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When fingers start tapping, the music must be striking a chord

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According to University of Toronto speech-language pathologist Luc De Nil, the beat could be revealing such things as how children master one of the most complex tasks of all – speech.

"The rapid and precise muscle movements of speech must be the most intricate, yet poorly understood, of all the sensory-motor skills," says De Nil.

De Nil's interest in finger-tapping came out of his group's previous work on adults who stutter. His team discovered that they have problems in acquiring new and unusual tapping sequences and not just speech. The research suggests an underlying neural basis for the motor deficit.

The researchers tested the abilities of stuttering adults to learn both speech and tapping sequences. In some experiments, the participants were given extensive practice lasting more than one day. Other studies investigated the effects on the accuracy of a speaker's performance when motor learning was disrupted. To follow up, the investigators use magnetic resonance imaging and fMRI to observe and analyze the neural processes underlying speech production in children and adults who stutter.

"We turned to children next because we wanted to know if the adult data was relevant to them and if giving them finger and speech tasks would let us observe motor skills as they develop in both stutterers and non-stutterers."

De Nil will discuss some of the findings at this week's meeting of the American Association for the Advancement of Science in Washington, D.C. He will take part in the session From Freud to fMRI: Untangling the Mystery of Stuttering on Sunday, February 20.

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