

Eye research tracks how the brain 'sees'

JONATHAN Marotta is a professional in the field of eye study. But his research has more to do with visual perception than it does with only vision. He is interested in learning more about how we perceive things.

"We study the visual system," says Marotta, an associate professor of psychology at the University of Manitoba. "We look at how vision is used to control action. Vision has a big role in perception."

What Marotta learns in his studies could one day be integrated into the rehabilitation process for people who have suffered a stroke, those with head injuries, and children born with Fetal Alcohol Spectrum (FAS) or premature.

"We want to learn what's going on as the brain is doing various tasks," he says. "Our eventual goal is to know more about the damage and how we can get people to adapt and improve rehabilitation."

People use their eyes to help guide them through the world, from playing soccer, to getting out of the way of danger, to reaching out and picking up objects.



Jonathan Marotta studies how we perceive things with our eyes.

"We use our vision," says Marotta, "to tell us the best way to act."

Healthy people may take these everyday abilities for granted, but those who have suffered a stroke or head injury may struggle. For example, people with a condition called prosopagnosia have trouble recognizing faces. A stroke may trigger hemispatial neglect, a neurological condition in which people ignore things on one side of their space, including sounds, objects and people.

"We are interested in how that

affects visual motor control," says Marotta. "We've learned that they have trouble distinguishing items presented to them in various positions; that they'll pick up objects differently — with a right (or left) bias. The right (or left) part of their world is missing."

Marotta tracks people's three-dimensional movement with a functional MRI (fMRI), to look at the brain during the completion of various tasks. He tracks eye and hand movement, as well as neural activity to see what's going on.

Marotta continues to do research in this area, and is always looking for subjects willing to participate in his studies. To learn more about his work, visit his website at www.perceptionandaction.com.