

# RESEARCH DIRECTIONS

## Expecting the Unexpected: Learning Complex Rhythms

Associate Professor Kate Stevens from MARCS Auditory Laboratories and Professor Barbara Tillmann, visiting Eminent Research Fellow from the Centre National de la Recherche Scientifique (CNRS) Lyon, along with Dr Peter Keller from The Max Planck Institute for Human Cognitive and Brain Sciences, are looking at ways adults raised in a particular linguistic or music environment acquire knowledge of complex temporal and rhythmic relations. This research is funded by an Australian Research Council Discovery Project grant.

'Many Australian adults are unfamiliar with the uneven rhythms of music from other parts of the world including west Africa, the Middle East and the Balkan Peninsula,' explains Associate Professor Stevens. 'We're interested in the way humans learn implicitly or by mere exposure. We know that adults find complex, unfamiliar rhythms and metres difficult to perceive and produce. Our aim is to use methods of implicit learning to see whether adults more attuned to the relatively simple temporal relations of Western music can learn, through mere exposure, to perceive and produce more complex patterns'.

Typically, participants in an experimental group listen to and interact with rhythmic material by performing a syllable detection task. Their performance on subsequent production and memory tasks is then compared with a control group. Learning is said to have occurred when responses of the experimental group are significantly faster and more accurate than those of the control group; learning is implicit if participants are unaware and find their acquired knowledge difficult to express.

Experiments include participants responding individually or in pairs to investigate social facilitation from "joint action".



Increasingly musical material will be used including tonal relations and instruments from Macedonian music.

As there are close connections between rhythms of speech and music in particular cultures, implicit learning of an unfamiliar musical rhythm will be investigated as a way to facilitate Australian listeners' perception of accented English.

An increased familiarity with different types of music can enhance preference for music and language sounds that were once 'foreign', which can lead to greater communication and understanding in Australia's multicultural communities.

**Project Title:** Expecting the Unexpected: Learning Complex Temporal and Rhythmic Relations.

**Funding has been set at:** \$186,000

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