

COGNITIVE RECOVERY LAB



Issue 6 • Fall 2022

2021 - 2022 HIGHLIGHTS

While every year comes with its own challenges, life has begun to feel a little more “normal” around the lab. We have continued our hybrid work environment, though we see each other much more frequently than we did last year. We’ve been able to celebrate thesis defenses, birthdays, publications, grants, and the small joys of just being together. And yes, we have exchanged hundreds of messages about the Wordle.

Most importantly, we are so grateful to everyone who has participated in our studies over the past year. It has been very exciting to work with so many new participants. That part of our job is what makes our lab such a special place. You have allowed us to continue making progress toward a brighter future for people with aphasia in this often challenging world. Thank you!



Top row left to right: Peter Turkeltaub, Elizabeth Lacey, Alycia Laks, Kyle Shattuck, Tyler Ketchabaw, Sara Dyslin, Gina Choe, Ilse Hahn, Brendan Hall Middle row left to right: D. Seles Gadson, Andrew DeMarco, Caitlin McDermott, Trini Kelly, Nikta Najib, Sarah Snider Bottom row left to right: Sachi Paul, Kelly Martin, not pictured: Candace van der Stelt

RECENT NEWS

We have a few new doctors to celebrate! In February, Joshua McCall (middle) defended his thesis, *Investigating The Neurocognitive Mechanisms Of Error Monitoring In Aphasia*. A week later, Joey Posner (left) also defended his thesis, *It Sounds The Way It's Spelled: Orthography Effect Mechanisms In Persons With Aphasia*. Dr. McCall and Dr. Posner have both returned to finish medical school. We are so proud of them, and their presence in the lab is dearly missed! In June, just a few months later, Kelly Martin (right) defended her thesis, *Language System Plasticity in Healthy Development and after Perinatal Stroke*. Fortunately for us, Dr. Martin started a postdoctoral fellowship position in our lab this summer. We are so excited to have her expertise around in this new role.



Our former Lab Manager, Sachi Paul, started her PhD in Clinical Neuropsychology at the University of Pittsburgh in August. We've had such a wonderful two years with her and can't wait to watch her grow in this next chapter. We'll miss you, Sachi!

Four of our undergraduate research assistants graduated in May. Katherine Modrall is attending the Indiana University School of Medicine, Chris Grisham is working in research at Georgetown Lombardi Comprehensive Cancer Center, Quynh Pham is working in a research lab at Stanford University, and Cameron Davis is working in an emergency department in Florida. These four students have contributed so much to the lab in such a short time—a huge congratulations to you all! Thank you for your time and service to CRL! We will always be here cheering you on.

Dr. Turkeltaub had a very big and exciting year, which kind of means that all of us have too! His NIH training grant was funded, so he has started a new **Neuroscience of Language training program** at Georgetown. The grant will support PhD students and postdoctoral fellows studying the brain basis of language. These young scientist are the

future leaders who will help improve the lives of people with aphasia and other communication disorders. They should learn from people with aphasia, so we may reach out to ask you to share your stories with them.

Dr. Turkeltaub also received a new NIH research grant! Reading is very difficult for many people after their stroke. This new grant provides 5 years of funding to help us understand this problem, which is called alexia. Understanding specific types of reading problems and how people get better over time is the first step toward finding new ways to treat alexia. We're calling this study **ReadMap**, and we're working hard to plan new tests and MRIs for it. We hope to start recruiting participants in the next few months. It's been a busy year, and we're very excited about these new ventures!

WELCOMING NEW LAB MEMBERS

We are incredibly excited to welcome Trini Kelly, MA, CCC-SLP as another Research Speech-Language Pathologist on the team! Before joining us, Trini worked with Dr. Argye Hillis at Johns Hopkins University, where she worked on post-stroke language recovery. We are grateful to have her expertise and passion on our team!



Sara Dyslin joined the lab last fall and will now be starting her third year as a PhD student in the Interdisciplinary Program in Neuroscience. She is interested in mechanisms of brain plasticity after injury or trauma. In the lab, she is using MRI to study brain plasticity in the reading network after stroke.



Karina Diaz joined our team this summer as a research recruiter and retention coordinator! She completed her masters in physiology and biophysics in May. She will help connect stroke survivors to our research. She will also work with other labs in the Center for Brain Plasticity and Recovery.



We also have new undergraduate research assistants in the lab: Ilse Hahn, Brendan Hall, Victoria Hannett, Jessica Visone, Sofia Veljkovic, and Tabitha You. Hooray for a diverse, growing team!

ALUMNI NEWS

Mackenzie Fama, former graduate student and Assistant Professor in the Department of Speech, Language, and Hearing Sciences at The George Washington University, received an ASH Foundation Research Grant for new investigators, and also a K12 career development grant! Dr. Turkeltaub is one of her mentors on this grant, so we are very happy to keep working on inner speech with her!

Vivian Dickens, who is back in medical school after finishing his PhD in 2021, attended the American Academy of Neurology meeting this spring as a Futures in Neurologic Research Scholar. He then won the Milton Corn award for having the top academic performance in his class across the first three years of medical school. We're so proud of him!

THANK YOU TO OUR PARTICIPANTS

We enrolled 46 participants in the BUILD study this past year, and in total, we have now enrolled 158 BUILD participants! Our speech-language pathologists continue to run weekly “Conversation Group” for individuals with aphasia over Zoom, with the



Conversation group meets up at the park to enjoy a beautiful day!

occasional in-person gathering. It has been incredible to watch them build relationships and support each other. These special people and many more are why we are here and able to do what we do. We have survived a pandemic and a lot of tough days together—thanks for sticking with us.

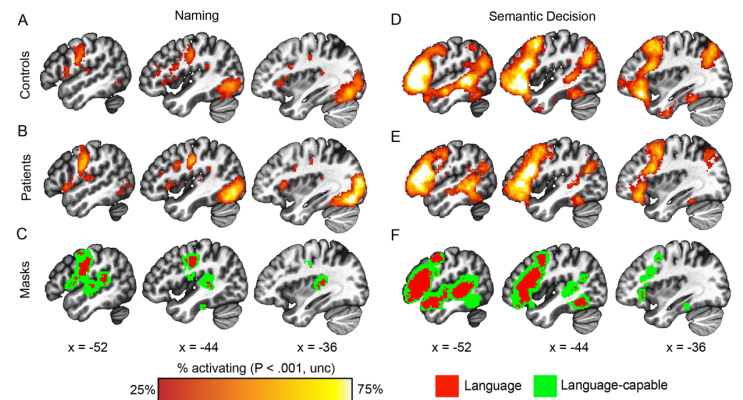
We also started offering [free lectures](#) to area speech-language pathologists this year. Our hope is to make research and

neuroscience more accessible to clinicians. Topics covered so far have included brain imaging, the brain's vascular system, and neurons and attendance has been amazingly high! Please reach out to us if you have any other ideas about community involvement.

We've highlighted our publications and presentations over the last year below so that you can see how you are helping us contribute to science and the world.

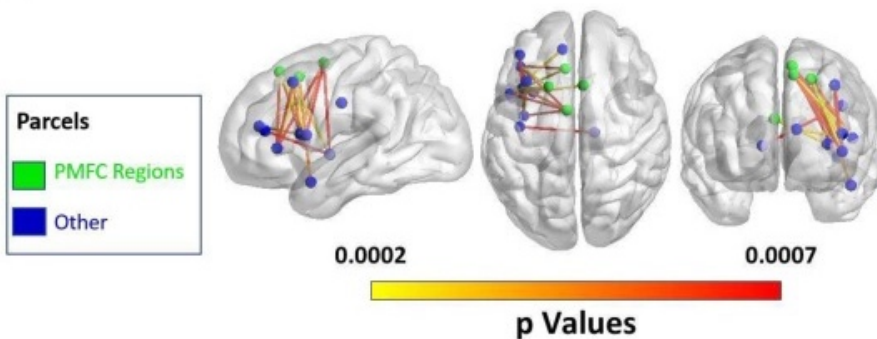
NEW RESEARCH PUBLICATIONS

Andrew DeMarco published a paper in *Neurology* investigating a common theory about aphasia recovery: that the area around the stroke serves as an important location for neuroplasticity during recovery. The study results did not support this idea. Instead, the study found that activity across the whole remaining brain language network is important for recovery. These findings bring us a step closer to understanding how the brain changes after a stroke to promote aphasia recovery.



Brain activity during picture naming (left) and making decisions about meanings of words (right).

Joshua McCall published two papers from his thesis work. The first, in *Neuropsychologia*, examines cognitive control abilities in people with aphasia. Although aphasia is a disorder of language, we found evidence that impaired cognitive control can also contribute to language difficulties in aphasia. One cognitive control ability we measured was semantic control, which evaluated one's ability to ignore distractors related to a word's meaning. We found that people with aphasia with decreased semantic control made more speech errors based on word meanings.



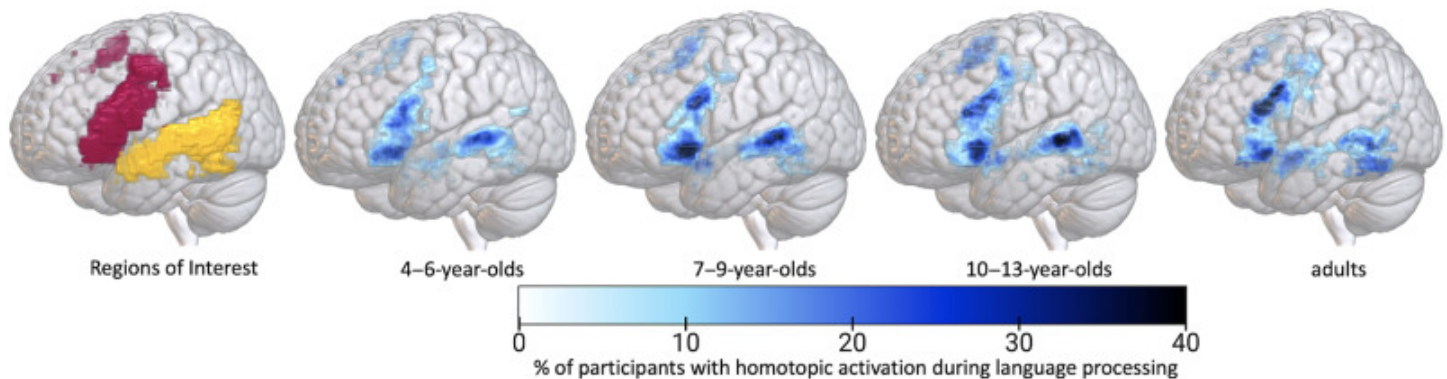
Brain connections important for detecting speech errors.

We found that damaged connections to brain regions in the middle of the frontal lobe led to difficulty with detecting speech errors.

The second of Josh's papers, published in *NeuroImage: Clinical*, examines the role of connections in the brain in speech error detection in people with aphasia. Some people with aphasia have difficulty detecting the errors they make while speaking. We

Kelly Martin and Tyler Ketchabaw published a book chapter in the *Handbook of Clinical Neurology*. They summarize how the plasticity in the language system changes over a person's life, and how these changes in plasticity change how brain injuries and disorders affect language at different ages.

Kelly Martin also published a paper in *Neurobiology of Language*. Language relies more on both sides of the brain in young children than in adults. This may explain why a left hemisphere stroke is less likely to cause aphasia when it happens very early in life. In this study we found that parts of the right hemisphere that are symmetrical to left hemisphere language centers still show the same pattern of activity in adults as they do in children, even though the activity is much weaker. This may be important for developing new



Overlap between the left and right hemisphere regions when the activity in the right hemisphere was flipped into the left hemisphere for comparison.

treatments to help people with aphasia use this weak right hemisphere activity to help them recover.

We also published two papers in collaboration with Dr. John Medaglia at Drexel University. These papers examine connections in the brain to understand how strokes affect the organization of brain networks, and how the brain can find bypasses around the stroke damage.

We also published a paper in collaboration with CRL Alumna, Dr. Mackenzie Fama, examining how aging and left hemisphere strokes affect a specific type of language learning called statistical learning. Dr. Turkeltaub also co-authored two additional collaborative papers this year.

All of this work is only possible with the help of participants, so we thank you for your contributions! Please email us at crlab@georgetown.edu if you have any questions or if you would like a copy of any of our publications.

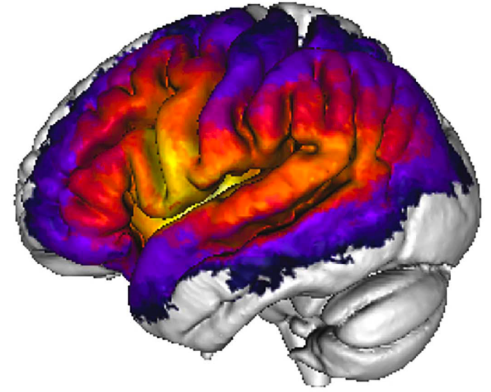
We are recruiting! If you or someone you know may be interested in participating in research, please reach out to us. We can schedule a phone screening to discuss the study and eligibility. See the last page of this newsletter for contact information and more detail on our current study, BUILD. We love hearing from you (and love referrals—please keep those coming!).

RECENT TALKS AND CONFERENCE PRESENTATIONS

- Kelly Martin presented her research via “slide slam” at the virtual **Society for the Neurobiology of Language** in October 2021, and she also won first place for her oral presentation at Georgetown’s **student research day!**
- Sachi Paul presented her research as a platform talk at the virtual **Academy of Aphasia Conference** in October 2021, as well as in a poster at the virtual **International Neuropsychological Society** meeting in February 2022.
- Davetrina Seles Gadson was a guest on [ASHA’s Podcast](#) in March 2022, discussing research on healthcare disparities. She gave a response to the keynote address at the Clinical Aphasiology Conference. Way to represent, Seles!
- Kelly Martin got a shout out in Episode 17 of Stephen Wilson’s [Language Neuroscience Podcast](#), discussing language development and perinatal stroke with Elissa Newport.
- Andrew DeMarco and D. Seles Gadson presented their research via platform talks at the **American Society of Neurorehabilitation** meeting in April 2022. This took place in St. Louis and was our first in-person conference since 2019.
- Tyler Ketchabaw presented his research at the **Cognitive Neuroscience Society** meeting in April 2022 – a fun trip to San Francisco!
- Peter Turkeltaub was the first expert for the **National Aphasia Association’s** [Ask the Expert webinar series](#) in July. He also gave a virtual talk for the Biomedical Engineering Department at **City College of New York**, and was on a panel for the **Planet Word Museum**, titled [Word Finding, Aphasia, and the Brain](#).

CURRENT STUDIES

As always, thank you to all of the people who have participated in our studies this past year! We can not do our work without you. We are continuing to enroll participants for our NIH-funded study called **BUILD**. We are looking for people who have had a left hemisphere stroke, or a stroke elsewhere in the brain causing aphasia. Additionally, we are looking for individuals with no history of neurological conditions to become control participants. What is the **BUILD** study about?



Have you ever wondered why you recovered so well after your stroke? Have you wondered why you didn't recover as well as you'd hoped? Have you wondered why your strengths and weaknesses are so different from other stroke survivors you meet? In **BUILD**, we're studying whether these individual differences are due to the nature of your stroke. We also want to understand how the strength of brain structures and connections that were not

affected by your stroke impacts recovery. We hope that in the future, we will be able to predict who will recover well and who may need extra help after their stroke. We also hope that **BUILD** will guide us toward new targets for brain stimulation treatment. Participation requires a few sessions of behavioral testing and one MRI scan.

The BUILD Study

- Brain-based Understanding of Individual Language Differences after stroke
- 4-5 sessions of language, speech, and cognitive testing (at Georgetown or NRH)
- One MRI scan (at Georgetown)
- Help us understand more about aphasia and the brain
- After the study, you will receive a report with our observations about your language abilities and pictures of your brain

Please call or e-mail Alycia Laks, MS, CCC-SLP (alycia.laks@georgetown.edu, 202-687-5205) or Trini Kelly, MA, CCC-SLP (trini.kelly@georgetown.edu, 202-687-5205) if you are interested in participating. **We will also begin recruiting and enrolling participants for our new study, ReadMap, later this fall, so please stay tuned!**

Need to update your contact information with us? Let us know!

Cognitive Recovery Lab • Building D, Suite 165A • 4000 Reservoir Road NW • Washington, DC 20057 • (202) 687-5205
www.cognitiverecoverylab.com • crlab@georgetown.edu