

CHOW LAB

We are a psychology lab at St. Thomas University focusing on **multisensory perception and cognition**. Under the direction of Dr. Doris Chow, undergraduate students in our lab conduct experimental research to understand **how human participants respond to, interpret, and remember information from the different senses**. This year, we focus on two research projects, one on eye-tracking and one on tactile-sound associations. Each of our 6 student members this year **developed new lifelong skills while achieving our research goals**. In addition, 100 participants have contributed to our studies this year. **A huge thank you to our participants and funding sources** for helping us make progress in understanding the science of multisensory perception.



News & Achievements of 2025-2026

Beatrix Culligan completed an honours thesis study on “Relationship between pupil diameter and working memory capacity” and presented her work at the Psychology Honours Day and the Science Atlantic Psychology Undergraduate Conference (Newfoundland). Congratulations Beatrix!

Our lab attended two academic conferences this year: the Annual Meeting of the Cognitive Neuroscience Society (Beatrix & Dr. Chow) & the Annual Convention of the Association of Psychological Sciences (Dr. Chow). We presented our work entitled:

- Audiovisual temporal synchrony modulates fast sensorimotor transformation in smooth pursuit eye movements (presenter: Chow; co-authors: Gavin, Beatrix)
- Effect of working memory load on smooth pursuit eye movements (presenter: Beatrix; co-authors: Serena, Chow)
- Hearing What You Touch: Correspondences between Tactile Sensations and Phonemic Features in Young Adults are Found using a Rating Task (presenter: Chow; co-authors: Sid, Rebecca, Carla)

Our lab has expanded this year: We had **6 lab members** (including four 3rd-year students who were new to the lab). All new lab members learned to complete some research tasks independently by the end of the year! Amazing work, and thank you to the team leads (Sid and Beatrix). Sid and Rebecca also won **NSERC USRA to conduct summer research** in the lab!

Finally, we will be sending off Beatrix soon. **Beatrix has been accepted into Western University's Master of Science program** in Cognitive, Developmental, and Brain Sciences and will move to Ontario soon. We will miss you!

Principal Investigator



Dr. Doris Chow

Doris joined STU Psychology as a faculty member in 2022 with a PhD in developmental and brain sciences. Born and raised in Hong Kong, she travelled and lived in many places before calling Fredericton home. When not at work, she can be found reading, riding her bike, or experimenting with new recipes in the kitchen.

The Bouba-Kiki Team



Sid d'Entremont

Sid is a 2026 STU graduate with Honours in Psychology and minors in Gerontology and English. They have worked in the ChowLab for two years doing research on the Bouba-Kiki effect, first as an honours student, then as a Research Assistant. Sid hopes to continue doing research when they pursue graduate school for Speech-Language Pathology. Beyond the lab, they spend time playing video games, reading, and walking on the Fredericton trails.

Rebecca Jones

Rebecca is going into her fourth year at STU, majoring in Psychology and minoring in Criminology and Gerontology. She is from Fredericton and has always had a passion for Psychology. Rebecca hopes to pursue a career in counselling and will be applying to graduate programs in the fall. Outside of the lab, she enjoys reading, attending spin classes, and spending time with her partner, friends, and family.



Carla Prodan

Carla is a fourth-year student pursuing a major in Psychology and a minor in Communications and Public Policy. She has a passion for helping others and plans on working within the mental health field. Outside of school, Carla enjoys spending time with family and friends, being outdoors, and reading.

The Eye-Tracking Team



Beatrix Culligan

Beatrix is a graduating student from STU with an Honours in psychology. She is from Fredericton and has worked in the ChowLab for two years researching pupillary and eye movement dynamics. Next year, Beatrix will be attending Western University to get her MSc in psychology. Outside of the lab, she takes her dog for walks and spends time in the kitchen baking.

Gursimran Kaur

Gursimran is a fourth-year undergraduate student majoring in Psychology and Gerontology with a strong academic record and a passion for research, accessibility, and community support. Alongside working as a Research Assistant and International Office Assistant, she has experience as a Residential Support Worker and has contributed to initiatives supporting older adults, students, and people with disabilities. With interests in counselling, social work, and healthcare, she aims to continue making meaningful contributions through leadership, research, and advocacy.



Mishael Robinson

Mishael is a fourth-year student pursuing double majors in Psychology and Philosophy, and a minor in Criminology and Criminal Justice. Mishael has been with the lab since the fall of 2025 and has developed her data analysis skills through her involvement in lab tasks. Outside of the lab, she was also the President of the International Students' Association of STU.

The Relationship Between Pupil Diameter and Working Memory Capacity

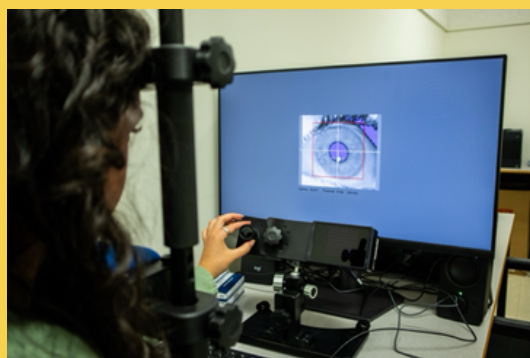
Student Researchers: Beatrix Culligan, Gursimran Kaur & Mishaël Robinson

Background

Although we can't control the size of our pupils, it can be influenced by many social, physiological, and cognitive variables. For example, your pupil widens in dark environments. Research has even shown that pupil size is indicative of cognitive load (i.e., how much information is being handled in working memory) and differs between people based on cognitive capacity. For example, some research has found that people with higher working memory capacity have generally larger pupil sizes that stay more consistent over time, suggesting that the pupil may reflect individual differences in working memory capacity.

Current Study

To test this, we had 40 participants perform an eye-tracking task in which we assessed the capacity of their working memory. Participants performed easy and difficult cognitive tasks, while their pupil diameter was recorded using a video-based eye tracker. In the difficult task, participants were asked to remember the order of six numbers. In the easier task, they were asked to remember the colour of numbers. Then, participants had to remember if a sequence of two numbers were the same or different order/colour of those in the previous task.



Results

Results showed that participants' answers were more accurate and quicker in the easier task than in the difficult task, suggesting that we effectively manipulated working memory load. Consistent with these measures, pupil size was also smaller during the easier task. We also found that the average baseline size of participants' pupils was not related to working memory capacity, but how much their pupil size changed was, indicating that change in pupil size could be related to individuals' cognitive capacity.

Crossmodal Correspondance on Perception

**Student Researchers: Sid d'Entremont,
Rebecca Jones & Carla Prodan**

Background

If someone asked you to touch a shape with rounded edges, then a shape with spiky edges, and then told you to name one of the shapes “Kiki” and one of the shapes “Bouba”, what would you choose? Most people say that “Kiki” is spiky and “Bouba” is round. This is the tactile Bouba-Kiki (BK) effect. However, people with congenital blindness and young children don’t tend to make the same associations. This might be because those populations can’t picture the shapes that they’re touching in their heads, suggesting a link between visual imagery and the tactile BK effect.

Current Study

We wanted to directly test that link. So, we had 60 participants fill out the Vividness of Visual Imagery Questionnaire (VVIQ), which asked them to picture familiar images and rate how clearly they could see them in their mind’s eye. This told us how strong participants’ visual imagery was. Then, we asked them to do a tactile BK task in which they felt round and spiky 3D-printed shapes that were hidden from view while listening to nonsense words (e.g., “Boogoe”). Finally, participants rated how well each shape and word pair went together from 1 to 7.



Results

First, our results showed us that our participants made typical associations between speech sounds and shapes: words containing the sounds /m/, /b/, /l/, /n/, /o/, /u/ and /a/ went with rounds shapes; and /t/ and /k/ went with spiky shapes. Usually, we would expect /i/ and /e/ to go with spiky shapes, and it’s unclear why this didn’t happen. As for the link between visual imagery and the tactile BK effect, our results did not support our hypothesis that people with stronger visual imagery would more consistently make the expected associations between certain sounds and shapes.

“I really enjoyed working as a research assistant, and I learned a lot from this experience as well. First, I learned that if something seems difficult, by working with others or asking questions, the task will no longer seem daunting. Second, I learned that even in areas that I perceived myself as being weaker in (like stats or navigating new software), there is always an opportunity for growth, and you will improve your skills as you continue to figure things out.” – Carla

“Being a research assistant really helped me apply the many skills I learned in both my research methods and statistics classes. This position helped me better understand difficult concepts from my classes by putting them into practical situations. I am very grateful for this opportunity as it not only helped me develop my research skills but also broadened my interpersonal skills as well. Interacting with participants and troubleshooting with other lab members made me more confident in my ability to communicate effectively.” - Rebecca

“I had a great experience as an honour’s student. I was able to develop critical skills that helped prepare me for a future in psychology and got to participate in the different steps of the research process. It was a great opportunity to be able to do my thesis this year, I was exposed to many new experiences and was able to connect with my cohort as well.” - Beatrix

“This year I had the privilege of guiding new research assistants in the lab. This experience helped me develop my skills in leadership and team work, and to gain confidence in myself as a student researcher. I'm sad to be leaving STU, but so grateful for the team I got to work alongside during my last year here; the things I learned and the memories I made will stick with me long after I've left.” - Sid

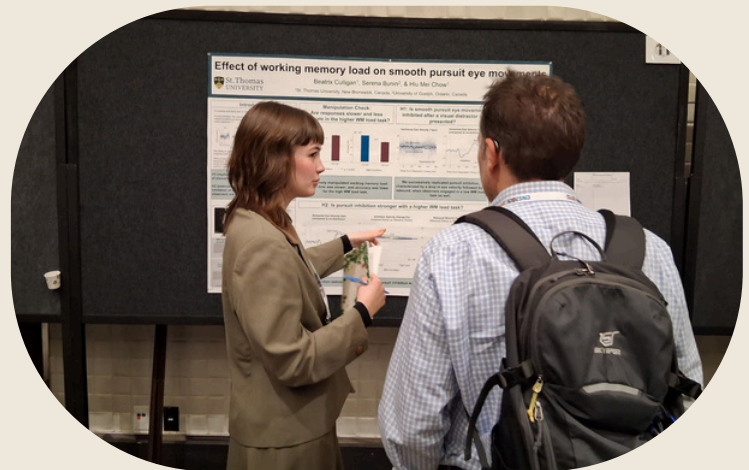
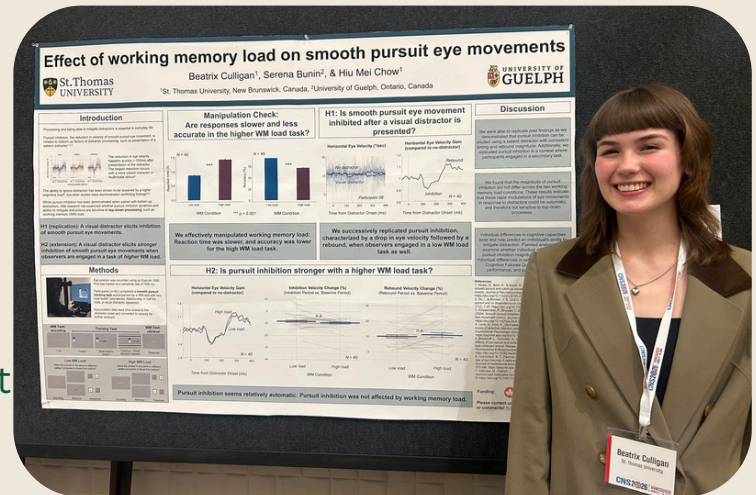
The Annual Meeting of the Cognitive Neuroscience Society

This year, Beatrix and Dr. Chow travelled to Vancouver to take part in this academic meeting. This is one of the flagship conferences for those who study how the brain and mind work. Here is what Beatrix has to say about her experience:

“Attending the Cognitive Neuroscience Society conference in Vancouver, B.C. was such a great experience. I was able to learn so much through **attending lectures by some of the leading researchers** in my areas of interest. I had originally been nervous to be attending a conference in which I didn’t have any peers with me, but it was a great opportunity to **meet new people from all around the world**.

One of my highlights of the conference was my poster presentation. This was my **first time presenting a poster**, and it was an overwhelmingly positive experience. I had been intimidated by the 2-hour time slot, but I was able to meet many researchers who were extremely engaged in this type of research and received a great deal of **constructive feedback**.

CNS also allowed me to focus on personal development. I have never attended such a long conference before, so I had to pace myself to avoid burning out. This forced me to **reflect on my interests**, choose the events that mattered most to me, and take a step back to focus on myself. Additionally, being in a big city like Vancouver allowed for opportunities for exploration. Overall, CNS was a fantastic opportunity to work on my personal and professional development, and I am very grateful for the chance. I learned so much about the topics I am invested in, and I hope to attend CNS and other conferences in the future.”



The Application Process

- Start building relationships with your professors and peers early. They can offer you great support throughout your application process.
- Start your application early so that you have time to review your letter of intent and CV with your professors.
- Don't be afraid to talk to ask your professors questions about the application process - they are one of the best resources because they understand how the program works.

Asking for help

- Don't be afraid to ask for help! It can be daunting to admit that you don't know what you're doing, but your supervisor is there to support you.
- Remember that your professor doesn't expect you to have it all figured out. They know that this is your first time writing a thesis - that's why you need a supervisor!

Getting work done

- Keep on top of your work! It gets easy to procrastinate honours work, but even just a few hours every week can go a long way.
- Let your drafts be drafty. Don't get caught up in perfecting the details. The most important thing to do in the early stages of the writing process is to just get words down - worry about editing later.
- If you're struggling to write, break your work down into small pieces. Show yourself that you can write just 50 words, and then 50 more words.

Taking care of yourself

- Celebrate your milestones! If you finished the first draft of your introduction section, or some challenging data analysis, or even your references pages...pat yourself on the back! You're doing great work!
- Make sure to take time to yourself. The whole year will be busy and stressful, it's important to also spend time doing things you enjoy and taking time to see family and friends.

Beatrix's tips for getting through grad school applications

This year, Beatrix gained a lot of experience with applying to graduate school and was ultimately accepted into Western University's Master of Science program in Cognitive, Developmental, and Brain Sciences. Here is her advice:

- **Start thinking early about what type of research you are interested in!** I found it helpful to explore individual professors' lab websites. You get a good sense of the work they do from their page. If you're really interested in their work, many potential supervisors are happy to set up an online meeting before applications are due to learn more about what kind of work is currently going on in their lab.
- **Have multiple people review your letter of intent!** This is an integral part of your application, so it's important to get feedback from multiple professors and peers before finalizing it. I started mine a few months before applications were due to give myself enough time for multiple rounds of feedback and rewrites.
- **Prepare for your interviews, but also be yourself!** Potential supervisors want you to be a good student and come prepared, but they are also trying to see if you would be a good person to work with and a good fit for the lab. I found it helpful to prepare well, but not stress out too much before the initial interview. (I know, easier said than done!)
- **If you are invited, go to the prospective student's/interview day!** It seems very overwhelming to miss school in your final semester, but I found it helped me a lot in making my decision. A school might be a great fit research-wise, but you don't mesh well with the lab, or vice-versa. It can be much easier to discover whether a lab is a good fit in person. I am very glad I took the time to visit my potential labs before making my final decision.
- **To finish, don't be too hard on yourself!** Getting into grad school is very difficult these days, and the application process can be gruelling. Give yourself patience and grace, and take time for yourself as well. If you don't get in on your first application, you can always try again the next year.