

Rhesus monkeys cannot hear beat in music

December 13 2012



(Phys.org)—Beat induction, the ability to pick up regularity – the beat – from a varying rhythm, is not an ability that rhesus monkeys possess. These are the findings of researchers from the University of Amsterdam (UvA) and the National Autonomous University of Mexico (UNAM), which have recently been published in the scientific journal *PLOS ONE*.

The research conducted by Henkjan Honing, professor of [Music Cognition](#) at the UvA, and a team of neurobiologists headed by Hugo Merchant from the UNAM, shows that [rhesus monkeys](#) cannot detect the beat in music, although they are able to detect rhythmic groups in music. The results of this research support the view that beat induction is a uniquely human, cognitive skill and contribute to a further understanding of the biology and evolution of human music.

Monkey versus man

It seems a trivial skill: children that clap along with a song, musicians that tap their foot to the music, or a stage full of line dancers that dance in [synchrony](#). And in way, it is indeed trivial that most people can easily pick up a regular pulse from the music or judge whether the music speeds up or slows down. However, the realisation that perceiving this regularity in music allows us to dance and make music together makes it less trivial a phenomenon.

Previous research showed that not only adult humans, but also newborn babies can detect the beat in music. This proved that beat induction is congenital and can therefore not be learnt. In their experiments with rhesus monkeys, the researchers used the same stimuli and experimental paradigms from previous research conducted on humans and babies. They measured electrical [brain signals](#) using electrodes while the participants were listening.

Confirmation of hypotheses

These research results are in line with the vocal learning hypothesis, which suggests that only species who can mimic sounds share the ability of beat induction. These species include several bird and [mammal species](#), although the ability to mimic sounds is only weakly developed, or missing entirely, in nonhuman primates.

In addition, the results support the dissociation hypothesis, which claims that there is a dissociation between rhythm perception and beat perception. This new research suggests that humans share rhythm perception (or duration-based timing) with other primates, while beat induction (or beat-based timing) is only present in specific species (including humans and a selected group of bird species), arguably as a

result of convergent evolution.

More information: Honing, H., Merchant, H., Háden, G.P., Prado, L. & Bartolo, R. (2012). 'Rhesus monkeys (*Macaca mulatta*) detect rhythmic groups in music, but not the beat' in *PLOS ONE*. [doi 10.1371/journal.pone.0051369](https://doi.org/10.1371/journal.pone.0051369)

Provided by University of Amsterdam

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