Revised, September 14, 2022

Dr. Benjamin Wolfe

University of Toronto Mississauga
Department of Psychology
3359 Mississauga Road
Mississauga, ON, L5L 1C6

benjamin.wolfe@utoronto.ca
www.applylab.org

PROFESSIONAL APPOINTMENTS

2021 - Assistant Professor
Department of Psychology, University of Toronto Mississauga
School of Graduate Studies, University of Toronto
Co-Director, Applied Perception and Psychophysics Lab (APPLY Lab)

2016 - 2020 Postdoctoral Associate, Rosenholtz Lab
Department of Brain and Cognitive Sciences
Massachusetts Institute of Technology
PI: Dr. Ruth Rosenholtz

2015 – 2016 Postdoctoral Associate, AgeLab
Center for Transportation Logistics
Massachusetts Institute of Technology
PIs: Dr. Bryan Reimer and Bruce Mehler

EDUCATION

2015 Ph.D., Psychology
University of California at Berkeley
Advisor: Professor David Whitney; Cognition, Brain and Behavior Program
Dissertation: *Before the Eye Moves: Remapping, Visual Stability and Perisaccadic Perception*

2008 B.A., Psychology
Boston University

RESEARCH INTERESTS

Visual perception; peripheral vision, scene perception, eye movements, visual attention, driving

RESEARCH FUNDING

2022-2024 University of Toronto Connaught Fund - New Researcher Award
Why don't we notice rare dangerous situations on the road, and what can we do about it?
$20,000

2022 Adobe Research Award (Jointly awarded to Dr Benjamin Wolfe and Dr Anna Kosovicheva)
Effects of Highlighting and Underlining on the Visual Mechanisms of Reading
$94,750, *gift award to APPLY Lab ($75,000 USD)*

2021-2026 Natural Sciences and Engineering Research Council (NSERC) Discovery Grant
Mechanisms of Visual Information Acquisition in Driving
$140,000 ($28,000/year)

2021-2026 Natural Sciences and Engineering Research Council (NSERC)
Discovery Launch Supplement
$12,500

2020 Adobe Research Award
Virtual Reading Laboratory Project
$40,000, gift award to APPLY Lab ($30,000 USD)

2019 – 2020 Toyota Research Institute - CSAIL Joint Research Program Grant
"Driver Perception and the Car-to-Driver Handoff"
PI: Rosenholtz, supporting Benjamin Wolfe
$230,000 USD per year in direct support to Rosenholtz Lab

2016 – 2018 Toyota Research Institute - CSAIL Joint Research Program Grant
"Reducing the Pain Points in Driving"
PI: Rosenholtz; supporting Benjamin Wolfe
$300,000 USD per year in direct support to Rosenholtz Lab

2017 Transport Research Laboratories (PI: Rosenholtz)
"Critical Event Response Thresholds"
$20,000 USD (gift award)

2015 Google Faculty Research Award (PI: Rosenholtz)
"The role of eye movements in successful navigation during smartphone use"
$67,000 USD (gift award)

2011 – 2014 National Science Foundation Graduate Research Fellowship (GRFP) to Benjamin Wolfe
$120,000 USD in direct support and tuition coverage at UC Berkeley

2005 – 2008 Boston University Undergraduate Research Opportunities Program (UROP)
$20,000 USD in direct support over three years (8 Competitive Renewals)

AWARDS AND HONORS

2019, 2021 Journal of Vision Exceptional Reviewer Award
2018 Transportation Review Board; Operations Section Young Author Award
2015, 2014 UC Berkeley Research Impact Initiative (Open Access Publication)
2015 UC Berkeley Psychology Department Travel Award
2014, 2013 UC Berkeley Graduate Division Travel Award

PUBLISHED PAPERS AND ARTICLES

1. (2022) Kosovicheva, A., Wolfe, J.M., **Wolfe, B.**, Taking Prevalence Effects on the Road: Rare hazards are often missed; *Psychonomic Bulletin and Review*

2. (2022) Wolfe, J.M., Kosovicheva, A., **Wolfe, B.**, Normal Blindness – When we look but fail to see; *Trends in Cognitive Sciences*

3. (2022) Vater, C., **Wolfe, B.A.**, Rosenholtz, R., Peripheral vision in real-world tasks: A systematic review; *Psychonomic Bulletin and Review*

4. (2021) **Wolfe, B.A.**, Kosovicheva, A., Stent, S., Rosenholtz, R., Effects of Temporal and Spatiotemporal Cues on Detection of Dynamic Road Hazards. *Cognitive Research: Principles and Implications*

5. (2021) Nyström, M., Ahlström, C., Kircher, K., **Wolfe, B.**, Eye tracking in driver attention research - how gaze data interpretations influence what we learn. *Frontiers in Neuroergonomics.*

6. (2021) Beier, S., Berlow, S., Boucaud, E., Bylinskii, Z., Cai, T., Cohn, J., ... & **Wolfe, B.** Readability Research: An Interdisciplinary Approach. *arXiv preprint arXiv:2107.09615*

7. (2020) **Wolfe, B. A.**, Sawyer, B., Rosenholtz, R., Towards a Theory of Visual Information Acquisition in Driving. *Human Factors.*

8. (2020) Sawyer, B., **Wolfe, B.**, Dobres, J., Chahine, N., Mehler, B., Reimer, B., Glanceable Legible Typography over Complex Backgrounds. *Ergonomics*.

9. (2019) **Wolfe, B. A.**, Seppelt, B., Mehler, B., Reimer, B., Rosenholtz, R., Rapid Detection and Localization of Road Hazards. *Journal of Experimental Psychology: General.*

10. (2019) **Wolfe, B. A.**, Sawyer, B., Kosovicheva, A., Reimer, B., Rosenholtz, R., Detection of Brake Lights While Distracted: Separating Peripheral Vision from Cognitive Load. *Attention, Perception and Psychophysics.*

11. (2019) **Wolfe, B. A.**, Fridman, L. Kosovicheva, A., Seppelt, B., Mehler, B., Reimer, B., Rosenholtz, R., Predicting Road Events from Brief Views of Driving Video. *Journal of Vision.* 19(5), 8-8

12. (2018) **Wolfe, B.A.**, Rosenholtz, R., Peripheral Vision, Models Of. *Encyclopedia of Cognitive Neuroscience*.

13. (2018) Dobres, J., **Wolfe, B.**, Chahine, N., Reimer, B. The Effects of Visual Crowding, Text Size, and Positional Uncertainty on Text Legibility at a Glance. *Applied Ergonomics*. 70, 240-246

14. (2018) Chen, Z., Kosovicheva, A., **Wolfe, B.**, Cavanagh, P., Gorea, A., Whitney, D. Unifying Visual Space Across the Right and Left Hemifields. *Psychological Science*. 9(3), 356-369

15. (2017) **Wolfe, B.A.**, Dobres, J., Rosenholtz, R., & Reimer, B. More Than the Useful Field: Considering Peripheral Vision in Driving. *Applied Ergonomics*. 65, 316-325

16. (2017) **Wolfe, B.**, Fridman, L., Kosovicheva, A., Seppelt, B., Mehler, B., Reimer, B. Perceiving The Roadway In The Blink Of An Eye – Rapid Perception Of The Road Environment And Prediction Of Events. *Conference Proceedings, Driving Assessment 2017.*

17. (2017) Dobres, J., Chrysler, S. T., **Wolfe, B.**, Chahine, N., & Reimer, B. Signs of the Times: An Empirical Assessment of the Legibility of Highway Gothic and Clearview Signage Fonts. In *Transportation Research Board 96th Annual Meeting* (No. 17-04920). *Won Operations Section Young Author Award from Transportation Review Board.*

18. (2016) **Wolfe, B.**, Dobres, J., Kosovicheva, A., Rosenholtz, R., Reimer, B., Age-related differences in the legibility of degraded text. *Cognitive Research: Principles and Implications.* 1(1), 22

19. (2015) **Wolfe, B. A.**, Whitney, D. Saccadic remapping of object-selective information. *Attention, Perception and Psychophysics.* 77:7, 2260-2269.

20. (2015) **Wolfe, B. A.**, Kosovicheva, A. A., Leib, A. Y., Wood, K. Whitney, D. Foveal input is not required for ensemble perception of emotional faces. *Journal of Vision*. 15(4), 11-11.

21. (2014) Kosovicheva, A. A., **Wolfe, B. A.,** Whitney, D. Visual motion shifts saccade targets. *Attention, Perception, & Psychophysics*, 1-11.

22. (2014) **Wolfe, B. A.**, Whitney, D. Facilitating recognition of crowded faces with presaccadic attention. *Frontiers in Human Neuroscience*. 8:103

23. (2010) **Wolfe, B.A.,** Rushmore, R.J., Valero-Cabre, A. Coping With Spatial Attention in Real Space: A Low-Cost Portable Testing System for the Investigation of Visuo-Spatial Processing in the Human Brain. *Journal of Neuroscience Methods*. 187(2):190-8.

24. (2010) Swisher, J.D., Gatenby, J.C., Gore, J.C., **Wolfe, B.A.**, Moon, C.H., Kim, S.G., Tong., F.. Multiscale pattern analysis of orientation-selective activity in the primary visual cortex. *Journal of Neuroscience*. 30(20):6811-2.

MANUSCRIPTS IN REVISION

Beier, S., Berlow, S., Boucaud, E., Bylinskii, Z., Cai, T., Cohn, J., ... & **Wolfe, B.** Readability Research: An Interdisciplinary Approach. *Foundations and Trends in Human-Computer Interaction*

SELECTED CONFERENCE PRESENTATIONS (student presenters underlined)

1. (2022) Wolfe, B., Panelist and presenter, The Future of HFES By Some Of Those Who Will Create It, *Human Factors and Ergonomics Society Annual Meeting, 2022*

2. (2022) Song, J., Kosovicheva, A., Wolfe, B. You'll still miss the moose on the road: Rare hazards are frequently missed even when they are perceived as highly dangerous. *Talk presentation Object Perception Attention and Memory (OPAM) meeting at Psychonomic Society Annual Meeting.*

3. (2022) **Wolfe, B.A.** Eye Movements and Information Acquisition. International Conference on Traffic and Transport Psychology (ICTTP), August 22-25, 2022 *(postponed from 2020 due to COVID-19)*

4. (2022) Hart, J.A., McGlashan, C., **Wolfe, B.**, Greene, M.R. You know the situation is dangerous within 100 ms: Neural signatures of road hazard detection; *Poster presentation, Vision Sciences Society 2022*

5. (2022) Guidi, S., Ghuman, C., Kosovicheva, A., **Wolfe, B.**, Effects of Blur on Duration Thresholds for Road Hazard Detection; *Poster presentation, Vision Sciences Society 2022*

6. (2022) Haseeb, Z., **Wolfe, B.**, Kosovicheva, A. Spatial Heterogeneity in Localization Biases Predicts Crowding Performance; *Poster presentation, Vision Sciences Society 2022*

7. (2022) Kosovicheva, A., Wolfe, J.M., **Wolfe, B.**, The Moose Came Out of Nowhere: Low Prevalence Effects in Road Hazard Detection; *Talk presentation, Vision Sciences Society 2022*

8. (2021) Kosovicheva, A., Wolfe, J.M., **Wolfe, B.** Taking Prevalence Effects on the Road: Rare Hazards are Often Missed. *Poster Presentation, Psychonomic Society Annual Meeting*

9. (2021) Kanda, S. (advisors: Kosovicheva, A., Wolfe, J.M., **Wolfe, B.**) Prevalence effects on the road: rare hazards are often missed. *Presented at V-VSS 2021 (undergraduate just-in-time session)*

10. (2021) **Wolfe, B.A.**, Kosovichvea, A., Stent, S., Rosenholtz, R., Attentional Cueing in the World: Temporal and Spatiotemporal Cues for Road Hazards*. Presented at V-VSS 2021.*

11. (2020) **Wolfe, B.A.**, Rosenholtz, R., Understanding dynamic scenes: How driving can teach us about scene perception. Vision Sciences Society Annual Meeting*. Presented virtually at V-VSS, June 19-24, 2020, due to COVID-19.*

12. (2020) Hernandez, C.I., Rahill, K., Pham, M., Manriquez, L., Louis, P., Figueroa, A., Medina, B., **Wolfe, B.**, Sawyer, B.D., Prevalence effects are not driving hazard detection on the road*.* Vision Sciences Society Annual Meeting, May 15-20, 2020. *Presented virtually at V-VSS, June 19-24, 2020, due to COVID-19.*

13. (2019) **Wolfe, B.A.**, Rosenholtz, R., Why Uber Drivers Scare You: Detecting Road Hazards With Peripheral Vision. Vision Sciences Society Annual Meeting May 17-22, 2019.

14. (2018) **Wolfe, B.A.**, Rosenholtz, R., Was that a moose on the road? Gist-like perception of emerging driving hazards. Vision Sciences Society Annual Meeting, May 18-23, 2018.

15. (2017) **Wolfe, B.A.**, Fridman, L., Kosovicheva, A.A., Reimer, B. & Rosenholtz, R. Seeing the road in the blink of an eye - rapid perception of the driver's visual environment. Vision Sciences Society Annual Meeting, May 19–24, 2017.

16. (2017) Rosenholtz, R., **Wolfe, B.A.,** Sawyer, B., Kosovicheva, A.A. & Reimer, B. Perceptual and attentional factors in detection of driving-relevant visual events. Vision Sciences Society Annual Meeting, May 19–24, 2017.

17. (2016) **Wolfe, B.A.**, Dobres, J., Kosovicheva, A.A., Rosenholtz, R., Reimer, B. Reduction in Legibility with Degradation in Older and Younger Observers. Vision Sciences Society Annual Meeting, May 13–18, 2016.

18. (2015) **Wolfe, B.A.**, Whitney, D. Object-selective processing of remapped information. Vision Sciences Society Annual Meeting. May 15–20, 2015.

19. (2015) Kosovicheva, A. A., **Wolfe, B.A.,** Cavanagh, P., Gorea, A., Whitney, D. Dynamic recalibration of perceived space across the visual hemifields. Vision Sciences Society Annual Meeting. May 15–20, 2015.

20. (2015) Wood, K., **Wolfe, B. A.,** Kosovicheva, A. A., Whitney, D. Speeded breakthrough of faces in interocular suppression requires configural information. Vision Sciences Society Annual Meeting. May 15–20, 2015.

21. (2014) **Wolfe, B.A.,** Whitney, D. Presaccadic Induction and Spatial Tuning of the Face Aftereffect. Vision Sciences Society Annual Meeting. May 16–21, 2014.

22. (2014) Wood, K., **Wolfe, B. A.,** Kosovicheva, A. A., Leib, A. Y., Whitney, D. Foveal input is not required for ensemble coding of emotional faces. Vision Sciences Society Annual Meeting. May 16–21, 2014.

23. (2013) **Wolfe, B. A.,** Kosovicheva, A. A., Leib, A. Y., Whitney, D. Beyond fixation: Ensemble coding and eye movements. Vision Sciences Society Annual Meeting. May 10–15, 2013.

24. (2012) Kosovicheva, A. A., **Wolfe, B.A.,** Whitney, D. Effects of motion-induced mislocalizations on saccade landing position. Vision Sciences Society Annual Meeting. May 11–16, 2012.

25. (2012) **Wolfe, B.A.,** Whitney, D. Presaccadic foveal priming diminishes crowding. Vision Sciences Society Annual Meeting. May 11–16, 2012.

26. (2011) **Wolfe, B.A.,** Whitney, D. Egocentric but not allocentric perceptual distortions from saccadic adaptation. Vision Sciences Society Annual Meeting. May 6–11, 2011.

27. (2008) **Wolfe, B.A.,** Rowe, C.K., Rushmore, R.J., Valero-Cabre, A. Spatial distribution and temporal dynamics of visuo-spatial attention capabilities in human subjects as revealed by transcranial magnetic stimulation (TMS) on parietal systems and associated networks. Twelfth International Conference on Cognitive and Neural Systems. May 14-17, 2008.

INVITED TALKS AND SEMINARS (* denotes delivered remotely due to COVID-19)

1. Autonomous Vehicles Workshop (AI-CRV Conference), May 30, 2022*
2. Rotman Rounds, Rotman Research Institute at Baycrest, February 7, 2022*
3. University of Toronto, Ebbinghaus Empire Talk Series, October 27, 2021*
4. KITE, University Health Network, Toronto ON, June 22, 2021*
5. Huawei Canada, Human-Machine Interaction Workshop, May 28, 2021*
6. Huawei Canada, Human-Machine Interaction Group, March 24, 2021*
7. Brandeis University, Department of Psychology, March 11, 2021*
8. Human Factors Interest Group, University of Toronto, February 21, 2021*
9. Boston University, Department of Biomedical Engineering, November 9, 2020*
10. University of Toronto, Department of Mechanical and Industrial Engineering, November 3, 2020*
11. University of Iowa, Department of Psychology, October 23, 2020*
12. University of California at Berkeley, Department of Psychology, July 13, 2020*
13. University of Indiana – Bloomington, School of Optometry, March 31, 2020*
14. University of Toronto Mississauga, Department of Psychology, January 21, 2020
15. Toyota Research Institute, Cambridge MA, May 13, 2019
16. New England College of Optometry, Boston MA, April 16, 2019
17. Schepens Eye Research Institute, Boston MA, August 29, 2018
18. Tufts University, Department of Psychology, January 25, 2018

MENTORSHIP & RESEARCH SUPERVISION

Postdoctoral Fellows

2022 - Dr Jiali Song

Graduate Students

2022 - Greer Gilles (external PhD project, co-supervised with A. Kosovicheva)

Undergraduate Students (* denotes honors thesis supervision)

University of Toronto Mississauga (2021-present)
Sara Alzate, Avery Chua, Chandandeep Ghuman, Cristeidy Gonzalez, Silvia Guidi, Zainab Haseeb*, Saad Khan, Simran Kanda, Zoey Khaled, Meghna Patil, Sanaullah Pirzada, Mia Romano, Dyllan Simpson

Massachusetts Institute of Technology (2015-2020)
Riley Ledezma, Martin Lopez

University of California at Berkeley (2010-2015)
Claire Jeon, Omead Kohanteb, Katherine Wood*

High School Students

Massachusetts Institute of Technology
Sohan Subhash, Yrvine Thelusma

TEACHING EXPERIENCE

Department of Psychology, University of Toronto Mississauga

Winter 2022 *Systems of Psychology (4th year seminar)*
Average student evaluation: 4.2 (department mean, 4.1 / 5)

Summer 2021 *Cognitive Psychology (2nd year lecture course)*
Average student evaluation: 4.6 (department mean, 4.2 / 5)

Graduate Student Instructor, UC Berkeley (Teaching Assistant)

Spring 2015 *Mind, Brain and Behavior*
Average student evaluation: 5.97 (department mean, 5.92 / 7)

Spring 2011 *Sensation and Perception*
Average student evaluation: 6.33 (department mean, 6.27 / 7)

Fall 2010 *Drugs and the Brain*
Average student evaluation: 6.09 (department mean, 6.32 / 7)

SERVICE

Fall 2021	Organizer, UTM Psychology “Careers in Cognitive Psychology” Panel Series
2021	Departmental PTR Committee Member
2018 – Present	Vision Sciences Society Demo Night Committee Member
2017 – 2020	Member, Ad-Hoc Working Group on NIH Clinical Trials Policy for Basic Science

ADDITIONAL TRAINING

2008 - 2010 Research Associate, Tong Lab
Department of Psychology, Vanderbilt University
Supervisor: Dr. Frank Tong

2005 – 2008 Research Assistant, Cerebral Dynamics Laboratory
Department of Anatomy and Neurobiology, Boston University Medical School
Advisors: Dr. R. Jarrett Rushmore and Dr. Antoni Valero-Cabré

REVIEWING EXPERIENCE

Journals: Attention, Perception and Psychophysics; Vision Research; Journal of Vision*; Journal of Experimental Psychology: General; iPerception; Experimental Brain Research; Behavioral Research Methods; Translational Vision Science and Technology; Visual Cognition, Cognitive Science; Cognitive Processing, Experimental Psychology; Cognitive Research, Principles and Implications; Scientific Reports (Nature); PLOSone; Human Factors; Ergonomics; Applied Ergonomics; International Journal of Occupational Safety and Ergonomics; Traffic, Injury and Prevention; Accident, Analysis and Prevention; Transactions on Intelligent Transportation Systems

*Exceptional Reviewer Award (2019, 2021)

Conferences: IEEE Visualization and Graphics Technical Committee (VGTC), Driving Assessment, IEEE Information Visualization (InfoVis), NeurIPS/NIPS, AutomotiveUI

Agencies: US-Israel Binational Science Foundation
National Sciences and Engineering Research Council of Canada (NSERC)

EDITORIAL EXPERIENCE

2021 – Digital Associate Editor, Psychonomic Society

COMMUNITY OUTREACH AND PRESENTATIONS

2010 – 2015 Whitney Lab K-12 Outreach Program

2014 Vision Sciences Society Demo Night Presenter, “Strobowheel”

2012 Vision Sciences Society Demo Night Presenter, “An Aftereffect Based on Texture Element Ratios”

PROFESSIONAL MEMBERSHIPS

2022 Human Factors and Ergonomics Society
2009 – Present Vision Sciences Society
2014 – Present Psychonomics Society

REFERENCES

Ruth Rosenholtz, Ph.D.
Principal Research Scientist
Department of Brain and Cognitive Sciences
Massachusetts Institute of Technology
77 Massachusetts Ave, 32-D426
Cambridge, MA, 02139
rruth@mit.edu

David Whitney, Ph.D.
Professor, Department of Psychology
University of California at Berkeley
2121 Berkeley Way
University of California, Berkeley
Berkeley, CA 94720-1650
dwhitney@berkeley.edu

Ben D. Sawyer, Ph.D., MSIE
Associate Professor
Department of Industrial Engineering and Management Systems
University of Central Florida
4000 Central Florida Blvd.
Orlando, FL 32817
sawyer@ucf.edu