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

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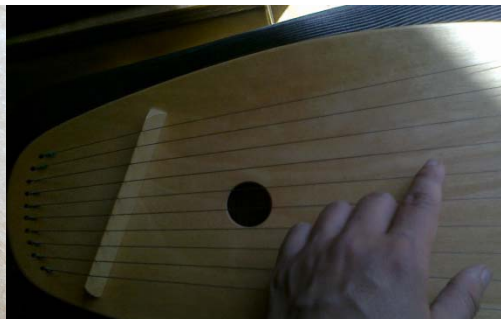
uniHealth

# 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* (2<sup>nd</sup> 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:

Study or Subgroup	SMD	SE	Weight	SMD IV, Fixed, 95% CI
<b>1.1.1 Within sessions</b>				
Kim 2008	1.06	0.53	100.0%	1.06 [0.02, 2.10]
<b>Subtotal (95% CI)</b>			<b>100.0%</b>	<b>1.06 [0.02, 2.10]</b>

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]
<b>Subtotal (95% CI)</b>			<b>100.0%</b>	<b>0.71 [0.18, 1.25]</b>

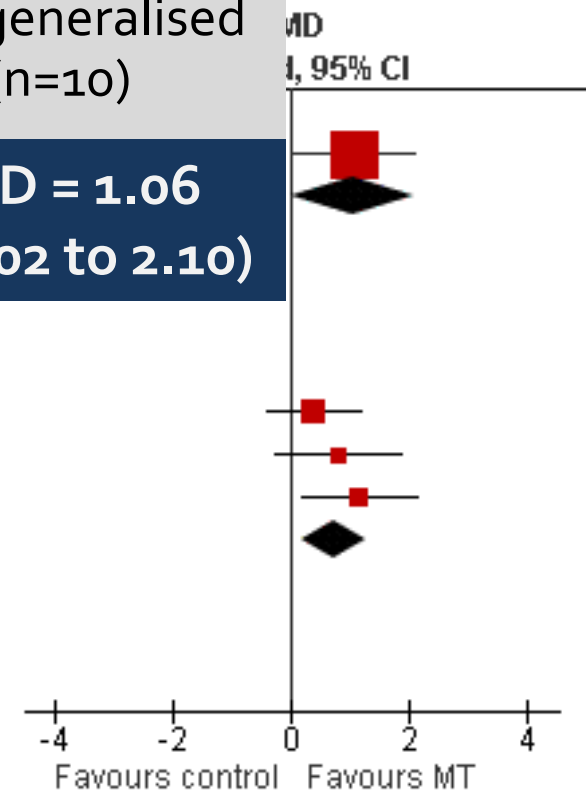
Heterogeneity:  $\text{Chi}^2 = 1.41$ ,  $df = 2$  ( $P = 0.49$ );  $I^2 = 0\%$

Test for overall effect:  $Z = 2.61$  ( $P = 0.009$ )

Test for subgroup differences:  $\text{Chi}^2 = 0.34$ ,  $df = 1$  ( $P = 0.56$ ),  $I^2 = 0\%$

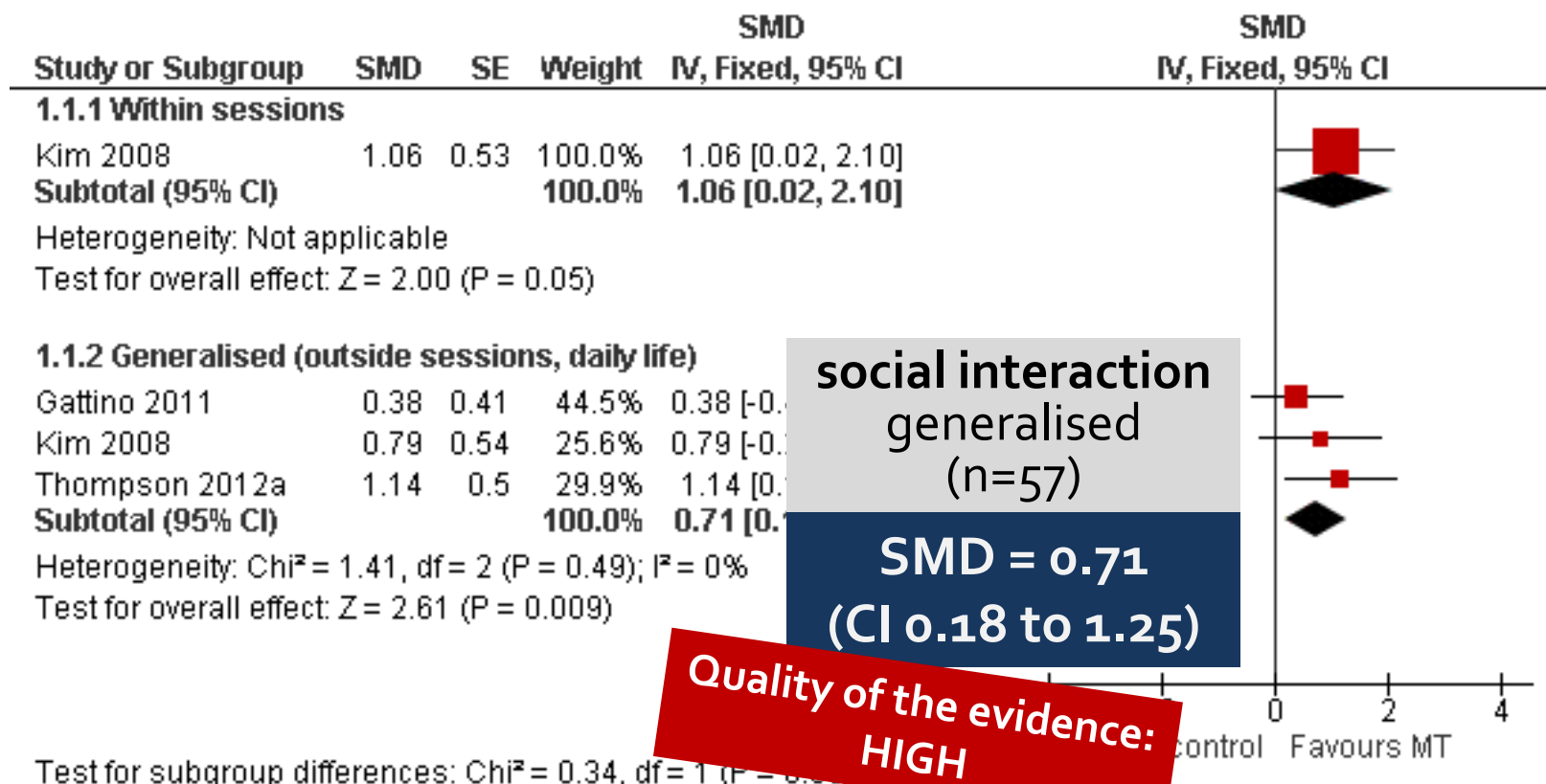
social interaction  
non-generalised  
(n=10)

**SMD = 1.06**  
**(CI 0.02 to 2.10)**



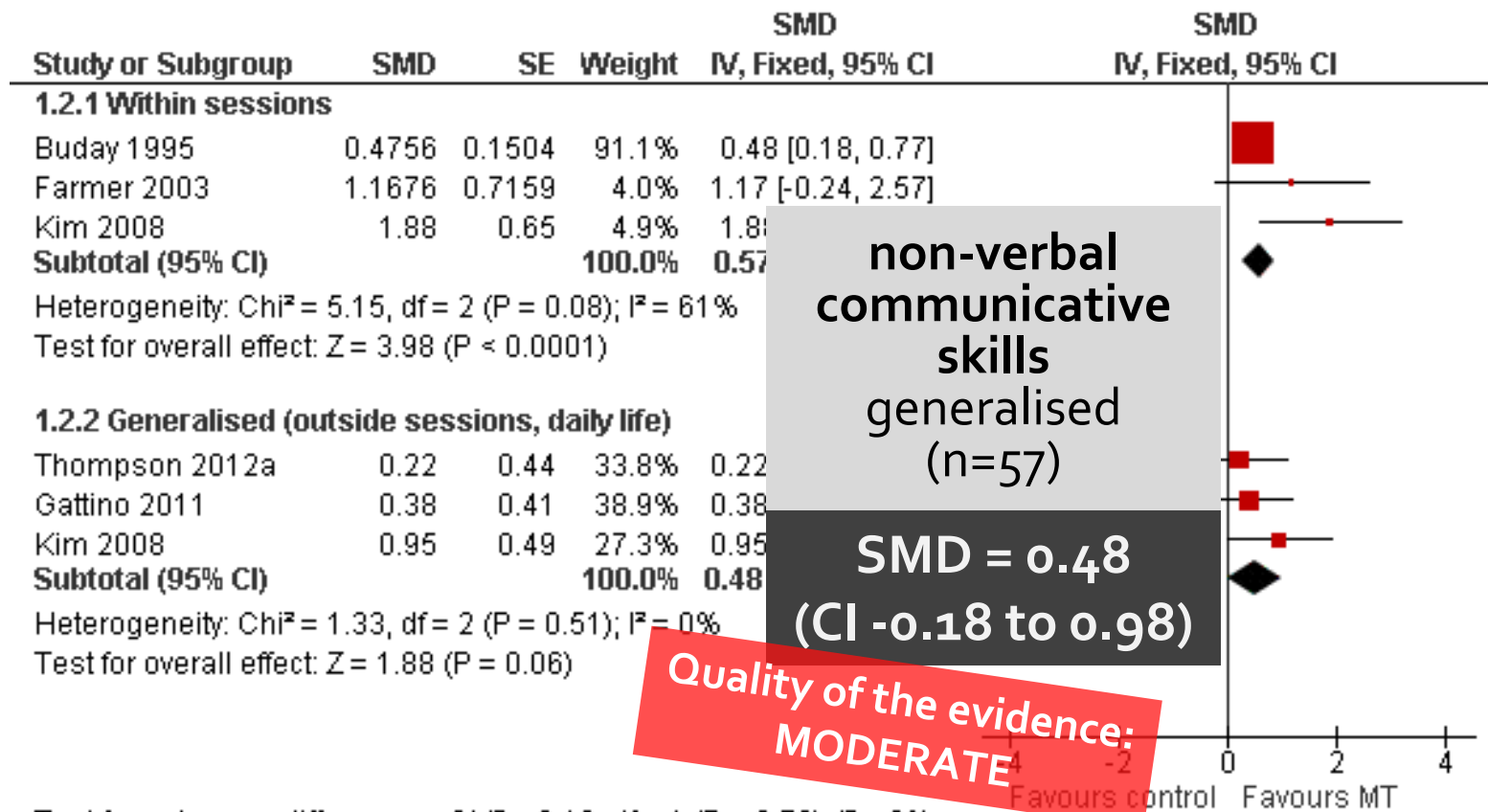
# MAIN RESULTS:

## Social interaction:



# MAIN RESULTS:

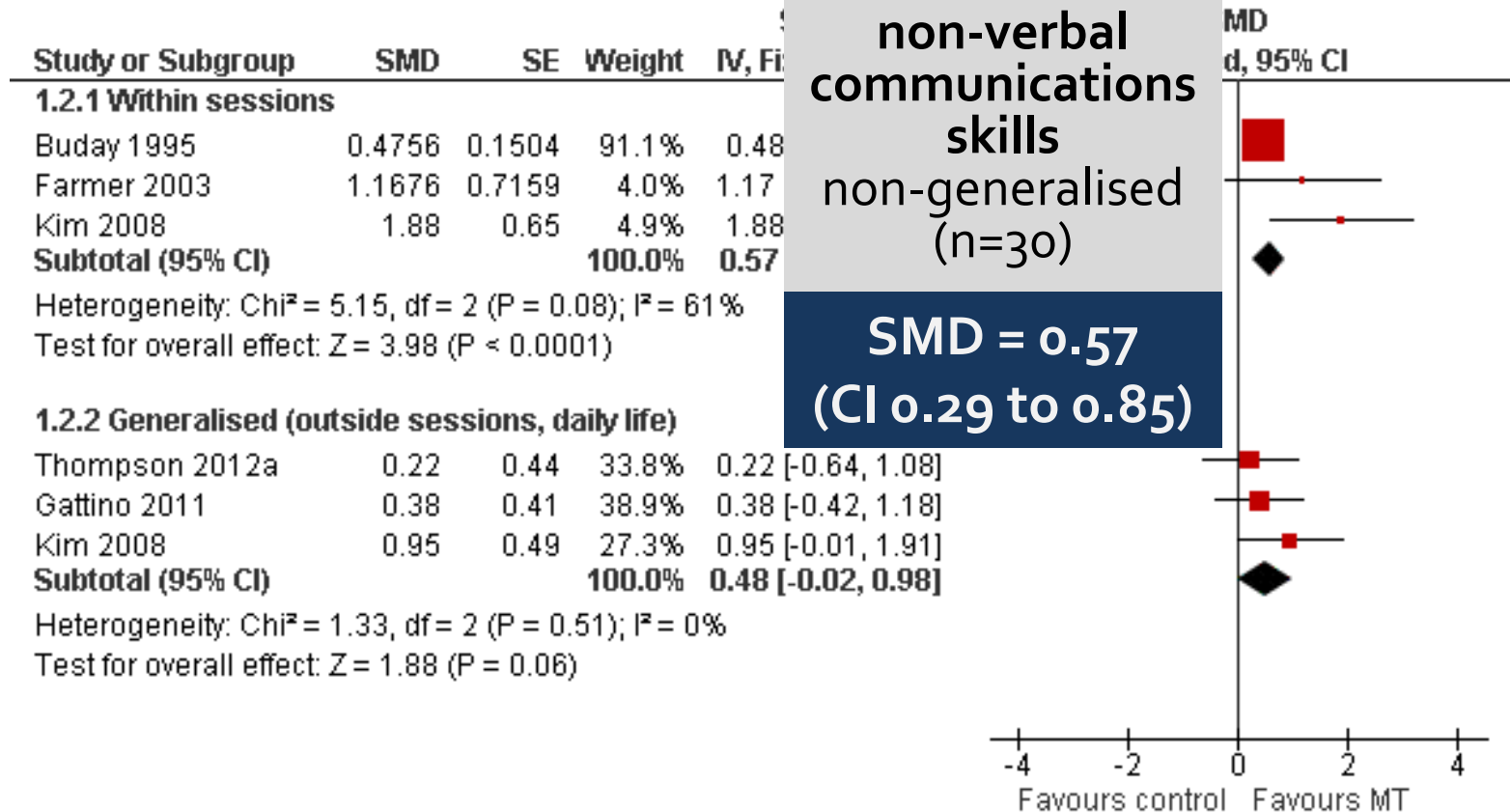
## Communicative skills: non-verbal



Test for subgroup differences:  $\text{Chi}^2 = 0.10$ ,  $\text{df} = 1$  ( $P = 0.76$ ),  $I^2 = 0\%$

# MAIN RESULTS:

## Communicative skills: non-verbal



Test for subgroup differences:  $\text{Chi}^2 = 0.10$ ,  $\text{df} = 1$  ( $P = 0.76$ ),  $I^2 = 0\%$

# MAIN RESULTS:

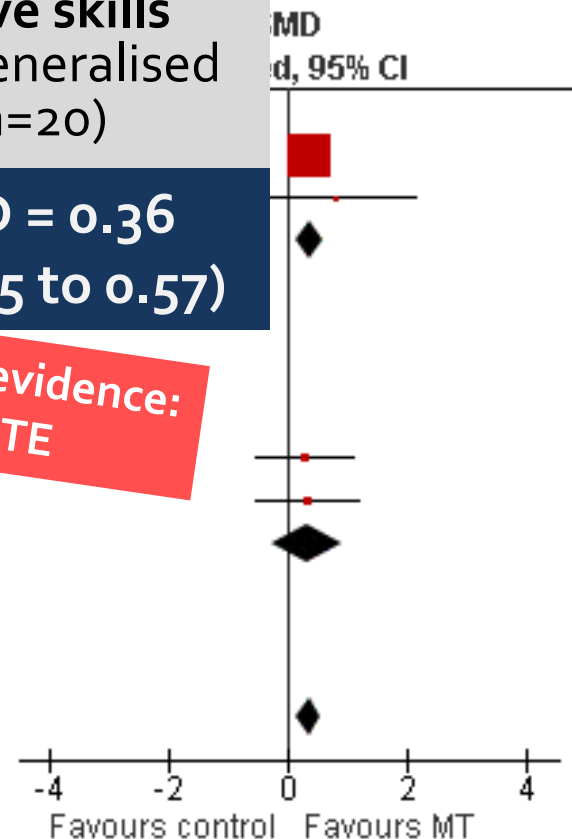
## Communicative skills: verbal

verbal communi-  
cative 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
<b>1.3.1 Within sessions</b>				
Buday 1995	0.3471	0.1097	86.2%	0.35
Farmer 2003	0.8066	0.6736	2.3%	0.81
<b>Subtotal (95% CI)</b>			<b>88.5%</b>	<b>0.36</b>
Heterogeneity: Chi <sup>2</sup> = 0.45, df = 1 (P = 0.50); I <sup>2</sup> = 0%				
Test for overall effect: Z = 3.32 (P = 0.0009)				
<b>1.3.2 Generalised (outside sessions, daily life)</b>				
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]
<b>Subtotal (95% CI)</b>			<b>11.5%</b>	<b>0.30 [-0.28, 0.89]</b>
Heterogeneity: Chi <sup>2</sup> = 0.01, df = 1 (P = 0.93); I <sup>2</sup> = 0%				
Test for overall effect: Z = 1.01 (P = 0.31)				
<b>Total (95% CI)</b>			<b>100.0%</b>	<b>0.35 [0.15, 0.55]</b>
Heterogeneity: Chi <sup>2</sup> = 0.49, df = 3 (P = 0.92); I <sup>2</sup> = 0%				
Test for overall effect: Z = 3.46 (P = 0.0005)				
Test for subgroup differences: Chi <sup>2</sup> = 0.03, df = 1 (P = 0.86), I <sup>2</sup> = 0%				





# MAIN RESULTS:

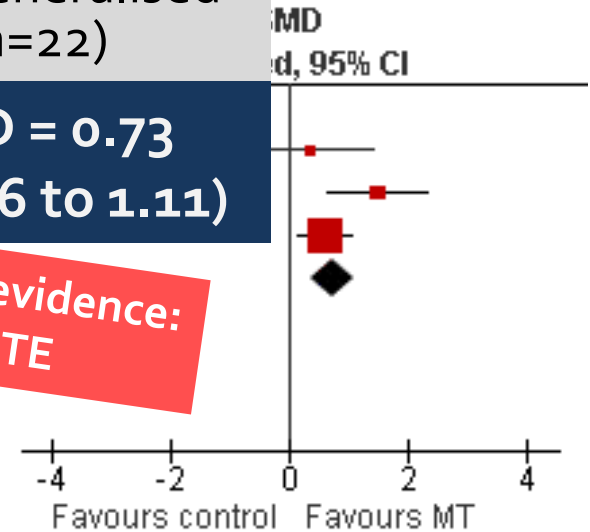
## Initiating behaviour

Study or Subgroup	SMD	SE	Weight	IV,
<b>1.4.1 Within sessions</b>				
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%	0.7
<b>Subtotal (95% CI)</b>			<b>100.0%</b>	<b>0.73</b>
Heterogeneity: Chi <sup>2</sup> = 3.91, df = 2 (P = 0.14); I <sup>2</sup> = 40%				
Test for overall effect: Z = 3.86 (P = 0.0001)				

initiating  
behaviour  
non-generalised  
(n=22)

**SMD = 0.73**  
**(CI 0.36 to 1.11)**

Quality of the evidence:  
**MODERATE**



Test for subgroup differences: Not applicable

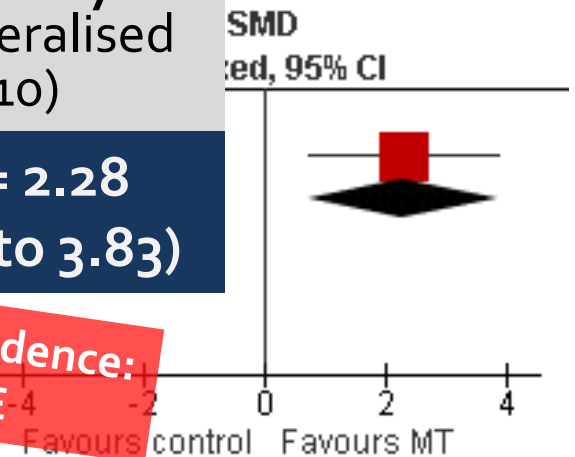
## Social-emotional reciprocity

Study or Subgroup	SMD	SE	Weight	IV,
<b>1.5.1 Within sessions</b>				
Kim 2008	2.28	0.79	100.0%	2.2
<b>Subtotal (95% CI)</b>			<b>100.0%</b>	<b>2.2</b>
Heterogeneity: Not applicable				
Test for overall effect: Z = 2.89 (P = 0.004)				

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

**SMD = 2.28**  
**(CI 0.73 to 3.83)**

Quality of the evidence:  
**MODERATE**



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

Geretsegger, M., Elefant, C., Mössler, K., & Gold, C. (submitted).  
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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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