

@CarletonMathLab

The MathLab conducts research into the cognitive processes involved in numerical and mathematical abilities. Research projects are designed to study different aspects of mathematical cognition including its development across different ages and cultures. We study basic cognitive processes and numeracy skills such as the retrieval and representation of mathematical knowledge and the application of that knowledge to real-world situations.

COG SCI LAB CRAWL

This was a Carleton Cognitive Science Association event where students in Cognitive Science were able to tour various labs on campus.

MathLab tour:

- Students met our lab director (Dr. Jo-Anne LeFevre)
- Discussed research in numerical cognition
- Participated in eye-tracking demos



COG SCI COLLOQUIUM



Forty Years of Research on Numerical Cognition: Summing it Up

In July 2023, Dr. Jo-Anne Lefevre was awarded the Donald O. Hebb award, celebrating her outstanding contributions throughout her career. Accordingly, she had the opportunity to discuss her research and other scholarly activities in a presentation to the Canadian Society for Brain, Behaviour, and Cognitive Science. This presentation was a slightly modified version, covering:

- Highlights of her research
- Supervision
- Service activities in relation to the evolution of Cognitive Science in Canada.



Resources for Cognitive Science Trainees: Networking, Alt-Ac Jobs, and Supporting Neurodiverse Students

Presented by the Women in Cognitive Science Canada (WiCSC+) Trainee Board, this presentation provided a brief overview of WiCSC+ Trainee objectives and highlighted some of the resources and opportunities provided, focusing on:

- Networking
- Alt-ac jobs
- Supporting neurodiverse students



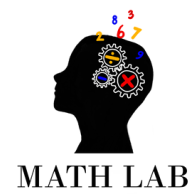
Speakers:

- Taeko Bourque
- Liza Kahwaji
- Fraulein Retanal (University of Ottawa)



PROJECT HIGHLIGHTS

- **Neuralign:** the final report was released last semester, and a collection of case studies will be completed this semester, marking the end of this project.
- **AIM Collective:** visit the [AIM Collective website](#) to learn more about new podcast episodes and read the latest editions of the newsletter.
 - **2024 AIM Summit** will be held in May (Ottawa, ON). Stay tuned for more information.



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UPCOMING CONFERENCES

APRIL
12

Ottawa
ON

CU Spring Conference

CU Cognitive Science Graduate Conference

CFA deadline: TBD
Registration: TBD

JUNE
19 - 21

Montreal
QC

CKF24

Canadian Knowledge Mobilization Forum

CFA deadline: March 10
Submission link
Registration: TBD

JUNE
21-23

Ottawa
ON

CPA 2024

Canadian Psychological Association

CFA deadline: closed for submissions
Registration: opens in February
[Registration link](#)

JUNE
25-27

Edmonton
AB

CSBBCS 2024

Canadian Society for Brain, Behaviour and Cognitive Science

CFA deadline: TBD
[Link for more info](#)

JUNE
26-28

Washington
D.C., USA

MCLS 2024

Mathematical Cognition and Learning Society

CFA deadline: submit by February 1
Submission link
Registration: Jan 1 - June 5 (early bird ends April 15)
[Registration link](#)

JULY
24 -27

Rotterdam,
Netherlands

CSS 2024

Cognitive Science Society

CFA deadline: submit by February 1
Submission link
Registration: April 1 - June 30 (early bird ends May 20)



Weekly Lab Meetings

Thursdays, 10:00 - 11:00
Location: DT2201 & Zoom

Schedule of topics is on Teams and email reminders will be sent out to the mailing list. To suggest a topic, email Taeko or post in the Teams MathLab chat.



PICKERING CENTRE

Grad students supervised by Jo-Anne:

You are automatically registered as Student Members of the Pickering Centre. Members have access to funding for conferences, professional experiences, invited speaker series, and more!

- For more info, visit the [Pickering Centre](#)

Monday, January 29 @ 10:30

Winter Welcome Meeting

ALL MATHLAB STUDENTS WELCOME

Monday, February 12 @ 10:00 - 11:30

Crafting Impactful Communication: A Workshop on Knowledge Mobilization and Infographics

- Speaker: Taeko

immediately followed by



MATHLAB

PARTY



11:30 - 13:00: Potluck lunch

It's been a long time since the whole lab got together! Join us in VSIM5210D for a informal gathering and yummy food!

We will be taking a **group photo of lab members at 12:00.**



Reading Groups

Developmental Math Cognition

Tuesdays, 15:00 - 16:00
Location: VSIM5210D & Zoom

NSERC

Tuesdays, 12:00 - 13:00
Location: Zoom



PUBLICATIONS & REPORTS

Wei, W., Liao, H., Xu, C., Ye, X., & LeFevre, J. A. (2023). [The home mathematics environment and its relation to children's mathematical skills for Chinese families](#). *Learning and Individual Differences*, 108, 102381.

Youmans, A. S., LeFevre, J. A., Douglas, H. P., Anthony, T. L., & PARENT, I. (2023). *Minding the Gap in Mathematics*. <https://www.edcan.ca/articles/minding-the-gap-in-mathematics/>

Douglas, H., Dixit, S., Bourque, T., & LeFevre, J. A. (2023). [Final Report on Neuralign® Reading Intervention](#).



UPCOMING THESES

Spencer O'Brien

Under the initiatives of the AIM collective, my thesis highlights the successful teacher-researcher collaboration between researcher, Dr. Heather Douglas, and her early math assessment (EMA@School) and AIM collective partner and educator, Tracie Anthony, and her curation of a numeracy intervention targeted in response to the EMA. Above this, my thesis aims to determine whether or not students' (grades 1-3) EMA scores improve in response to the targeted numeracy intervention, and whether these students' EMA scores improve more than what is seen within students of a similar level, who did not receive the intervention.

Sara Nafar

Within the AIM Collective, the Early Math Assessment @ School (EMA@School) is being developed to aid educators in identifying students in kindergarten to grade 3 who are underachieving relative to their peers. With the desire to help bridge the gap between research and education in practice, my thesis will explore current trends in the use of numeracy screeners for early math education. Qualitative analysis of Canadian data will provide insight into educators' beliefs of screening tools, uniting factors of assessment tools currently used for K-3 math intervention, and existing gaps that may be addressed by EMA@School.

Alastair Amsden

My thesis aims to provide validity to the early math assessment (EMA@School) by comparing third grader's scores on the EMA to their scores on the computerized, adaptive assessment, STAR Math. My thesis will also investigate whether the EMA@School assessment correlates with mathematical achievement by comparing 1st to 3rd grader's scores on the assessment to their report card grades. Overall, my thesis's goal is to strengthen the validity of the EMA@School assessment.

Liza Kahwaji

My thesis aims to measure preschooler's understanding of number words. Currently, three main tasks exist for this purpose: Give-N task (where children create a set of items), Point-to-X task (where children choose which item set corresponds to a number), and How Many (where child have to indicate how many items they see). Research has shown that success rates vary between measures, suggesting it is not clear how to assess cardinality. I will be comparing preschoolers performance on all of these tasks as well as creating a new task. The new task will present a set of stickers, ask children to re-create the set, and then ask them to identify how many stickers are seen. By comparing all of these tasks, I hope to gain a deeper understanding of how children represent number words.

UNDERGRADUATE THESIS PRESENTATIONS

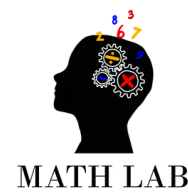
Join us March 7th (MathLab), March 12th (Dev. Math Cog. Reading Group), and March 14th (MathLab) to learn more about what our undergraduates have been working on. Honours thesis students will present their work and all lab members are encouraged to attend, ask questions, and provide feedback.

Jules Lavoie

In my thesis, I am investigating how arithmetic ability affects performance on order judgment tasks and whether different gaze patterns (measured using eye-tracking) correlate with variations in arithmetic proficiency. Very little is known about the causes or the related effects of high numerical cognition, which is why investigating its relationship with mathematical ability could provide insights into the hidden mechanisms of the numerical mind. Additionally, using eye-tracking we can identify hidden patterns in visual attention that could point to other mechanisms. This academic endeavour has been an enjoyable and enriching experience thanks to James Vellan and Jo-Anne LeFevre acting as my supervisors!

Grace Yee

There are claims that language and mental imagery are intrinsically intertwined, however, opposing theories state that these are two distinct codes (such as Paivio's dual-coding theory). Under the supervision of Dr. Olessia Jouravlev, my thesis aims to explore neural responses when generating mental imagery and language using EEG. By looking at participants' responses, we will be able to investigate if there are different processes mental images and language are decoded as well as the time-course of decoding.



FACULTY



Dr. Jo-Anne LeFevre

Lab Director, Chancellor's Professor of Cognitive Science and Psychology, Chair of Department of Cognitive Science.



Dr. Heather Douglas

Adjunct Research Professor in the Department of Cognitive Science



Dr. Rebecca Merkle

Adjunct Research Professor in the Department of Cognitive Science



NEW MEMBERS

Abida Kadri

Undergraduate Student, Psychology

Faith Chambers

Undergraduate Student, Cognitive Science

Grace Yee

PBD, Cognitive Science

Jules Lavoie

Undergraduate Student, Cognitive Science

Leah Marshall

Undergraduate Student, Cognitive Science

Georgia Livingstone

Undergraduate Student, Cognitive Science

Class of 2023



GRADUATED MEMBERS



Shradha Dixit

M.A. Psychology

Thesis title: Impact of a Multi-factor Digital Intervention on the Reading and Affect Skills of Children with Reading Difficulties.



RETURNING MEMBERS

Dr. Shuyuan Yu

Postdoctoral Researcher, Cognitive Science

James Vellan

Ph.D. Student, Psychology

Seyeon Kim

Ph.D. Student, Psychology

Taeko Bourque

Ph.D. Student, Cognitive Science

Christian Atta Aglah

Ph.D. Student, Cognitive Science

Steph Gunning

M.Cog.Sci Student, Cognitive Science

Jenna Rice

M.Cog.Sci Student, Cognitive Science

Alexander Kirby

M.A. Student, Psychology

Ayushi Chitranshi

M.Cog.Sci Student, Cognitive Science

Kenda Parsons

M.Cog.Sci Student, Cognitive Science

Abbey Gandhi

M.Cog.Sci Student, Cognitive Science

Nicole Ermuth

Undergraduate Student, Cognitive Science

Liza Kahwaji

Undergraduate Student, Cognitive Science

Alastair Amsden

Undergraduate Student, Psychology

Sara Nafar

Undergraduate Student, Cognitive Science

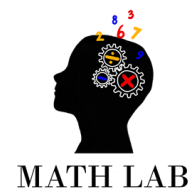
Spencer O'Brien

Undergraduate Student, Psychology



Member Profiles

If you don't already have a profile on our website, please fill out this form: [Member Profile](#). If you have a profile and want to make changes, contact Taeko.






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KNOWLEDGE MOBILIZATION





Social Media, Infographics, Research Summaries

The Socials Team works to share research from the lab, general knowledge from the field, and the 'hidden curriculum'.

 @carletonmathlab
 @CarletonMathLab
 <https://carleton.ca/mathlab/>

 Lab Member Profiles:
Fill out this [form](#) to update / add a Math Lab profile.

To learn more or join us, please contact:



-  [Taeko Bourque](#)
-  [Liza Kahwaji](#)

STUDENT ASSOCIATIONS





Joining one of Carleton University's on campus student associations is a great way to meet new people and attend fun events and pursue your interests outside the classroom.



Undergrad Associations

Cognitive Science Student Association: CCSA
 @cu.cogsciassociation
 <https://carletonccsa.wixsite.com/ccsa>

Carleton Psychology Society: PSCarletonU
 @pscarletonu

Grad Associations

Cognitive Science Graduate Students Association: CSGSA
 Carleton Cognitive Science Graduate Group
 [2023-2024 Executive Board](#)

Psychology Graduate Students' Association
Carleton University: Carleton PGSA
 @pgsa.carleton
 <https://carletonccsa.wixsite.com/ccsa>

If you'd like to contribute to the next newsletter, contact Taeko or Liza.



CU COG SCI GRAD RESEARCH SHOWCASE

Grad students & upper-year undergrads:

Get a behind-the-scenes glimpse at published papers and conference presentations by current students in Cognitive Science.

- For more info, visit the [Grad Research Showcase](#)
- To submit an entry, contact [Taeko](#)



WORKSHOPS & CERTIFICATES

Grad students:

Carleton has Graduate Professional Development workshops ([view schedule](#)). Some of these can count towards paid TA training and/or [Trajectories certificates](#). There are currently 3 certificates available:

- Professional Writing
- Communications & Engagement
- Research Management



WICSC TRAINEE BOARD

Women in Cognitive Science Canada - Trainee Board

WiCSC+ Trainee provides cognitive science trainees (undergraduates, graduates, and early career researchers) with information and resources with a focus on:

- Preparing for academic careers
- Preparing for non-academic careers
- Personal life

For more info, visit wicsc.ca

We have **openings for the Working Board.**

- We are seeking volunteers for:
 - Visuals
 - En-Fr translations
- For more info and to apply, view the [Application Form](#). **Deadline: February 9**

Taeko is a
Governing Board
member; Liza is a
Working Board
member



**DON'T
FORGET**

MathLab is on TEAMS

All MathLab content and chats are on teams. If you do not have access, please contact Taeko or Jo-Anne.