

# Helen

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in AUTISM**

& Related Disabilities

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EDUCATIONAL OUTREACH

ENDORSED BY



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Music for educational outreach and therapeutic use





# Dancing the Neural Tango:

EDUCATIONAL OUTREACH

By Dr. Martha Summa-Chadwick, DMA  
Steve Weiser

**M**usic is deeply woven into the fabric of human civilization. Ancient artwork from the earliest human cultures suggests that music was once used as an early form of communication. Ongoing science-based research now confirms that music can play an essential role in brain development by helping to promote neuroplasticity. Most people think that listening to their favorite music is a delightful form of entertainment or a lovely spiritual experience, without realizing that music can also be utilized as a powerful therapeutic modality.

Biomedical music protocols can assist people with motor, speech, and cognition challenges, including stroke, autism, dementia, traumatic brain injury, and many other diagnoses resulting from rehabilitation challenges due to trauma or disease and intellectual and/or developmental disabilities. An extraordinary amount of excellent research highlighting these benefits has been published in neuroscience journals

for the last three decades. Unfortunately, this knowledge has not filtered down to the consumers who would directly benefit from such knowledge, such as physicians, patients, and therapists. Concurrently, statistically significant data from large-scale clinical trials are lacking to confirm the efficacy and the cost-effectiveness of music protocols in therapeutic use. As a result, insufficient business plan models are available to medical CEOs and university chancellors to justify expanding music therapy programs; only a few medical/educational professionals are currently interested in implementing music in their own regional hospitals, therapy centers, and school systems.

The 501(c)3 nonprofit organization Music Therapy Gateway in Communications (MTGIC) was founded in 2002 to help bring this knowledge of the powerful connection between music and the brain to both the medical profession and directly to the consumer. Advocacy concerts, presentations, residencies, and educational guidance to raise this awareness have focused on many different audiences, including physicians, therapists, educators, musicians, parents, and caregivers, to stretch the paradigms of bringing this knowledge into an expansion of music in healthcare.

One of MTGIC's most effective outreach projects has been an annual concert series (beginning in 2013)

called Chamber Music for Body and Soul. Most people attend a concert to hear music they love; this concert series achieves that goal and helps the audience learn something new about how music works with the brain. These events feature works by composers with neural afflictions, paired with pre-concert lectures to explain how the condition may have affected the composition process. Forms of dance are also featured, so that the audience can directly experience the power of "muscular entrainment" as they are encouraged to tap a finger or a toe along with the music.

This concert format reached the interest of strategic musical personnel in Erie, Pennsylvania, in 2015, when MTGIC collaborated in a weeklong residency of concerts and presentations with Gannon University, the Erie Chamber Orchestra, and the Barber National Institute. The response to these events was very positive, and more collaborative efforts were soon under way between the Erie organizations and MTGIC.

During the 2020 pandemic lockdown, when live concerts were not possible, MTGIC and the Erie Philharmonic collaborated to create a unique video learning series called "The Neural Tango" to educate their audience in various elements of music and the brain. For the Erie Philharmonic, these efforts are part of ongoing community engagement initiatives.



Erie Philharmonic outreach projects also include working with children at the Barber National Institute.



Dr. Martha Summa-Chadwick and Craig Stevens discussing biomedical music protocols in the Neural Tango video series.

music is used as a direct pathway to activation of non-musical networks, such as gait, executive functioning, attention span, and speech. The benefits of potential collaboration between music therapy and physical therapy professionals are spoken of in detail, in addition to

The video series brings together skilled professionals in music, education, physical therapy, music therapy, and those with personal knowledge of working with persons challenged with disabilities.

The expert panel includes Daniel Meyer, conductor and Music Director of the Erie Philharmonic; Steve Weiser, Executive Director of the Erie

Philharmonic; Brian Hannah, musician and program host on WQLN, Erie's NPR-affiliate radio station; Maureen Barber-Carey, Executive Vice President of the Barber National Institute in Erie; Craig Stevens, Board-Certi-

fied Music Therapist and founder and owner of Lake Erie Music Therapy; Elizabeth Darling, DPT, Physical Therapist and U.S.A. Olympic team trainer; Martha Summa-Chadwick,

a thoughtful conversation regarding of the differences between music therapy and music enrichment. The importance of music education, the potential of music for pain management, and the

impact of music to help with inclusion for persons with disabilities and music in

society are also included in the panel discussions. Another topic reveals that some of the greatest composers in the history of Western music had forms of neural afflictions; the panel experts discuss how these challenges likely



This video series was designed as a model of the strength of output made possible when professionals with different backgrounds sit around the same table to help solve a problem.

DMA, Executive Director, MTGIC; and the principal players of the Erie Philharmonic string quartet.

Discussions in the series include topics regarding the specific applications of music therapy and how



## The Organizations

**Erie Philharmonic:** The mission of the Erie Philharmonic is to strengthen the Erie community and region by providing high-quality live orchestra concerts and programs that enrich, entertain, and educate people of all ages. In existence since 1913, the Philharmonic is one of the oldest professional ensembles in the country and is recognized on a national level as one of the top orchestras in its budget size. With a season that features 13 mainstage performances at the Warner Theatre, various summer programs, a free chamber music series, four Youth Concerts and numerous outreach events, the orchestra reaches more than 50,000 people across the region annually. ([www.eriephil.org](http://www.eriephil.org))

**Music Therapy Gateway in Communications (MTGIC):** The mission of MTGIC is to 1.) disseminate information regarding biomedical music protocols through concerts, lecture concerts, or concert workshops, 2.) Encourage and facilitate open discussion for music in medicine and education by bringing together groups of researchers, doctors, therapists, behavioral specialists, educators, musicians, parents, and caregivers to create innovative musical solutions for those with psychosocial, motor, speech, or cognition challenges. ([www.mtgic.org](http://www.mtgic.org))

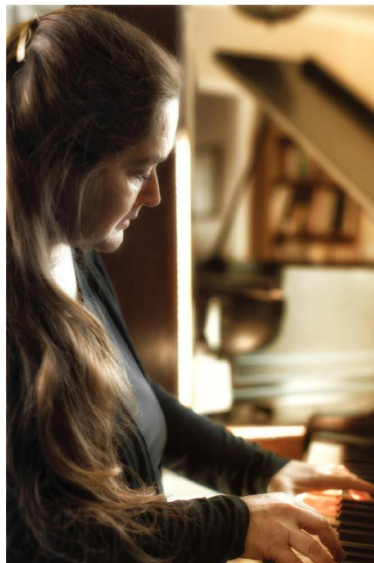


made these individuals even better composers despite their disorders. The series also includes an in-depth discussion of the amazing changes that occur in the brains of long-term musicians as neuroplasticity fuses the auditory and motor systems.

The final module unifies all the information into an experiential performance of Beethoven's String Quartet in F minor, Op. 95, specifically performed for this video series by the principal players from the Erie Philharmonic. Referred to as the "Serioso" quartet by Beethoven himself, it is the shortest of all his string quartets but seems to reflect the emotional state of Beethoven's own life as he sank deeper into complete deafness. The opening movements portray struggle, rage, and the depths of despair. Finally, at the end of the last movement, the emotions shift suddenly from hopelessness to a feeling of joy and triumph of the human spirit. This experiential performance mirrors how wonderfully music can help those with motor, speech, and cognition afflictions rise to the challenge of creating a better quality of life through music.

This video series was designed as a model of the strength of output made possible when professionals with different backgrounds sit around the same table to help solve a problem. It is a free resource that can be utilized by any person or organization who would like to educate their audience in the benefits of music and the brain, and can be found on the Erie Philharmonic website at <https://eriephil.org/neuraltango>. By collaborating on this project, MTGIC and the Erie Philharmonic have provided a platform directly to the consumer for raising awareness about the benefits of music and the brain. Once societal awareness is raised, there will be much greater ease in promoting music into the mainstreams of healthcare and education, where so many people would benefit.

Indeed, music has the potential to revolutionize healthcare.



*Martha Summa-Chadwick, DMA, has achieved a national reputation as an educator, presenter, performer, and advocate for the cause of music in therapy. She is Executive Director of the nonprofit organization Music Therapy Gateway in Communications.*



*Steve Weiser, Executive Director, began his tenure with the Erie Philharmonic in August 2015. As a percussionist with the orchestra for three seasons, Mr. Weiser has helped usher in a new era for the 108-year-old organization, now performing in a stunning, newly renovated Warner Theatre.*

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## RESOURCES

### Recommended Books:

Levitin, D. J. (2006). *This is your brain on music: The science of a human obsession*. New York, N.Y: Dutton.

Sacks, O. (2007). *Musicophilia: Tales of music and the brain*. New York: Alfred A. Knopf.

Thaut, M. H., & Hoemberg, V. (Eds.). (2014). *Handbook of neurologic music therapy*. Oxford University Press.

### Recent Sample Articles:

Gassner L, Geretsegger M, Mayer-Ferbas J. Effectiveness of music therapy for autism spectrum disorder, dementia, depression, insomnia and schizophrenia: update of systematic reviews. *Eur J Public Health*. 2022 Feb 1;32(1):27-34. doi: 10.1093/eurpub/ckab042. PMID: 34595510; PMCID: PMC8846327.

Speranza L, Pulcrano S, Perrone-Capano C, di Porzio U, Volpicelli F. Music affects functional brain connectivity and is effective in the treatment of neurological disorders. *Rev Neurosci*. 2022 Mar 24. doi: 10.1515/revneuro-2021-0135. Epub ahead of print. PMID: 35325516.

van Vugt FT, Hartmann K, Altenmüller E, Mohammadi B, Margulies DS. The impact of early musical training on striatal functional connectivity. *Neuroimage*. 2021 Sep;238:118251. doi: 10.1016/j.neuroimage.2021.118251. Epub 2021 Jun 8. PMID: 34116147.