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Raglio & Oasi, Front Psychol. 2015; 6:230

Table 1.Types of intervention with music in clinical settings and their characteristics.

MUSIC THERAPY APPROACHES		LISTENING TO MUSIC APPROACHES		MUSIC-BASED APPROACHES
Relational Music Therapy	**Rehabilitative Music Therapy**	**Individualized Music Listening**	**Listening To Music Based On Music Medicine Approach**	**General Music-Based Approaches**
- Trained music therapist - Therapeutic Setting - Psychological models - Relationship as the core of intervention - Specific techniques: active approaches (in particular sonorous-musical improvisation) or receptive approaches - Aims (aspiring to become stable and long-lasting over time): attenuation of behavioural and psychiatric symptoms and prevention/stabilization of complications; increase in communication and relationship skills (sometimes improvement of cognitive and motor functions) - Presence of assessment criteria	- Trained music therapist -Rehabilitative setting -Neuroscientific models - Motor, cognitive and sensory rehabilitation as the core of intervention - Specific techniques: active approaches; exercises using sonorous-musical elements (in particular rhythm) - Aims (aspiring to become stable and long-lasting over time): motor, cognitive and sensory changes (sometimes psychological changes) - Presence of assessment criteria	- Trained music therapist helps patient/client to create a playlist including music that meets his/her taste - Absence of a specific therapeutic setting - Neuroscientific and psychological models - Self administration of listening to favourite music is the core of intervention - Aims: attenuation of behavioural and psychological symptoms; improvement of cognitive functions - Presence of assessment criteria	- A staff with medical/therapeutic background (sometimes supported by a music therapist) creates specific music listening programs for patient/client - Absence of a specific therapeutic setting - Physiological and psychological models - Self administration of listening to tailored music is the core of intervention - Aims: to balance and regulate physical and biological processes; to reduce physical and psychological symptoms (i.e., depression, anxiety, stress, sleeping disorders, hypertension, burnout, etc); psychological empowerment - Presence of assessment criteria	- Absence of a music therapist - Absence of a specific therapeutic setting - Absence of a specific intervention model - Making music (structured musical initiatives: rhythmic use of instruments, singing, movement associated to music, etc.) and listening to music (classical music, soothing music, evocative music, etc) - Aims: well-being, improving mood and motivation, promoting socialization, motor and cognitive stimulation, etc. - Presence of assessment criteria

Clinical Psychology Review 29 (2009) 193–207

Contents lists available at ScienceDirect

Clinical Psychology Review

Dose–response relationship in music therapy for people with serious mental disorders: Systematic review and meta-analysis

Christian Gold [a,*], Hans Petter Solli [b,c], Viggo Krüger [b], Stein Atle Lie [a]

"...Music therapy is a **special type of psychotherapy** where forms of musical interaction and communication are used alongside verbal communication. It has been defined as "a systematic process of intervention wherein the therapist helps the client to promote health, using music experiences and the relationships developing through them as dynamic forces of change" (Bruscia, 1998). The **types of 'music experiences' used in music therapy can include free and structured improvisation, other types of active music-making by patients, and listening to music. Improvisation is perhaps the most prominent form of musical interaction in music therapy... Music therapists are specifically trained to intervene therapeutically within the medium**, for example to support by providing rhythmical or tonal grounding, to clarify, to confront or to challenge the client's expression in the music (Bruscia, 1987; Wigram, 2004). Other modes of music experiences in music therapy include playing composed music on instruments, singing and writing or improvising songs (Baker & Wigram, 2005), and listening to music (Grocke & Wigram, 2006)... **All these different modes of 'music experiences' become therapeutic by being used in the context of a therapeutic relationship**. Verbal discussions, reflections, or interpretations connected to the music are important to help clients explore the potential meaning of an experience, and to relate a new experience within therapy to situations in the client's life. The degree to which the music experience itself, versus the verbal reflection connected to it, is seen as the active agent of change may vary between models of music therapy (Garred, 2004), as well as between clients.

However**, treatments that rely solely on the direct effects of music alone, which do not "involve or depend upon a process of intervention and change within a client–therapist relationship" ("auxiliary level", Bruscia, 1998, p. 195), are not music therapy.** The term 'music medicine' is sometimes used to distinguish such treatments from music therapy."...

Alfredo Raglio, Ph.D.

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D. Stern: “Baby talk is a good example… When you talk to a baby you automatically do a whole bunch of things. You raise your pitch, you make it more melodic, the pauses are different, and they do that in every culture in the world, every place that we’ve looked. And the baby’s nervous system’s designed to that.”

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The communication is based on modulations and variations of sonorous-musical parameters...

- Rhythms
- Timbre (tone color)
- Melodic contour
- Agogic
- Loudness
- ...

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PSYCHOLOGICAL BASES OF MUSIC THERAPY...

(STERN, 1975;1985;2004;2010; BENENZON, 1984; TRONICK, 1989;TREVARTHEN & AITKEN, 2001; WIGRAM, 2004; HILLECKE ET AL., 2005; KIM ET AL., 2009; RAGLIO & OASI, 2009; KOELSCH, 2009; 2010)

- THE SOUND AS EARLY ORGANIZER AND REGULATOR OF COMMUNICATION AND EMOTIONS (RELATIONSHIP BETWEEN MOTHER AND INFANT)
- THE SONOROUS-MUSIC INTERACTION FACILITATES THE PROCESS OF EXPRESSION, ORGANIZATION, MODULATION AND (CO-)REGULATION OF THE RELATIONSHIP
- THE SONOROUS-MUSICAL PARAMETERS REFLECT DYNAMIC AND KINETIC ELEMENTS OF EMOTIONAL EXPERIENCES
- SONOROUS-MUSICAL AND NON VERBAL COMMUNICATION PROMOTES AND FACILITATES MEETING MOMENTS AND EMPATHETIC RELATIONSHIP

Active music therapy (intersubjective approach)

(Tronick, 1989; Beebe, 2002; Fogel, 1993; Trevarthen, 2001; Stern, 1987; 2005; Raglio, 2008; Raglio & Gianelli 2009; Raglio & Oasi 2010)

Active music therapy (intersubjecive approach) is based on direct relationship between patient and music therapist. Patients are stimulated by therapist using rhythmic and melodic patterns (vocal and instrumental setting). The music therapist modulates and tailors the proposals reflecting the arousal level and emotional, motor, behavioral and sonorous-music responses of patients to music . The sonorous-music production of the music therapist includes free and strucured improvisation. The aims of these interactions are:

1.to stimulate the patient from a relational, emotional, cognitive, motor point of view

2.to regulate and modulate emotional and behavioral responses

3.to establish an empathetic relationship (“affect attunement”)

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Raglio & Oasi, Front Psychol. 2015; 6:230

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NEUROSCIENTIFIC BASES OF MUSIC THERAPY

Alfredo Raglio, Ph.D.

Current Advances in the Cognitive Neuroscience of Music

Daniel J. Levitin and Anna K. Tirovolas

Ann. N.Y. Acad. Sci. 1156: 211–231 (2009).

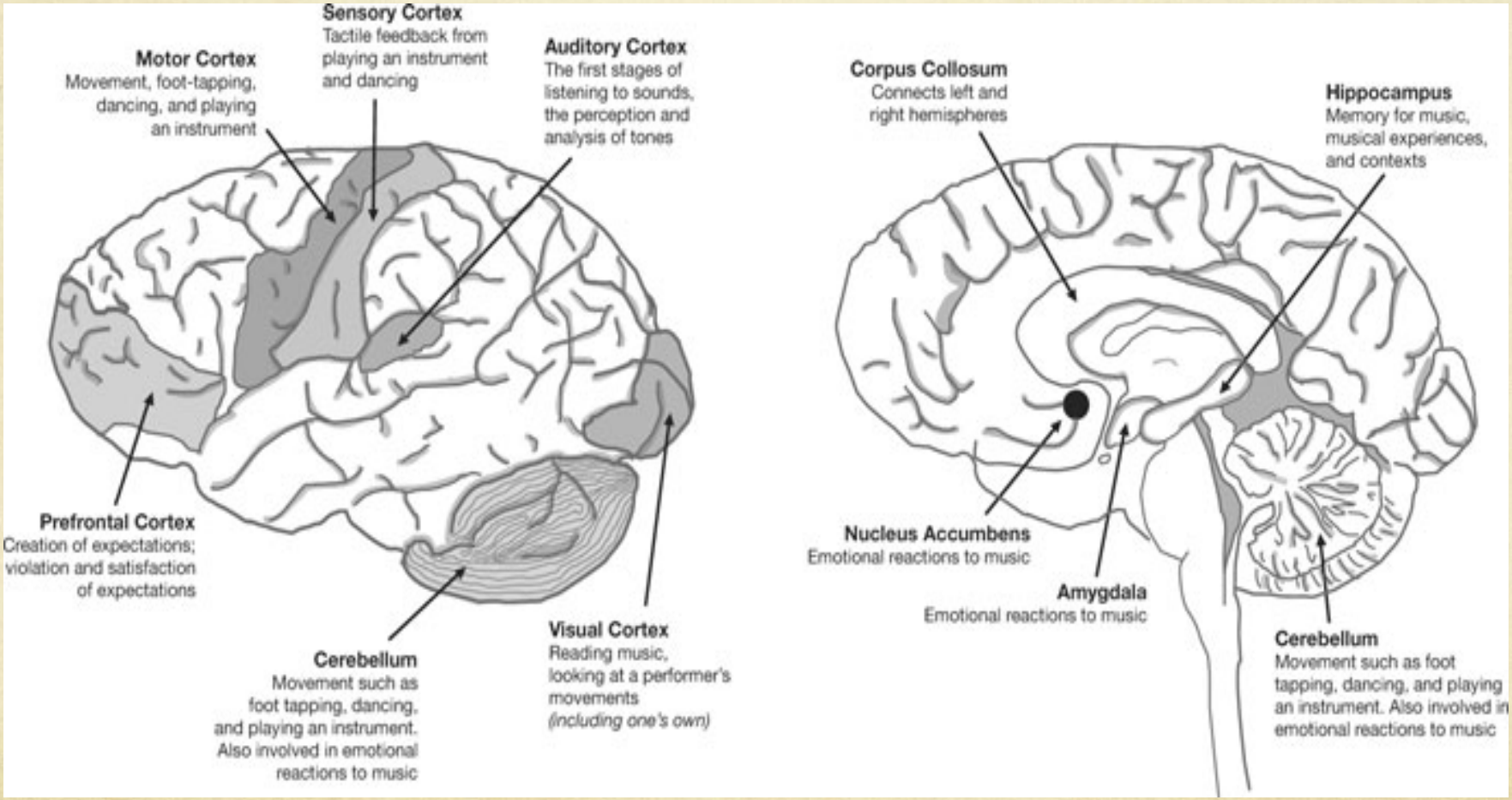

Figure 1. Core brain regions associated with musical activity. Based on Tramo 2001 and updated in 2006 (from Levitin 2006).

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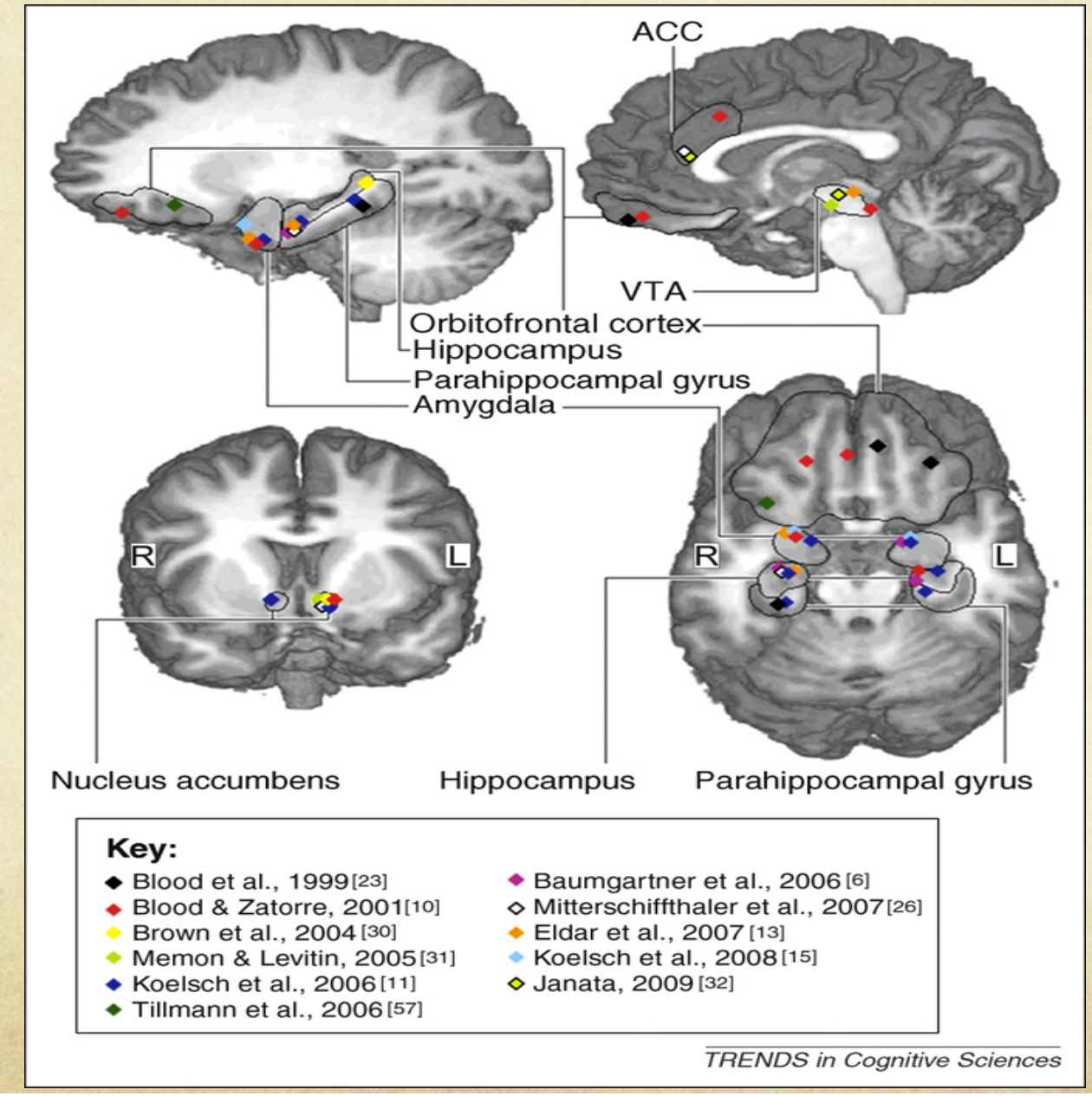
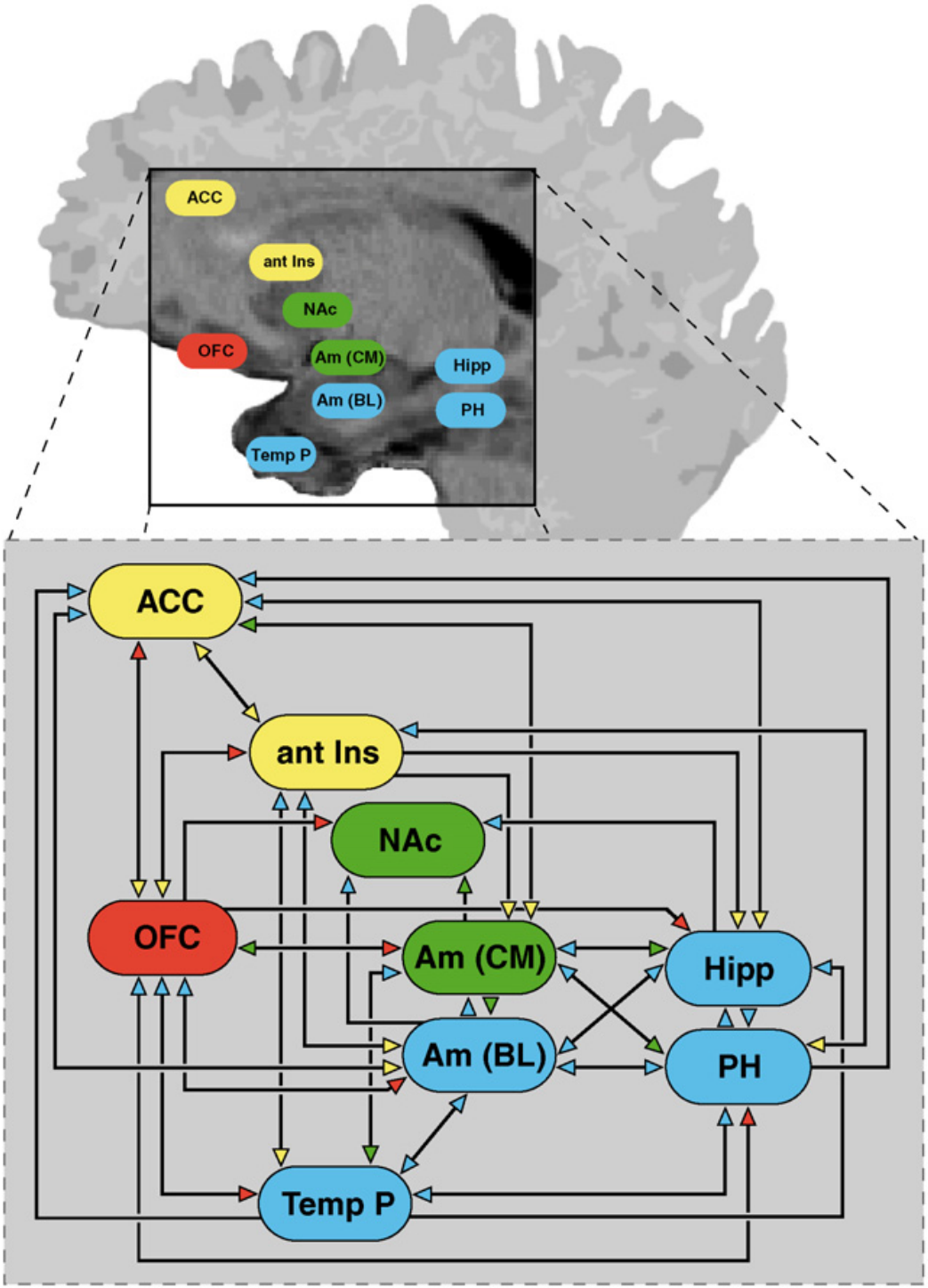
Illustration of some structures belonging to the limbic/paralimbic system. The diamonds represent music-evoked activity changes in these structures (Koelsch, 2010)





Koelsch, 2010

Figure 2. Schematic representation of anatomical connections of some limbic and paralimbic structures involved in the emotional processing of music (Figure 1 and main text). ACC: anterior cingulate cortex; ant Ins: anterior insula; Am (BL): basolateral amygdala; Am (CM) corticomedial amygdala (including the central nucleus), Hipp: hippocampal formation; NAc: nucleus accumbens; OFC: orbitofrontal cortex; PH: parahippocampal gyrus; Temp P: temporal pole.
Connectivity is depicted based on Refs. [37,79–81].

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Note the repeatedly reported activations of amygdala, nucleus accumbens and hippocampus, reflecting that music is capable of modulating activity in core structures of emotion.

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Neural Reorganization Underlies Improvement in Stroke-induced Motor Dysfunction by Music-supported Therapy

E. Altenmüller,[a] J. Marco-Pallares,[b] T. F. Münte,[b] and S. Schneider[a]

[a] Institute of Music Physiology and Musicians' Medicine, University of Music and Drama Hannover, Hannover, Germany

[b] Department of Neuropsychology, Otto von Guericke University, Magdeburg, Germany

Ann. N.Y. Acad. Sci. 1169: 395–405 (2009).

Altenmuller, 2009

Some “studies has shown rapid plastic adaptation due to music performance, which is not restricted to cortical motor areas but also involves auditory and integrative auditory–sensorimotor circuits (Bangert & Altenmuller, 2003; Bangert et al, 2006; Meyer et al., 2007; Bauman et al., 2007).

…

music-making, even in unskilled patients, **might be an effective means to induce plastic changes in the motor system**.

…

While sharing the repetitive character of movements with other therapies, **music could in addition shape movements through the immediate auditory feedback**. Moreover, the high **motivational value of music** and, possibly, audio–sensorimotor coupling imply that music might be useful in the rehabilitation process (Bangert & Altenmuller, 2003; Bangert et al, 2006)”.

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There is a significant connection between rhythm and movement (activation of motor areas– premotor cortex, supplementary motor areas, cerebellum, basal ganglia – synchronization, regulation, modulation...)

Halsband et al., 1993; Janata et al., 2003; Peretz & Zatorre, 2005; Zatorre et al., 2007; Chenn et al., 2008; 2009; Grahn & Brett, 2007; 2009; Schwartze et al., 2011

Part VI Introduction

Listening to and Making Music Facilitates Brain Recovery Processes

Gottfried Schlaug

Department of Neurology; Music, Stroke Recovery, and Neuroimaging Laboratories, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, Massachusetts, USA

Ann. N.Y. Acad. Sci. 1169: 372–373 (2009).

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Schlaug, 2009

- … long-term music training and skill learning can be a strong stimulator for **neuroplastic changes** in the developing as well as adult brain.
- **Making music** places unique demands on the nervous system, leading to **strong coupling of perception and action** mediated by sensory, motor, and multimodal integrative regions distributed throughout the brain.
- … **listening to music and making music ("musicking")provokes motion, improves and increases between-subject communication and interaction, and is considered to be and experienced as a joyous and rewarding activity.**

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◆ ◆ ◆

- **Music is a strong multimodal stimulus** that simultaneously transmits visual, auditory, and motoric information to a specialized brain network consisting of **frontotemporo-parietal regions whose components are also part of the putative human mirror neuron system.**

- Among other functions**, this system might support the coupling between perceptual events (visual or auditory) and motor actions (leg, arm/hand, or vocal/articulatory actions)**. Music might be a special vehicle to engage components of this mirror-neuron system.
  Furthermore,music might also provide an alternative entry point into a "broken" brain system **to remediate impaired neural processes or neural connections by engaging and linking up brain centers that would otherwise not be engaged or linked with each other.**

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...

- Using an instrument or using one's own voice alone or within a group involves, in a unique way, a feed-forward and feedback circuit in the brain that connects sensory and motor regions. **Training-induced and use-dependent plastic changes within the nodal points of these networks and in the fiber bundles connecting these regions might underlie effects that outlast the duration of the actual intervention.**

Altenmuller, 2009

Some “studies has shown rapid plastic adaptation due to music performance, which is not restricted to cortical motor areas but also involves auditory and integrative auditory–sensorimotor circuits (Bangert & Altenmuller, 2003; Bangert et al, 2006; Meyer et al., 2007; Bauman et al., 2007).

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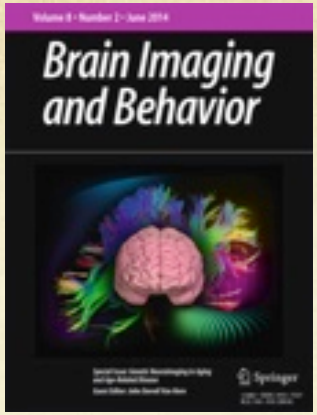

Raglio A, Galandra C, Sibilla L, Esposito F, Gaeta F, Di Salle F, Moro L, Carne I, Bastianello S, Baldi M, Imbriani M

Effects of Active Music Therapy on the Normal Brain: fMRI Based Evidence

Brain Imaging Behav, 2016;10(1):182-6

Alfredo Raglio, Ph.D.

ABSTRACT

The aim of this study was to investigate the neurophysiological bases of Active Music Therapy (AMT) and its effects on the normal brain. Twelve right-handed, healthy, non-musician volunteers were recruited. The subjects underwent 2 AMT sessions based on the free sonorous-music improvisation using rhythmic and melodic instruments. After sessions each subject underwent 2 fMRI scans acquisition during the listening to a Syntonic (SP) and A-Syntonic (AP) Production from the AMT sessions. A 3T Discovery MR750 scanner with a 16-channel phased array head coil was used and the image analysis was conducted with Brain Voyager QX 2.8. The listening to SP vs AP excerpts mainly activated: (1) the right middle temporal gyrus and right superior temporal sulcus, (2) the right middle frontal gyrus and in particular the right precentral gyrus, (3) the bilateral precuneus, (4) the left superior temporal sulcus and (5) the left middle temporal gyrus. These results are consistent with the psychological bases of AMT approach an with the activation of those brain's areas involved in memory and autobiographical processes but also in personal or interpersonal significant experiences. Further studies are required to confirm these findings and to explain possible effects of AMT in clinical settings.

Alfredo Raglio, Ph.D.

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Discussione

- Attivazione delle **Corteccia Prefrontale Mediale:**

1.creatività, libera espressione ➔ improvvisazione 2.espressione di sé, situazioni autobiografiche significative ➔ ricordo e dimensione emotivo-interpersonale della seduta

- Attivazione del **Precuneo:**

Compiti visuo-spaziali, memoria episodica, componente elaborativa, ToM, social cognition, attribuzione di stati emotivi, eventi autobiografici ➔ricordo e dimensione emotivo-interpersonale della seduta

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Scientific Perspectives on Music Therapy

THOMAS HILLECKE, ANNE NICKEL, AND HANS VOLKER BOLAY

German Center for Music Therapy Research, and Outpatient Department, University of Applied Sciences Heidelberg, D-68123 Heidelberg, Germany

Ann. N.Y. Acad. Sci. 1060: 271–282 (2005).

The fourth factor is called *behavior modulation* or *motoric behavioral factor*: The basic assumption is that music represents a useful possibility to evoke and condition behavior, such as movement patterns, without the necessity of conscious will. The association of music and dance is well known. Marching songs are common, and the military offers a great variety of military marches. Neuroscientists, like the team of Michael Thaut, point out that rhythmic stimulation influences timing processes in the frontal brain and associated neural structures (neurologic music therapy, NMT). This factor is used therapeutically in gait rehabilitation of stroke patients and in the treatment of movement problems, for example, in Parkinson patients.[42,43] Music and auditive stimulation—known since the time of Pavlov—is a useful tool in behavioral conditioning in general. The analysis of the behavioral component of patients' performing music is of central interest in active music therapy and important in facilitating the learning of new behaviors. It is used as a theoretical framework in behavioral music therapy.[44,45]

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Neurologic Music Therapy

Basic Definitions

- NMT is defined as the therapeutic application of music to cognitive, sensory, and motor dysfunctions due to neurologic disease of the human nervous system.

Thaut, M.H. (1999). Training Manual for Neurologic Music Therapy

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Neurologic Music Therapy

A Research-Based System of Standardized Clinical Techniques

- Colorado State University
  - Center for Biomedical Research in Music and Neurologic Rehabilitation
    - Michael Thaut, Ph.D Neuroscience/Music Therapy
    - Gerald McIntosh, M.D. Neurologist
    - Ruth Rice, MS PT PT, Neurologic Rehabilitation
    - Gary Kenyon, MS Biomechanics, Mathematics
    - Corene Thaut, MM MT, Neurologic Rehabilitation

Thaut, M.H. (1999). Training Manual for Neurologic Music Therapy

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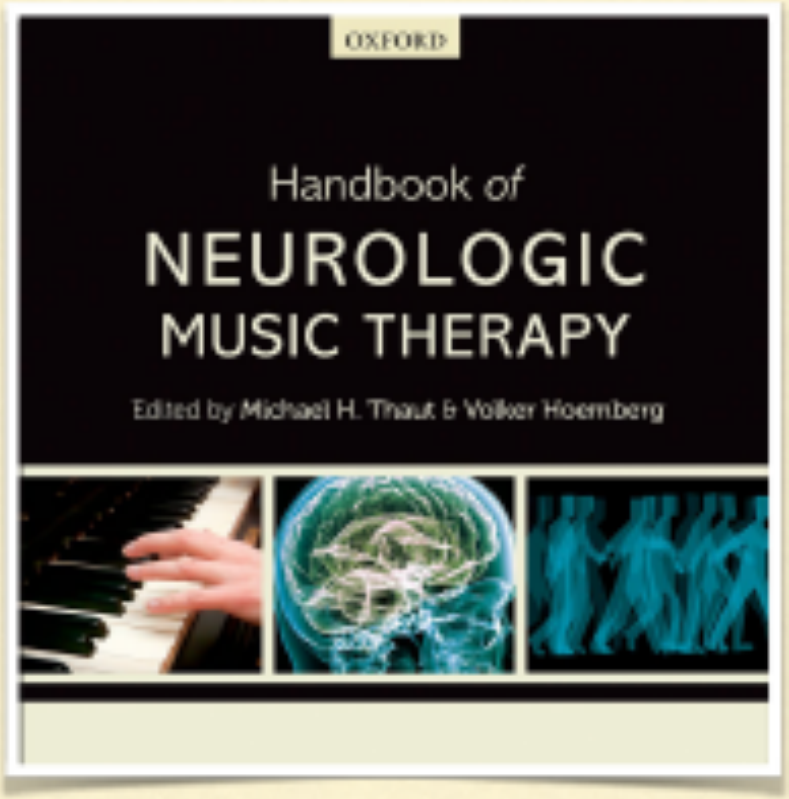
NEUROLOGIC MUSIC THERAPY



Handbook of Neurologic Music Therapy

Michael H. Thaut, Volker Hoemberg

Oxford University Press, 2014

Alfredo Raglio, Ph.D.

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NMT (LE 20 TECNICHE)

1. Rhythmic Auditory Stimulation (**RAS**)
2. Patterned Sensory Enhancement (**PSE**)
3. Therapeutic Instrumental Music Performance (**TIMP**)
4. Melodic Intonation Therapy (**MIT**)
5. Musical Speech Stimulation (**MUSTIM**)
6. Rhythmic Speech Cuing (**RSC**)
7. Vocal Intonation Therapy (**VIT**)
8. Therapeutic Singing (**TS**)
9. Oral Motor and Respiratory Exercises (**OMREX**)
10. Developmental Speech and Language Training Through Music (**DSLM**)
11. Symbolic Communication Training Through Music (**SYCOM**)
12. Musical Sensory Orientation Training (**MSOT**)
13. Musical Neglect Training (**MNT**)
14. Auditory Perception Training (**APT**)
15. Musical Attention Control Training (**MACT**)
16. Musical Mnemonics Training (**MMT**)
17. Musical Echoic Memory Training (**MEMT**)
18. Associative Mood and Memory Training (**AMMT**)
19. Musical Executive Function Training (**MEFT**)
20. Music in Psychosocial Training and Counseling (**MPC**)

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The neurochemistry of music

Mona Lisa Chanda and Daniel J. Levitin

Trends in Cognitive Sciences, 2013, Vol. 17, No. 4

Department of Psychology, McGill University, Montreal, Quebec, QC H3A 1B1, Canada

Music is used to regulate mood and arousal in everyday life and to promote physical and psychological health and well-being in clinical settings. However, scientific inquiry into the neurochemical effects of music is still in its infancy. In this review, we evaluate the evidence that music improves health and well-being through the engagement of neurochemical systems for (1) reward, motivation, and pleasure; (2) stress and arousal; (3) immunity; and (4) social affiliation...

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Chanda & Levitin, 2013
Neurochemical Systems involved in the listening to and making music

① Dopamine and opioids

② Cortisol, corticotrophin-releasing hormone (CRH), adernocorticotropic hormone (ACTH)

③ Serotonin and the peptide derivatides of proopriomelanocortin (POMC), including alpha-melanocyte stimulating hormone and beta-endorphin

④ Oxytocin

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Effects of music therapy on vital signs (systolic blood pressure, diastolic blood pressure, heart rate, heart rate variability, etc.)

Kumar et al., 1999; Suzuki et al., 2004; 2005; Takahashi et al., 2006; Boso et al., 2006; Okada et al., 2009; Raglio et al., 2010; Loomba et al., 2012...

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Raglio & Oasi, Front Psychol. 2015; 6:230

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Musicoterapia e ascolto musicale

Musicoterapia

- Componente relazionale (presenza costante del musicoterapeuta)
- Basi psicologiche (approcci relazionali) e neuroscientifiche (approcci riabilitativi)
- Setting terapeutico strutturato
- Obiettivi terapeutici medio-lungo termine (processo)

Ascolto musicale

- Auto-somministrazione (azione diretta della musica)
- Basi psicologiche e neurofisiologiche
- Setting flessibile
- Obiettivi prevalenti breve termine (maggiore efficacia sui sintomi transitori)

Alfredo Raglio, Ph.D.

Ascolto musicale

- Scelto dal paziente* (musica preferita, scelta soggettiva)
- Proposto dal terapeuta (attenzione posta sulle caratteristiche parametrali e strutturali della musica)

*talvolta la scelta è tra una serie di proposte (vari generi, vari brani): situazione ibrida

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Da che cosa è influenzato l'ascolto musicale?

- Aspetti culturali
- Personalità (tratto)
- Condizione psicologica (stato)
- Componente patologica
- Training/competenza musicale
- Strutture e parametri musicali
- Condizione di ascolto
- ...

Efficacia documentata (vari contesti clinici):

- Aspetti psicologici (ansia, stress, umore...)
- Aspetti comportamentali (agitazione)
- Aspetti cognitivi (memoria, attenzione, ...)
- Qualità di vita
- ...

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Expert Rev Neurother. 2016;16(11):1241-1249.

The effects of music listening interventions on cognition and mood post-stroke: a systematic review.

Baylan S, Swann-Price R, Peryer G, Quinn T

- 5 studi/169 partecipanti
- Tutti gli studi mostrano benefici su almeno un aspetto cognitivo o sull'umore

Int Psychogeriatr. 2000;12(1):49-65.

Effects of individualized versus classical "relaxation" music on the frequency of agitation in elderly persons with Alzheimer's disease and related disorders.

Gerdner LA.

- Effetti dell'ascolto musicale individualizzato sull'agitazione
- ...

Cochrane Database Syst Rev. 2016;8:CD006911.

Music interventions for improving psychological and physical outcomes in cancer patients.

Bradt J, Dileo C, Magill L, Teague A.

- 29/52 studi si riferiscono all'ascolto musicale
- Effetti: ansia, depressione, tono dell'umore; alcuni singoli studi documentano riduzione di anestetici, analgesici e tempi di recupero, durata ospedalizzazione
- Effetti minori sui parametri fisiologici
- Alto rischio di bias e cautela nell'interpretazione dei dati

Front Hum Neurosci. 2015;9:434.

The effects of music listening on pain and stress in the daily life of patients with fibromyalgia syndrome.

Linnemann A, Kappert MB, Fischer S, Doerr JM, Strahler J, Nater UM.

- Effetti sul controllo del dolore percepito

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Cochrane Database Syst Rev. 2013;6:CD006908.

Music interventions for preoperative anxiety

Bradt J, Dileo C, ShimM.

- 26/26 studi si riferiscono all'ascolto musicale
- Effetti: riduzione significativa ansia pre-operatoria
- Effetti minori sui parametri fisiologici
- Conclusioni coerenti con quelle di altre 3 revisioni Cochrane relative alla riduzione dell'ansia in altri contesti clinici

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Lancet. 2015 Oct 24;386(10004):1659-71.

Music as an aid for postoperative recovery in adults: a systematic review and meta-analysis.

Hole J, Hirsch M, Ball E, Meads C.

- Effetti in generale nel setting peri-operatorio
- Effetti sulla riduzione del dolore post-operatorio, dell'ansia, dell'utilizzo di analgesici e sull'aumento del grado di soddisfazione dei pazienti
- ...

Quali problematiche applicative?

- Scarsa definizione dello stimolo sonoro-musicale
- Controllo dei parametri e delle strutture musicali
- Scarso rigore metodologico generale
- Rigore nella definizione della tipologia dei gruppi di controllo (definire la specificità terapeutica dello stimolo sonoro)
- Individuare indicatori di efficacia oggettivi

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Questioni aperte...

- Maggiore definizione delle tipologie di ascolto (razionale terapeutico)
- Definire con maggiore rigore i protocolli applicativi e di ricerca
- Studi comparativi relativi a differenti modalità di ascolto (es. self-selected vs non self-selected) e ad ascolto musicale vs fare musica
- Approfondire l'impatto dell'ascolto musicale su differenti popolazioni cliniche
- Studiare gli effetti a breve e lungo termine
- Ruolo del musicoterapeuta nell'utilizzo dell'ascolto musicale
- ...

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Raglio & Oasi, Front Psychol. 2015; 6:230

Table 1.Types of intervention with music in clinical settings and their characteristics.

MUSIC THERAPY APPROACHES		LISTENING TO MUSIC APPROACHES		MUSIC-BASED APPROACHES
Relational Music Therapy	**Rehabilitative Music Therapy**	**Individualized Music Listening**	**Listening To Music Based On Music Medicine Approach**	**General Music-Based Approaches**
- Trained music therapist - Therapeutic Setting - Psychological models - Relationship as the core of intervention - Specific techniques: active approaches (in particular sonorous-musical improvisation) or receptive approaches - Aims (aspiring to become stable and long-lasting over time): attenuation of behavioural and psychiatric symptoms and prevention/stabilization of complications; increase in communication and relationship skills (sometimes improvement of cognitive and motor functions) - Presence of assessment criteria	- Trained music therapist -Rehabilitative setting -Neuroscientific models - Motor, cognitive and sensory rehabilitation as the core of intervention - Specific techniques: active approaches; exercises using sonorous-musical elements (in particular rhythm) - Aims (aspiring to become stable and long-lasting over time): motor, cognitive and sensory changes (sometimes psychological changes) - Presence of assessment criteria	- Trained music therapist helps patient/client to create a playlist including music that meets his/her taste - Absence of a specific therapeutic setting - Neuroscientific and psychological models - Self administration of listening to favourite music is the core of intervention - Aims: attenuation of behavioural and psychological symptoms; improvement of cognitive functions - Presence of assessment criteria	- A staff with medical/therapeutic background (sometimes supported by a music therapist) creates specific music listening programs for patient/client - Absence of a specific therapeutic setting - Physiological and psychological models - Self administration of listening to tailored music is the core of intervention - Aims: to balance and regulate physical and biological processes; to reduce physical and psychological symptoms (i.e., depression, anxiety, stress, sleeping disorders, hypertension, burnout, etc); psychological empowerment - Presence of assessment criteria	- Absence of a music therapist - Absence of a specific therapeutic setting - Absence of a specific intervention model - Making music (structured musical initiatives: rhythmic use of instruments, singing, movement associated to music, etc.) and listening to music (classical music, soothing music, evocative music, etc) - Aims: well-being, improving mood and motivation, promoting socialization, motor and cognitive stimulation, etc. - Presence of assessment criteria

Listening to and making music activate social functions (Koelsch, 2010)

- Contact
- Social cognition (Steinbeis & Koelsch, 2009; Koelsch, 2009)
- Co-pathy
- Communication (Trehub, 2003; Fitch, 2006)
- Coordination (Overy & Molnar-Szakacs, 2009; Patel, 2009; Kirschner & Tomasello, 2009)
- Cooperation (Rilling et al., 2002; Tomasello, 2005)
- Social cohesion (Baumeister &Leary, 1995; Cross & Morley, 2008)

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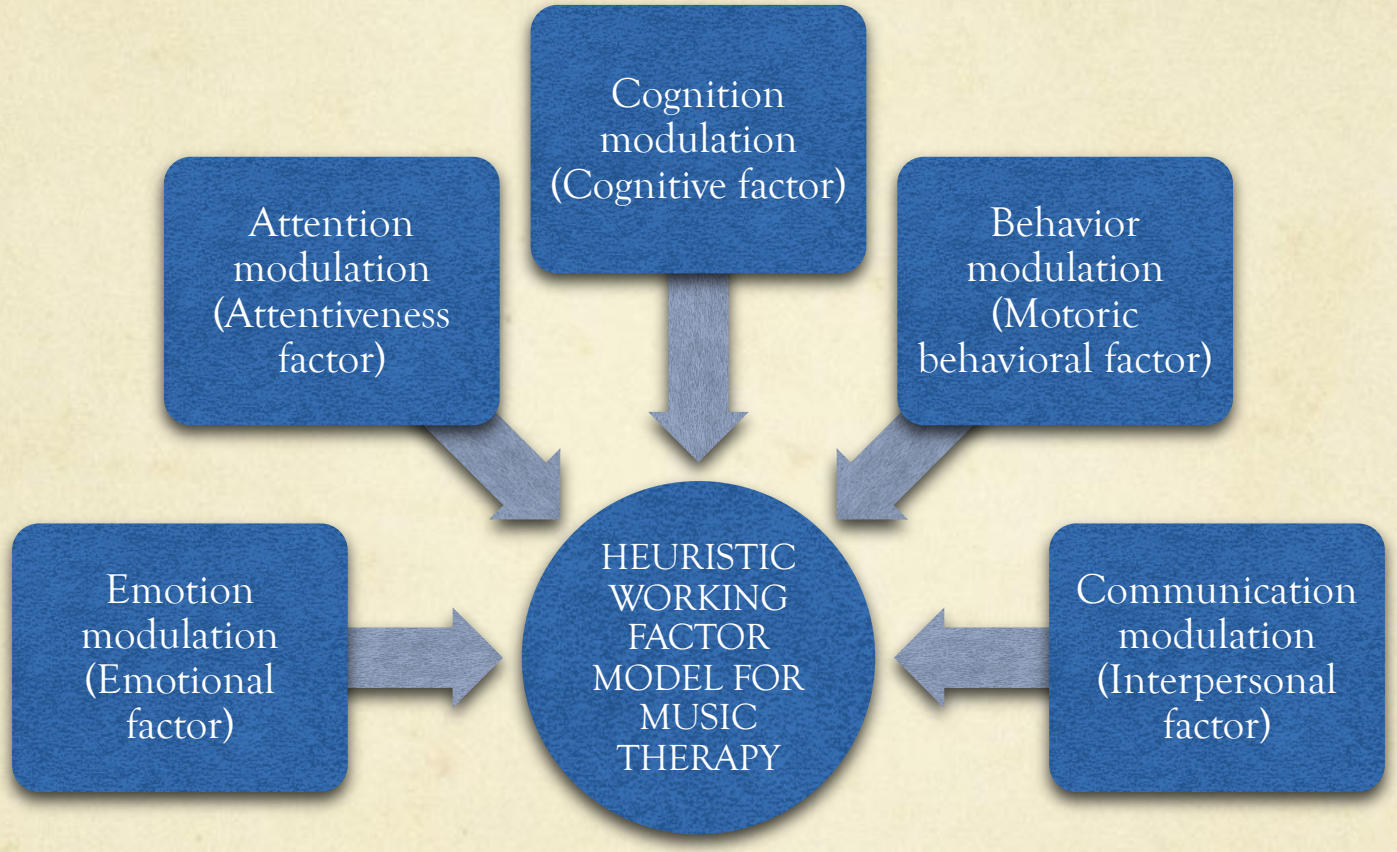
Scientific Perspectives on Music Therapy

THOMAS HILLECKE, ANNE NICKEL, AND HANS VOLKER BOLAY

Ann. N.Y. Acad. Sci. 1060: 271–282 (2005)



Plasticity - Connectivity

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Fields of Music Therapy

- Psychiatry (schizofrenia, depression, autism, intellectual disability, etc)
- Neurology (dementia, Parkinson's disease, stroke, multiple sclerosis, amyotrophic lateral sclerosis, disturbances of consciousness, etc)
- Oncology/Palliative care
- Chronic Pain
- Hospital setting (anxiety, pain, etc)
- ...

Musicoterapia e...

- Cancro (Bradt et al., 2016)
- Depressione (Maratos et al., 2008)
- Cure di fine vita (Bradt & Dileo, 2014)
- Danno cerebrale acquisito (Magee et al., 2017)
- Autismo (Geretsegger et al., 2014)
- Demenza (van der Steen et al., 2017)
- Schizofrenia (Geretsegger et al., 2017)
- Ansia pre-operatoria (Bradt et al., 2013

...

Music therapy for acquired brain injury (2017)

MageeWL, Clark I, Tamplin J, Bradt J

(29 studies, 775 partecipants)

Music interventions may be beneficial for gait, the timing of upper extremity function, communication outcomes, and quality of life after stroke. These results are encouraging, but more high-quality randomised controlled trials are needed on all outcomes before recommendations can be made for clinical practice.

Alfredo Raglio, Ph.D.

Music interventions for improving psychological and physical outcomes in cancer patients (2016)

Bradt J, Dileo C, Magill L, Teague A

(52 studies, 3731 partecipants)

This systematic review indicates that music interventions may have beneficial effects on anxiety, pain, fatigue and QoL in people with cancer. Furthermore, music may have a small effect on heart rate, respiratory rate and blood pressure. Most trials were at high risk of bias and, therefore, these results need to be interpreted with caution.

Music therapy for people with schizophrenia and schizophrenia-like disorders (2017)

Geretsegger M, Mössler KA, Bieleninik Ł, Chen XJ, Heldal TO, Gold C.

(18 studies, 1215 partecipants)

Moderate- to low-quality evidence suggests that music therapy as an addition to standard care improves the global state, mental state (including negative and general symptoms), social functioning, and quality of life of people with schizophrenia or schizophrenia-like disorders. However, effects were inconsistent across studies and depended on the number of music therapy sessions as well as the quality of the music therapy provided. Further research should especially address the long-term effects of music therapy, dose-response relationships, as well as the relevance of outcome measures in relation to music therapy.

Music therapy for autistic spectrum disorder(2014)

Geretsegger M, Elefant C, Mössler KA, Gold C

(10 studies, 165 partecipants)

The findings of this updated review provide evidence that music therapy may help children with ASD to improve their skills in primary outcome areas that constitute the core of the condition including social interaction, verbal communication, initiating behaviour, and social-emotional reciprocity. Music therapy may also help to enhance non-verbal communication skills within the therapy context.Furthermore, in secondary outcome areas, music therapymay contribute to increasing social adaptation skills in children with ASDand to promoting the quality of parent-child relationships. In contrast to the studies included in an earlier version of this review published in 2006, the new studies included in this update enhanced the applicability of findings to clinical practice. More research using larger samples and generalised outcome measures is needed to corroborate these findings and to examine whether the effects of music therapy are enduring. When applying the results of this review to practice, it is important to note that the application of music therapy requires specialised academic and clinical training.

Music therapy for depression (2017)

Aalbers S, Fusar-Poli L, Freeman RE, Spreen M, Ket JCF, Vink AC, Maratos A, Crawford M, Chen XJ, Gold C

(9 studies, 421 partecipants)

Findings of the present meta-analysis indicate that music therapy provides short-term beneficial effects for people with depression. Music therapy added to treatment as usual (TAU) seems to improve depressive symptoms compared with TAU alone. Additionally, music therapy plus TAU is not associated with more or fewer adverse events than TAU alone. Music therapy also shows efficacy indecreasing anxiety levels and improving functioning of depressed individuals. Future trials based on adequate design and larger samples of children and adolescents are needed to consolidate our findings. Researchers should consider investigating mechanisms of music therapy for depression. It is important to clearly describe music therapy, TAU, the comparator condition, and the profession of the person who delivers the intervention, for reproducibility and comparison purposes.

Alfredo Raglio, Ph.D.

Music-based therapeutic interventions for people with dementia (2017)

van der Steen JT, van Soest-Poortvliet MC, van derWouden JC, Bruinsma MS, Scholten RJPM, Vink AC

(16 studies, 620 partecipants)

Providing people with dementia with at least five sessions of a music-based therapeutic intervention probably reduces depressive symptoms but has little or no effect on agitation or aggression. There may also be little or no effect on emotional well-being or quality of life, overall behavioural problems and cognition. We are uncertain about effects on anxiety or social behaviour, and about any longterm effects. Future studies should employ larger sample sizes, and include all important outcomes, in particular 'positive' outcomes such as emotional well-being and social outcomes. Future studies should also examine the duration of effects in relation to the overall duration of treatment and the number of sessions.

Music interventions for preoperative anxiety (2013, up-to-date 2012)

Bradt J, Dileo C, Shim M

(26 studies, 2051 partecipants)

This systematic review indicates that music listening may have a beneficial effect on preoperative anxiety. These findings are consistent with the findings of three other Cochrane systematic reviews on the use of music interventions for anxiety reduction in medical patients. Therefore, we conclude that music interventions may provide a viable alternative to sedatives and anti-anxiety drugs for reducing preoperative anxiety.