What is stuttering? Who does it affect?

Stuttering is a neurodevelopmental disorder that affects approximately 5% of children and 1% of adults. Stuttering is characterized by involuntary disruptions in the flow of speech. Speech disfluencies characteristic of stuttering consist of sound or syllable repetitions, prolongations, or silent blocks. It is not related to intelligence or caused by anxiety. Stuttering affects more boys than girls and tends to run in families.

What should I do if I think my child might be stuttering?

First, contact your doctor for a referral to a speech-language pathologist for a speech and language evaluation. In the meantime:

- Slow down your own speech to model "unhurried" talking.
- Don't say, "Slow down," or "Think about what you are trying to say."
- Allow your child enough time to talk and keep eye contact.
- Try not to finish your child's sentences or fill in words.
- Provide a supportive environment where talking is fun.

Where can I find more information about stuttering?

- American Speech-Language-Hearing Association: **www.asha.org**
- The National Stuttering Association: **www.westutter.org**
- The Stuttering Foundation: **www.stutteringhelp.org**
- Friends - National Association of Young People Who Stutter: **www.friendswhostutter.org**

Meet the study team:

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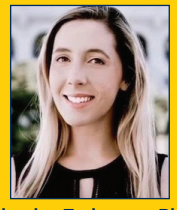

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THE SPEECH NEUROPHYSIOLOGY LAB

Stuttering Research at the University of Michigan

UNIVERSITY OF MICHIGAN HEALTH
MICHIGAN MEDICINE

What kind of studies can my child participate in?

Many of our research projects aim to better understand brain function and structure that differentiate people who stutter compared to people who do not stutter. These findings are expected to help us better understand the mechanisms behind stuttering onset, persistence, and recovery, and further lead to investigations to develop novel treatments for stuttering.

To conduct these studies, we need to recruit children who stutter, as well as children who have never stuttered (control group).

Our research studies use safe, noninvasive neuroimaging methods such as magnetic resonance imaging (MRI) and electroencephalogram (EEG).

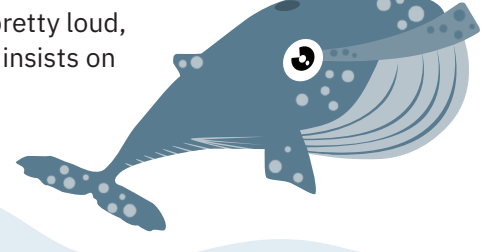
As part of our eligibility screening, we administer standardized speech, language, and cognitive tests to children who participate in our studies, and parents receive a free report of those assessments. Additional tests may be administered, such as temperament questionnaires, and we may also collect saliva samples for DNA analysis.

What is MRI? Is it safe? What is it like to participate in an MRI study?

As parents ourselves, we understand your concerns. MRI scanning is very safe—it is commonly used for children and even infants and can even be repeated in short succession without worry. Unlike x-rays or CT ("CAT") scans, MRI does not involve radiation, injections, or invasive procedures of any kind.

Our research team is experienced with pediatric MRI scanning. Usually children enjoy the experience, and are excited to obtain a picture of their brain!

Before the actual MRI visit, children practice in our mock MRI machine, a realistic, pretend MRI scanner. Our friend Whally the Whale helps us out! Your child will play games and become a Submarine Captain that will help them to be prepared to get their picture taken in our "submarine" MRI machine. During Submarine Captain Training, your child practices being still and listens to the sounds they will hear in the MRI machine (it can be pretty loud, but Whally insists on ear plugs!).



What is EEG? What happens during an EEG study?

An EEG (electroencephalogram) enables researchers to measure electrical activity in the brain using small disks (electrodes). These electrodes can detect the tiny electrical charges that occur during brain activity. The charges are amplified and can be shown in a graph that appears as a wavy pattern ("brain waves"). During an EEG study, electrodes connected to wires will be placed on the scalp using a cap that is placed on the head. Brain activity is measured with EEG while the child engages in listening and speaking tasks in front of the computer.

In our research, we will be looking for subtle differences in how certain brain regions important for speech processing work together in children to enable speech.

Do you have any studies for adults who stutter?

Yes! Past and ongoing studies for adults who stutter include behavioral, MRI, and noninvasive brain stimulation methods like transcranial direct current stimulation (tDCS). Future studies will focus on speech and rhythm processing using computerized experiments, MRI, EEG, and transcranial alternating current stimulation (tACS).