Dialogue Between Friends—Exploring How Neuroscience Supports Themes Defining Community Music Therapy

GENE ANN BEHRENS[1] AND VIGGO KRÜGER[2]

[1]Professor Emeritus, Music Therapy, Elizabethtown College, Elizabethtown, PA, USA (retired)
[2]The Grieg Academy Music Therapy Research Centre, University of Bergen, Bergen, Norway

ABSTRACT Viggo Krüger ended his presentation on Community Music Therapy (CoMT) at a recent conference, paused and thoughtfully added, "However, I really do not see how neuroscience can support the concepts involved in Community Music Therapy." Gene Ann Behrens, who was in the audience and had previously discussed the integration of neuroscience concepts in music therapy, smiled and thought, "Oh, that is the person to have lunch with today"—and she did. Thus began a series of in-person and Zoom conversations over the next year to discuss and write about the benefits and challenges of integrating neuroscience concepts with the values of CoMT. This article traces the journey of Viggo, a music therapist and researcher from Norway, committed to CoMT and engaged in discussions with Gene Ann, a music therapist and researcher from the United States, who embraces an eclectic and neuroscience perspective. We are both white, privileged professors who have traveled extensively, experiencing a variety of cultures. We wrote this paper using a dialogue format to reflect the conversational process that structured our informative, informal discussions. Our conversational process, which was not recorded, also was supported by dialogical inquiry, a qualitative research and learning method that uses interactive discussions to co-create knowledge. The authors hope that by presenting the paper as a dialogue, other music therapists will consider engaging in conversations with colleagues who have seemingly contrasting views—such as exploring the integration of neuroscience and CoMT perspectives.

Keywords: *neuroscience, Community Music Therapy (CoMT), dialogical inquiry, human rights*

> "The point is, art never stopped a war and never got anybody a job. That was never its function. Art cannot change events. But it can change people. It can affect people so that they are changed because people are changed by art—enriched, ennobled, encouraged—they then act in a way that may affect the course of events, by the way they vote, the way they behave, the way they think." Leonard Bernstein, 1972 (quoted in Gruen, 1972, p. 50)

Our discussions about integrating neuroscience with Community Music Therapy began about eight months before we started writing this paper. We believed formatting it as a dialogue would not only reflect the process in which we engaged but also highlight the role of dialogical inquiry. This qualitative research method uses collaborative, interactive discussions to co-create knowledge.[1] Dialogical inquiry is based on the concepts of dialogism and polyphony, two components of Bakhtin's (1981) literary theory, which was influenced by the complex dialogs in Fyodor Dostoevsky's novels (Clark & Holquist, 1984). Dialogism emphasizes that understanding and insights emerge from the relationships that exist and further develop between people as they engage in discussions and build on each other's ideas. Polyphony reflects the multiplicity of voices and perspectives, such as those embodied in Dostoevsky's work. His characters interact dynamically, allowing diverse viewpoints to coexist and shape each other, thereby creating a richer, relational understanding of knowledge.

In addition, dialogical inquiry aims not to identify final answers but to be open to the ongoing conversations and meaning that evolves from embracing multiple perspectives—allowing ideas and insights to reflexively develop while celebrating the ensuing relationships. As our discussions unfolded, our back-and-forth exchanges were impacted by our individual prior knowledge and experiences as well as our shared, collegial understanding of the topics—the polyphony of our dialogism. Engaging in and writing using a dialogue approach not only deepened our analysis of the two therapeutic approaches but also honored the differences in our perspectives, making this article a true reflection of our shared, dynamic knowledge-building (Dysthe, 1996).

Gene Ann Behrens, MT-BC, Professor Emeritus after 23 years of directing the music therapy program at Elizabethtown College, continues a consulting career as a workshop leader, writer, visiting professor, supervisor, and board-certified music therapist focused on a neural-informed approach to treatment.

Viggo Krüger—researcher and associate professor at the Grieg Academy Research Center, University of Bergen, and Norwegian Research Center—has more than 20 years of experience with community music therapy and numerous publications on topics such as child welfare, education, and mental health.

[1]Stige's (1998) and Stensæth's (2015) use of a similar polyphonic perspective set a precedent for incorporating dialogical inquiry in qualitative research.

[2]Neurocounseling or neuro-informed therapy are equivalent terms that refer to the integration of traditional psychosocial approaches with the application of neuroscience research outcomes and concepts to work with clients.

[3]Brain scans involve the use of CT and MRI scans to understand brain structures; PET scans to investigate how the brain functions; fMRI scans to reveal brain structure and function; DTI scans to identify functional connections or how areas of the brain interact; and many other variations that continue to be developed.

[4]Networks involve the synaptic connections among the neurons of various areas of the brain that form pathways to process specific information. Examples are the reward, social, salience, decision-making, and mirror neuron networks.

[5]Neuroplasticity is the development of synaptic connections in the brain based on a person's experiences and responses—that is, the ability of the brain to rewire itself.

[6]In that Porges (2017) identified the ventral vagal nerve as another portion of the vagal nerve, he labeled his theory, the Polyvagal Theory.

Correspondence concerning this article should be addressed to Gene Ann Behrens, Email: gene.behrens@comcast.net

© The Author(s) 2025. Published by Oxford University Press on behalf of American Music Therapy Association. All rights reserved. For commercial re-use, please contact reprints@oup.com for reprints and translation rights for reprints. All other permissions can be obtained through our RightsLink service via the Permissions link on the article page on our site—for further information please contact journals.permissions@oup.com.

https://doi.org/10.1093/mtp/miaf007

Downloaded from https://academic.oup.com/mtp/article/43/1/miaf007/8157433 by guest on 09 June 2025

A Dialogue Between Friends

Gene Ann: Viggo, I really enjoyed your talk about Community Music Therapy (CoMT) at the 2023 trauma conference in Poland. Your presentation provided an overview of the approach, discussing music therapy, community work, and human rights, illustrated with practical cases and vignettes.

Viggo: Thank you, Gene Ann, and I enjoyed your discussion of a neuroscience perspective. You referred to how neurocounseling or neuro-informed therapy[2] is evolving as an approach that integrates neuroscience research outcomes and concepts to provide additional levels of understanding for therapists and clients. You sound as committed as I feel when I discuss CoMT.

Gene Ann: I was wondering if you had considered how neuroscience might support your work with CoMT.

Viggo: I am open to inputs from a neuroscientific perspective, but as you might already have noticed, I am a bit skeptical about how neuroscience combines with the theories and themes that support CoMT, especially those addressing human rights.

Gene Ann: I can relate to your concerns, as neuroscience and human rights appear unrelated. However, combining the legacy and the themes of CoMT with what now is known about music and the brain may provide an interesting additional perspective, one that integrates how a nervous system supports the tolerance of and need for human rights and values. How about if we begin with a short discussion about some of your overall concerns about neuroscience and then review how neuroscience concepts support the three themes of CoMT identified by Murphy et al. (2023)?

Viggo: I like that plan. To begin, one of my initial impressions is that neuroscience provides interesting and relevant concepts for therapy. However, music has been a rich source of information and a way to promote health since ancient times. Neuroscience is a rather new perspective with the potential to provide new information, but many are skeptical that it might be applied in a reductionistic manner. Neural research seems to try to explain everything about a person in terms of the brain (De Vos & Pluth, 2015).

Gene Ann: I agree that recognizing criticisms about neuroscience is important so music therapists can remain vigilant when applying the concepts. In response to your concern about the exclusive use of neuroscience, Luke et al. (2019) and Russell-Chapin (2016) caution therapists not to think of neuroscience as the only perspective or model for treatment. Instead, I and many neuro-informed therapists discuss the need to *integrate* neuroscience with one or more psychosocial models, such as CoMT. As a metaphor, the integration of psychosocial and neuroscience perspectives has been described as two parallel train rails connected by ties that travel parallel—each rail with its own focus but now integrated and serving each other.

Viggo: That metaphor helps highlight the importance of integrating neuroscience. However, my other concern is about the application of the results from brain research. That is, how can the outcomes explain the sociocultural factors and human values so important to CoMT, such as the impact of cultural, sociopolitical, and environmental factors that influence how people think and feel?

Gene Ann: Oh, I am excited for us to discuss how neuroscience supports those human values, but I believe we need to talk through some other neural concepts before I can more fully respond to those questions. For now, as we start to move into our discussion, I would briefly say that neuroscience addresses sociocultural factors by describing how a person's nervous system develops as a result of experiencing either supportive or oppressive sociocultural experiences, and then how the person's resulting flexible or inflexible nervous system responds to meet or not meet the sociocultural needs of others. A person's nervous system is a product of their past sociocultural experiences, influencing future, lifelong changes to their nervous system (Dana, 2018; van der Kolk, 2015). These life experiences also potentially impact how tolerant and open the person becomes to the differences and rights of others.

Viggo: So, I see the relevance of integrating neuroscience with a conceptualization of CoMT rather than thinking that neuroscience would replace it. However, again coming from a sociocultural tradition, I learned that individuals cannot experience directly what is going on in the brain. Instead, music therapists use music to get in touch with feelings and whatever is going on in the brain and body of their clients (McFerran et al., 2019).

Gene Ann: I remember being taught that and to be cautious about what could be inferred because so little was understood about how the brain functioned (Restak, 1980). However, since the late 1990s and the development of brain scan technology,[3] a growing body of literature on the nervous system is now available. Researchers are learning about areas and networks[4] in the brain, connecting symptoms to neural responses (Cammisuli & Castelnuovo, 2023), and defining how music and music components are processed (Sankaran et al., 2024). Music continues to be a window to understanding an individual, but now an increasing number of studies specifically on music and the brain provide music therapists with additional windows of information and insights (Toader et al., 2023).

Music therapists can increase their understanding of what the person is experiencing by connecting a client's symptoms and music responses with related neuroscience concepts. Therapists also observe that clients benefit from learning neuroscience explanations of their symptoms and responses (Dana, 2018). Clients are less likely to respond with the guilt, blame, and stigmatization they often face when dealing with mental health diagnoses when they understand symptoms are due to changes in their brains.

Viggo: I can understand this shift in thinking because so often the individuals who seek treatment deal with their guilt or the blame and stigmatization from others within communities. CoMT focuses on normalizing mental health to prevent this stigmatization (Rodgers, 2017; Woofenden, 2020).

Gene Ann: Normalizing is so important to support individuals. When possible, I try to develop music therapy experiences that help clients understand the impact of past and current experiences on their nervous system (Dana, 2018; van der Kolk, 2015)—a treatment strategy that provides hope for people dealing with symptoms related to a diagnosis. If people are a product of their past experiences, then future supportive experiences have the potential to positively change

Downloaded from https://academic.oup.com/mtp/article/43/1/miaf007/8157433 by guest on 09 June 2025

how the brain functions and its structure. For clients, this process means hope exists and changes will occur in their lives.

Viggo: So, while I see how neuroscience can add to our understanding, music therapists need to be aware that they will never really have all the answers that provide the correct "guess" about what is internally occurring for clients.

Gene Ann: Yes, in the end, our observations and research only provide "best guesses." However, if integrating the results from neural research enhances a music therapist's understanding of their client and development of treatment strategies—why not?

Viggo: Your comments suggest that adding a layer of neuroscience information may be a valid approach. Research has been valuable as community music therapists seek to develop the theory and benefits of CoMT. Many of the neuroscience concepts you discussed connect with the researched theories and goals for CoMT, such as the focus on empowering people to independently live their lives while collaborating with others in whatever context they are situated (Krüger et al., 2024). The goals of CoMT involve promoting social connections and a sense of belonging, as well as addressing social issues such as poverty, violence, and discrimination—focuses that echo the themes discussed in a paper I wrote with four colleagues (Murphy et al., 2023).

Let's consider those three themes as summarized in Figure 1, as we continue our discussion. CoMT has been described in many ways since it was introduced as a new paradigm in 2002 at the World Congress of Music Therapy, Oxford, England. While CoMT developed in many countries, it has been studied and practiced widely in Norway, Australia, South Africa, and the UK. CoMT is best described as an approach rather than a specific methodology or technique.

Gene Ann: I attended that Congress and remember the introduction of CoMT and the ensuing fervor and discussion among those attending. Since then, an increasing number of people have written about CoMT. Let's start with the first theme from Murphy et al. (2023), also discussed by Stige and Aarø (2012) and Small (1998)—*CoMT is a relational, societal-oriented approach that supports empowered growth through the decision-making and participation involved in musicking* (see Figure 1).

Viggo: Yes, the first theme emphasized CoMT as a person-oriented approach that highlights how collaboration and participation in music-making and creative decision-making support the development of identities, rights, relationships, and empowerment of individuals and groups. The theme focuses on the benefits of working together as a group to experience music. Those experiences also involve the development of the decision-making process and opportunities for self-expression. Because of the involvement of people from a community in music experiences, their participation and roles in other activities increase, evolve, and support personal development.

Gene Ann: Indeed, recent research on the social neuroscience of music (Greenberg et al., 2021) supports this first theme of CoMT and adds to the understanding and benefits of group music-making. Of course, the enrollment of communities or individuals in groups depends on whether making music with another person is beneficial. Historically, music therapists often discussed the phenomena of music to support their work—for example, "music-making is an enjoyable experience" and "music brings people together" (Kenny, 2002). With the development of brain scan technology, neuroscience began to expand what is known about the impact of group music experiences. Researchers connected the impact of music responses to neural changes, that is, neuroplasticity[5] and the release of neural chemicals, and then to the development of psychosocial goals (Greenberg et al., 2021). For example, research now validates the existence of the phenomenon "music is reinforcing" by confirming the release of dopamine within the reward network during music experiences that are not contraindicated (Ferreri et al., 2019; Phan et al., 2010). From there, the number of studies on the impact of group music experiences on the brain is constantly expanding.

To organize and understand the results of several neural studies focused on group musicking, I created a diagram that reflects the (a) connections among the different types of music experiences that were investigated, (b) neuroscience outcomes, and (c) related psychosocial focuses (see Figure 2). I believe the connections support the first CoMT theme we are discussing.

Essentially, the results from a variety of studies document that group music experiences, again when not contraindicated, change the function and structure of the brain—the neuroplasticity and neural chemicals. More specifically, music experiences involving group drumming (improvised, synchronous, and reciprocal), increased the neural focuses of functional connectivity (synaptic interconnections in and across brain areas) as well as the release of oxytocin and dopamine (neurochemicals associated with relationships and pleasure, respectively) (Beeler & Dreyer, 2019; Kokal et al., 2011; Phan et al., 2010; Yuhi et al., 2017). These neural changes led to the psychosocial focuses of increased attention, regulation, trust, bonding, prosocial behavior, and the experience of positive emotions and relationships. Tracking group singing through the diagram's three tiers, these researchers found that singing with others increased oxytocin and dopamine and decreased cortisol levels, leading to the development of trust, bonding, and positive emotions while decreasing stress (Good & Russo, 2022). Finally, other investigators concluded that group music listening increased oxytocin and decreased cortisol levels, which further supported stress reduction, trust, and bonding (Ooishi et al., 2017).

Viggo: I like this area, social neuroscience, and believe it has the potential to explain the changes that can occur, for example, as a result of group musicking within CoMT. The concept that the brain is wired to be social is echoed by Russian psychologist Lev Vygotsky (1978): "Every function in the child's cultural development appears twice: first, on the social level and, later on, on the individual level; first, between people (inter-psychological) and then inside the child (intra-psychological)" (p. 57). Vygotsky's insights inform CoMT that social goals become an important focus.

Gene Ann: This is a great quote, but I might amend the order in which he wrote about neural growth. First, an individual's nervous system begins to develop (Raburu, 2015; Sokol, 2009), and then, as the person interacts with groups of people, their participation in communities impacts others and the development of the groups. In turn, the individual's nervous system is further influenced and continues to develop—and the cycle continues. Therefore, the impact of development is cyclical

Downloaded from https://academic.oup.com/mtp/article/43/1/miaf007/8157433 by guest on 09 June 2025

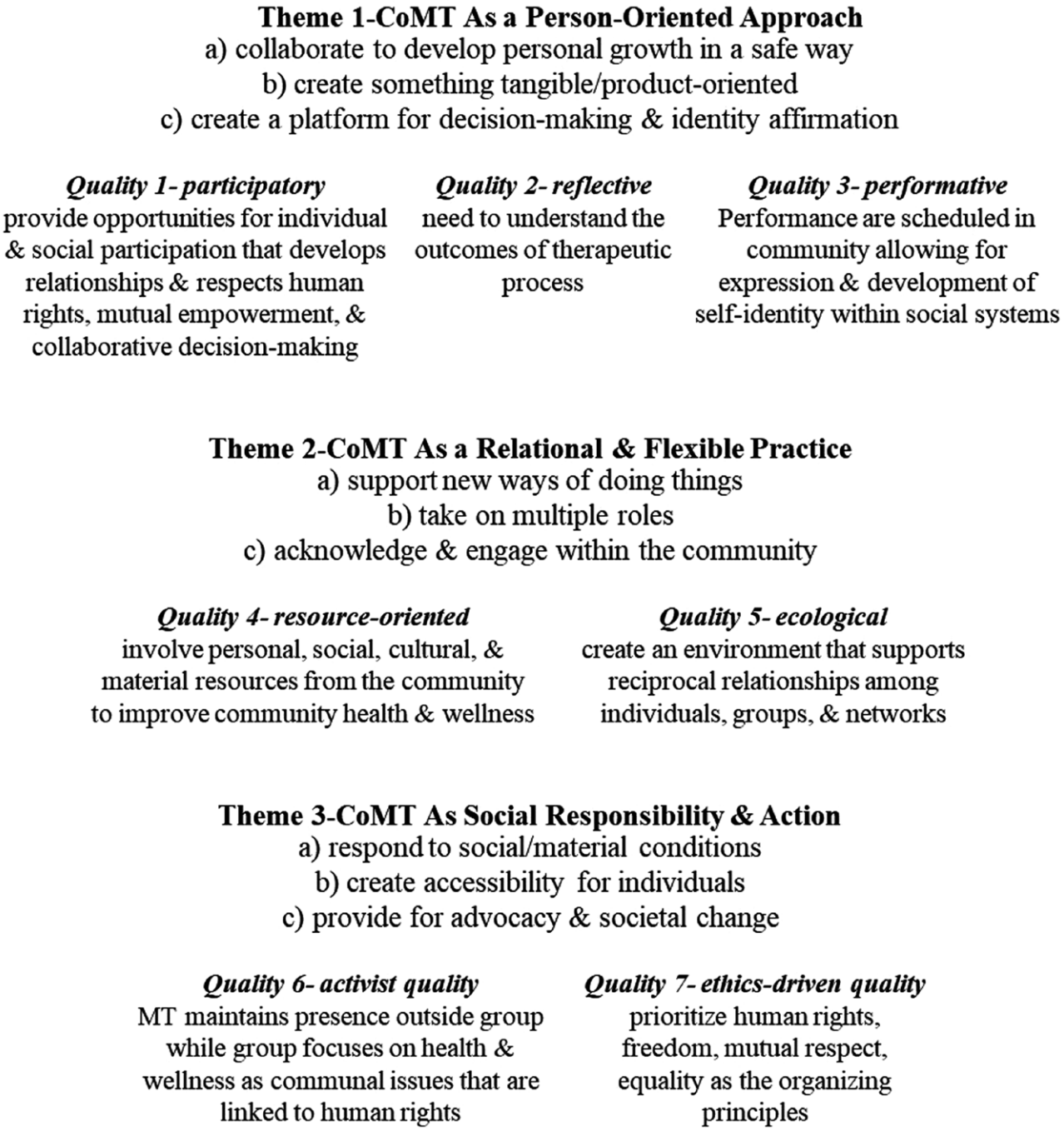


Figure 1. 0 CoMT Themes

from individual to group to individual and so forth—it seems to depend on where a person enters into the cycle.

Within a CoMT environment, therapists may work with people who have had many and those who have had few initial positive, supportive experiences as their nervous systems developed. Of course, the existence of positive experiences is not a dichotomy but will vary across people. For those who encounter positive experiences, the firing in their brains becomes more synchronized as they begin to develop a nervous system that enables them to trust and engage in relationships (Harrod et al., 2023; Pinna & Edwards, 2020; Porges, 2017). Their experiences and neural development enhance their ability to engage in group music experiences, which further impacts the development of their nervous system. However, individuals with fewer positive experiences growing up will develop nervous systems that are vigilant and struggle with trust and relationships.

The expanding body of research on social neuroscience provides support concluding that the playing of instruments, singing, or listening to music as a group, when therapeutically used, are potential ways to positively affect a dysregulated brain (Beeler & Dreyer, 2019; Good & Russo, 2022; Phan et al., 2010; Yuhi et al., 2017) (see Figure 2) From a psychosocial perspective, those neural changes can affect a person's

Downloaded from https://academic.oup.com/mtp/article/43/1/miaf007/8157433 by guest on 09 June 2025

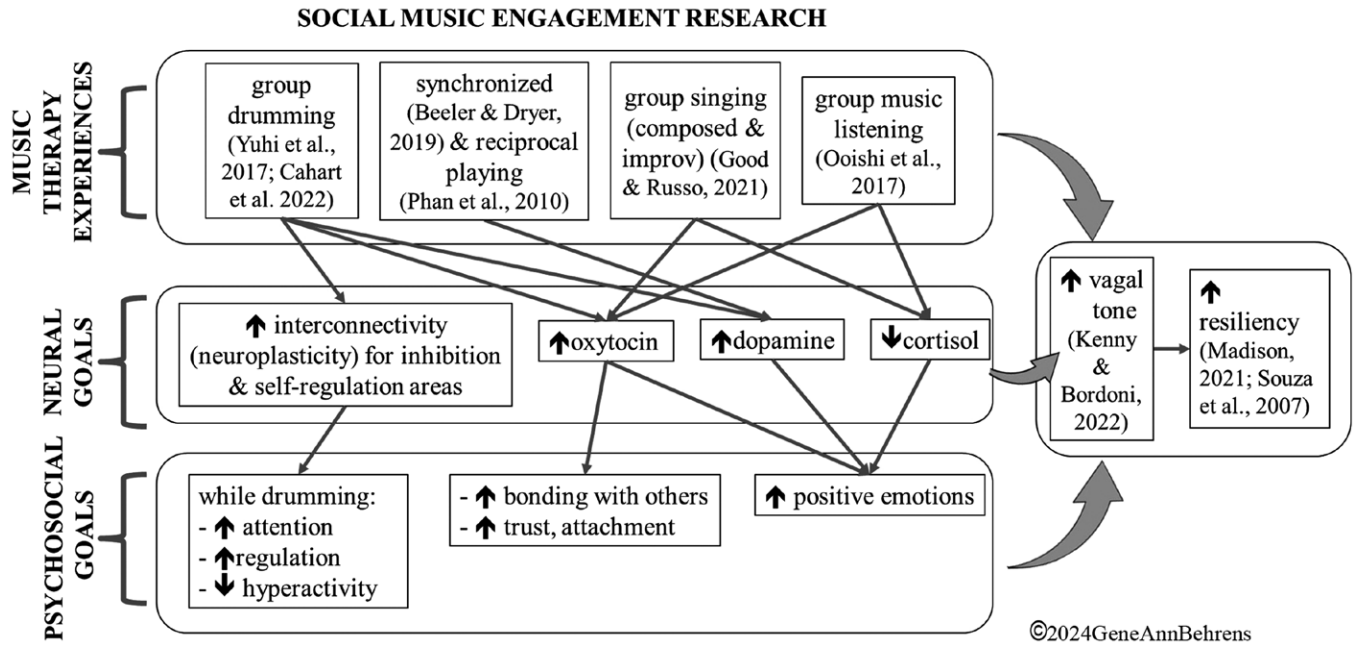


Figure 2. Summary of Social Music Engagement Research

ability to experience and focus (intra-psychological), and then develop relationships and trust (inter-psychological), which further develop skills to participate with a group of people making music together in social patterns that form additional relationships.

Viggo: From this multilayered perspective that integrates CoMT with neural science, the changes observed in individuals participating in community music experiences actually can be attributed in part to the impact of music on the brain. Those music-related neural changes further support the psychosocial changes, such as social connections, on which music therapists focus when working with individuals who experience some level of dysregulation in their lives.

Gene Ann: Yes, a person's involvement in music experiences can change the brain and support social connections (Greenberg et al., 2021). After learning more about the theories and values of CoMT, I also understand how theme one of CoMT is an excellent application of social neuroscience music research. Music becomes a vehicle for connecting with other people—a vehicle for creating neural changes that support social development. As music therapists, we need to be thinking so much more about extending our work into the community.

What's more, when therapeutically supportive, the benefits of group muiscking do not stop there. Because of group music experiences and the resulting neural changes, individuals potentially experience increased vagal tone, which supports a flexible nervous system and the development of resilience. A flexible, resilient nervous system helps people be tolerant and respond to the sociocultural differences and needs of others, stress, and change.

Viggo: I think you need to expand on each of the last components you mentioned.

Gene Ann: Of course, I believe these additional concepts also are key to CoMT. Let me start by briefly expanding on what traditionally has been described as the autonomic nervous system (ANS) that regulates involuntary functions, such as heart rate and respiration (Cerritelli et al., 2021). The ANS involves the sympathetic and the parasympathetic nervous systems. The vagal nerve is the 10th cranial nerve and the longest nerve in the body. As the main component of the parasympathetic nervous system, the vagal nerve begins in the lower brain stem and extends through the neck to the abdomen and upward into the voice box, face, and middle ear. However, recent research by Porges (2017) divides the function of the vagal nerve, a part of the parasympathetic nervous system, into two tracts, therefore providing three tracts or systems within the ANS[6] (Cerritelli et al., 2021; Dana, 2018). One, the sympathetic or hyperaroused system, increases body functions in response to threats. Two, a lower portion of the vagal nerve, the dorsal parasympathetic or withdrawn system, slows down body functions in response to even more extreme threats. Three, an upper portion of the parasympathetic system or vagal nerve, identified as the ventral or social engagement system, extends into the face, eyes, middle ear, and voice box and supports people's social interactions and attention when feeling flexible and balanced in their nervous system.

I also mentioned the vagal nerve and vagal tone, which are key parts of the parasympathetic nervous system. High vagal tone leads to an ability to deal with stress, recover from threats (Kenny & Bordoni, 2022), and develop a balanced, flexible nervous system that is tolerant and adaptable. People who are more relaxed and flexible when responding to stressors have higher vagal tone. A person with a flexible, balanced nervous system more easily calms themselves following a stressful experience—that is, high vagal tone helps a person cope and move from their sympathetic or dorsal system back to their ventral, safe engagement system. High vagal tone and a flexible, balanced nervous system also lead to resilience (Madison, 2021; Souza et al., 2007). Therefore, resilience can be described as a person's ability to deal with and recover from an anxious or threatening experience.

Downloaded from https://academic.oup.com/mtp/article/43/1/miaf007/8157433 by guest on 09 June 2025

When possible, I teach clients about their three nervous systems through music experiences. Clients can be empowered by understanding their responses to threats and how they can learn to identify and use coping skills to regulate. As a result, clients become hopeful as they also learn that their neural pathways and responses can change because of what they can learn about coping skills.

Viggo: I see several ways a neural perspective can empower clients. Your definition of resilience seems more concrete and relates to CoMT. Resilience is an important focus for individuals, especially in communities struggling to come together. From what you discussed, people with a flexible and grounded nervous system will recover more quickly from stress or conflicts and potentially become empowered to support the community as they work together to find the common good. In addition, individuals may further feel empowered as they learn how processes in the brain may be related to their symptoms.

You also suggest social neuroscience can help us understand how changes in the brain lead to psychosocial changes, such as establishing a sense of safety, relationships, and coping. These three are some of the important focuses for music-making groups in CoMT as well as the three pillars of trauma-informed care (Bath, 2015). Of the three, it seems a music therapist with an integrated neural perspective would seek to first use music to develop a sense of safety because it is the basis for other human activities, such as learning and coping.

Gene Ann: Yes, a sense of safety, or cues of safety, now is one of the most important concepts and strategies, followed by trust. A neural perspective focuses on supporting cues of safety for an individual first, from which trust and relationships then develop (Bell et al., 2019; Dana, 2018). While many people think of safety only as an emotional feeling, that response actually is the person's subjective interpretation of what occurs in their ANS. From a neurological perspective, Porges (2022) also defines safety as an internal physiological state regulated by the ANS that occurs when the person's nervous system perceives cues of safety and is balanced and flexible. Cues of safety, as well as threats, come from a person's environment. Therefore, an individual's day-to-day experiences influence their sense of safety and calm and can potentially keep them in their ventral or social engagement tract. However, while cues of safety are key, not all family, cultural, or community environments and experiences are positive and involve signs of safety—especially communities dealing with conflicts. Therefore, developing coping skills and resilience becomes an important psychosocial focus for communities dealing with some level of tension.

Viggo: I hear you saying that two important goals in CoMT involve observing whether individuals in a community are sensing cues of safety and then finding the right strategy to continue providing support for those safety cues within the group. How can therapists observe people's nervous systems in a group and then, based on available information, choose the best approach that will support either a person, group, or community? I wonder if the approach becomes a combination of various strategies introduced in phases. I like your idea that cues of safety come from the environment—that is, as you have been saying, the processes in the brain are influenced by the outside as well as one's inner world. Therefore, what creates safety for one person might create anxiety in another person.

Gene Ann: And that makes selecting instruments and music experiences that provide cues of safety a challenge, especially as you said, in a group. The process of monitoring a person's nervous system is individualized as each person responds based on their past encounters, the state of their nervous system, and the cues they are currently experiencing. Therefore, observing the nervous systems of several people at once is challenging, but the process starts by observing and adjusting to the moment-to-moment needs of each individual and then to how they function as a group. Again, monitoring their nervous systems based on observing their music and nonmusic responses provides additional insights.

Viggo: So even though neural research presents grouped data and outcomes, you interpret based on each person's music and nonmusic responses and the music components music therapists employ. Therefore, cues of safety become an individualized focus for individuals, groups, and communities.

Gene Ann: Yes, but before we move on to the next two themes, I want to briefly mention one more focus that I believe supports CoMT—that music therapists also need to monitor their own nervous system. Therapists often are taught to know themselves, especially as they enter sessions. However, training rarely explains what "knowing yourself" means. Monitoring one's nervous system provides an avenue for how to become self-aware and manage anxieties that may arise before or during sessions so their focus is on supporting their clients. Therapists must be in their engaged, ventral nervous system to focus and interact with their clients, observe and interpret symptoms, and adapt. Monitoring one's nervous system also allows music therapists to identify and flexibly adjust during sessions when interruptions or threats occur.

Viggo: What you are saying is the more music therapists learn to monitor their inner responses, that is, their nervous system, the better equipped they are to improvise and respond to their client's needs during sessions. However, this awareness of oneself comes from real-life experiences in which one learns to cope with anxiety or frustration.

Gene Ann: Yes, you are right. But then those life experiences in turn impact the person's nervous system, which influences future experiences and the relationships that develop.

Viggo: I believe you are describing the ripple effect, a concept in CoMT. It seems a CoMT approach with a neuroscience perspective helps further develop the knowledge, role, and experiences of music therapists. This expanded level of expertise can impact the sensitivity of therapists to the sociocultural contexts that produce ripple effects starting with each person, then groups and communities.

Gene Ann: Yes, the identity of the individual is key to starting that ripple effect and supports the last two themes defining CoMT. The Bernstein (1972) quote that began this article seems to reinforce the start of this ripple effect: "… Art cannot change events. But it can change people." As I hear you saying, CoMT is about facilitating group music experiences that change individuals, which in turn change communities.

Viggo: But then Bernstein went on to say. "…they then act in a way that may affect the course of events…by the way they vote, the way they behave, the way they think." Our

Downloaded from https://academic.oup.com/mtp/article/43/1/miaf007/8157433 by guest on 09 June 2025

discussion highlights that a neuroscience perspective may add to a therapist's understanding of the individual, the beginning of what CoMTs call the "ripple effect," an important concept in CoMT. Bernstein seemed to highlight the ripple effect, that changes that occur because of music experiences have the potential to impact social change.

From a CoMT perspective, a ripple effect refers to the impact that music therapy has on individuals, then on groups, and finally on entire communities and societies. As such, CoMT focuses on working collaboratively with individuals and groups in community settings. Music is a resource that promotes those social connections, the well-being of individuals, and the empowerment of communities. Music therapists who employ a CoMT point of view embrace a wide range of practices, from small-group workshops to large-scale community events. Therefore, each individual's experiences impact the groups they are a member of and the communities they join.

And that brings us to themes two and three (see Figure 1) which focus on how *the process of musicking in CoMT supports the development of a flexible approach that is open and meets the wellness and relational needs of the community*. *Achieving a flexible approach further promotes human rights and group decisions for the greater good of the community* (Stige & Aarø, 2012). While I slowly am becoming a supporter of integrating a neuroscience perspective, I am especially interested in how these themes and the ripple effect intersect with the context of a situation and how neuroscience supports developing an atmosphere of well-being for a community.

Gene Ann: Your concept of a ripple effect fits with another framework I developed which may support the last two themes (see Figure 3). While this framework outlines the development of a compassionate perspective (Behrens, 2024), Areas 1, 3, and 4 specifically define how supportive experiences impact the ripple effect of developing a flexible, balanced nervous system, Area 2, which in turn supports the tolerance of differences and human rights. I also want to clarify that the listed subskills of Areas 1, 3, and 4 do not represent an inclusive set of subskills, and the areas of the framework are partially stage-dependent in that they begin sequentially.

Area 1 (Figure 3) outlines skills that help an individual initially become grounded in their own identity, needed to eventually attend to the needs of others in a community (Raburu, 2015; Sokol, 2009). Area 2 then begins the interactive impact of one's developing nervous system with life experiences—focusing on high vagal tone. The framework assumes a best-case scenario of experiences to develop a flexible, balanced nervous system. White and Gonsalves (2021) more specifically discuss the universal need for human rights experiences (i.e., agency, autonomy, self-determination, freedom from want, and freedom from fear) to positively develop a nervous system that thrives—what they define as *dignity neuroscience*. Area 3 focuses on the impact of connecting with groups of people who usually are similar, such as family and close friends, and the development of relationship skills, which further interact with the development of one's nervous system. Finally, area 4 outlines the application of skills within a community of diverse people who might challenge human rights. The development of high vagal tone and the ripple effect of interactive skills prepares a person to support the human rights of others—to flexibly respond to the needs of a diverse community.

Viggo: Your framework asks CoMTs to focus on the individual's nervous system to help clients develop a perspective that will be more open and flexible to dealing with diversity. Such openness and flexibility set up a range of responses and opportunities.

Gene Ann: Yes, as a social response, group music-making potentially helps develop or repair these communication and relationship skills that you describe. Reciprocal and synchronous playing is key to learning to listen, hear, and develop neural integration besides developing an openness to reach out to help others (Kirschner & Tomasello, 2010; Vlachová, 2022). Coregulation within a group improvisation facilitates learning to self-regulate one's nervous system (Bornstein & Esposito, 2023). Ensemble playing increases trust in others as a resource while also developing relationships (Phan et al., 2010).

Viggo: So you propose that this neural-based framework supports fostering connections with others—the aim of most CoMT group music-making experiences. For individuals transitioning back into a community, CoMTs would help them find music connections within the community to continue supporting their health. The changes discussed in this portion of the framework are ongoing skills that continue to develop over time. A CoMT would be there to support the individual as they move from being a patient to a member of the community, which would continue their recovery.

Gene Ann: And thinking from an integrated neural perspective, I have heard you talk about a variety of music experiences that can rehearse skills within the various areas of the framework. For example, music-making rehearses skills such as waiting for entrances, performing at slow tempos, and adapting when errors occur. Rehearsing these psychosocial skills within positive music experiences that provide safe cues supports clients in becoming calmer, better able to use coping skills to deal with challenges, less easily threatened, and more open when working with people who may have differing values. Because of the skills that resilience supports, individuals are less impulsive, have coping skills that help them adapt and recover from errors, and increase their tolerance of uncomfortable feelings.

Viggo: I have observed those changes. Because of music experiences, children and adults learn to tolerate challenges and bounce back from making errors. Music can become the cornerstone of how children learn to process their fears and anxieties. Over time because of their music-making, they learn to adapt and modify their responses rather than become upset, shut down, and walk away—which is, as I understand now, the sympathetic or dorsal system responding to perceived threats. In addition, what they learn about coping with their fears becomes a strength for dealing with future conflicts.

Gene Ann: That shift in the child's nervous system is something that a music therapist can observe and identify as a result of understanding a neural perspective and its impact on the client's music and nonmusic cues. The music therapist then can adjust the available music components to create cues of safety and support for that child.

Viggo: I agree that a ripple effect evolves from the development of an individual's nervous system. When working with

Downloaded from https://academic.oup.com/mtp/article/43/1/miaf007/8157433 by guest on 09 June 2025

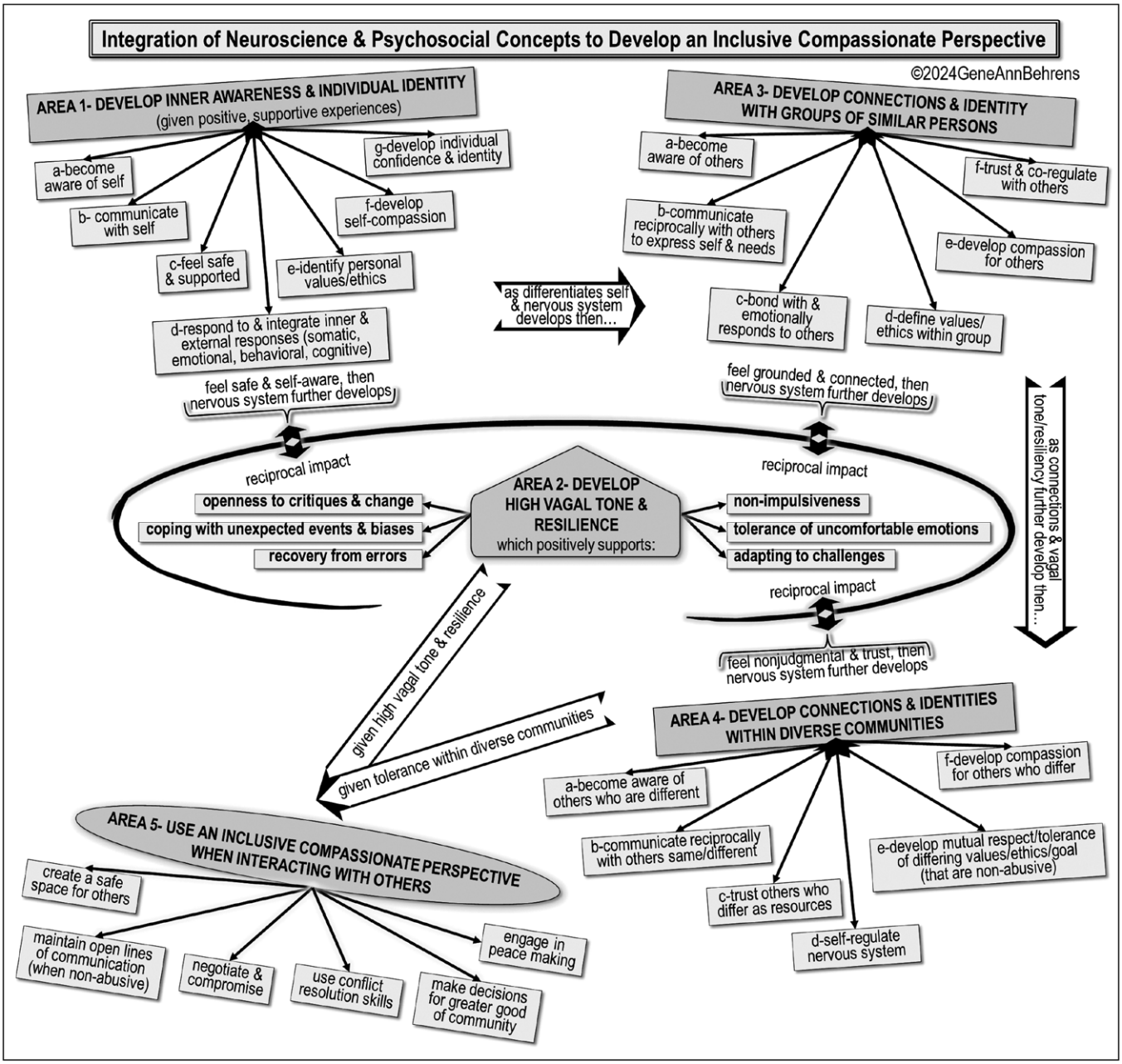


Figure 3. Detailed Framework of an Inclusive Compassionate Perspective

people with various backgrounds, it seems that monitoring people's nervous systems within a community would help me gain more information about individuals as I get to know them and how they are doing. Which person has a balanced, grounded nervous system and whose nervous system is dysregulated? Therefore, what you are saying is those with high resilience and a flexible nervous system potentially support an environment of growth in a community.

Gene Ann: Yes, your summary reflects so many concepts that we discussed. Nevertheless, although group music experiences may potentially create positive environments with cues of safety where individuals can explore the differences and similarities among those in the community, issues and conflicts still occur. However, as you suggest, those individuals who have learned to cope with their fears and more easily calm themselves will be able to separate themselves from conflicts and become coregulators for others, thus building trust (see Area 5 of Figure 3). Those people who model tolerance have the skills to lead others and support the greater good of the group. Those who also are grounded in their identity will be able to observe the needs of those in conflict and create cues of safety within the environment in which negotiations may begin (Dana, 2018; Madison, 2021).

Viggo: The final portion of your neural framework seems to be about how music therapists can embrace values from a human rights discourse, the final theme. This focus is especially relevant when working with individuals in danger of losing their voices and basic human rights because of the systems that are supposed to take care of them. A modern view of human rights not only focuses on the individual but how

Downloaded from https://academic.oup.com/mtp/article/43/1/miaf007/8157433 by guest on 09 June 2025

the individual is connected to their families and communities and globally to the world. Music therapists need frameworks that support a holistic view of how people develop individual identities and connect with communities and the world. I now see how a neural perspective allows music therapists to essentially zoom in and zoom out when assessing and developing treatment as well as to expand their own self-awareness.

Gene Ann: I like that image of zooming in and out as we integrate neuroscience to support our music therapy work with individuals and groups. Even though we focused on how neuroscience might support CoMT, I also can reflect on the insights I gained about CoMT. You have challenged me to realign how I discuss the integration of neuroscience with others, and most importantly, you have helped me realize how peace and justice have always been a part of my thinking. Over the years, my experiences and international travels supported an evolving personal perspective that embraces an inclusive, compassionate approach to interacting with people. While this perspective has impacted my life, I don't think I clearly understood how those concepts also supported my work and belief in the human rights of all individuals with whom I interact.

Viggo: It sounds like we both have gained insights as a result of our collaborative conversation. Maybe CoMT even needs to consider a fourth theme—how CoMT impacts the neural changes that develop personal, relational, and social changes.

Concluding Thoughts

As a result of our discussions and the writing of this paper, we believe that our perspectives evolved, which in turn shaped and reshaped how we engaged in our ongoing conversations. We and our clients will benefit from the information and insights that we exchanged—perceptions that were co-constructed due to our discussions, shared commitment, and the process of dialogical inquiry. While we hope that music therapists will consider integrating one or more of the concepts from our discussion of CoMT and neuroscience, we also encourage readers to engage in conversations with those with differing views. It may be easier to dismiss such interactions as futile; however, we can attest to the beneficial impact of our discussions and the friendship that grew. We learned that discussing challenging questions nurtures insights and that agreement is not always necessary. Instead, exploring differing perspectives led to the collaborative, creative nature of knowledge production. We hope our discussions and dialogical writing have shown that engaging with diverse perspectives deepens understanding, fosters growth, and builds connections.

Conflicts of interest: None declared.

References

Bakhtin, M. M. (1981). *The dialogic imagination: Four essays*. (M. Holquist, Ed.; C. Emerson & M. Holquist, Trans.). University of Texas Press. (Original work published 1975).

Bath, H. (2015). The three pillars of TraumaWise Care: Healing in the other 23 hours. *Reclaiming Children and Youth 23*(4), 5–11. https://www.traumebevisst.no/kompetanseutvikling/filer/23_4_Bath3pillars.pdf

Beeler, J. A., & Dreyer, J. K. (2019). Synchronicity: The role of midbrain dopamine in whole-brain coordination. *eNeuro 6*(2), 1–17. https://doi.org/10.1523/ENEURO.0345-18.2019

Behrens, G. A. (2024). A Framework for developing an inclusive compassionate identity. *Music Therapy Perspectives 43*(1), 1–10. https://doi.org/10.1093/mtp/miaf005

Bell, V., Robinson, B., Katona, C., Fett, A. K., & Shergill, S. (2019). When trust is lost: The impact of interpersonal trauma on social interactions. *Psychological Medicine 49*(6), 1041–1046. https://doi.org/10.1017/S0033291718001800

Bernstein, L. (1972). "The point is, art never stopped a war…" Quoted in Gruen, J. (1972, December 31). Berstein talks about his new 'Mini-Mass'. *Los Angeles Times-Calendar Section 26, 50*, 1.

Cammisuli, D. M., & Castelnuovo, G. (2023). Neuroscience-based psychotherapy: A position paper. *Frontiers in Psychology 14*, 1101044. https://doi.org/10.3389/fpsyg.2023.1101044

Cerritelli, F., Frasch, M. G., Antonelli, M. C., Viglione, C., Vecchi, S., Chiera, M., & Manzotti, A. (2021). A review on the vagus nerve and autonomic nervous system during fetal development: Searching for critical windows. *Frontiers in Neuroscience 15*, 721605. https://doi.org/10.3389/fnins.2021.721605

Clark, K., & Holquist, M. (1984). *Mikhail Bakhtin*. Belknap Press of Harvard University Press.

Dana, D. (2018). *The Polyvagal Theory in therapy: Engaging the rhythm of regulation*. W. W. Norton & Company.

De Vos, J., & Pluth, E. (Eds.). (2015). *Neuroscience and critique: Exploring the limits of the neurological turn*. Routledge.

Dysthe, O. (1996). The multivoiced classroom: Interactions of writing and classroom discourse. *Written Communication 13*(3), 385–425. https://doi.org/10.1177/0741088396013003004

Ferreri, L., Mas-Herrero, E., Zatorre, R. J., Ripollés, P., Gomez-Andres, A., Alicart, H., Olivé, G., Marco-Pallarés, J., Antonijoan, R. M., Valle, M., Riba, J., & Rodriguez-Fornells, A. (2019). Dopamine modulates the reward experiences elicited by music. *Proceedings of the National Academy of Sciences of the United States of America 116*(9), 3793–3798. https://doi.org/10.1073/pnas.1811878116

Good, A., & Russo, F. A. (2022). Changes in mood, oxytocin, and cortisol following group and individual singing: A pilot study. *Psychology of Music 50*(4), 1340–1347. https://doi.org/10.1177/03057356211042668

Greenberg, D. M., Decety, J., & Gordon, I. (2021). The social neuroscience of music: Understanding the social brain through human song. *The American Psychologist 76*(7), 1172–1185. https://doi.org/10.1037/amp0000819

Harrod, E. G., Shrira, I., Martin, J. D., & Niedenthal, P. M. (2023). Living in ancestrally diverse states of the United States is associated with greater vagal tone. *Frontiers in Psychology 13*, 1068456. https://doi.org/10.3389/fpsyg.2022.1068456

Kenny, B. J., & Bordoni, B. (2022). Neuroanatomy, cranial nerve 10 (Vagus nerve). In *StatPearls*. StatPearls. https://www.ncbi.nlm.nih.gov/books/NBK537171/

Kenny, C. (2002). Keeping the world in balance—Music therapy in a ritual context. *Voices: A World Forum for Music Therapy 2*(2). https://doi.org/10.15845/voices.v2i2.84

Kirschner, S., & Tomasello, M. (2010). Joint music making promotes prosocial behavior in 4-year-old children. *Evolution and Human Behavior 31*(5), 354–364. https://doi.org/10.1016/j.evolhumbehav.2010.04.004

Kokal, I., Engel, A., Kirschner, S., & Keysers, C. (2011). Synchronized drumming enhances activity in the caudate and facilitates prosocial commitment—If the rhythm comes easily. *PLoS One 6*(11), e27272. https://doi.org/10.1371/journal.pone.0027272

Krüger, V., Murphy, K. M., Nordanger, D., & Wilhelmsen, C. (2024). Music therapy for adolescents in a child welfare setting—A qualitative interview study. *British Journal of Music Therapy 38*(1), 5–14. https://doi.org/10.1177/13594575231155267

Luke, C., Miller, R., & McAuliffe, G. (2019). Neuro-informed mental health counseling: A person-first perspective. *Journal of Mental Health Counseling 41*(1), 65–79. https://doi.org/10.17744/mehc.41.1.06

Madison, A. A. (2021). Boosting stress resilience using flexibility as a framework to reduce depression risk. *Brain, Behavior, & Immunity - Health 18*, 100357. https://doi.org/10.1016/j.bbih.2021.100357

McFerran, K. S., Derrington, P., & Saarikallio, S. (Eds.). (2019). *Handbook of music, adolescents, and wellbeing*. Oxford University Press.

Murphy, K. M., Krüger, V., Pomerselig, N., Stige, B., & Washington-Guillemet, R. (2023). Community music therapy in the United States: A thematic analysis. *Voices: A World Forum for Music Therapy 23*(1). https://doi.org/10.15845/voices.v23i1.3615

Ooishi, Y., Mukai, H., Watanabe, K., Kawato, S., & Kashino, M. (2017). Increase in salivary oxytocin and decrease in salivary cortisol after listening to relaxing

Downloaded from https://academic.oup.com/mtp/article/43/1/miaf007/8157433 by guest on 09 June 2025

slow-tempo and exciting fast-tempo music. *PLoS One 12*(12), e0189075. https://doi.org/10.1371/journal.pone.0189075

Phan, K. L., Sripada, C. S., Angstadt, M., & McCabe, K. (2010). Reputation for reciprocity engages the brain reward center. *Proceedings of the National Academy of Sciences of the United States of America 107*(29), 13099–13104. https://doi.org/10.1073/pnas.1008137107

Pinna, T., & Edwards, D. J. (2020). A systematic review of associations between interoception, vagal tone, and emotional regulation: Potential applications for mental health, wellbeing, psychological flexibility, and chronic conditions. *Frontiers in Psychology 11*, 1792. https://doi.org/10.3389/fpsyg.2020.01792

Porges, S. W. (2017). *The pocket guide to the Polyvagal Theory: The transformative power of feeling safe*. W. W. Norton.

Porges, S. W. (2022). Polyvagal theory: A science of safety. *Frontiers in Integrative Neuroscience 16*, 871227. https://doi.org/10.3389/fnint.2022.871227

Raburu, P. A. (2015). The self—Who am I?: Children's identity and development through early childhood education. *Journal of Educational and Social Research 5*(1), 95–102. https://www.richtmann.org/journal/index.php/jesr/article/view/5600

Restak, R. M. (1980). *The brain—The last frontier*. Warner Books.

Rodgers, D. (2017). Community music as a vehicle for tackling mental health-related stigma. *London Review of Education 15*(15), 474–487. https://doi.org/10.18546/LRE.15.3.10

Russell-Chapin, L. (2016). Integrating neurocounseling into the counseling profession: An introduction. *Journal of Mental Health Counseling 2*(38), 93–102. https://doi.org/10.17744/mehc.38.2.01

Sankaran, N., Leonard, M. K., Theunissen, F., & Chang, E. F. (2024). Encoding of melody in the human auditory cortex. *Science Advances 10*(7), eadk0010. https://doi.org/10.1126/sciadv.adk0010

Small, C. (1998). *Musicking: The meaning of performing and listening*. Wesleyan University Press.

Sokol, J. T. (2009). Identity development throughout the lifetime: An examination of Eriksonian theory. *Graduate Journal of Counseling Psychology 2*(1), Article 14. https://epublications.marquette.edu/gjcp/vol1/iss2/14

Souza, G. G., Mendonça-de-Souza, A. C., Barros, E. M., Coutinho, E. F., Oliveira, L., Mendlowicz, M. V., Figueira, I., & Volchan, E. (2007). Resilience and vagal tone predict cardiac recovery from acute social stress. *Stress 10*(4), 368–374. https://doi.org/10.1080/10253890701419886

Stensæth K (2015) 'Musical dialoguing': A perspective of Bakhtin's dialogue on musical improvisation in asymmetric relations. In E. Georgii-Hemming, S. E. Holgersen, Ø. Varkøy, et al. (Eds.), *Nordic Research in Music Education Yearbook*, (Vol. *16*, pp. 209–225). NMH-Publications.

Stige, B. (1998). Aesthetic practices in music therapy. *Norsk Tidsskrift for Musikkterapi 7*(2), 121–134. https://doi.org/10.1080/08098139809477932

Stige, B, & Aarø, L. E. (2012). *Invitation to Community Music Therapy* (1st ed.). Routledge.

Toader, C., Tataru, C. P., Florian, I. A., Covache-Busuioc, R. A., Bratu, B. G., Glavan, L. A., Bordeianu, A., Dumitrascu, D. I., & Ciurea, A. V. (2023). Cognitive crescendo: How music shapes the brain's structure and function. *Brain Sciences 13*(10), 1390. https://doi.org/10.3390/brainsci13101390

van der Kolk, B. (2015). *The body keeps the score*. Penguin Random House.

Vlachová, Z. (2022). Means of musical dialogues and reciprocity: Improvisational music therapy for social interaction of a preschool child with autism spectrum disorder. *Voices: A World Forum for Music Therapy 22*(2). https://doi.org/10.15845/voices.v22i2.3191

Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

White, T. L., & Gonsalves, M. A. (2021). Dignity neuroscience: Universal rights are rooted in human brain science. *Annals of the New York Academy of Sciences 1505*(1), 40–54. https://doi.org/10.1111/nyas.14670

Woofenden, N. (2020). *Decreasing mental health stigma one song at a time: Using community music therapy to increase social connectedness and decrease self-stigma and perceived stigma* (Publication No. 295) [Expressive Therapies Capstone Theses, Lesley University]. DigitalCommons@Lesley. https://digitalcommons.lesley.edu/expressive_theses/295

Yuhi, T., Kyuta, H., Mori, H. A., Murakami, C., Furuhara, K., Okuno, M., Takahashi, M., Fuji, D., & Higashida, H. (2017). Salivary oxytocin concentration changes during a group drumming intervention for maltreated school children. *Brain Sciences 7*(11), 152. https://doi.org/10.3390/brainsci7110152

Bornstein, M. H., & Esposito, G. (2023). Coregulation: A multilevel approach via biology and behavior. *Children (Basel, Switzerland) 10*(8), 1323. https://doi.org/10.3390/children10081323

Downloaded from https://academic.oup.com/mtp/article/43/1/miaf007/8157433 by guest on 09 June 2025