

# MUSICAL LEARNING ACROSS THE LIFESPAN/ MUSIC, COGNITION & THE BRAIN INITIATIVE

## CORE FACULTY

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## Innovative Research on Improvised Active Music Therapy and Parkinson's Disease

Demian Koguttek recently completed his PhD in Health and Rehabilitation Sciences, with a dissertation on music therapy and Parkinson's disease. This project, co-supervised by Dr. Jessica Grahn and Dr. Jeffrey Holmes, drew on Demian's expertise as an accredited music therapist, as well as methods from psychology and music theory. It represents the kind of interdisciplinary research that's central to Western's Music, Cognition, and the Brain Initiative, and it ultimately points toward new evidence-based interventions in music therapy.

For this study, Demian ran a series of home-based Improvised Active Music Therapy (IAMT) sessions for individuals with Parkinson's disease (PD). He led each session with an acoustic guitar, while the participant played an electronic drum set. They improvised together, and as sessions progressed, Demian added more rhythmic complexity. Because both the guitar and the drum set were equipped with MIDI (Musical Instrument Digital Interface) technology, their improvisations were con-



Demian Koguttek

verted into digital data in real time. MIDI data could then be examined via statistical techniques and computational music analysis software. More complex rhythms in participants' playing related to beat perception and production abilities—and also to gait performance. Overall, the dissertation suggests that IAMT sessions could be an effective way of increasing physical mobility among individuals with PD.

## New Postdoctoral Associate to Study Musical Improvisation

In September 2018, Dr. Andrew Goldman will join Western's Music, Cognition, and the Brain Initiative as a postdoctoral associate. Andrew is currently a Presidential Scholar in Society and Neuroscience at Columbia University. He is a member of the Laboratory for Intelligent Imaging and Neural Computing, and he has also taught in Columbia's

Department of Music. Andrew completed his PhD in 2015 at the University of Cambridge, where he worked with Prof. Ian Cross



Andrew Goldman

at the Centre for Music and Science. He holds undergraduate degrees in piano performance and neuroscience from the University of Southern California.

Andrew is principally interested in musical improvisation, and his multidisciplinary research combines humanistic and scientific approaches. He has developed new music-theoretical and philosophical perspectives on improvisation—as in his 2016 article, “Improvisation as a Way of Knowing,” published in *Music Theory Online*. At the same time, he tests these theories through EEG experiments. His other research interests include live coding, Dalcroze eurhythmics, and embodied cognition. He is also an active pianist and composer.

Andrew will visit Western in May 2018 to present a talk titled “The Neuroscience of Improvisation: Epistemological Problems, Empirical Approaches” at the initiative’s annual retreat.

### Recent Events at Western University

In April 2018, Dr. Jessica Grahn’s lab hosted this year’s Symposium

on Timing And Rhythm (STAR). The symposium featured presentations on rhythm and timing, music and interpersonal interaction, and music and language. The keynote talk, “Auditory Cortex Plasticity Following Hearing Loss and Restoration,” was given by Dr. Steve Lomber (Western), and the day ended with a discussion led by Dr. Grahn, Dr. Laurel Trainor (McMaster University), and Dr. Devin McAuley (Michigan State University).

The 2018 meeting of Music Theory Midwest was also held at Western. Local arrangements chair Jonathan De Souza welcomed scholars from across Canada and the United States for the two-day conference. The program covered diverse topics, from Renaissance canons to hip-hop, and included presentations related to music cognition.

With both events—and also our Music, Cognition, and the Brain Seminar Series—Western has hosted exciting conversations about the ways we perceive and produce music.

### Music Education and Music Therapy in Collaboration

Meghan Hopkins, a Master of Music Education student, presented her capstone project, “Music Inclusion: A collaboration between music educators and music therapists” at the first annual ABLE Assembly in

Boston, MA. The acronym ABLE stands for Arts Better the Lives of Everyone. This conference brought together educators, therapists and parents of children on the Autism Spectrum to share practices and engage in hands-on experience. Meghan’s project explored the potential collaboration between music educators and music therapists working with students with autism. A website and forum was developed to virtually connect and provide resources and technology to educators and therapists.

Meghan also presented her project at the thirty-first annual McGill Music Graduate Symposium.

### Music, Cognition & the Brain Seminar Series, 2017–2018

- Michael Hove (Fitchburg State University/Harvard Medical School), “Links between Rhythm, Bass, and Movement: Neural Mechanisms and Applications”
- Robert Zatorre (McGill University/Montreal Neurological Institute), “The Musical Brain: Born or Made?”
- Bryn Hughes (University of Lethbridge), “The Effect of Style on Musical Syntax”
- Laura Stambaugh (Georgia Southern University), “But I Played It Correctly in the Practice Room! Motor Learning Theories Can Inform Music Practice”
- Andrew Oxenham (University of Minnesota), “Perceiving Pitch for Speech and Music: All in the Timing?”