltd. <p><i>Glow Piano</i></p>	Mac App Store	Free
 Yousician Ltd. <p><i>GuitarTuna</i></p>	Mac App Store or Google Play Store	Free
 Easybrain <p><i>Groovepad- Music & Beat Maker</i></p>	Mac App Store or Google Play Store	Free
 Musicnotes <p><i>Musicnotes – Sheet Music</i></p>	Mac App Store or Google Play Store	Free

BOOKS:

Berger, D. (2016). Kids, music ‘n’ autism: Bringing out the music in your child. Jessica Kingsley Publishers.

Dunn, H., Coombes, E., Maclean, E., Mottram, H., & Nugent, J. (2019). Jessica Kingsley Publishers.



Kern, P., & Humpal, M. (2018). Early childhood music therapy and autism spectrum disorder: Supporting children and their families (2nd ed.). Jessica Kingsley Publishers.

WEBSITES:

American Music Therapy Association (AMTA) <https://www.musictherapy.org/>

Certification Board for Music Therapists (CBMT) <https://www.cbmt.org/>

Melospeech, Inc. for information on Melodic Based Communication Training (MBCI)
<https://www.melospeech.com/>

National Association of Schools of Music <https://nasm.arts-accredit.org/>

World Federation of Music Therapy <https://wfmt.info/>



---CEC Standards---



The CEC Standards that apply to all evidence-based practices can be found on our website at <https://afirm.fpg.unc.edu/>.

Below are the CEC Standards that apply specifically to music-mediated interventions (MMI).

Initial Practice-Based Standards for Early Interventionists/Early Childhood (0-5 years; CEC, 2020)

STANDARD 4: ASSESSMENT PROCESSES

4.2 Develop and administer informal assessments and/or select and use valid, reliable formal assessments using evidence-based practices, including technology, in partnership with families and other professionals.

4.4 Candidates, in collaboration with families and other team members, use assessment data to determine eligibility, develop child and family-based outcomes/goals, plan for interventions and instruction, and monitor progress to determine efficacy of programming.

STANDARD 5: APPLICATION OF CURRICULUM FRAMEWORKS IN THE PLANNING OF MEANINGFUL LEARNING EXPERIENCE

5.1 Collaborate with families and other professionals in identifying an evidence-based curriculum addressing developmental and content domains to design and facilitate meaningful and culturally responsive learning experiences that support the unique abilities and needs of all children and families.

STANDARD 6: USING RESPONSIVE AND RECIPROCAL INTERACTIONS, INTERVENTIONS, AND INSTRUCTION

6.1 In partnership with families, identify systematic, responsive, and intentional evidence-based practices and use such practices with fidelity to support young children’s learning and development across all developmental and academic content domains.

6.3 Engage in ongoing planning and use flexible and embedded instructional and environmental arrangements and appropriate materials to support the use of interactions, interventions, and instruction addressing developmental and academic content domains, which are adapted to meet the needs of each and every child and their family.



STANDARD 6: USING RESPONSIVE AND RECIPROCAL INTERACTIONS, INTERVENTIONS, AND INSTRUCTION (CONTINUED)

- 6.4 Promote young children’s social and emotional competence and communication, and proactively plan and implement function-based interventions to prevent and address challenging behaviors.
- 6.6 Candidates use responsive interactions, interventions, and instruction with sufficient intensity and types of support across activities, routines, and environments to promote child learning and development and facilitate access, participation, and engagement in natural environments and inclusive settings.
- 6.7 Plan for, adapt, and improve approaches to interactions, interventions, and instruction based on multiple sources of data across a range of natural environments and inclusive settings.

STANDARD 7: PROFESSIONALISM AND ETHICAL PRACTICE

- 7.2 Engage in ongoing reflective practice and access evidence-based information to improve own practices.

Initial Practice-Based Standards for Grades K-12 (CEC, 2020)

STANDARD 2: UNDERSTANDING AND ADDRESSING EACH INDIVIDUAL’S DEVELOPMENTAL AND LEARNING NEEDS

- 2.1 Apply understanding of human growth and development to create developmentally appropriate and meaningful learning experiences that address individualized strengths and needs of students with exceptionalities.

STANDARD 4: USING ASSESSMENT TO UNDERSTAND THE LEARNER AND THE LEARNING ENVIRONMENT FOR DATA-BASED DECISION MAKING

- 4.1 Collaboratively develop, select, administer, analyze, and interpret multiple measures of student learning, behavior, and the classroom environment to evaluate and support classroom and school-based systems of intervention for students with and without exceptionalities.
- 4.3 Assess, collaboratively analyze, interpret, and communicate students’ progress toward measurable outcomes using technology as appropriate, to inform both short- and long-term planning, and make ongoing adjustments to instruction.

STANDARD 5: SUPPORTING LEARNING USING EFFECTIVE INSTRUCTION

- 5.2 Use effective strategies to promote active student engagement, increase student motivation, increase opportunities to respond, and enhance self-regulation of student learning.



STANDARD 5: SUPPORTING LEARNING USING EFFECTIVE INSTRUCTION (CONTINUED)

5.6 Plan and deliver specialized, individualized instruction that is used to meet the learning needs of each individual.

STANDARD 6: SUPPORTING SOCIAL, EMOTIONAL, AND BEHAVIORAL GROWTH

6.2 Use a range of preventive and responsive practices documented as effective to support individuals' social, emotional, and educational well-being.

STANDARD 7: COLLABORATING WITH TEAM MEMBERS

7.2 Candidates collaborate, communicate, and coordinate with families, paraprofessionals, and other professionals within the educational setting to assess, plan, and implement effective programs and services that promote progress toward measurable outcomes for individuals with and without exceptionalities and their families.

Advanced Practice-Based Standards (CEC, 2012)

STANDARD 1: ASSESSMENT

1.2 Design and implement assessments to evaluate the effectiveness of practices and programs.

STANDARD 2: CURRICULAR CONTENT KNOWLEDGE

2.2 Continuously broaden and deepen professional knowledge and expand expertise with instructional technologies, curriculum standards, effective teaching strategies, and assistive technologies to support access to and learning of challenging content.

STANDARD 3: PROGRAMS, SERVICES, AND OUTCOMES

3.1 Design and implement evaluation activities to improve programs, supports, and services for individuals with exceptionalities.

3.3 Apply knowledge of theories, evidence-based practices, and relevant laws to advocate for programs, supports, and services for individuals with exceptionalities.

STANDARD 7: COLLABORATION

7.2 Use collaborative skills to improve programs, services, and outcomes for individuals with exceptionalities.

---Glossary---

MMI



Below are the key terms that apply specifically to this evidence-based practice.

For more information about this selected evidence-based practice, please visit <https://afirm.fpg.unc.edu/>.

Augmentative and alternative communication (AAC)

interventions that use a system of communication that is not verbal/vocal including aided and unaided communication systems

Baseline data

information gathered from multiple sources to better understand the target behavior, before using an intervention or practice; data collected on current performance level prior to implementation of intervention

Duration data

records how long a learner engages in a particular behavior or skill

Dynamics

how loudly or softly music is played

Expressive communication

one's ability to communicate thoughts and feelings through words, gestures, or facial expressions

Fade

to systematically reduce and eventually withdraw the use of stimulus such as a prompt, request, or reinforcer

Fidelity

how well and how often the implementation steps for an evidence-based practice are followed

Generalization

the ability to use learned skills in new and different environments

Harmony

the sounds of two or more musical notes played at the same time

Implementation checklist

the specific steps needed to accurately follow an evidence-based practice.



Interfering behavior

a challenging behavior that interferes with the learner's ability to learn

Melody

the musical combination of pitch and rhythm

Modeling (MD)

an evidence-based practice that involves the learner observing someone correctly performing a target behavior

Music Mediated Intervention (MMI)

an intervention that uses music as a key feature to address target skills and behaviors

Naturalistic intervention (NI)

an evidence-based practice that integrates the principles of applied behavior analysis (ABA) into the natural environment or into a learner's everyday routines and activities

Neurodevelopmental Approach

an approach to music therapy that involves an understanding of the developing brain across all domains (communication, motor, sensory), neurological differences in autism, and how music-based activities may impact that development

Nordoff-Robbins Approach

an approach to music therapy that addresses learner goals by establishing therapeutic relationships through interaction with music

Orff-Schulwerk Method

an approach to music therapy that uses a naturalistic, developmental, and success-oriented music treatment for small groups of learners

Parent-Implemented Intervention (PII)

an evidence-based practice that focuses on including parents in all steps of the implementation process while applying a cycle of coaching to ensure successful implementation

Peer-Based Instruction and Intervention (PBII)

an evidence-based practice in which peers receive training from an adult to deliver social initiations or instructions in a way that supports the learning goals of the learner with autism

Phrasing

the shaping of a sequence of notes to allow for expression in music



Prompting (PP)

an evidence-based practice that will assist the learner in using specific skills; prompts can be verbal, gestural, or physical

Prompting hierarchy

the continuum of prompting used to support a learner in acquiring new skills

Reinforcement (R)

an evidence-based practice that provides feedback that increases the use of a strategy or target behavior/skill

Social narratives (SN)

an evidence-based practice used to describe social situations and appropriate behavior expectations for learners with autism

Team members

includes the parents, other primary caregivers, IEP/IFSP team members, teachers, therapists, early intervention providers, and other professionals involved in providing services for the learner with autism

Technology-Aided Instruction & Intervention (TAII)

an evidence-based practice that in which technology is the central feature supporting the acquisition of a goal for the learner

Tempo

the pace or speed at which music is played

Video Modeling (VM)

a video-recorded demonstration of the target behavior or skill to the learner to assist learning in or engaging in a desired behavior or skill

Visual Supports (VS)

an evidence-based practice that provides concrete cues that are paired with, or used in place of, a verbal cue to provide the learner with information about a routine, activity, behavioral expectation, or skill demonstration

---References---

MMI



Listed below, in numerical order, are the references used in the module.

For more information about this selected evidence-based practice, please visit <https://afirm.fpg.unc.edu/>.

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