

Avinash Rao Vaidya

Contact Information

Address:

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Citizenship: USA

Employment

Postdoctoral research fellow
Department of Cognitive, Linguistic and Psychological Sciences
Brown University
Providence, RI

Education

Graduate:

PhD in Neuroscience, 2010-2016
McGill University
Montreal, QC
Department of Neurology and Neurosurgery

Thesis: "Frontal Lobe Contributions to Attention in Reward Learning and Decision-Making"

GPA: 4.00 out of 4.00

Undergraduate:

BSc in Neuroscience and Psychology. *Summa cum laude*, 2006-2010
Ursinus College. Collegeville, PA
Minor in Biology

GPA: 3.90 out of 4.00

Research Experience

Postdoctoral research associate (*November 2016 to August 2018*)

Postdoctoral research fellow (*August 2018 to present*)

Brown University

Providence, Rhode Island

Supervisor: Dr. David Badre

I am currently a postdoctoral research fellow working with Dr. David Badre. My research focuses on the neural circuitry involved in constructing value judgments from information stored in multiple memory systems, and the neural systems involved in utilizing structured knowledge for learning and decision-making.

September 2011 to August 2016

Doctoral student, Department of Neurology and Neurosurgery

McGill University

Montreal, Quebec

Supervisor: Dr. Lesley Fellows

My doctoral thesis with Dr. Lesley Fellows focused on the effects of focal frontal lobe damage in human patients on attentional processes during decision-making and associative learning. In this work, I used behavioral testing, eye-tracking and magnetoencephalography in patients and healthy control subjects.

Outside of my thesis work, I also studied the effects of prefrontal damage on exploration of emotional faces through eye-movements, and the concomitant effects on emotion recognition.

January 2014

Visiting Scholar, Department of Psychology

University of Pennsylvania

Philadelphia, Pennsylvania

Supervisor: Dr. Joseph Kable

I visited the laboratory of Dr. Joseph Kable to collect data for my thesis project. I tested patients with frontal lobe damage who were part of the University of Pennsylvania Cognitive Neuroscience database.

August 2010 to August 2011

Rotation Student, Integrated Program in Neuroscience

McGill University

Montreal, Quebec

I completed rotations with Drs. Lisa Koski, Lesley Fellows and Martin Lepage during my rotation year in the Integrated Program in Neuroscience rotation program for the first year of my graduate studies.

August 2008 to May 2010

Honors research, Neuroscience Program and Department of Psychology

Ursinus College

Collegeville, Pennsylvania

Supervisor: Dr. Joel P. Bish

I conducted an independent, distinguished honors research project on a perceptual phenomenon known as synesthesia. I also took on the responsibilities of lab supervisor, coordinating other research projects and helping train students in collecting and analyzing data.

May to August 2008

Summer fellow, Department of Pharmacology and Physiology

Drexel University College of Medicine

Philadelphia, Pennsylvania

Supervisor: Dr. Olimpia Meucci

I worked as a summer fellow in the laboratory of Dr. Olimpia Meucci, investigating the *in vitro* localization of leucine-rich acidic nucleic protein (LANP) in rat cortical neurons and characterize its role in neuron survival. This research was conducted as part of the Summer Undergraduate Research Fellowship program at Drexel University College of Medicine.

July to August 2007

Volunteer, Department of Biological Sciences

Tata Institute of Fundamental Research

Mumbai, India

Supervisor: Dr. Vidita A. Vaidya

I worked for three and a half weeks in the laboratory of Dr. Vidita A. Vaidya, examining changes in hippocampal neurogenesis in maternally deprived rats and recombinant mice.

Related work experience

Winter 2013, Fall 2014, 2015

Teaching assistant (2013), Head teaching assistant (2014-2015)

Department of Neurology and Neurosurgery

McGill University

Montreal, Quebec

As a teaching assistant, I instructed medical students during dissection of the cranial cavity and brains in human cadavers. I also helped lead review sessions outside of regular class hours for students studying for their exams. As head teaching assistant,

I was also responsible for reviewing anatomy and the dissection process with the other teaching assistants, and leading the class through the dissection.

August 2009 to May 2010

Neuroscience Teaching Assistant

Ursinus College
Collegeville, Pennsylvania

I worked as a teaching assistant in an introductory neuroscience laboratory course (NEUR120) for the spring semester of 2010 and the fall semester of 2009. My duties included helping students in the laboratory, facilitating discussions, evaluating student presentations and grading exams.

September 2008 to May 2010

Biology Tutor

Ursinus College
Collegeville, Pennsylvania

I worked as an on-campus tutor for undergraduate biology students at Ursinus College. I tutored seven students in Genetics and Biology of the Cell (BIO-201), Cell Biology and Genetics of Health and Disease (BIO-102), and Issues in Ecology and Evolution (BIO-101) over two academic years.

July 2007, January 2009

Illustrator

Drexel University College of Medicine
Philadelphia, Pennsylvania
Tata Institute of Fundamental Research
Mumbai, India

I produced several figures for a review article in *Annual Review of Microbiology*, Vaidya AB, Mather MW (2009) Mitochondrial Evolution and Functions in Malaria Parasites. *Annual Review of Microbiology* and in *CNS and Neurological Disorders: Drug Targets*, Vaidya VA, Vadodaria KC, Jha S (2007) Neurotransmitter regulation of adult neurogenesis: Putative therapeutic targets. *CNS and Neurological disorders: Drug Targets* 6(5):358-374).

Honors and Awards

Ruth L. Kirschstein National Research Service Award (NRSA) Individual Postdoctoral Fellowship, 2018-2021.

Postdoctoral Fellow Award, Cognitive Neuroscience Society, 2018. (\$100)

Winner of Computational Modeling Challenge, Initiative for Computation in Brain and Mind, Brown University, 2017

Tom Gevas Student Travel Award from the Montreal Neurological Institute for attendance of the Fourth quadrennial meeting on OFC function, 2015 (\$1500)

McGill University Integrated Program in Neuroscience Excellence Award, 2015 (\$2000)

Jeanne Timmins Costello Fellowship awarded by the Montreal Neurological Institute (Sept 2015-August 2016) (\$10,000)

Graduate Research Enhancement and Travel Award from McGill University for attendance of the annual meeting of the Society for Neuroeconomics, 2015 (\$500)

Kenelm M. Winslow Student Travel Award for travel to the Annual Meeting of the Society for Neuroscience, 2014 (\$1500)

Desjardins Outstanding Student Award, Integrated Program in Neuroscience, McGill University (Sept 2014-August 2015) (\$20,000)

2013 MEG Study Competition at McGill University (selected from over 20 other proposed studies in the Montreal area) – Awarded 10 free MEG recordings and MRIs at the Brain Imaging Center (Approx. \$9000 in value).

Faculty of Medicine Internal Studentship from McGill University (Sept 2012- August 2013) (\$12,000)

Faculty of Medicine Internal Studentship from McGill University (Sept 2011- August 2012) (\$12,000)

Graduate Research Enhancement and Travel Award from McGill University for attendance of the 40th annual Society for Neuroscience Conference, 2010 (\$500)

Recruitment award from the Integrated Program in Neuroscience at McGill University, 2010 (\$10,000)

Inducted into the Phi Beta Kappa national honors society, 2010

Individual poster award, 1st Annual Lehigh Valley Society for Neuroscience Conference, 2010

Awarded funding from the Working Group for Undergraduate Research at Ursinus College for research on the cognitive and developmental aspects of synesthesia for the fall semester of 2009 (\$150)

Inducted into Nu Rho Psi, the National Honor Society in Neuroscience, 2009

Awarded Summer Undergraduate Research Fellowship at Drexel University College of Medicine, 2008 (\$3000)

Dean's Honor List (Ursinus College), each semester from Fall 2006 to Spring 2010

Publications

Vaidya A.R. & Badre, D. Neural systems for memory-based value judgment and decision-making. *In preparation*

Vaidya A.R.,* Pujara M.S.*, Petrides M., Murray E.A. & Fellows L.K. (2019). Lesion studies in contemporary neuroscience. *Trends in Cognitive Science*.

*Equal contribution

Vaidya A.R. and Fellows L.K. (2019). Ventromedial frontal lobe damage affects interpretation, not exploration, of emotional facial expressions. *Cortex*. PMID: 30716612.

Vaidya A.R., Sefranek, M., and Fellows L.K. (2017). Ventromedial Frontal Lobe Damage Alters how Specific Attributes are Weighed in Subjective Valuation. *Cerebral Cortex*. 28(11): 3857-3867. PMID: 29069371

Vaidya A.R., and Fellows L.K.. The Neuropsychology of Decision-Making: A View From the Frontal Lobes , in *Decision Neuroscience. 1st edition*. Dreher J., Tremblay L., ed. London, UK: Elsevier. (2016). Chapter 22,; p.277-289.

Vaidya A.R., and Fellows L.K. (2016). Necessary contributions of human frontal lobe sub-regions to reward learning in a dynamic, multidimensional environment. *Journal of Neuroscience*. 36(38): 9843-9858. PMID: 27656023.

Vaidya A.R., and Fellows L. K. (2015). Testing necessary regional frontal contributions to value assessment and fixation-based updating. *Nature Communications*, 6 :10120. PMID: 26658289.

Vaidya A.R., and Fellows L. K. (2015). Ventromedial frontal damage in humans reduces attentional priming of rewarded visual features. *The Journal of Neuroscience*, 35(37). PMID: 26377468.

Vaidya A.R. Neural mechanisms for undoing the “curse of dimensionality.” (2015). *The Journal of Neuroscience*, 35(35). PMID: 26338319.

Vaidya A.R., Jin, C., and Fellows L. K. (2014). Eye spy: The predictive value of fixation patterns in detecting subtle and extreme emotions from faces. *Cognition*, 133(2). PMID: 25151253.

Hochman E.Y.,* **Vaidya A.R.**,* and Fellows L.K. (2014). Evidence of a role for the dorsal anterior cingulate cortex in disengaging from an incorrect response. *PLoS One*, 9(6). PMID: 24968256.

*Equal contribution

Khan, MZ., **Vaidya, A.**, and Meucci, O. (2011). CXCL12-mediated regulation of ANP32A/Lanp, a component of INHAT complex, in cortical neurons. *Journal of Neuroimmune Pharmacology*, 6(1). PMID: 20617464.

Kaas, B. **Vaidya A.R.**, Leatherman A., Schleidt S. and Kohn R.E. (2010). Technical Report: Exploring the basis of congenital myasthenic syndromes in an undergraduate course, using the model organism, *Caenorhabditis elegans*. *Invertebrate Neuroscience*, 10(1). PMID: 20431904.

Vaidya A.R., Gurenlian L., Brady L., Erin Romero N. and Kohn R. (2009). Cardioactive effects of diphenhydramine and curcumin in *Daphnia magna*. *IMPULSE*. (E-Pub).

Invited Presentations

Testing the role of the ventromedial frontal lobe in value judgment and emotion recognition. Social Brown Bag, Brown University, 2017

Accounting for taste: effects of human frontal lobe damage on valuation and decision-making. Tata Institute for Fundamental Research, 2016.

Preference is bought by judgment of the eye: Frontal lobe contributions to value judgment and updating. Northwestern University, 2016.

Effects of frontal lobe damage on attention in reward-learning and decision-making. Columbia University, 2016.

Effects of frontal lobe damage on attention in reward-learning and decision-making. Brown University, 2016.

Frontal lobe contributions to attention in reward learning and decision-making. Moss Rehabilitation Research Institute, 2016.

Frontal lobe contributions to attention in learning and decision-making. University of Pennsylvania, 2015.

Effects of prefrontal damage on value updating. McGill University Integrated Program in Neuroscience Retreat, 2015.

Testing effects of reward priming on attention. MEG@McGill Training Session, Montreal Neurological Institute, 2015.

Platform Presentations

*** Presenting Author**

Vaidya A.R.* Fellows L.K. *Follow the money! Ventromedial frontal damage affects attentional priming of rewarded features during visual search.* Presented at the Montreal Neurological Institute Neuropsychology Day, 2015.

Vaidya A.R.* Fellows L.K. *Like the look of it? Dorsomedial prefrontal damage increases the influence of visual fixations in value-based choice.* Cognition and Circuits lecture series, Montreal Neurological Institute, 2015.

McGuire J.T., Mukherjee, D., Kazinka, R. **Vaidya A.R.**, and Kable J.W. *Altered willingness to wait for delayed rewards in the context of psychopathology or focal brain injury.* Accepted at the annual meeting of the Society for Neuroeconomics, 2014.

Vaidya A.R.* *Testing the contributions of orbitofrontal cortex to attentive decision-making.* Presented at the Montreal Neurological Institute Neuropsychology Day, 2014.

Vaidya A.R.* *Seeing 'T's' of Green, Red 'O's' Too, 'I' and 'C' are Blue, same for 'E' and 'U': the Wonderful World of Synesthesia.* Presented at the Fifth Annual Celebration of Student Achievement, Ursinus College, Collegeville, Pennsylvania, 2010.

Vaidya A.R.* *Illuminating LANP and its role in rat cortical neuron survival.* Presented at the Drexel University College of Medicine Summer Undergraduate Research Fellowship Seminar, Philadelphia, Pennsylvania, 2008.

Poster Presentations

*** Presenting Author**

Vaidya A.R. and Badre D. *Neural systems for memory-based value judgment and decision-making.* Presented at the 4th Multidisciplinary Conference on Reinforcement Learning and Decision-Making in 2019.

Vaidya A.R. and Badre D. *Mechanisms for sampling distinct memory stores during decision-making.* Presented at the 25th annual Cognitive Neuroscience Society Meeting, 2018.

Vaidya A.R.* and Fellows, L.K. *Mechanistic contributions of the ventromedial frontal lobe to the exploration and recognition of emotional expressions.* Presented at the 47th annual meeting of the Society for Neuroscience, 2017.

Vaidya A.R.*, Sefranek M. and Fellows, L.K. *Deconstructing the aesthetic brain: Effects of prefrontal damage on the weighting of art attributes during value judgment.* Presented at the 46th annual Cognitive Neuroscience Society Meeting, 2016.

Vaidya A.R.* and Fellows, L.K. *Effects of damage to human prefrontal cortex on learning in a dynamic, multidimensional environment.* Presented at the Fourth quadrennial meeting on OFC function, 2015.

Vaidya A.R.* and Fellows, L.K. *Choice is bought by judgment of the eye: Necessary prefrontal contributions to value updating during decision-making.* Presented at the Society for Neuroeconomics Annual Meeting 2015.

Vaidya A.R.* and Fellows, L.K. *Testing orbitofrontal contributions to formation of a value-based attentional set in a two dimension probabilistic reversal-learning task.* Presented at the 44th annual meeting of the Society for Neuroscience, 2014.

Vaidya A.R.* and Fellows L.K. *Look me in the eye: An in-depth investigation of fixation patterns to emotional faces in patients with prefrontal damage.* Presented at the 21st annual Cognitive Neuroscience Society Meeting, 2014.

Vaidya A.R.*, Hochman E.Y., Yu L.Q. and Fellows L.K. *Measuring inhibition by locking event-related potentials to unexecuted responses: estimating known unknowns using known knowns in the brain.* Presented at the 20th annual Cognitive Neuroscience Society Meeting, 2013.

Vaidya A.R.*, Hochman E.Y. and Fellows L.K. *A butterfly in Brazil: error inhibition is a local process with global effects.* Presented at the 42nd annual Society for Neuroscience Conference, 2012.

Yu L.Q., **Vaidya A.R.**, Hochman E.Y. and Fellows L.K. *A Novel Approach to Studying Endogenously Triggered Response Inhibition.* Presented at the Montreal Neurological Institute Neuropsychology Day, 2012.

Vaidya A.R.*, Hochman E.Y. and Fellows L.K. *Within-trial dissociation of error inhibition and volitional response inhibition in a patient with damage to the right inferior frontal gyrus.* Presented at the 19th annual Cognitive Neuroscience Society Meeting, 2012.

Vaidya A.R.*, Hochman E.Y. and Fellows L.K. *Challenging the error-correct mismatch hypothesis of the ERN: Preliminary evidence that the error-related negativity is more sensitive to the representation of the error than to the correct response.* Presented at the 41st annual Society for Neuroscience Conference, 2011.

Vaidya A.R.*, Hochman E.Y. and Fellows L.K. *The error-related negativity reflects behavioral adjustment, not the evaluation of response outcome.* Presented at the McGill University Integrated Program in Neuroscience Retreat, 2011.

Yusuf A, Sussex R, Whatley B, **Vaidya A**, Koski L. *Cortical Inhibition and Cognitive Fatigue in Multiple Sclerosis*. 17th Annual Meeting of the Organization for Human Brain Mapping, 2011.

Bish J.P., Dougherty K.A., Meeley L.E., Brenner S., Powers C. and **Vaidya A.R.*** *An Electroencephalographic Investigation of Automaticity in Grapheme-color Synesthesia*. Presented at the Association for Psychological Science 23rd Annual Convention, 2011.

Bish J.P., **Vaidya A.R.***, Dougherty K. and Meeley L. *Seeing 'T's' of Green, Red 'O's' Too, 'I' and 'C' are Blue, same for 'E' and 'U': the Wonderful World of Synesthesia*. Presented at the 40th annual Society for Neuroscience Conference, 2010. (Selected for press conference at event).

Vaidya A.R.*, Dougherty K.A. and Bish J.P. *Seeing 'T's' of Green, Red 'O's' Too, 'I' and 'C' are Blue, same for 'E' and 'U': the Wonderful World of Synesthesia*. Presented at the 1st Annual Lehigh Valley Society for Neuroscience Conference, 2010.

Vaidya A.R.*, Meeley L.E., Pall, M.J., Ramsey, S.J. and Bish, J.P. *Oz comes to Kansas: behavioral effects of grapheme-color associations among non-synesthetes*. Presented at the 1st Annual Lehigh Valley Society for Neuroscience Conference, 2010.

Vaidya A.R.*, Hartl A., Pall M. and Bish J. *Inhibition, Maturation, Memory and Synesthesia*. Presented at Drexel University College of Medicine: Discovery Day 2009.

Hartl A., **Vaidya A.**, Pall M. and Bish J. *Neurocognitive Correlates of the Development of Obsessive Compulsive Disorder and Attention Deficit/Hyperactivity Disorder*. Drexel University College of Medicine: Discovery Day 2009.

Khan M.Z., **Vaidya A.** and Meucci O. *Regulation of LANP/ANP32A by the chemokine CXCL12 and its role in neuronal survival*. Drexel University College of Medicine: Discovery Day 2009.

Adhoc reviewer

- *Biological Psychiatry*
- *Brain*
- *Cortex*
- *Cognitive, Affective and Behavioral Neuroscience*
- *Cognitive Research: Principles and Implications*
- *Human Brain Mapping*
- *Nature Communications*
- *Journal of Cognitive Neuroscience*
- *Journal of Neurophysiology*
- *Neuropsychologia*
- *PLoS One*
- *Social Cognitive and Affective Neuroscience*

Mentoring experience (student, department or program, type of project)

Student	Dates	Project
Gray Jin, Neuroscience Independent research	Spring 2012	Face scanning patterns of healthy individuals
David Benrimoh, McGill Faculty of Medicine Summer research project	Summer 2013	Monitoring attention during decision-making
Alexandra Tighe, Psychology Honors project	Fall 2013-Spring 2014	Effects of feature priming in decision-making
Andras Lenart Cognitive Science Independent research	Spring 2014	Behavioral measures of post-error control
Marcus Sefranek Summer research student	May-August 2015	Attributes underlying value judgment following prefrontal damage
Matthew Satterthwaite, Cognitive Science Independent research	Fall 2015-Winter 2016	Role of partisanship in political decision-making
Henry Jones Cognitive Science Honors Research and Summer Student	Spring 2017-Spring 2019	Contrasting state and value representations in orbitofrontal cortex
Emily Waters Neuroscience Independent Research	Fall 2018-Present	Effects of feedback and task goals on re-encoding during retrieval

Popular science

A news story about the publication “Testing necessary regional frontal contributions to value assessment and fixation-based updating” was picked up by multiple news outlets, including Science Daily and La Presse.

I gave a presentation titled “Seeing T’s of Green, Red O’s Too, ‘I’ and ‘C’ Are Blue, Same for ‘E’ And ‘U’: The Wonderful World of Synesthesia” as part of a news conference headlined *Hearing Colors, Seeing Sounds: New Research Explores Sensory Overlap in the Brain* at the 40th annual Society for Neuroscience Conference, 2010.

I contributed an interview for an article on synesthesia in *The Charlton*, Carleton University’s student newspaper (2010).

Volunteer work

Winter 2012

BrainReach Volunteer

McGill University

Montreal, Quebec

Spring 2011

Brain Awareness Day Volunteer

Montreal Neurological Institute

Montreal, Quebec

September to November 2008

Volunteer for the Barack Obama presidential campaign

May 2006

Volunteer at Fair Hill Cemetery