

## 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.