

Carleigh Litteral

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EDUCATION

University of Kentucky, Lexington, KY

Doctor of Philosophy, Experimental Psychology - Cognitive Neuroscience Projected May 2028

University of Louisville, Louisville, KY

Bachelor of Science, Neuroscience December 2022

Bachelor of Science, Psychology December 2022

Graduated with Honors

Research Interests: Etiology of psychological disorders, epidemiology, social determinants of health, epigenetics, allostatic load, substance use disorders, addiction, psychiatric drug development, memory

RESEARCH EXPERIENCE AND EMPLOYMENT

Graduate Research Assistant

November 2023 – Present

University of Kentucky

Lexington, KY

Advisor: Michelle Martel, MS, PhD

- Provided editing feedback on research papers to enhance clarity and coherence, facilitating the review process for publication submissions.
- Developed and executed independent research projects, from conceptualization to literature reviews to data analysis, utilizing SPSS and R to analyze secondary data and test hypotheses derived from original study ideas.

Graduate Research Assistant

September 2023 – Present

University of Kentucky

Lexington, KY

Advisor: Justin Moore, PhD

- Conducted comprehensive literature reviews encompassing diverse disciplinary perspectives, synthesizing vast bodies of research to inform novel study designs and hypotheses.
- Actively engaged in the research process, from conceptualization to data analysis, by collaborating with peers and external laboratories, participating in journal clubs, formulating innovative study ideas, and navigating institutional review board (IRB) protocols for ethically sound research implementation.

Graduate Teaching Assistant

August 2023 – May 2024

University of Kentucky

Lexington, KY

Courses: Introduction to Psychology, Abnormal Psychology

- Provided meticulous grading for 130+ laboratory submissions, quizzes, and exams, ensuring accuracy, adherence to grading rubrics, and offering constructive feedback to support student learning and academic development.
- Maintained academic integrity through the vigilant proctoring of exams and quizzes.

Research Assistant

May 2022 – August 2023

University of Louisville

Louisville, KY

Advisor: David Magnuson, PhD

- Assisted graduate student in 3+ research projects on the roles of immobilization and peripheral inflammation in spinal cord injury (SCI) recovery and recovery trajectories.
- Engaged in data curation, collation, and digitization of SCI records for statistical analysis to test new hypotheses regarding the roles of polytrauma, spared white matter, and surgery weight on SCI recovery.

Research Technologist

February 2022 – July 2022

University of Louisville

Louisville, KY

Advisor: Maxwell Boakye, MD, MPH, MBA, FACS, FAANS

- Regularly collected and evaluated locomotor recovery behavioral assessments in a porcine model following SCI.
- Assisted with animal care, evaluations, surgeries, and surgery preparation.

Undergraduate Research Assistant

May 2021 – Present

University of Louisville

Louisville, KY

Advisor: Rifaat El-Mallakh, MD

- Conducted literature reviews and aided in the final composition of two publications.
- Authored initial research documentation, facilitated approval processes, and developed database dictionaries and templates to organize collected data, actively contributing to data gathering from patients for future analysis.

Patient Engagement Specialist

June 2021 – Present

Landmark Recovery

Louisville, KY

- Managed the well-being of a caseload of up to sixty patients simultaneously, employing personalized engagement methods, adept conflict resolution, and dynamic group leadership to uphold treatment standards and cultivate a collaborative treatment milieu.
- Spearheaded the implementation of standardized daily schedules, optimized medical records organization for accuracy and efficiency, delivered informative presentations on addiction neuroscience to patients and staff, and designed individualized incentives to support patient goal attainment and holistic wellness initiatives.

RESEARCH PUBLICATIONS, PRESENTATIONS, AND GRANTS

Litteral, C. A., Martel, M. M., Mattingly, D., & Moore, J. X. (2025, March 16-19). Family history density of substance use: Influence on participant substance use onset and duration [Poster Presentation].

**American Academy of Health Behavior Annual Meeting, San Diego, CA, March 16-19, 2025.
University of Kentucky Neuroscience Clinical-Translational Research Symposium, Lexington, KY, October 24-25, 2024.**

- Developed and led the project, including data acquisition, study design, and conceptualization.
- Conducted comprehensive data analysis on a nationally representative sample (NESARC-III) to assess weighted family history density and its effects on substance use onset and duration.
- Created and presented a poster summarizing findings, which demonstrated significant associations between weighted family history density, earlier substance use initiation, and extended use duration, with concordance of substance preferences and sex-specific transmission patterns.

GradResearch Live! Third Place Winner, 3-Minute Thesis (3MT) Track

- Litteral, C. (2024, November). *Impact of Family History Density on Substance Use Onset and Duration*. University of Kentucky GradResearch Live!, Third Place Prize, \$250.

Litteral, C. A., Martel, M. M., Mattingly, D. T., & Moore, J. X. (2024, October). Family history density of substance use: Influence on participant substance use onset and duration. 3rd place presentation at the University of Kentucky GradResearch Live! competition, Lexington, KY.

- Competed in the university-wide "Three-Minute Thesis" format, presenting research on family history density and substance use onset and duration in a concise, three-minute presentation; awarded 3rd place for effectively communicating complex research to a broad audience.

Litteral, C.A., Freudenberger, R., Melis O., Domenech, S., El-Mallakh, R.S. (2024) Lithium and COVID-19: Infection Rates and Symptom Severity in Patients with Bipolar Disorder.

[Manuscript under review] *Bipolar Disorders*.

[Poster Presentation, Author]. International Society for Bipolar Disorders, Reykjavik, Iceland, September 29-October 1, 2024.

[Poster Presentation, Presenter]. National Network of Depression Centers, Salt Lake City, UT, September 12, 2024.

- Motivated by lithium's known effects on white blood cell count and its association with reduced infections, suggesting possible benefits for COVID-19 outcomes, we conducted a study on lithium's potential protective effects against COVID-19 contraction and symptom severity in patients with bipolar disorder.

- I was responsible for study design, data collection, and analysis. I developed and implemented phone call scripts, coordinated participant outreach, and conducted all data analyses.
- I authored the manuscript and created a poster presentation demonstrating that lithium treatment did not significantly protect patients with bipolar disorder from contracting COVID-19, nor did it reduce acute symptom severity. Additionally, lithium was not significantly associated with the presence or severity of long COVID sequelae.

Young Investigator Travel Award

August 2024

National Network of Depression Centers (NNDC)

- One of 10 recipients of the highly competitive Young Investigator Travel Award, providing up to \$1,000 to cover travel expenses for presenting a poster at the NNDC 2024 Annual Conference in Salt Lake City, UT. Selected based on research excellence and potential as an emerging investigator in the field of depression and mood disorders.

Almeida, C.A., Litteral, C.A., Chariker, J. H., Rouchka, E.C., Magnuson, D.S. (2024, June 9-12). *The Impact of Simulated Bedrest in an Animal Model of SCI* [Poster Presentation]. National Neurotrauma Society.

- Developed and implemented a novel bedrest model for rats following spinal cord injury (SCI) to enhance the translation of treatments from bench to bedside, analyzing gait, coordination, thermal sensitivity, and gene expression across different groups.
- Discovered that simulated bedrest disrupted functional recovery in several animals, suggesting the potential impact of in-cage activity on recovery differences between rodents and human patients.

Martel, M.M., Goh, P.K., Eng, A.G., Monticello, N., Litteral, C.A., & Eisenlohr-Moul, T.A. (under review). *Impulsivity moderates end-of-cycle but not midcycle effects on executive function and ADHD symptoms*. JOPBA.

- This study, investigating hormonal influences on impulsivity in ADHD among women, underscores the importance of end-of-cycle effects on impulsive symptoms and cognitive markers, shedding light on potential hormonal sensitivities in this population.

Summer Research Opportunity Program Grant Recipient

May 2022 – August 2022

University of Louisville

- Acknowledged for receiving the esteemed \$4,000 Summer Research Opportunity Program (SROP) Grant, engaging in a 10-week immersive research experience, professional development seminars, and presenting research achievements at the Summer Research Showcase.

Litteral, C., Almeida, C., Pierce, K., Magnuson, D. (2022, August 5). *Peripheral Inflammation Improves Locomotor Recovery Following Spinal Cord Injury* [Poster Presentation]. Summer Research Opportunity Program Research Day, Louisville, KY.

- We reduced dark data by curating and digitizing records from old experiments and used this dataset to test a new hypothesis regarding the role of polytrauma in SCI recovery. We found that animals experiencing peripheral inflammation from ECG/EMG implants or laminectomies prior to SCI had improved locomotor recovery trajectories.

Crump, C.J., Litteral, C.A., Elsayed, O.H. and El-Mallakh, R.S. (2022), Pimavanserin for Bipolar Disorder. *Bipolar Disorder*. <https://doi.org/10.1111/bdi.13191>

- In addition to its effect on Parkinson's disease psychosis, Pimavanserin has also demonstrated efficacy in schizophrenia and dementia-related psychosis. This study is the first demonstration of this drug's potential efficacy in bipolar disorder.

Gao, Y., Mack, A. A., Litteral, C., Delamere, N. A., and El-Mallakh, R. S. (2022). NMDA Receptor Inhibition Prevents Intracellular Sodium Elevations in Human Olfactory Neuroepithelial Precursors Derived from Bipolar Patients. *Scientific Reports*, 12(1). <https://doi.org/10.1038/s41598-022-14187-w>

- This study utilized the sodium ionophore monensin to examine the role of the NMDA receptor in the increased intracellular sodium concentrations of individuals with bipolar disorder (BD) during manic states. The results suggest a central role of the NMDA receptor, which may explain why some NMDA antagonists, such as lamotrigine and ketamine, are effective in the treatment of BD.

TRAINING/CERTIFICATIONS

- CPR/BLS Certified
- NARCAN Trained
- EMR Training: Sunwave Health, Kipu Health, EPIC
- Basic R and SPSS statistical analysis
- Advanced Grant Proposal Writing
- CITI Program
 - *Working with the IACUC*
 - *RCR Basic Course*
 - *Human Research - Human Subjects and HIPAA Research*
 - *U of L General Population - Institutional Compliance - U of L General Population*
 - *Information Privacy and Security (IPS) – HIPAA Privacy – Students and Instructors*
 - *Information Privacy and Security (IPS) – HIPAA Privacy – VA Researchers*
 - *Animal Care and Use (ACU) - Occupational Health and Safety Training for Animal Handlers*
- Institutional Animal Care and Use Committee

- Level I Training
- Level II Training
- Enrollment in the Occupational Health and Safety Program (OHSP)
- Periodic Animal Health Survey
- IACUC Participant Training Log
- Lab Safety & Hazardous Waste Training
- Basic Biosafety Training

VOLUNTEERING

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| · Seven Counties | · Women and Children's Shelter | · Yew Dell Gardens |
| · Women’s Healing Place | · We Care participant and donor | · Landmark Recovery |
| · Habitat for Humanity | · Rescue Mission | · PhiDE Anatomy |
| · Feed Louisville | · Walk a Mile in My Shoes | Fashion Show |
| · Omega Psi Phi Men’s Brain Health Event | · High School Biostatistics R Programming Mentor | |

MEMBERSHIP

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| Society for Alcohol Research | (March 2024 – Present) |
| Phi Delta Epsilon | (August 2017 – May 2023) |
| Collegiate Neuroscience Society | (March 2019 – May 2023) |
| Multicultural Association of Pre-Health Students | (August 2020 – May 2023) |
| Advocates for Recovery | (January 2021 – May 2023) |
| Mental and Physical Health Committee | (January 2021 – May 2023) |