Music therapy may promote relational skills in children with ASD – evidence from an updated Cochrane Review

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Publication date:
2013

Document Version
Early version, also known as pre-print

Music therapy may promote relational skills in children with ASD – evidence from an updated Cochrane Review

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Music therapy … ?

(A) definition:

"a **systematic process** of intervention wherein the therapist helps the client to promote health, using **musical experiences** and the **relationships that develop through them** as dynamic forces of change"

Kenneth Bruscia (1998), p. 20

Bruscia, K. (1998). *Defining music therapy* (2nd ed.). Gilsum, NH: Barcelona.

Gold, C., Wigram, T., & Elefant, C. (2006).
Music therapy for autistic spectrum disorder.
***Cochrane Database of Systematic Reviews*(2), CD004381.**

Brownell
2002

Buday
1995

Farmer
2003

(total n = 24)

- **MT may help children with ASD**
  to improve their communicative skills

→ more research:
effects of MT in typical clinical practice
& within longer periods

Wheeler et al. (2008):

"Some reviews (Risperidone, Music therapy and Parent-mediated behaviour interventions) provided evidence of statistically significant improvement effects for communication, speech and/or some behaviours associated with autism."

Rossignol (2009):

highest ranks in an evidence-based grading system:
"Grade A treatments for ASD include melatonin, acetylcholinesterase inhibitors, naltrexone, and music therapy."

Wheeler, D., Williams, K. Seida, J., Ospina, M. (2008). The Cochrane Library and autism spectrum disorder: an overview of reviews. *Evidence- Based Child Health, 3,* 3-15.

Rossignol, D. A. (2009). Novel and emerging treatments for autism spectrum disorders: A systematic review. *Annals of Clinical Psychiatry, 21,* 213-236.

Geretsegger, M., Elefant, C., Mössler, K., & Gold, C. (submitted). *Music therapy for autism spectrum disorder.*

Brownell 2002

Buday 1995

Farmer 2003

Arezina 2011

Kim et al. 2008

Gattino et al. 2011

Thomas & Hunter 2003

Thompson 2012

(total n = 93)

Arezina, C. (2011). *The Effect of Interactive Music Therapy on Joint Attention Skills in Preschool Children with Autism Spectrum Disorder.* University of Kansas: Master's thesis.

Brownell, M. D. (2002). Musically adapted social stories to modify behaviors in students with autism: four case studies. *Journal of Music Therapy, 39,* 117-144.

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,* 189-202.

Farmer, K. J. (2003). *The Effect of Music vs. Nonmusic Paired with Gestures on Spontaneous Verbal and Nonverbal Communication Skills of Children with Autism between the Ages 1-5.* Florida State University: Master's thesis.

Gattino, G.S., Riesgo, R. d. S., Longo, D., Leite, J. C. L., & Faccini, L.S. (2011). Effects of relational music therapy on communication of children with autism: A randomized controlled study. *Nordic Journal of Music Therapy, 20,* 142-154.

Kim, J., Wigram, T., & Gold, C. (2008). The effects of improvisational music therapy on joint attention behaviors in autistic children: A randomized controlled study. *Journal of Autism and Developmental Disorders, 38,* 1758-1766.

Thomas, A., & Hunter, B. (2003). The effect of music therapy on communication skills of children ages 2-3 with autism: A pilot study. Minneapolis, MN: Presentation at the American Music Therapy Association Conference.

Thompson, G. (2012). *Making a Connection: Randomised Controlled Trial of Family Centred Music Therapy for Young Children with Autism Spectrum Disorder.* The University of Melbourne: PhD thesis.

Description of studies:

8 studies included (total n = 93)

methods:

RCTs (MT vs. 'placebo' therapy or standard care)
small sample sizes (4 to 24 participants)
5 crossover, 3 parallel designs

participants:

children (2 – 9 years) with ASD
80 – 100 % male

interventions:

1 week to 7 months
5 to 20 sessions
individual or family-based setting
receptive and active/improvisational methods

outcomes:

non-generalised & generalised

interventions:

1 week to 7 months, 5 to 20 sessions
individual or family-based setting
receptive and active/improvisational methods

Brownell 2002
receptive: social stories sung vs. read (5 sessions each) vs. no intervention (2x5 d)

Buday 1995
receptive: songs vs. rhythmic speech to teach signs (5 sessions each)

Farmer 2003
active + receptive: guitar playing & songs (5 sessions) vs. placebo sessions

Arezina 2011
interactive MT vs. interactive play vs. independent play (6 sessions each, 10 min.)

Gattino et al. 2011
relational MT (20 sessions, 30 min.) vs. standard care

Kim et al. 2008
improvisational MT vs. free toy play (12 sessions each, 30 min.)

Thomas & Hunter 2003
MT (12 session parts, 15 min.) vs. play time

Thompson 2012
family-centered MT (16 sessions) vs. standard care

outcomes: non-generalised & generalised

Buday 1995	**sign & speech imitation** in session
Brownell 2002	**repetitive behaviours** in classroom
Farmer 2003	**verbal & gestural responses** in session
Thomas & Hunter 2003	**on-task behaviour, requesting behaviour**
Arezina 2011	**respond to bid for joint attention + initiate joint attention** in session
Kim et al. 2008	**ESCS, PDDBI,** eye contact, turn-taking, emotional synchronicity…
Gattino et al. 2011	**CARS verbal, nonverbal, & social communication**
Thompson 2012	**Vineland SEEC, SRS, MBCDI-W&G, Parent-Child Relationship Inventory**

outcomes: non-generalised & generalised

SOCIAL INTERACTION
non-generalised: n=10 (1 study)
generalised: n=57 (3 studies)

NON-VERBAL COMMUNICATIVE SKILLS
non-generalised: n=30 (3 studies)
generalised: n=57 (3 studies)

VERBAL COMMUNICATIVE SKILLS
non-generalised: n=20 (2 studies)
generalised: n=47 (2 studies)

QUALITY OF PARENT-CHILD RELATIONSHIP
generalised: n=33 (2 studies)

INITIATING BEHAVIOUR
non-generalised: n=22 (3 studies)

SOCIAL ADAPTATION
non-generalised: n=22 (3 studies)
generalised: n=4 (1 study)

SOCIAL-EMOTIONAL RECIPROCITY
non-generalised: n=10 (1 study)

JOY
non-generalised: n=10 (1 study)

Geretsegger, M., Elefant, C., Mössler, K., & Gold, C. (submitted).
Music therapy for autism spectrum disorder.

MAIN RESULTS:

generalised measures:

significant effect for **social interaction** (0.71)

non-generalised measures:

significant effects for **social interaction, non-verbal & verbal communicative skills, initiating behaviour, social-emotional reciprocity** (between 0.36 and 2.28)

MAIN RESULTS:

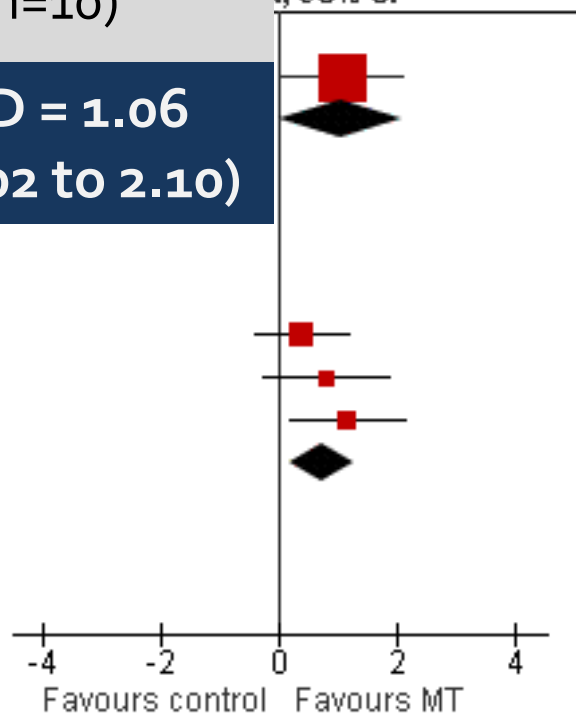
Social interaction:

social interaction
non-generalised
(n=10)

SMD = 1.06
(CI 0.02 to 2.10)

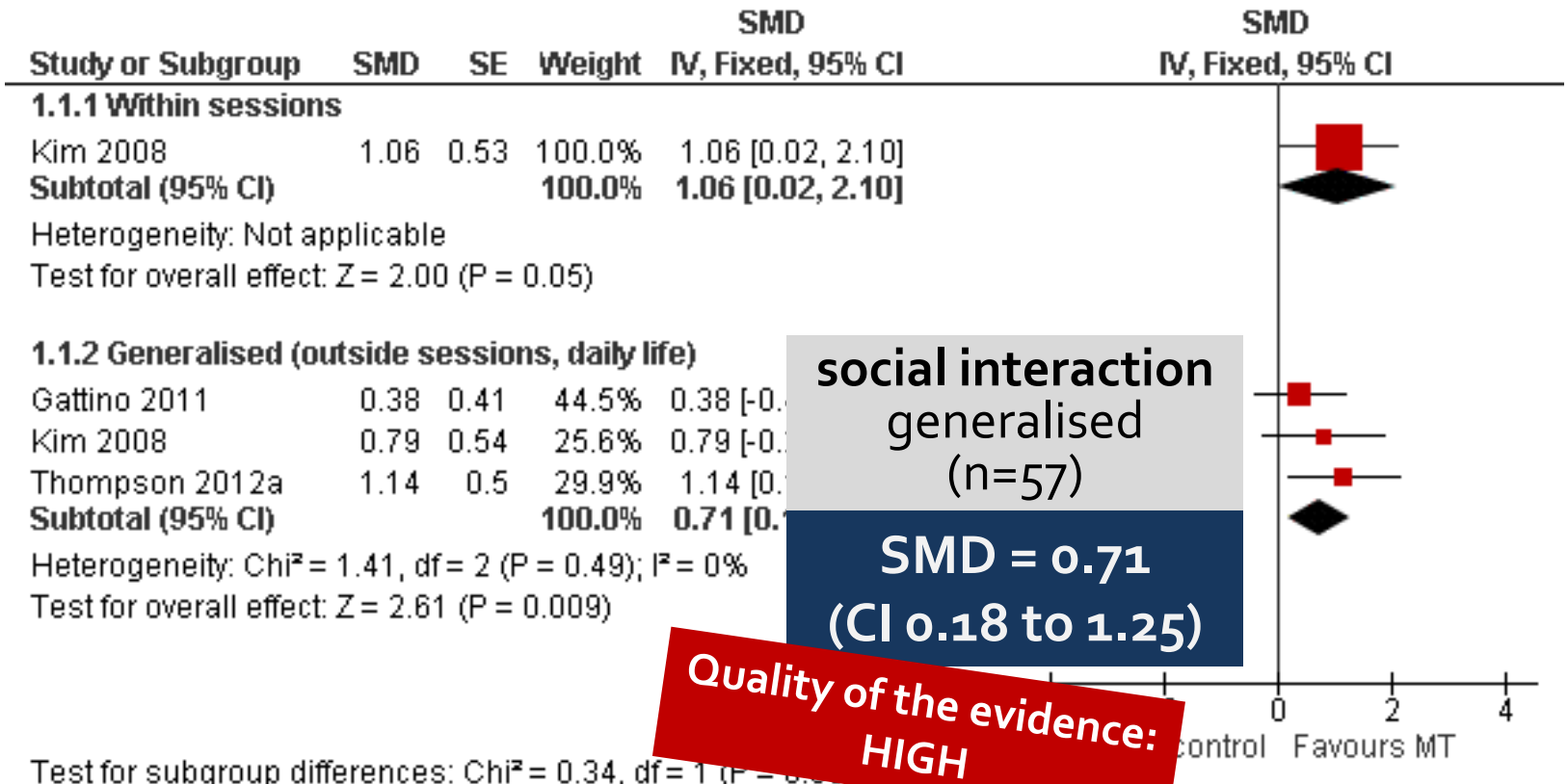
Study or Subgroup	SMD	SE	Weight	SMD IV, Fixed, 95
1.1.1 Within sessions				
Kim 2008	1.06	0.53	100.0%	1.06 [0.02,
Subtotal (95% CI)			**100.0%**	**1.06 [0.02,**
Heterogeneity: Not applicable				
Test for overall effect: Z = 2.00 (P = 0.05)				
1.1.2 Generalised (outside sessions, daily life)				
Gattino 2011	0.38	0.41	44.5%	0.38 [-0.42, 1.18]
Kim 2008	0.79	0.54	25.6%	0.79 [-0.27, 1.85]
Thompson 2012a	1.14	0.5	29.9%	1.14 [0.16, 2.12]
Subtotal (95% CI)			**100.0%**	**0.71 [0.18, 1.25]**
Heterogeneity: Chi² = 1.41, df = 2 (P = 0.49); I² = 0%				
Test for overall effect: Z = 2.61 (P = 0.009)				

Test for subgroup differences: Chi² = 0.34, df = 1 (P = 0.56), I² = 0%



MAIN RESULTS:

Social interaction:



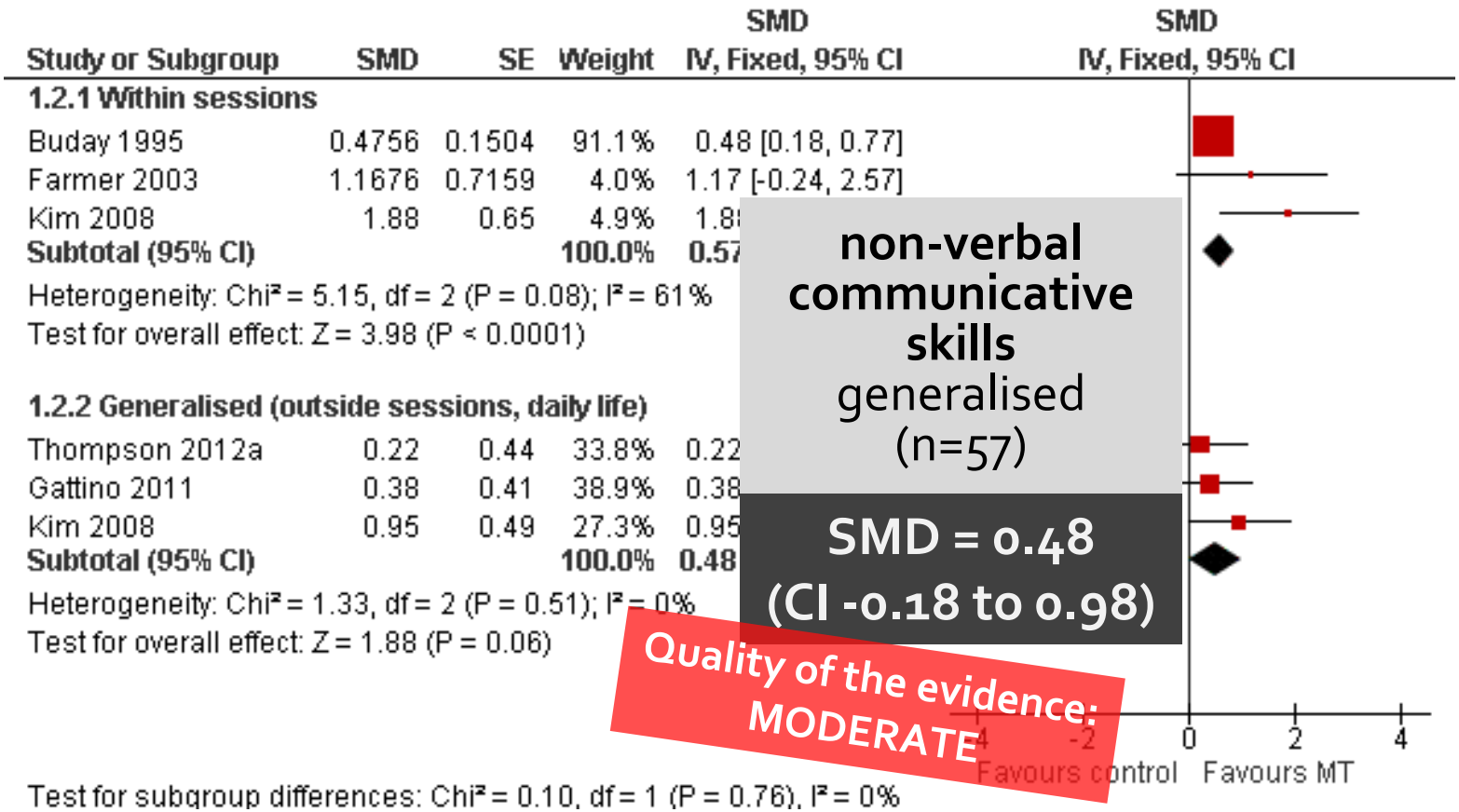
social interaction
generalised
(n=57)

SMD = 0.71
(CI 0.18 to 1.25)

Quality of the evidence: HIGH

MAIN RESULTS:

Communicative skills: non-verbal



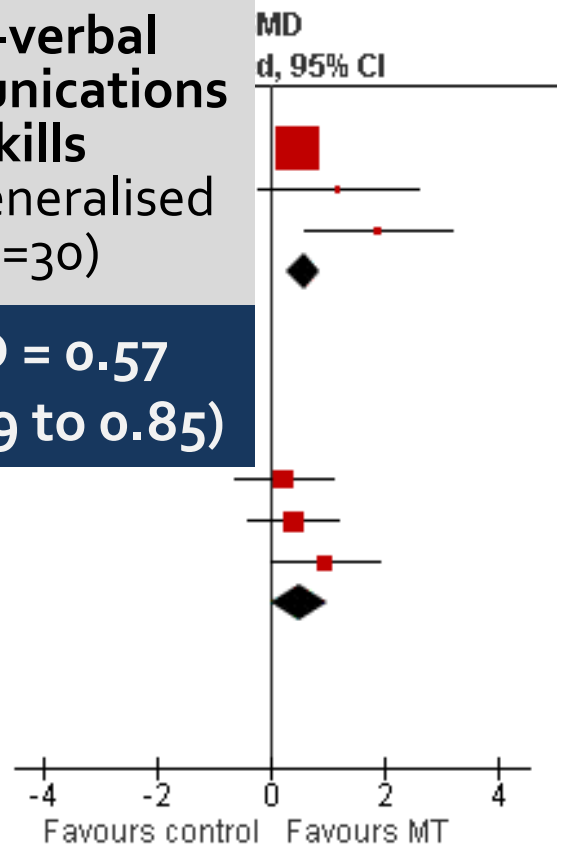
MAIN RESULTS:

Communicative skills: non-verbal

Study or Subgroup	SMD	SE	Weight	IV, Fi
1.2.1 Within sessions				
Buday 1995	0.4756	0.1504	91.1%	0.48
Farmer 2003	1.1676	0.7159	4.0%	1.17
Kim 2008	1.88	0.65	4.9%	1.88
Subtotal (95% CI)			**100.0%**	**0.57**
Heterogeneity: Chi² = 5.15, df = 2 (P = 0.08); I² = 61%				
Test for overall effect: Z = 3.98 (P < 0.0001)				
1.2.2 Generalised (outside sessions, daily life)				
Thompson 2012a	0.22	0.44	33.8%	0.22 [-0.64, 1.08]
Gattino 2011	0.38	0.41	38.9%	0.38 [-0.42, 1.18]
Kim 2008	0.95	0.49	27.3%	0.95 [-0.01, 1.91]
Subtotal (95% CI)			**100.0%**	**0.48 [-0.02, 0.98]**
Heterogeneity: Chi² = 1.33, df = 2 (P = 0.51); I² = 0%				
Test for overall effect: Z = 1.88 (P = 0.06)				
Test for subgroup differences: Chi² = 0.10, df = 1 (P = 0.76), I² = 0%				

non-verbal communications skills
non-generalised
(n=30)

SMD = 0.57
(CI 0.29 to 0.85)



MAIN RESULTS:

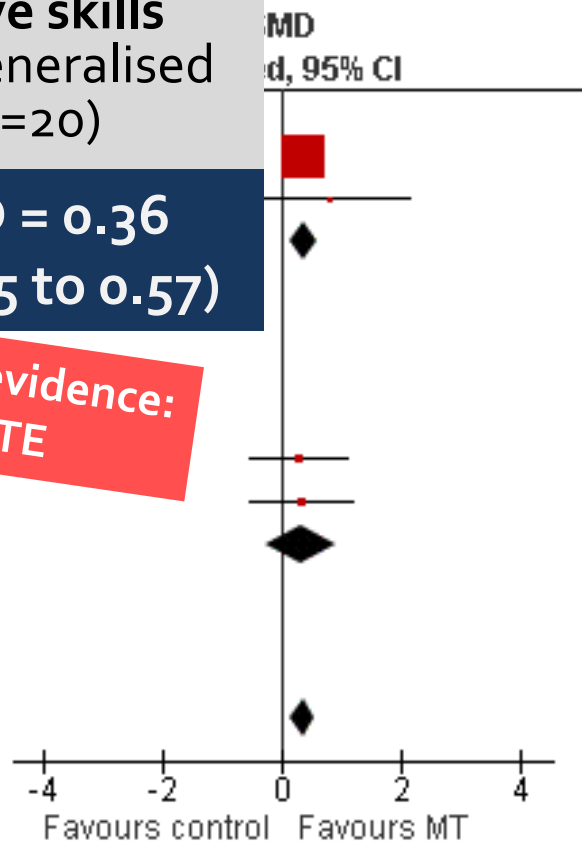
Communicative skills: verbal

verbal communicative skills
non-generalised
(n=20)

SMD = 0.36
(CI 0.15 to 0.57)

Quality of the evidence: MODERATE

Study or Subgroup	SMD	SE	Weight	IV, Fi
1.3.1 Within sessions				
Buday 1995	0.3471	0.1097	86.2%	0.35
Farmer 2003	0.8066	0.6736	2.3%	0.81
Subtotal (95% CI)			**88.5%**	**0.36**
Heterogeneity: Chi² = 0.45, df = 1 (P = 0.50); I² = 0%				
Test for overall effect: Z = 3.32 (P = 0.0009)				
1.3.2 Generalised (outside sessions, daily life)				
Gattino 2011	0.28	0.41	6.2%	0.28 [-0.52, 1.08]
Thompson 2012a	0.33	0.44	5.4%	0.33 [-0.53, 1.19]
Subtotal (95% CI)			**11.5%**	**0.30 [-0.28, 0.89]**
Heterogeneity: Chi² = 0.01, df = 1 (P = 0.93); I² = 0%				
Test for overall effect: Z = 1.01 (P = 0.31)				
Total (95% CI)			**100.0%**	**0.35 [0.15, 0.55]**
Heterogeneity: Chi² = 0.49, df = 3 (P = 0.92); I² = 0%				
Test for overall effect: Z = 3.46 (P = 0.0005)				
Test for subgroup differences: Chi² = 0.03, df = 1 (P = 0.86), I² = 0%				



MAIN RESULTS:

Initiating behaviour

initiating behaviour
non-generalised
(n=22)

SMD = 0.73
(CI 0.36 to 1.11)

Quality of the evidence: MODERATE

Study or Subgroup	SMD	SE	Weight	IV,
1.4.1 Within sessions				
Arezina 2011	0.34	0.55	12.0%	0.3
Kim 2008	1.48	0.43	19.6%	1.4
Thomas 2003	0.59	0.23	68.4%	
Subtotal (95% CI)			**100.0%**	

Heterogeneity: Chi² = 3.91, df = 2 (P = 0.14); I² = 4
Test for overall effect: Z = 3.86 (P = 0.0001)

SMD
d, 95% CI

-4 -2 0 2 4
Favours control Favours MT

Test for subgroup differences: Not applicable

Social-emotional reciprocity

social-emotional reciprocity
non-generalised
(n=10)

SMD = 2.28
(CI 0.73 to 3.83)

Quality of the evidence: MODERATE

Study or Subgroup	SMD	SE	Weight	IV,
1.5.1 Within sessions				
Kim 2008	2.28	0.79	100.0%	2.
Subtotal (95% CI)			**100.0%**	**2.**

Heterogeneity: Not applicable
Test for overall effect: Z = 2.89 (P = 0.004)

SMD
ed, 95% CI

-4 -2 0 2 4
Favours control Favours MT

Test for subgroup differences: Not applicable

MT also superior to 'placebo' therapy or standard care in secondary outcome areas:

Social adaptation

non-generalised (n=22) — **SMD = 1.15 (CI 0.69 to 1.61)**

Quality of the evidence: MODERATE

Joy

non-generalised (n=10) — **SMD = 0.96 (CI 0.04 to 1.88)**

Quality of parent-child relationship

non-generalised (n=33) — **SMD = 0.82 (CI 0.13 to 1.52)**

Quality of the evidence: MODERATE

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Music therapy for autism spectrum disorder.

Music therapy helps children with ASD to improve their abilities in social interaction and communication

Implications for practice:

utilise the relational qualities of music
focus on client's interests and motivations

Implications for research:

find larger samples, use generalised outcome measures
use long-term follow-up assessments
do pragmatic trials

thank you!

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