Medical Xpress

Differential hearing difficulties cause kids to fall behind at school

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(Medical Xpress)—Some children who have trouble learning in the classroom have difficulty switching their listening attention and so have trouble following a conversation from one talker to the next, according to a University of Sydney study published online in Nature's *Scientific Reports*.

The PhD study led by Imran Dhamani was a collaboration between the University's Auditory Neuroscience Laboratory and Macquarie University's Audiology Section, funded by the HEARing Cooperative Research Centre.

The study looked at three groups of participants, 12 adults, 12 normal children and 12 children with persistent listening difficulties in noisy environments, but no diagnosis of a hearing disorder or other attentional disorder.

Paper co-author Associate Professor Simon Carlile said the researchers were determined to find out why some children, with otherwise normal hearing, fell behind in the classroom.

"A wide battery of clinical tests indicated that children who complained of listening difficulties had otherwise normal hearing sensitivity and auditory processing skills," he said.

In our study, we showed that these children were markedly slower to switch their attention compared to their age-matched peers. In a noisy

conversation with many participants, this means that these children were having trouble following a conversation as it moved from one talker to the next, making it difficult for them to get the gist of what was being said."

"A deficit in the ability to switch attention across multiple talkers now provides the basis for this otherwise hidden listening disability, especially in noisy environments involving multiple talkers, such as classrooms.

"What we have done is provide a tool to diagnose a particular symptom that indicates an underlying problem that has been undiagnosed to date."

Co-author, Macquarie University audiologist and Senior Lecturer, Dr Mridula Sharma said the researchers had discovered the answer to an important question, so far not investigated in this population.

"Children had been brought to audiologists by either their parents or teachers, who had done a whole heap of tests on them, only to not be able to diagnose the problem.

Dr Sharma said that, prior to the study, only a third of the children presenting at the audiology clinic at Macquarie University had gone on to be diagnosed with Auditory Processing Disorder (APD).

"But two thirds of these children were being sent back home without a diagnosis on what the problem was. We knew there was something there, we just hadn't worked out the right question to ask. We now have a real handle on what the problem is."

Associate Professor Carlile said the group are now developing a test that can be easily used by audiologists and GPs in their consulting rooms.

"Often we see that medical diagnosis is based on a clinical presentation, and to date, neither the audiologists nor the GPs have had the question to ask of these kids having trouble at school," he said.

"A symptom can have many causes. And a clinical presentation can only be judged on the symptom.

"Some forms of attentional disorders (such as ADHD) can be treated with medications, we don't know yet whether that is appropriate here. And some forms of these attentional disorders can be treated with cognitive and other behavioural or training therapies, where you are helping people latch onto the appropriate cues to help manage these conditions.

"We are now working on developing a simple clinical test to diagnose this differential hearing condition, and aim to make it available to audiologists."

Provided by University of Sydney

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