

Serra E. Favila

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Academic Appointments

starting 2024 Assistant Professor, Brown University
Department of Cognitive, Linguistic, and Psychological Sciences

2019-2024 Postdoctoral Research Scientist, Columbia University
Department of Psychology

Education

2013-2019 PhD, New York University
Psychology (Cognition and Perception Program)

2007-2011 BA, Stanford University
Human Biology, with Honors and Distinction

Awards & Fellowships

2023 Postdoctoral Fellow Award, Cognitive Neuroscience Society

2020 Elsevier/Vision Research Travel Award, Vision Sciences Society

2017-2024 NIH Blueprint Diversity (D-SPAN) F99/K00 Award

2016-2017 NIH/NEI Visual Neuroscience Traineeship T32EY007136

2013-2016 Opportunity Fellowship, New York University

2013-2016 Graduate Research Fellowship, National Science Foundation

2011 Joshua Lederberg Award for Academic Excellence in Human Biology, Stanford

2011 Chicano/Latino Community Scholar Prize for Academic Excellence, Stanford

2007 National Merit Scholar

Grants

- 2020-2024 NIH/NEI K00EY031607 - NIH Blueprint Diversity (D-SPAN) Award (postdoctoral)
Neural mechanisms for memory-guided visual behavior in humans
 Role: PI \$313,424 total direct costs awarded
- 2017-2019 NIH/NINDS F99NS105223 - NIH Blueprint Diversity (D-SPAN) Award (predoctoral)
Spatiotemporal dynamics of episodic memory retrieval
 Role: PI \$73,050 total direct costs awarded

Publications

JOURNAL ARTICLES

Favila SE, Kuhl BA, & Winawer J (2022). Perception and memory have distinct spatial tuning properties in human visual cortex. *Nature Communications*, 13, 5864.

+Top 25 *Nature Communications* social science and human behavior articles of 2022

Wanjia G, **Favila SE**, Kim G, Molitor RJ, & Kuhl BA (2021). Abrupt hippocampal remapping signals resolution of memory interference. *Nature Communications*, 12, 4816.

Favila SE, Lee H, & Kuhl BA (2020). Transforming the concept of memory reactivation. *Trends in Neurosciences*, 43, 939-950.

Favila SE, Samide R, Sweigart SC, & Kuhl BA (2018). Parietal representations of stimulus features are amplified during memory retrieval and flexibly aligned with top-down goals. *Journal of Neuroscience*, 38, 7809-7821.

Carr VA, Bernstein JD, **Favila SE**, Rutt BK, Kerchner GA, & Wagner AD (2017). Individual differences in associative memory among older adults explained by hippocampal subfield structure and function. *Proceedings of the National Academy of Sciences, USA*, 114, 12075-12080.

Chanales AJH, Oza A, **Favila SE**, & Kuhl BA (2017). Overlap among spatial memories triggers repulsion of hippocampal representations. *Current Biology*, 27, 2307-2317.e5.

Brown TI, Carr VA, LaRocque KF, **Favila SE**, Gordon AM, Bowles B, Bailenson JN, & Wagner AD (2016). Prospective representation of navigational goals in the human hippocampus. *Science*, 352, 1323-1326.

Favila SE, Chanales AJH, & Kuhl BA (2016). Experience-dependent hippocampal pattern differentiation prevents interference during subsequent learning. *Nature Communications*, 7, 11066.

Favila SE & Kuhl BA (2014). Stimulating memory consolidation. *Nature Neuroscience*, 17, 151-152. [Invited commentary on Borota et al. 2014].

PREPRINTS

Favila SE & Aly M. Hippocampal mechanisms resolve competition in memory and perception. *bioRxiv*. doi: <https://doi.org/10.1101/2023.10.09.561548>.

Wang S-F, Carr VA, **Favila SE**, Bailenson JN, Brown TI, Jiang J, & Wagner AD. Representations of local spatial information in the human medial temporal lobe during memory-guided navigation. *bioRxiv*. doi: <https://doi.org/10.1101/2020.11.18.389346>.

Invited Talks

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| Mar 2023 | New York University | Cognition & Perception Seminar |
| Feb 2023 | Northwestern University | Psychology Colloquium |
| Jan 2023 | Brown University | Cognitive, Linguistic, & Psychological Sciences Colloquium |
| Jan 2023 | Cornell University | Psychology Colloquium |
| Jun 2022 | Max Planck Berlin | Neurocode Research Group |
| Apr 2020 | Dartmouth University | Brain Imaging Center fMRI Brown Bag |
| Dec 2018 | Columbia University | Memory, Attention, & Navigation Meeting |
| Dec 2018 | Yale University | Visual Cognitive Neuroscience Lab |

Conference Presentations

Favila SE & Aly M (May 2023). Hippocampal and visual cortex contributions to resolving competition during memory-guided attention. Poster at *Vision Sciences Society*, St Pete Beach, FL.

Favila SE & Aly M (Mar 2023). Hippocampal differentiation and visual cortex anticipation resolve competition during memory-guided attention. Poster at *Cognitive Neuroscience Society*, San Francisco, CA.

+Postdoctoral Fellow Award

Favila SE & Aly M (Sep 2022). Resolving competition during memory-guided visual attention. Talk at *Manhattan Area Memory Meeting*, New York, NY.

Favila SE & Aly M (Apr 2022). Resolving competition during memory-guided visual attention. Poster at *Cognitive Neuroscience Society*, San Francisco, CA.

Favila SE & Aly M (Mar 2021). Resolving competition during memory-guided visual exploration. Poster at *Cognitive Neuroscience Society*, virtual meeting.

Favila SE & Winawer J (Jun 2020). Retinotopic reactivation in human visual cortex tracks memory success in a single-shot encoding paradigm. Poster at *Vision Sciences Society*, virtual meeting.

+Elsevier/Vision Research Travel Award

Guo W, Molitor R, **Favila SE**, & Kuhl BA (May 2020). Repulsion of hippocampal representations is time-locked to resolution of memory interference. Poster at *Cognitive Neuroscience Society*, virtual meeting.

Favila SE & Winawer J (Oct 2019). Incidental spatial encoding in human visual memory. Poster at

Society for Neuroscience, Chicago, IL.

Guo W, Kim G, **Favila SE**, & Kuhl BA (Oct 2019). Repulsion of competing hippocampal representations parallels learning-related reductions in memory interference. Poster at *Society for Neuroscience*, Chicago, IL.

Favila SE, Kuhl BA, & Winawer J (May 2019). Long-term spatial memory representations in human visual cortex. Talk at *Vision Sciences Society*, St Pete Beach, FL.

Favila SE, Kuhl BA, & Winawer J (Nov 2018). Neural encoding of spatial information during visual perception and memory retrieval. Poster at *Society for Neuroscience*, San Diego, CA.

Long NM, **Favila SE**, & Kuhl BA (Nov 2018). The cortical locus of stimulus representations is influenced by the state of the memory system. Poster at *Society for Neuroscience*, San Diego, CA.

Wang S-F, Carr VA, **Favila SE**, Bailenson JN, Brown TI, Jiang J, & Wagner AD (Apr 2018). Representations of local information in human medial temporal lobe during memory-guided spatial navigation. Poster at *International Conference on Learning & Memory*, Huntington Beach, CA.

Favila SE, Long NM, & Kuhl BA (Nov 2016). Stimulus-specific memory representations in lateral parietal cortex. Poster at *Society for Neuroscience*, San Diego, CA.

Chanales AJH, **Favila SE**, & Kuhl BA (Nov 2016). Overlap between real-world spatial routes triggers divergence of their hippocampal representations. Talk at *Society for Neuroscience*, San Diego, CA.

Brown TI, LaRocque KF, Carr VA, **Favila SE**, Gordon AM, Bowles B, Bailenson JN, & Wagner AD (Nov 2016). Mechanisms of prospective navigation in the human brain. Talk at *Society for Neuroscience*, San Diego, CA.

Wang S-F, Carr VA, **Favila SE**, Bailenson JN, & Wagner AD (Nov 2016). Functional connectivity in the human medial temporal lobe during memory-guided spatial navigation. Poster at *Society for Neuroscience*, San Diego, CA.

Favila SE, Samide R, & Kuhl BA (Apr 2016). Distributed cortical representations of visual features and items in perception and memory. Poster at *Cognitive Neuroscience Society*, New York, NY.

Favila SE, Samide R, & Kuhl, BA (Oct 2015). Distributed cortical representations of visual features in perception and memory. Poster at *Society for Neuroscience*, Chicago, IL.

Brown TI, LaRocque KF, **Favila SE**, Carr VA, Gordon AM, Bowles B, & Wagner AD (Oct 2015). Prospective representation of navigational events in the human hippocampus. Poster at *Society for Neuroscience*, Chicago, IL.

Favila SE, Chanales AJH, & Kuhl BA (May 2015). Hippocampal pattern separation is tuned by experience for the benefit of future learning. Talk at *Manhattan Area Memory Meeting*, Princeton, NJ.

Brown TI, LaRocque KF, **Favila SE**, Carr VA, Gordon AM, Bowles B, & Wagner AD (Mar 2015).

Prospective representation of navigational goals in the human MTL. Poster at *Cognitive Neuroscience Society*, San Francisco, CA.

Favila SE, Chanales AJH, & Kuhl BA (Nov 2014). High discrimination demands reduce interference during later learning. Poster at *Society for Neuroscience*, Washington, DC.

Carr VA, Bernstein JD, **Favila SE**, Wagner AD, & Kerchner GA (Nov 2013). Individual differences in associative memory among older adults predicted by high-resolution MRI metrics of hippocampal structure and function. Talk at *Society for Neuroscience*, San Diego, CA.

Carr VA, Bernstein JD, **Favila SE**, Wagner AD, & Kerchner GA (Jul 2013). High-resolution imaging of medial temporal lobe subfield structure and function in Mild Cognitive Impairment. Poster at *Alzheimer's Association International Conference*, Boston, MA.

Carr VA, **Favila SE**, Arena D, Bailenson JN, & Wagner AD (Oct 2012). Modulation of medial temporal lobe activity by reward value during virtual navigation: A high-resolution fMRI study. Talk at *Society for Neuroscience*, New Orleans, LA.

Carr VA, **Favila SE**, Bernstein JD, Wagner AD, & Kerchner GA (Jul 2012). Successful associative memory formation and retrieval in healthy older adults is associated with hippocampal subfield activation. Poster at *Alzheimer's Association International Conference*, Vancouver, BC.

Carr VA, **Favila SE**, & Wagner AD (Nov 2010). High-resolution investigation of relational pattern separation in the medial temporal lobe using a rapid fMR-adaptation approach. Poster at *Society for Neuroscience*, San Diego, CA.

Carr, VA, **Favila SE**, & Wagner AD (Apr 2010). High-resolution fMRI of relational pattern separation in the human medial temporal lobe. Poster at *Cognitive Neuroscience Society*, Montreal, QC.

Mentorship

UNDERGRADUATE HONORS THESES

Kaylee Wang (Columbia '22, Psychology)

UNDERGRADUATE RESEARCH ASSISTANTS

Columbia

Shelton Brister (2022-2023)

Kaylee Wang (2020-2022)

Alyssa Levy (2020)

OTHER ACTIVITIES

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| 2020- | Mentor/Mock Interviewer, Científico Latino Graduate Student Mentorship Initiative |
| 2022 | Mentor, Columbia Summer Internship Program in Psychological Science |
| 2017-2018 | Mentor, NYU Graduate School of Arts and Sciences Mentorship Program |

Teaching

TEACHING ASSISTANT

Fall 2016 NYU PSYCH-UA 25: Cognitive Neuroscience
Fall 2015 NYU PSYCH-UA 22: Perception

Professional Service

AD HOC REVIEWING – JOURNALS

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| <i>Cell Reports</i> | <i>Journal of Neuroscience</i> |
| <i>Cerebral Cortex</i> | <i>NeuroImage</i> |
| <i>Communications Psychology</i> | <i>Plos Computational Biology</i> |
| <i>Current Research in Behavioral Sciences</i> | <i>Plos One</i> |
| <i>eLife</i> | <i>Science Advances</i> |
| <i>Journal of Cognitive Neuroscience</i> | |

AD HOC REVIEWING – GRANTS

National Science Foundation

SOCIETY MEMBERSHIPS

Association for Psychological Science
Cognitive Neuroscience Society
Psychonomic Society
Society for Neuroscience
Vision Sciences Society

Media Coverage

Press for Favila, Kuhl, & Winawer (2022):

“How the Brain Distinguishes Memories from Perceptions”, *Quanta Magazine*, Dec 2022
Reprinted in *Wired* and featured on the *Quanta Science Podcast*