

# Movement and Timing

## MAPLE Lab PASIC testing results are in!

By Michael Schutz and Fiona Manning

Interested in improving your rhythm? Curious about your performance in our experiments? Want to learn more about how our brains process music?

Over the past several years we have tested 150 percussionists on a variety of experiments—many during PASIC in 2013 and 2014. As a result, we have gained new insight into the relationship between musical training, movement, and perception. This project will help inform efforts to improve musicians' timing, and will shed light on core issues of interest to psychologists, neuroscientists, and percussionists. We now look forward to sharing our results with the community contributing so much to our work!

This research is being conducted by the MAPLE (Music, Acoustic, Perception, and Learning) Lab—the world's first federally funded research facility with a percussion focus. Housed within McMaster University's School of the Arts, undergraduate students in the lab are often enrolled in our interdisciplinary undergraduate music cognition specialization. Graduate students in the lab enroll in masters and Ph.D programs through the Department of Psychology, Neuroscience and Behavior. The MAPLE Lab ([www.maplelab.net](http://www.maplelab.net)) conducts cognitively based research on a wide variety of questions related to musical performance and perception. Many of our projects examine percussion-focused topics, including the gestures used by marimbists to convey long and short notes, and an exploration of Steve Reich's "Drumming" as performed by Russell Hartenberger and Bob Becker. Other projects deal with musical topics more broadly, such as an audience's emotional response to the complex relationship between a composer's structural and a performer's interpretive decisions.

Broadly construed, our PASIC experiments explored the relationship between body movement and musical timing. Psychologists typically study timing by examining finger tapping, and our project builds on that work by exploring movements familiar to percussionists: tapping with drumsticks. We ran our experiments on two groups: trained percussionists and control subjects without percussion training. Most of these experiments involved judging the timing of woodblock notes relative to the rest of a sequence after hearing a measure of silence. On half of our trials ("movement trials") we asked participants to tap on a pad; some experiments involved drumsticks, others fingers. On "no-movement" trials we asked participants to refrain from moving.

Consistent with expectations, we found that percussionists generally possess excellent rhythm perception. However, we found evidence that this expertise may be conditioned upon trained movement. Although percussionists outperformed control participants when moving, curiously they performed similar in the no-movement condition. This suggests movement may be a requirement for percussionists' widely recognized rhythmic abilities.

We are looking forward to discussing the practical implications of these findings and answering your questions about perception research!

**Michael Schutz** recently received tenure at McMaster University, where he is now Associate Professor of Music Cognition/Percussion. His duties include conducting the percussion ensemble, supervising graduate students, and directing the MAPLE Lab. Michael's research is featured prominently in multiple textbooks including *Psychology of Music* and *Cognitive Psy-*



*chology*, and is supported by a variety of federal and international funding agencies. He remains active as a recitalist, and appeared on the title track of Judith Shatin's album *Time to Burn* (Innova Records), which he premiered previously at PASIC. Prior to joining the McMaster Institute for Music and the Mind, Michael spent five years as Director of Percussion Studies at Longwood University, performing frequently with the Roanoke and Lynchburg Symphonies and serving as principal percussionist with Opera On the James. He holds percussion degrees from Penn State (BMA) and Northwestern (MM), where he studied with Michael Burritt, as well as degrees in Cognitive Psychology and Computer Science. For more information, visit [www.michaelschutz.net](http://www.michaelschutz.net).

**Fiona Manning** is a graduate student in the MAPLE Lab. She completed her Bachelor of Science in Psychology degree, specialized in Music Cognition in 2011 and is currently working towards her Ph.D. in Psychology, Neuroscience, and Behavior at McMaster University. Her research is focused on understanding how we process rhythmic information and synchronize our movements with the beat in music. She has conducted experiments examining how musical experience influences how we perceive rhythm in music and how the timing of movements differs in participants with different musical backgrounds. These findings have been presented at many international conferences and published in empirical psychology journals. **PN**

research

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Thursday, November 12 . 2:00 P.M.