

Babies Groove to a Beat -- Maybe Even Before Birth

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All God's children got rhythm -- and at a much earlier age than doctors ever suspected, a small study shows.

Studying children's sense of musical timing has long been challenging. The babies in the study couldn't even grab their toes, let alone tap them. Yet brain scans show that these 2- and 3-day-olds could perceive musical patterns and even take note when a drummer missed a beat, the study in today's Proceedings of the National Academy of Sciences shows.

The 14 babies, who were examined under their mothers' watchful eyes, had similar patterns of electrical brain activity as 14 adults in the study, says co-author Henkjan Honing of the University of Amsterdam. The scans revealed the infants were following the beat and, like any listener, began to expect the drummer to continue the pattern.

The scans recorded the babies' surprise when the drummer didn't meet those expectations by stumbling on the downbeat, or first beat of a musical measure, Honing says.

Doctors have long known that a fetus can process sounds even three months before birth, Honing says. The new findings, however, may change the way doctors think about children's musical abilities, says co-author Istvan Winkler of the Hungarian Academy of Sciences in Budapest. Many researchers have believed that babies learn about music by listening to adult speech and lullabies, he says. Earlier experiments, using less sophisticated technology, found that babies could begin to tell only one rhythm from another at 4 to 6 months.

The new results suggest that rhythm could be an innate ability, hard-wired into the human brain, Honing says.

Following a beat is a vital part of cultural activities, from following the rhythm of a conversation to dancing or playing music with another person, Honing says. It's possible that babies are born with a musical sense because it helps communication.

Other researchers say the young music critics in Honing's study were made, not born. Babies may learn about rhythm from hearing music in the womb, feeling the rhythm of a mother's movements or listening to her heartbeat, says Nadine Gaab, an assistant professor of pediatrics at Children's Hospital Boston.

Yet rhythm seems to be a uniquely human talent, Honing says. Our closest primate relatives, chimpanzees and bonobos, aren't able to sense a beat -- even though they must hear their mother's heartbeat in the womb as well, he says.

"If you listen to music, we can all clap along," says Honing, who adds that the question deserves much further study. "What is special about something we see as so very simple?"

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