



On the MaHRC
The Newsletter of the Music and Health Research Collaboratory

Volume 2 No. 2, February 20, 2013
Faculty of Music, University of Toronto

MaHRC is organized into four spheres of research interest. Beginning in this issue *On the MaHRC* will be organized by these four spheres.

Sphere: Sound & Health in Therapy and Medicine

Post Doctoral Fellowship Position in Alzheimers Research Now Open

Background: Rhythmic Sound Stimulation (RSS) is the stimulation of neural activity with sound: (1) applied rhythmically to the body as low frequency sound and transmitted to the brain through the sensory system, or (2) applied to the auditory system through the ears. The goal of the research project is to test 40-Hz sound stimulation in two forms and in comparison to the subject's preferred music as a means of improving alertness, clarity, and short-term memory in Alzheimer's Disease (AD). The specific aim of the proposed research is to perform exploratory pilot studies evaluating the effects of 40 Hz RSS and music stimulation on AD patients with the intent of informing the parameters of a larger and more rigorous clinical study.

Candidate Qualifications & Responsibilities: The candidate PDF with a PhD in a neuroscience-related discipline should have conducted her/his PhD research in the area of neurological degenerative diseases and have considerable experience related to Alzheimer's or Dementia, including cognitive testing. The PDF should have a solid publication record in these fields. The candidate should be familiar with sensory systems and ideally already worked with the method of RSS and is experienced in the related data analysis methods.

The role of the PDF is to begin by planning studies pertinent to the goals of the project, recruit patients for the studies, perform the experimental procedures, analyze the data, and prepare publications. The realistic expectation is to get two journal publications completed.

For more information please see:

http://www.music.utoronto.ca/Assets/faculty/job+postings/post-doc_alzheimers.pdf

Forum on Research on Music Medicine in Aging Videos Re-Posted

Videos of the presentations by the three Connaught Scholars at the November 11 Forum on Research on Music Medicine in Aging have been posted with new links to YouTube. Please click on the following links:

Joanne Loewy: <http://www.youtube.com/watch?v=orxTNt6EIck>

Connie Tomaino: <http://www.youtube.com/watch?v=SVtWeUXq4JU>

Gottfried Schlaug: <http://www.youtube.com/watch?v=DFtTtPpPFvU>

3rd International Conference of the International Association for Music & Medicine, June 24-27, 2014

Conference Theme: "Music Medicine through the Lifespan"

Key Note Speakers:

Keynote 1. Music Medicine in Childhood: Laurel Trainor

Laurel Trainor: Professor, Psychology, Neuroscience & Behaviour, McMaster University; Founding Director, McMaster Institute for Music and the Mind, McMaster University; Research Scientist, Rotman Research Institute, Baycrest Hospital. Research interests include the perception and cognition of music, human auditory perceptual and cognitive development, the perception of objects, speech and music in relation to communication, emotional development and social interaction. The research uses a variety of methodologies including psychophysics, infant preference and head turn paradigms, EEG (electroencephalography), MEG (magnetoencephalography), fMRI (functional magnetic resonance imaging), TMS (transcranial magnetic stimulation), and eye tracking.

Keynote 2. Music Medicine in Adulthood: Julian Thayer

Julian F. Thayer, Ph.D: Currently Ohio Eminent Scholar Professor in Health Psychology, Ohio State University. Previously Chief of the Emotions and Quantitative Psychophysiology Section in the Laboratory of Personality and Cognition at the National Institute on Aging.

He has published over 195 research papers and book chapters covering a wide range of topics including behavioral medicine, cardiology, emotion, psycho- pathology, bioengineering, research design and multivariate statistical techniques.

Dr. Thayer has received research awards including the Sigma Xi Research Recognition Award; the Early Career Award for Contributions to Psychosomatic Medicine from the American Psychosomatic Society; a Fulbright Fellowship to conduct research on emotion; and an Alexander von Humboldt Research Award.

He is a Fellow of the Society for Behavioral Medicine.

He has served as Associate Editor of *Psychophysiology*, on the editorial board of *Psychosomatic Medicine* as well as *Music and Medicine* and is an Associate Editor of *Bio-Psycho-Social Medicine*.

Dr. Thayer is also a professional jazz musician and has performed extensively throughout

the United States and Europe He has recorded with Charlie Mariano, Geri Allen, Pheeroan akLaff, Emil Viklicky, Paul Steven Ray, Scott Robinson, Frank Carlberg, Eli Fountain, Jarmo Savolainen, and Klaus Suonsaari.

Keynote 3. Music Medicine in Geriatric Context: Alicia Clair

Alicia Ann Clair, Professor and Director of Music Education and Music Therapy at the University of Kansas. Dr. Clair is a Research Associate in Gerontology at KU. A music therapy practitioner for many years, Dr. Clair has specialized in music therapy practice with persons who have diagnoses of Alzheimer's Disease or related dementias and their professional and family caregivers since 1988, and with persons who are well, older adults, and older adults with disabilities since 1975. She participates as a Research Associate at the Colmery-O'Neil Veterans Affairs Medical Center in Topeka, KS. Dr. Clair is nationally and internationally known for her expertise in gerontology and wellness in music therapy. She is a past President of the National Association for Music Therapy (Now the American Music Therapy Association) and was awarded the National Service Award, and the National Professional Practices Award by that organization.

Neuroscience Features (short plenary presentations - 30 minutes)

Jessica Grahn, Western University, MaHRC Associate
Bernhard Ross, Baycrest & Rotman, MaHRC Associate

Hospital Research Features (20 minute plenary sessions)

Sunnybrook Hospital - Dr Joseph Chen, MD, Chief Otolaryngologist, with Dr Lendra Friesen
Mount Sinai Hospital, Wasser Pain Management Centre, Dr. Allan Gorden, MD, Director.
Toronto Rehabilitation Hospital, Dr David Alter, MD, PhD.

Co-Hosts: Dr. Lee Bartel, University of Toronto, MaHRC; Dr. Heidi Ahonen, Wilfrid Laurier University, CIMTR; and Dr Amy Clements-Cortes, Canadian Association for Music Therapy

Call for Papers: website will be going live very soon at www.iammcanada.com

Sphere: Sound & Health in Body Brain and Mind

Connaught Lecture Series: Dr. Rodolfo Llinas

Dr. Rodolfo Llinas, MD, PhD. is Professor of Neuroscience and Chairman, Department of Physiology and Neuroscience, New York University School of Medicine. He is the author of *I of the Vortex: From Neurons to Self*, an original explanation of mind and mental function based entirely on the brain. Born in Columbia and having obtained his Ph.D. in Neuroscience at the Australian National University in Canberra under the legendary John Eccles (Nobel Prize in Medicine and Physiology), Dr. Llinas's research spans molecular and cognitive neuroscience, including pioneering work on the

cerebellum and the thalamus. His specific research has involved the following: intrinsic electrophysiological properties of mammalian neurons in vitro, ionic channels, sodium and calcium currents and their distribution in different cell types, the role of calcium conductance in synaptic transmission, cerebellar control of movement and thalamocortical connectivity in brain slices and isolated whole brain preparations, ionic-concentration-dependent imaging techniques, computer-based mathematical models, noninvasive magnetoencephalography, and thalamocortical interaction and functional mapping in the human brain. Llinás has published over 500 scientific articles. He is the originator of the theory of Thalamocortical Dysrhythmia (TCD), a framework in which neuroscientists try to explain the positive and negative symptoms induced by neurological disorders like Parkinson's Disease, neurogenic pain, Tinnitus, Epilepsy as well as neuropsychiatric disorders like depression.

TCD will be the focus of Dr Llinas's presentations at the University of Toronto. The central premise of MaHRC's Connaught application "Music Medicine in Aging" is that TCD can be addressed through Rhythmic Sensory Stimulation (RSS) with sound.

"Evidence for Thalamocortical Dysrhythmia and its Association with Health Conditions."

Wednesday April 3, 2:30 – 5:00 Worthman Hall, Baycrest Centre

This session will include an hour presentation by Dr Llinas followed by short related research presentations by Baycrest researchers and opportunity for discussion particularly related to TCD and neurodegenerative conditions.

Collaborative Program In Neuroscience Distinguished Lecture

Related Seminars:

"Thalamocortical Dysrhythmia and Pain"

April 2, Tuesday, 2:00 – 4:00, Mount Sinai, 14th floor classroom

"Thalamocortical Dysrhythmia and Psychiatric Conditions"

April 4, Thursday 12:00 – 1:00, Mount Sinai, 14th floor classroom

"Thalamocortical Dysrhythmia and Hearing"

April 4, Thursday 2:30 – 4:00, Mount Sinai, 14th floor classroom

Funded by the University of Toronto Connaught Fund

Post Doctoral Fellowship Position in Music Neuroscience Research Now Open

Background. Rhythmic Sensory Stimulation (RSS) induces or enhances brain activity at the rhythm of stimulation. Previous research found that low level vibrations applied to the skin elicit largest activity in primary sensory cortices at the stimulation rate of 20 Hz. For the auditory system the best responding frequency is 40 Hz. Many questions remain as to the effect of RSS at specific frequencies, such as, the effect of 5Hz RSS on the mean spectral magnitude in the theta frequency band. Such stimulus driven brain oscillations are of interest for several reasons: First, the brain responses are large compared to other responses to sensory input, therefore RSS may provide sensory input for otherwise less responsive patients like in Alzheimer's Disease or other dementia. Second, brain oscillations in the 40-Hz range are essential for neural communication and general integrity of functional brain networks. Stimulation at this rate may have positive therapeutic effects. Third, the responsiveness to RSS may serve as a sensitive indicator of brain function and changes in brain function and could be used for monitoring and predicting the outcome of rehabilitation intervention. Finally, RSS is a reductionist model for understanding the effects of more complex stimuli such as music on the human body.

Post-Doctoral Fellow Research Plan. The research aims of the post doctoral fellow are:

1. to study the responsiveness to 40-Hz amplitude modulated sound in older adults and older adults diagnosed with mild cognitive impairment as well as the early stage of Alzheimer's Disease.
2. to compare brain responses to 20-Hz vibrotactile stimulation between young and older adults with a focus of brain responses beyond the primary somatosensory cortex.
3. to study the effect of RSS at a range of frequencies on mean spectral magnitude power on multiple frequency bands by analyzing EEG data for frequency using discrete Fourier transformation.

These studies will provide critical data for planning further studies about applying RSS as therapeutic intervention in neurodegenerative diseases.

Candidate Qualifications & Responsibilities. The candidate PDF, with a PhD in a neuroscience-related discipline, should have conducted her/his PhD research using EEG or MEG and should have a solid publication record in these fields. The candidate should be familiar with sensory systems and ideally already worked with the method of RSS and is experienced in the related data analysis methods.

The role of the PDF is to begin by planning the first two outlined MEG studies, recruit patients, and healthy control participants for the two studies, perform the experimental procedures, analyze the data, and prepare the publications. The realistic expectation is to get two journal publications completed. Subsequently, to design additional studies as possible to pursue research aim 3, review and synthesize related literature to provide foundation for further research questions.

For more information see:

http://www.music.utoronto.ca/Assets/faculty/job+postings/post-doc_neuroscience.pdf

American Synesthesia Association Conference

May 31-June 2 2013

Faculty of Music and OCAD University

Featuring performances by the Gryphon Trio

and “Harmonia” by Christos Hatzis and Bruno Degazio

Sphere: Sound & Health in Society and Culture

Lecture: Sanctuaries, Gateways: The Sonic Spaces of Curative and Palliative Music in Medieval Cloister and Infirmary

Time: Wednesday March 13, 12:00 - 1:00

Place: Jackman Humanities Institute, Room JHB100a

Presenter: Paul Shore PhD, from St. Paul's College University of Manitoba. He is a Fellow at the Centre for Reformation and Renaissance Studies at the University of Toronto this spring.

Sponsorship: Music and Health Research Collaboratory (MaHRC) Faculty of Music; Health Arts and Humanities Program; Jackman Humanities Institute; Centre for Medieval Studies.

Description: The function of music in medieval medicine has long been acknowledged: the relationship between the aesthetic experience of music, the cognitive and spiritual content of song and the well being of the patient was known to medieval physicians and healers. Of particular importance is the role of the architectural setting in which music was encountered, since access to the sonic event was crucial for the frequently immobile patient. The construction of spaces in which communication between the infirmary and areas where worship took place made the acoustics of the liturgy accessible to these patients. Medieval infirmaries in the Latin west were often built as vaulted halls, with a chapel located either within the infirmary itself or communicating with the infirmary through a door that allowed patients to hear religious services. No rood screen separated the sick from the music.

Because music was also employed as palliative care for the dying, the connection between the theological message contained in the liturgy and the experience of song was central. The elevation by High Medieval theologians of the senses of taste and touch that raised the status of these senses by linking them to the physical experiences of Christ, reinforced this connection and promoted the idea of the entire body absorbing the music.

This talk will examine curative and “infirmary” music performed in the Cluniac

communities and elsewhere, placing these sonic events within the built environments in which they took place, taking into account the roles of silence and darkness in these spaces, and situating this music within the broader story of music and built environments in the West.

Lecture: Music and Lunacy

Presenter: University Professor Emeritus, Andrew Hughes

Title: "The Representation of Madness in Western Art Music."

Time: March 20, 12:00 – 1:30

Place: 14th Floor Classroom, Mount Sinai Hospital

Description: The talk is entitled "The Representation of Madness in Western Art Music." It will consist of about 30 minutes of talking interspersed with some 40 slides of musical scores, most of which are accompanied by the music, and occasionally movie clips of operas.

The talk begins with a brief resume of mental and social afflictions and the mad characters depicted in music: occasionally, specific illnesses are obvious and well documented in the libretto or stage effects or in the context of the piece, with appropriate musical features. A few relatively obvious musical techniques come next. Then, skipping the earlier periods of music history, the Middle Ages and Renaissance, the talk will proceed generally chronologically, with excerpts from a few of the most important works from the 17th to the 20th centuries, a few of which should be familiar.

Sponsored by: MaHRC and Health, Arts, & Humanities Program, Mount Sinai

Sphere: Sound & Health in Teaching, Learning, and Performing

Music in Human Development

A “gathering” sponsored by the Fraser Mustard Institute for Human Development will explore possible interdisciplinary research directions. For more information contact Lee Bartel at lbartel@chass.utoronto.ca

March 7, 3:10 – 5:00

Room 225, Edward Johnson Building, Faculty of Music

On the MaHRC Newsletter is created and edited by: Prof. Lee Bartel, Associate Dean-Research and Acting Director of MaHRC. For questions or comments: music.research@utoronto.ca