

## **Does optimal integration of auditory and visual cues occur in a complex temporal task?**

Scott Love, James M. Hillis, Frank E Pollick

University of Glasgow, Department of Psychology

When multiple sources of sensory information about a single environmental property are available combining them can form improved estimates of that property. For simple physical dimensions such as object size (Ernst & Banks, 2002) and location (Alais & Burr, 2004) studies, using a standard paradigm, show that humans integrate different sensory sources in a statistically optimal fashion. It is unclear whether this paradigm can be used to understand integration of auditory and visual cues in the temporal domain (Roach et al, 2006), especially with complex stimuli. We investigated this question using relatively complex stimuli, drumming point light displays, created from 3D motion capture data of a drummer performing swing groove drumming and corresponding simulated drumming sounds (Love et al, 2007). There were three main conditions in the experiment: audio-alone, vision-alone and audio-visual combined. Noise was added to the audio-alone and audio-visual conditions. Discrepancies between the cues occurred in the audio-visual condition. For each of these conditions we measured tempo discrimination performance in a 2IFC task. Results show that only some of the tests of the statistically optimal cue combination model are met and data will be presented that will illuminate the potential reasons why.