

The Laboratory of Neurocognitive Development

Quarterly Newsletter: **Fall 2026**

Topic: The development of inhibitory control



Scientist Spotlight

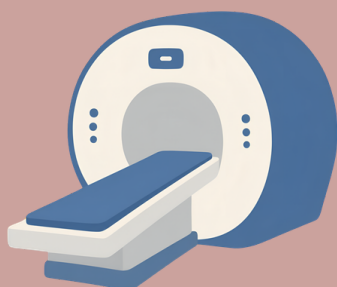
Meet Victoria!

Victoria is in the third year of her PhD here at the LNCD, coming from the Philadelphia area. Her research looks at changes in brain structure that support the development of cognitive functioning. Outside the lab, Victoria performs in a Greek folk dance group and loves to cook!



What is the science saying?

Every day you make decisions about what to do and what **not** to do. Your ability to stop yourself from automatically doing something and instead do something that fulfills a goal is called **inhibitory control**, and it becomes more accurate and more reliable as you get older!



This is what an MRI machine looks like!

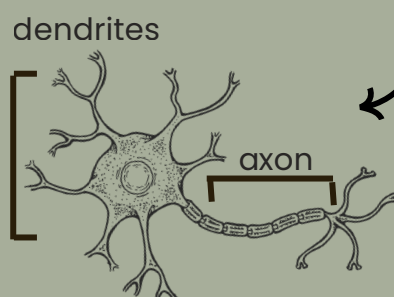
The structure of **neurons** (brain cells) and how they communicate with each other allow us to use inhibitory control. This changes during adolescence!

To collect data on these changes, we had participants lie in an **MRI machine**, which uses a powerful magnet to take brain images. From these scans, we measured neuron density (how tightly packed they are) and how strongly they connect.

We found that as people age, parts of neurons take up more space and function more independently, supporting improvements in inhibitory control.

These results matter because they show that as one matures from adolescence to adulthood, changes in neuronal structure and how neurons wire together help improve cognition.

This is what some neurons look like!



Inhibitory control is like a “pause button”

Whether we're feeling stressed about school, friendships, or other challenges, we can choose healthy ways to respond rather than reacting automatically. This is especially important during the fall season, when schedules fill up and stress builds.

Here are local places to recharge this Fall!

The Beacon at The Friendship Circle in Squirrel Hill

Teen-designed and teen-led. This organization introduces ways to take care of your mental health with emotional literacy and connecting with peers.

<https://fcpgh.org/initiatives/teen-mental-health-the-beacon>

Carnegie Library of Pittsburgh (Main - Oakland) “Teen Choice”

A safe space to decompress, do some hands-on crafts, and play games!

<https://carnegielibrary.org/event/teen-choice-35-2>

Brentwood Library “Teen Lounge”

Teens can go after school to relax, make new friends, play boardgames, Nintendo Switch, snacks, and other great activities!

<https://brentwoodpubliclibrary.org/service/teens/>

Enjoy the crisp Autumn weather at local parks!

Don't forget to explore green spaces like **Schenley Park, Frick Park, Highland Park** and more! <https://pittsburghparks.org/explore-your-parks/park-overview-and-map/>



Managing Stress for a Healthy Brain During the School Year

As the brain develops, connections between neurons become more efficient, helping us make thoughtful decisions about our day. Stress can make this harder to do in many ways, but *how* we respond still matters for a healthy brain.

Great ways to cope with stress include asking for support, prioritizing a good night's rest, and carving out time for something fun!



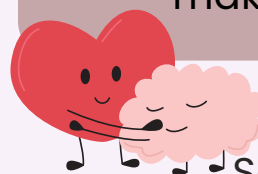
Check out the next page for some fun fall activities and check out the resources above for managing those overwhelming feelings.

From Our Team to You

Thank you so much for being part of our study!

Because of awesome participants like you, we're learning more about how kids and teens grow, think, and explore the world around them.

Your time and ideas help us understand the brain in ways that make a real difference!



Scan the QR code to check out our website and learn more!



The background is white with several autumn leaves scattered around. There are nine large, solid-colored circles arranged in a circular pattern around the central text. The colors of the circles are: light orange, pink, dark orange, red, light green, dark green, yellow, brown, and dark red.

Color Hunt:
While on a nature
walk, search for
autumn shades
and match them
to the colors on
this page!

Read more about microstructure!

1. Dionisos, V. O., Sydnor, V. J., Foran, W., Calabro, F. J., & Luna, B. (2026). Developmental Changes in Gray Matter Microstructure and Local Brain Connectivity Support Inhibitory Control from Adolescence to Young Adulthood. <https://doi.org/10.64898/2026.08.19.745824>
2. Mah, A., Geeraert, B., & Lebel, C. (2017). Detailing neuroanatomical development in late childhood and early adolescence using NODDI. PLOS ONE, 12(8), e0182340. <https://doi.org/10.1371/journal.pone.0182340>

