

Kaoru Nashiro

Employment

- 2023 - Present Research Associate Professor, Gerontology Department, University of Southern California (USC) & Clinical Research Director at the Emotion & Cognition lab
- 2017 – 2023 Research Assistant Professor, Gerontology Department, USC
- 2015 - 2017 Postdoctoral Research Associate, Gerontology Department, USC
- 2015 - 2017 Visiting Research Collaborator, USC Imaging Genetics Center
- 2012 - 2015 Postdoctoral Fellow, Center for Vital Longevity at University of Texas at Dallas

Education

- 2012 University of Southern California, Ph.D. in Gerontology
Dissertation “How emotional arousal influences memory and learning in younger and older adults”
Awarded Heinz Osterburg Prize for Best Dissertation
- 2005 California State University (CSU), East Bay, B.A. in Psychology
Graduated with Summa Cum Laude Honor

Publications

- Nashiro, K.**, Yoo, H. J., Cho, C., Kim, A. J., Nasserri, P., Min, J., Dahl, M. J., Mercer, N., Choupan, J., Choi, P., Lee, H. J., Choi, D., Alemu, K., Herrera, A. Y., Ng, N., Thayer, J. F., & Mather, M. (in press). Heart Rate and Breathing Effects on Attention and Memory (HeartBEAM): study protocol for a randomized controlled trial in older adults. *Trials*.
- Bachman, S. L., Cole, S., Yoo, H. J., **Nashiro, K.**, Min, J., Mercer, N., Nasserri, P., Thayer, J. F., Lehrer, P., & Mather, M., (in press). Daily heart rate variability biofeedback training decreases locus coeruleus MRI contrast in younger adults in a randomized clinical trial. *International Journal of Psychophysiology*.
- Min, J., Koenig, J., **Nashiro, K.**, Yoo, H. J., Cho, C., Thayer, J. F., Mather, M. (in press). Resting heart rate variability is associated with neural adaptation when repeatedly exposed to emotional stimuli. *Neuropsychologia*.
- Yoo, H. J., **Nashiro, K.**, Dutt, S., Min, J., Cho, C., Thayer, J. F., Lehrer, P., Chang, C., & Mather, M. (in press). Daily biofeedback to modulate heart rate oscillations affects structural volume in hippocampal subregions targeted by the locus coeruleus in older adults but not younger adults. *Neurobiology of Aging*.
- Nashiro, K.**, Min, J., Yoo, H. J., Cho, C., Bachman, S. L., Dutt, S., Thayer, J. F., Lehrer, P. M., Feng, T., Mercer, N., Nasserri, P., Wang, D., Chang, C., Marmarelis, V. Z., Narayanan, S., Nation, D. A., & Mather, M. (2023). Increasing coordination and responsivity of emotion-related brain regions with a heart rate variability biofeedback randomized trial. *Cognitive, Affective, & Behavioral Neuroscience*, 23(1), 66–83.
- Nashiro, K.**, Yoo, H. J., Cho, C., Min, J., Feng, T., Nasserri, P., Bachman, S. L., Lehrer, P., Thayer, J. F., & Mather, M. (2023). Effects of a randomised trial of 5-week heart rate variability biofeedback intervention on cognitive function: Possible benefits for inhibitory control. *Applied Psychophysiology and Biofeedback*, 48(1), 35–48.

- Yoo, H. J., **Nashiro, K.**, Min, J., Cho, C., Mercer, N., Bachman, S. L., Nasser, P., Dutt, S., Porat, S., Choi, P., Zhang, Y., Grigoryan, V., Feng, T., Thayer, J. F., Lehrer, P., Chang, C., Stanley, J. A., Marmarelis, V. Z., Narayanan, S., . . . Mather, M. (in press). Multimodal neuroimaging data from a 5-week heart rate variability biofeedback randomized clinical trial. *Scientific Data*.
- Min, J., Rouanet, J., Martini, A. C., **Nashiro, K.**, Yoo, H. J., Porat, S., Cho, C., Wan, J., Cole, S. W., Head, E., Nation, D. A., Thayer, J. F., & Mather, M. Modulating heart rate oscillation affects plasma amyloid beta and tau levels in younger and older adults (2023). *Scientific Reports*, 13, 3967.
- Min, J., Koenig, J., **Nashiro, K.**, Yoo, H. J., Cho, C., Thayer, J. F., Mather, M. (in press). Sex Differences in Neural Correlates of Emotion Regulation in Relation to Resting Heart Rate Variability. *Brain Topography*.
- Sible, I. J., Yoo, H. J., Min, J., **Nashiro, K.**, Chang, C., Nation, D. A., & Mather, M. M. (2023). Short-term blood pressure variability is inversely related to regional amplitude of low frequency fluctuations in older and younger adults. *Aging Brain*, 4.
- Cho, C., Yoo, H. J., Min, J., **Nashiro, K.**, Thayer, J. F., Lehrer, P. M., & Mather, M. (2023). Changes in Medial Prefrontal Cortex Mediate Effects of Heart Rate Variability Biofeedback on Positive Emotional Memory Biases. *Applied Psychophysiology and Biofeedback*, 1–13.
- Nashiro, K.**, Yoo, H. J., Min, J., Cho, C., Nasser, P., Zhang, Y., Lehrer, P., Thayer, J. F., & Mather, M. (2022). Effects of a randomised trial of 5-week heart rate variability biofeedback intervention on mind wandering and associated brain function. *Cognitive, Affective, & Behavioral Neuroscience*, 22(6), 1349-1357.
- Yoo, H. J., **Nashiro, K.**, Min, J., Cho, C., Bachman, S. L., Nasser, P., Porat, S., Dutt, S., Grigoryan, V., & Choi, P. (2022). Heart rate variability (HRV) changes and cortical volume changes in a randomized trial of five weeks of daily HRV biofeedback in younger and older adults. *International Journal of Psychophysiology*, 181, 50-63.
- Min, J., **Nashiro, K.**, Cho, C., Nasser, P., Bachman, S., Porat, S., Thayer, J. F., Chang, C., Lee, T., and Mather, M. (2022). Emotion down-regulation targets interoceptive brain regions while emotion up-regulation targets other affective brain regions. *Journal of Neuroscience*, 42 (14), 2973-2985.
- Bachman, S. L., **Nashiro, K.**, Yoo, H. J., Wang, D., Thayer, J. F. & Mather, M. (2022). Associations between locus coeruleus MRI contrast and physiological responses to acute stress in younger and older adults. *Brain Research*, 1796, 148070.
- Basak, C., Qin, S., **Nashiro, K.**, O'Connell, M., & (2018). Functional magnetic neuroimaging data on age-related differences in task switching accuracy and reverse brain-behavior relationships. *Data in Brief*.
- Nashiro, K.**, Qin, S., O'Connell, M., & Basak, C. (2018). Age-related differences in BOLD modulation to cognitive control costs in a multitasking paradigm: Global switch, local switch, and compatibility-switch costs. *NeuroImage*, 172, 146–161.
- Nashiro, K.**, Sakaki, M., Braskie, M. N., & Mather, M. (2017). Resting-state networks associated with cognitive processing show more age-related decline than those associated with emotional processing. *Neurobiology of Aging*, 54, 152–162.
- Nashiro, K.**, Guevara-Aguirre, J., Braskie, M. N., Hafzalla, G. W., Velasco, R., Balasubramanian, P., Wei, M., Thompson, P. M., Mather, M., Nelson, M. D., Guevara, A., Teran, E., & Longo, V. D. (2017). Brain structure

and function associated with younger adults in growth hormone receptor-deficient humans. *The Journal of Neuroscience*, 37, 1696–1707.

- Ray, N. R., O’Connell, M. A., **Nashiro, K.**, Smith, E. T., Qin, S., & Basak, C. (2017). Evaluating the relationship between white matter integrity, cognition, and varieties of video game learning. *Restorative Neurology and Neuroscience*, 35(5), 437–456.
- Qin, S., Ramakrishnan, N., **Nashiro, K.**, O’Connell, M., & Basak, C. (2016). Illusory conjunctions in visual short-term memory: Individual differences in Corpus Callosum connectivity and splitting attention between the two hemifields, *Psychophysiology*, 53, 1639-1650.
- McDonough, I. M., & **Nashiro, K.** (2014). Network complexity as a measure of information processing across resting-state networks: Evidence from the Human Connectome Project. *Frontiers in Human Neuroscience*, 8, 409.
- Nashiro, K.**, Sakaki, M., Nga, L., & Mather, M. (2013). Age-related similarities and differences in brain activity underlying reversal learning. *Frontiers in Integrative Neuroscience*, 7, 37.
- Nashiro, K.**, Sakaki, M., Nga, L., & Mather, M. (2012). Differential brain activity during emotional vs. non-emotional reversal learning. *Journal of Cognitive Neuroscience*, 24, 1794-1805.
- Nashiro, K.**, Sakaki, M., Huffman, D., & Mather, M. (2012). Both younger and older adults have difficulty updating emotional memories. *Journal of Gerontology: Psychological Sciences*, 68, 224-227.
- Nashiro, K.**, Sakaki, M., & Mather, M. (2012). Age differences in brain activity during emotion processing: Reflections of age-related decline or increased emotion regulation? *Gerontology*, 58, 156-163.
- Nashiro, K.**, & Mather, M. (2011). The effect of emotional arousal on memory binding in normal aging and Alzheimer’s disease. *American Journal of Psychology*, 124, 301-312.
- Nashiro, K.**, Mather, M, Gorlick, M., & Nga, L. (2011). Negative emotional outcomes impair older adults’ reversal learning. *Cognition and Emotion*, 25, 1014-1028.
- Nashiro, K.**, & Mather, M. (2011). How arousal affects younger and older adults' memory binding. *Experimental Aging Research* 37, 108-128.

Grants

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| 2023 - 2028 | Co-I (PI: Mather), “Effects of Resonance-Frequency Breathing on Preclinical Alzheimer’s Disease Biomarkers and Cognition,” National Institute on Aging R01 AG080652, Total \$3,942,735 |
| 2023 - 2024 | Co-I (PI: Mather), “Effects of Daily Resonance-Frequency Breathing on Brain Perivascular Space Volume,” USC Epstein Breakthrough Alzheimer’s Research Fund, Total \$224,559 |
| 2017 - 2024 | Co-I (PI: Mather), “Why Does Heart Rate Variability Matter for Emotion Regulation?” National Institute on Aging R01 AG057184, Total \$2,125,425 (no-cost extension requested for a year) |

Awards, Honors and Fellowships

2017	NIH-funded Workshop for Human Neuroimaging Methods and Best Practices at UCLA
2013	NIH Scholarship for Training Course in fMRI at University of Michigan
2012	Heinz Osterburg Prize for Best Dissertation
2010 - 2012	National Institute on Aging (NIA), Multidisciplinary Research Training Fellowship
2010	American Psychological Association Div 20 Award for Completed Research
2007	David Peterson Fellowship
2006	NIA - MERIT Underrepresented Diversity Supplement Program Scholarship
2005	Summa Cum Laude from CSU East Bay
2003	Robert Stenger Scholarship
2002	Rourke Family Foundation Scholarship
2002	American Association of University Women Scholarship

Invited Talks, Conference Presentations

Talk at Cognitive and Cognitive Neuroscience Proseminar at UC Riverside (2023, December). Title: “Effects of heart rate variability biofeedback on emotional well-being, brain structure and function, and plasma amyloid beta (A β).”

Talk at Cognitive psychology forum at UCLA, Los Angeles, CA (2023, March). Title: “How heart rate variability (HRV) biofeedback affects emotional well-being, brain structure and function, and plasma biomarkers for Alzheimer's disease”

Symposium at the International Association of Gerontology and Geriatrics World Congress, San Francisco, CA (2017, July). Talk Title: “Resting-state networks associated with cognition but not with emotion show age-related decline”

Dallas Aging and Cognition Conference, Dallas, TX (2015, January). Poster Title: “Age-related differences in task load, response compatibility and selective attention in task switching: An fMRI study”

Cognitive Aging Conference, Atlanta, GA (2014, April). Poster Title: “Strategy vs. action video games: Aging, cognitive predictors and neural correlates of complex skill acquisition”

Society for Neuroscience Annual Meeting, San Diego, CA (2013, November). Poster Title: “Effective coupling: Working memory training related changes in task-related activity and resting-state functional connectivity”

Dallas Aging and Cognition Conference, Dallas, TX (2013, January). Poster Title: “Working memory workout: Increases in resting state network connectivity due to working memory training”

Annual Meeting of the Psychonomic Society, Seattle, WA (2011, November). Poster Title: “Differential neural activity during emotional vs. non-emotional reversal learning”

Bay Area Memory Meeting (BAMM), Berkeley, CA. (2011, August). Talk Title: “Differential neural activity during emotional vs. non-emotional reversal learning”

Cognitive Neuroscience Society Annual Meeting, San Francisco, CA (2011, April). Poster Title: “Differential neural activity during emotional vs. non-emotional reversal learning”

Gerontological Society of America Annual Meeting, New Orleans, LA (2010, November). Talk Title: “Negative emotional outcomes impair older adults’ reversal learning?”

Association for Psychological Science Annual Meeting, San Francisco, CA (2009, May). Poster Title: “Emotional vs. non-emotional reversal learning in Alzheimer’s disease”

Symposium Chair in “Cognitive Issues in Dementia Session” at the Gerontological Society of America Annual Meeting, Atlanta, GA (2009, November). Talk Title: “Does emotional content enhance older adults’ and Alzheimer’s disease patients’ memory binding?”

Gerontological Society of America Annual Meeting, National Harbor, MD (2008, November). Talk Title: “Does emotional content help Alzheimer’s disease patients learn more effectively?”

Alzheimer's Disease Research Update Day, Los Angeles, CA (2008, June). Poster Title: “Emotional vs. logical learning in Alzheimer’s disease: Positive emotional content helps AD patients learn effectively”

Other Research Experience

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| 2005 - 2006 | Research Assistant at Stanford University, Life-span Development Lab directed by Dr. Laura Carstensen |
| 2003 - 2006 | Research Assistant at UC Berkeley, Berkeley Psychophysiology Laboratory directed by Dr. Robert Levenson |
| 2004 - 2005 | Research Assistant at UC Berkeley, the Interracial Friendship Interactions Study directed by Dr. Dacher Keltner |
| 2003 - 2004 | Research Assistant at CSU East Bay, the Adult Attachment Study directed by Dr. David Sandberg |