


# InPsych

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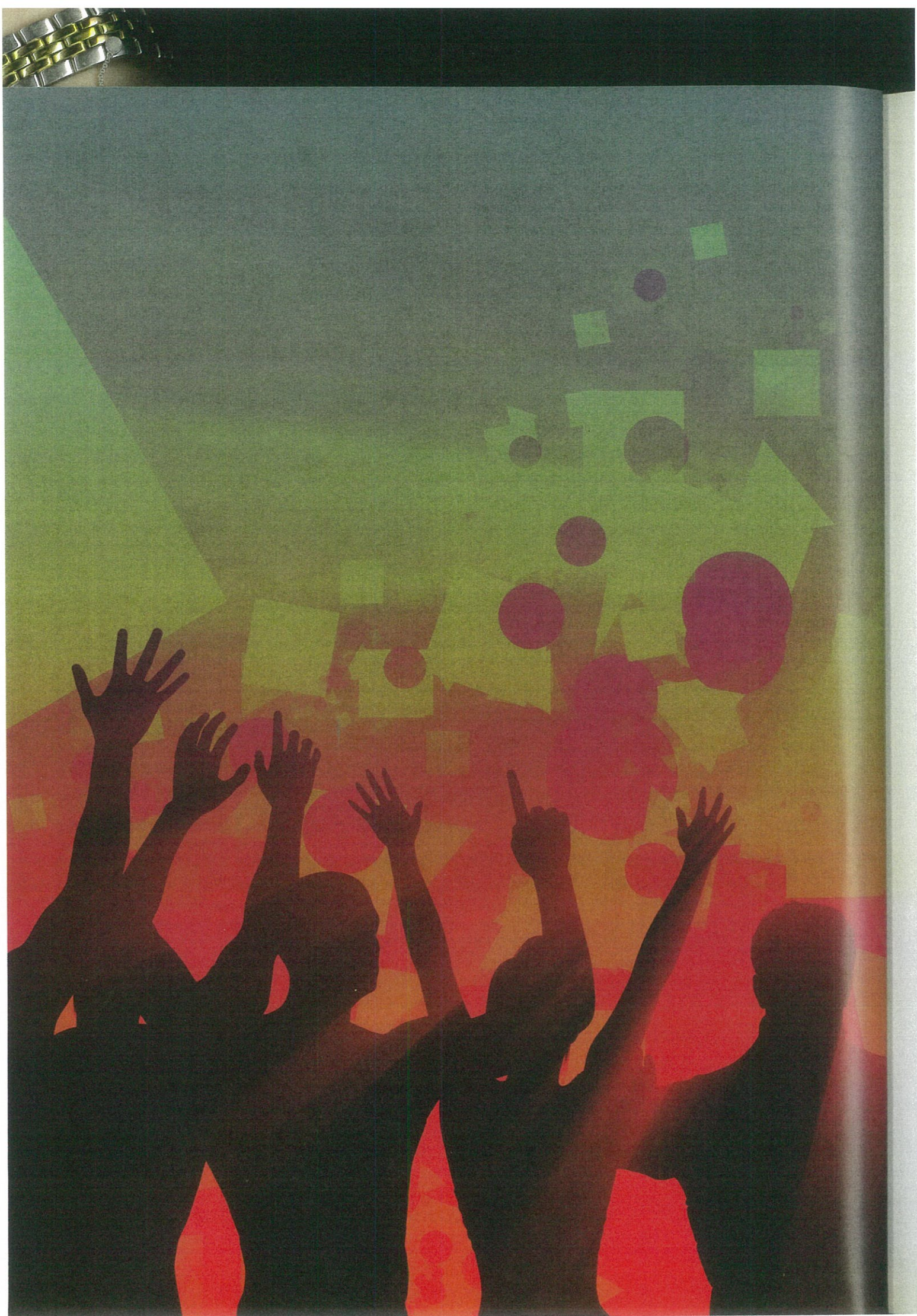
## Why music moves us



**Living with dementia**

**Reading controversies**







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Cover feature by Dr Sandra Garrido, Dr Jennifer MacRitchie, Matthew Breden  
and Professor Kate Stevens MAPS

## Why music moves us

**M**usic permeates our daily lives. Current technology and streaming services provide unprecedented access to a variety of musical styles and genres. Music can be experienced virtually anytime and anywhere. A recent study by Vision Critical reports that Australians listen to an average of 3.4 hours of audio per day, not including incidental listening such as music played in shopping centres or other public places. So why is music so ubiquitous, and how can music be harnessed to improve lives? Examining the impact of music in different human functional domains enables us to understand music's power more clearly.



## Music in human culture

For thousands of years, music has been a central part of human culture. The earliest discovered musical instruments, flutes made of bone found in a cave in southern Germany, have been carbon-dated at between 42,000 and 43,000 years old (Higham et al., 2012). Singing probably predates even that, but we cannot know with certainty due to a lack of archaeological evidence. It is even possible that music and language evolved from a single early communicative system or protolanguage. According to this theory, at an early point in human evolution, human communicative use of sound may have divided into two specialisations: *emotive meaning*, resulting in music, and *referential meaning*, resulting in speech (Mithen, Morley, Wray, Tallerman, & Gamble, 2006). Music, and movement to music in the form of dance, have always played a vital role in rituals, celebrations, courtship, and religion. Given that music seems to have always been part of human life, what evolutionary advantage might music confer?

One hypothesis is that as humans formed themselves into larger tribes, group music-making could have been used increasingly to strengthen social bonding (Weinstein, Launay, Pearce, Dunbar, & Stewart, 2016). Additionally, groups that were able to coordinate their movement and actions using music may have appeared larger and more threatening to an enemy. Coordinated vocalisation would sum in amplitude and be perceived as louder and potentially more organised and stronger than the sounds produced by less coordinated groups. On the interpersonal level, courtship and sexual advantages have been conveyed throughout human history by superior musical and dance behaviour (Brown et al., 2005). An additional evolutionary advantage of music is in adaptively strengthening the bond between parents and infants. Parents intuitively create soothing or stimulating environments for infants through speech with exaggerated prosodic features and singing (Trehub, Ghazban, & Corbeil, 2015).

## Music's impact on human functioning

### Physiological influences

Music can have a powerful physiological effect on the human body. The joint action of people making music together – whether children singing a nursery rhyme or jazz musicians improvising – involves *entrainment*, which refers to spatio-temporal coordination in response to a rhythm or beat (Nozaradan, Schönwiesner, Keller, Lenc, & Lehmann, 2018). Experiments using motion capture technology have demonstrated that the metre or temporal structure of music, which is often hierarchical, is reflected in periodicities in bodily movement (Toiviainen & Keller, 2010). Recently, the “locking on” to the temporal structure or the beat perceived in music has also been seen in electroencephalography

(EEG). Cortical activity at the frequency of the perceived beat is selectively enhanced compared with other frequencies in the EEG spectrum, especially when rhythms are conveyed by bass (lower) sounds (Lenc, Keller, Varlet, & Nozaradan, 2018).

The mutual sharing of an affective state between individuals has been referred to as *affective entrainment* (Phillips-Silver & Keller, 2012). Malloch and Trevarthen (2018) theorise that *communicative musicality* is at the core of much of human behaviour and can be glimpsed in early interactions between caregivers and infant. Behaviour such as chorusing, turn-taking, imitation/mimicry, and joint action are underpinned by mechanisms such as motor resonance, action simulation and temporal/affective entrainment (Phillips-Silver & Keller, 2012).

Music may also have a strong effect on physiological arousal. One study has found that listening to slow-tempo music was accompanied by increases in oxytocin levels and associated with physiological relaxation. The study also found that listening to fast-tempo music was accompanied by decreases in cortisol levels, which was associated with emotional excitation (Ooishi, Mukai, Watanabe, Kawato, & Kashino, 2017).

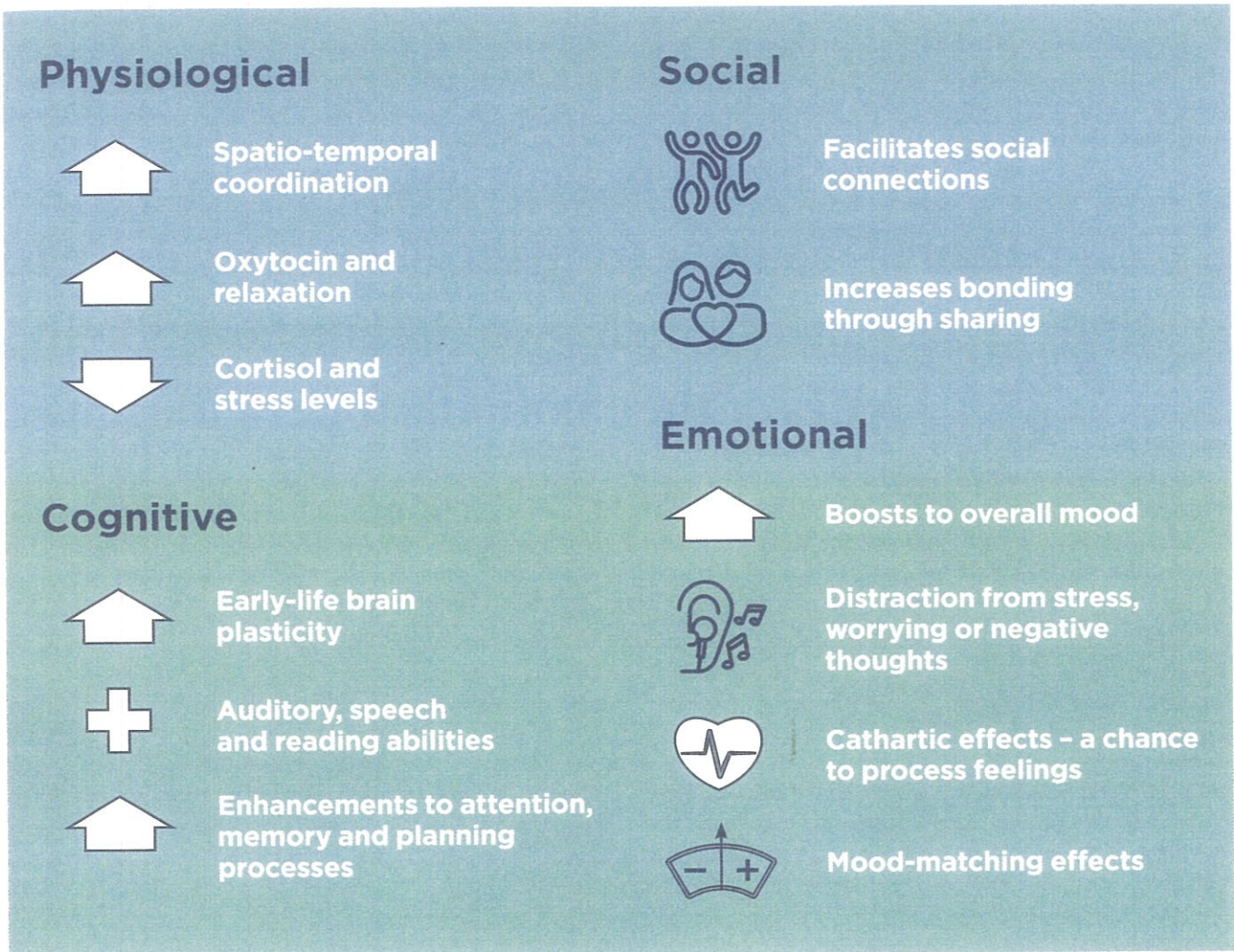
### Cognitive benefits

Actively engaging in music, such as by learning a musical instrument, is associated with cognitive benefits across the lifespan. This is thought to be due to the numerous, coordinated and time-sensitive tasks required to play just a single note, let alone a sequence of notes in a melody (Vasuki, Sharma, Ibrahim, & Arciuli, 2017). Playing a musical instrument regularly from early childhood stimulates the brain and puts down neural pathways. This can have near-transfer as well as far-transfer benefits associated with the high level of brain plasticity in the early years of life (Schellenberg, 2004).

Auditory skills such as speech processing are related to music-specific skills as they require perception of aural qualities such as timing, loudness and frequency. Musical training in early childhood can hone the brain's processing of these auditory signals; it appears that time spent processing auditory signals while playing music sharpens the abilities of the individual when listening to and producing speech. This can have knock-on effects for reading abilities, and the ability to produce different sounds in first and second languages (Nan et al., 2018). Another is that musically trained individuals show broad enhancements to processes that regulate and control attention, memory and planning. For instance, musicians appear to be able to store and manipulate information in working memory for longer periods of time than non-musicians (Pallesen et al., 2010).

Active engagement with music can bring cognitive benefits for older adults, too. There is some evidence that musical training in the later stages of life can mitigate cognitive





declines associated with age (Wan & Schlaug, 2010). Those who have been regularly undertaking musical training show general cognitive advantages (far transfer) in older adulthood in performance of tasks requiring nonverbal memory and executive functioning (Seinfeld, Figueroa, Ortiz-Gil, & Sanchez-Vives, 2013). And for people living with dementia, music interventions have the potential to enhance their quality of life (Vasionytė & Madison, 2013).

**Social aspects**

Music plays an important role in facilitating social connections to other individuals and the larger community around us. Social occasions, rituals, celebrations such as weddings, and moments of shared sadness such as funerals all feature music in prominent roles. In fact, this is the most common purpose for which music is used in many cultural settings, although the characteristics of music and dance themselves may differ from culture to culture. The modern-day phenomenon in western cultures of listening to pre-recorded music in a

socially isolated setting is a relatively recent development in the history of music.

Moving in synchrony as two or more people create music or dance and move in response to music evokes a connection between the participants and promotes the sense of belonging to the same group. Research has shown, for example, that children taking part in joint music-making activities are more likely to demonstrate pro-social behaviours towards their fellow musicians than to other children who were not in the music-making group (Kirschner & Tomasello, 2010). Similarly, a newly formed group of people singing together as a choir will form bonds faster than those groups taking part in other creative activities, and this bonding extends from small to large groups. Moving in synchrony, which can often involve mimicking others' sounds and movements, is thought to enhance the degree to which individuals perceive the overlap between the idea of 'self' and 'other'. As a group of people act in unison, this can foster a sense of belonging through the shared artistic and emotional experiences.



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“Many listeners share a tendency to extract personal meaning from the music they listen to, finding relevance to their own circumstances in the lyrics or the emotional tone of the music”

Current research into interpersonal coordination and synchronisation through music, for example, suggests that moving and making music together in time is associated with group cohesion and bonding (Launay, Tarr, & Dunbar, 2016). At the behavioural level of description, there is recent evidence that adults and children are more likely to assist another person after a period of coordinated and synchronised movement together (Cirelli, Einarson, & Trainor, 2014).

Although music and dance are pervasive across cultures, differences between musical genres serve as important forms of self-identity within groups of people. Adolescents often report that listening to certain types of music helps to both explore and communicate their identity to others. Sharing a similar set of musical preferences with someone else suggests that the other person has a similar outlook and values. Musical preferences can then act as an indicator of a person's underlying characteristics and traits, and people who participate in listening to or playing a certain type of music communicate their identity as belonging to the social group that shares those values.

We don't need to be actively involved in creating dance or music to experience this social connection. Even when people are listening to music in solitude they can experience a sense of emotional connection with the person singing or playing the music. Emotional expression in music often mimics the extra-linguistic ways we express emotions in speech, such as through the pitch, pitch variation and tempo of our speech.

Thus, in songs and even in instrumental music, there can be a powerful sense of connection between the performer and the listener.

#### **Moods and emotions**

One of the primary reasons people report listening to music is to influence their moods and emotions. Research demonstrates that music is in fact second only to exercise in its effectiveness in improving our moods (Thayer, Newman, & McCain 1994). Music has this effect via a number of mechanisms including the way it modulates arousal (Husain, Thompson, & Schellenberg, 2002). However, there are several other ways that music influences our moods and emotions. One of the most widely experienced benefits of music is simply that it provides a welcome distraction from stress or worrying thoughts. For many people, playing a musical instrument or listening to music is a highly absorbing pastime that both relaxes and engages the mind. Music enables the individual to take a break from the stressors of daily life and to be rejuvenated in much the same way that they would be if engaging in other hobbies or relaxing activities.

Music can also have a much more direct effect on the mood and emotions of the person listening to or playing it. Music often provides a useful opportunity for individuals to process emotions they are experiencing in response to real-life events (Moore, 2013). Many listeners share a tendency to extract personal meaning from the music they



listen to, finding relevance to their own circumstances in the lyrics or the emotional tone of the music. Thus, listening to music can bring deep emotions to the surface, providing an appropriate space for their expression. This has a cathartic effect, and can give the listener a feeling of validation and of being understood by other people who have experienced similar feelings. In addition, many people engage in processes of self-reflection when listening to music, developing a sense of acceptance, or engaging in cognitive reappraisal or problem-solving in relation to their current circumstances. Thus, many listeners select music that matches their mood or that has lyrics that they can identify with, and benefit from the chance to explore their own emotions and the life events that prompt them.

In fact, mood-matching music is often the preferred choice of people who are experiencing difficult emotions (Garrido, Schubert, & Bangert, 2016). While there are several psychological benefits to be gained from this approach to managing emotions with music, the effect can backfire in some listeners. People with tendencies to depression can

find that listening to mood-matching music only perpetuates cycles of negative thinking where the individual does not have access to appropriate psychological support. The listener may seek out music with the intention of expressing their feelings, seeking validation or reflecting on their experiences, but does not obtain the same benefits as other individuals because of the negative thought processes that are triggered by the music. Therefore, using music to cope with negative emotions may not be so helpful for individuals with minimal awareness of the impact of their thought processes on their wellbeing. Individuals and clinicians need to remain aware that the greater access to music enabled by rapid advances in technology can merely intensify cycles of negative thinking in people who tend to have ineffective ways of dealing with emotional states. For such individuals it may be less helpful to listen to mood-matching music for lengthy periods of time. They may be encouraged to search for music that reconnects them with positive memories or promotes positive and hopeful messages without clashing with their current mood state.





### Therapeutic implications

As a result of the multiple effects of, and associations with music, there are numerous ways in which music can potentially enhance mental health and wellbeing. In its ability to help moderate arousal levels through processes of entrainment, music can be a useful addition to the psychological toolbox for providing stimulation and motivation on the one hand, and to relax and calm the listener on the other hand. Being involved directly in active music-making or dancing can promote physical activity thereby contributing to overall health, while also providing cognitive benefits and enhancing an individual's sense of competence and mastery in other facets of their lives. By creating a sense of belonging and cohesion with a social group, musical activities or musical interests can promote social links and provide a basis for positive self-identity.

Even listening to music alone can provide a sense of social connection for people who feel otherwise isolated. Playing or listening to music alone creates an abundance of opportunities for self-reflection and psychological work in relation to difficult emotions and life circumstances, and can be a useful tool for promoting self-exploration and self-expression amongst clients in a clinical environment. Where clients show an interest in music, they may benefit from working with a trained music

therapist, or from simply being encouraged to engage more deeply with their musical interests.

While there is still much to be discovered about the mechanisms by which humans are influenced by music, recent research is increasingly placing music at the forefront as an effective agent of change in human lives. Recently, arts-on-prescription schemes in the UK have been trialed in primary care, and music interventions provided as part of these schemes have shown benefits for patients in several areas (Chatterjee, Camic, Lockyer, & Thomson, 2018). Current research being conducted at the MARCS Institute for Brain, Behaviour and Development at Western Sydney University is examining the usefulness of music as a tool for helping young people to more effectively manage their emotions, as well as exploring the therapeutic uses of music and learning musical instruments for older adults and people with dementia.

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References available online: [psychology.org.au/inpsych](http://psychology.org.au/inpsych)

## The Therapeutic Relationship is Your Most Powerful Tool (and Biggest Pitfall): Relational Strategies to Effectively Treat Challenging Clients A 1-Day Intensive Professional Training with Robert T. Muller PhD Psychologist

In this practical workshop, using attachment theory and a relational, integrative approach, Dr Muller, a leading expert on trauma therapy and acclaimed author of *Trauma and the Avoidant Client*, will build your understanding of the psychotherapeutic relationship with challenging clients, particularly trauma clients. Throughout the workshop, theory is complemented by case examples, practical exercises and segments from Dr Muller's own treatment sessions. This workshop focuses on clinical skills that are directly applicable in your work as therapists. You will learn specific skills to ensure professional, skilled and ethical practice with all clients. This workshop is suitable for all practitioners who work with traumatised clients.

**Workshop Objectives:** You will learn how to

- navigate and use conflicts in the relationship;
- bring safety to the therapeutic relationship early on;
- help clients pace the process of opening up;
- recognise your own feelings on treatment (eg, the wish to rush into trauma work, or wish to avoid it); and
- help clients mourn traumatic losses to bring post-traumatic growth.

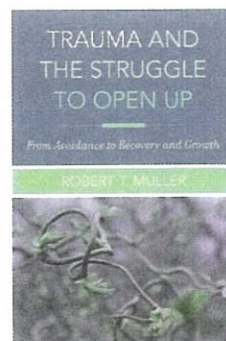
For a very detailed description of each workshop session, go to: [www.cpmsservices.org](http://www.cpmsservices.org)

**Brisbane 29 April; Perth 1 May; Melbourne 4 May; Adelaide 8 May; and Sydney 11 May 2019**

9.00am – 5.00pm. Refreshments, lunch, handouts and Dr Muller's new book (right) included in registration.



▲ Dr Robert T. Muller



For a detailed workshop description and registration and payment options, go to: [www.cpmsservices.org](http://www.cpmsservices.org)