

# Jonathan Nicholas, Ph.D.

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## Employment History

2023 – now      **Postdoctoral Researcher**, Mattar Lab, New York University  
2015 – 2017      **Research Software Developer**, Stanford Cognitive and Systems Neuroscience Lab

## Education

2017 – 2023      **Ph.D., Columbia University**, Psychology (Cognitive Neuroscience)  
2011 – 2015      **B.Sc., Brown University**, Cognitive Neuroscience

## Grants and Fellowships

2025-2027      NSF SBE Postdoctoral Research Fellowship (\$160,000)  
                     "Exploring the role of episodic memory in adaptive decision making"  
2021-2022      Leo Rubinstein Endowed Fellowship  
2017-2020      NSF Graduate Research Fellowship

## Honors and Awards

2024      Best Talk Award, Society for Neuroeconomics  
                 NYU Postdoctoral Travel Award  
2022      Edward E. Smith Memorial Award in Cognitive Neuroscience  
2015      Kling Premium in Psychology  
                 Election to Sigma Xi  
2014      Karen T. Romer Undergraduate Teaching and Research Award  
                 1st Prize Brown Institute for Brain Sciences Neural Decoding Competition

## Research

### Preprints

1      **Nicholas, J.** and Mattar, M.G., *Episodic memory facilitates flexible decision making via access to detailed events*, 2025. 🌐 DOI: 10.1101/2025.03.13.643066.

### Journal Articles

- 1      Montaser-Kouhsari, L.\*, **Nicholas, J.\***, Gerraty, R.T., and Shohamy, D., "Differentiating reinforcement learning and episodic memory in value-based decisions in parkinson's disease," *Journal of Neuroscience*, 2025, \***Denotes co-first author.** 🌐 DOI: 10.1523/JNEUROSCI.0911-24.2025.
- 2      **Nicholas, J.**, Daw, N.D., and Shohamy, D., "Proactive and reactive construction of memory-based preferences," *Nature Communications*, 2025. 🌐 DOI: 10.1038/s41467-025-56183-4.
- 3      Luo, X., Rechar, A., Sun, G., N. Yanez, F., Yilmaz, B., Lee, K., Cohen, A.O, Borghesani, V., Pashkov, A., Marinazzo, D., **Nicholas, J.**, ..., and Love, B.C., "Large language models surpass human experts in predicting neuroscience results," *Nature Human Behaviour*, 2024. 🌐 DOI: 10.1038/s41562-024-02046-9.

- 4 **Nicholas, J.**, Amlang, C.J., Lin, C.Y., Desai, N., Montaser-Kouhsari, L., Kuo, S.H., and Shohamy, D., "The role of the cerebellum in learning to predict reward: Evidence from cerebellar ataxia," *The Cerebellum*, 2024. [DOI: 10.1007/s12311-023-01633-2](#).
- 5 Grossman, I., Rotella, A., Hutcherson, C.A., ..., **Nicholas, J.**, ..., and Wilkening, T., "Insights into accuracy of social scientists' forecasts of societal change," *Nature Human Behaviour*, 2022. [DOI: 10.1038/s41562-022-01517-1](#).
- 6 **Nicholas, J.**, Daw, N.D., and Shohamy, D., "Uncertainty alters the balance between incremental learning and episodic memory," *eLife*, 2022. [DOI: 10.7554/eLife.81679](#).
- 7 Chen, L., Iuculano, T., Mistry, P., **Nicholas, J.**, Zhang, Y., and Menon, V., "Linear and nonlinear profiles of weak behavioral and neural differentiation between numerical operations in children with math learning difficulties," *Neuropsychologia*, 2021. [DOI: 10.1016/j.neuropsychologia.2021.107977](#).
- 8 Iuculano, T., Padmanabhan, A., Chen, L., **Nicholas, J.**, Mitsven, S., de los Angeles, C., and Menon, V., "Neural correlates of cognitive variability in childhood autism and relation to heterogeneity in decision-making dynamics," *Developmental Cognitive Neuroscience*, 2020. [DOI: 10.1016/j.dcn.2020.100754](#).
- 9 Dimsdale-Zucker, H.\* and **Nicholas, J.\***, "Is spatial context privileged in the neural representation of events?" *Journal of Neuroscience*, 2018, \***Denotes co-first author**. [DOI: 10.1523/JNEUROSCI.0949-18.2018](#).
- 10 Taghia, J., Cai, W., Ryali, S., Kochalka, J., **Nicholas, J.**, Chen, T., and Menon, V., "Uncovering hidden brain state dynamics that regulate performance and decision-making during cognition," *Nature Communications*, 2018. [DOI: 10.1038/s41467-018-04723-6](#).
- 11 Ryali, S., Supekar, K., Chen, T., Kochalka, J., Cai, W., **Nicholas, J.**, Padmanabhan, A., and Menon, V., "Temporal dynamics and developmental maturation of salience, default and central-executive network interactions revealed by variational bayes hidden markov modeling," *PLOS Computational Biology*, 2016. [DOI: 10.1371/journal.pcbi.1005138](#).

## Conference Proceedings

- 1 **Nicholas, J.** and Mattar, M.G., "Humans use episodic memory to access features of past experience for flexible decision making," in *46th Proceedings of the Annual Meeting of the Cognitive Science Society*, Rotterdam, The Netherlands, 2024. [URL: https://escholarship.org/uc/item/9x22d800](https://escholarship.org/uc/item/9x22d800).

## Presentations

### Invited and Selected Talks

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| 2025 | <b>UCL Max Planck Computational Psychiatry Seminar Series</b> , Virtual                                |
|      | <b>Johns Hopkins Ocular Motor &amp; Vestibular Lecture Series</b> , Virtual                            |
| 2024 | <b>Annual Meeting of the Cognitive Science Society</b> , Rotterdam, Netherlands                        |
|      | <b>Society for Neuroscience</b> , Chicago, IL  |
|      | <b>Society for Neuroeconomics</b> , Cascais, Portugal  |
| 2022 | <b>5th Multidisciplinary Conference on Reinforcement Learning and Decision Making</b> , Providence, RI |
|      | <b>Society for Neuroeconomics</b> , Arlington, VA  |
| 2019 | <b>Columbia Interdisciplinary Decision Making Meeting</b> , New York, NY                               |
|      | <b>Manhattan Area Memory Meeting</b> , Princeton, NJ   |

## Presentations (continued)

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### Posters

- 2025     **6th Multidisciplinary Conference on Reinforcement Learning and Decision Making**, Dublin, Ireland
- 2024     **Cognitive Computational Neuroscience**, Boston, MA
- 2022     **Society for Neuroscience**, San Diego, CA
- Neurobiology of Reward and Decision Making**, Lake Arrowhead, CA
- 18th Annual Context and Episodic Memory Symposium**, Philadelphia, PA
- International Congress of Parkinson's Disease and Movement Disorders**, Madrid, Spain
- International Congress for Ataxia Research**, Dallas, TX
- 2019     **Society for Neuroscience**, Chicago, IL
- Cognitive Neuroscience Society**, San Francisco, CA
- 2016     **Fourth Annual Flux Congress**, St. Louis, MO
- 2014     **Brown Summer Research Symposium**, Providence, RI

## Academic Service

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### Organizing

- 2024-2025     **Organizer**, NYU ConCats Seminar Series
- 2022     **Research Mentor**, Columbia Summer Internship Program in Psychological Science
- 2020-2021     **Instructor**, Columbia University Introduction to Programming Bootcamp
- 2020     **Organizer**, Columbia Interdisciplinary Decision Making Meeting
- Scientific Computing Support Staff**, Columbia Psychology Department
- 2019     **Organizer**, Columbia University Introduction to Programming Bootcamp
- Organizer**, Manhattan Area Memory Meeting

### Teaching

- 2022     **Teaching Fellow**, Science of Psychology, Columbia University
- Teaching Fellow**, Cognitive Neuroscience, Columbia University
- 2020     **Teaching Fellow**, Statistics for Behavioral Scientists, Columbia University
- 2019     **Teaching Fellow**, Cognitive Neuroscience, Columbia University
- 2018     **Teaching Fellow**, Experimental Methods, Columbia University
- 2017     **Teaching Fellow**, Behavioral Neuroscience, Columbia University
- 2015     **Teaching Assistant**, Computational Cognitive Science, Brown University

### Mentoring

#### Undergraduate Honors Theses

- 2019-2020     Nicole van Amerongen
- 2018-2020     Jessica Hecht

#### Undergraduate Research Assistants

- 2023-2025     Yifei Deng

## Academic Service (continued)

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2022	Annie Xu
	Sukriti Gupta
2020	Jesse Eiseman
2019	Natasha King

### High School Research Assistants

2022	Andy Feng
	Hitomi Nakamura
2021-2022	Pradnya Rajalakshmi
2021	Loc Nguyen
	Brad Ji

## Peer Review

Nature Communications, eLife, PLOS Computational Biology, Journal of Experimental Psychology: General, Cognitive Science, Scientific Reports, PLOS One

## Technical Skills

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### Research Methods

Task design, Bayesian modeling, Reinforcement learning, Eyetracking, fMRI

### Programming Languages

**Proficient:** Python, Matlab, Javascript

**Competent:** Stan, R, Unity/C, Bash, HTML/CSS