

AMY MCDONNELL

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EDUCATION

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| Doctoral Candidate in Cognition and Neural Sciences, University of Utah
<i>Designation in Teaching in Higher Education</i> | Anticipated 2023 |
| Master of Science in Psychology, University of Utah | 2020 |
| Bachelor of Science in Psychology with a Neuroscience Concentration, Boston College
<i>Minor in Faith, Peace, and Justice</i> | 2015 |

RESEARCH INTERESTS

My research interests surround the neural correlates of attention and emotion and how they change in different applied environments. In one line of research, I utilize electroencephalography (EEG) and electrocardiography (ECG) to study the physiological effects of spending an extended amount of time in nature. In another line of research, I utilize EEG and ECG to explore driver workload, arousal, and attention when operating both manual and autonomous vehicles. I am interested in the applications of my research to public policy and technological development.

PUBLICATIONS

- 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*. xx(xx), 1-16. <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.**, LoTemplo, 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>
- LoTemplo, 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., LoTemplo, 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. *Washington, DC: AAA Foundation for Traffic Safety*. <https://aaaafoundation.org/wp-content/uploads/2020/03/1.-AAA-Foundation-Utah-Report-FINAL.pdf>

BOOK CHAPTERS

Strayer, D.L., Castro, S.C., & **McDonnell, A.S.** (In press). The Multitasking Motorist. In A. Kiessel, L. Johannsen, H. Mueller, & I. Koch (Eds.), *Handbook of Human Multitasking*.

MANUSCRIPTS UNDER REVIEW

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

McDonnell, A.S., LoTemplo, S.B., Scott, E.E., Greenberg, K., McNay, G.D., Castro, S.C., & Strayer, D.L. (Under Review). Nature modulates neurophysiological correlates of reward.

LoTemplo, S.B., McKinney, T.L., Scott E.E., **McDonnell, A.S.**, Castro, S.C., McNay, G.D., Greenberg, K., Euler, M., Payne, B.R., & Strayer D.L. (Under Review). A natural boost to cognitive control: Nature exposure as a potential modulator of the anterior N2 component and medial frontal theta.

MANUSCRIPTS IN PREPARATION

McDonnell, A.S. & Strayer, D.L. (In preparation). Neurophysiological effects of exposure to nature: Suggestions for future research.

McDonnell, A.S., Scott, E.E., LoTemplo, 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.

GRANTS AND AWARDS

Graduate Research Fellowship , University of Utah, The Graduate School, \$20,108	2022
Professional Development Award , University of Utah, Cognition and Neural Sciences, \$500	2022
B. Jack White Award , University of Utah, Department of Psychology, \$1250	2022
Clayton Award for Research Excellence , University of Utah, Department of Psychology, \$2700	2022
Teaching in Higher Education Designation , University of Utah, Center for Teaching and Learning Excellence	2022
Virtual Conference Award , University of Utah, The Graduate School, \$200	2021
Commendation for Service , University of Utah, Department of Psychology	2021
Professional Development Award , University of Utah, Cognition and Neural Sciences, \$500	2020
Qualifying Exams—Pass with Distinction , University of Utah, Department of Psychology	2020
Commendation for Research , University of Utah, Department of Psychology	2020
Commendation for Teaching , University of Utah, Department of Psychology	2020
Undergraduate Research Mentorship Certificate , University of Utah, Office of Undergraduate Research	2020
SHIFT Award—Applied Cognition Lab , SHIFT Conference	2019
Emerging Leaders Program Fellow , SHIFT Conference	2019

RESEARCH EXPERIENCE

University of Utah – Applied Cognition Lab , Salt Lake City, UT <i>Graduate Research Assistant</i> <i>Advisor: David Strayer, Ph.D.</i>	2018-Present
University of Utah – Applied Cognition Lab—AAA Grant , Salt Lake City, UT <i>Graduate Research Assistant</i> <i>Advisors: Joel Cooper, Ph.D. and David Strayer, Ph.D.</i>	2018-Present
Red Scientific, Inc. , Salt Lake City, UT <i>Statistical Consultant</i>	Fall 2020
Didi Hirsch Mental Health Services , Los Angeles, CA <i>Clinical Research Assistant</i> <i>Supervisors: Lisa Davis, Ph.D. and Sae Lee, Ph.D.</i>	2015-2017
Boston College – Department of Psychology , Chestnut Hill, MA <i>Research Assistant</i> <i>Advisor: Ann Burgess, D.N.Sc., RNCS, FAAN</i>	2014-2015

TEACHING EXPERIENCE

PSY4130 Cognition in the Wild , University of Utah, Salt Lake City, UT <i>Graduate Instructor</i>	Spring 2022
PSY1010 Introduction to Psychology , Utah State Prison, Draper, UT <i>Lab Instructor</i>	Summer 2021
PSY3960 Data Science for Psychology Majors , University of Utah, Salt Lake City, UT <i>Graduate Teaching Assistant</i>	Spring 2021
PSY4130 Cognition in the Wild , University of Utah, Salt Lake City, UT <i>Graduate Instructor</i>	Spring 2020
PSY2100 Cognitive Psychology , University of Utah, Salt Lake City, UT <i>Graduate Teaching Assistant</i>	Fall 2019, 2020 & 2021
PSY3711 Brain and Behavior , University of Utah, Salt Lake City, UT <i>Graduate Teaching Assistant</i>	Summer 2019

INVITED TALKS

University of Utah , Salt Lake City, UT <i>Guest Lecturer, STAT6003 Survey of Statistical Packages</i>	February 2022
University of Utah , Salt Lake City, UT <i>Guest Lecturer, PSY2100 Cognitive Psychology</i>	November 2021
University of Utah , Salt Lake City, UT <i>Guest Lecturer, PSY3960 Data Science for Psychology Majors</i>	April 2021
University of Utah , Salt Lake City, UT <i>Guest Lecturer, PSY2100 Cognitive Psychology</i>	October 2020

Southern Utah Wilderness Alliance , Salt Lake City, UT <i>Title: Nature in the Time of COVID-19</i>	April 2020
Emerging Leaders Program for the SHIFT Conference , Jackson, WY <i>Title: Outdoor Recreation and Health</i>	October 2019
University of Utah , Salt Lake City, UT <i>Guest Lecturer, PSY2100 Cognitive Psychology</i>	September 2019
University of Utah , Salt Lake City, UT <i>Guest Lecturer, PSY2010 Psychology as a Science and Profession</i>	July 2019
University of Utah , Salt Lake City, UT <i>Guest Lecturer, PSY4130 Cognition in the Wild</i>	March 2019
Boston College TED Talks: Undergraduate Lecture Series , Chestnut Hill, MA <i>Title: How Neuroscience Can Save the Crisis in America's Prisons</i>	April 2015

CONFERENCE PRESENTATIONS

ORAL PRESENTATIONS

McDonnell, A.S., Cooper, J.M., & Strayer, D.L. (October 2021). Assessing visual engagement during partial automation. Oral presentation at the 7th 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*

Schulz, C.*, **McDonnell, A.S.**, LoTempio, 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., LoTempio, S.B., Scott, E.E., McNay, D. Greenberg, K., Castro, C.C., & Strayer, D.L. (October 2020). Nature modulates neurophysiological correlates of reward. Virtual poster presentation at the 2020 Society of Psychophysiological Research 60th 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. Virtual poster presentation at the 2020 Society of Psychophysiological Research 60th 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 64th Annual Meeting.

McDonnell, A.S., LoTempio, 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 60th 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 of working memory and mood: A pilot study. Poster presentation at the 2019 Psychonomic Society's 60th Annual Meeting in Montréal, Québec, Canada.

UNDERGRADUATE RESEARCH SUPERVISED

Quick, A. (Summer 2022). Effects of natural and urban imagery on error-related negativity. *Funded by the Undergraduate Research Opportunity Program (UROP).*

MacFarlane, M. (Summer 2022). The influence of nature images on the neurophysiology of attention. *Funded by the Undergraduate Research Opportunity Program (UROP).*

Schulz, C. (Spring 2022). Effects of natural and urban imagery on reward processing in the brain. *Funded by the Undergraduate Research Opportunity Program (UROP) 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 (UROP) 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 (SPUR), presented at the Undergraduate Research Symposium and published in the Undergraduate Research Journal.*

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.*

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 (UROP), presented at the Undergraduate Research Symposium and published in the Undergraduate Research Journal.*

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

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

VOLUNTEER AND OUTREACH

Utah Prison Education Program - Utah State Prison, Salt Lake City, UT
Psychology Instructor

2021-Present

Emerging Leaders Program , Jackson, WY <i>Advisory Council</i>	2021-Present
Undergraduate Research Symposium , Salt Lake City, UT <i>Poster Session Judge</i>	August 2021
Mathematics, Engineering, and Science Achievement Program , Salt Lake City, UT <i>Outreach Presentation on Psychology as a Science</i>	March 2021
Bright Futures , Park City, UT <i>Outreach Presentation on Psychology as a Science</i>	February 2021
Girls in STEM, University of Utah , Salt Lake City, UT <i>Graduate Volunteer</i>	February 2019
SHAWCO Education , Nyanga, South Africa <i>International Volunteer</i>	2013-2014
Center for Developing Kids , Pasadena, CA <i>Volunteer</i>	2006-2012

PROFESSIONAL SERVICE

Ad Hoc Reviewing

Frontiers in Psychology, Frontiers in Neuroergonomics

Departmental Service

Faculty Tenure Review Committee , University of Utah, Department of Psychology	Fall 2021
Professional Issues & Ethics Committee Representative , University of Utah	2020-Present
Diversity Graduate Application Advisory , University of Utah, Department of Psychology	2019-Present
Rural Outreach Committee , University of Utah, Department of Psychology	2018-Present
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	2011-2014

PROFESSIONAL MEMBERSHIPS

Society for Psychophysiological Research	2020-Present
Association for Psychological Science	2019-Present
Open Science Framework	2019-Present
American Psychological Association	2015-Present

SKILLS

Proficient in MATLAB, EEGLab, ERPLab, R, E-Prime 2.0, and PsychoPy
Experience using electroencephalography (EEG), electrocardiography (ECG), detection response task (DRT), video coding, subjective measures, BioPac Systems, BrainVision Systems, driving simulation technology, multimethod on-road vehicle assessment, and field-based physiological data collection.