

>> Hi, I'm Steve Mencher for the Library of Congress and this is another one of our Music and the Brain Podcasts. Today I'm with Connie Tomaino; Connie is Executive Director and cofounder of the Institute for Music and Neurological Function and senior Vice-President for Music Therapy at Beth Abraham Family of Health Services in New York. Welcome Connie.

>> Concetta M. Tomaino: Thank you so much.

>> Tell me a little bit about your background. Do you come at music therapy as a therapist a musician or some combination of some of these things?

>> It's really a combination of those and evolving in each step of the way. I went to college as a premed biochemistry major, but also played trumpet in high school and I also studied music as a child, and when I went to college I wanted to take lessons from the trumpet professor there, but I had to become a music major to do so. And so, in becoming a music major and double majoring in bio and music I decided I didn't want to go into medicine, but didn't know what to do with my life; found out about music therapy which in the early 70's was still a fairly new field, I decided to go into that. However, even with my training which in school was mostly psychotherapeutic uses of music, my work was dealing with people with neurologic impairment like Alzheimer's disease and Parkinson's and it struck me early on, about 32 years ago, that something else about music that really got inside people and got to still preserve areas of function in people with Alzheimer's disease and dementia who couldn't tell you who they are or where they're from, and yet with the right song, could become alive in the moment and actually have fluent memories, and also remember the words to songs. So, early on I was curious about what was happening in the brains of these individuals, and it wasn't until I came to Beth Abraham in 1980 that I had the good fortune of having to be at the same place that Oliver Sacks was working as the neurologist and he and I sort commiserated many, many times trying to figure out what it was that was happening and the fact, at one point, went to a group of scientists in the late 80's and said: "Can you study music in the brain?" And they said: "No, it's too impossible, you have to slice and dice it and can't find anything out about it." And we couldn't really learn except through clinical observation, how music works the way it does, and it's only recently in the past 10 years or so that we see this emergence of neuroscientists that can explain finally what we see every day clinically.

>> That's great, now I was reading some of the things you've written and you talk about neurological and psychological and physical functioning, and areas such as learning language, processing emotional expression, memory, physiologic and motor responses. So, this is all the kind of thing that music might have an effect on or music might filter through the brain and be related to some of these things, but right now, as you say we're kind of getting closer and closer to figuring out what the processes are. Can you tell us a little bit about how that work is going and what people are finding out?

>> Sure, well you know, the early neuroscience studies and music were really about separating music into components, you know, separating sound

into pitch and where that's processed in the brain; separating awareness of time and expectations, so you know, 15 years ago that was the course of neuroscience and music and the brain. Now in the past few years, there's been the ability through functional imaging and also through some Chaos Theory with [inaudible] and the complex processing theories that show us how these interactions of many levels of neural networks talk to each other, in fact, we know that children, even before they're born, have the ability to interpret or perceive beats the timing of sound is already ingrained in them before they're born and this is so key because it allows an infant to perceive the world around them, to perceive language to understand and interpret sounds in time, but also what science is showing us is that even movement without music is providing an encoding of sound and time and rhythm, so we now know through neuroscience that there's an incredible interaction of aspects that we consider music like rhythm and pitch, melody, emotional expression, emotional nuances of sound that all get pad very deeply in our brains to of precursor of movement, the precursors of language, the precursors of thought, the precursors of feeling and interpretation of those feelings and somehow early on in our childhood development we're starting to encode those connections very deeply some are preset and some are learned, but in doing so with we're forever ingraining and combining those systems together.

>> Wow, I mean are you looking into the brains of babies in the wombs or children?

>> I'm not, but the scientists are. I'm seeing the patients and how they respond.

>> Ah huh.

>> To music, but what we see is this awareness that's so key and what I see are patient's who've lost function, very specific function through stroke, people who can't speak but can still sing and 30 years ago I was told, you know, flat out that when somebody loses speech they'll never get it back, the brain once it's damaged is damaged for life you just get some compensatory mechanisms but you'll never get the true ability back, and yet we see people recover the function in the course of music therapy. So, now what we're learning from neuroscience is that there's so many shared networks that you can't say that one specific function is the end result of one specific area of the brain that there's so many networks that contribute to that ability that and I think through sound and through auditory stimulation, we're able to reach a lot of those fundamental areas.

>> Now as a music therapist, is music therapy something that the therapist has to do while they're in the room or can a music therapist kind of prescribe, you know, an hour or Beethoven or a CD of James Taylor to someone or something to help them when the therapist is gone? How does this work in practice?

>> Well, first just so people are clear the field of music therapy's is an organized profession and so music therapists are trained to really engage; one of the best forms of music therapy is live interactive music,

because it's in those sessions where the therapist is leading, it's supporting the patient's music improvisation, the patient doesn't have to be musical but in those improvisations the music therapist is changing that in the moment to get more expression out of the patient, or if the person can't walk or can't speak the therapist is looking for or listening for abilities in the nuances of how they're responding and changing that in the moment. So, music therapists create the right environment through music to allow for these abilities to show themselves. However, because of that knowledge we can then take what works for an individual and then prescribe other types of music that is similar, so somebody who's lost their speech, who's now able to sing phrases, the music therapist may create practice tapes because we know that only through rehearsal and repetition, we change the brain. So, one session isn't going to do anything, but it's that constant repetition to recombine both of those.

>> Now, I've heard you say that training is a very big issue and it must be very complicated to figure out, as the field changes so quickly, how you keep music therapists trained to understand what's going on in neurology and what's going on.

>> Sure.

>> At the very cutting edge of all these scientists. How has the field adapting to the change?

>> Sure, I think there's a group of music therapists who are keenly connected and tuned in to what's happening in neuroscience and there's an effort to really do more of that; there's a Neurologic Music Therapy Academy in Colorado that Michael Thaut of music therapist neurosciences founded. They train people to use very specific techniques of music for very specific disabilities, and so people who want to train in that particular area either after they've received the music therapy to be with people who want to be trained as a neurologic music therapist can get that specific training. We at my institute, the Institute of Neurologic Function, we also have people train with us on specific techniques to they can use the techniques that we use.

>> Is your institute some place where if, say I was living in New York, and living with my mother or grandmother and was noticing that there was just an impairment that the Alzheimer's or dementia or whatever was getting worse and worse and the doctor that she, her neurologist for instance might say: "Well, let's try this, we're giving her Aricept or a medicine, we're doing this other thing, but perhaps we should also add this." And, if they were going to do that how would they do it, what would they do?

>> Well, usually they would look for a music therapist, if it was in the New York area they probably would find us, we're one of the biggest, if not biggest, program around, and either we can meet with the person in their home and a lot of music therapists do do home visits, or if in some areas in the city we have places where we have studios where we can meet, and then we do an assessment of the person and see what really works for them. For people who don't have access to music therapists, we've created

a program that's easier to use and easier to prescribe; the way they give out prescribed music is a program called Well-Tuned which is basically taking the concept of autobiographical music that somebody is connected to and putting that music, finding out what songs work by interviews family members like you as a son, we would interview you, find out what your mom liked, what type of music was part of her own history and create a song library, place it on an iPod or an MP3 player and send it back to you and ask you how it works and if works we'll give you more of the same type music, so even remotely we can help in developing programs that could work therapeutically.

>> I do actually see that on your website and this is probably the first time we will have done this and I don't know even if the library likes to do this, but tell me how they can find you on the web.

>> Sure, well it's very easy. You can either Google Music Has Power which is a.

>> Music has power? Okay.

>> Which is a term we use a lot, but it's also the initials of the institute, IMNF.org and you'll learn all about these programs and how they make use of them.

>> Now, one of the pieces of music that I found particularly interesting because my mother-in-law has some trouble with her gait and she has some troubles sometimes walking and falling. I imagine that it would be really fabulous if you could figure out how music could help people with their gait and apparently.

>> I do, yeah, sure.

>> You have figured some of this out, so tell me about it.

>> Sure. Well a lot of my work has been with people with Parkinson's disease where indeed gait and the synchrony of movement and the balance is very much an issue many, many, times and one of the phenomenal things that happens with rhythm specifically, is how rhythm can drive very fundamental mode areas into action. So a person with a gait problem who's unable either because they can't cue themselves anymore maybe it's too difficult, maybe what called proprioception you know the sense of their body in space is damaged, if you ask them to listen to music and feel the rhythm, many times you'll see immediately their improvement in coordination, you'll see their steps change in time to the rhythm cause now instead of thinking about how to move, their following something and the following, of course, is a lot easier than how to do it on your own, and so we have this way of enhancing a skill that they have in a way that they can initiate it on their own so we can provide a rhythm or a sound that allows them to understand how to move in time and space. And through that music indeed we see with people with Parkinson's their ability to walk evenly, to initiate that function. We know now that there's areas at the basal ganglia that are involved, as well as the cerebellum so we know that those key areas are turned on with rhythm and music.

>> When we think about the healing characteristics of music, you point specifically to two of music's components rhythm and melody, and music obviously also has a lot of components.

>> Right.

>> Like timbre, instrumentation, loudness, tempo, harmony, so why would you start specifically with rhythm and with melody.

>> Okay, well rhythm in and of itself is fundamental to music, I mean just even sound has a rhythm to it. There's a sound in silence and the repetition of sound and silence gives us rhythm, and like I said, children before birth are already wired to perceive rhythm so we have a very fundamental mechanism that we can tap into therapeutically to turn on all areas of neural networks. In fact, when you look at how neurons talk to each other, there's a timing mechanism, the electricity starts it stops, you know, EEGs are rhythmic everything in the brain is rhythm and has a frequency to it that we pick up, so that's fundamental and we know that we can reach links. Melody, I talk about melody because when we think about music and the motions it usually in the context of melodic sound; a song that was keenly important to us, the shape of a melody can tell us a lot of nuances about meaning. So, it's melody but melody personally connected to somebody and the meaning that that melody provides. We know that emotions are keenly connected to all our ability to either respond to something or withdraw from something and we know that through science some of these neuroscience studies that when somebody's listening to personally preferred pleasurable music, some areas of the brain actually turn off like the amygdala, so we know that the amygdala is involved in withdrawal, fear so that fear response is immediately started by the amygdala. When we're having a pleasurable experience that whole area of the brain is shut off, it's not needed and so we're morphally engaged than the experience because we're allowing ourselves to react and to be part of, and melody and motion and rhythm are key.

>> Okay, now how have things changed in the last couple of years as your work and as the work as Dr. Sachs has just exploded on the public scene, he's had several best sellers, people are really keenly following this sort of thing in a way that they weren't before. So, how have things changed for you specifically in your work?

>> Well, one of the wonderful thing that has changed is that people are actually taking it seriously, so even the scientists are taking it seriously, so something that 32 years ago when I was told to my face that you're making this up, it doesn't work that way, people will never change, there's no way we can study music in the brain. In fact, everybody seems to be studying music in the brain; it's the hottest topic in cognitive neuroscience today because it also allows us to study the complexity in the brain and how these areas interact with each other. So, we have a scientific community that is eager to learn about music and the brain. We have clinicians who've known for years that their clinical work was effective and now getting answers to how that worked. And we have a general public whose been informed about the power of music and so the gut instinct that they had about that music affected them very deeply are

starting to get an inkling and insight as to how this works and I think the education of the public, to the fact that there is something like music therapy which without the Internet and all this exposure to public awareness of music in the brain that not many people knew that there was even field which is unfortunate because it's been around for so long, but I think that's true, I think there's a growing public awareness with awareness comes more inquisitiveness, as well as desire and need for something. So, I'm hoping that the consumer need the interest in the possibility that music therapy can help somebody they know will drive more people to seek out music therapists and in fact help the field expand the way it should and rightfully should.

>> Do you ever stand in front of a group now or come into a therapeutic situation where now and remember back to the scene 32 years ago that you described for us of your first encounter with the power of music an can you tell us a little bit about that as we close.

>> I feel reassured that the world has changed, because the more I think about those early days and realize that my stubbornness in knowing that something was really happening and the fact that only now it's being validated through neurosciences is incredibly affirming.

>> That's great. Connie Tomaino has joined us today. She's the Executive Director and cofounder of the Institute for Music and Neurologic Function and Senior Vice-President for Music Therapy at Beth Abraham Family of Health Services in New York. Thanks so much.

>> Thank you so much for having me.

>> And thanks so much for listening to another Music and the Brain Podcast from the Library of Congress. I'm Steve Mencher.