Revised, December 20, 2021

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

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

GRANTS AND FELLOWSHIPS

2021-2026 NSERC Discovery Grant
Mechanisms of Visual Information Acquisition in Driving
$140,000 ($28,000/year)

2021-2026 NSERC Early Career Researcher Supplement
$12,500

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

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 (via CSAIL Alliances)
"Critical Event Response Thresholds"
$20,000 USD (gift award)

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

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

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

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

(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*

(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.*

(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*

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

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

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

(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.*

(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

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

(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

(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

(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

(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.*

(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.*

(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

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

(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.

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

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

(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.

(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

Vater, C., **Wolfe, B.A.**, Rosenholtz, R., Peripheral vision in action: A systematic review on functionality discussions in driving, walking and aviation – a relation to sports

TEACHING EXPERIENCE

Instructor of Record
Summer 2021 *Cognitive Psychology*, Instructor of Record
Department of Psychology, University of Toronto Mississauga
Average student evaluation: 4.6 (department mean, 4.2 / 5)

Graduate Student Instructor, UC Berkeley (Teaching Assistant)
Spring 2015 *Mind, Brain and Behavior*
Departments: Psychology; Molecular and Cellular Biology
Average student evaluation: 5.97 (department mean, 5.92 / 7)

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

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

MENTORING EXPERIENCE

2021 Simran Kanda, Undergraduate Research Assistant, APPLY Lab (W2021)
Silvia Guidi, Research Opportunity Program (S2021), APPLY Lab
Chandandeep Ghuman, Research Opportunity Program (F2021, W2022)
Mia Romano, Research Opportunity Program (F2021, W2022)
Zainab Haseeb, co-advised Psychology Thesis Student (F2021, W2022)
Zoey Kahled, Independent Research Project (W2022)
Cristeidy Gonzalez, (PSEP Mentee; F2021, W2022)

2017 Sohan Subhash, High School Student in Rosenholtz Lab

2017 Yrvine Thelusma, High School Student in Rosenholtz Lab

2015 Martin A Lopez, MIT, Aeronautics and Astronautics Undergraduate
Completed Senior Project in AgeLab

2015 Riley Ledezma, MIT, Aeronautics and Astronautics Undergraduate
Completed Senior Project in AgeLab

2013-2015 Katherine Wood, Undergraduate Student, UC Berkeley
Completed Honors Thesis in Psychology

2013 Omead Kohanteb, Undergraduate Student, UC Berkeley

2012 Claire Jeon, Undergraduate Student, UC Berkeley

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; Translational Vision Science and Technology; Visual Cognition, Cognitive Science; 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”

GUEST LECTURES AND INVITED TALKS

(2021) Cueing drivers to proximate hazards
KITE, University Health Network
June 22, 2021 *Given remotely due to COVID-19*

(2021) Information Acquisition: Distraction and Hazard Perception
Human-Machine Interaction Workshop
May 28, 2021 *Given remotely due to COVID-19*

(2021) How do drivers acquire visual information?
Huawei Canada Human-Machine Interaction Laboratory
March 24, 2021 *Given remotely due to COVID-19*

(2021) Cueing the Driver: Temporal and Spatiotemporal Cues to Road Hazards
Human Factors Interest Group (HFIG), University of Toronto
February 12, 2021 *Given remotely due to COVID-19*

(2020) What can driving teach us about vision?
Boston University, Department of Biomedical Engineering
November 9, 2020 *Given remotely due to COVID-19*

(2020) How do drivers acquire visual information?
University of Toronto, Department of Mechanical and Industrial Engineering
November 3, 2020 *Given remotely due to COVID-19*

(2020) How do drivers acquire visual information?
University of Iowa, Department of Psychology
October 23, 2020 *Given remotely due to COVID-19*

(2020) Using Driving to Understand Vision or the Art of Avoiding a Moose to the Face
UC Berkeley, Department of Psychology
July 13, 2020 *Given remotely due to COVID-19*

(2020) What Can Driving Teach Us About Vision?
University of Indiana – Bloomington, School of Optometry
March 31, 2020 *Given remotely due to COVID-19*

(2020) What Can Driving Teach Us About Vision?
University of Toronto Mississauga
January 21, 2020

(2019) Reconsidering the Mechanisms of Situation Awareness in Driving
Toyota Research Institute, Cambridge, MA
May 13, 2019

(2019) Using Driving to Understand Vision
New England College of Optometry, Boston, MA
April 16, 2019

(2018) Information Acquisition for Driving
Schepens Eye Research Institute, Boston, MA
August 29, 2018

(2018) Visual Attention in Driving
Tufts University, Department of Psychology, Medford, MA
January 25, 2018

SELECTED CONFERENCE PRESENTATIONS (* denotes student presenter)

(Submitted) *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; *Submitted to Vision Sciences Society 2022*

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

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

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

(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*

(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)*

(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.*

(2022) **Wolfe, B.A.** Eye Movements and Information Acquisition. International Conference on Traffic and Transport Psychology (ICTTP), August 24-26, 2022 *(postponed from 2020 due to COVID-19)*

(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.*

(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.*

(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.

(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.

(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.

(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.

(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.

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

(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.

(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.

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

(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.

(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.

(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.

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

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

(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.

PROFESSIONAL MEMBERSHIPS

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
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Cambridge, MA, 02139
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David Whitney, Ph.D.
Professor, Department of Psychology
University of California at Berkeley
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