

Guitarists' brains swing together (w/Video)

March 17 2009

When musicians play along together it isn't just their instruments that are in time - their brain waves are too. Research published in the online open access journal *BMC Neuroscience* shows how EEG readouts from pairs of guitarists become more synchronized, a finding with wider potential implications for how our brains interact when we do.

Ulman Lindenberger, Viktor Müller, and Shu-Chen Li from the Max Planck Institute for Human Development in Berlin along with Walter Gruber from the University of Salzburg used electroencephalography (EEG) to record the [brain electrical activity](#) in eight pairs of [guitarists](#). Each of the pairs played a short jazz-fusion melody together up to 60 times while the EEG picked up their [brain waves](#) via electrodes on their scalps.

The similarities among the brainwaves' phase, both within and between the brains of the musicians, increased significantly: first when listening to a [metronome](#) beat in preparation; and secondly as they began to play together. The brains' frontal and central regions showed the strongest synchronization patterns, as the researchers expected. However the temporal and parietal regions also showed relatively high synchronization in at least half of the pairs of musicians. The regions may be involved in processes supporting the coordinated action between players, or in enjoying the music.

"Our findings show that interpersonally coordinated actions are preceded and accompanied by between-brain oscillatory couplings," says Ulman Lindenberger. The results don't show whether this coupling occurs in

response to the beat of the metronome and music, and as a result of watching each others' movements and listening to each others' music, or whether the brain synchronization takes place first and causes the coordinated performance. Although individual's brains have been observed getting tuning into music before, this is the first time musicians have been measured jointly in concert.

More information: Brains Swinging in Concert: Cortical Phase Synchronization While Playing Guitar, Ulman Lindenberger, Shu-Chen Li, Walter Gruber and Viktor Müller, *BMC Neuroscience* (in press), www.biomedcentral.com/bmcneurosci/

Source: BioMed Central ([news](#) : [web](#))

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