

# LORENA A. FERGUSON

LEONARD DAVIS SCHOOL OF GERONTOLOGY, UNIVERSITY OF SOUTHERN CALIFORNIA

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## RESEARCH INTERESTS

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Memory • Aging • Mental Health • Neuroimaging • Alzheimer's Disease Pathology • Locus Coeruleus

## EDUCATION

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### Postdoctoral Research Fellow

August 2025 – Present

Leonard Davis School of Gerontology  
Advisor: Dr. Teal Eich, Ph.D.  
University of Southern California

### Ph.D. Cognitive and Affective Neuroscience

August 2020 – May 2025

Department of Psychological Sciences  
Advisors: Dr. Stephanie Leal, Ph.D. & Dr. Margaret Beier, Ph.D.  
Dissertation: Behavioral and Neural Correlates of Emotional Memory in Retirement and Late Life Neuropsychiatric Conditions  
Rice University

### M.A. Cognitive and Affective Neuroscience

December 2022

Thesis: The Impact of Retirement on Emotional Mnemonic Discrimination  
Advisor: Dr. Stephanie Leal, Ph.D.  
Rice University

### B.A. Cognitive Science

May 2016

Concentration in Neuroscience  
University of California, Berkeley

## PUBLICATIONS

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**Ferguson, L. A.**, Harikumar, A., & Leal, S. L. (2025). Subclinical depressive symptoms and job stress differentially impact memory in working and retired older adults. *Scientific Reports*, 15(1), 3163. 10.1038/s41598-025-87333-9.

Vas, R., Phillips, T., **Ferguson, L. A.**, Harikumar, A., Castro, M., & Leal, S. L. (2024). High and low current perceived stress associated with enhanced emotional mnemonic discrimination. *Learning & Memory*, 31(12), a053989. 10.1101/lm.053989.124.

**Ferguson, L. A.**, Harikumar, A., & Leal, S. L. (2024). Retirement through rose-colored glasses: greater positivity bias in retired relative to working older adults. *Work, Aging and Retirement*, waae014. 10.1093/workar/waae014.

**Ferguson, L.A.** & Leal, S.L. (2023) Chapter 10: Neurobiology. *Lifestyle Psychiatry: Through the Lens of Behavioral Medicine*. Merlo, G., & Fagundes, C. P. (Eds.). CRC Press. 10.1201/b22810.

Phillips, T., Castro, M., Vas, R., **Ferguson, L. A.**, Harikumar, A., & Leal, S. L. (2023). Perceived antidepressant efficacy associated with reduced negative and enhanced neutral mnemonic discrimination. *Frontiers in Human Neuroscience*, 205, 107824. 10.3389/fnhum.2023.1225836.

Hayes, B. K., Harikumar, A., **Ferguson, L. A.**, Dicker, E. E., Denny, B., & Leal, S. L. (2023). Emotion regulation during encoding reduces negative and enhances neutral mnemonic discrimination in individuals with depressive symptoms. *Neurobiology of Learning and Memory*, 17, 1662-5161. 10.1016/j.nlm.2023.107824.

**Ferguson, L.A.**, Leal, S.L. (2022) Interactions of Emotion and Memory in the Aging Brain: Neural and Psychological Correlates. *Curr Behav Neurosci Rep* 9, 47–57. 10.1007/s40473-021-00245-6.

Leal, S. **Ferguson, L.A.**, Harrison, T., & Jagust, W. (2019). Development of a mnemonic discrimination task using naturalistic stimuli with applications to aging and preclinical Alzheimer's disease. *Learning & Memory*, 26(7), 219-228. 10.1101/lm.048967.118.

#### ***IN PREPARATION***

**Ferguson, L. A.**, Ballard, H., Castro, M., & Leal, S. (in prep). Retirement associated with greater hippocampal activation and network connectivity during mnemonic discrimination.

**Ferguson, L. A.**, Ballard, H., Castro, M., Van Egroo, M., Jacobs, H., & Leal, S. (in prep). Late-life transdiagnostic symptom profiles of depression and anxiety associated with increased locus coeruleus integrity.

#### ***ORAL PRESENTATIONS***

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**Ferguson, L.** (2025). High locus coeruleus integrity associated with worse memory performance in older adults with severe transdiagnostic neuropsychiatric symptoms. Integrative Neuromodulatory Subcortical Systems Meeting.

**Ferguson, L.** (2024). Participant Diversity is Necessary to Advance Brain Aging Research. Rice University Psychological Sciences Diversity, Equity, & Inclusion Journal Club.

**Ferguson, L.** (2024). Relationship between Alzheimer's disease pathology and emotional mnemonic discrimination. Rice University Cognitive/Health/Affective Tea.

**Ferguson, L.** (2024). Relationship between Alzheimer's disease pathology and emotional memory using a naturalistic mnemonic discrimination task. Aspen Aging & Brain Health Conference.

**Ferguson, L.** (2023). Positivity Bias Specific to Retired Older Adults: Findings from an Emotional Mnemonic Discrimination Study. International Conference on Learning and Memory.

**Ferguson, L.** (2023). The effect of retirement on emotional mnemonic discrimination. Rice University Cognitive/Health/Affective Tea.

**Ferguson, L.** (2022). Retirement: Impact on Emotional Memory, MTL Function, and Alzheimer's Disease Risk. Rice University Cognitive/Health/Affective Tea.

**Ferguson, L.** (2021). Examining the effect of retirement on cognition and memory. Dallas & Austin Area Memory Meeting.

**Ferguson, L.** (2021). Examining the effect of retirement on cognition and memory. Rice University Cognitive/Health/Affective Tea.

**Ferguson, L.** (2020). Development of a mnemonic discrimination task using naturalistic stimuli with applications to aging and preclinical Alzheimer's disease. Dallas & Austin Area Memory Meeting.

#### ***CONFERENCE POSTERS***

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**Ferguson, L.**, Harikumar, A., Leal, S. (2024). Subclinical depressive symptoms and job stress differentially impact emotional memory in working and retired older adults. Society for Neuroscience Conference, Chicago, IL.

Ballard, H., **Ferguson, L.**, Leal, S. (2024). Sex differences in associations between sleep, memory, and Alzheimer's disease biomarkers via PET and fMRI. Society for Neuroscience Conference, Chicago, IL.

**Ferguson, L.**, Jagust, W., Leal, S. (2023). Relationship between Alzheimer's disease pathology and emotional memory using a naturalistic mnemonic discrimination task. Greater Houston Area Alzheimer's Disease Research Symposium, Houston, TX.

**Ferguson, L.**, Bannis, C., Jagust, W., Leal, S. (2022). Neural correlates of a naturalistic mnemonic discrimination task with implications for Alzheimer's disease. Society for Neuroscience Conference, San Diego, CA.

Castro, M., Hayes, B., Phillips, T., Vas, R., Harikumar, A., **Ferguson, L.**, Leal, S. (2022). Multiple approaches towards the modulation of emotional memory in depression. Society for Neuroscience Conference, San Diego, CA.

**Ferguson, L.**, Harikumar, A., Leal, S. (2022). The effect of retirement on emotional mnemonic discrimination. Cognitive Neuroscience of Aging Symposium, Dallas, TX.

**Ferguson, L.**, Harikumar, A., Leal, S. (2022). The effect of retirement on emotional mnemonic discrimination. Cognitive Aging Conference, Atlanta, GA.

**Ferguson, L.**, Harikumar, A., Leal, S. (2022). The effect of retirement on emotional mnemonic discrimination. Dallas Aging and Cognition Conference.

**Ferguson, L.**, Harikumar, A., Leal, S. (2021). The effect of retirement on emotional mnemonic discrimination. University of Texas Health 27<sup>th</sup> Annual Neuroscience Poster Session, Houston, TX.

**Ferguson, L.**, Harikumar, A., Leal, S. (2021). Examining the effect of retirement and cognitive activity on mnemonic discrimination. Society for Neuroscience Conference.

Phillips, T.O., Vas, R., Harikumar, A., **Ferguson, L.**, Leal, S.L. (2021). The effect of antidepressants on emotional mnemonic discrimination. Society for Neuroscience Conference.

Vas, R., Phillips, T.O., Harikumar, A., **Ferguson, L.**, Leal, S.L. (2021). The effect of current perceived stress on emotional mnemonic discrimination. Society for Neuroscience Conference.

Hayes, B., Harikumar, A., **Ferguson, L.**, Leal, S.L. (2021). The effect of emotion regulation on negative affect and emotional mnemonic discrimination. Society for Neuroscience Conference.

**Ferguson, L.**, Leal, S., Jagust, W. (2019). Regional Distribution of Amyloid Accumulation in Cognitively Normal Older Adults. Society for Neuroscience Conference, Chicago, IL.

**Ferguson, L.**, Leal, S., Jagust, W. (2018). Using Dynamic, Contextually Rich Stimuli as a More Ecologically Valid Test of Remembering and Forgetting. Society for Neuroscience Conference, San Diego, CA.

del Rosario, K., **Ferguson, L.**, Brown, C., Wells, J., Levenson, R. (2017). Coherence Between Subjective Experience and Facial Expressions is Associated with Greater Social Support for Familial Caregivers of Neurodegenerative Patients. Association for Psychological Science Conference, Boston, MA.

## RESEARCH EXPERIENCE

Postdoctoral Research Fellow

Lifespan Cognition Lab

August 2025 – Present

Principal Investigator: Teal Eich, Ph.D.

University of Southern California

- Analyze complex behavioral and functional neuroimaging data for manuscripts and research studies
- Develop protocols for processing structural and functional neuroimaging data
- Train and mentor graduate students and undergraduate research assistants

**Doctoral Student**

**August 2020 – May 2025**

The Neuroscience of Memory, Mood, and Aging Lab

Principal Investigator: Stephanie Leal, Ph.D.

Rice University

- Responsible for the development and execution of research studies
- Collected and analyzed complex behavioral and neuroimaging data for manuscripts and research studies
- Assisted with coordinating departmental meetings, served as a teaching assistant for undergraduate courses, and organized research-relevant volunteer opportunities
- Trained and mentored research assistants

**Lab Manager**

**October 2019 – July 2020**

The Neuroscience of Memory, Mood, and Aging Lab

Principal Investigator: Stephanie Leal, Ph.D.

Rice University

- Responsible for laboratory administration, including purchasing laboratory equipment, organization of databases, creating expense reports and budget tracking documents, and schedule creation
- Recruitment, screening, and neuropsychological testing of participants
- Preparation and maintenance of IRB protocols, as well as assistance writing grants
- Recruitment, training, and supervision of research assistants
- Collection and analysis of fMRI, PET, and behavioral data

**Research Assistant**

**May 2017 – September 2019**

The Jagust Lab

Principal Investigator: William Jagust, M.D.

University of California, Berkeley

- Examined memory performance in a novel naturalistic memory task that used video stimuli
- Ran functional and structural MRI scans on age-unimpaired old and young adults to assess the neurological basis of memory changes across the lifespan
- Used high-resolution imaging tools to examine links between brain structure and behavior
- Processed and analyzed functional and structural MRI data
- Analyzed behavioral performance links to tau and amyloid PET scan data

**Staff Research Associate**

**May 2016 – July 2017**

Berkeley Psychophysiology Lab

Principal Investigator: Robert Levenson, Ph.D.

University of California, Berkeley

- Applied physiological sensors to patients with neurodegenerative diseases and their caregivers to obtain autonomic and behavioral data in laboratory assessments of emotional and social functioning
- Ran physiological experiments on patients with neurodegenerative diseases and their caregivers, including showing physiologically arousing videos, recording participants singing, and recording patients and their caregivers engaging in an emotionally difficult conversation
- Identified artifacts during data collection and processed physiological data

- Examined how physiological reactivity to emotionally arousing stimuli changed in patients with neurodegenerative diseases and their familial caregiver

**Research Assistant**

**July 2014 – July 2017**

Berkeley Psychophysiology Lab

Principal Investigator: Robert Levenson, Ph.D.

University of California, Berkeley

- Manually coded behavioral and facial data of study participants as they underwent physiologically arousing states
- Entered self-report questionnaire responses and demographic information into a database
- Transcribed conversations between patients with neurodegenerative diseases and their familial caregiver

**Research Assistant**

**December 2015 – March 2016**

The Rankin Lab

Principal Investigator: Katherine Rankin, Ph.D.

University of California, San Francisco

- Organized and entered patient demographic and diagnostic information into the UCSF database
- Observed the clinical diagnostic sessions of patients with neurodegenerative diseases
- General administrative tasks, such as the filing of patient folders and transcription of study protocols

**HONORS AND AWARDS**

**T32 Multidisciplinary Training Program in Gerontology**

**August 2025**

University of Southern California

Award Amount: Tuition and stipend

**Social Sciences Research Institute Dissertation Research Improvement Grant**

**May 2024**

Rice University

Award Amount: \$5,000

**Student Travel Fellowship**

**October 2023**

Aspen Aging & Brain Health Conference

Award Amount: Conference travel expenses

**Kenneth R. Laughery Award for Best Master's Thesis in Psychology**

**April 2023**

Rice University

Award Amount: \$300

**Social Sciences Research Institute Graduate Student Conference Travel Grant**

**November 2022**

Rice University

Award Amount: \$1,000

**Trainee Professional Development Award**

**September 2022**

Society for Neuroscience

Award Amount: \$1,000

**Best Poster**

27<sup>th</sup> Annual Neuroscience Poster Session, UT Health

**December 2021**

Award Amount: \$1,000

**Social Science Research Institute Pre-Dissertation Research Grant**

**December 2021**

Rice University

Award Amount: \$3,000

## TEACHING

<b>Teaching Assistant, Memory</b> Dr. Kirsten Adam Rice University	<b>August 2024 – December 2024</b>
<b>Teaching Assistant, Psychology of Aging</b> Dr. Stephanie Leal Rice University	<b>January 2024 – May 2024</b> <b>January 2023 – May 2023</b> <b>January 2022 – April 2022</b>
<b>Guest Lecture</b> “Assessment of Mental Health” Neuroaffective Disorders in Aging, University of Southern California	<b>October 2025</b>
<b>Guest Lecture</b> “Aging & Alzheimer’s Disease” Memory, Rice University	<b>September 2024</b>
<b>Guest Lecture</b> “Memory in Aging & Alzheimer’s Disease” Introduction to Cognitive Psychology, Rice University	<b>September 2024</b>
<b>Guest Lecture</b> “Lifestyle Modifiers of Aging” Psychology of Aging, Rice University	<b>March 2024</b>
<b>Guest Lecture</b> “Memory in Aging and Alzheimer’s Disease” Memory, Rice University	<b>October 2023</b>
<b>Guest Lecture</b> “Emotional Memory and Neuroimaging Methods” Neuropsychology of Language and Memory, Rice University	<b>October 2023</b>
<b>Guest Lecture</b> “Pattern Separation in Aging: Applications to Mood Disorders and Dementia” Memory, Rice University	<b>July 2022</b>
<b>Guest Lecture</b> “Lifestyle Modifiers in Aging” Psychology of Aging, Rice University	<b>March 2022</b>
<b>Guest Lecture</b> “Development of a mnemonic discrimination task using naturalistic stimuli with applications to aging and preclinical Alzheimer’s disease” Memory, Carleton College	<b>February 2022</b>
<b>Guest Lecture</b> “Pattern Separation in Aging” Memory, Rice University	<b>July 2021</b>

## ACADEMIC SERVICE

<b>Cognitive/Health/Affective Tea Organizer</b>	<b>August 2021 – April 2022</b>
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## Rice University

- Organize weekly departmental lecture series
- Poll the department to determine desired speakers, invite and schedule speakers, and create marketing flyers for weekly speakers
- Moderate departmental discussions with guest speakers

## **SERVICE AND OUTREACH**

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### **BlueSpot Slack Administrator**

**November 2025 – Present**

University of Southern California

- Manage membership for a locus coeruleus-focused Slack channel
- Organize relevant talks and events
- Coordinate with other administrators to optimize channel usage and participation

### **Rice University Walk to End Alzheimer's Organizer**

**July 2020 – November 2024**

Alzheimer's Association

- Organize the annual departmental Walk to End Alzheimer's
- Create fundraising goals and coordinate with team members to meet those goals
- Coordinate day-of logistics, such as transportation, meeting points, and food and beverages

### **Community Outreach Lecture**

**April 2024**

The Village at Tanglewood Retirement Community

"Mental Health and Well-Being in Aging"

### **Community Outreach Lecture**

**March 2024**

Thomas A. Glazier Senior Education Center

"Mental Health in Aging"

### **Community Outreach Lecture**

**March 2024**

Glasscock School of Continued Studies

"Aging and thriving: Integrating and applying insights on aging"

### **Community Outreach Lecture**

**December 2023**

The Village at River Oaks Retirement Community

"Mental Health in Aging"

### **Community Outreach Lecture**

**July 2023**

The Village at Southampton Retirement Community

"Mental Health in Aging"

## **PROFESSIONAL HISTORY**

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### **Experiential Learning Project Coordinator**

**February 2017 – September 2019**

Haas School of Business Executive MBA Program

University of California, Berkeley

- Coordinated complex logistics for week-long offsite immersion classes for 70 Executive MBA students, including negotiating hotel contacts, working with transportation companies to create busing itineraries, coordinating catering, selecting and reserving classroom and event space, and other miscellaneous logistics
- Led and provided onsite support for 70 Executive MBA students during immersions in both domestic and international locations
- Generated and submitted purchase orders and bills stemming from immersions and other events
- Analyzed complex data to predict trends in grading over time

## CERTIFICATIONS

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<b>Level II MRI Certified</b> , Core for Advanced Magnetic Resonance Imaging, Baylor College of Medicine	<b>2023</b>
<b>Biomedical Research Basic/Refresher</b> , CITI Program	<b>2024</b>
<b>Social and Behavioral Research Basic/Refresher</b> , CITI Program	<b>2022</b>
<b>Biomedical Responsible Conduct of Research</b> , CITI Program	<b>2019</b>
<b>Social and Behavioral Responsible Conduct of Research</b> , CITI Program	<b>2019</b>

## PROFESSIONAL DEVELOPMENT

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<b>Hit the Target: Deliver Timely Brain Health Information Across the Continuum of Cognitive Aging Workshop</b> , Gerontological Society of America Conference	<b>2024</b>
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## PROFESSIONAL AFFILIATIONS AND SOCIETIES

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<b>Society for Neuroscience</b>
<b>Alzheimer's Association International Society to Advance Alzheimer's Research and Treatment (ISTAART)</b>
<b>American Psychological Association (APA) Division 20 – Adult Development and Aging</b>

## SKILLS

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<b>Coding Languages:</b> R, SPSS
<b>Neuroimaging:</b> Analysis of Functional Neuroimages (AFNI), Siemens 3T Magnetic Resonance Imaging Scanner
<b>Technical Skills:</b> Qualtrics, PsychoPy, Microsoft Office Suite
<b>Physiological Measurement:</b> Data acquisition with BioPac equipment.
• Impedance cardiography, electrocardiogram, photoplethysmography, galvanic skin response, continuous blood pressure, respiration, electrogastrography, and electromyography.