American Music Therapy Association

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Autism Spectrum Disorders: Music Therapy Research and Evidence-Based Practice Support

STATEMENT OF PURPOSE

Music therapy is a well-established professional health discipline that uses music as the therapeutic stimulus to achieve non-musical treatment goals. **In special education and settings serving persons with autism spectrum disorders, music therapists utilize music as an educational related service to promote learning and skill acquisition**.

Research supports connections between speech and singing, rhythm and motor behavior, memory for song and memory for academic material, and overall ability of preferred music to enhance mood, attention, and behavior to optimize the student's ability to learn and interact. Therefore, one of the purposes of music therapy for persons with autism is to provide the student with an initial assist using melodic and rhythmic strategies, followed by fading of musical cues to aid in generalization and transfer to other learning environments.

Recognized as a related service, music therapy serves as an integral component in helping the child with special needs attain educational goals identified by his/her IEP team,* either through direct or consultant services. The strength of evidence is growing and music therapy interventions were reviewed for quality of evidence by the Cochrane Collaborative with favorable results.

STANDARDIZATION: Music therapy sessions are documented in a treatment plan and delivered in accordance with standards of practice. Music selections and certain active music-making activities are modified for client preferences and individualized needs (i.e., song selection and music may vary). Toolkits are available via AMTA and publications.

REPLICATION: Yes; has also been used with different providers and populations.

OUTCOMES:

Increased attention	Improved behavior
Decreased self-stimulation	Enhanced auditory processing
Improved cognitive functioning	Decreased agitation
Increased socialization	Improved verbal skills
Successful and safe self-expression	Enhanced sensory-motor skills

* The Individuals with Disabilities Education Act (IDEA) 20 U.S.C. §1400, provides that eligible children and youth with disabilities shall receive special education and related services. The law includes a definition of related services that the U.S. Department of Education notes is not exhaustive. In addition, in June 2000, the U.S. Department of Education issued a letter of policy clarification related to the use of music therapy. The letter reiterated the Department's continuing policy that "[i]f the IEP team determines that music therapy is an appropriate related service for a child, the team's determination must be reflected in the child's IEP, and the service must be provided at public expense . . ." [This interpretation stands with the 2006 regulations.]

OVERVIEW OF RESEARCH

- **Trends regarding evidence-based review and recommendations regarding assessment and referral criteria based on current research and clinical evidence are emerging. Music therapy is a particularly important intervention for children with autism spectrum disorders to engage and foster their capacity for flexibility, creativity, variability, and tolerance of change, in order to balance the more structured and behaviorally driven education required in school settings. One review protocol published in the Cochrane Collaborative of Systematic Reviews concluded music therapy was superior to "placebo" therapy with respect to verbal and gestural communicative skills (verbal: 2 RCTs, *n* = 20, SMD 0.36 CI 0.15 to 0.57; gestural: 2 RCTs, *n* = 20, SMD 0.50 CI 0.22 to 0.79). The addition of music therapy intervention to a child's treatment program can have positive outcomes and may be an effective method for increasing joint attention skills in some children with autism. The Council for Exceptional Children (CEC) published an article examining the effectiveness and efficacy of various intervention and music therapy was one of the few professions listed as promising based upon the systematic reviews of research complied and listed herein.**

  - Gold, C., & Wigram, T. (2006). Music therapy for autistic spectrum disorder. *Cochrane Database of Systematic Reviews, 1*.
  - Reitman, M. R. (2005). Effectiveness of music therapy interventions on joint attention in children diagnosed with autism: A pilot study (Doctoral dissertation, Carlos Albizu University, 2005). *Dissertation Abstracts International, B66*(11). (AAT 3195248)
  - Umbarger, G.T. (2007). State of the evidence regarding complementary and alternative medical treatments for autism spectrum disorders. *Education and Training in Developmental Disabilities*, 42(4): 437-447.
  - Wigram, T. (2002). Indications in music therapy. *British Journal of Music Therapy, 16*(1),11–28.

- **An overall positive direction is noted in meta-analytic reviews of the literature on the subject of music therapy and autism in terms of an array of outcomes related to both therapeutic and specific educational goals. Variations for effect size occur within the broad category of the autism spectrum disorders and tend to reflect the idiosyncratic nature of the disorders between individuals. This is typical across disciplines.**

  - Standley, J. M. (1996). A meta-analysis on the effects of music as reinforcement for education/therapy objectives. *Journal of Research in Music Education, 44*(2), 105–133.
  - Whipple, J. (2004). Music in intervention for children and adolescents with autism: A meta-analysis. *Journal of Music Therapy, 41*(2), 90–106. (Listed in *Database of Abstracts of Reviews of Effects* produced by the Centre for Reviews and Dissemination, 2007.)

- **Survey research indicates goal areas typically addressed by music therapists among persons with autism include language/communication, behavioral/psychosocial, cognitive, and musical, to perceptual/motor. Goal attainment was found to be high within one year, and parents and caregivers surveyed indicated subjects generalized skills/responses acquired in music therapy to non-music therapy environments.**

- Kaplan, R. S., & Steele, A. L. (2005). An analysis of music therapy program goals and outcomes for clients with diagnoses on the autism spectrum. *Journal of Music Therapy, 42*(1), 2–19.

❖ **Survey research examining therapy trends of inpatient and habilitation care of autistic children revealed the most common therapies were physical therapy, speech, occupational, and music therapy. One hundred and seventy-eight subjects out of 187 showed some improvement on the Childhood Autism Rating Scale (CARS). All modes of therapy were found to be useful.**

- Kielinen, M., Linna, S. L., & Moilanen, I. (2002). Some aspects of treatment and habilitation of children and adolescents with autistic disorder in Northern-Finland. *International Journal of Circumpolar Health, 61*(Suppl. 2), 69–79.

❖ **Observational study of the effect of music therapy on communication skills revealed significant gains in autistic children's communication behaviors as measured by Checklist of Communicative Responses/Acts Score Sheet (CRASS). Commensurate decreases in scores were noted when music therapy intervention was removed.**

- Edgerton, C. (1994). The effect of improvisational music therapy on the communicative behaviors of autistic children. *Journal of Music Therapy, 21*(1), 31–62.

❖ **Preschool children in an early intervention music therapy program show high on-task behavior during sessions and a high success rate in language development, social skills, cognitive concepts, motor skills, and music knowledge.**

- Standley, J. M., & J. E. Hughes (1996). Documenting developmentally appropriate objectives and benefits of a music therapy program for early intervention: A behavioral analysis. *Music Therapy Perspectives, 14*(2), 87–94.

❖ **Research demonstrates the efficacy of music used in the curriculum to enhance literacy skills. Musical cueing is effective to improve word recognition, logo identification, print concepts and prewriting skills of children in early intervention programs. Shared reading paired with song rehearsal of text facilitates greater text accuracy than spoken rehearsal with kindergarten students.**

- Colwell, C. M. (1994). Therapeutic applications of music in the whole language kindergarten. *Journal of Music Therapy, 31*(4), 238–247.
- Register, D. (2001). The effects of an early intervention music curriculum on pre-reading/ writing. *Journal of Music Therapy, 38*(3), 239–248.
- Standley, J., & Hughes, J. (1997). Evaluation of an early intervention music curriculum for enhancing pre-reading/writing skills. *Music Therapy Perspectives, 15,* 79–86.

❖ **Selected verbal language and speech skills are enhanced through music activities in special education populations. Musical presentation of new vocabulary words results in an increased number of words learned and transferred in elementary school-age**

children. Music is effective as a prompt and reinforcer to increase verbal response in preschool-age children with limited verbal communication.

- Braithwaite, M., & Sigafoos, J. (1998). Effects of social versus musical antecedents on communication responsiveness in five children with developmental disabilities. *Journal of Music Therapy, 35*(2), 88–104.
- Buday, E. M. (1995). The effects of signed and spoken words taught with music on sign and speech imitation by children with autism. *Journal of Music Therapy, 32*(3), 189–202.

❖ **Research supports the use of music to structure and organize information in order to increase learning and retention of number concepts. Sequential verbal information, such as telephone numbers and multiplication tables, set to melodic and rhythmic patterns are more effectively memorized and recalled than through non-music presentation.**

- Claussen, D., & Thaut, M. (1997). Music as a mnemonic device for children with learning disabilities. *Canadian Journal of Music Therapy, 5*, 55–66.
- Wolfe, D., & Hom, C. (1993). Use of melodies as structural prompts for learning and retention of sequential verbal information by preschool students. *Journal of Music Therapy, 30*(2), 100–118.

❖ **Music-facilitated interactions and structured instrument playing are effective to improve social skills in school-age populations. Social problem solving skills in 5-year-old students are increased on a long-term basis through creative musical activities. Positive affect induced by music helps to improve social problem solving skills in middle school students.**

- Bryan, T., Sullivan-Burstein, K., & Mathur, S. (1998). The influence of affect on social-information processing. *Journal of Learning Disabilities, 31*(5), 418–426.
- Ulfarsdottir, L., & Erwin, P. (1999). The influence of music on social cognitive skills. *The Arts in Psychotherapy, 26*(2), 81–84.