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Ed Roth

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WMU professor takes worldly approach in researching the healing power of music

By Margaret von Steinen

Can listening to and making music be effectively used in the treatment of people diagnosed with neurologic and psychiatric disorders?

This is the primary question Professor Ed Roth, director of WMU's music therapy program, is attempting to answer in collaboration with colleagues from around the world to improve treatment for people experiencing post-traumatic stress and other acute anxiety disorders. He is a co-founder and director of WMU's Laboratory for Brain Research and Interdisciplinary Neurosciences (BRAIN) (article) and a Fellow in the Academy of Neurologic Music Therapists, who specializes in the application of music in the treatment of neurologic disorders and diseases of the central nervous system in pediatric and adult populations.

Roth actively works with Dr. Daniel Levitin, McGill University in Montreal, Canada (author of *This is Your Brain on Music*) and Dr. Charles Limb, University of California-San Francisco (chief of the Division of Otology, Neurotology and Skull Base Surgery, and TED speaker: *Your Brain on Improvisation*). He was also instrumental in the establishment of music therapy programs in Spain at the University of Ramon Llull and Pompeu Fabra University, both in Barcelona, where he served as a scholar in residence.

A frequent national and international presenter, Roth has shared his methods and findings at the University of Queensland in Australia, Oxford University in England, and other prestigious institutions. His work is widely published in international journals of neuroscience, rehabilitation medicine, music therapy, counseling, and perceptual and motor skills.

A paper Roth wrote collaboratively during his graduate degree program on the Mozart Effect is what well-positioned him early on in his career to conduct research with an international perspective. He presented the paper at the Neurosciences and Music conference in Montreal and at the first International Congress of Clinical Neuromusicology in Salzburg, Austria. Those presentations garnered international attention for the topic and brought the general public into the conversation about the use of music to increase intelligence.

"When we wrote our paper, like us, another two or three groups theorized that the occasionally observed improved performance as a result of listening to a Mozart piano sonata was due to an arousal affect, instead of sitting in silence," said Roth, who came to WMU in 2000. "Many believe that if you listen to any auditory stimulus that changes over time, such as music, that it would have a brief enhancing effect on whatever you were doing afterward. That made all of us who study music skeptical whether it could, quote, make you smarter, unquote, what was the actual mechanism of such an effect, and why would it only be due to the music of Mozart?"

When multiple studies were not able to replicate the Mozart Effect, researchers within the U.S. and Canada scientific community who were focused on cognition and perception became engaged in the discussion. Some labs did succeed in replicating the effect, but Roth said no one could explain what, were the actual mechanisms of change.

"The Mozart Effect really caught on in the U.S. when the Governor of Georgia sent every newborn home with a Mozart CD and parents of young children latched onto the theory as a possible method for boosting their kids' mental and intellectual advancement," he said. "The science did not demonstrate that the Mozart Effect was correct as originally presented, but it captured the public's imagination about how listening to music can enhance non-musical thinking."

As a marimbist and drummer, Roth has had a lifelong interest in percussion and how the rhythm impacts humans. His



current research has branched out to better understand the neuroanatomical, neurophysiological and clinical application of music improvisation toward the emotional rehabilitation of children who have experienced abuse or neglect.

The origins of music therapy at WMU

The music therapy program at WMU was founded in 1958 by Professor Carol Collins, followed by its second director, Professor Brian Wilson in 1975. Roth, the program's third director, assumed that role in May 2015. The discipline's origins stem back to World War II, when affluent nurses from New York City who were taking care of soldiers discovered that the soldiers calmed down when they sang to them and that their vital signs synchronized to the singing. "This was the beginning of music therapy as a professional discipline," Roth said. "WMU was amongst the earliest universities in the U.S. to offer a music therapy degree."

Roth said early stages of research in the field laid out a mechanistic approach to examine music to understand its therapeutic effect on people. In the last 15 to 20 years, he said some in the discipline have contextualized their research within the neurosciences, which likely improved its credibility in science and medicine. "When music therapy started to anchor some of its interventions in neuroscience rather than in the humanities or social sciences, it began to be more widely known among the general public," Roth said. "It is still a young discipline and there are several passionate, and seemingly incompatible, perspectives about it."

In the U.S., the profession relies more heavily on scientific research and evidence based practice to inform the delivery of therapeutic music interventions for clinical purposes. In contrast, Roth noted that others in the U.S. and most European countries practice music therapy from a very non-medical scientific frame of reference.

wmich.edu/music/directory/roth

"It is so invigorating and motivating to have international colleagues whose work motivates me and causes me to remain open to alternative hypotheses."

"Many countries reject the scientific approach to understanding how music can be used as therapy," he said. "Sometimes when I present internationally, the scientists and physicians in an audience seem to respond favorably to the information and the approach to obtaining it, which is in direct contrast to the response of some of the music therapists. Some Europeans have mentioned to me that, 'it is so 'American' of you to attempt to reduce art and human expression to its elemental features.' Those perspectives forced me to remain open to multiple hypotheses, theories, and methods of practice. As a researcher, the more research you do in a certain area, the more narrow and focused it becomes. It is so invigorating and motivating to have international colleagues whose work motivates me and causes me to remain open to alternative hypotheses."

Recently, Roth chaired an institute in San Diego titled, *Clinical Neuromusicology: The Neuroscience of Music from Perception to Clinical Practice*, at the American Music Therapy Association's annual national conference. He also chaired a symposium at WMU titled, *Music, Mind, and Medicine: Creativity and Consciousness in Clinical Care*. The institute and symposium both featured some of the world's most prominent neuroscientists and music therapists and drew large audiences from a broad field of disciplines.



Professor Roth (front left) with final-year music therapy students at the University of Queensland in Australia, where he taught in 2005.