AUDITORY AGING

AUDITORY AGING LAB

annual newsletter 2026

Baycrest

www.auditoryaging.com

3560 Bathurst St, Toronto, ON M6A2E1

AUDITORY AGING

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how do we preserve communication and cognitive vitality as we age?

Explore the research, people, and discoveries driving our search for answers

AUDITORY AGING

about us

Auditory Aging Lab, 2026

we're the auditory aging lab!

Understanding listening, communication, and aging.

Based at Baycrest and the University of Toronto, the **Auditory Aging Lab** studies how people experience listening and communication throughout adulthood and later life. Our work combines neuroscience, psychology, audiology, and qualitative research.

Led by Dr. Björn Herrmann, our team investigates topics ranging from speech understanding and listening effort to cognitive aging, hearing health, and lived experiences of communication challenges.

OUR MISSION

We conduct cutting-edge research and create knowledge that improves communication and quality of life for older adults

RESEARCH

Advancing understanding of listening, hearing, cognition, and aging through innovative scientific research.

COMMUNITY

Partnering with older adults, clinicians, and community organizations to address real-world challenges.

IMPACT

Creating tools, knowledge, and resources that improve communication, cognition, and quality of life.

message from björn

Over the past year, our work has continued to explore how people experience listening and communication in everyday life. Across projects, we have focused not only on the underlying brain and cognitive processes, but also on how individuals interpret, adapt to, and navigate real-world listening situations. This perspective has led us to examine listening as something people actively do, shaped by context, technology, and social interaction.

In this issue, we highlight research that bridges scientific insight with lived experience, with a particular emphasis on how knowledge is communicated, understood, and applied.

A central direction of our research is to better understand how listening unfolds in complex, **real-world environments**. Everyday communication is rarely straightforward. Background noise, competing speakers, and shifting attention all shape how we perceive and engage with sound. By studying these dynamics, we aim to move beyond simplified laboratory conditions and toward a **more realistic understanding** of listening as it is lived.

At the same time, we continue to investigate how cognitive processes such as attention, memory, and interpretation interact with auditory perception. These processes are essential for making sense of speech, especially as listening becomes more effortful with age or sensory change. Our work integrates **behavioural, neurophysiological, and qualitative approaches** to capture this complexity.

Another important focus this year has been on **how research is communicated and translated** into meaningful impact. Understanding hearing and communication is not only a scientific challenge, but also a matter of how information is shared, interpreted, and acted upon by individuals, clinicians, and communities. This includes examining **how people respond** to hearing health messages and how accessible communication can support better decision-making.

Looking ahead, we aim to further strengthen connections between **fundamental research and real-world application**. By working across disciplines and engaging with lived experiences, we hope to contribute to approaches that support communication, participation, cognitive vitality, and well-being in later life.

> *Understanding listening requires looking beyond the ear and into the everyday experiences of the community.*

Björn Herrmann

Auditory Aging Lab

Principal Investigator

Canada Research Chair
in Auditory Aging (Tier II)

Scientist
Rotman Research Institute
Baycrest Academy for Research and Education

Associate Professor
Department of Psychology
University of Toronto

geneva mariotti

Graduate Student

Auditory Aging Lab

University of Toronto
Third Year Graduate Student

Areas of study
Internal cognitive processes of listening and memory

Click here for the full study

deep dive

Eye movements help ‘paint the picture’ of what we’re hearing

Whether listening to a friend tell us about their vacation, or becomoing immersed in an audiobook, we might create a mental picture of what we hear.

This process, termed **mental imagery**, allows us to keep track of many rich vivid details, instead of simply adding them to a list in our working memory.

The question

We were interested in asking questions about mental imagery generation during listening and future memory. But how can we measure someone building a mental image in their mind without asking them about it?

To answer this, we used **eye-tracking**. Previous research suggests our eyes may help us “paint the picture” we create in our minds, offering a window into the imagery behind listening.

What we discovered

Sixty-four young adults listened to spoken descriptions and were instructed to later recall them in detail from memory.

People made fewer eye movements when descriptions were easy to visualize or presented in challenging background noise.

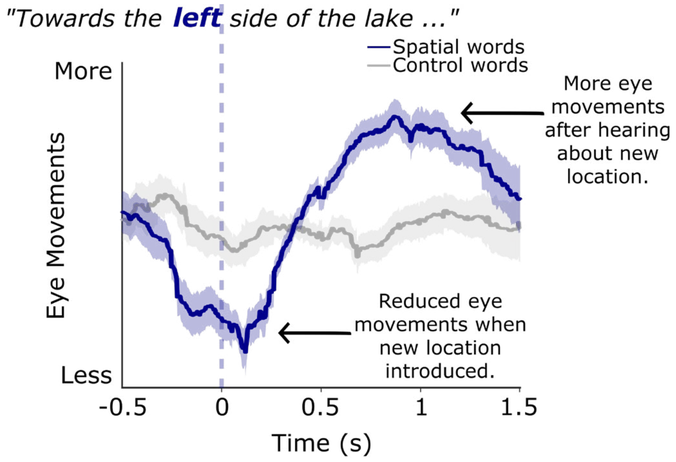
When locations were described, however, their eye movements appeared to map locations described in the imagined scene. This pattern can be seen in the **figure on the right**.

Similar patterns occurred during recall, where eye movements occurred *before* participants remembered the correct locations.

Why this matters

Listening and memory are closely connected. This research shows that some people rely on and naturally form vivid mental images, while others experience little or no imagery.

Understanding whether these images actively support memory – or simply accompany it – could lead to **new ways of supporting memory** and tailoring memory strategies to individual needs.



What’s next?

Now that we have ways of measuring mental imagery as it unfolds, we can investigate when people spontaneously “see” what they hear and whether these mental images help memories stick.

Future work will extend this work to people with reduced mental imagery or memory, to better understand the role of mental imagery in communication and memory.

showcasing work

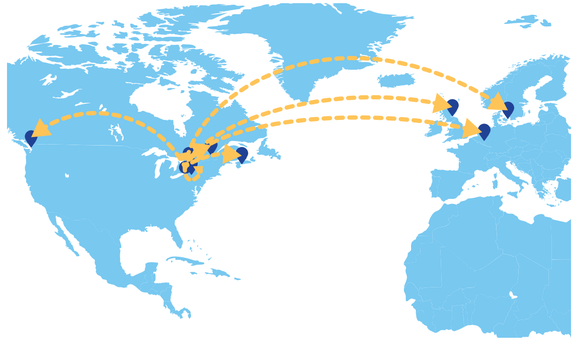
Throughout the year, members of the Auditory Aging Lab presented research at conferences, symposia, workshops, and community events across Canada and internationally. Our work this year spanned a wide range of topics, including speech perception in noise, memory and listening effort, narrative engagement, hearing health communication, auditory cognition, artificial intelligence, and sensory aging.

Addressing the audiology community

This spring, Björn went to the 2026 SAC conference in Halifax, NS, gathering speech-language pathologists, audiologists, communication health assistants, and students from across Canada. Björn presented the lastest work from our lab, including on how older adults process speech in noisy environments, how we can better measure listening effort, and why awareness of the hearing loss–dementia connection matters.

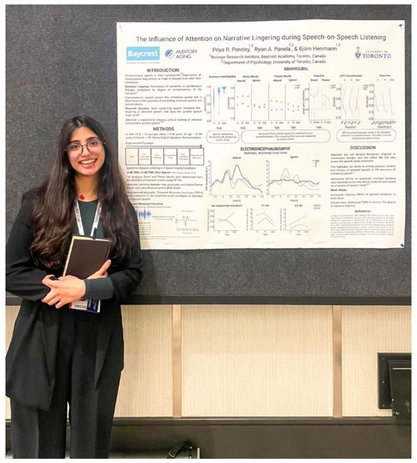
5,250

The Auditory Aging Lab shared our cutting-edge research to more than 5,250 people this year at conferences, presentations, workshops, and outreach activities.

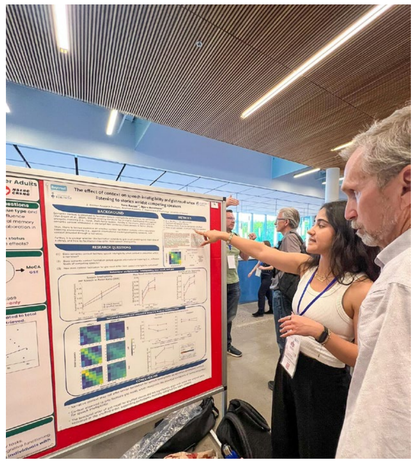


Our team travelled across Canada and Europe, from Toronto, Vancouver, Montréal, and Halifax to Dundee, Maastricht, and Copenhagen to tell people about our work!

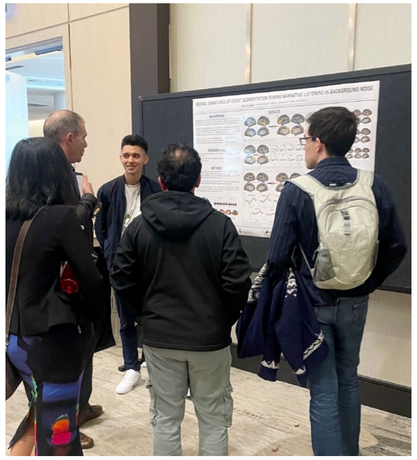
We connected with researchers, clinicians, students, and community members worldwide at more than 10 different events.



Priya Pandey, graduate student, presenting on attention during speech-on-speech listening at CNS 2026 in Vancouver, BC.



Tara Raessi, graduate student, during the poster session at the CSBBCS 2026 Annual Meeting in North York, ON.



Ryan Panela, graduate student, presenting on event segmentation during speech listening, at CNS 2026 in Vancouver, BC.

Geneva Mariotti, graduate student, presenting her study on eye movements while listening at CNS 2026 in Vancouver, BC.

AUDITORY AGING

noble iwuoha

student spotlight

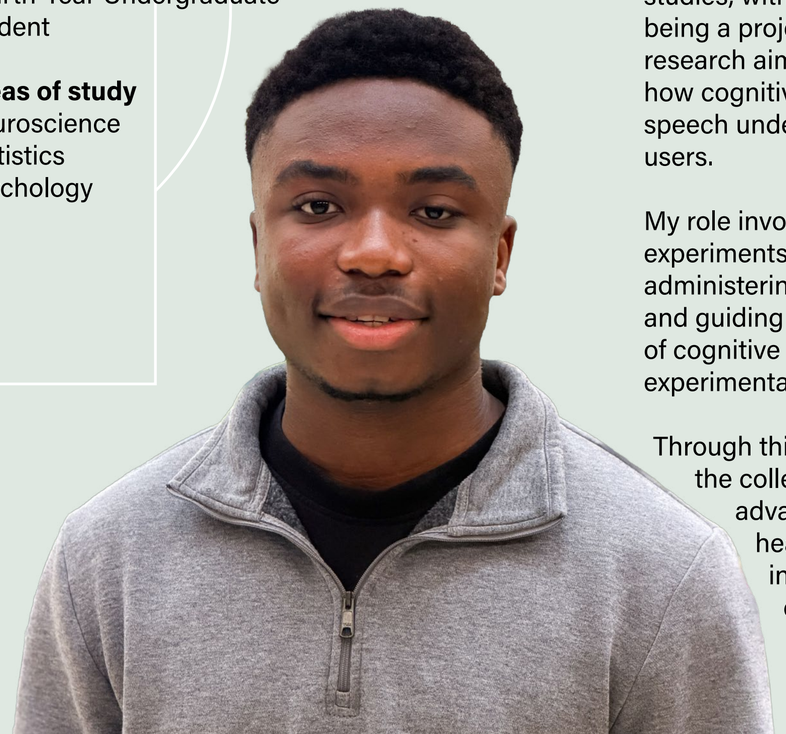
Noble is a fourth-year student at the University of Toronto, where he is pursuing studies in Neuroscience, Statistics, and Psychology. His academic interests reflect a curiosity about how the brain, behaviour, and data can be brought together to better understand human health and cognition. Read on to hear from Noble about his experience in the Auditory Aging Lab.

Co-op student

Auditory Aging Lab

University of Toronto
Fourth-Year Undergraduate Student

Areas of study
Neuroscience
Statistics
Psychology



Inside the research experience with Noble

Since joining the Auditory Aging Lab, I have been involved in several studies, with my primary assignment being a project called RecAids. This research aims to better understand how cognitive processes influence speech understanding in hearing aid users.

My role involves conducting experiments with participants, administering hearing assessments, and guiding them through a series of cognitive and speech-related experimental tasks.

Through this work, I contribute to the collection of data that helps advance our understanding of hearing and communication in real-world listening environments.

> *Working directly with hearing aid users has given me a new perspective on the everyday challenges of hearing loss and communication.*

Takeaway experience

One of the biggest takeaways from my time in the lab has been developing research skills such as electroencephalography and eye-tracking.

More importantly, working directly with hearing aid users has given me a new perspective on the everyday challenges of hearing loss and communication.

This experience has shown me the importance of conducting research that can make a meaningful difference in people's lives.

Outside the lab

Outside of academics, I am a passionate sports enthusiast who closely follows soccer, the NBA, tennis, and more.

I enjoy spending time with friends watching games, bantering, and debating sports-related topics.

A fun fact about me is that I am an ambivert; I enjoy both social settings and quiet time to recharge.

Looking ahead

As I near the completion of my undergraduate studies, I hope to pursue a graduate degree in a related field.

I would like to be involved in clinical research, where I can contribute to advancing our understanding of the brain, cognition, and health.

I am particularly interested in work that bridges research and real-world applications to improve people's quality of life.

AUDITORY AGING

student spotlight

A passion for understanding the mind

Rojin recently finished her undergrad as a Psychology Specialist at University of Toronto. In this spotlight, Rojin takes you behind the scenes of her work in the Auditory Aging Lab.

What I'm working on

I am involved in a few different projects in the lab that focus on speech comprehension, cognition, and real-world listening.

One project I work on explores how people focus on important speech while ignoring competing background speech. The study examines how people process and recall what they heard, and how listening experiences may shape the thoughts that linger afterwards.

In my role, I run participant sessions, guide participants through speech and cognitive tasks, and work with methods such as electroencephalography, eye-tracking, and camera-based facial movement tracking.

Through this work, I contribute to research that aims to better understand how people listen, remember, and communicate in everyday environments.

Lessons from the lab

One of the biggest takeaways from my time in the lab has been gaining hands-on experience with research methods such as EEG and eye-tracking.

Being involved in different studies has helped me understand how hearing, vision, cognition, and aging are connected in complex ways.

Working with participants has also given me a better appreciation for the everyday challenges older adults may face, and has shown me why research in this area is so important.

rojin firooz

When she's not in the lab, Rojin loves spending her time baking new recipes, going for long walks to get outside, and diving into a good book. These hobbies have been a great way to unwind and enjoy life.

Co-op student

Auditory Aging Lab

University of Toronto
Recent graduate

Areas of study
Psychology Specialist

What's next?

Having just finished my undergraduate degree in Psychology, I want to continue building on this foundation.

Moving forward, I hope to pursue graduate studies and ultimately establish a career where I can continue utilizing research to understand human cognition, behavior, and neurodegenerative health.

My goal is to contribute to meaningful work that bridges scientific discovery with practical applications that support healthy aging.

deep dive

Reactions to the link between hearing loss and dementia

You may have heard that untreated hearing loss is linked to a higher risk of dementia. Information about this connection appears both in news stories and social media.

Although research has found an association between hearing loss and cognitive decline, scientists are still working to understand exactly how the two are connected.

As awareness grows, important questions remain: **How do people interpret this message?** Does it influence how they think about their hearing health and their approach to their hearing care?

What we found

I interviewed **25 older adults** with hearing difficulties. Explore the **quote cards** to hear their perspectives.

Many developed their own explanations for how hearing loss and dementia might be related.

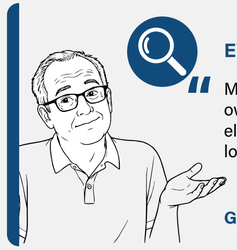
Some believed that the brain needs sound to stay active, while others felt social withdrawal due to hearing loss could contribute to dementia.

quote cards

MAKING SENSE OF THE LINK

I can see the anti-social thing, because of the impact it had on me. I re-think events that I go to based on that, so does that have an impact on me mentally... you know, that might be the link.

JAMES, 66



EVALUATING RELEVANCE

Maybe I'm not worried about my own case because there's nothing else we can do about my hearing loss anyway, so why worry about it?

GEOFF, 65

IMPACT ON HEARING HEALTH

I decided to embrace my hearing loss and do whatever I can to make it better, if that meant getting the best hearing aids, or going to support groups, or whatever it takes.

CHERYL, 71

TRUST AND CERTAINTY

Clearly, the audiology people want you to buy hearing aids. So, the more that your hearing loss seems to be a major jeopardy, the more likely you are to go that route.

FIONA, 97

These ideas closely mirror several leading scientific theories.

Learning about the link affected people differently. For some, it encouraged hearing testing or more consistent hearing aid use. Others felt it did not change how they managed their hearing.

Trust also shaped responses. While some accepted the information, others were skeptical or worried that fear of dementia might be used to encourage hearing aid sales.

Why this matters

People interpret health information through the lens of their own experiences, beliefs, and concerns.

Understanding these perspectives can help clinicians and researchers communicate about the hearing loss–dementia link in ways that inform and support, rather than create fear or pressure.

Looking ahead

The study provides a foundation for understanding how hearing and cognitive health intersect in everyday hearing care.

In a follow-up project, I am interviewing audiologists to explore how discussions about the hearing loss–dementia link shape conversations with patients and influence clinical practice.

sarah bobbitt

Research Assistant

Auditory Aging Lab

Western University
MSc in Neuroscience

Areas of study
Audiology

Click here for the full study ←

AUDITORY AGING

research in print

27
publications 2025-2026

18
peer-reviewed journal articles

9
pre-prints

A NOTE ON PUBLICATION TYPES

JOURNAL ARTICLES	Published following independent peer review.
PREPRINTS	Publicly available manuscripts that have not yet completed peer review.

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→ https://www.auditoryaging.com/publications

2025

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2026

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AUDITORY AGING

meet the team

A diverse and passionate team working together to advance research in auditory aging

WHAT WE STUDY

Hearing
Understanding how we perceive sound

Cognition
Exploring how hearing relates to thinking

Communication
Supporting connection in everyday life

Healthy aging
Promoting well-being across the lifespan

Björn Herrmann
PRINCIPAL INVESTIGATOR
bherrmann@research.baycrest.org

Signe Mathiesen
POSTDOCTORAL RESEARCHER
smathiesen@research.baycrest.org

Yulia Lamekina
POSTDOCTORAL RESEARCHER
ilamekina@research.baycrest.org

Marika Mariano
POSTDOCTORAL RESEARCHER
mmariano@research.baycrest.org

Sarah Bobbitt
RESEARCH ASSISTANT
sbobbitt@research.baycrest.org

Mo Eric Cui
GRADUATE STUDENT
mcui@research.baycrest.org

Ryan Panela
GRADUATE STUDENT
rpanela@research.baycrest.org

Geneva Mariotti
GRADUATE STUDENT
gmariotti@research.baycrest.org

Pryia Pandey
GRADUATE STUDENT
ppandey@research.baycrest.org

Tara Raessi
GRADUATE STUDENT
traessi@research.baycrest.org

Rojin Firooz
CO-OP STUDENT
rfirooz@research.baycrest.org

Noble Iwuoha
CO-OP STUDENT
niwuoha@research.baycrest.org

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Conseil de recherches en sciences humaines du Canada
Social Sciences and Humanities Research Council of Canada
Canada

phone:
(416) 785-2500 ext. 2614

mail:
bherrmann@research.baycrest.org

location:
3560 Bathurst St, Toronto, ON M6A2E1

web:
www.auditoryaging.com

design by: signe lund mathiesen
Postdoctoral Fellow