

UNIVERSITY OF PITTSBURGH
DEPARTMENT OF PSYCHOLOGY

Fusing the Sight and Sound of Swing-Groove in the
Brain of Drummers

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12:00 PM

**Martin Colloquium Center
4127 Sennott Square**

Merging audio and visual signals into a unitary event is essential for interpreting the actions around us. We examined how experience influences this process by using both behavioural and brain imaging (fMRI) techniques. Our studies present audio and visual streams and compare the ability of drummers and control participants to detect mismatches in the synchrony or congruence of these information streams. All studies employed a novel means of transforming motion capture data of swing groove drumming into visual point-light displays and corresponding sounds generated from physical simulation. Behavioural results showed that drummers, are more narrowly tuned to detect timing differences between the audio and visual signals, and show robust performance across variations in tempo, occlusion and image rotation. Brain imaging results showed large activation differences between drummers and controls in the processing of audiovisual information. Synchrony detection engaged right temporal areas (MTG and STG) for drummers and a right frontal region (IFG) for controls. However, this same right IFG region was active in drummers when detecting incongruence, suggesting that only controls treat asynchrony detection as a cognitive task. In addition, for synchrony detection, drummers showed substantial task-induced deactivation during synchronous displays. Thus drumming expertise appears to provide drummers both with enhanced multisensory perceptual representations and management of processing resources.

Reception to follow in Room 4125 Sennott Square