

OUR daughter's
TRIUMPH as a reader with

dyslexia

Our little one struggles in school due to a learning disability. My alma mater helped her become a reader.

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By JULIE GUNTER

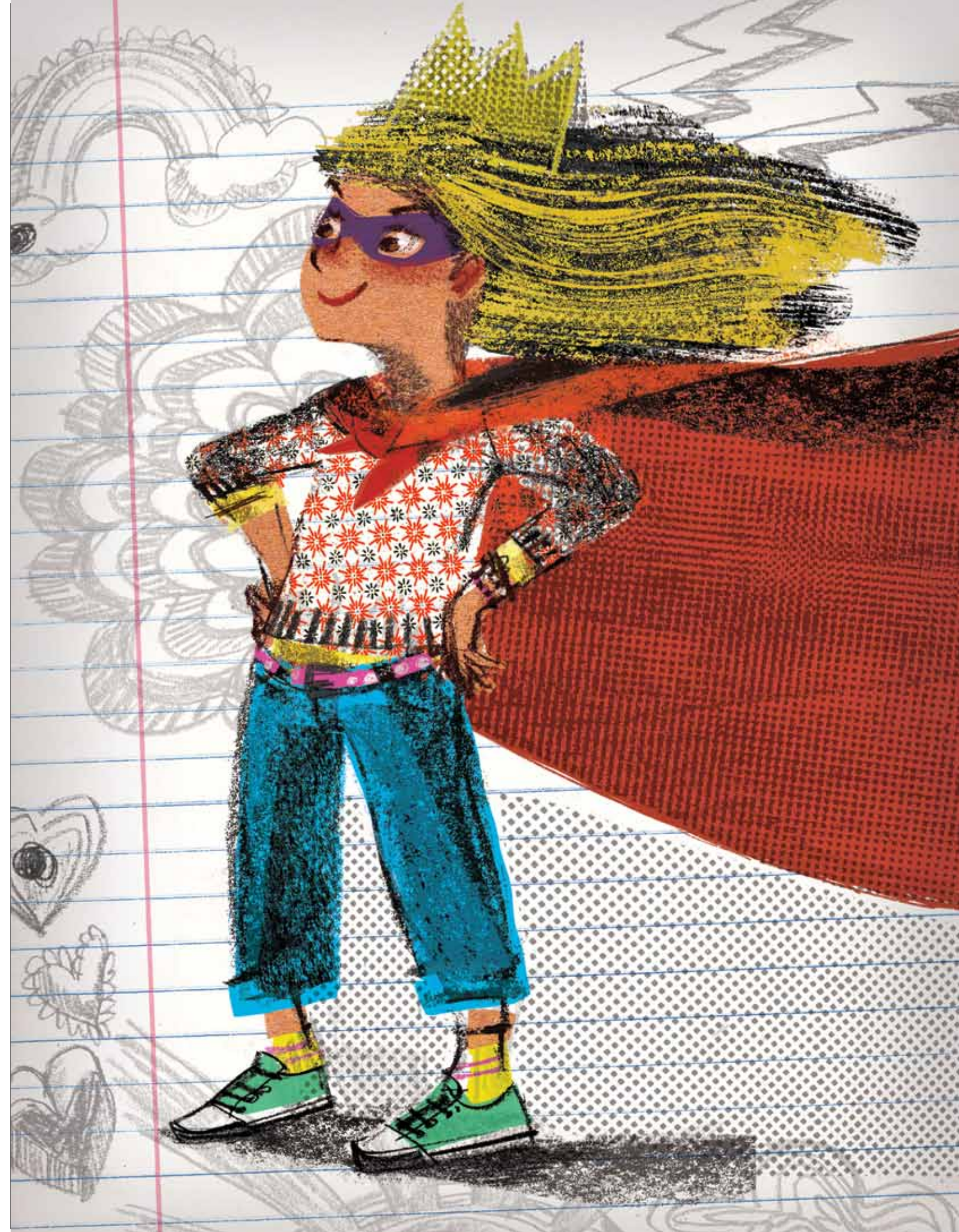
Art by SUSAN GAL



“Remember, when you lie down, act like a statue,” I urged, yet again, as I helped my daughter wriggle into a set of child-sized scrubs. Hastily, I guided her head through the top’s V-neck opening and cinched the pants, aware that her session was just one of many brain scans scheduled for that day. “It’s not that different from your veterinarian’s outfit at home,” I added, “except for the dog-bone buttons.”

A few minutes later—guided by a member of the UW Brain Development and Research team—she was heading across the hall for her brain scan.

Over the next almost-hour, I flipped through magazines in the waiting room and let the magnitude of our daughter’s willingness to be here sink in. My daughter’s participation as a research subject in this study at the UW Institute for Learning and Brain Sciences (I-LABS) could transform her life as a student impacted by dyslexia.



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Almost 20 years after graduating with an English degree from the UW (my husband, Christian, is an Evans School alum), I could never have guessed that I'd be back on campus again, but this time for the sake of our daughter—a vivacious, socially savvy first-grader who can assemble puzzles faster than her older sister and has a knack for creating the most fantastic worlds out of odds and ends in shoeboxes. But she still hadn't learned how to read. It wasn't for lack of trying; she yearned to read like her friends yet she struggled to understand how sounds fit together to make symbols of meaning, or words.

When her teacher confided during a midyear conference that our daughter wasn't thriving, my husband and I decided to look beyond the public school system. Two weeks later, we transferred to her to a Catholic school in our Northeast Seattle neighborhood that offers Slingerland instruction—a multisensory teaching method—to all students in lower grades. After her first day "air-writing" letters, my daughter told me, "Mom, I understood everything that I heard in class today. My teacher is a lifesaver!"

Although we didn't realize it at the time, our daughter still needed help strengthening her phonological awareness—the ability to decipher sounds within words, a foundational skill for reading. Struggles in this area from an early age can indicate that an otherwise typically developing child may have a language-based learning disability. Dyslexia is the most common diagnosis, affecting approximately one in 10 individuals, according to the International Dyslexia Association.

Despite her new school, our daughter still struggled to read on her own. Tears at bedtime were a regular occurrence as she stumbled over the same simple words in paragraph after paragraph. And the clock was ticking. Research has shown that therapeutic intervention has a far greater impact if children receive it when their brains are still sponge-like and plastic. Each day that passed began to weigh on us like a missed chance.

Then, in the summer of 2015, an impromptu conversation changed everything: a colleague encouraged me to call the UW Speech & Hearing Clinic to inquire about its services and waitlist status. Luckily, our daughter was deemed a good fit for a summer literacy camp that the clinic offered that year. Soon, she was counting out syllables within words by jumping through hula hoops, and learning about narrative structure with a "tree" that substituted strings for branches.

From behind a mirror, I observed graduate-student clinicians as they encouraged our daughter to engage with language in new ways. Karen Jacobsen, one of the clinic's clinical supervisors, was quick to realize that our

daughter needed more than speech articulation therapy alone. An expert in language-learning awareness and client assessment, she guided her graduate-student charges to focus their efforts on literacy and language-building as a core part of her treatment. This expanded approach was crucial, because, as Jacobsen explained, our daughter is one of those kids who could easily fall into "the gray area." Because she is bright and motivated, her needs may not always be readily apparent to educators. "She is every teacher's dream—adorable, not causing trouble, following directions," Jacobsen told me. "It's only later, when these kids start having trouble in school, people can think they are lazy, and ask them, 'Well, why aren't you trying?'"

At the end of each quarter, I'd meet with the UW student clinicians around a kid-sized table to discuss test results and recommendations. It was at one of these meetings that I first heard the word "dyslexia" mentioned in reference to our daughter. Though not a diagnosis, I felt compelled to learn more.



Toward the end of this breakthrough year at the UW Speech & Hearing Clinic, I came across a brochure, requesting applicants for a summer 2016 research study directed by Dr. Jason Yeatman, director of the Brain Development & Education Lab in the Institute for Learning & Brain Sciences. The goal of the study: to understand origins of reading difficulties in the brain and how intensive intervention can change the wiring of the brain's "reading circuitry." I took a brochure home, and called to express our interest.

From that first phone call, my husband and I realized that our family's participation in this research could not only improve our daughter's learning trajectory, but also impact the lives of countless other children with dyslexia. There was reason for optimism: As a part of the study, our daughter would receive eight weeks of intensive training on the building blocks of reading at Lindamood-Bell, an internationally known group of learning centers that has been helping dyslexic children and adults, as well as those with other learning challenges, gain literacy skills since 1986. The hallmark of the Lindamood-Bell approach is intensive, individualized, one-on-one instruction.

Throughout the course of Dr. Yeatman's research study, there would also be a handful of trips to I-LABS for brain-mapping activities that ranged from simulated video games to five MRI scans and two magnetoencephalography (MEG) sessions that can record tiny magnetic field changes inside a person's brain. I was amazed to see how quickly our daughter grew comfortable with the routine.

After completing her first MRI, she was thrilled to receive a copy of her brain scan—

showing whorls of marvelous intricacy like a road map to everywhere—that she brought to school for show and tell. When I picked her up that afternoon, she told me that so many kids raised their hand to ask a question about the picture, there wasn't enough time to call on them all. The experience boosted her confidence, and over time I could tell that she took pride in her role at the lab.

And then there was the therapy she received at Lindamood-Bell, instruction that Yeatman and his team would also examine to determine its impact on her brain. Working four hours a day, five days a week with an instructor who rotated each hour, our daughter found the experience both challenging and exhilarating. Using flash cards and generous doses of positive reinforcement that included "magical learning moment cards" and milestone celebrations, staff soon had her sounding out multisyllabic words with gusto, and reading chapter books that would have been beyond her ability just a short time before.

Incredibly, after just eight weeks of therapy, our daughter's reading fluency jumped two grade levels—largely a result of her persistence and desire to learn, according to Jamie Geddis, former center director of Lindamood-Bell's Bellevue location. Her youth and the intensity and quality of instruction were factors, too. (Most students saw roughly a single grade-level improvement.) And an even greater shocker: our daughter loved the process. She described those long hours of brain-building concentration—time spent indoors during summer vacation—"as so much fun, because even though we worked hard, there was also a basketball hoop, and parties."



In the months ahead, Yeatman and his team will discern how our daughter's brain changed and developed as a result of this therapy. Eventually, results of his team's research could help instructional designers and educators create products that are individualized according to how students learn, including those with different learning styles. "Reading is a complex process that depends on the collaboration between many brain systems," Yeatman says. "There are many reasons why a child might struggle with reading and we are trying to understand how a child's unique pattern of brain development relates to their learning."

In his interdisciplinary lab, researchers are developing cutting-edge quantitative magnetic resonance imaging (qMRI) techniques that can track cellular changes during the precise window of time when children are learning to read. Described as the "next generation" of MRI techniques, Yeatman points out that, like traditional MRIs, they are both non-invasive and safe, providing detailed information about the brain's underlying structure. His goal, along with his colleagues, is to develop methods that measure properties of human brain tissue over time. The data will even help researchers better understand how brains "rewire" in response to certain experiences, such as the eight weeks of intensive instruction that had such an impact on our daughter.

Since joining the UW in 2014, Yeatman has used study participants' brain scans to map and investigate the most minuscule changes in the concentration of fatty tissue known as myelin or "white matter") that insulates nerve-cell connections over time.

"You can think of the brain like a super-computer with wires connecting processing units that are specialized for different functions," he explains. "The insulation on these wires is one of the factors that determines how efficiently information moves between processors, and this is critical for skilled reading. We want to figure out if the learning process actually changes these fundamental biological building blocks of the brain's reading circuitry."

Known for his drive and enthusiasm, Yeatman is equally passionate about connecting research to the wider community. Over the past year, he has offered several popular open houses at local schools, at I-LABS and online. He hopes in coming years "to build a tighter link between academic

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Dyslexia *Continued from p. 23*

research [in neuroscience] and educational practice on dyslexia" and looks forward to continuing to build "programs that help us deliver services to those in need while contributing to a deeper understanding of dyslexia."

To this end, Yeatman recently launched the UW Reading & Dyslexia Research Program—which he directs and manages—to support research and education efforts both locally and nationwide. Long term, his dream is to apply research on the neurobiology of learning how to read to the creation of instructional programs that could more successfully support the unique learning needs of children according to their brain patterns and neural development. He believes this research could transform the availability of (and access to) personalized reading interventions, resulting in the opportunity for all students with dyslexia to experience success in the classroom. A database of potential participants, both those with dyslexia and those who are typical learners, has been created.

Patricia Kuhl, an award-winning pioneer in early-learning research who has served as co-director of I-LABS since its inception, applauds Yeatman's vision. "Jason represents the future of developmental cognitive neuroscience," she says.

While our daughter was extremely fortunate to receive this life-changing intervention, I'm keenly aware that other children who struggle with learning to read due to dyslexia (whether diagnosed or not) may never receive the type of instruction that could make a transformative difference in their lives.

Now when our daughter huddles over a book, transported to worlds that had once been closed to her, it's hard to remember the anxiety and near-anguish that used to frustrate her attempts to read books on her own; two years later, she's no longer reluctant to get out of bed on school days, and her teacher's concerned observations that she'd become quieter and less confident in class have been replaced by report cards that show solid growth in all areas of study.

This hard-won ability to read has helped her make progress in other subjects, too: math, with its abundance of word problems; science; and social studies, which is now her favorite subject. She's excited for third grade, and recently proclaimed that she wants to go to UW one day. I told her she'd need to work hard in school and keep turning in homework on time, but that she should follow her dreams wherever they take her. It seems fitting that one day, she might return to the community that was key in helping her reach her full potential.

■ —This is Julie Gunter's first piece for Columns. She is a Seattle-based freelance writer and former high-school English teacher.

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