

Inside the Mind of the IOG's Newest Brain Researcher

When Noa Ofen and her family moved to Michigan from Massachusetts on a recent Saturday, traffic on Woodward crawled. She was driving with her husband and two young sons to their new residence in Pleasant Ridge, taking in the local sights as they headed south.

Dr. Ofen, a cognitive neuroscientist from the Massachusetts Institute of Technology (MIT), observed strange behavior. "Why are all those people sitting in chairs, on patches of grass along the road, staring at traffic?" she wondered. "What sort of odd Detroit custom is this?" She'd been, of course, an involuntary participant in this year's Dream Cruise.

"Now that I know what they're doing," she said, "it looks like a lot of fun."

The mystery of local customs aside, Dr. Ofen is adapting well to life at Wayne State University where she is jointly appointed at the IOG and the Pediatrics Department of the School of Medicine. Born in Haifa, Israel, she earned her doctorate there at the Weizmann Institute of Science before

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- Dr. Noa Ofen



completing a postdoctoral fellowship at Stanford University. The past five years she spent as a postdoctoral associate at the Gabrieli Laboratory of Cognitive & Affective Neuroscience at MIT.

"MIT was a fantastic experience," she said. "I ran a research group studying the brain basis of memory development in typically developing children. But MIT's focus is basic research and I am now thinking more about clinical applications." Her voice rises with excitement about the potential to expand her work at WSU. "You have a strong medical school and a strong collaborative environment. Here I can research the clinical implications of what we've learned about memory development."

Twenty Somethings Remember More

Dr. Ofen's natural warmth and easy smile define her, whether as a proud mother describing her sons (3 ½ and 10 months) or as a gifted researcher expertly analyzing images of brains. Her research at MIT added significant knowledge to the

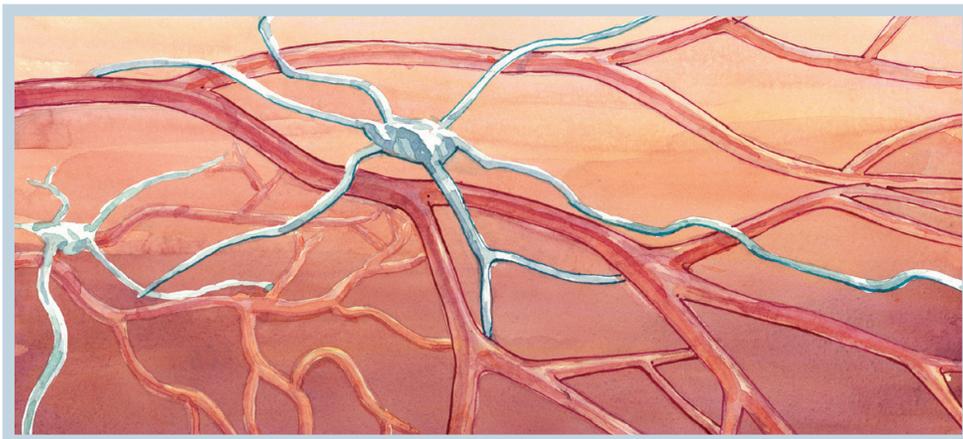
understanding of normal memory development. She used functional magnetic resonance imaging (fMRI) to study memory in about 300 participants aged 5 to 24. She found that young adults create more vivid memories than children, and showed that this is linked to the maturity of the prefrontal cortex, a late maturing region in the brain responsible for, among other things, the richness of memories. While a 5-year-old will remember having seen a picture of a white house, a 24-year-old will remember that the house was a two-story Colonial with midnight blue shutters and an Adirondack chair on the lawn.

Until recently, brain scans of children were difficult to conduct so research tended to concentrate on brain changes in older adults. "Studying children's cognition with fMRI is a recent development. Not much was known about the brain basis of memory in children," she said.

Scanning brains at Wayne State has distinct advantages. "You have a fantastic imaging center," Dr. Ofen said. Harper Hospital provides access to the latest generation of scanners but more important to Dr. Ofen is the exceptional level of expertise, tools and cutting edge analysis methods available here. "These physicists at Harper develop tools and methods that will allow me to access a new type of information from the brain images that will greatly enrich our understanding of brain development."

Role Playing with an MRI

For fMRI scan to be successful though, a child has to get into the scanner and stay there with



minimal movement for about 45 minutes. Sedation isn't an option because Dr. Ofen studies the way brains function while fully awake. Enter the mock MRI to familiarize children with the process. "That's another great thing about being at Wayne," Dr. Ofen said.

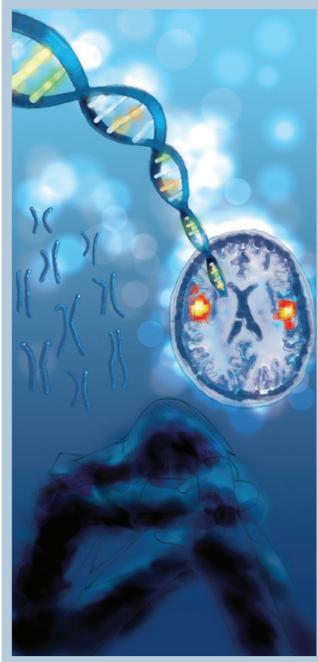
John Hannigan, the associate director of WSU's Merrill Palmer Skillman Institute for Child & Family Development, is overseeing the installation of this simulated MRI with the look and sounds of the real machine. The step-by-step introduction to the MRI prepares the children and makes them more comfortable during the scan. "This will be especially important when we work with clinical populations, such as children with fetal alcohol syndrome or ADHD," Dr. Hannigan said.

Dr. Ofen sees the MRI research participation as a wonderful experience for children, one that often ignites a deeper interest in science. Dr. Ofen's young participants have produced science projects, show-and-tell presentations, and science fair entries on the brain after being in her study. "I scanned over 300 children at MIT and Stanford," she said. "As they came out of the scanner, we gave them a 'tour of their brain' and a print-out of their brain. We make sure they have a positive experience and try to involve the whole family. Typically the children are very excited, raving to their friends, and our best recruiters for the next study."

From Aikido to Shakespeare

Teaching comes naturally to Dr. Ofen. As a grad student, she taught brain development to both ends of the lifespan – children and retirees – and directed the science, music and arts summer camp for 60 adolescents. Her husband, Julian Wong, connects well with children, too. As an artist and freelance designer, he has created children's book illustrations, as well as designs for the McGovern Institute for brain research at MIT and landscape paintings. He is also a third degree black belt aikido instructor. "Even his aikido style is more art than martial art," Dr. Ofen said. "It's all about movement and flow."

As a brown belt herself, Dr. Ofen embraces aikido harmony. The couple met at a dojo and married three years later. She also enjoys acting and



played Viola in an amateur production of Shakespeare's *Twelfth Night*. "Not much time for that now," she laughs. First, she has a five-room neuroscience lab to equip with students and furniture, some of it reclaimed from bargain hunting visits to WSU's surplus warehouse.

Dr. Ofen's lab is part of the Lifespan Cognitive Neuroscience program, jointly run by the IOG and the Merrill Palmer Skillman Institute, and directed by Dr. Naftali Raz, a world-renowned researcher on brain changes in aging. Dr. Moriah Thomason joined recently (from Stanford University) to study anxiety and brain development in the 0 to age 15 segment. Dr. Ofen's lab focuses on typical and atypical brain development in 5 to 30-year-olds. "I am proud to be invited to add to extending our understanding of brain changes across the lifespan," she said. "I look forward to a career of productive collaborations."

Original illustrations by
Julian Wong

Research

Respecting from page 1

cate while it soothes fears. "We need a broader assessment," Dr. Mast said to a ballroom of professionals at the 2011 Issues in Aging Conference in Dearborn. "We need more treatment options. Diagnosis is important but we need to understand the person and how to provide better care for him or her." His book advises caregivers to live the disease from the patient's point of view. "We know what dementia does to the brain but what does it do to the person?" he asks.

Dr. Mast has been fascinated with gerontology since college when his grandfather disappeared after heading to a union meeting. A day later, he showed up in a farmhouse 200 miles from home. When his wife retrieved him, he had no explanation for the disappearance. He was just going for a drive. Autopsy eventually confirmed he had Alzheimer's.

Dr. Mast received his doctorate in clinical psychology from Wayne State University followed by research training at the IOG under Director Peter Lichtenberg. "Peter has been a wonderful mentor and friend whose support and investment in me has been unwavering over the past 15 years," he writes in his acknowledgements. Today, he is an associate professor in psychological and brain sciences at the University of Louisville.

Whole Person Dementia Assessment explains how to apply the person-centered approach to all the technical aspects of assessment, including assessing the caregiver, intergrating information from multiple disciplines and providing feedback. "A person is more than the sum of his or her cognitive abilities," Dr. Mast says. We have an emotional side, a life story, fears, hopes." Listening is paramount, not just to the words but to the body language and the emotion expressed.

Alzheimer's is frustrating because no one is cured to be able to tell you how they wished they were treated. "I hope this book will influence how health care professionals think – and feel – about people with dementia as well as their approach to assessment. We need intelligence tempered by sensitivity."