Abstracts

The Listening Program: A music-based listening therapy

Alex Doman

Abstract

Music-based listening therapy is an emergent field with its roots in otolaryngology in France starting in the mid twentieth century. Therapists and educators alike are embracing the idea that acoustically modified music can play a key role in improving patient and student performance in particular children and adults with developmental, learning, and cognitive challenges. This workshop will introduce an evidence-based acoustically modified music intervention called The Listening Program®, which is used by over 5,000 trained healthcare providers and educators worldwide. Case studies, theoretical basis, supportive research, and applications for this effective, easy-to-use and mobile treatment will be explored.

Effect(s) of music on each of the primary systems of the body (CNS, ANS, PNS, Immune)

Arthur Harvey

Abstract

The presentation will be a multi-media one presenting a Systems Approach to Music Applications looking at research focusing on the effect(s) of music on each of the primary systems of the body. (CNS, ANS, PNS, Immune.....etc). I have been looking at this for some time and decided to analyze music as a medical intervention from a Specialists viewpoint rather than a GP. An hour session would enable me to provide a presentation with descriptions, visuals, media clips and analysis of the richness of music's impact on the systems of the body. (See attached chart-bottom section).

Music as Therapy
Created by Dr. Arthur W. Harvey
Music is…

Sound	Rhythm	Melody	Harmony	Form
Soft-Loud	Tempo	Pitch	Chords	Patterns
Low-High	Accent	Direction	Primary	Motifs
Short-Long	Meter	Tonal- Diatonic	Secondary	Phrases
Slow-Fast	Duration	Chromatic	Tonality	Cadences
Single-Many	Subdivision	Range	Major-Minor	Sections

Experienced Through…

Moving

Singing LISTENING Playing Creating

Active and Passive for ...

Mood Thinking States Masking Distractions Reducing Stress

Instrumental Music Student Perceptions of Teacher Support for Experienced Music Performance Anxiety

Crystal Guy Sieger

Abstract

Music students often experience feelings of anxiety when they perform. Sometimes this anxiety is severe enough to be a detriment to the student's performance. Teachers who are aware of their students' Music Performance Anxiety (MPA) may be able to provide aid and support to them in their times of need. This research study was designed to learn how students view their own performance anxiety and to see how they view their teacher's involvement in their anxiety issues. The specific questions of the study were: (a) To what degrees are music students experiencing anxiety, (b) In what ways do these students seek treatment to alleviate the anxiety they experience, and (c) How do these students feel their teachers help their MPA experiences? Few studies regarding MPA have been conducted with middle and high school student musicians. Thus, little is known about how pre-college musicians handle MPA and where they turn for help. The purpose of this study was to examine how student musicians view the intensity of their own experienced anxiety and to investigate how they view their teacher's knowledge of and ability to help them with it. Teachers need to develop an assortment of strategies to provide such help and support for students who suffer from debilitating anxiety while performing. This study may provide insight into the needs of their students so that they might begin to effectively do so. Participants were instrumental music students from public schools in and around a large Southwestern city. Participants were selected from a pool of 60 band students, chosen to cover a broad spectrum of instrumental choices, both male and female, and from grades six through nine. Data were collected through a survey instrument. A significant difference was found in participants' perceptions of their teachers' willingness and ability to alleviate the effects of anxiety. A significant difference was also found in the usefulness of mock performances as an aid to negative effects of anxiety. This study may provide a starting point in investigating how music students experience MPA and how they seek advice from their teachers. This research may also help to uncover weaknesses in how teachers are equipped to help their students with MPA.

Keywords: Music Performance Anxiety, Stage Fright, Performance Anxiety Strategies, Music Teachers and Performance Anxiety

Examining the Gate Control Theory and how it has reshaped research in quantitative methods in music and medicine

David Akombo

Abstract

The Gate Control Theory of Pain was first proposed by Ronald Melzack and Patrick Wall (1965). They suggested that there is a "gating system" in the central nervous system (in the spinal cord where the nerves come in from an injury) that opens to let pain messages through to the brain and closes to block them. The aim of paper is to examine the contributions of the Gate Control Theory in the quantitative research in music and medicine. The paper delves into the tenets of the theory, its reliability and validity, and overall application in the biomedical research.

Effects of Music Engagement on Responses to Painful Stimulation

David H. Bradshaw

Abstract

Background. Pain is a complex, unpleasant sensory and emotional somatic awareness normally associated with tissue trauma. Behavioral methods for modulating pain such as distraction have proven successful in both clinical and experimental settings but often with limited effect and with significant differences in benefit from individual to individual. The mechanisms by which distraction reduces pain are poorly understood.

Aims. We propose a theoretical framework for the behavioral modulation of pain based on constructivism, positing that task engagement, such as listening for errors in a musical passage, can establish a construction of reality that effectively replaces pain as a competing construction. Graded engagement produces graded reductions in pain as indicated by reduced psychophysiological arousal and subjective pain report.

Methods. Fifty-three healthy volunteers having normal hearing participated in four music listening conditions consisting of passive listening with no task or performing an error detection task varying in signal complexity and task difficulty. During all conditions, participants received normally painful fingertip shocks varying in intensity while stimulus evoked potentials (SEP) and pupil dilation responses (PDR), and retrospective pain reports (PR) were obtained.

Results. SEP and PDR increased with increasing stimulus intensity. Task performance decreased with increasing task difficulty. Mixed model analyses, adjusted for habituation/sensitization and repeated measures within person, revealed significant quadratic trends for SEP and PR ($P<0.001$) with large reductions from no task to easy task and smaller graded reductions corresponding to increasing task difficulty/complexity. PDR decreased linearly ($P<0.001$) with graded task condition.

Conclusions. We infer that these graded reductions in indicators of central and peripheral arousal and in reported pain correspond to graded increases in engagement in the music listening task. Engaging activities may prevent pain by creating competing constructions of reality that draw on the same processing resources as pain. Better understanding of these processes will advance the development of more effective pain modulation through improved manipulation of engagement strategies.

Keywords: music, analgesia, distraction, psychophysiology, experimental

Spiritual Healing and Exorcism: Music as a Catalyst in Sacred Space.

D. Weldon Cochren

Abstract

The focus of this paper is to explore the possibility of music and its causality in spiritual healing, and exorcism in the Pentecostal Church within the African Diaspora. The term “spiritual healing” as opposed to just “healing” is used to indicate 1) an event that would occur in the realm of the miraculous or super-natural; and 2) an event that should not be misconstrued as the result or process of Music Therapy, as some have perceived or concluded David’s musical encounter with King Saul to have been (1 Samuel 16:23). Biblically, there is no evidence of music being incorporated into the ministry of spiritual healing or exorcism of Jesus or the Apostles, yet music has become an integral component in Pentecostal churches throughout the African Diaspora (Continental Africa, North America, Brazil, United Kingdom, Caribbean and Virgin Islands). This paper will endeavor to answer the following questions: Does a particular genre or style of music have a greater impact in the sacred space than others? Is there a particular spiritual position or comprehension that musicians and singers should occupy or obtain to achieve the desired outcomes? Does the cultural or worship community have an influence on the musical expression, e.g., instruments, lyrical content, language? Does meter, tempo, key, or pitch affect the outcomes? Does the “patient” have to be a Christian?

Conclusion

The transporting of sicknesses associated with spiritual oppression, spiritual possession, physical ailments, or biological toxins from a human can be facilitated through or assisted by music, with certain exceptions and stipulations.

Music-Based Sound Stimulation In Pediatric Acquired Brain Injury Rehabilitation: Preliminary Case Studies

Donna L. Kelly & Sheila Allen

Abstract

Sensory input is used in rehabilitation to stimulate subcortical and cortical activity in patients with acquired brain injury (ABI). Recent studies have shown that patients in minimally conscious and persistent vegetative states show neural activity in auditory and prefrontal cortices, and auditory association areas in response to auditory stimulation (Baker 2001, Boly 2005, Bradt 2010). Research supports the connection between music and sensory, emotional, motor and cognitive functions in higher level patients with ABI (Boly 2004). While sound and music have been found to stimulate neural activity and function, protocols for programming with music-based sound stimulation in association with levels of coma recovery are not yet established for patients with acquired brain injury. Considering ongoing healthcare changes and challenges, and reduced lengths of inpatient stays for recovering ABI patients, there is a need for effective programs which lend themselves to an easily implemented continuum of care through inpatient hospitalization and the transition from inpatient to outpatient services, or as part of outpatient services. Increased research into the delivery of systematic, complex and meaningful sound stimulation is needed (Boly 2004).

Aims:

At Children's Specialized Hospital (CSH), progressive music-based sound stimulation protocols in association with Rancho Los Amigos/Levels of Coma Recovery have been developed for limited trial use in support of the healing process*e*s of patients with ABI. These clinical trials are aimed at establishing the need for a full pilot study, an essential initial step toward a long term goal of incorporating sound/music-based protocols into the systematic stimulation programs designed for those recovering from ABI.

Method:

Limited clinical trials were conducted with select in and out-patients with ABI who listened to music from The Listening Program™ (TLP), and the Sound Health Series™ (SHS), following the newly developed CSH protocols. Subjects for these trials were initially recommended by their therapists, and were chosen based on medical stability, parental and rehab team involvement, review of recently administered quantitative and qualitative assessment measures, level of coma recovery, and anticipated duration of services. Upon selection, subjects underwent pre-listening testing as needed, based on assessment measures already administered, and were assigned one of three protocols of stimulation. Team members and parents were trained in equipment use, the implementation of the specified protocol, and underlying theoretical rationale, and implemented programs according to protocols. Subjects listened to the TLP and SHS music as per designated programs (with music delivered through speakers, air conduction headphones, and/or air conduction/bone conduction headphones); in or out-patient therapies continued. Therapist/parent observations were recorded and compiled. Post-listening testing was conducted.

Results:

JP, a 9 year old girl diagnosed two weeks post Bickerstaff Brainstem Encephalitis (Ranchos Level IV), began her 31-day listening protocol 12 days post admission. Two days into her program, parents and therapists began to observe changes including decreased nystagmus, dizziness, and vomiting and an increased tolerance to movement, improved visual fixation, improved sleep/wake cycle, and decreased agitation which resulted in a decrease in medication. Parents and therapists relate the changes in the rate of her recovery to her music-based sound stimulation program. KC is a 22 year old diagnosed with left hemiplegia post traumatic brain injury sustained in 2008 when hit by a car. She began her initial listening protocol in fall of 2010 and continues to listen, with ongoing specification of her protocol. Clinically observed areas of change include improved postural extension, spatial awareness and comfort with movement, midline orientation, and active left shoulder movement. Post-listening testing will be conducted, with findings to be discussed.

Conclusion:

Clinical findings suggest that listening with enhanced bone conduction may assist the recovery of patients with ABI and support neural activity associated with the vestibular system during various stages of the rehabilitation process. Further research, with a feasibility pilot study and randomized clinical trials for both inpatients and outpatients, is warranted.

Keywords:

Music-based sound stimulation; acquired brain injury; air and bone conduction

Music and Emotion: A Qualitative Study

Jordan Roper & Jeffrey Reber

Abstract

It is a universal fact that music influences human emotion. Music psychology fills an important role through describing the relationship between emotion, the brain, and the musical experience. Although many studies show reliable connections between emotional and musical experiences, we feel that the existing body of work in this area has been very focused on providing a scientific representation of the bodily functions that occur while listening to music, and thus has been primarily quantitative in form. The research within this field has largely focused on very specific quantitative experiments, providing data and statistics supporting certain physiological and emotional responses to differing passages and styles of music. We feel this research method is limited in its scope and applicability because it neglects important qualitative aspects of music and emotion that do not lend themselves well to quantitative measurement. Reducing the experience of listening to music to neural activity, without also considering context and meaning, yields an incomplete understanding of this important human experience.

Aims:

We intend to design an experiment that pays special attention to the qualitative issues of contextuality, significance, and meaning. Our aim is to more completely understand music and its relationship to emotion in the lived experience of human beings. Many musicians agree that there are some feelings expressed musically that can't be fully represented in words because of our linguistic constraints. In our study, we will incorporate an opportunity for people to express themselves using music itself, and will draw conclusions from their musical expressions. There are two main sections of the study. For the first section, each participant will listen to a 20-30 minute compilation CD consisting of many different genres and periods of music ranging from classical to modern pop. While they are listening to the music, we will encourage them to write comments about the strength of the emotions, images, and memories the different music pieces evoke. We will encourage responses with ecological validity. In the second section of the study, we will ask the subjects to explore in writing any particularly strong or meaningful emotion that was brought to their attention during the first exercise. We will then allow them a period of time to browse an online music site and to pick any songs that might effectively express their selected emotion and therefore increase the accuracy and enrich the understanding of their emotional description.

Main Contributions:

By accounting for contextuality and significance in our experiment, we feel that we will be in a stronger position to suggest correlations between music and emotion. We also hope to open a new door in the research methods by providing more validity to qualitative research within the field of music and emotion.

Implications:

As with all qualitative experiments, it is difficult to eliminate subjectivity from our interpretation of our findings. We intend to create a systematic method for interpreting our results that will be applied to all participants, and thereby making our results more standardized. Although subjectivity is a concern, we feel that we will get a more accurate picture of the connections between music and emotion than through a quantitative approach.

Keywords (Up to 5). Music, Emotion, Experience, Context

The Effect of Live Classical Piano Music on the Vital Signs of Patients Undergoing Ophthalmic Surgery

Jorge G. Camara & Joseph M. Ruszkowski

Abstract

Objective: To determine the effect of live classical piano music on the vital signs of patients undergoing ophthalmic surgery.

Design: Retrospective case series

Setting and Patients: 203 patients who underwent various ophthalmologic procedures during the period a piano was present in the operating room of St. Francis Medical Center

Intervention: Demographic data, surgical procedures, and the vital signs of 203 patients who underwent ophthalmologic procedures, were obtained from patient records. Blood pressure, heart rate and respiratory rate taken in the pre-operative holding area was compared to the same parameters taken in the operating room, with and without exposure to live piano music. A paired t-test was used for statistical analysis.

Main outcome measure: mean arterial pressure, heart rate and respiratory rate
Results: 115 patients who were exposed to live piano music showed a statistically significant decrease of their mean arterial blood pressure, heart rate, and respiratory rate in the operating room compared to the vital signs measured in the pre-operative holding area (P<0.0001). The control group of 88 patients not exposed to live piano music showed a statistically significant increase of their mean arterial blood pressure (P<0.0002), heart rate and respiratory rate (P<0.0001).
Conclusion: Live classical piano music had a lowering effect on the blood pressure, heart rate, and respiratory rate on patients undergoing ophthalmic surgery.

Key words: Music, Blood pressure, Heart rate, Respiratory rate, Ophthalmic surgery

Current music technology for music and medicine

Joseph Ruszkowski,

Abstract:
This workshop will demonstrate practical applications of recorded music as well as live instruments for therapeutic purposes. Electronic keyboards, harps, guitars, and other live sources will be explored. Electronic content delivery via recorded devices will be surveyed. Practical set up applications will be shown for clinical offices as well as for pre-and post operative rooms. This workshop will also explore the application of modern digital devices such as the iPad and iPod in the operating room and clinic. This workshop will also demonstrate the theory and set up of an digital piano used in a 2008 study of live music in the operating room. Hospital permission, piano preparation, sterilization, and other practical applications will be explained for further use by other surgeons in the modern operating room. There are many technologies currently available for the delivery of music content in the music therapy and medicinal music fields. This workshop will explore various ways of employing music in differing realms of medical and clinical practice:
1. musical content delivery in medical clinics
2. music in the operating room
3. live music in clinical practice and operating rooms
4. electronic music content delivery options for patients
5. musical instruments for live content delivery

Successful strategies and coping skills of individuals in the field of music: Life stories of six professionals

Kent Nelson

Abstract
Dyslexia occurs in 10-20% of the population with severe cases affecting approximately 4%. The cause(s) of dyslexia, which often runs in families, is currently being examined in the fields of genetics, biology, toxicology, and neurology. Many of the traits of dyslexia, such as difficulties with decoding written symbols, phonic awareness, rhythmic processing, physical coordination, and poor handwriting may adversely affect learning music and mastering a musical instrument. Despite these issues, individuals with dyslexia may be among the most intellectual, creative, and gifted people in the general population and among musicians. This study examined six dyslexic individuals who are respected members in the music profession and sought to answer the following research questions:

- What strategies and coping skills did these musicians use to succeed despite their learning difficulties?
- What special talents and insights have these musicians brought to the music profession?
- And what implications may be drawn from this study for school and private music educators, parents, students, and other professional musicians with learning disabilities to help better understand how individuals with dyslexia learn music?

The life story method of narrative analysis was utilized in this study with participants interviewed on two or three occasions. The recorded interviews were then transcribed and participants were given an opportunity to member check their stories for accuracy. The six life stories were then compiled in a manner that highlighted the musicians' own voices and experiences with music throughout their lives and then their experiences were compared. Recurring themes and motifs were sought from the participants' interviews. Particular attention was paid to how these musicians were taught and any strategies they implemented to aid their learning as they progressed through their music education and training.

Preliminary conclusions point to a large diversity in the talents possessed and the difficulties endured by each participant. This diversity, in light of performing music, may be due to the particular source or cause of a participant's dyslexia, along with the severity of the individual's learning disability. Of interest are the struggles all six of these professional musicians experienced with reading words compared to the wide range of abilities they had in reading musical notation: some participants had no disability whatsoever when reading music, while others had great difficulty in this area. Because of this disparity in music and text reading, it may be proposed that there is some manner of disconnect between the decoding these two different kinds of symbol systems. Another finding of interest in this study is a validation of multi-sensory teaching and individual and/or small group instruction as a way to assist dyslexics in learning music. One participant, a composer of popular music, learned music primarily on his own and with some peer tutoring in "garage band" fashion. Despite the hardships the participants experienced with learning in school, music was very often a positive activity in their formal education. Finally, many, but not all, of the participants thought that their dyslexia had actually contributed to their musical talent and success as a professional musician. It is hoped that the conclusions gleaned from the experiences and insights of these six musicians will provide knowledgeable assistance, career guidance, and encouragement to other dyslexic musicians, parents, and music teachers.

The Effects of Music on the Behavior Distraction Among Middle School Students

Laura Dunbar

Abstract

The purpose of this study was to observe effect of music on distraction in middle school students. Four classes totaling 70 students were randomly assigned to three different sound conditions while reading and responding to an essay; the sound conditions were silence, music with words, and music without words. One class served as a control group. There were differences in the frequency of distracted behaviors with the silence group having the least and the music with words group having the most. No significant difference was found in assignment scores between the various sound conditions. A significant difference was found by gender with females scoring higher than males across all sound conditions. Discussion of results includes implications for future research.

When to refer patients/clients to a music therapist

Lillieth Grand

Abstract

1. Background – Lillieth Grand, MS, MT-BC is Music Therapy Program Coordinator at Primary Children's Medical Center, an Intermountain Healthcare hospital, in Salt Lake City, Utah. She has practiced music therapy for over 18 years specializing in pediatrics.
2. Aims – To educate participants about when to include music therapy in their treatment team. The music therapists at PCMC have developed a tool to help other medical professionals make appropriate referrals called the "Prioritization of Need Scale for Music Therapy". This tool will be presented as well as the positive results of PCMC utilizing the tool.
3. Method – Use of the "Prioritization of Need Scale for Music Therapy" tool.
4. Results – increased number of appropriate referrals, increased knowledge by medical staff about music therapy and what music therapy can do for their patients
5. Conclusions – medical professionals should utilize this tool in order to know when to include a music therapist as part of the treatment team.
6. Keywords (up to 5) – music therapy, pain, anxiety, vital signs, emotional expression
7. Topic areas (choose up to 3 from the suggested topics below) – music therapy, music and pain, music and emotion

There is no "I" in teach!

Malinda Tall

Abstract

This presentation will show how to work with students who have disabilities, the challenges that present and ways to help them succeed in learning. Eight years of hands on research of how learning can take place and be remembered by the student using repetition, patience, and dedication of the teacher, student and family. Qualitative and quantitative research will show that music can help a student be able to form memories, make connections of previous teaching, and apply these ideals to new pieces as well as make relations in day to day life.

The student used for this research is Jacob, (In this paper, I've used the pseudonym 'Jacob' to protect the privacy of the subject). He was born premature and was not expected to survive more than a few weeks. His mother believed he would live. Her strong belief in the benefits of music inspired her to place a wind up musical elephant in his crib each visit to her son in NICU. She believes some of his love for music comes from the early introduction and continuous music he had as a baby.

Jacob came to me eight years ago through the one of our Utah's Colleges Preparatory Program. He had a love for music that has helped him become what he is today. The first six years were continuous repetition with one-sided teaching from teacher to student. By the start of the sixth year Jacob began to relate and interject previous teaching techniques and learning methods to new pieces. This had not occurred before. An element that came in the seventh year was the ability to add emotion. In fact so much emotion was used when he performed that the playing became mindless and uncontrolled. Now in the eighth year he is learning to balance the emotion so his playing can be musically emotional as well as technical and thoughtful.

A way to understand Jacob's brain is to think of a brain being filled with a bunch of intersections that connect to each other and lead to nowhere but more intersections. After this analogy in the fourth year of teaching Jacob, it was evident that bridges had to be made so the intersections could finally have a logical path for him to follow. So the process began of how Jacob learned. There were a collection of ah-ha moments and many calls to his mom, so a deeper understanding could be obtained. By year six he started to be able to see over the intersections and follow the newly developed paths. This is when the learning started to make sense to him, memories made and the learning was built upon.

Memory is something that takes an interesting path in Jacob's brain. If he is personally involved, and there is music he will remember. During the fourth year of teaching him there was an interesting discovery with the way Jacob tried to memorize a piece of music. When he came to a lesson I asked him play the memorized page assigned the previous week. He responded that he only had half of the page memorized. He then proceeded to cover up half of the page with another sheet of paper. This made it evident that he did not memorize in phrases, groups, or harmonically but through groups of random notes that were inserted into his computer like brain. This explained why he played so mechanically. It was from this point on he learned how the structure of a piece works and began relating notes to each other and give continuity to his playing. This is when he first started to lay the foundation to be able to put his heart into music and was able to make sense musically to his brain and the audience. Working with a student who's had a brain injury from birth such as Jacob, using repetition, patience, and dedication have shown to be a key element to improve everyday function. This research has shown that using music can help people with brain injuries to function on a higher level socially and musically.

Bridging Medical Ethnomusicology and Music Therapy

May May Chiang

Abstract

This paper is inspired by the recent establishment of the subfield medical ethnomusicology in ethnomusicology and the increasing use of multicultural approaches in the practices of music therapy. Ethnomusicologists have done much research on the role of music in healing rituals and similarly music therapists are actively investigating music's healing power; yet, historically the two professions have not interacted or collaborated in the research of music and healing. The aims of this paper are to: 1) understand the causes for this lack of

interaction and 2) explore how medical ethnomusicology and "ethnomusic therapy" (as proposed by music therapist Joseph Moreno) can contribute to healthcare oriented research and sciences.
This ethnographic project uses data from interviews, participant observation, and literature reviews collected between 2007 and 2010 and analyzes the objectives, terminology, and practices of medical ethnomusicologists and music therapists. The research suggests that music therapists are essentially clinicians who are largely interested in measurable, scientific evidence for the efficacy of music's healing power, and most reports of indigenous musical healing do not provide evidence of a quantifiable effect of music on healing. Ethnomusicologists, on the other hand, embrace the ethnographic and cultural elements of healing music and do not scientifically analyze the efficacy of music's healing power, at least not until the development of medical ethnomusicology. In addition, collaborations between music therapists and medical ethnomusicologists appear to be hindered by ethnocentrism, the obstacles of scientific research of indigenous musical healing, and the scarce funding of such research. This research suggests that 1) future collaborations between ethnomusicology and music therapy will likely require some analysis of the efficacy of indigenous music traditions on physical or mental wellbeing and 2) ethnographic methods are indispensible for educating researchers about the emic experience of the indigenous healing traditions. This project hopes to bring medical ethnomusicology and indigenous musical healing traditions to the attention of healthcare professionals, and to encourage interdisciplinary collaboration for the benefit of the diverse patient populations in the United States.

Keywords: music therapy, ethnomusicology, medical ethnomusicology, ethnomusic therapy, music and healing.

A Relational Alternative to the Study of Music and Emotion

Peter Sanders, Peter Reschke, & Jeff Reber

Abstract

There has been considerable research studying the relationship between music and emotion. Although researchers agree that the most common reason individuals listen to music is to influence emotions, there is little consensus as to how music affects emotion (Juslin & Sloboda, 2010; Juslin & Västfjäll, 2008). Researchers have proposed a number of different theories to explain relationships between music and emotion (Juslin & Sloboda, 2010). The majority of these theories have maintained an abstractionist theoretical approach. Abstractionist frameworks are marked primarily by assumptions of efficient cause, atomism, reductionism, and quantification. Efficient cause leads the researcher to view the emotional response as fully explainable by stimulus-response chains. Although the use of this assumption has proven useful, it may not be sufficient to explain all emotional response to music. Atomism and reductionism lead researchers to try to eliminate context in order to examine factors that determine emotional response. It is impossible to eliminate context altogether, however, because even experimental scenarios create context. In addition, quantitative research paradigms that seek to quantify relationships between music and emotion may be insufficient to explain participants' experience.

To date, few studies have critically examined how adequately abstractionist assumptions explain the relationship between music and emotion. As a result, few alternative theoretical frameworks have been considered. As Slife, Reber & Richardson (2005) noted, "these fundamental ideas [assumptions] often seem less compelling and certain than they once did" (p. 4). Relationality has been proposed as an alternate explanation to expand current understanding of relationships between music and emotion.

Aim

The aim of the current project is to present relationality for the study of music and emotion. Relationality is based on assumptions of final cause and holism. Final cause considers a person's goals and desires as essential determining factors in emotional response to music. Holism recognizes that it is essential to understand the context in which emotional response occurs. The current proposal explains how considering emotion and music within a relational framework can add to our current understanding of individuals' emotional experience with music. In addition, the value of qualitative research methods to investigate the relationship between music and emotion will be examined.

Contribution

This presentation will explore how relationality, an alternative framework to study emotion and music, could ultimately lead to a more complete understanding of the way individuals experience music. This work will hopefully suggest a new dimension to existing research.

Implications
This presentation could be the beginning of a paradigm shift away from the exclusive use of abstractionist assumptions to a more pluralistic approach. If the relationship between music and emotion is more fully understood, then therapeutic interventions using music could become more effective.
Keywords
Music, Emotion, Abstractionism, Relationality

Retuning Mind and Body: Exploring Music's Potential in Enhancing Post-Stroke Rehabilitation

Steven Cornelius

Abstract
Although stroke is the second leading cause of death worldwide, most episodes are not fatal. Four million stoke survivors live in the United States alone. I am one of them. During the early hours of October 11, 2009, I experienced a massive right-brain stroke. The event resulted in cognitive disfunction, near total left-side paralysis, and aphasia. The brain damage was significant, but I was lucky; I was a musician. In the days following the event, as I regained cognitive function, partial speech and limited left-side movement, I began to discover how, when systematically employed, applying basic strategies for learning and performing music could play a role in my physical recovery. The recovery process, guided in large part by the regular practice of various bi-lateral rhythmic exercises, continues today. Much more gradually, I also began to recognize the subtle ways in which my physicality and emotionality were deeply integrated. It was not by coincidence that listening to music no longer stirred my emotions. Music—its timbres and melodies, harmonies and rhythms, and even the memories they invoked—no longer moved me. The emotional inner experience of music's physicality, previously deeply embodied in my dominant left side, had vanished. Might it be recovered? Through the construction of exercises involving emotive, thought-infused movement, I endeavored to find out. In developing this paper I follow Leventhal (1984), who, when presenting his perceptual-motor theory of emotion, argued for the primacy of subjective experience. I also draw from the theory of embodied cognition, which contends that cognitive processes develop in close accord with environmental conditions. I find additional traction in a wide variety of research demonstrating the brain's plasticity when an individual engages in mentally focused, emotionally engaged, and repetitive activities (Doidge 2007, Levitin 2006, Sacks 2007). I organize this paper along two distinct, yet intertwined, lines—the cognitive/physical and the physical/emotional. In regards to the cognitive/physical, I describe the simple musical exercises that have informed my journey from near total left-side negligence, to limited awareness, and towards the goal of balanced lateral integration. For at least some stroke patients undergoing physical rehabilitation, the regular and methodical application of these simple techniques may offer a therapeutic tool of considerable efficacy. My discussion on the physical/emotional axis details the musical strategies I employ to reembody my cognitive processes as I seek to live fully in the world and reinvolve myself in the broadest range of emotional experience. Here my thinking is less developed and I cannot currently offer practicable patient-focused rehabilitation methodologies. Nonetheless, I believe this an avenue rich with potential for advancing understanding in the area of music and medicine.

The Effects of Community Drumming on Generalized Anxiety and Academic Performance in Teenagers

Tara Whiting

Abstract
Generalized anxiety and academic performance were measured in five middle school students receiving group drumming as music intervention. Participants served as their own controls in the study. Participants received instruction in group drumming for seven weeks. Generalized anxiety was measured using the State-Trait Anxiety Inventory (STAI) using pre-intervention and post-intervention data collection. Academic performance was measured with the Utah Basic Skills Competency Test (UBSCT) math and writing tests. It was hypothesized

that group drumming would decrease anxiety and increase academic test scores. Analysis of the data found statistically significant findings with the implementation of group drumming.

Facts and figures: results of a randomized placebo controlled double blind clinical trial on personalized music-focused auditory stimulation therapy – a novel approach for the treatment of depression, dystyhmia and stress-related disorders

Vera Brandes

Abstract

The application of therapeutic music interventions enjoys a growing interest from clinical practice and neurobiological research. Commonly, people listen to music to positively alter mental states and to encourage relaxation, support resilience and to help control anxiety. The therapeutic application of music is generally not associated with negative side effects and can be easily implemented. These factors contribute to high adherence and favorable treatment outcomes. Neuroimaging studies have demonstrated that processing of music activates particular pathways in the brain, in areas associated with emotional behavior (e.g. the insular and cingulate cortex, hypothalamus, hippocampus, amygdala, and prefrontal cortex). Neurochemical studies have also shown that biochemical mediators of emotional behavior (e.g. endorphins, endocannabinoids, dopamine and nitric oxide) may be triggered by music [1]. Compared to healthy controls, diminished activation of reward-processing neurocircuitry in depressed patients is associated with the loss of the experience of pleasure from listening to music [2]. Anhedonia is a key symptom of depression. Prior studies of different music interventions for depression provided evidence, but were not placebo-controlled and did not compare the specific effects of different stimuli. Part of depression's negative effect involves decreased heart rate variability [3,4]. We evaluated a new receptive music therapy method which was specifically developed for the treatment of depression on the basis of experiments which confirmed positive effects of specific music composition on heart rate variability (HRV) [5].

Methods: Recruited through media and by contacting doctors, potential subjects were screened online using the Goldberg Depression Questionnaire (GDQ) [6] to determine eligibility. All subjects provided written informed consent before participation in the study. The study was reviewed and approved by the local ethics commission and registered with the National Institute of Health's clinical trial registry (www.clinicaltrials.gov, # NCT00644527). The first 204 respondents who completed the GDQ and met the inclusion criteria (aged 18+ and a GDQ score between 15 and 65) underwent more comprehensive baseline assessments. Respondents were not accepted if they had changed in the six month prior to study initiation: (a) therapists, (b) therapeutic session frequency, (c) antidepressants, or (d) antidepressant dosage. Further, individuals were only included if the agreed not to make any such changes during the course of the study period. 203 subjects (average age 49.6 ± 13.1 years, 28.1% male) entered the study protocol. The study design included four arms: Music Therapy 1 (MT1), Music Therapy 2 (MT2), Placebo (nature sounds) and waiting-list Control. The subjects were followed over four consecutive, five-week study periods (T1, T2, T3 and T4). During the T1 period, control arm subjects did not listen to study-provided music. (T2, T3 and T4) were employed to explore the effects of extended treatment duration.

MT1 and MT2 were personalized music-focused auditory stimulation therapies (I-MATs) developed by the study investigators as receptive music interventions for depression treatment. Both programs were developed and refined through a series of case studies and included two specific programs for different times of the day. Subjects listened twice daily for 30 minutes following am individualized treatment protocol. Depression status was assessed at the beginning of T1 and T2 using the Hamilton Rating Scale for Depression (HAM-D) [7], the Beck Depression Inventory (BDI) [8] and the Hospital Anxiety and Depression Scale (HADS-D) [9]. HAM-D was administered by trained psychologists blinded to the subjects' arm assignment. A composite (COMP) depression scale was constructed based on the HAM-D (double weighted), BDI and HADS-D z-scores. Utilizing multivariate linear regression models, Changes in depressive symptoms between the beginning of T1 and T2 were assessed based on a composite scale (COMP) and the Hamilton Rating Scale for Depression (HAM-D), Beck Depression Inventory (BDI) and Hospital Anxiety and Depression Scale-Depression Subscale (HADS-D) alone. At the beginning of T1, each subject also completed an extensive questionnaire covering various potential confounders. Separate multivariate linear regression models were constructed for each of the depression

change variables with stepwise, backward elimination of possible confounders. Analyses were carried out based on an intention-to-treat approach with significance assessed both at the $p \leq 0.05$ and $p \leq 0.0125$ level [10].
Results: Compared to the control arm, a significant, positive effect in COMP was observed for MT1 in T1 ($b=1.44$, $p=0.030$), but not for MT2 ($b=1.14$, $p=0.059$) or Placebo $b=0.57$, $p=0.397$). No significant change in any depression score was detected in the placebo arm. After T2 to T3, the treatment was associated with a mean HAM-D score reduction of 60%. HAM-D, BDI and HADS-D score changes correlated only moderately, with the highest correlation observed between BDI and HADS-D ($\rho=0.59$). In bivariate analysis, a "worries" scale was the only possible confounder significantly associated with all four depression scores, suggesting that the HAM-D, BDI and HADS-D scales may focus on different aspects of the construct of depression (e.g. cognitive and emotional factors).
Conclusions: The study included both subjects treated with personalized music-focused auditory stimulation therapy alone, or in combination with pharmacological and/or psychotherapy treatment approaches. Subjects in both patient groups benefited from the treatment. Based on possible neurophysiologic and neuro-chemical effects, personalized music-focused auditory therapy, as explored in this trial, is associated with reduced depressive symptoms and high treatment compliance, and may therefore potentially represent an effective depression treatment alternative, alone or in combination with psychosocial and pharmacological approaches. Further study is needed to explain the neurophysiological mechanisms.