

Andra Mihali

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Education and Research

Research Foundation for Mental Hygiene April 2019 - present
Postdoctoral researcher, prof. Guillermo Horga
New York University, Center for Neural Science Summer 2018 - April 2019
Postdoctoral researcher, prof. Wei Ji Ma
New York University, Graduate School of Arts and Sciences Fall 2012 - Spring 2018
Ph.D. in Neural Science: Systems, Computation and Behavior, advised by prof. Wei Ji Ma Fall 2013 - Spring 2018
Thesis: Measures and models of covert visual attention in neurotypicals and ADHD
Rotation student, profs. Andre Fenton and Wendy Suzuki Fall 2012 - Fall 2013
Elective courses: Neural population coding, Computer modeling of neuronal systems, Understanding in brain research, Machine learning and computational statistics (audit), Psychophysics (audit), Bayesian modeling of behavior (audit), Computational psychiatry (audit)
Columbia University, Columbia College 2007 - 2011
B.A., Major in Biochemistry with Minors in Psychology and Mathematics
Research assistant in the lab of prof. Stephen Rayport, Center for Molecular Therapeutics, Columbia University Medical Center 2008 - 2012
Additional training:
Computational Psychiatry summer course, New York 2019
Neural Data Analysis Summer School, Cold Spring Harbor Laboratory 2015
Science Communication Workshops I and II, NYU - instructor Stephen Hall 2013, 2014
International Summer School in Cognitive Science, New Bulgarian University, Sofia 2012

Awards

NYSPI Magnetic Resonance Imaging Program Pilot Award Spring 2019
NYU FAS Postdoctoral Travel Grant 2019
NYU Student Senators Council (SSC) Conference Fund 2017
NYU GSAS Dean's Student Travel grant 2015
NYU MacCracken Fellowship 2012 - 2017
Columbia Undergraduate Scholars Program (CUSP) Summer Enhancement Fellowship 2009
Columbia Summer Undergraduate Research Fellowship 2008
Professor Van Amringe Mathematics Prize for first years 2008
Columbia University Dean's List 4 terms, 2007 - 2009, 2011
Columbia University Global Scholars Program 2007 - 2011
Romanian National Chemistry Olympiad - Gold and Bronze, large team for IChO 2005, 2006
Romanian National Mathematics Olympiad - Honorable mention 2003

Publications

Google scholar link
ORCID link
Web of Science link

Neuroscience, psychophysics, vision science, computational psychiatry

1. A Computational Approach to Search in Visual Working Memory. *psyArXiv*, 2023, doi:10.31234/osf.io/jqthb - Singh*, A, **Mihali***, A, Chou, W, Ma, WJ.
2. Introspective inference counteracts perceptual distortion. *Nature Communications*, 14, 7826 (2023). doi: 10.1038/s41467-023-42813-2. - **Mihali**, A, Broeker, M, Ragalmulto, F, Horga, G
3. Effects of hallucination proneness and sensory resolution on prior biases in human perceptual inference of time intervals. *Journal of Neuroscience*, 43 (29) 5365-5377, 2023. doi: 10.1523/JNEUROSCI.0692-22.2023 - Lagache*, E, **Mihali***, A, Horga G
Journal Club by Rodriguez-Sanchez et al, *Journal of Neuroscience*
4. Psychophysics of visual search with heterogenous distractors. *bioRxiv*, 2020, doi:10.1101/2020.08.10.244707. Revision in submission, *Psychological Review* - **Mihali**, A, Ma, WJ

5. A low-level perceptual correlate of behavioral and clinical deficits in ADHD. *Computational Psychiatry*, 2018, doi:10.1162/cpsy_a.00018.
- **Mihali***, A, Young*, AG, Adler, L, Halassa, MM, Ma, WJ
Press coverage: McGovern Institute for Brain Research at MIT
6. Bayesian microsaccade detection. *Journal of Vision*, 2017, 17(1), 13. doi:10.1167/17.1.132017.
- **Mihali***, A, van Opheusden*, B, Ma, WJ
7. Evidence for perceptual insight in a virtual psychophysics experiment. In preparation
- Broeker*, M, **Mihali***, A, Horga, G.
Neurobiology, biochemistry and psychiatry:
8. Dopamine neuron dependent behaviors mediated by glutamate cotransmission. *eLife* 2017; 6:e27566, doi: 10.7554/eLife.27566.
-Mingote, S, Chuhma, N, Kalmbach, A, Siena, AC, Wang, Y, **Mihali**, A, Sferrazza, C, Zucker-Scharff, I, Welch, MG, Lizardi-Ortiz, J, Sulzer, D, Moore, H, Gaisler-Salomon, I Rayport, S
9. Genetic mouse models of resilience as a guide to novel therapeutic approaches to neuropsychiatric disorders: focus on schizophrenia. *Expert Reviews in Neurotherapeutics*, 2012, 12(7): 785–799. doi: 10.1586/ern.12.60.
-**Mihali***, A, Subramani*, S, Kaunitz*, G, Rayport, S, Gaisler-Salomon, I
10. Synaptic underpinnings of altered hippocampal function in glutaminase deficient mice during maturation. *Hippocampus*, 2012, 22(5):1027-39. doi: 10.1002/hipo.22014
-Gaisler-Salomon, I, Wang, Y, Chuhma, N, Zhang, H, Columbic, Y, **Mihali**, A, Arancio, O Sibille, E Rayport, S

Other writing

11. A step-by-step guide to the peer review process. *The Cooper Square Review of Science, Medicine and Technology*
12. Interview with a neuron. *The Cooper Square Review of Science, Medicine and Technology*

Talks

1. Perceptual insight in health and psychosis. Online lab meeting of Roy Salomon. *Haifa University*, February 2024
2. The neurocomputational basis of insight in perceptual decision-making. *Adelphi University*, February 2024
3. Introspective inference counteracts perceptual distortion. *Association for the Scientific Study of Consciousness (ASSC)*, June 2023
4. Perceptual insight in health and psychosis. Online lab meeting of Dobromir Rahnev. *Georgia Tech*, November 2022
5. Adjustment of prior beliefs as a candidate mechanism for perceptual insight. *Zuckerman Institute Postdoctoral Seminar (ZIPS)*, March 2021
6. Visual search with heterogeneous distractors. *Ma Lab research talk*, with Joshua Calder-Travis and Wei Ji Ma, November 2020
7. The psychophysics of visual search with heterogeneous distractors. *Vision Sciences Society Annual Meeting*, May 2019
8. Perceptual variability, cognitive control and microsaccades in neurotypicals and ADHD. Lab meeting of Guillermo Horga, Columbia University Medical Center, September 2018
9. Perceptual variability, cognitive control and microsaccades in neurotypicals and ADHD. Lab meeting of Yael Niv, Princeton, July 2018
10. Measures and models of covert visual attention in neurotypical function and ADHD. Thesis defense, NYU, Apr. 2018
11. Bayesian microsaccade detection. NYU, Nov. 2015, with Bas van Opheusden and Wei Ji Ma
12. Do hippocampal cells display directional selectivity? NYU, Oct. 2013, with Shihpi Ku and Wendy Suzuki

**Conference
posters**

1. Introspective inference counteracts perceptual distortion. *Society for Neuroscience (SfN)*, November 2023
- **Mihali**, A, Mendes de Leon, C, Velikovskaya, A, Fogelson, A, Broeker, M, Ragalmuto, F, Horga, G
2. Examining the Neurobiological Psychosis Continuum via Neuromelanin-Sensitive MRI. *Society for Neuroscience (SfN)*, November 2023
- Fogelson, A, Velikovskaya, A, Ashinoff, B, Wengler, K, **Mihali**, A, Butt, A, Horga, G
3. Introspective inference counteracts perceptual distortion. *Curiosity, Creativity and Complexity*, May 2023
- **Mihali**, A, Broeker, M, Ragalmuto, F, Horga, G
4. Introspective inference counteracts perceptual distortion. *Columbia Postdoctoral Research Symposium*, May 2023
- **Mihali**, A, Broeker, M, Ragalmuto, F, Horga, G
5. Introspective inference counteracts perceptual distortion. *Vision Sciences Society (VSS)*, May 2023
- **Mihali**, A, Broeker, M, Ragalmuto, F, Horga, G
6. Perceptual insight in health and psychosis. *CPC++ 2022: computational psychiatry course*, July 2022
- **Mihali**, A, Ragalmuto, F, Fogelson, A, Ojeil, N, Broeker, M, Horga, G
7. Decoding Auditory Verbal Hallucinations Based on Patterns of Neural Activity in the Temporal Cortex in Schizophrenia. *American College of Neuropsychopharmacology (ACNP)*, December 2021
-Wengler, K, He, X, **Mihali**, A, Horga, G
8. Insight and compensation under distorted perception. *Society for Neuroscience (SfN)*, November 2021.
- **Mihali**, A, Broeker, M, Horga, G
9. Evidence for perceptual insight in a virtual psychophysics experiment. *Association for the Scientific Study of Consciousness (ASSC)*, June 2021.
-Broeker, M, **Mihali**, A, Horga, G
10. Adjustment of prior beliefs as a candidate mechanism for perceptual insight. *Society of Biological Psychiatry Annual Meeting*, May 2021 (online poster).
- **Mihali**, A, Broeker, M, Horga, G
11. Seeing versus believing in the motion after-effect illusion: a novel paradigm to measure perceptual insight. Late-breaking poster, *Society of Biological Psychiatry Annual Meeting*, 2020 (In-person conference canceled; work was presented in an online poster gallery).
- **Mihali**, A, Broeker, M, Horga, G
12. Perceptual and executive behavioral deficits in ADHD and their differential correlation with microsaccade rate. *Society of Biological Psychiatry Annual Meeting*, 2018.
- **Mihali***, A, Young*, AG, Adler, L, Halassa, MM, Ma, WJ
13. Characterizing behavior and microsaccades in ADHD using a mixed sensory - executive psychophysical paradigm. *Computational Cognitive Neuroscience*, 2017.
- **Mihali***, A, Young*, AG, Adler, L, Halassa, MM, Ma, WJ
14. Is location information lost from visual short-term memory? *Vision Sciences Society Annual Meeting*, 2017, Vol.17, 104. doi:10.1167/17.10.104 2017
-**Mihali**, A, Ma, WJ
15. A Bayesian model for microsaccade detection. *Vision Sciences Society Annual Meeting*, 2015, 15(12):1275. doi: 10.1167/15.12.1275
-**Mihali***, A, van Opheusden*, B, Ma, WJ
16. Selective reduction of glutaminase in dopamine neurons impairs glutamate cotransmission and leads to a schizophrenia resilience phenotype. *Society of Biological Psychiatry Annual Meeting*, 2014, 75 (9), 175S-175S
-Mingote, S, Chuhma, N, Kalmbach, A, Wang, Y, **Mihali**, A, Gellman, C, Zucker-Scharff, I, Sferrazza, C, Field, BC, Hirschberg, D, Welch, M, Inbar, BI, Krueger, K, Moore, H, Gaisler-Salomon, I, Rayport, S
17. Selective reduction of glutaminase in dopamine neurons leads to reduced susceptibility to amphetamine sensitization: relevance to schizophrenia resilience. *Society for Neuroscience Annual Meeting Abstract* 2013
-Mingote S, Chuhma, N, Wang, Y, **Mihali**, A, Gellman, C, Zucker-Scharff, I, Sferrazza, C, Field, BC, Inbar, BP, Krueger, K, Moore, H, Rayport, S

18. An inquiry-based neuroscience curriculum emphasizing the scientific method. *Society for Neuroscience Abstract* 2012
-Gelman, C, Sitko, A, Varodayan, FP, Burgos, A, Deihle, D, Remole, K, Crumiller, M, Pham, T, Wu, M, Rabinowitz, G, Martin Hernandez, AL, Saotome, K, **Mihali**, A, Spatzer, A, Murray, A, Reibstein, L, Alamu, O, Jensen, CL, Rayport, S, Yu, H

Professional service

Journal reviewer.

2023: reviewer for *Psychiatry Research* and *Cerebral Cortex*

2022: reviewer for *PLoS Computational Biology*

co-reviewer with Guillermo Horga for *Schizophrenia Bulletin*

2021: reviewer for *Clinical Psychological Science*

co-reviewer with Guillermo Horga for *Frontiers in Psychiatry*

2020: reviewer for *Plos One*

co-reviewer with Guillermo Horga for *Schizophrenia Bulletin*, *Computational Psychiatry*

2019: reviewer for *Journal of Vision*, *Psychiatry Research*, *Journal of eye movement research*

co-reviewer with Guillermo Horga for *Molecular Psychiatry*, *Schizophrenia Bulletin*, *Computational Psychiatry*

2018: reviewer for *Journal of Neurophysiology*

Membership. Vision Sciences Society (VSS), Society of Biological Psychiatry (SOBP), Association for the Scientific Study of Consciousness (ASSC), Society for Neuroscience (SfN)

Mentoring

Rotation student mentor. Victoria Fisher, PhD student in Neurobiology and Behavior, Columbia University Winter 2023 - present

- Project: Drift-diffusion modeling to elucidate the cognitive mechanisms of perceptual updating

Thesis mentor. Carmen Mendes de Leon, Master in Cognitive Neuropsychology, Vrije Universiteit Amsterdam Winter 2023 - Fall 2023

- Thesis: Fixational eye movements in a perceptual insight task based on the motion after-effect (MAE) illusion

Thesis mentor. Florian Ragalmuto, Master in Cognitive Neuropsychology, Vrije Universiteit Amsterdam Winter 2022 - Fall 2022

- Thesis: Perceptual inference in psychosis: interindividual differences in prior biases during the estimation of time intervals

Thesis mentor. Anastasiya Velikovskaya, BA student in Neuroscience and Behavior, Barnard College, Columbia University Fall 2020 - Summer 2021

- Thesis: Auditory verbal hallucinations in schizophrenia and non-clinical populations

Thesis mentor. Marianne Broeker, MA student in Psychology in Education, Teachers College, Columbia University Summer 2019 - Fall 2021

- Thesis: Metacognition and perceptual insight in neurotypical individuals
- 2020: awarded Honorable mention for her Integrative Project

Research mentor. High school student Gurveen Dhallu Summer 2019 - Winter 2020

Research mentor. High school student Aditi Singh Summer 2017 - present

- 2018: awarded the "Exceptional Accomplishment in Behavioral Science" at the Westchester Science and Engineering Fair (WESEF)
- 2019: Regeneron Science Talent Search (STS) Finalist

Teaching

Graduate teaching Assistant. New York University.

- From Illusions to Inference, prof. Wei Ji Ma. Spring 2014
- Cellular and Molecular Neurobiology, profs. Alex Reyes and Chiye Aoki Fall 2013

Undegraduate teaching assistant. Columbia University.

- Calculus I, II and Linear Algebra, Physical Chemistry I: Thermodynamics and Kinetics, various terms 2008 - 2011

Volunteering and outreach

Teacher. Virtual Science Week organized by Elevate NYC and PDA's anti-discrimination committee. 2021

Member. Scientist Action and Advocacy network, NYU. Contributed literature research for the projects below: 2016 - 2019

- Scientific support for restricting non-medical vaccination exemptions in New York State
- Scientific support for raising the age of criminal responsibility
- Scientific arguments against solitary confinement

Judge. Westchester Rockland Fifteenth Annual Subregional Junior Science and Humanities Symposium (JSHS) Spring 2018

Teacher. Outreach visit at Crossroads Juvenile Detention Center Fall 2017

Teacher. Neuroscience Outreach Group at NYU (NOGN), Columbia University Neuroscience Outreach (CUNO) 2011 - 2018

Mentor. Columbia College Women (CCW); Science, Technology and Engineering Program (STEP) 2015 - 2018

Volunteer teacher. Let's Get Ready Harlem (SAT) 2008 - 2010

Other activities

Advocacy Chair. Columbia University Postdoctoral Society (CUPS) Fall 2021 - Fall 2022

- organized a postural therapy class taught by Joey Zimet, two events on loneliness and community and how to make friends in NYC with Jillian Richardson, a permanent residence webinar co-organized with the International Students and Scholars Office (ISSO), a Krav Maga class with Krav Maga Experts, a tango class with Strictly Tango NYC and a webinar on how to find an apartment in NYC with Alice Lesman from the Office of Work/Life at Columbia University

DEI book club discussion coordinator. Chapter 3 from Mary-Frances Winters' book "We can't talk about that at work"; event series organized by CUPS Summer 2021

Host. Yael Niv's talk at the Columbia Neuroscience Seminar Series Winter 2020

Coordinator. First-Year Dialogue discussion leader about the novels *Americanah*, *Behold the dreamers*, NYU 2017-2018

Member. NeuWrite, NYU 2015-present

Co-organizer. Argentine Tango dance classes at NYU 2018

Organizer. NYU Center for Neural Science Retreat Mohonk Mountain House Fall 2015

Health literacy volunteer. New York Methodist Hospital 2011 - 2012

Tutor. Ivy League Tutors Network (high school science and math), Columbia University Tutoring and Translating Agency 2007 - 2012

Executive Vice President of Communications, Editor, Symposium coordinator. Columbia Undergraduate Science Journal 2009 - 2011

Science outreach coordinator. Columbia Scientists and Engineers for a Better Society 2007 - 2011

Exhibit organizer. Through the looking glass - An Exploration of Art and Science 2010 - 2011

Photographer, Photo editor. Columbia Daily Spectator 2008 - 2011

Photography exhibits: Art Exhibit at Columbia University Medical Center (2011, 2012), Window to Russia, East-Central Europe, and Eurasia at Harriman Institute (2009), Summer Photography Show at Postcrypt Art Gallery, Columbia University 2008 - 2010

Photography portofolio link: Adobe stock

Skills

Programming: Extensive experience with MATLAB/Psychtoolbox and Latex. Some experience with Unix shell scripting, C++, Python and R. Github repository link.