Music and the Brain in Recovery

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What We Want to Do Today

• Learn a little about the Brain, *very little*
• See how music effects the Brain, and changes the Brain in Therapy/Recovery
• See how music can be used in Treatment setting.
• Sing together!
This is what I know........
The Chills

• Music is able to create an incredibly pleasurable experience that can be described as "chills". A scientific study in 2001 measured changes in cerebral blood flow while participants listened to music that they knew to give them the "chills" or any sort of intensely pleasant emotional response. They found that as these chills increase, many changes in cerebral blood flow are seen in brain regions such as the amygdala, orbitofrontal cortex, ventral striatum, midbrain, and the ventral medial prefrontal cortex.
We used to think......
“Music and the Brian in Recovery”
by

John McAndrew- Singer/Songwriter Recording Artist.

There is excitement in the air, it is Wednesday afternoon at Cumberland Heights in Nashville, TN. I get to go there once a month and do a presentation called, “Spiritual Emphasis Day”. There are musical instruments up on the stage and my piano and my guitar. There will be stories told today, and songs played, and of course some other wonderful things happening. There is buzz about the patients playing later today. They will have a chance to play, sing, recite poetry, tell jokes, laugh, cry, and love one another. It kind of a “Recovery Talent Show”

It all sounds like fun and games, but something spiritual and magical happens every time!

Music and the creative Arts in general, do something very powerful to all people, but especially to those in Recovery. And when they get up in front of a crowd, and reach out to them, and the audience reaches back, something special happens. This is a chance for them to play for others and to stand with their friends and recover together. Fears are sometimes overcome, and dreams come true all in a few minutes.

So what is really happening?

Here is what we know, and what the science and research shows:
New Evidence

• Many of these areas appear to be linked to reward and motivation, emotion and arousal and are also activated in other pleasurable situations. All these parts of the brain are activated, and known to be involved in both music related emotions, as well as rhythmic timing.

• *In other words contrary to older beliefs, the whole brain is stimulated, not just certain auditory receptors in the brain. And the Brain is elastic, it can change!!!!!!*
Emotions induced by music activate similar frontal brain regions compared to emotions elicited by other stimuli.

Joyful and happy musical segments were associated with increases in left frontal EEG activity whereas fearful and sad musical segments were associated with increases in right frontal EEG activity. Additionally, the intensity of emotions was differentiated by the pattern of overall frontal EEG activity. Overall frontal region activity increased as affective musical stimuli became more intense.
Link to tonality

• When unpleasant melodies are played, the posterior cingulate cortex activates, which indicates a sense of conflict or emotional pain. The right hemisphere has also been found to be correlated with emotion, which can also activate areas in the cingulate in times of emotional pain, specifically social rejection. This evidence, along with observations, has led many musical theorists, philosophers and neuroscientists to link emotion with tonality. This seems almost obvious because the tones in music seem like a characterization of the tones in human speech, which indicate emotional content. The vowels in the phonemes of a song are elongated for a dramatic effect, and it seems as though musical tones are simply exaggerations of the normal verbal tonality.
The Science- “oh boy”

• The Brain and Music

• Neuroscientists are only just beginning to understand how music affects the brain. We know that music is extremely powerful and that it can elicit hundreds of shades of emotion very quickly.
The Chills!

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The Brain Knows!  
“Like A Child”

- Demonstration of how the brain predicts music!
- Our brains expect certain melodic, harmonic and rhythmic eventualities! This is a great demonstration of that!
- Pentatonic scale
- Blues scale
- Gospel music
- New age
- Meditation music
What people say....

• "Music is playing inside my head, Over and over and over again, My friend, there's no end to the music ..."

  --Carole King

• "I know it's only rock 'n' roll but I like it, like it, yes I do ..."--The Rolling Stones

"'Cause music's been my therapy, Taking the pain from all my anatomy ..."--Marvin Gaye
It’s Safe!

- Music therapy is generally safe. The only precaution is that excessive noise (greater than 90 decibels) may increase blood pressure and impair hearing. Music is readily available, and for those who are interested, it is certainly a reasonable approach to try. Music may be pursued on one's own or by consulting a professional music therapist.
Creating Music

* Play an instrument.
* Make simple movements, such as tapping a drumstick, along with music.
* Join a chorus or choir.
* Even if you're not musical, have a jam session with friends.
* Although many people listen casually, it may be helpful to be more thoughtful about the types of music one chooses and to be more attentive to them. Especially in Recovery. We all know about triggers. What about triggering good things? What about triggering therapeutic responses?
Now We’re Talkin’

• Music is also stimulates the brain in a positive, energizing, *endorphin-producing* way!
• Hooray!
Music Is Power!

- Music may be capable of accessing diverse brain regions in an individualized way.
- Stress
- Emotional problems such as anxiety and sadness, and difficulties with self-esteem, self-acceptance and coping.
- Cognitive issues, including problems with memory, speech, or communication
- Weakness, poor coordination and walking difficulties
- Pain
Music was first

• The widespread activity in the brain that music arouses suggests that music serves a critical role in human existence.

• Some have proposed that music actually preceded language in human evolution, thus making it a core characteristic or instinct.

• Music may, in a more general sense, promote social bonding and may also be important for cognitive development.
Music Training Influences Multiple Senses
A second study presented at Neuroscience 2013 hints that musical training improves the ability of the nervous system to integrate information from multiple senses.

"Implications of these results are clearly in the rehabilitation field," Julie Roy, graduate student in speech pathology and audiology at the University of Montreal, Quebec, Canada, told Medscape Medical News. Prior research on the sensory impact of musical training has focused on audiovisual processing, she explained. Her study, she said, suggests a broader role for musical training in improving the ability of the nervous system to integrate information from all senses.

To gauge how musical training may affect multisensory processing, the researchers administered 2 tasks that simultaneously engage the sense of touch and hearing to a group of highly trained musicians and a group of non-musicians.
Test results showed that musicians and non-musicians had identical capabilities to detect and discriminate information based on a single sense, but the musicians were better able to separate auditory and tactile information. This finding suggests that long-term musical training influences multisensory processing, the researchers say.

"By finding that even though using different modalities and nonmusical stimuli, musicians still seem to have enhanced multisensory processing, we are one big step further down the road in affirming that musicians have overall enhanced multisensory processing," Roy told Medscape Medical News.

"We live in a multisensory environment where auditory and tactile information are processed together to give us the perception of the world as we know it. Knowing that musical training can indeed enhance this processing is of crucial importance when speaking about people with disability in one or both of those modalities, but even with people recovering from a stroke, for example, or diagnosed with a degenerating disease, or again, simply aging," she noted.
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The study was supported by the Quebec Health Research Fund and the National Sciences and Engineering Research Council of Canada.

**Musical Improv Strengthens Brain Circuits**
A third study presented at the conference sheds light on the neural basis of musical creativity. The researchers used functional MRI to study neural correlates of musical improvisation in 39 professional pianists with varying degrees of improvisational training.

Ana Pinho, MS, from the Karolinska Institutet, Stockholm, Sweden, and colleagues found that experienced improvisers showed increased functional connectivity with other motor, premotor, and prefrontal regions, after adjustment for age and general piano playing.
"The findings support that improvisation training has specific effects on neural networks involved in musical creativity. Extensive experience with improvisation is associated with lower levels of activity in frontal and parietal association areas, regions which are central for cognitive control, working memory, and explicit response selection, suggesting that generation of meaningful musical materials can be more automated or performed with less attentional effort," they explain in a meeting abstract.

"This study raises interesting questions for future research, including how and to what extent creative behaviors can be learned and automated," Pinho added in a statement.

The study was supported by the Swedish Research Council, Sven and Dagmar Salén Foundation, and Fundação para a Ciência e a Tecnologia. Neuroscience 2013. Abstracts 550.13, 122.13, and 767.07. Presented November 11, 2013.
Music As Natural Medicine

• It is thought that music may act as a sort of tonic or jump-starter to activate or improve neurological function.

• Music may be capable of accessing diverse brain regions in an individualized way.
Seven Experiences in Recovery
7 stories and songs
SEEING

• being able to see things differently, experience them with new eyes

• with hope, willingness, honesty, open mindedness.

• Song- “GIVE ME NEW EYE’S”
NOT BEING PERFECT

• being comfortable in our own skin, acceptance, being ourselves

• Song: “GOOD ENOUGH”
“God Works That Way”

Seeing a sermon rather than listening to one!
Watching God work in others.
Using song to describe those experiences.
UNDERSTANDING OUR BROKENESS - The Miracle Of FORGIVENESS

• coming from alcoholic family, about my father, not feeling loved, understanding those who hurt me, understanding myself and why I hurt others.

• Song: "IF YOU CAN'T FORGIVE"
Becoming a Part of a Community

• belonging to a fellowship, coming home to family, being “a part of”, not alone, recovering with others.

• Song: “THE THREAD”
SPIRITUALITY

• daily reading, putting new information into our hearts and minds, praying, faith,” living with the windows open”, feeling safe and loved, allowing” GOD” into our lives. The ’ miracle of transformation’

• from “PAIN TO GRACE”

• Song: “GOD FOUND US AT THE BOTTOM”
We Are Always Learning

• we will always make mistakes, find new ways to see, never be perfect, and find new miracles every day. like a child, we are always learning.

• Song: “LIKE A CHILD”
Passing It On

• closing song:” LIKE WE WERE MADE OF GOLD”

• for the CHILDREN---passing it on to the future !!!!!
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Emotions induced by music activate similar frontal brain regions compared to emotions elicited by other stimuli. Joyful and happy musical segments were associated with increases in left frontal EEG activity whereas fearful and sad musical segments were associated with increases in right frontal EEG activity. Additionally, the intensity of emotions was differentiated by the pattern of overall frontal EEG activity. Overall frontal region activity increased as affective musical stimuli became more intense.

All this science makes sense when we can see it and feel it. I’ve seen it happen on a daily basis in Recovery Settings. Days when recovering people laugh, cry, sings and dance all in one day. I firmly believe that music and spirituality are connected, and that perhaps the “God experience” happens as much in our brain as it does in our “heart and soul”.

*published in the US Journal of Science May 2015
Resources

- This Is Your Brain on Music, by Dr. Daniel J. Levitin (New York: Penguin, 2006).


Questions?

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All songs/stories/videos available for free download at:

www.inthishour.org

more info/music available at:

www.wbarecords.net

www.johnmcandrew.com
Thank You