

MOTOR AND BRAIN DEVELOPMENT LAB

WHAT'S INSIDE:

- Presentations
- Recent Findings
- Study Opportunities
- Lab Member Updates



A NOTE FROM BRITTANY

Hello from the Motor & Brain Development Lab of the Waisman Center! The mission of our lab is to seek unique insights into the neurobiological basis of sensory and motor features of autism. As you can see from this newsletter, this last year has been full of adventure and growth. A major highlight was getting to live, teach, and do research in Málaga, Spain for a Fulbright award. I came away from it with new perspectives and new scientific methods to continue to infuse and grow the work we do. Another highlight has been working with our community advisory board of autistic individuals and their family members, including a Spanish-speaking group. Their insights into how we can enhance our work to make sure we are aligned with the goals of the autistic community have been invaluable. Our commitment is to continue to listen, learn, and implement.

As we enter 2024, I am so grateful for getting to work with the best team around and for the community we have built over the last 9 years of this research. You are receiving this newsletter because you are part of that community. Thank you. We truly could not do this work without you, and frankly we wouldn't want to. Getting to share in your milestones, joys, and challenges is what fuels this work and makes it meaningful.

Thank you for generously supporting and being a part of this community and scientific journey.

Sincerely,


Brittany Travers, PhD
Carla & Mike Austin Faculty Fellow
Associate Professor, Occupational Therapy Program
Kinesiology Department
Waisman Center



Presentations

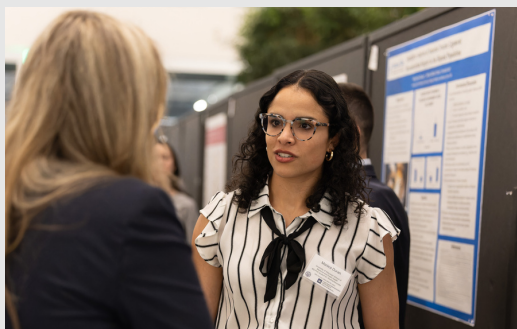


Occupational Therapy Summit of Scholars

Emily Skaletski, a current PhD candidate, presented findings related to predictors of self- and caregiver-reported quality of life in autistic children. Emily won Best Student Poster at OT Summit for this work, as well as Honorable Mention at the Waisman Center 50th Anniversary Symposium!

Society for Neuroscience Conference

Lab members presented three posters at the Society for Neuroscience Conference. Monica Duran, a current MD/PhD student, presented on correlations between ADHD features and structural differences in the brainstem of autistic children. Al Block, a current OTD/PhD student, presented on a new way to analyze brainstem images from a MRI (TiDi-Fused) that leads to clearer pictures. Sonali Naik, a former undergraduate research assistant, presented on the neural contributions in postural stability of autistic children when standing with their eyes closed.



Latino Medical Student Association Conference

Monica Duran also presented our lab's ongoing efforts to make our research more inclusive and accessible to Spanish-speaking members of the LatinX community in Madison. Monica won Best Poster Presentation!

Lab Member Updates

We welcomed...

- 4 new entry-level occupational therapy doctorate (EL-OTD) students: Sarah Dehnel, Crystal Garcia, Kaitlyn Hoang, and Shelby Hornberg
- 5 new undergraduate students: Owen Crowell, Amelia Levin, Sydney Williams, Gloria Tornehl, and Goni Hutt
- 1 new MD-PhD student: Monica Duran
- 1 Capstone Project student: Celina Huerta

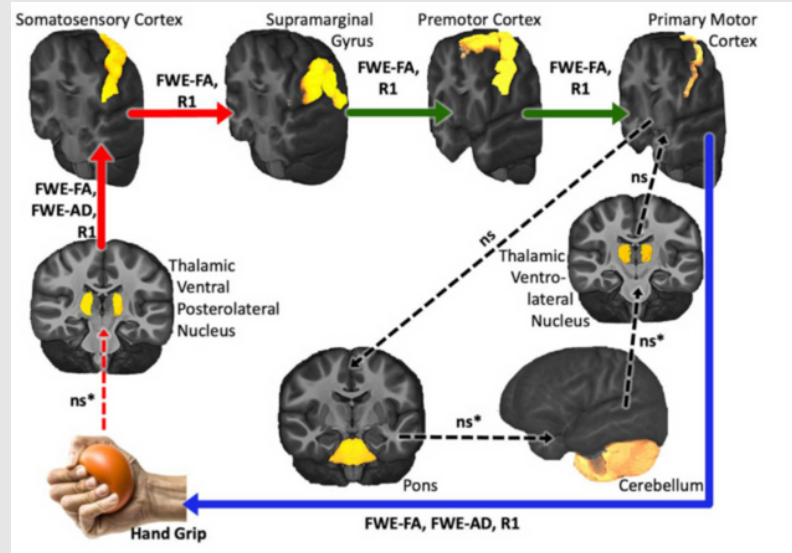
We said farewell to...

- Former PhD student and postdoctoral fellow, Olivia Surgent, PhD, who is now doing a postdoc at the UC Davis MIND Institute.
- EL-OTD students Claire Sheedy, Ella Vanderpool, Lauren Hill, Kailey McIlvaine, and Emily Sprague. EL-OTD student Al Block will be returning in summer 2024 to continue working on her OTD/PhD!

Recent Findings

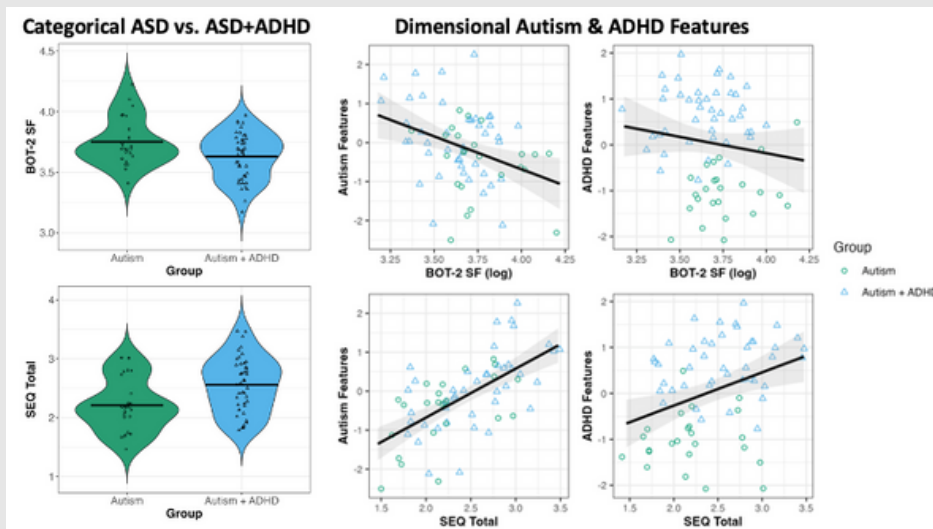
HOW DOES THE BRAIN SUPPORT HAND MOVEMENTS?

As part of her dissertation, former lab postdoctoral fellow and PhD student, Dr. Olivia Surgent, used high-resolution brain imaging to investigate how different brain areas contribute to grip strength in non-autistic children. Demonstrating the remarkable complexity of hand movements, grip strength was related to white matter properties of many areas of the brain that support motor planning, movement, and body awareness. In her next paper, Dr. Surgent and colleagues examine how these grip networks might be similar or different in autistic children.



SURGENT, O., GUERRERO-GONZALEZ, J., DEAN, D. C., 3RD, KIRK, G. R., ADLURU, N., KECSKEMETI, S. R., ALEXANDER, A. L., & TRAVERS, B. G. (2023). HOW WE GET A GRIP: MICROSTRUCTURAL NEURAL CORRELATES OF MANUAL GRIP STRENGTH IN CHILDREN. *NEUROIMAGE*, 273, 120117. [HTTPS://DOI.ORG/10.1016/J.NEUROIMAGE.2023.120117](https://doi.org/10.1016/j.neuroimage.2023.120117)

ARE SENSORY AND MOTOR FEATURES DIFFERENT IN AUTISTIC CHILDREN WITH AND WITHOUT ADHD?

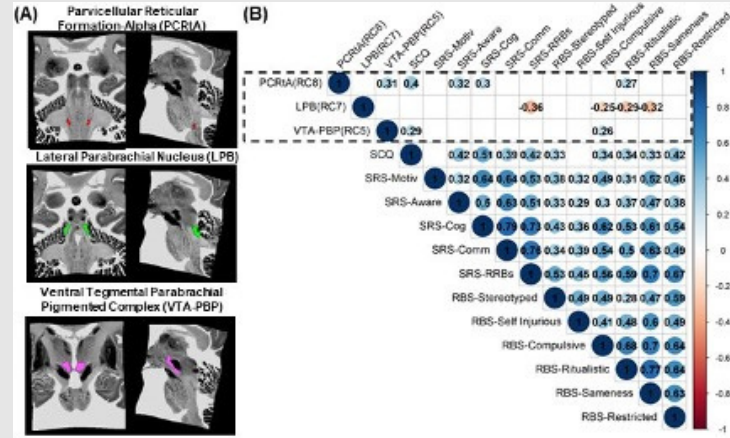


SKALETSKI, E. C., BARRY, K., DENNIS, E., DONNELLY, R., HUERTA, C., JONES, A., SCHMIDT, K., KABAKOV, S., AUSDERAU, K., LI, J., & TRAVERS, B. G. (2024). SENSORIMOTOR FEATURES AND DAILY LIVING SKILLS IN AUTISTIC CHILDREN WITH AND WITHOUT ADHD. *JOURNAL OF AUTISM AND DEVELOPMENTAL DISORDERS*. [HTTPS://DOI.ORG/10.1007/S10803-024-06256-Y](https://doi.org/10.1007/S10803-024-06256-Y)

We wanted to better understand how autistic children with and without attention-deficit hyperactivity disorder (ADHD) differed in their motor skills, sensory features, and daily living skills. On average, autistic children with ADHD had more pronounced sensory features and lower motor scores than those without ADHD. We also found that knowing the prominence of each child's autism and ADHD features was a better indicator of daily living skills compared to diagnostic group assignment (autism or autism + ADHD).

HOW DO MICROSTRUCTURAL PROPERTIES OF BRAINSTEM NUCLEI RELATE TO INDIVIDUAL DIFFERENCES IN AUTISM FEATURES?

Early theories of autism hypothesized the importance of the brainstem, a highly complex region of the brain. However, because of this complexity, the brainstem is difficult to study. Thanks to the development of sophisticated post-processing of MRI scans, we are now better equipped to study this important area! In this study, we looked at how autism features like social communication and repetitive behaviors might relate to brainstem nuclei. We found that social communication related to a part of the brainstem that is believed to be involved in chewing and digesting food, heart rate, and breathing. A part of the brainstem involved with pain processing related to the preference for things not changing and maintaining routines.



TRAVERS, B. G., SURGENT, O., GUERRERO-GONZALEZ, J., DEAN III, D. C., ADLURU, N., KECSKEMETI, S. R., KIRK, G. R., ALEXANDER, A. L., ZHU, J., SKALETSKI, E. C., NAIK, S., & DURAN M. (2024). ROLE OF AUTONOMIC, NOCICEPTIVE, AND LIMBIC BRAINSTEM NUCLEI IN CORE AUTISM FEATURES. AUTISM RESEARCH. DOI: 10.1002/AUR.3096

Study Opportunities

UW LINK STUDY

Children between 4-7 years old with a diagnosis of autism spectrum disorder are invited to participate in our new research project about autism and ADHD. Families will be asked to visit the Waisman Center once per year for three years. During these visits, a parent completes a clinical interview and questionnaires about their child, while their child completes cognitive assessments and an MRI brain scan. Both parent and child will be asked to provide a saliva sample. In-person study activities total 4 hours in the first year and can be broken into multiple visits. In Year 1, families will receive up to \$120 for completed participation. Mileage reimbursement and travel support are available as well.

To learn more, visit: [UW LINK STUDY](#)
or scan the QR code to the right.

