2018

Neurocognitive, genetic and environmental risk factors of learning disorders in children

BrainsCAN , Western University

Marc Joanisse
Western University

Daniel Ansari
Western University

Lisa Archibald
Western University

Elizabeth Hayden
Western University

See next page for additional authors

Authors and Researchers

BrainsCAN , Western University; Marc Joanisse; Daniel Ansari; Lisa Archibald; Elizabeth Hayden; Janis Oram Cardy; Ryan Stevenson; and Jeffrey Gruen

Western BrainsCAN
Transforming brain research.

Project **Summary**

KNOWLEDGE MOBILIZATION & IMPACT

Neurocognitive, genetic and environmental risk factors of learning disorders in children

Background

Western has an enviable range of world-class laboratories examining neurocognitive development and identifying developmental disorders and learning disabilities in children. A learning disability can be considered as unusual development of the higher-level cognitive abilities we normally exhibit such as language, reading, numeracy and self-control. Examples of learning disabilities are reading disability/dyslexia (RD), language learning disorders (LLD) and math disability/dyscalculia (MD).

The Problem

Our research has already uncovered a range of behavioural and neural factors that can differentiate between children whose development is impaired and those whose development is progressing typically. Intriguingly, our recent findings have also suggested that multiple learning disorders are often present in children with general cognitive difficulties like autism spectrum disorder and ADHD. However, a common feature of research in this area is that of a 'distinct syndrome' approach, only studying childhood disabilities separately.

We believe there is a wealth of untapped knowledge in examining common risk factors for learning disabilities. We can deploy our collective expertise to identify the behavioural, neural, environmental and genetic factors that explain learning disorders in school-age children, and why these disorders tend to co-occur. However, undertaking large-scale multi-year studies with hundreds of participants requires a significant investment of time, funding and resources.

The Project

This work will demonstrate the feasibility of such a large-scale multi-year study by recruiting a targeted sample of 100 children over 10-12 months and obtaining measures of cognition, neuroimaging, genetics and demographics. This will enable us to address any problems with our approach and provide some pilot data.

Our work will also avoid the typical distinct syndrome approach by examining risk factors in a way that cuts across traditional syndrome models.

This project will validate the behavioural and environmental measures we will use, allow us to identify any distinct patterns of disorders occuring together (known as 'comorbidity'), explore resting state imaging data of learning disorder individuals and even identify the rate of occurance of certain genes that seem to be associated with increased risk of disorders.

Funding Program

BrainsCAN Accelerator Grant: Stimulus
Awarded: $97,209

Additional BrainsCAN Support

Computational Core
Human Cognition & Sensorimotor Core
Imaging Core

Western Faculty, Group or Institution

Department of Psychology, Faculty of Social Sciences

Keywords

Neurodevelopment, mental health, learning & learning disorders

Related

None

Share this page

Tweet Share

Western Researchers

Marc Joanisse
Daniel Ansari
Lisa Archibald
Elizabeth Hayden
Janis Oram Cardy
Ryan Stevenson
Jeffrey Gruen