

# AMY S. MCDONNELL, PHD

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380 South 1530 East, Room 502

Salt Lake City, UT 84112

## EDUCATION AND TRAINING

### Postdoctoral Research Fellow

Cognitive Neuroscience  
Department of Psychology  
University of Utah

2023-Present

### Ph.D. in Psychology, Cognitive Neuroscience

**Designation** in Teaching in Higher Education  
University of Utah

2020-2023

### M.S. in Psychology, Cognitive Neuroscience

University of Utah

2018-2020

### B.S. in Psychology, Neuroscience Concentration

**Minor** in Faith, Peace, and Justice  
Boston College

2011-2015

## RESEARCH INTERESTS

I study human cognition in the laboratory, technology-mediated, and real-world contexts. In one line of research, I utilize electrocardiography (ECG), scalp electroencephalography (EEG), intracranial electroencephalography (iEEG), and virtual reality (VR) to study the psychophysiological effects of immersion in nature on attention, affect, stress, and psychological well-being. In another line of research, I utilize ECG, EEG, driving simulation, and on-road, naturalistic methods to explore driver workload, arousal, and visual engagement when multitasking behind the wheel and operating autonomous vehicles. My work has significant implications for public health, urban design, environmental psychology, health psychology, human factors/engineering psychology, and human-automation interactions. I am interested in the continued development of mobile psychophysiological methods and data fusion techniques for reliably assessing cognition in the real-world and am passionate about translating my research into tangible impact in my community.

## PUBLICATIONS

<sup>†</sup>Contributed equally

Mahmoodzadeh, M., Sunil, S., Pillai, P., Biondi, F. N., Strayer, D. L., Cooper, J. M., **McDonnell, A. S.**, Balasingam, B. (In Press). Temporal analysis of cognitive workload during manual and partial driving automation levels based on the detection response task. *Proceedings of the IEEE International Symposium on Industrial Electronics*.

**McDonnell, A. S.**, LoTempio, S. B., Scott, E. E., & Strayer, D. L. (2025). Nature images are more visually engaging than urban images: Evidence from neural oscillations in the brain. *Frontiers in Human Neuroscience*, 19, 1-12. <https://doi.org/10.3389/fnhum.2025.1575102>

Collins, S. A., **McDonnell, A. S.**, Scott, E. E., McNay, G. D., Shannon, M. F., Augustin, L., Hoffman, N., Johnson, S., Strayer, D. L., & LoTempio, S. B. (2025). Nature imagery's influence on ERN amplitude: An examination of attention restoration theory using EEG. *Frontiers in Human Neuroscience*, 19, 1-15. <https://doi.org/10.3389/fnhum.2025.1567689>

**McDonnell, A. S.**, LoTempio, S. B., Scott, E. E., McNay, G. D., Greenberg, K., Castro, S. C., & Strayer, D. L. (2025). Immersion in nature decreases neural sensitivity to extrinsic reward. *Journal of Environmental Psychology*, XX(XX), XX-XX. <https://doi.org/10.1016/j.jenvp.2025.102546>

- McDonnell, A. S.** & Strayer, D. L. (2024b). The influence of a walk in nature on human resting brain activity: A randomized controlled trial. *Scientific Reports*, 14, 1-12. <https://doi.org/10.1038/s41598-024-78508-x>
- Lohani, M., Cooper, J. M., **McDonnell, A. S.**, Erickson, G. G., Simmons, T. G., Carriero, A. E., Crabtree, K. W., Strayer, D. L. (2024). Reliable but multi-dimensional cognitive demand in operating partially automated vehicles: Implications for real-world automation research. *Cognitive Research: Principles and Implications*, 9(60), 1-9. <https://doi.org/10.1186/s41235-024-00591-5>
- Alley, J. C., **McDonnell, A. S.**, & Diamond, L. M. (2024). Early adversity and sexual diversity: The importance of self-reported and neurobiological sexual reward sensitivity. *Scientific Reports*, 14(8717), 1-13. <https://doi.org/10.1038/s41598-024-58389-w>
- McDonnell, A. S.** & Strayer, D. L. (2024a). Immersion in nature enhances neural indices of executive attention. *Scientific Reports*, 14(1845), 1-15. <https://doi.org/10.1038/s41598-024-52205-1>
- Sanbonmatsu, D. M., Crabtree, K. W., **McDonnell, A. S.**, Cooper, J. M., & Strayer, D. L. (2024). Automated driving experiences, attention, and intentions following extensive on-road usage of a level 2 automation vehicle. *Journal of Safety Research*, 90, 199-207. <https://doi.org/10.1016/j.jsr.2024.05.002>
- Biondi, F. N., **McDonnell, A. S.**, Cooper, J. M., & Strayer, D. L. (2024). Using the ISO Detection Response Task to measure the cognitive load of driving four separate vehicles on two distinct highways. *Transportation research Part F: Psychology and Behaviour*, 102, 260-269. <https://doi.org/10.1016/j.trf.2024.02.013>
- Cooper, J. M., Crabtree, K. W., **McDonnell, A. S.**, May, D., Strayer, S. C., Tsogtbaatar, T., Cook, D. R., Alexander, P. A., Sanbonmatsu, D. M., & Strayer, D. L. (2023). Driver behavior while using Level 2 Vehicle Automation: A hybrid naturalistic study. *Cognitive Research: Principles and Implications*, 8(1), 1-19. <https://doi.org/10.1186/s41235-023-00527-5>
- McDonnell, A. S.**, Crabtree, K. W., Cooper, J. M., & Strayer, D. L. (2023). This is your brain on Autopilot 2.0: The influence of practice on driver workload and engagement during on-road, partially-automated driving. *Human Factors*, 66(8), 2025-2040. <https://doi.org/10.1177/00187208231201054>
- LoTempio, S. B., **McDonnell, A. S.**, Nadkarni, N., Walker, S., Gallegos-Riofrio, C. A., Scott, E. E., Bettmann, J. E., Rojas-Rueda, D., Dahl, J., Tomasso, L. P., Lawler, J., Davalos, D., & Strayer, D. L. (2023). Healthy by nature: Policy practices aimed at maximizing the human health benefits of nature contact. *Policy Insights from the Behavioral and Brain Sciences*, 10(2), 247-255. <https://doi.org/10.1177/23727322231197578>
- Biondi, F. N., **McDonnell, A. S.**, Mahmoodzadeh, M., Jajo, N., Balasingam, B., & Strayer, D. L. (2023). Vigilance decrement during on-road partially-automated driving across four systems. *Human Factors*, XX(XX), XX-XX. <https://doi.org/10.1177/00187208231189658>
- LoTempio, S. B., Lopes, C. L., **McDonnell, A. S.**, Scott, E. E., Payne, B. R., & Strayer D. L. (2023). Updating the relationship of the Ne/ERN to task-related behavior: A brief review and suggestions for future research. *Frontiers in Human Neuroscience*, 17, 1-21. <https://doi.org/10.3389/fnhum.2023.1150244>
- Scott, E. E.<sup>†</sup>, Crabtree, K. W.<sup>†</sup>, **McDonnell, A. S.**, LoTempio, S. B., McNay, G. D., & Strayer, D. L. (2023). Measuring affect and complex working memory in natural versus urban environments. *Frontiers in Psychology*, 14, 1-11. <https://doi.org/10.3389/fpsyg.2023.1039334>
- Strayer, D. L., Cooper, J. M., Sanbonmatsu, D. M., & **McDonnell, A. S.** (2023). *A multi-method approach to understanding drivers' experiences and behavior under partial vehicle automation* (Technical Report). Washington, DC: AAA Foundation for Traffic Safety. <https://aaaafoundation.org/wp-content/uploads/2023/09/202309-AAAFTS-ADAS-Exposure-and-Driver-Workload.pdf>

- McDonnell, A. S.**, Imberger, K., Poulter, C., & Cooper, J. M. (2021). The power and sensitivity of four core driver workload measures for benchmarking the distraction potential of new driver vehicle interfaces. *Transportation Research Part F: Traffic Psychology and Behaviour*, 83, 99-117. <https://doi.org/10.1016/j.trf.2021.09.019>
- McDonnell, A. S.**, Simmons T. G., Erickson, G. G., Lohani, M., Cooper J. M., & Strayer, D. L. (2021). This is your brain on Autopilot: Neural indices of driver workload and engagement under partial vehicle automation. *Human Factors*, 65(7), 1435-1450. <https://doi.org/10.1177/00187208211039091>
- Lohani, M., Cooper J. M., Erickson, G. G., Simmons, T. G., **McDonnell, A. S.**, Carriero, A. E., Crabtree, K. W., & Strayer, D. L. (2021). No difference in arousal or cognitive demands between manual and partially automated driving: A multi-method on-road study. *Frontiers in Neuroscience*, 15, 627. <https://doi.org/10.3389/fnins.2021.577418>
- Scott E. E., **McDonnell, A. S.**, LoTempio, S. B., Uchino, B. N., & Strayer, D. L. (2021). Toward a unified model of stress recovery and cognitive restoration in nature. *Parks Stewardship Forum*, 37, 46-60. <https://doi.org/10.5070/P537151710>
- LoTempio, S. B., Scott, E. E., **McDonnell, A. S.**, Hopman, R. J., Castro, S., McNay, G. D., McKinney, T. L., Greenberg, K., Payne, B. R., & Strayer, D. L. (2020). Nature as a potential modulator of the error-related negativity. *International Journal of Psychophysiology*, 156, 49-59. <https://doi.org/10.1016/j.ijpsycho.2020.06.014>
- Scott, E. E., LoTempio, S. B. **McDonnell, A. S.**, McNay, G. D., Greenberg, K., McKinney, T. L., Uchino, B. N., Strayer, D. L. (2020). The autonomic nervous system in its natural environment: Immersion in nature is associated with changes in heart rate and heart rate variability. *Psychophysiology*, e13698. <https://doi.org/10.1111/psyp.13698>.
- Lohani, M., Cooper J. M., Erickson, G. G., Simmons, T. G., **McDonnell, A. S.**, Carriero, A. E., Crabtree, K. W., & Strayer, D. L. (2020). Driver arousal and workload under partial vehicle automation: A pilot study. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 64(1), 1955-1959. <https://doi.org/10.1177/1071181320641471>
- Strayer, D. L., Cooper, J. M., Sanbonmatsu, D. M., Erickson, G. G., Simmons, T. G., **McDonnell, A. S.**, Carriero, A.E., Crabtree, K. W., & Lohani, M. (2020). *Driver's arousal and workload under partial vehicle automation* (Technical Report). Washington, DC: AAA Foundation for Traffic Safety. <https://aaafoundation.org/wp-content/uploads/2020/03/1.-AAA-Foundation-Utah-Report-FINAL.pdf>

## BOOK CHAPTERS

- Strayer, D. L. & **McDonnell, A. S.** (2025). SPIDER 2.0: Driver Distraction and Visual Attention. In D. Brainard & J. H. R. Maunsell (Eds.), *Annual Review of Vision Science*. <https://doi.org/10.1146/annurev-vision-110423-025626>
- Strayer, D. L., Castro, S. C., & **McDonnell, A. S.** (2022). The Multitasking Motorist. In A. Kiessel, L. Johannsen, H. Mueller, & I. Koch (Eds.), *Handbook of Human Multitasking*. <https://doi.org/10.1007/978-3-031-04760-2>

## MANUSCRIPTS UNDER REVISION

- McDonnell, A. S.**, Scott, E. E., Jecmen, D., Crabtree, K., Hopman-Droste, R. J., Walker, S. E., Coane, J. H., Strayer, D. L., & LoTempio, S. B. (revise and resubmit). A conceptual comparison of the influence of nature images, sounds, and virtual reality on affect and working memory.
- LoTempio, S. B., Euler, M. J., Scott, E. E., **McDonnell, A. S.**, McKinney, T. L., Castro, S. C., McNay, G. D., Greenberg, K., Payne, B. R., & Strayer, D. L. (revise and resubmit). A natural boost to cognitive control?

Two pilot studies on nature exposure as a potential modulator of the anterior N2 component and midline frontal theta.

Scott, E. E., **McDonnell, A. S.**, LoTempio, S. B., McNay, G. D., Greenberg, K., Castro, S. C., & Strayer, D. L. (revise and resubmit). Prolonged immersion in nature modulates neural correlates of working memory.

## MANUSCRIPTS IN PREPARATION

**McDonnell, A. S.**, Scott, E. E., LoTempio, S. L., Stefanucci, J. K., & Strayer, D. L. (In preparation). Nature and the brain: Attention, affect, and the integrative role of the anterior cingulate cortex.

**McDonnell, A. S.**, Lee, J., & Strayer, D. L. (In preparation). Cognitive considerations in human-automation interactions.

## GRANTS AND FELLOWSHIPS

### FUNDED

**REI Cooperative Action Fund (2024-2026)** – \$47,752

Utilizing deep brain recordings to uncover nature's health potential for nature-deprived individuals. **Role: Co-Principal Investigator**

**One Utah Data Science Hub Seed Grant (2024-2025)** – University of Utah, \$41,206

Modeling the effect of artificial nature exposure on brain health in bed-bound populations using variational autoencoders. **Role: Co-Investigator**

**Research Incentive Seed Grant (2024-2025)** – University of Utah, \$20,000

Exploring the utility of virtual reality nature as a therapeutic intervention for neurosurgical patients in a hospital setting. **Role: Co-Principal Investigator**

**Community Based Research: Partnership Formation Grant (2023-2024)** – University of Utah, \$7,470

Exploring the impact of immersion in nature on the health and well-being of the Pasifika community in Salt Lake County, **Role: Co-Principal Investigator**

**Graduate Research Fellowship (2022-2023)**, University of Utah, \$20,108

Exploring neural correlates of attention restoration in nature, **Role: Principal Investigator**

### UNDER REVIEW

**National Science Foundation (2026-2028)**

Your Brain on Nature: Disentangling the Mechanisms of Environmental Effects on Attention and Cognitive Control

### NOT FUNDED

Investigating the intracranial neural computations of risk and reward related to anhedonia, Wellcome Mental Health Award, Role: Co-Investigator (2024)

Influence of Roadside Assistance Vehicle Lighting on Driver Behavior and Safety, AAA Foundation for Traffic Safety, Role: Co-Investigator (2023)

Bridging the Gap: Examining the neural correlates of cognitive control, utilizing invasive and non-invasive electroencephalographic techniques, One Utah Data Science Hub Pilot Seed Grant, Role: Co-Investigator (2022)

From the Lab to the Highway: A New Method for Detecting Lapses in Attention While Driving, Fulbright U.S. Scholar Program, Role: Principal Investigator (2021)

Co-registration of pupillometry and EEG to assess the influence of nature imagery on emotional response, NSF Graduate Research Fellowship Program (GRFP), Role: Principal Investigator (2019)

## HONORS AND AWARDS

<b>Women Tech Awards Finalist</b> , Women Tech Council	2025
<b>Top 100 Authors of 2024</b> , <i>Scientific Reports</i> , Nature Portfolio	2025
<b>Poster Winner</b> , Residents/Fellows Category at Mental Health, Brain & Behavioral Science Research Day	2023
<b>Postdoctoral Conference Award</b> , University of Utah, \$1,000	2023
<b>The Frederick T. Rhodewalt Award for Innovative Scholarship</b> , University of Utah, \$1,000	2023
<b>Utah Public Health Conference Scholarship</b> , Utah Public Health Association, \$300	2023
<b>Commendation for Research</b> , University of Utah, Department of Psychology	2023
<b>Professional Development Award</b> , University of Utah, Cognition and Neural Sciences, \$500	2022
<b>B. Jack White Award</b> , University of Utah, Department of Psychology, \$1,250	2022
<b>Clayton Award for Research Excellence</b> , University of Utah, Department of Psychology, \$2,700	2022
<b>Teaching in Higher Education Designation</b> , University of Utah, Center for Teaching and Learning Excellence	2022
<b>Graduate Student Conference Award</b> , University of Utah, The Graduate School, \$1,000	2022
<b>Virtual Conference Award</b> , University of Utah, The Graduate School, \$200	2021
<b>Commendation for Service</b> , University of Utah, Department of Psychology	2021
<b>Professional Development Award</b> , University of Utah, Cognition and Neural Sciences, \$500	2020
<b>Qualifying Exams—Pass with Distinction</b> , University of Utah, Department of Psychology	2020
<b>Commendation for Research</b> , University of Utah, Department of Psychology	2020
<b>Commendation for Teaching</b> , University of Utah, Department of Psychology	2020
<b>Undergraduate Research Mentorship Certificate</b> , University of Utah, Office of Undergraduate Research	2020
<b>SHIFT Award—Applied Cognition Lab</b> , SHIFT Conference	2019
<b>Emerging Leaders Program Fellow</b> , SHIFT Conference	2019

## RESEARCH EXPERIENCE

<b>University of Utah – Applied Cognition Lab</b> , Salt Lake City, UT <i>Postdoctoral Research Fellow</i> Advisor: David Strayer, Ph.D.	2023-Present
<b>University of Utah – Immersive Neuromodulation and Neuroimaging Lab</b> , Salt Lake City, UT <i>Postdoctoral Research Fellow</i> Advisor: Cory Inman, Ph.D.	2023-Present
<b>University of Utah – Applied Cognition Lab</b> , Salt Lake City, UT <i>Graduate Student</i> Advisor: David Strayer, Ph.D.	2018-2023
<b>Red Scientific</b> , Salt Lake City, UT <i>Statistical Consultant</i> Supervisor: Joel Cooper, Ph.D.	2020-2021
<b>Didi Hirsch Mental Health Services</b> , Los Angeles, CA <i>Clinical Research Assistant</i> Supervisors: Lisa Davis, Ph.D. and Sae Lee, Ph.D.	2015-2017
<b>Boston College – Department of Psychology</b> , Chestnut Hill, MA <i>Research Assistant</i> Advisor: Ann Burgess, D.N.Sc., RNCS, FAAN	2014-2015

## TEACHING EXPERIENCE

### INSTRUCTOR

<b>Cognition in the Wild</b> , Osher Lifelong Learning Institute, University of Utah	Spring 2024
<b>PSY4130 Cognition in the Wild</b> , University of Utah	Fall 2023
<b>PSY4130 Cognition in the Wild</b> , University of Utah	Spring 2022
<b>PSY4130 Cognition in the Wild</b> , University of Utah	Spring 2020

### TEACHING ASSISTANT

<b>Introduction to Psychology</b> , Utah State Prison	Summer 2021
<b>PSY3960 Data Science for Psychology Majors</b> , University of Utah	Spring 2021
<b>PSY2100 Cognitive Psychology</b> , University of Utah	Fall 2019
<b>PSY2100 Cognitive Psychology</b> , University of Utah	Fall 2020
<b>PSY2100 Cognitive Psychology</b> , University of Utah	Fall 2021
<b>PSY3711 Brain and Behavior</b> , University of Utah	Summer 2019

### GUEST LECTURES

<b>PSY2100 Cognitive Psychology</b> , University of Utah	February 2024
<b>PSY6700 Neuropsychology</b> , University of Utah	September 2023
<b>PSY4010 Biological Psychology</b> , Vermont State University	March 2023
<b>PSY2100 Cognitive Psychology</b> , University of Utah	February 2023
<b>STAT6003 Survey of Statistical Packages</b> , University of Utah	February 2022
<b>PSY2100 Cognitive Psychology</b> , University of Utah	November 2021
<b>PSY3960 Data Science for Psychology Majors</b> , University of Utah	April 2021
<b>PSY2100 Cognitive Psychology</b> , University of Utah	October 2020
<b>PSY2100 Cognitive Psychology</b> , University of Utah	September 2019
<b>PSY2010 Psychology as a Science and Profession</b> , University of Utah	July 2019
<b>PSY4130 Cognition in the Wild</b> , University of Utah	March 2019

## INVITED TALKS

<b>Northwest Nature and Health Symposium</b> , Seattle, WA <i>Title: Using neuroscience methods to understand the influence of nature the brain</i>	May 2025
<b>Procter &amp; Gamble Human Biology Symposium</b> , Cincinnati, OH <i>Title: This is your brain on nature: The influence of exposure to nature on cognition</i>	March 2025
<b>Vancouver Botanical Gardens Association</b> , Vancouver, BC, Canada <i>Title: Your Brain in Nature</i>	January 2025
<b>Center for Native Excellence and Tribal Engagement</b> , Salt Lake City, UT <i>Title: The impact of nature on physical and mental health</i>	October 2024
<b>American Public Gardens Association: Education Symposium</b> , Salt Lake City, UT <i>Keynote Speaker</i> <i>Title: This is your brain on nature: The influence of exposure to natural environments on cognition</i>	August 2024
<b>Hydrow</b> , Boston, MA <i>Title: Nature, Cognition, and the Brain</i>	May 2024
<b>Red Butte Garden</b> , Salt Lake City, UT <i>Title: Environmental Neuroscience at Red Butte Garden</i>	February 2024



**Macquarie University**, Sydney, Australia  
**Title:** *Nature on the Brain*, Perception in Action Research Centre

April 2023

**Southern Utah Wilderness Alliance**, Salt Lake City, UT  
**Title:** *Nature in the Time of COVID-19*

April 2020

**Emerging Leaders Program for the SHIFT Conference**, Jackson, WY  
**Title:** *Outdoor Recreation and Health*

October 2019

**Boston College TED Talks: Undergraduate Lecture Series**, Chestnut Hill, MA  
**Title:** *How Neuroscience Can Save the Crisis in America's Prisons*

April 2015

## CONFERENCE PRESENTATIONS

### ORAL PRESENTATIONS

**McDonnell, A. S.**, Cowan, R., Smith, E. H., Stefanucci, J. K., & Strayer, D. L. (June 2025). The influence of immersion in nature on the brain. Oral presentation at the 2025 Society for Applied Research in Memory and Cognition (SARMAC) meeting in County Kildare, Ireland.

**McDonnell, A. S.**, LoTempio, S. B., Scott, E. E., Strayer, D. L. (April 2024). This is your brain on nature: The influence of exposure to natural environments on attention. Oral presentation at the 2024 Rocky Mountain Psychological Association Convention in Denver, Colorado.

**McDonnell, A. S.** & Strayer, D. L. (April 2023). This is your brain on nature: The influence of exposure to natural environments on cognition and mental health. Oral presentation at the 2023 Utah Public Health Conference in Salt Lake City, Utah.

**McDonnell, A. S.**, Cooper, J. M., & Strayer, D.L. (October 2021). Assessing visual engagement during partial automation. Oral presentation at the 7<sup>th</sup> International Conference on Driver Distraction and Inattention in Lyon, France.

**McDonnell, A. S.** & Strayer, D. L. (October 2021). Neurophysiological Effects of Exposure to Nature: Attention, Affect, And Integrative Role of the Anterior Cingulate Cortex. Oral presentation at the Nature and Health Conference in Seattle, Washington.

### POSTER PRESENTATIONS

*\*Undergraduate researcher mentee*

Lasko, C.\* , Lang, W.\* , Landvatter, J., Strayer, D. L., & **McDonnell, A. S.** (August 2024). The impact of cell phone usage on stress physiology in nature. Poster Presentation at the 2024 and 2025 Undergraduate Research Symposium.

**McDonnell, A. S.** & Strayer, D. L. (September 2024). Immersion in nature enhances mood and executive attention. Poster presentation at the 2024 Mental Health, Brain and Behavioral Science Research Day at the University of Utah.

Lang, W.\* , Landvatter, J., Strayer, D. L., & **McDonnell, A. S.** (August 2024). The impact of cell phone usage on stress physiology in nature. Poster Presentation at the 2024 Undergraduate Research Symposium.

Sherman, H.\* & **McDonnell, A. S.** (April 2024). Why do we benefit from immersion in nature? Poster Presentation at the 2024 Undergraduate Research Symposium.

Scott, E. E., **McDonnell, A. S.**, LoTempio, S. B., Switser-Rae, C., Inghram, D., O'Neill, K., Strayer, D. L. (April 2024). Examining neurophysiological responses to environmental imagery. Poster presentation at the 2024 Rocky Mountain Psychological Association Convention in Denver, Colorado.

- Scott, E. E., **McDonnell, A. S.**, LoTemplo, S. B., Switser-Rae, C., Inghram, D., O'Neill, K., Strayer, D. L. (March 2024). Examining neurophysiological responses to environmental imagery. Poster presentation at the 2024 Eastern Psychological Association Conference in Philadelphia, Pennsylvania.
- McDonnell, A. S.** & Strayer, D. L. (November 2023). Immersion in nature enhances neural correlates of human attention. Poster presentation at the 2023 Society for Neuroscience in Washington, D.C.
- McDonnell, A. S.**, LoTemplo, S. B., Scott, E. E. & Strayer, D. L. (September 2023). Cognition in the wild: The influence of immersion in nature on the brain. Poster presentation at the 2023 Mental Health, Brain and Behavioral Science Research Day at the University of Utah. *Poster winner in the Medical Residents/Fellows category.*
- Scott, E. E., **McDonnell, A. S.**, McNay, G. D., Strayer, D. L., & LoTemplo, S. B. (September 2023). Examining changes in physiological stress during exposure to environmental imagery. Poster presentation at the 2023 SHIFT Conference in Bend, Oregon.
- Storie, M.\* & **McDonnell, A. S.** (August 2023). Influence of nature on effortful processing of emotionally charged stimuli. Poster Presentation at the 2023 Undergraduate Research Symposium.
- Macfarlane, M.\* & **McDonnell, A. S.** (February 2023). Effects of natural and urban imagery on error-related negativity. Poster presentation at the 2023 Utah Conference for Undergraduate Research in Salt Lake City, Utah.
- Silcox, J., **McDonnell, A. S.**, Strayer, D. L., & Payne, B., (November 2022). Driving under the influence of misperception: The effects of speech perception and false hearing on driving performance. Poster presentation at the 2022 Psychonomic Society's 63<sup>rd</sup> Annual Meeting in Boston, Massachusetts.
- McDonnell, A. S.**, Crabtree, K.W., DePry, C., Cooper, J., & Strayer, D.L. (September 2022). The influence of trust on driver cognitive states during automated driving. Poster presentation at the 2022 Society of Psychophysiological Research 62<sup>th</sup> Annual Meeting in Vancouver, British Columbia.
- McDonnell, A. S.**, LoTemplo, S.L., McNay, G.D., Scott, E.E., & Strayer, D.L. (September 2022). The influence of exposure to different dosages of nature on reward processing. Poster presentation at the 2022 Society of Psychophysiological Research 62<sup>th</sup> Annual Meeting in Vancouver, British Columbia.
- Shannon, M.F.\* & **McDonnell, A. S.** (August 2022). The cognitive effect of nature imagery on reward positivity. Poster Presentation at the 2022 Undergraduate Research Symposium.
- Macfarlane, M.\*, Quick, A.\*, & **McDonnell, A. S.**, (August 2022). Effects of natural and urban imagery on error-related negativity. Poster Presentation at the 2022 Undergraduate Research Symposium.
- Schulz, C.\*, **McDonnell, A. S.**, LoTemplo, S.B., & Strayer, D.L. (April 2022). Effect of nature vs. urban imagery on the reward positivity. Poster Presentation at the 2022 Undergraduate Research Symposium.
- Jeong, S. \*, **McDonnell, A. S.**, Silcox, J., Strayer, D. L., & Payne, B. (April 2022). The effect of listening to degraded speech on driving performance. Poster Presentation at the 2022 Undergraduate Research Symposium.
- Bennett, K.\*, Jeong, S.\*, Silcox, J., **McDonnell, A. S.**, Payne, B., & Strayer, D. L. (April 2022). The effects of driving on false hearing and cognitive load. Poster Presentation at the 2022 Undergraduate Research Symposium.
- McDonnell, A. S.**, Crabtree, K. W., Cooper, J., Strayer, D. L. (September 2021). Neural indices of driver workload and engagement during partial vehicle automation. Poster presentation at the 2021 Society of Psychophysiological Research 61<sup>st</sup> Annual Meeting.
- Augustin, L.\*, Hoffman, N.\*, **McDonnell, A. S.**, LoTemplo, S. B., & Strayer, D. L. (August 2021). Assessment of



Nature Imagery's Influence on Attention Restoration. Poster Presentation at the 2021 Undergraduate Research Symposium.

**McDonnell, A. S.**, LoTemplo, S.B., Scott, E.E., McNay, D. Greenberg, K., Castro, C.C., & Strayer, D.L. (October 2020). Nature modulates neurophysiological correlates of reward. Poster presentation at the 2020 Society of Psychophysiological Research 60<sup>th</sup> Annual Meeting.

Lohani, M. Cooper, J.M., Erickson, G.G., Simmons, T.G., **McDonnell, A. S.**, Carriero, A.\*, Crabtree, K.W.\*, & Strayer, D.L. (October 2020). Application of heart rate variability to assess arousal in semi-automated vehicles. Poster presentation at the 2020 Society of Psychophysiological Research 60<sup>th</sup> Annual Meeting.

Lohani, M., Cooper J.M., Erickson, G.G., Simmons, T.G., **McDonnell, A. S.**, Carriero, A.E.\*, Crabtree, K.W.\*, & Strayer, D.L. (October 2020). Driver arousal and workload under partial vehicle automation: A pilot study. Virtual presentation at the Human Factors and Ergonomics Society 64<sup>th</sup> Annual Meeting.

**McDonnell, A. S.**, LoTemplo, S.B., Scott, E.E., Castro, S.C., McNay, D. Greenberg, K., & Strayer, D.L. (October 2019). Reward Positivity as a Biomarker of Attention Restoration in Nature. Poster presentation at the 2019 SHIFT Conference in Jackson, Wyoming.

Scott, E.E., **McDonnell, A.S**, LoTemplo, S.B., Castro, S.C., McNay, D. Greenberg, K., & Strayer, D.L. (October 2019). Prolonged Exposure to Nature Modulates Neural Biomarkers of Attention. Poster presentation at the 2019 SHIFT Conference in Jackson, Wyoming.

LoTemplo, S.B., Scott, E.E., **McDonnell, A. S.**, Hopman, R.J., McKinney, T.L., Payne, B.R., & Strayer, D.L. (October 2019). Nature as a potential modulator of the error-related negativity. Poster presentation at the 2019 SHIFT Conference in Jackson, Wyoming.

LoTemplo, S.B., Scott, E.E., **McDonnell, A. S.**, Hopman, R.J., McKinney, T.L., Payne, B.R., & Strayer, D.L. (November 2019). Nature as a potential modulator of the error-related negativity. Poster presentation at the 2019 Psychonomic Society 60<sup>th</sup> Annual Meeting in Montréal, Québec, Canada.

Crabtree, K.W.\*, Scott, E.E., Hopman, R.J., McKinney, T.L., **McDonnell, A. S.**, Strayer, D.L., & Uchino, B.N. (November 2019). Virtual environments' effects on working memory and mood: A pilot study. Poster presentation at the 2019 Psychonomic Society's 60<sup>th</sup> Annual Meeting in Montréal, Québec, Canada.

### UNDERGRADUATE RESEARCH SUPERVISED

Huskey, E. (Summer 2025). Effects of urban or nature virtual reality immersion on stress physiology. *Funded by the Undergraduate Research Opportunity Program (\$1,200) and presented at the Undergraduate Research Symposium.*

Lang, W. (Summer 2024 & Spring 2025). Effect of cellphone usage on stress, heart rate, and heart rate variability in a nature environment. *Funded by the Undergraduate Research Opportunity Program (\$2,400) and presented at the Undergraduate Research Symposium.*

Lasko, C. (Fall 2024). Impact of cell phone use on stress recovery and attention restoration in nature. *Funded by the Undergraduate Research Opportunity Program (\$1,200) and presented at the Undergraduate Research Symposium.*

Sherman, H. (Spring 2024). Effect of connectedness to nature and living environment on cognition and affect after exposure to nature. *Funded by the Undergraduate Research Opportunity Program (\$1,200), completed as part of an independent study in the undergraduate Computer Science major, and presented at the Undergraduate Research Symposium.*

Storie, M. (Spring 2023 & Summer 2023). Influence of nature on effortful processing of emotionally charged stimuli. *Funded by the Undergraduate Research Opportunity Program (\$1,200), presented at the*

*Undergraduate Research Symposium, completed as part of the undergraduate Human Factors Certificate Program and published in the Undergraduate Research Journal (RANGE).*

Richins, J. (Fall 2022 & Spring 2023). Effects of natural and urban imagery on the brain's reward processes. *Funded by the Undergraduate Research Opportunity Program (\$2,400).*

Shannon, M.F. (Summer 2022). Influence of environmental imagery on neurophysiological correlates of attention. *Funded by the Odyssey Program for Undergraduate Research at Hendrix College (\$5,000) and presented at the Undergraduate Research Symposium.*

Quick, A. (Summer 2022 & Fall 2022). Effects of natural and urban imagery on error-related negativity. *Funded by the Undergraduate Research Opportunity Program (\$2,400), completed as part of the undergraduate Human Factors Certificate Program, presented at the Undergraduate Research Symposium, and published in the Undergraduate Research Journal (RANGE).*

Macfarlane, M. (Summer 2022 & Fall 2022). The influence of nature images on the neurophysiology of attention. *Funded by the Undergraduate Research Opportunity Program (\$2,400), presented at the Undergraduate Research Symposium, presented at the 2023 Utah Conference for Undergraduate Research and published in the Undergraduate Research Journal (RANGE).*

Schulz, C. (Spring 2022). Effects of natural and urban imagery on reward processing in the brain. *Funded by the Undergraduate Research Opportunity Program (\$1,200) and presented at the Undergraduate Research Symposium.*

Jeong, S. (Spring 2022). The effect of listening to degraded speech on driving performance in a simulator. University of Utah. *Funded by the Undergraduate Research Opportunity Program (\$1,200) and presented at the Undergraduate Research Symposium.*

Augustin, L. (Summer 2021). The effect of nature imagery on event-related brain potentials. University of Utah. *Funded by the Summer Program for Undergraduate Research (\$5,000), presented at the Undergraduate Research Symposium and published in the Undergraduate Research Journal (RANGE).*

Hoffmann, N. (Summer 2021). The effect of nature imagery on event-related brain potentials. University of Utah. *Funded by Furman University Summer Internship Fellowship Program (\$5,000).*

Morse, R. (Fall 2020 & Spring 2021). The relationship between self-reported motivation and the error-related negativity. University of Utah. *Funded by the Undergraduate Research Opportunity Program (\$2,400), presented at the Undergraduate Research Symposium and published in the Undergraduate Research Journal (RANGE).*

Morse, R. (Summer 2020). Measuring cognitive control and response to reward using electroencephalography. University of Utah. *Funded by the Summer Program for Undergraduate Research (\$5,000).*

Weaver, V. (Fall 2019). Effect of cell phone use on driving behavior. University of Utah. *Completed as part of the undergraduate Human Factors Certificate Program.*

## **VOLUNTEER AND OUTREACH**

<b>Community-driven Research – Lead Researcher</b> , Open Circle, Ojai, CA	2023-Present
<b>Community-driven Research – Lead Researcher</b> , Tracy Aviary, Salt Lake City, UT	2022-Present
<b>Outreach Presentation</b> , Mt. View Elementary School, Salt Lake City, UT	March 2024
<b>Instructor</b> , OSHER Lifelong Learning Institute, Salt Lake City, UT	Spring 2024
<b>Poster Session Judge</b> , Utah Conference for Undergraduate Research, Salt Lake City, UT	February 2023
<b>Instructor</b> , Utah Prison Education Program - Utah State Prison, Salt Lake City, UT	2021-2022
<b>Advisory Council</b> , Emerging Leaders Program, Jackson, WY	2021-2022
<b>Poster Session Judge</b> , Undergraduate Research Symposium, Salt Lake City, UT	August 2021
<b>Outreach Presentation</b> , Mathematics, Engineering, and Science Achievement Program	March 2021

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## PROFESSIONAL SERVICE

**Guest Editor**, *Human Factors* 2024-2026  
Special Issue: "Investigating the Human Factors of Artificial Intelligence Use"

**Lead Guest Editor**, *Cognitive Research: Principles and Implications* 2023-2025  
Special Issue: "Automation and Human Cognition"

### Ad Hoc Reviewing

Computer Methods in Biomechanics and Biomedical Engineering, International Journal of Human-Computer Interaction, Cognitive Research: Principles and Implications, Frontiers in Psychology, Frontiers in Neuroergonomics, Human Factors, Journal of Environmental Psychology, Ecopsychology, Mental Health and Physical Activity, Scientific Reports, Journal of Cognitive Psychology, Frontiers in Human Neuroscience

### Departmental Service

**Diversity Graduate School Application Advisory**, University of Utah, Department of Psychology 2019-Present  
**Diversity Committee**, University of Utah, Department of Psychology 2018-Present  
**Faculty Tenure Review Committee**, University of Utah, Department of Psychology 2021-2022  
**Professional Issues & Ethics Committee Elected Representative**, University of Utah 2020-2021  
**PsychoPy Research Group—Co-Founder** University of Utah, Department of Psychology 2019-2020  
**International Assistants Program**, Boston College 2014-2015  
**Arrupe International Program**, Boston College 2013-2014  
**Appalachian Volunteers**, Boston College 2011-2015

## POPULAR MEDIA

**@theU – Health and Medicine**: Instruments of the U: Applied Cognition Lab 2025  
Article link: <https://attheu.utah.edu/health-medicine/instruments-of-the-u-applied-cognition-lab/>

**Svenska Dagbladet**: Hjärnforskare: "Enorm förbättring i kreativitet" [Swedish Newspaper] 2025  
Article link: <https://www.svd.se/a/dRbLn1/positiv-hjarneffekt-redan-efter-40-minuter-i-naturen-utan-mobil>

**@theU - Health and Medicine**: How a walk in nature restores attention 2024  
Article link: <https://attheu.utah.edu/health-medicine/new-strayer-research/>

**PBS**: America Outdoors with Baratunde Thurston, Season 2, Episode 5 2023  
Full episode: <https://www.pbs.org/video/utah-choose-your-path-m1j4hf/>  
Research highlight: <https://www.pbs.org/video/the-science-behind-outdoor-relaxation-e3jbzi/>

**IMPACT Magazine**: This is Your Brain on Nature 2021  
Article link: <https://impactmagazine.ca/health/health-and-wellness/this-is-your-brain-on-nature/>

## PROFESSIONAL MEMBERSHIPS

Society for Applied Research in Memory and Cognition, Nature and Health Alliance, Society for Neuroscience, Human Factors and Ergonomics Society, Society for Psychophysiological Research, Nature and Human Health - Utah, Open Science Framework

## SKILLS

Electroencephalography (EEG), electrocardiography (ECG), virtual and augmented reality (V/AR), intracranial electroencephalography (iEEG), electrodermal activity (EDA), detection response tasks (DRT), BORIS naturalistic video coding, BioPac Systems (BioNomadix), BrainVision Systems (actiCHamp and LiveAmp), driving simulation technology, R, Python, PsychoPy, MATLAB, EEGLab, ERPLab, E-Prime, event-related potential analyses, frequency analyses, time-frequency techniques, multimethod on-road vehicle assessment, field-based physiological data collection.

## ACADEMIC REFERENCES

**David L. Strayer, Ph.D.**, Professor of Psychology, University of Utah, [david.strayer@utah.edu](mailto:david.strayer@utah.edu)

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**Paula G. Williams, Ph.D.**, Professor of Clinical and Health Psychology, University of Utah, [paula.williams@psych.utah.edu](mailto:paula.williams@psych.utah.edu)

**Sarah H. Creem-Regehr, Ph.D.**, Department Chair and Professor of Psychology, University of Utah, [sarah.creem@psych.utah.edu](mailto:sarah.creem@psych.utah.edu)

**Elliot H. Smith, Ph.D.**, Assistant Professor of Neurosurgery, University of Utah School of Medicine, [e.h.smith@utah.edu](mailto:e.h.smith@utah.edu)