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Dr. Benjamin Wolfe
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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

AFFILIATIONS / STATUS-ONLY APPOINTMENTS

2023 - Mobility Network at the University of Toronto
2022 - Adjunct Faculty, Centre for Vision Research, York University
2022 - Associate Member, *The Readability Consortium*

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, readability

RESEARCH FUNDING

2023-2028 **Social Sciences and Humanities Research Council** (SSHRC), Insight Grant
“Improving readability in the digital age: Optimizing variable fonts for individual readers”
Lead PI, with Dr Anna Kosovicheva (co-PI)
$302,875

2023-2025 **University of Toronto XSeed Program**
"Normal Blindness: Why drivers miss other road users even though they are looking, and what can we do about it?"
Lead PI; collaboration with Dr Birsen Donmez
$120,000

2023 **UTM Psychology Autonomy Fund**
Supporting undergraduate attendance at *Vision Sciences Society 2023*
$6,270

2023 **UTM Research and Scholarly Activity Fund**
"A proof of concept for individual visual reading interventions in medical contexts"
$10,000

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**
"Effects of Highlighting and Underlining on the Visual Mechanisms of Reading"
Joint award to Dr Benjamin Wolfe and Dr Anna Kosovicheva
$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 Laborato**ries (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. (2023) Haseeb, Z., **Wolfe, B.**, & Kosovicheva, A. Individual differences in localization biases predict crowding performance. *Journal of Vision.* 23(7), 9-9.

2. (2023) Kosovicheva, A., Wolfe, J.M., **Wolfe, B.**, Taking Prevalence Effects on the Road: Rare hazards are often missed; *Psychonomic Bulletin and Review,* 30(1), 212-223.

3. (2022) 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*. 16(4), 214-324

4. (2022) Wolfe, J.M., Kosovicheva, A., **Wolfe, B.**, Normal Blindness – When we look but fail to see. *Trends in Cognitive Sciences*, 26(9), 809-819.

5. (2022) Vater, C., **Wolfe, B.A.**, Rosenholtz, R., Peripheral vision in real-world tasks: A systematic review; *Psychonomic Bulletin and Review*. 29(5), 1531-1557.

6. (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,* 6(1), 80.

7. (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.* 2, 778043.

8. (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*

9. (2020) **Wolfe, B. A.**, Sawyer, B., Rosenholtz, R., Towards a Theory of Visual Information Acquisition in Driving. *Human Factors*, 64(4), 694-713.

10. (2020) Sawyer, B., **Wolfe, B.**, Dobres, J., Chahine, N., Mehler, B., Reimer, B., Glanceable Legible Typography over Complex Backgrounds. *Ergonomics*, 63(7), 864-883.

11. (2019) **Wolfe, B. A.**, Seppelt, B., Mehler, B., Reimer, B., Rosenholtz, R., Rapid holistic perception and evasion of road hazards. *Journal of Experimental Psychology: General*, 149(3), 490.

12. (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*, 81(8), 2798-2813.

13. (2019) **Wolfe, B. A.**, Fridman, L. Kosovicheva, A., Seppelt, B., Mehler, B., Reimer, B., Rosenholtz, R., Predicting Road Scenes from Brief Views of Driving Video. *Journal of Vision*, 19(5):8, 1–14.

14. (2018) **Wolfe, B.A.**, Rosenholtz, R., Peripheral Vision, Models Of. *Encyclopedia of Cognitive Neuroscience*.

15. (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.

16. (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

17. (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

18. (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.*

19. (2017) Dobres, J., Chrysler, S. T., **Wolfe, B.**, Chahine, N., & Reimer, B. Empirical Assessment of the Legibility of the Highway Gothic and Clearview Signage Fonts. *Transportation Research Board 96th Annual Meeting*, 2624(1), 1-8. (No. 17-04920). *Won Operations Section Young Author Award from Transportation Review Board.*

20. (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), 1-13.

21. (2015) **Wolfe, B. A.**, Whitney, D. Saccadic remapping of object-selective information. *Attention, Perception and Psychophysics.* 77:7, 2260-2269.

22. (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.

23. (2014) Kosovicheva, A. A., **Wolfe, B. A.,** Whitney, D. Visual motion shifts saccade targets. *Attention, Perception, & Psychophysics*, 1-11.

24. (2014) **Wolfe, B. A.**, Whitney, D. Facilitating recognition of crowded faces with presaccadic attention. *Frontiers in Human Neuroscience*. 8:103

25. (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.

26. (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.

SELECTED CONFERENCE PRESENTATIONS (student presenters underlined)

1. (2023) **Wolfe, B.,** *Invited Symposium Speaker, Autonomous Vehicles and Driver Assistance Technology: What Can They Do for Drivers with Vision Impairment Now, and What Does the Future Hold?* American Academy of Optometry Annual Meeting 2023

2. (2023) Gillies, G., **Wolfe, B.**, Kosovicheva, A. Close, but not a T: Feedback, not similarity search, reduces the low-prevalence effect. *Poster presentation, Vision Sciences Society 2023*

3. (2023) Guidi, S., Haseeb, Z., Kosovicheva, A., & **Wolfe, B.** Psychophysics of variable fonts: Speed and comprehension measures. *Poster presentation, Vision Sciences Society 2023*

4. (2023) Haseeb, Z., Guidi, S., **Wolfe, B.**, & Kosovicheva, A. Psychophysics of variable fonts: Gaze measures of reading efficiency. *Poster presentation, Vision Sciences Society 2023*

5. (2023) **Wolfe, B.**, Gonzales, C., Kosovicheva, A. Where was the moose? The time course of dynamic road scene perception. *Poster presentation, Vision Sciences Society 2023*

6. (2023) Song, J., Chua, A. M., Patil, M., Kosovicheva, A., & **Wolfe, B.** When should you warn the driver about the moose?: The effect of auditory cue timing on hazard localization in naturalistic videos. *Poster presentation, Vision Sciences Society 2023.*

7. (2022) **Wolfe, B.**, Panelist and presenter, The Future of HFES By Some Of Those Who Will Create It, *Talk presentation at Human Factors and Ergonomics Society Annual Meeting, 2022*

8. (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.*

9. (2022) **Wolfe, B.A.** Eye Movements and Information Acquisition. 7th International Conference on Traffic and Transport Psychology (ICTTP), August 22-25, 2022

10. (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*

11. (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*

12. (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*

13. (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)*

14. (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.*

15. (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.*

16. (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.*

17. (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.

18. (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.

19. (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.

20. (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.

21. (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.

22. (2015) **Wolfe, B.A.**, Whitney, D. Object-selective processing of remapped information. Vision Sciences Society Annual Meeting. May 15–20, 2015.

23. (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.

24. (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.

25. (2014) **Wolfe, B.A.,** Whitney, D. Presaccadic Induction and Spatial Tuning of the Face Aftereffect. Vision Sciences Society Annual Meeting. May 16–21, 2014.

26. (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.

27. (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.

28. (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.

29. (2012) **Wolfe, B.A.,** Whitney, D. Presaccadic foveal priming diminishes crowding. Vision Sciences Society Annual Meeting. May 11–16, 2012.

30. (2011) **Wolfe, B.A.,** Whitney, D. Egocentric but not allocentric perceptual distortions from saccadic adaptation. Vision Sciences Society Annual Meeting. May 6–11, 2011.

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

1. University of New Hampshire, Department of Psychology, December 14, 2022
2. York University, Centre for Vision Research, Toronto ON, September 23, 2022
3. Autonomous Vehicles Workshop (AI-CRV Conference), May 30, 2022*
4. Rotman Rounds, Rotman Research Institute at Baycrest, February 7, 2022*
5. University of Toronto, Ebbinghaus Empire Talk Series, October 27, 2021*
6. KITE, University Health Network, Toronto ON, June 22, 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
2023 - Dr Khushi Patel

Graduate Students

2022 - 2023 Greer Gilles (external PhD project, co-supervised with A. Kosovicheva)
2023 - Jaweria Qaiser (external PhD project, co-supervised with A. Kosovicheva)
2023 - Zainab Haseeb (direct advisee; co-supervised with A. Kosovicheva)

Undergraduate Students (* denotes honors thesis supervision)

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

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 / Secondary School Students

Massachusetts Institute of Technology
Sohan Subhash, Yrvine Thelusma

TEACHING EXPERIENCE

Department of Psychology, University of Toronto Mississauga

Winter 2023 *Roots of Psychology* (4th year seminar; formerly Systems of Psychology)
Average student evaluation: 3.7 (department mean, 4.0 / 5)

Fall 2022 *Human Factors* (3rd year lecture course)
Average student evaluation: 4.4 (department mean, 3.9 / 5)

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)

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; Journal of Experimental Psychology: Human Perception and Performance; 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; British Journal of Psychology

*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

2023	UTM STEM Fellowship Program – Host Lab (for Grade 11 students)
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

2023 – Present	Cognitive Science Society
2023 – Present	Canadian Society for Brain, Behaviour and Cognitive Science
2022 – Present	Human Factors and Ergonomics Society
2009 – Present	Vision Sciences Society
2014 – Present	Psychonomics Society

REFERENCES

Ruth Rosenholtz, Ph.D.
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