

Summary

Developing computer-vision methods to learn how people sample and process audiovisual information under naturalistic uncertainty. My ongoing works explore its clinical implication: leveraging naturalistic data to identify individualized markers of attention: body and gaze markers of listening difficulties gaze markers for cognitive deficits during face perception. To extend my research beyond clinical setting, I supported 4 hearing aids development program to connect these methods to real-world development.

Technical Skills

- Machine learning & computer vision (python, matlab): gaze-path estimation (deepGaze); eye-movement Hidden Markov Models (EMHMM); naturalistic audiovisual behavioral-data pipelines (Google ML).
- Statistical & Bayesian modeling (implemented in python, r, or matlab): foveated ideal observer analysis; mixed-effects models; psychometric functions; signal detection theory; drift-diffusion models
- Experimental methods: eye-tracking and EEG; online experiment (jsPsych); sdaily experience sampler (EMA)

Education

- M.A., (completed) Ph.D., (ongoing) Perception, Cognition & Cognitive Neuroscience - U of Toronto & Rotman Research Institute · 2020-present · Advisors: Drs. Allison Sekuler, Bjorn Herrmann
- H.B.Sc., Psychology, Statistics & Mathematics - U of Toronto Mississauga · 2015-2020 · Advisors: Drs. Bruce Schneider, Kathy Pichora-Fuller

Experience

- R&D Research Analyst - Sonova Group (Unitron / Phonak / Sonova) · 2020-present: 5 years of applied R&D; co-authored 2 white papers and contributed to 2 registered clinical trials (NCT05292534, NCT05521308).
- Course Instructor - Psychology, U of Toronto · 2024. Taught Introductory Statistics (n = 180, in-person) and Advanced Statistics (n = 190, online) - 370 students.
- Research Assistant - CCNA, Team 17 & Speech-Language & Audiology Canada · 2022–2024.
- Mentored 11 trainees (3 thesis, 4 co-op, 4 research assistants) toward co-authorships.

Selected Publications

Full list on [Google Scholar](#)

1. Cui, M. E., Rabaglia, C. D., & Schneider, B. A. (2026). Age-related differences in the lexical priming effect can be predominantly attributed to differences in response bias. *Psychology and Aging*.
2. Ren, Y., Cui, M. E., & Herrmann, B. (2026). Attentional disengagement during distractions reduces neural speech tracking in background noise. *Journal of Neuroscience*, 46(21).
3. Cui, M. E.*, Verno-Lavigne, E.*, Saxena, S., Fink, L. K., & Herrmann, B. (2025). Mobile eye-tracking glasses capture ocular and head markers of listening effort. *JASA Express Letters*, 5(12), 125202.
4. Herrmann, B., & Cui, M. E. (2025). Impaired prosodic processing but not hearing function is associated with an age-related reduction in AI speech recognition. *Audiology Research*, 15(1), 14.

Awards & Funding

\$70,000+ in competitive funding across 17 awards (2018-2026), incl. Synapse Major Research Funds (\$10,000), Doctoral Completion Award (\$9,200), Finkler Graduate Fellowship (\$8,300), Graduate Fellowship (\$16,000).

Service

EDI Coordinator & training funder, Psychology, U of Toronto