



MOH Clinical Practice Guidelines (Autism): AMTS responds to the call for evidence

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Dear Dr. Lim and the CPG team,

As professional representatives of the Association for Music Therapy, Singapore, AMTS, we are responding to the recently published *MOH Clinical Practice Guidelines (CPG)¹ for Autistic Spectrum Disorders(ASD) in Pre-school Children*. In the CPG, music therapy was not recommended in the “routine management of children with ASD because of inconclusive evidence (p. 71). We would like to clarify points made in the CPG, specifically in the order they were made and drawing from current music therapy research to support music therapy as a viable adjunctive treatment modality for individuals with ASD. This paper is divided into 2 main sections:

- 1) Definition of Music Therapy, its approaches and objectives
- 2) Research: The way forward

1. Definition of music therapy, its approaches and goals

The CPG (p. 70) defined music therapy as being

“a specific intervention using music communication and expression, including free and structured improvisation, songs and listening to music. This is based on the premise that musical interaction and improvisation may be considered a type of non-verbal and pre-verbal language training.”¹

1.1 Defining music therapy and its approaches

Music therapy is an international, evidence-based allied-health clinical profession, and not a specific intervention or method, nor limited to the use of listening to sound recordings, singing songs, playing instruments or improvisations.² As a research-based professional discipline, music therapy is distinct from sound therapies or vibrational applications such as Samonas or other music-listening protocols, and is more akin to allied health professions such as Physiotherapy or Occupational Therapy. The scope of professional practice is broad and does not easily lend itself to a singular, simple definition, method or technique³--music therapy is widely applied with many populations.

Music therapy is defined through measurable and observable outcomes from evidence and clinical-based interventions. The therapeutic alliances or relationships between the therapist, the client, and the client's preferred music are core components.² Common targeted outcomes for

children with autism include increasing spontaneous vocalizations and improving joint attention or imitation skills. Music therapists draw from a wide range of theories, approaches and methods in their work, based on their training and skill competencies. Musical interventions are designed and are implemented based on the client's musical interest, ability, and targeted therapeutic goals. "Improvisation" is but one out of a range of techniques--from instrument-playing exercises, movement to music and rhythm based activities, to using songs for multi-step self care tasks in ongoing classroom routines,⁴ and social stories.⁵

1.2 The improvisational music therapy approach and structure within its applications

As "improvisation" was mentioned numerous times in the CPG, it is necessary to examine the improvisational approach in music therapy. Improvisation is but one out of four dominant music therapy methods.² It broadly refers to a client-centred or child-led approach, which focuses on what the client is doing in the moment and how the music therapist responds accordingly. This can be seen at two levels, namely within the musical activity and in the flow between activities. The therapist is constantly making decisions based on the needs of the child, to implement varied levels of structure within sessions and to set up opportunities for the child to co-engage in and successfully complete tasks within music experiences.¹⁰

Music inherently contains various levels of structure. Structure in music is provided by manipulating its musical elements, for examples, tempo and dynamics.¹⁰ This framework sets up a child's anticipatory response and may increase motivation and engagement while decreasing the child's anxiety. Music can be structured to provide a predictable framework, yet within the repetitive elements, introduce subtle variability and flexibility as therapeutic agents to counteract the more rigid characteristics of ASD, such as self-stimming behaviour or echolalia.¹¹ Cues or prompts within music were effective to improve logo identification, print concepts and pre-writing skills in children enrolled within early intervention programmes. Songs further assisted children with ASD in transitions, for example, entering the room, greeting and attending to tasks.⁴ Music often involves dynamic forms of fluid dialogue which act as alternative communication, helping to achieve targeted goals of engagement and relationship-building.⁶ Wimpory, Chadwick and Nash also found that the timing provided in the musical structure facilitated turn-taking in children with ASD.⁷ This structure in music can also help the child enjoy the process of music making and having a dialogue with the therapist and/or peer(s). Turns can be allowed to overlap in the music, as music offers more flexibility compared with the more strict rules of turn-taking in verbal communication. Music prompts are gradually faded to increase generalizability to other contexts.

1.3 Goals of Music therapy

Music therapy goals for persons with autism are not limited to "non-verbal and pre-verbal language training" (CPG, p. 70). Goals target various areas of focus across social, emotional, cognitive, communicational, and general domains: for example, increased attention, decreased self-

stimulation, enhanced auditory processing, improved cognitive functioning, decreased agitation, decreased response time, increased socialization, improved verbal skills, successful and safe self-expression, and enhanced sensory-motor skills. In particular, goals for ASD clients may include the following: to “establish a nonverbal channel of communication and a bridge to verbal communication, to provide a fulfilling means of self-expression and identity formation, to develop group skills, or to develop perceptual and cognitive skills.”¹⁰ Kaplan & Steele (2005) found goal attainment to be high within one year and that parents and caregivers surveyed indicated skills and responses acquired within music therapy were generalized by subjects to non-music therapy environments.⁸

An alternate means of assessment, for example, the Improvisation Assessment Profile (IAP), a comprehensive model of client evaluation and assessment based on improvisational treatment methods in music therapy,¹⁰ may contribute holistically to the diagnostic process in Child Development Centres and Assessment Clinics where music therapists have been employed.¹¹ Oldfield collated data from the Music Therapy Diagnostic Assessments (MTDAs) as well as the Autism Diagnostic Observation Schedule (ADOS), a principle test used for children who are suspected to be on the autistic spectrum for 30 children.¹² The data collated supported the hypothesis that Music Therapy Diagnostic Assessments (MTDAs)¹² were effective at highlighting important aspects of behaviours that are symptomatic to the ASD and the effects of and impact of music experiences (p. 157). Significantly, music therapy research has shown that persons with autism have a range in ability from “typical to gifted in relation to music.”²⁰ This provides a significant pathway to affirm the client’s strengths while addressing their deficits, challenges and needs.

The CPG cited Gold, Wigram and Elefant, “music therapy was superior to placebo with respect to verbal and gestural communication, but had insignificant effect on behavioral problems.”⁹ Autism, according to the DSM-IV, is a disorder of relating and communicating, and is not a behavioural disorder. Problem behaviours may be a by-product of sensory issues, such as difficulties with integrating sensory input or information, etc. Hence, in another words, the study cited demonstrated that MT targeted and positively impacted core deficits of autism.

2. Current Evidence

2.1 Debatable points in CPG comments about MT research

“Systematic reviews of music therapy for ASD produced contradictory conclusions. A meta-analysis concluded that all music intervention was effective for children and adolescents with autism. While one review found a generally positive effect of music therapy, another review was unable to identify possibly relevant studies of music therapy and concluded that its effects were unclear. In a Cochrane review of 3 studies . . . music therapy was superior to placebo with respect to verbal and gestural communication, but had insignificant effect on behavioural problem . . . In recent small randomized controlled trial that used improvisational techniques, music therapy was found beneficial in promoting the social, emotional and motivational development of children with autism.”¹¹

The CPG report acknowledged the positive evidence by reporting that “music therapy was found beneficial in promoting the social emotional and motivational development of children with autism”¹. There were in fact no “contradictory” conclusions, as the CPG recommendations stated. Rather, going by the eight sources that were reviewed, the need for continued quality research protocols was highlighted. It was also noted that out of the eight studies cited in the CPG, many were from the United Kingdom (where the improvisation model may be a predominant approach). Hence the review undertaken for the guidelines was not comprehensive. The Cochrane Review⁹ cited included both highly structured music therapy approaches of American origin as well as European approaches which tend to be more improvisation-based. Techniques reviewed included receptive and expressive ones. Receptive techniques used included listening to music, while active techniques included having participants play musical instruments, e.g. Q-chord, tone chimes, handbells, drums or guitar.

For example, in one study reviewed, Ball had studied the impact of music therapy on behaviour and social functional, long-term effects, and its effect in comparison to other forms of behavioural therapy for ASD children.¹⁵ In fact, after noting that “children with autism may demonstrate slight improvements in speech and imitation during music therapy sessions”, Ball conservatively stated “whether music therapy is better than other forms of behavioural therapy for children with autism is unclear” (p. 9). While valid criticisms regarding the limitations of included studies were made, a closer look revealed the lack of detailed analysis, discussion of, or references to other behavioural therapy models for comparison.

Next, the 2006 Cochrane review reported that the “data on behavioural problems were limited . . . to the smallest included studies.”⁹ However, the strength of the evidence lies in that “there was no performance bias (co-intervention) or attrition bias (drop-out), and inter-rater reliability was high”.⁹ It may thus be possible to posit that the focus on “behavioural problems” was an arbitrary categorization, as autism is not a behavioural disorder as earlier discussed in Section 1.3.

2.2 Limitations

“Music therapy is not recommended in the routine management of children with ASD because of inconclusive evidence” (MOH, 2010, p. 71).

It has often been highlighted that music therapy-ASD related studies are lacking in Randomised Control Trials (RCTs) and case series. Within allied health research, there are limitations posed by accepted scientific research protocols.¹⁴ With an international trend towards mixed methods research to support clinical practice, a more comprehensive account of current music therapy research evidence¹⁶ is hereby explored.

While not impossible, it is often difficult to implement music therapy RCTs for a client population whose individual condition varies across a spectrum. No two individuals with ASD are alike. Even if they may behave in similar ways, the underlying cause of the behaviors could very well stem from very different needs. This affects the music therapy intervention design and therapy

process in complex ways. The questions addressed within a positivistic paradigm may not adequately measure the processes inherent within music therapy work. RCTs were designed to test the efficacy of pharmacological drugs. Music Therapy, on the other hand, is relationship-based, where music experiences are individualized to achieve functional, non-musical outcomes. In addition, there is an ever-present challenge within the music therapy research methodology: there is no neutral control for comparison and observer bias cannot be excluded for the client populations involved.¹⁴ Dileo and Bradt observed that “music therapy research is typically characterized by the use of small samples, [hence] statistically significant results may not be achieved” (p. 1) even when the intervention was effective and the study well-designed.¹⁷

Music therapists are advocates for looking beyond “routine” management to understand the core difficulties uniquely experienced by the individual with ASD. Music therapy is client-oriented even in group settings, and tailored towards individual needs grounded in one-to-one relationships and the child’s emotional or behavioural responses. It is also worthwhile to highlight that music therapists’ work is informed by building on the existing strengths of clients, to offer them successful experiences in music so they can develop core skills toward self-management and holistic development.^{2,12,20}

2.3 Highlights of Music Therapy Research

2.3.1 Comprehensive Music Therapy reviews

A systematic review⁹ of relevant studies for ASD found positive effects, no negative effects, and called for more research to “shed light on the effectiveness of music therapy for individuals with autism”(p. 13). The studies reviewed, which showed Music Therapy to be superior to the placebo (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.), were mirrored in a local meta-analysis¹⁸ of nine small studies which showed the effectiveness of music therapy (n=75, overall effect size 0.77 (95% CI: 0.46-1.08) to improve communication. Moreover, Whipple's comprehensive analysis found all musical intervention to be significantly effective in affecting one or more areas of communication and social skill development.¹⁹ In addition, there are over 100 papers on the CD-ROM database from Witten-Herdecke University, and more than 125 on the American Music Therapy Association’s database.

Three recent comprehensive reviews rated music therapy as one of the promising potential treatments,^{9,16,21} in a better light as compared to other therapy approaches. In Rossignol’s graded novel and emerging treatments for ASD while reviewing the potential adverse effects for each; music therapy received an A.²¹

2.3.2 Additional supporting data in music therapy research

Additional highlights from the literature that show music therapy as an effective intervention for individuals with autism follow:

Benefits of a music therapy programme have also been documented for early intervention for children with ASD. Music can help autistic children to reorganize the nervous system and integrate multiple sensory inputs²⁴. Kaplan and Steele analyzed two years' worth of music therapy programme outcomes and found positive results in level of progress over time, and generalization of skills of forty clients with ASD.⁸ Detailed video analysis of the music therapy sessions of 10 children with ASD showed progress towards identified aims such as engagement or vocalisations and words.⁸ Some children with autism have also exhibited musical strengths.^{33,34} Despite challenges in interpreting human affect, Heaton, Hermelin and Pring found that individuals with ASD have no deficit in processing affect in music.²² In addition, Hayoung Lim's research showed that children with ASD have an intact ability to perceive and produce music and speech, suggesting that the inherent structure of music stimuli can serve as an effective training to improve speech production.²³ Through varying vocal pitch and emphasis, strategies incorporating music has the potential to enhance communication. Hence, improvisational music therapy has been demonstrated to increase communicative behaviour of children with autism and that these skills were generalized to other contexts.²⁰

One of music therapy's greatest advantages is that it is inviting, highly motivating, and non-threatening. Music therapy intervention techniques effectively harness the ability of music activities to provide nonthreatening opportunities for parent(s) to initiate interaction with the child with ASD.^{11, 20} Children with autism sometimes, in the early stages of relationship building, reject or ignore social contact attempts by others in favour of objects. The music therapist can use the instrument as an intermediary between the client and therapist, and make the first connection with the client through music toward targeted meaningful goals.^{10,19}

2.4. Drawing conclusions

"When applying the results of the review to practice, it is important to note that application of music therapy requires specialised academic and clinical training." (MOH, 2010, p. 71)

Music therapy is an emerging profession in Singapore; the Association for Music Therapy, Singapore, was established only in 2007. Even in countries where music therapy has enjoyed a longer history as a formal discipline and profession, many researchers are still unable to make the distinction between sound and music therapy. For example, Accordino, Comer and Heller's claim to be the first thorough narrative literature review on music therapy for individuals with autism had them considering Auditory Integration Therapy (AIT) as music therapy³. This epitomises the prevalent confusion in general academia about what constitutes music therapy. While acknowledging that "mainstream music therapists often consider AIT a form of "sound" therapy, distinctly different from mainstream MT", AIT was still subsumed under the music therapy umbrella for the fact that "music was used in a systematic way"³, neglecting the essence of music therapy that lies in the therapeutic relationship between therapist and client, and client's preferred music in a live context.^{2,19}

Conclusion

This formal response to the CPG guidelines, supported by the literature review undertaken, has demonstrated music therapy's promise as an effective intervention for individuals with ASD, to address a range of therapeutic goals. The authors agree that more empirical research is required for the improvement of services. Furthermore, that a clearer distinction between the types of studies (music, music education, music medicine or music therapy) as well as clearer and more detailed methodology and analysis will be helpful for future research.

At the same time, clinical guidelines for holistic and non-pharmacological treatments need to account for the larger picture and take into consideration other factors such as impact on functional abilities, social living, and total quality of life. Children with developmental, exceptional or special needs may benefit from increased support and resources in addition to the "routine management." Indeed, music therapy may not be suitable for every child with autism. However, caregivers and families should not be discouraged from pursuing an assessment with a trained music therapist to evaluate suitability or benefit.

It is the authors' hope that this paper helps to deepen understanding about music therapy as a professional field of practice and clarify some common misconceptions. The Association for Music Therapy, Singapore, welcomes enquiries at musictherapy.sg@gmail.com.

With sincerity,

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AMTS
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References

1. Ministry of Health, Singapore. Autism Spectrum Disorders in pre-school children: AMS-MOH Clinical Practice Guidelines 1/2010. Ministry of Health, Singapore 2010, 71.
2. Bruscia KE. Defining music therapy. 2nd ed. Gilsum, NH: Barcelona Publishers 1998.
3. Accordino R, Comer R, Heller W. Searching for music's potential: A critical examination of research on music therapy with individuals with autism. *Research in Autism Spectrum Disorders* 2006; 1(1):101-110.
4. Kern P, Wolery M, Aldridge D. Use of songs to promote independence in morning greeting routines for young children with autism. *Journal of Autism and Developmental Disorders* 2007; 37(7):1264-1271.
5. Brownell M. Musically adapted social stories to modify behaviours in students with autism: Four case studies. *Journal of Music Therapy* 2002; 39(2):117-144.
6. Wigram T, Gold C. Music therapy in the assessment and treatment of autistic spectrum disorder: Clinical application and research evidence. *Child: Care, Health and Development* 2006; 32(5):535-542.
7. Wimpory D, Chadwick P, Nash S. Brief report: Musical interaction therapy for children with autism: An evaluative case study with two-year follow-up. *Journal of Autism and Developmental Disorders* 1995; 25(5):541-552.
8. Kaplan, RS, Steele A. An analysis of music therapy program goals and outcomes for clients with diagnoses on the autism spectrum. *J Music Therapy* 2005; 42(1):2-19.
9. Gold C, Wigram T, Elefant, C. Music therapy for autistic spectrum disorder. *Cochrane Database of Systematic Reviews* 2006, Issue 2.
10. Bruscia KE. Improvisational models of music therapy. Springfield, IL: Charles C Thomas Publishers 1987.
11. Walworth DD. The use of music therapy within the SCERTS model for children with autism spectrum disorder. *Journal of Music Therapy* 2007; 44(1):2-22.
12. Oldfield A. Interactive music therapy in child and family psychiatry: Clinical practice, research and teaching. London, Philadelphia: Jessica Kingsley Publishers 2006b.
13. Mottron L, Peretz I, Menard E. Local and global processing of music in highfunctioning persons with autism: Beyond central coherence? *Journal of Child Psychology and Psychiatry* 2000; 44(4):1057-1065.
14. Rosenbaum P. The randomized controlled trial: An excellent design, but can it address the big questions in neurodisability? *Developmental Medicine & Child Neurology* 2010; 52(2):111.
15. Ball CM I. Music therapy for children with autistic spectrum disorder. *STEER* 2004; 4(1). Bazian Ltd and Wessex Institute for Health Research & Development, University of Southampton.
16. Umbarger GT. State of the evidence regarding complementary and alternative medical treatments for autism spectrum disorders. *Education and Training in Developmental Disabilities* 2007; 42(4):437-447.
17. Dileo C, Bradt J. Medical music therapy: A meta-analysis and agenda for future research. Cherry Hill, NJ: Jeffrey Books, 2005.
18. Erf van der S, Low YS, Tan PLP, Lim JFY. Music therapy may benefit autistic children but need larger RCTs. In: Singhealth Research Publications [online]. Available at: <http://www.singhealth.com.sg/Research/HealthServicesResearch/Publications/Documents/Music%20therapy.pdf>. Accessed March 18, 2011.
19. Whipple J. Music in intervention for children and adolescents with autism: Meta-analysis. *Journal of Music Therapy* 2004; 41(2):90-106.
20. Aldridge D, Gustorff D, Neugebauer L. A preliminary study of creative music therapy in the treatment of children with developmental delay. *The Arts in Psychotherapy* 1995; 21(3):189-205.
21. Rossignol DA. Novel and emerging treatments for Autism Spectrum Disorders: A systematic review. *Annals of Clinical Psychiatry* 2009; 21(4):213-236.
22. Heaton P, Hermelin B, Pring, L. Can children with autistic spectrum disorders perceive affect in music? An experimental investigation. *Psychological Medicine* 1999; 29(6):1405-10.
23. Lim, HA. Effect of "developmental speech and language training through music" on speech production in children with Autism Spectrum Disorders. *Journal of Music Therapy* 2010; 47(1): 2-26.
24. Simpson, K. & Keen, D. (2011). Music Interventions for Children with Autism: Narrative Review of the Literature. *Journal of Autism and Developmental Disorders*.