

# Ideas on the Edge

## Risk, Memory and the Uh-Oh Response

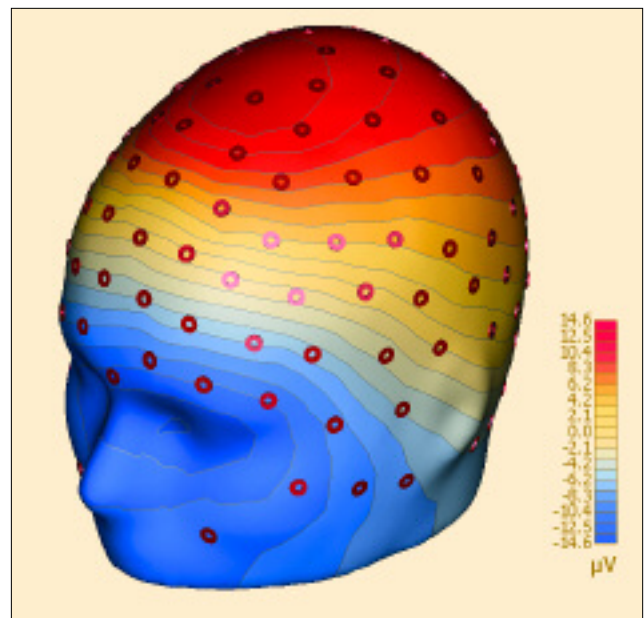
BRAINWAVE RESEARCH AT BROCK CONNECTS PHYSIOLOGY AND BEHAVIOURAL SCIENCE FOR NEW INSIGHTS INTO HOW WE THINK AND REMEMBER.

We all know that moment when we're about to make a mistake and it's too late to stop. But Brock psychologist Dr. Sid Segalowitz knows it better than most because it's **"YOU NEED TO BE ABLE TO TALK ABOUT THE RESEARCH YOU'RE DOING AND MAKE CONNECTIONS."** a key focus of his research. "That sinking feeling," he says, "produces a distinct pattern of brainwaves. We call it 'the uh-oh response,'" Using a wired halo of hundreds of sensors on a subject's head, combined with sophisticated software and imaging tools, Dr. Segalowitz has been studying the phenomenon.

Not surprisingly, the "uh-oh response" is closely associated with risk-taking, and recently Dr. Segalowitz's research has been focusing on that kind of behaviour in young people. Understanding what happens in the adolescent brain at these moments may provide valuable clues about brain development, and why some teens are more predisposed to take risks than

others. Physiology is only one part of the puzzle, however. Dr. Segalowitz is also working closely with researchers who are looking at lifestyle choices in adolescents from a behavioural perspective.

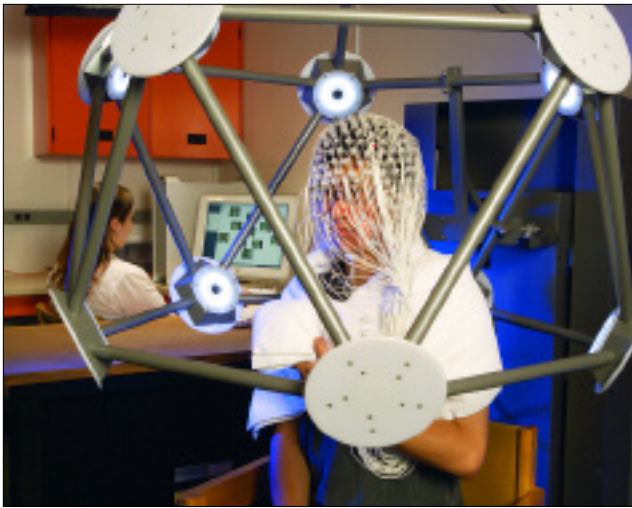
This cross-disciplinary approach will be greatly enhanced with the opening of a unique new facility at Brock: the Lifespan Development Research Centre, funded



**RESEARCH THAT MATTERS**  
REAL-WORLD BENEFITS FOR ONTARIANS:

- potential reduction in crime through early identification of, and programs for, at-risk youth
- new insights into causes of dementia in seniors, and development of potential therapies



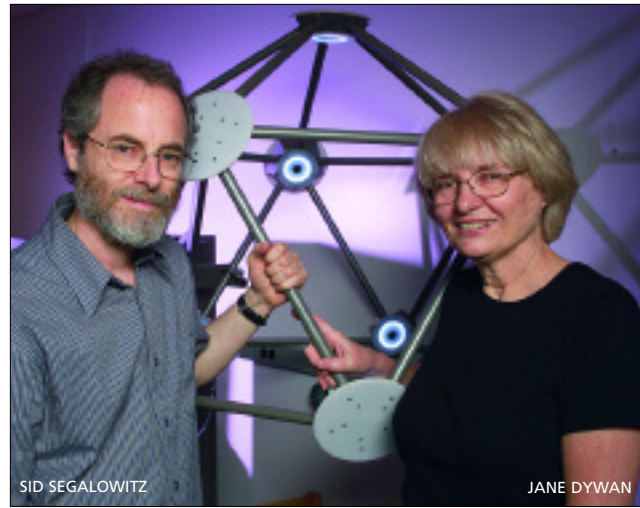


**Head-mounted sensors, combined with a larger mapping device, lets researchers Segalowitz and Dywan pinpoint what's happening in a subject's head—and where.**

in part by an investment from the Ontario Innovation Trust. The Centre's state-of-the-art physiology and observation labs will bring together up to 50 researchers from a range of disciplines, including Dr. Segalowitz. Together, they'll be working on problems involving nearly every stage of life from infancy to old age.

One of those researchers is Dr. Jane Dywan, who is studying similar brainwave patterns and their connection with variability of heart rate. Much of Dr. Dywan's work, however, is in the context of seniors who have difficulty retrieving memories and other information. By combining physiological and behavioural avenues of inquiry, she and her colleagues are shedding new light on the web of factors

**Project:** Lifespan Development Research Centre  
**Institution:** Brock University  
**Research Discipline:** Social Sciences/Psychology  
**Principal Investigator:** Sidney Segalowitz  
**Trust Investment:** \$1,793,479  
**ORF Investment:** \$809,160  
**CFI Investment:** \$2,602,639  
**Total research investment from all sources:** \$6,513,952

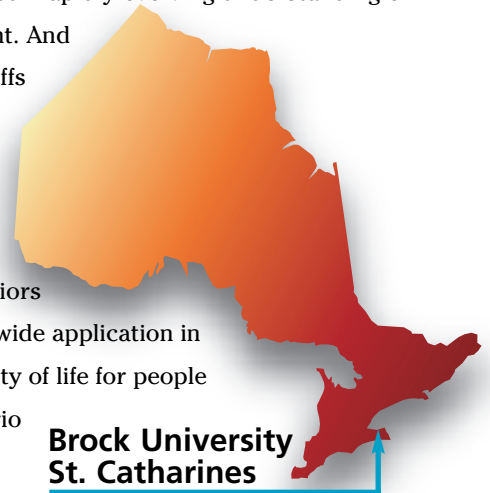


that affect how the aging brain processes information.

Facilitating this kind of integrated understanding is what the new Lifespan Development Research Centre facility is all about. "A lot of the work we're doing," says Dr. Segalowitz, "involves an integration across many disciplines...It's not magic. You just need to be able to get together with people and talk about the research you're doing and make connections."

Making those connections will also help keep Ontario on the frontiers of our rapidly evolving understanding of human development. And the practical spin-offs will be significant.

Insights into areas as diverse as adolescent risk-taking and memory in seniors may one day have wide application in improving the quality of life for people of all ages, in Ontario and elsewhere.



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## Infrastructure for Innovation About the Ontario Innovation Trust

The Ontario Innovation Trust was created in 1999 by the Government of Ontario to invest in research equipment and facilities at Ontario's universities, colleges, hospitals and other non-profit research institutions. The Trust is governed by a volunteer Board of Directors, according to the terms of a Trust agreement established by the Ontario government. A small permanent staff looks after day-to-day operations.

Since its inception, the Trust has committed almost \$843 million to strengthen Ontario's position in the global marketplace of ideas. This represents more than a third of the \$2.44 billion in total funding that has been invested in Trust-supported projects.