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ARTICLE

Therapeutic Music Training (TMT): A music therapy model using music training on an instrument to address therapeutic goals in the areas of cognition and psychosocial health

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ABSTRACT

Music training has been noted for its benefits, both musical and non-musical, for the learner. Grounded in literature and informed by clinical work, the music therapy model *Therapeutic Music Training* (TMT) was developed. TMT uses the experience of learning to play an instrument to target specific non-music therapeutic goals in the areas of cognition and psychosocial health. Music training specifically is critical, as the components and characteristics of music contribute to the therapeutic mechanisms for both cognitive and psychosocial goals. Because of the engagement of the prefrontal cortex and the demands placed on cognitive control and working memory during TMT, it can be a unique and effective intervention for cognitive rehabilitation. The positive impact of new skill learning on self-perception, and the inherent expressiveness of music production, allows for TMT to be used to address a number of psychosocial goals. This paper introduces TMT and describes the theoretical bases for this music therapy model.

KEYWORDS

music training, attention, cognitive rehabilitation, psychosocial goals, sense-of-self, self-empowerment

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INTRODUCTION

Music training is valued for the many benefits it provides to the learner. These benefits range from the pleasure of the experience of performing music, and musical self-expression, to enhanced speech processing (Wong et al., 2007), phonological awareness (Dege & Schwarzer, 2011) and reading skills (Douglas & Willatts, 1994; Gardiner, Fox, Knowles & Jeffery, 1996). The act of performing on an instrument may also result in social benefits as students perform for and with each other (MacDonald & Miell, 2000). Because of the value of music training, many schools include music education along

with 'core' subjects, and conservatories promote their music programmes by highlighting the range of potential non-musical outcomes as a result of learning to play an instrument. In addition to the noted benefits, there is a further application and benefit of music training: therapy.

Grounded in literature and informed by clinical work, the music therapy model *Therapeutic Music Training* (TMT) was developed. TMT uses the experience of learning to play an instrument to target specific non-music therapeutic goals of the client. The primary goal areas addressed by TMT are cognition and psychosocial health. Because of the engagement of the prefrontal cortex and the demands placed on cognitive control and working memory, TMT can be a unique and effective intervention for cognitive rehabilitation. Examples of cognitive rehabilitation goals include improved attention, executive functioning and memory. The tangible outcome of producing a song can result in the motivation required to remain engaged in the rehabilitation process. The positive impact of new skill learning on self-perception, and the inherit expressiveness of music production, allows for TMT to be used to address psychosocial goals. Examples of psychosocial goals include improved self-identity, increased self-esteem and empowerment, reduced anxiety, and an appropriate release of emotion. Secondary benefits of TMT include improved motor control. The motor demands of producing a sound on an instrument can add further benefit for motor skills, including range-of-motion, strength and coordination. As a result, TMT can be an effective intervention for a range of therapeutic outcomes.

TMT was developed and piloted in clinical work by this author beginning in March 2004. Since that time, several case study examples have demonstrated the effectiveness of TMT to address cognitive rehabilitation goals and psychosocial goals. This author is a qualified music therapist working in cognitive rehabilitation and is a qualified psychotherapist. Prior to clinical work, this author maintained a full-time piano studio for 25 years. The purpose of this paper is to introduce the music therapy model TMT, describe its theoretical context, and inform music therapy practice. There is sparse literature investigating the use of music training for therapeutic goals, and this paper can contribute to filling that gap.

TMT and special music education

The distinction between TMT and special music education or modified music instruction is that the purpose of TMT is to address non-musical goals. Rather than the goal of achieving a specific level of performance ability or having the opportunity to experience music-making, the purpose of TMT is to increase abilities in specific non-musical goal areas of cognition or psychosocial health. Although in TMT progress is made in a musical context, unlike in music education, the purpose of this progress extends beyond the goal of the music level itself or performance abilities to the benefits that this progress supports in either the cognitive or psychosocial goal areas.

TMT and music therapy

The profession of music therapy addresses both psychosocial and cognitive goals. Music therapy is defined by Bruscia (1998, p. 20) as "a systematic process of intervention wherein the therapist helps the client to promote health, using music experiences and relationships that develop through them as

dynamic forces of change". Bruscia (1998, p. 20) further states that to be considered therapy "this process requires intervention by a therapist. An intervention is a purposeful attempt to mitigate an existing condition in order to affect some kind of change". TMT is a music therapy model and meets Bruscia's (1998) definition of music therapy.

This new music therapy model, TMT, is distinct from other models of music therapy addressing psychosocial goals in its use of *music training* rather than focusing primarily on the expressive qualities of music. Bruscia (1998, p. 22) states that "of particular importance is a non-judgemental acceptance of whatever the client does musically, and clear priorities with regard to the purpose, value, and meaning of music within the therapy process". Within TMT, although the therapist is supportive and empathetic to the client, s/he would give feedback and correction regarding the client's music, reflecting the music training basis of this approach. As with other models of music therapy, or with psychotherapy in general, the therapeutic relationship established between the therapist and client in TMT is also important.

TMT is distinct from other music therapy models addressing cognitive goals. The music therapy model Neurologic Music Therapy (Thaut & Hoemberg, 2014) addresses cognitive goals. However, it does not use music training in its interventions. While literature supports the cognitive benefits of music training (Hannon & Trainor, 2007; Bialystok & DePape, 2009; Chan et al., 1998; Moreno et al., 2011; Pallesen et al., 2010; Strait et al., 2010; Strait & Kraus, 2011) and also supports the neuroplasticity of cognitive functions (Miller, 2000; Peterson & Posner, 2012) there is sparse literature regarding music-based cognitive rehabilitation, and in particular there is a significant gap in the literature regarding the use of music training for cognitive benefit. TMT aims to link the cognitive benefits of music training – for the components of attention and executive functioning in particular – to cognitive rehabilitation.

The music therapy model TMT is distinct from special music education or modified piano instruction due to its goal areas. TMT is a new model within the profession of music therapy because of its use of music training to address goal areas of psychosocial health and cognition otherwise addressed within the profession.

The premise of TMT is that the individual be effortfully engaged in learning to play an instrument in order to stimulate a response and gains in the target goal area. TMT has its theoretical basis in literature regarding the influence of music training on cognition (Pallesen et al., 2010; Barrett, K.C., Ashley, Strait & Kraus, 2013; Moreno & Bidelman, 2014), evidence of the influence of music on the brain obtained by comparing musicians and non-musicians (Bailey et al., 2014; Munte, Altenmuller & Jancke, 2002; Wan & Schlaug, 2010), theories of attentional processing (Baddeley, 2012; Corbetta & Shulman, 2002; Peterson & Posner, 2012), the neuroplasticity of the brain (Bach-y-Rita, 1992, 2003; Doidge, 2015; Taub, 2004), music-centred psychotherapy (Ahonen-Eerikaninen, 1992, 2007, 2018; Wheeler, 1981) and clinical observations of the author.

TMT AND COGNITIVE GOALS

Cognitive goals include improving various forms of attention, memory or executive functioning. Clinical populations that may target cognitive goals include traumatic brain injury, stroke, Attention Deficit Disorder (ADD), brain tumour, age-related cognitive decline, and neurological disorders such as

multiple sclerosis, Parkinson's disease, or Alzheimer's. Due to the progressive nature of neurodegenerative disease, the aim of the application of TMT or other cognitive interventions in that case would be to provide cognitive stimulation and engagement that may serve to maintain current levels of cognitive abilities rather than to rehabilitate cognition to improved long-term functioning.

Cognitive impairment

Cognitive impairment is a result of deficit in one or more areas of cognition, including the various forms of attention, working memory, memory, processing speed and executive functioning (Beers, 1992; Donders, 1993; Kaufamnn, Fletcher, Levin & Minor, 1993; Whyte, Skidmore, Aizenstein, Richer & Butters, M., 2011; Ballard et al., 2003; Jaillard et al., 2009; Michel & Mateer, 2006; Zinn, Bosworth, Hoenig & Swartzwelder, 2007). An individual living with cognitive impairment may have difficulty in suppressing distraction and completing a task, remembering or sequencing the components of a multi-step task, shifting attention between two tasks, following directions, initiation or memory. Cognitive impairment can impede progress in rehabilitation therapies, impact an individual's ability to remain at or return to pre-injury work or school, result in difficulties completing self-care tasks, and is a major source of stress for caregivers (Brooks, 1987; Kinsella et al., 1997; Van Zomeren & Van Den Burg, 1985; Whyte et al., 2011). Because of the impact of cognitive impairment on the life of an individual, on his/her ability to carry out activities of daily living, and on the lives of caregivers, it is important that the individual with cognitive impairment has the opportunity to participate in therapy to improve cognitive abilities.

A major cause of cognitive impairment is acquired brain injury (ABI), due to its high prevalence and the potential scope of impact of ABI on cognition. A brain injury may be traumatic or non-traumatic. A traumatic brain injury (TBI) is a result of a force or blow to the head. Examples of TBI include automobile accident, fall or assault. It is estimated that annually 150-200 million people worldwide experience a traumatic brain injury resulting in severe disability (Whyte et al., 2001). A non-traumatic brain injury is a result of a vascular incident or lack of oxygen to the brain. Examples of a non-traumatic brain injury include stroke, suffocation, near-drowning, or exposure to toxins such as street drugs. It is estimated that between 32% and 52% of stroke survivors experience cognitive impairment three months post-stroke (Whyte et al., 2001). Cognitive impairment is the most common sequelae following an ABI (Dikmen, Heaton, Grant & Temkin, 1999; Goldstein & Levin, 1996; Gronwall, 1987; Van Zomeren & Brouwer, 1995).

Cognitive rehabilitation

Within the goal area of cognition, cognitive rehabilitation is a primary focus of TMT. Harley et al. (1992) define cognitive rehabilitation as:

> […] a systematic, functionally oriented service of therapeutic cognitive activities, based on an assessment and understanding of the person's brain-behaviour deficits. Services are directed to achieve functional changes by (1) reinforcing, strengthening, or reestablishing previously learned patterns of behavior, or (2)

> establishing new patterns of cognitive activity or compensatory mechanisms for impaired neurological systems. (as cited in National Academies Institute of Medicine, 2011, p. 78)

The primary goal of cognitive rehabilitation is to "ameliorate injury-related deficits in order to maximise safety, daily functioning, independence, and quality of life" (Haskins, 2012, p. 3).

Cognitive rehabilitation has two approaches: compensatory and remediation. The compensatory approach seeks to compensate for the cognitive deficits by providing strategies, cues and environmental supports. Examples include an alarm to cue an appointment or posting a list of steps to follow in a personal care task such as brushing teeth. The remedial approach seeks to remediate the cognitive deficit by addressing the underlying neural mechanisms. An example of the remedial approach is Attention Process Training (Sohlberg & Mateer, 1987), in which cognitive tasks are designed to place demands on specific attentional processes. Attention Process Training is based on training "underlying attentional processes which in turn improve higher, more complex cognitive functions" (Michel & Mateer, 2006, p. 64).

TMT: A remedial approach to cognition

TMT is a remedial approach to cognitive development or rehabilitation. That is, the aim of TMT expressed in cognitive goals is to drive attentional processes and to place demands on working memory and executive functioning abilities in order to support the development of, or remediate deficits within, these processes and improve cognitive functioning. Working memory is defined as the ability to maintain and manipulate information without incoming sensory stimulation (Baddeley, 2012; Corbetta & Shulman, 2002). Executive functioning has been described as the cognitive ability to plan, organise and initiate behaviour (Solhberg & Mateer, 2001; Stuss & Benson, 1986). Executive functioning involves processes of focused and sustained attention to remain on task, monitoring and the accommodation of feedback, distraction suppression, problem solving, purposeful behaviour, and mental flexibility (Anderson et al., 2002, Chen et al., 2006; Stuss & Benson, 1986; Pennington & Ozonoff, 1996). In order to address cognitive deficits, cognitive (re)development interventions should place demands on the prefrontal cortex.

The importance of the prefrontal cortex in cognition

Within the frontal lobes, the prefrontal cortex (PFC) has extensive connections throughout the brain, connected with sensory neocortical and motor systems and subcortical structures (Miller, 2000). Due to this widespread connectivity, the PFC is involved in several aspects of cognition (Chen et al., 2006; D'Esposito & Postile, 2002) and in goal-directed behaviour (Chen et al. 2006; Cohen et al., 1998). Central to the PFC's involvement in cognition is its role in executive functioning (Anderson et al., 2002; Chen et al., 2006; Krebs et al., 2012; Levine et al., 2008).

Goal-directed behaviour and executive functioning involve cognitive control. Miller (2000) proposes that the widespread neural connections of the PFC allow it to exert a top-down influence on these networks. Goal-directed behaviour is a result of the PFC's ability to bias attention, memory and

motor output towards a common theme (Miller, 2000). This biasing of attention supports cognitive control and enables the PFC to attend to a target stimulus, sustain attention, and organise a response. Individuals with cognitive impairment often demonstrate a deficit in cognitive control, having difficulty remaining on task or responding appropriately.

Because of its role in cognitive control and attention, tasks that engage the PFC should be a key component of cognitive rehabilitation interventions. The function of the PFC is moulded by experience and informed by previous learning (Peterson & Posner, 2012), providing evidence of its plasticity and ability to be trained. Training the PFC is achieved through specific tasks that place demands on its networks. Repeated driving of the PFC can strengthen and improve its various network connections involved in cognition. Tasks that have a specific target and require a behavioural response place demands on working memory, engage executive functioning and memory, or involve monitoring and error detection, all of which will drive the PFC and its associated cognitive networks.

The importance of attention: The foundation for cognition

Although in the literature attention, memory and executive function are often divided and discussed as separate components of cognition, functionally they are interconnected. However, attention is foundational to memory, executive functioning and higher cognitive processes. Improvements in attention can support improvement in other cognitive processes (Mateer & Sohlberg, 1988; Mateer, Sohlberg & Yougman, 1990; Mateer, 1992; Niemann, Ruff & Basser, 1990) and therefore cognitive rehabilitation interventions should initially target and continue to address attentional processes. Deficits in attention have a negative impact on an individual's ability to perform activities of daily living. If one cannot attend to information, one cannot focus on important stimuli, ignore distraction, stay on task, or effectively consolidate memory.

Due to the complexity of attention, there are several definitions (Cohen, 1993; Mesulam, 2010; Schmitter-Edgecombe, 1996) and theories (Baddeley, 2012; Dosenbach, Fair, Cohen, Schlaggar & Petersen, 2008; Peterson & Posner, 2012) proposed in the literature. All descriptions of attention include the components of limited attentional resources, target detection, distraction suppression and vigilance. Solhberg and Mateer (2001) have identified five forms of attention: focused (ability to respond to specific stimuli); sustained (ability to remain on task during a continuous activity); selective (attend to stimuli and suppress distraction); alternating (shift attention between tasks that require a different behavioural response); and divided (respond simultaneously to multiple task demands). Solhberg and Mateer later revised these forms of attention and removed divided attention, proposing it to be a rapid form of alternating attention (APT III Manual).

TMT: An intervention to address cognitive goals

Both attention processes and the activities of the PFC are noted in literature to be plastic and influenced by experience (Kelly et al., 2006; Miller, 2000; O'Connell & Robertson, 2011; Peterson & Posner, 2012), supporting the hypothesis that attention can be trained and that the PFC networks can be strengthened. Learning is proposed by Miller (2000) to be an important contributor to the PFC's organisation. The re-organisation of the PFC following ABI is proposed by Chen et al. (2006) to be the

primary goal of cognitive rehabilitation. The goal of TMT is to place demands on the PFC and to train and strengthen the cognitive networks involved in attention, working memory and executive functions. The strengthening of these cognitive networks supports the reorganisation of the PFC and improved functional outcomes. Working memory and attention processes overlap functionally (Corbetta, 2002), and as a result, TMT tasks placing demands on these cognitive functions can effectively engage, and potentially strengthen, PFC organisation and effectiveness.

Based on theories of cognition and attention, TMT and its associated music-based cognitive tasks have been developed to include the following criteria:

1. The intervention is designed to stimulate top-down processing, engaging the PFC.
    a. Detection and response to a target stimulus is used to increase attentional processing and engage cognitive control.
    b. Goal-directed behaviour
    c. Effortful processing
2. The intervention will place demands on working memory.
3. The intervention will be designed to target a specific aspect of cognition, informed by the models of attention described by Sohlberg and Mateer (2001). These include focused, sustained, selective, alternating and divided attention.
4. Interventions will be administered following the hierarchy of attention and cognition, beginning at the level appropriate for the client.
5. The interventions throughout the treatment period will be shaped, gradually increasing in complexity, and will include novelty to continue to engage attention and stimulate attentional and memory processing at an increasingly higher level (Kelly, Foxe & Garven, 2006; Solhberg & Mateer, 2001). This in turn may also serve to support generalisation.
6. The interventions will be varied, highlighting melody, rhythm or harmony, or focusing on different senses such as sight, hearing and movement in order to train attention and to prevent the acquisition of a 'trained task' only within a specific activity type.
7. Interventions will be administered with consideration to intensity and duration of treatment, recognising that neuroplastic change is sculpted by experience.

Through the process of learning to decode music notation and play an instrument, TMT drives the PFC and its cognitive networks by requiring cognitive control and goal-directed behaviour. TMT provides opportunity to influence PFC activity and cognitive functioning through new learning that is multimodal, requires effortful processing, and places demands on the attentional processes, working memory, executive function and memory. In addition, the PFC is activated during monitoring and error detection processes as the individual determines the accuracy of their response to the music notation and details. The primary instrument used in TMT is the piano. This allows for TMT to be adapted for use of either hand or both, depending on the motor ability of the client. In addition, playing the piano involves the reading of two clefs, which provides a greater scope of cognitive demands such as divided attention and an increased cognitive load.

Goal-directed behaviour is involved in the requirement to respond to a specific target (the note(s)) and organise a specific response (the accurate execution of the note(s)) while suppressing

distraction. This distraction may be internal, external (environmental, for example), or within the written music itself. The experience of performing even a single bar of music can engage several components of cognition: *long-term memory* – remembering the note(s) previously learned; *working memory* – holding the identification and location of note(s) in memory until executed on the instrument; *sustained attention* – visually tracking item to item in the measure; *selective attention* – remaining on task and suppressing distraction to complete a measure, line or page of music; and *alternating attention* – through shifting attention from notation to other music symbols or between clefs. *Monitoring and error detection* are engaged while listening to the auditory feedback of action, the pitch and duration of the note, and while assessing the accuracy of response. All the above components involve attention and executive function processes.

Based on goals established in assessment, tasks within TMT can be carefully shaped to the patient's cognitive deficit, level of ability and pace of learning. Beginning treatment at the appropriate level of task difficulty and the subsequent pace of increase in the level of difficulty are both important considerations in cognitive therapy. Initially matching the level of task difficulty to the patient's cognitive abilities allows for strengthening of the cognitive networks. Once functional improvements have been noted, it is important to increase the level of difficulty of the tasks. This increase in difficulty is important to ensure that cognitive processes continue to be challenged and strengthened, resulting in continued improvement. Strengthened networks can lead to a shift from an effortful response of the brain to an automatic response. This shift is a result of improved efficiency of the networks. However, in order to support continued development or rehabilitation, cognitive tasks must require effortful processing by the brain. Therefore, an important aspect of ongoing cognitive rehabilitation is the gradual increase in task demands. This may be reflected in novelty of information, more information to process, or in an increase in the complexity of the information.

TMT provides opportunity for continued effortful processing and cognitive rehabilitation through the gradual increase of cognitive demands by appropriately timing the introduction of new learning material. This new learning material may support increased cognitive load due to the novelty of the material, such as a new note or musical symbol; an increase in information, such as a longer song; or increased complexity of information, such as adding a second clef or moving from reading alternately between the clefs to reading the clefs simultaneously. Because TMT allows for the opportunity to focus on specific components of music such as melody, rhythm or harmony, this allows for multi-site neural engagement and for numerous possibilities of complexity or novelty of information. The various musical components that can potentially serve as cognitive targets, and the ongoing acquisition of new songs, providing new information to process, serves to support the continued improvement of cognitive processes rather than a task-specific improvement.

Reading and executing music is a multimodal task, involving various senses, and is therefore potentially a stronger stimulus of the PFC. The components of tracking visual information, executing a motor response, and monitoring the auditory feedback involve a number of senses or modalities. This multimodal stimulus may be a particularly effective stimulus for an injured brain where there may be potentially more impairment in one modality than another.

In addition to driving cognitive processes during a session, TMT includes the repetition required to reinforce and strengthen neural connections and to stimulate a neuroplastic response through the assignment of music homework to be practiced between sessions. The reward of learning to play a

song provides motivation for the client to remain engaged in cognitive therapy for an extended period of time, as required to stimulate neural change. Frequency and intensity of treatment are important considerations for all therapy work. TMT provides opportunity for high frequency of treatment due to the combination of the TMT session and between-session practice of assigned homework. Intensity of treatment is reflected in TMT's criteria to match the client's current level of ability and to gradually increase the cognitive demands of the tasks based on evidence of the client's improvement and need. Frequency and intensity of treatment also support neuroplastic change.

TMT: Music-based cognitive rehabilitation may require alternative tasks

Based on the level of attention deficit or other considerations, some individuals may require training in preliminary music-based attention tasks instead of, or prior to, participating in TMT. These tasks are similar to the ear-training activities of conservatories and are modified to use specific music targets of melody, rhythm or harmony for attention tasks. These tasks also target working memory and executive function processes.

Literature support for the hypothesis of TMT for cognitive rehabilitation

The hypothesis for the efficacy of music-based cognitive rehabilitation, and in particular for TMT, is supported in the literature regarding neuroplasticity and the musician's brain, music training's influence on non-musical abilities, musicians' enhanced working memory and cognitive control, the transfer of benefit of music training, and by clinical observations made by the author.

Anatomical differences in the brains of musicians when compared to non-musicians (Bailey et al., 2014; Munte, Altenmuller & Jancke, 2002; Wan & Schlaug, 2010; Zimmerman & Lahav, 2012) provide evidence of music's influence on the brain and its ability to stimulate a neuroplastic response and change. While music-related anatomical differences would be expected in musicians' brains, such as in sensorimotor and auditory areas, differences in musicians' brains have extended to other areas including the pre-central gyrus (Amunts et al., 1997), the anterior-medial part of the Heschl gyrus (Schneider et al., 2002), and parts of the cerebellum (Hutchinson et al., 2003). In addition to anatomical differences, functional differences have been observed between musicians and non-musicians. Studies have provided evidence of musicians' enhanced abilities in a variety of areas, including phonological awareness (Dege & Schwarzer, 2011), perceiving speech in noise (Parberry-Clark, Skoe, Lam & Kraus, 2009), reading (Douglas & Willatts, 1994, Gardiner, Fox, Knowles & Jeffery, 1996) and auditory perception (Strait et al., 2014). These studies demonstrate music training's influence on non-musical functions, and provide support for the hypothesis of the benefit of music training for non-music therapeutic goals.

Significant to TMT are studies that provide evidence of musicians' enhanced cognitive abilities (Barrett et al., 2013; Forgeard, Winner, Norton & Schlaug, 2008; Pallesen et al. 2010; Vaughn, 2000), and in particular literature demonstrating musicians' enhanced working memory, cognitive control and executive function (Hannon & Trainor, 2007; Bialystok & DePape, 2009; Chan et al., 1998; Moreno et al., 2011; Pallesen et al., 2010; Strait et al., 2010; Strait & Kraus, 2011). This literature supports the

hypothesis that TMT can be an effective intervention to target and influence the processes of working memory, cognitive control and executive functioning.

> A client, Cecilia (pseudonym), was referred for TMT to address cognitive impairment that was a result of 2 consecutive strokes on the same day, one in each hemisphere. Following the strokes, Cecilia was in a coma for 3 weeks. Post-stroke symptoms included speech impairment, right side paresis, difficulty reading letters or numbers, difficulty interpreting symbols, short attention span, difficulty acquiring new information, memory impairment and cueing being required to complete tasks. Cecilia also had impairment in alternating attention; she was unable to shift attention from one stimulus to another. For example, if the phone rang while Cecilia was eating, she could not continue to chew her food while hearing the phone. Cecilia was referred to TMT three years post-stroke.
>
> The initial cognitive goal addressed in TMT was improving attentional abilities: working memory, divided attention and sustained attention. Through carefully sequenced TMT sessions over 18 months, Cecilia was taught to read both clefs and play increasingly more complex piano pieces with her functional left hand. Although new learning post-stroke was challenging, Cecilia was successful in learning to read notes and their rhythmic value. Unfamiliar music was taught to her in order to place demands on her working memory engaged during note reading and execution, and to prevent her from relying on auditory cues of familiar melodies. Her attentional improvements were first observed within a music context, where she demonstrated improved ability to de-code notation, improved memory of music-related information, improved ability to shift her attention from one staff to the other, and an increase in the length of time she was able to sustain her attention on a task. Rhythm and melodic direction engage attention, and potentially any attentional gains might have only been observed within music activities. However, in time, Cecilia and her family reported that her improved attentional abilities transferred to activities of daily living. Cecilia demonstrated an increased ability to remain on task during distractions. It was also noted that she was able to better track conversations when more than two individuals were involved, as she was able to divide her attention between various individuals and track their comments. Her attention span during tasks increased in general, as in her TMT sessions, to approximately 30 minutes. Cecilia reported on several occasions that “things are beginning to click [in my brain]” *[she pointed to her head]*.

It is important for the clinician using TMT to be careful not to default to ‘piano lessons’ or lessons of another instrument, but rather to remain focused on specific cognitive goals such as increased attention span, and make decisions regarding session content based on these goals. New information should be guided by evidence of improved cognitive functioning in the goal areas and pacing of sessions guided by a structured increase of task difficulty and complexity when appropriate.

Potential challenges to TMT in cognitive rehabilitation

There are a number of potential challenges to the effectiveness of TMT, including the questioning of a link between music and cognitive abilities, the question of a remedial approach to cognitive rehabilitation, and the question of generalisation of results of treatment to activities or daily living.

Schellenberg (2004, 2005, 2006, 2011) has investigated the link between music training and enhanced cognitive abilities, and highlights the important question of music's *association* versus music's *causation* of enhanced cognitive abilities. He concludes that music is associated with intelligence and that individuals with higher IQ are more likely to participate in music training (Schellenberg, 2004, 2011). From a therapeutic standpoint, the question is not "does music make your smarter?" but rather, "does music effectively engage attention and executive functioning processes?" and "can music engage these processes in an injured brain?". The literature noted above provides evidence that music training does engage, and enhance, several aspects of cognition. Therefore, it is reasonable to apply music training to therapeutic cognitive goals.

There is literature that questions the effectiveness of a remedial approach in addressing cognitive impairment, stating that due to the scope of research designs investigating the topic and the variations in attention programmes, there is a lack of conclusive evidence in support of remediation (National Academies Institute for Medicine, 2011; Ceravolo, 2006; Park & Ingles, 2001**;** Van den Broek, 1999**).** However, the question is shifted from the efficacy of remediation for cognitive deficits to the question of research design, inclusion criteria for studies, and inclusion criteria for literature reviews. Numerous studies provide evidence of cognitive improvement following remedial interventions (Cappa et al., 2003; Cicerone et al., 2005; Lincoln, Majid & Weyman, 2000; Mateer & Mapou, 1996; Sohlberg & Mateer, 2001) and support the hypothesis for the effectiveness of TMT.

While some literature acknowledges improved cognitive performance within a remedial approach reported in studies, they challenge the practical benefits, proposing the gains observed are task-specific and do not transfer to untrained tasks or activities of daily living (Ceravolo, 2006; Gillian, 2009; Gummow, Miller & Dustman, 1983; Park & Ingles, 2001). Other literature states that planning for generalisation should be incorporated in the therapeutic process in order to support the transfer of gains made during therapy (Ponsford, 2008; Sohlberg & Mateer, 2001; Sohlberg & Raskin, 1996; Stokes & Baer, 1977). Gordon (1987) describes three levels of generalisation: 1) consistent gains on different training sessions; 2) improvement on similar tasks; and 3) transfer of improvement to activities of daily living. Gordon (1987) highlights the important question of the level of transfer gained. Additionally, rather than ask "what level of transfer has been achieved?", one might ask "how much time might it take for an individual to move along a continuum of transfer?" Often a time pressure is placed on generalisation by professionals or others who expect that gains should be observed within a specific timeframe. However, expectations regarding the timing of the transfer of gains may not allow for the time required by an individual to demonstrate a transfer of gains. The question may not be "will gains transfer (by a specific time)" but rather "how much time does this individual need to be engaged in therapy before a transfer of gains may be observed?" TMT assumes that by driving the underlying cognitive processes, these processes will strengthen, and potentially result in improved

cognitive performance in non-musical contexts, that is, transfer to activities of daily living. TMT clinical work has resulted in observations of improved cognitive abilities of individuals with cognitive impairment as a result of an ABI rated as severe. Attention and memory improvements were first noted within a musical context. However, these cognitive gains appeared to eventually transfer to non-musical contexts and to activities of daily living.

TMT AND PSYCHOSOCIAL GOALS

TMT can provide therapeutic psychosocial benefits through the experience of gaining a new skill. Due to the positive impact of gaining a skill (Murray, 2007; Rickard et al., 2013; Warner, 1999) TMT can be used to address a number of psychosocial goals, including improving or re-defining a sense of self, increasing empowerment, improving affect, and reducing anxiety. Clinical populations include, but are not limited to, depression, anxiety, PTSD, and persons coping with a significant life change such as acquired brain injury, illness or neurodegenerative disorder. Developing specifically a *music* skill further contributes to the therapeutic benefit of TMT due to the inherent expressive qualities of music and the contribution of music to personal identity. In addition, the therapeutic relationship established between the clinician and client during TMT serves to support the psychosocial goals, providing a sense of acceptance and security to individuals during the process of learning a new skill and as they work towards their therapeutic goals.

Literature supports the use of TMT for psychosocial goals

Literature supports the use of music to address psychosocial goals. The use of music to address psychosocial need is fundamental to the profession of music therapy (Ahonen, 2018; Bruscia, 1998; Castillo-Perez et al., 2010; Clements-Cortes, 2011; Dileo & Bradt, 2007; Dileo, 2015; Jochims, 1990; Lee, 2015; Loewy, 2000; Loewy et al., 1997; Wheeler, 1981), and specific models of music therapy have been built on this, such as Group Analytic Music Therapy (GAMT) (Ahonen-Eerikainin, 2007) and Guided Imagery in Music (GIM) (Bonny & Savary, 1973). A key aspect of the effectiveness of music in psychotherapy is the communicative aspects of music. The profession of music therapy has validated the use of music to address a range of psychosocial goals such as the treatment of depression, anxiety, PTSD and low self-esteem with a range of clinical populations, including palliative care, youth at risk, mental health, and those living with terminal illness. Research and case study examples demonstrate the unique effectiveness of music therapy in addressing psychosocial goals. Because TMT is not simply the acquisition of a skill, but rather a music skill, it is a unique and powerful intervention that can be used to address psychosocial goals, including improved sense of self, increased empowerment, improved affect and reducing anxiety.

Sense of self

Sense of self refers to one's concept of oneself. Vickery, Gonkovsky, Wallace and Caroselli (2006, p. 30) describe self-concept as a "collection of beliefs about an individual's own functioning in various

life dimensions". The abilities and skills one has, and their participation in and contributions to a range of social contexts, contribute to one's self-concept. A sense-of-self includes personality characteristics, values, and identity as an individual and in social contexts (Myles, 2010; Lewis & Rosenberg, 1990). For example, an individual may identify as an artist because of artistic abilities and interests, a parent in the role of raising a child, or a teacher employed by a school board and contributing to the education of students. A person's self-concept may include values that are held as important, such an "I am an honest person", or character traits such as impatience or humour.

A sense-of-self may be negatively impacted as a result of a significant life change. Significant life change can be a result of numerous events including stroke, ABI, cancer, development of a neurodegenerative disease, bereavement, mental illness, or other forms of crisis. O'Callaghan, Powell and Oyebode (2006) note that these significant life events may alter a person's abilities, autonomy, social interactions or approval, physical state or appearance, or knowledge of themselves.

A loss of, or a shattered, sense of self following a traumatic event needs to be addressed in order to support healing and recovery (Chu, 2011; Herman, 2006; Molica, 2006; Rothschild, 2000; Van der Kolk, 2015). The loss of a sense of self or self-concept can lead to anxiety, depression and fear (O'Callaghan, Powell & Oyebode, 2006; Vickery, Gonkovsky, Wallace & Caroselli, 2006). In addition to the direct influence these have on the immediate quality of life, they can also negatively impact an individual's participation in meaningful life experiences and in rehabilitation therapies. As a result, there is a shift in healthcare to address psychosocial needs, including the impact of a lost or damaged self-concept (Nochi, 1998).

Loss of sense of self and ABI

The loss of a sense-of-self may include several components. In discussing sense-of-self following brain injury, Nochi (1998) describes three aspects of loss of self: loss of clear self-knowledge due to memory impairment, loss of self by comparison to pre-injury state, and loss of self in the eyes of others. Myles (2004) identifies three themes that need to be acknowledged by clinicians when working with individuals who are experiencing a loss of self. These themes include the sense of being a "different person" than they were pre-injury, having a negative self-evaluation, and the outcome of emotional distress.

After experiencing an ABI, an individual may experience significant changes in motor, cognitive or speech abilities. Tasks that previously were performed with ease may now require a much higher degree of effort or compensation, or may no longer be possible to perform. This can include aspects of activities of daily living such as self-care, or activities that reflected personal interests such as sports or gardening. Loss of participation in activities that were once a regular part of life can result not only in a grieving process, but also in a loss of identity. The person may no longer identify as a soccer player or successful office administrator due to lack of abilities in those areas.

Loss of sense of self and illness

Many aspects of self-concept that are experienced following an ABI are also experienced by individuals who are experiencing illness or neurodegenerative disease, or who are living with the effects of medical

treatment. Illness may impact an individual's ability to participate in school or work to the extent they did previously, and may affect their ability to complete activities of daily life or of personal significance. Individuals may be coping with the loss of their "pre-illness" identity, and may be experiencing difficulty in developing a positive new sense of self. Treatments such as surgery or radiation may result in changes in abilities or appearance which can further contribute to a changed self-concept. If the illness is a progressive disease, the individual may be dealing with a gradual decline in cognitive or motor abilities and struggling to "hold on to who they are".

Loss of sense of self and grief

Balk (2004) highlights the importance of redefining oneself as an important aspect for recovery from a situation of grief. He states that the healing process involves "both reframing and relearning our place in the world, our relationships with others, and our relationship with ourselves" (Balk, 2004, p. 370). He states that redefining oneself enables a person to reintegrate into life. The recovery process from bereavement shares many parallels with the healing process in which a person is grieving the loss of their previous self.

TMT to support improved sense of self

As an individual responds and adjusts to a crisis or significant change in life, he/she may be facing losses that can range from change in appearance, loss of ability, loss of role in work or studies, loss of control, or loss of relationship(s); all of which can contribute to a loss of a sense of self.

TMT is able to support the development of an improved or new self-concept by providing the individual with a new skill that enables them to re-define themselves as a musician, and to recognise abilities that can be developed and celebrated post injury, post illness, or during an illness. Magee (2002) proposes that an individual, supported by music therapy, can shift from a "disabled self-concept" to a more "abled self-concept". In TMT, a new musical skill enables a person to experience an area of success and achievement that can contribute a positive component to their self-redefinition. This musical skill is the tool used to work towards the goal of improved sense of self.

Through learning to play an instrument, the new identity of "being a musician" can support an improved self-concept or sense-of-self for the client. The term "musician" is used to describe any individual who can play an instrument. Therefore even a student can be considered a musician. Musicians may range greatly in terms of their level of musicianship or ability. If a person is a professional musician, they would distinguish themselves by including the term "professional" when describing their musicianship. Therefore, clients would not consider themselves professional musicians, but rather a musician: someone who can play an instrument.

> A client, Lorraine, (pseudonym) was living with breast cancer and undergoing chemotherapy. She was grieving the loss of her health and the changes this brought to her life. Side-effects from chemotherapy resulted in her remaining at home. She could no longer work in the job she enjoyed and could not participate in school activities of her children as she had done previously. She stated that

> cancer had robbed her "of everything". Her identity, through the work she did and the activities she enjoyed, was significantly altered.
>
> Lorraine participated in TMT, with sessions carefully constructed to accommodate her level of fatigue and to ensure success. Learning to play the piano helped Lorraine gain a sense of empowerment, and gave her a new identity as a musician. The goals of TMT were not specifically musical, but rather of empowerment and new self-identity developed through the acquisition of a new skill. While some aspects of her identity were shaken as a result of cancer, TMT introduced new aspects for her identity. This had a positive impact on Lorraine. She was proud of her developing musical abilities and stated that "piano was one area that cancer did not take". Pieces of music were assigned that reflected the emotional state Lorraine indicated she would like to express. This in turn, provided Lorraine with a creative and expressive outlet for the various emotional states that she navigated through while coping with a terminal illness. The therapeutic relationship that developed between Lorraine and the therapist provided her with further support and affirmation during this difficult time.

Balk (2004) states that striving towards "essential human sentiments", as described by Leighton (1959), is an aspect of the definition of oneself, the relationship with others, and the world. One of the essential human sentiments that Leighton (1959) identifies is the need to express creativity. As such, actively striving towards an expression of creativity serves to support the redefinition of self. TMT teaches a music skill, thereby providing an individual with the tools to be creatively expressive, supporting their redefinition of themselves, and their reintegration into live post-crisis.

As described in the previous section related to cognitive goals, TMT sessions are shaped according to the individual's ability and pace. In the case of psychosocial goals, session shaping and pacing are not used to ensure strengthening of cognitive networks as in cognitive rehabilitation, but rather to accommodate physical or emotional variables the patient may be experiencing. Sessions need to be shaped to ensure success and to develop a sense of accomplishment. The individual is becoming a musician, at whatever level is appropriate for them, and is developing a new aspect of their self-concept that is positive and grounded in the successful progression of skill acquisition. Comments from TMT clients have reflected an improved self-concept, such as: "finally something I am good at since my brain injury"; "I am proud that I can (still) learn something new"; "I can't believe I am listening to myself play the piano, I did not think I would be able to do this"; and "cancer has robbed me of everything, but I can still learn to play a new song. I still can do something". The link between self-esteem and sense of self has been highlighted by Tafarodi and Ho (2006, p. 195), who state that self-esteem is a "key aspect of personal identity". TMT provides an opportunity for improved self-concept, supported by improved self-esteem, gained through success in learning to play an instrument.

The literature has provided evidence that self-concept can be improved following life-altering experiences (Balk, 2004; Lawendowski & Bieleninik, 2017; McGrath & Linley, 2006; Vickery, Gonkovsky, Wallace & Caroselli, 2006). A life crisis, or a significant life change can be viewed not only as a negative experience, but also as an opportunity for personal growth (Erikson, 1963; Moos, 1986). TMT can provide the opportunity for the development of a new self-concept and personal growth through the

acquisition of a new skill. Literature supports the role of music in improving self- identity following crisis (Lawendowski & Bieleninik, 2017; Smeijsters & van den Hurk, 1999; Steele, 2005). Literature also demonstrates the effectiveness of learning specifically a music skill to contribute to an improved sense-of-self or self-esteem (Clendenon-Wallen, 1991; MacDonald & Miell, 2002; Murray, 2007; Rickard, 2013; Shin, 2011; Warner, 1999).

TMT and improved affect

Depression can be the result of a number of situations. Individuals have been referred to TMT to improve mood as a result of clinical depression, discouragement as they adjust to life changes due to injury or illness, or anxiety as a result of PTSD. Depression and anxiety are common outcomes to a loss of sense self (Vickery, Gonkovsky, Wallace & Caroselli, 2006). In some cases, due to depression or anxiety, the individual has withdrawn from, or is unable to participate in, activities of personal significance.

TMT can be a therapy to stimulate interest and engage an individual in a positive and meaningful activity. For many individuals, the potential to learn a new skill, or to re-develop a previous music interest is motivation to participate in the therapy. For some individuals, the simple offer of TMT suggests hope, as it implies faith in their ability to succeed in a new skill. The vast number of musical pieces and technical components of performance that are available to learn when studying an instrument can provide positive goals to work towards, or encouragement when facing a difficult or uncertain future. The careful shaping of TMT sessions is imperative to ensure success in each step of music training, contributing to a sense of accomplishment, improved mood, and motivation to continue to strive towards new musical goals. The commitment to work towards new musical goals supports ongoing participation in therapy, and its benefits.

> Client Carol (pseudonym) was an inpatient in the psychiatric ward of a hospital, due to her level of depression. Although her family and the hospital staff regularly affirmed her, Carol continued to state that she had no value and was a "not good at anything". She was offered TMT and agreed to participate. Session material was carefully prepared to ensure Carol's success. Hospital staff were pleasantly surprised at her commitment to practice her homework each day in preparation for her weekly TMT session. After a few sessions, Carol commented that the therapist "must really believe that she could succeed at learning her pieces since (the therapist) kept coming back to have a session". It was significant that she eventually wanted to play a piece of music for her family. Carol was clearly proud of her progress. Clinical observations by the therapist and hospital staff indicated that Carol exhibited a developing sense of self-confidence and empowerment and had begun to make positive self-statements. TMT contributed to this unfolding shift in her self-perception.

Individuals dealing with depression often experience difficulty finding purpose in day-to-day life and may 'drift' through an unstructured week. Some describe that a lack of purpose in their day often results in a desire to remain in bed for extended periods of time. TMT can help to establish schedule

structure and motivation to comply with that structure. Through assigned homework to practice, TMT can provide concrete goals for an individual to set and work towards during the week. Because TMT is directly linked to the individual's self-determined goal – to learn to play an instrument – the individual can often be more motivated to be committed to the goal and more likely to benefit from the therapeutic aims of TMT. A client-centred approach to goal setting often results in increased compliance and motivation. In this author's clinical experience, attendance to TMT has been very high, with only very rare cancellations by a client who is depressed. At the beginning of a session the client is always asked "how are you?". At times clients have explained that they are not well, that they are discouraged or feeling low, and that they considered cancelling that day but chose to attend their TMT session because they recognised "it could make them feel better". At other times a client may explain that s/he has worked on her/his assignment and did not want to cancel and miss the opportunity to share her/his homework and progress. Incorporating music personally significant to the client into the TMT sessions provides further motivation to participate. In addition, these personally significant songs can serve as an opportunity for self-expression and acceptance, providing further therapeutic value, and can contribute to an improved affect.

TMT and a sense of empowerment

Learning a new skill results in a sense of empowerment. A sense of empowerment, fostered through the recognition that the individual has abilities and skill, is an invaluable resource to combat a shattered sense-of-self, a sense of grieving "the life before", depression, or anxiety. It enables an individual to look beyond losses to gains, to look beyond what they cannot do to what they can do, and to replace a sense of non-purpose with a sense of having goals to strive for. A sense of empowerment can increase a person's self-confidence in addressing the challenges they are facing.

A sense of empowerment is closely linked to self-esteem (a person's perceived self-worth), and to self-confidence (a person's perceived abilities and willingness to face challenges). An increase in self-esteem and self-confidence can lead to a decrease in low mood or anxiety. A strong sense of self-confidence or self-esteem can support a person to act, and can help to avoid anxiety, depression, or sense of powerlessness (Kuhl, 2000; Pyszczynski, Greenberg & Solomon, 1999).

Through learning a new skill and experiencing success, TMT can promote a sense of empowerment, increased self-esteem and increased self-confidence. It is important that the TMT sessions are shaped to balance motivation and challenge with a sense of success and accomplishment. As an individual begins to experience success in TMT sessions and an increase in self-esteem, this may transfer to support the willingness or confidence to address sources of anxiety.

It should be noted that patients participating in TMT who are experiencing clinical depression or severe anxiety typically are also receiving other forms of psychological support, such as psychotherapy or psychiatry. This author is often working with multidisciplinary teams. Serious mental health situations are beyond the scope of music therapy alone. TMT should not be considered a treatment for these conditions, but rather a component of the healing process, complementing the work of other healthcare professionals.

Why music?

Acquisition of a new skill in any form can contribute to an improved sense-of-self or empowerment. Does a new music skill offer unique benefits to psychosocial goals? Yes. Music can uniquely support psychosocial goals due to the inherent expressive qualities of music, the significance of personally meaningful songs, and the contributions of music to personal identity.

Music skill is not simply a skill, but is also a new voice or language with which to experience or express emotion. This vehicle of self-expression can be particularly meaningful to individuals who, due to their psychosocial needs, may not want or be able to express themselves verbally. Ahonen-Eerikainen (2007, p. 128) highlights the importance of speaking and being heard, stating that "without communication there can be no therapy" (p. 128). She describes music "as a language for communication" and suggests that music can serve to create contact between individuals. While the GAMT model developed by Ahonen-Eerikainen (2007) focuses on group improvisational musical experiences, her descriptions of the aspects contributing to the communicative power of music are applicable to other models of music therapy that use the expressive qualities of music making for therapeutic purposes.

The performance of music, and in particular personally significant music, can serve as a healing experience of speaking and being heard. This can be especially important for individuals seeking emotional healing. Self-expression through music allows a person to share a range of emotional qualities without the need for verbal articulation. This can be helpful for individuals who may be in a state of denial and are not able to reflect on, or verbally express, their situation at that time. Music may serve as the first step in expressing the complex emotions they may be experiencing. For others, there may be no words to describe their situation. Music enables them to be expressive without the need for words, and to feel heard and validated. Some individuals may not have the ability to speak due to physical trauma or change to the vocal mechanisms as a result of injury or disease. For them, music can be a new, expressive non-verbal language.

The acquisition of a musical skill enables a person to play songs that are personally meaningful. Playing, versus listening only, can be an intimate form of self-expression. Personally meaningful songs, shared with others, can be a powerful form of self-expression and self-identity. Performing one's personally significant songs can support the strength of self-identity with that song. Furthermore, incorporating the preferred music of clients within TMT sessions can serve to increase the motivation and commitment to remain in therapy. Ongoing participation in therapy enables a higher level and extended period of potential benefit from the therapy.

As noted, music is used as a form of non-musical identity. That is, in addition to providing an individual with a new sense of self by contributing to a new identity as a musician post-crisis, music also contributes to a person's self-identity in non-musical contexts. For example, music may be used to express one's cultural background, social opinions, faith practice, or other themes of personal importance. Lawendowski & Bieleninik (2017, p. 87) state that "in the scope of musical identity, music is understood as a way of expressing one's self-image". This is supported by Hargreaves and North (1999), who highlight music's role in "self-identity, interpersonal relationships, and mood" (p. 79). Music is used by individuals in the expression of non-music identity, to explore themselves, and to

express themselves to others (Hargreaves, Miell & MacDonald, 2002; Lawendowski & Bieleninik 2017; North & Hargreaves, 1999).

In developing the ability to play an instrument, and through the playing of personally meaningful songs, a person is enabled to express their self-identity on several levels. This supports the (re)development of self-concept, and can contribute to improved self-esteem and self-confidence. As noted, these can potentially result in further therapeutic benefits by supporting improved affect and reduced anxiety.

CONCLUSION

TMT is the use of music training – learning to play an instrument – to achieve either cognitive or psychosocial goals. It is distinguished from modified music education in that the purpose of TMT is to achieve non-musical goals. TMT holds a unique position within a spectrum of music therapy approaches in that it focuses on the acquisition of musical skills, guided by a professional trained in cognitive rehabilitation and psychotherapy. This professional regularly assesses the type of task, its level of challenge, and the progress being made by the client in order to work towards non-musical goals. The therapeutic relationship developed between the professional and the client further supports the therapeutic process.

The TMT music therapy model also uniquely contributes to the profession of music therapy due to the goal area of cognitive rehabilitation that it addresses. Although literature regarding attentional theories and music cognition support the theory of music-based cognitive rehabilitation, there is very sparse literature on this topic. TMT seeks to link attentional theories, music cognition, and cognitive rehabilitation through a music-based cognitive rehabilitation programme.

The acquisition of specifically a music skill provides unique therapeutic benefits. The musical skill in itself is not the primary goal, but is rather a means towards the therapeutic goal of cognitive rehabilitation or psychosocial health. Music is a key contributor to the potential therapeutic gains of TMT. Music training, as opposed to general new skill training, is critical as the components and characteristics of music specifically contribute to the therapeutic mechanisms for both cognitive and psychosocial goals. The demands TMT places on attentional networks, working memory and executive functioning support its efficacy as an intervention for cognitive goals. It is the *process* of learning a song, the neural networks stimulated during the learning of a song (rather than the end experience of performing the piece), that engages, challenges and benefits cognitive abilities, and supports cognitive rehabilitation. However, the end product of being able to perform a piece of music is a key contributor to the motivation to remain in cognitive rehabilitation, and provides a tangible measure of progress. Learning a new skill, specifically a music skill, through TMT addresses psychosocial goals by supporting the development of a new sense-of-self, increased empowerment, improved affect, and reduced anxiety. While the acquisition of any new skill could result in the above psychosocial benefits, gaining a musical skill provides unique benefits due to the expressive qualities of music. Creating music provides the client with a vehicle for self-expression, as well as an opportunity to be heard and to feel validated and supported.

There is sparse literature regarding both the use of music training for therapeutic goals, and the use of music to address cognitive rehabilitation goals. This paper contributes to these gaps in the literature, and introduces a new music therapy model: Therapeutic Music Training (TMT). Literature from various disciplines, including theories of attention, cognitive rehabilitation, and music psychotherapy, support the rationale for, and informed the development of, TMT. TMT has been piloted in clinical work since 2004, and case study examples indicate its effectiveness.

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Ελληνική περίληψη | Greek abstract

Θεραπευτική Μουσική Εκπαίδευση [Therapeutic Music Training, TMT]: Ένα μουσικοθεραπευτικό μοντέλο που χρησιμοποιεί την εκμάθηση ενός μουσικού οργάνου για την επίτευξη θεραπευτικών στόχων στους τομείς της γνωστικής και της ψυχοκοινωνικής υγείας

Cheryl Jones

ΠΕΡΙΛΗΨΗ

Η εκμάθηση μουσικής είναι αξιοσημείωτη τόσο για τα μουσικά όσο και για τα μη μουσικά της οφέλη προς τους εκπαιδευόμενους . Το μοντέλο της Θεραπευτικής Μουσικής Εκπαίδευσης [Therapeutic Music Training, TMT]. αναπτύχθηκε στηριζόμενο στη βιβλιογραφία και ενημερωμένο από την κλινική εργασία. Το μοντέλο TMT χρησιμοποιεί την εμπειρία της εκμάθησης ενός μουσικού οργάνου με σκοπό την επίτευξη συγκεκριμένων μη μουσικών θεραπευτικών στόχων στους τομείς της γνωστικής και της ψυχοκοινωνικής υγείας. Συγκεκριμένα, η εκμάθηση μουσικής είναι κρίσιμη, καθώς τα συστατικά και τα χαρακτηριστικά της μουσικής συμβάλλουν ιδιαιτέρως στους θεραπευτικούς μηχανισμούς που εξυπηρετούν την επίτευξη τόσο γνωστικών όσο και ψυχοκοινωνικών στόχων. Λόγω της εμπλοκής του προμετωπιαίου φλοιού και των απαιτήσεων που τίθενται στον γνωστικό έλεγχο και στη λειτουργική μνήμη κατά τη διάρκεια της εφαρμογής του, το μοντέλο TMT μπορεί να αποτελέσει μια μοναδική και αποτελεσματική παρέμβαση για τη γνωστική αποκατάσταση. Ο θετικός αντίκτυπος της εκμάθησης νέων δεξιοτήτων τόσο στην αυτοαντίληψη όσο και στην εγγενή εκφραστικότητα της μουσικής παραγωγής επιτρέπει στο TMT να χρησιμοποιηθεί για την αντιμετώπιση πολυάριθμων ψυχοκοινωνικών στόχων. Το παρόν άρθρο εισάγει το μουσικοθεραπευτικό μοντέλο TMT και περιγράφει τις θεωρητικές του βάσεις.

ΛΕΞΕΙΣ ΚΛΕΙΔΙΑ

μουσική εκμάθηση, σημασία, γνωστική αποκατάσταση, ψυχοκοινωνικοί στόχοι, αίσθηση εαυτού, αυτό-ενδυνάμωση