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CURRENT
POSITION 2019- Assistant Professor, Department of Cognitive Sciences
Faculty, Institute for Mathematical Behavioral Sciences
Fellow, Center for the Neurobiology of Learning and Memory
University of California, Irvine

PREVIOUS
APPOINTMENTS 2018 Associate Research Scholar, Princeton Neuroscience Institute
2013-2018 Postdoctoral Research Associate, Princeton Neuroscience Institute
2007-2013 PhD candidate, Cognition & Perception, New York University
2006 Research assistant, Deicken lab, UCSF/VA
2005-2007 Research assistant, Wagner lab, Stanford

EDUCATION

2013 Ph.D., Cognition & Perception
 New York University
 Advisor: Nathaniel D. Daw
2003 S.B., Mathematics (additional concentration in Economics)
 Massachusetts Institute of Technology

PUBLICATIONS (* = *Equal contribution.*)

Preprints

- PP4 **Bornstein AM**, Aly M, Feng SF, Turk-Browne NB, Norman KA, Cohen JD. Perceptual decisions result from the continuous accumulation of memory and sensory evidence. *bioRxiv*.
doi:10.1101/186817
doi:10.18112/openneuro.ds001614.v1.0.1
- PP3 Hunter LE*, **Bornstein AM***, Hartley CA. A common deliberative process underlies model-based planning and patient intertemporal choice. *bioRxiv*.
doi:10.1101/499707
- PP2 Rmus M, Ritz H, Hunter LE, **Bornstein AM**, Shenhav A. Individual differences in model-based planning are linked to the ability to infer latent structure. *bioRxiv*.
doi:10.1101/732072
- PP1 Wang S*, Feng SF, **Bornstein AM***. Mixing memory and desire: How decisions for reward depend on the dynamics and content of memory reinstatement. *PsyArXiv*.
doi:10.31234/osf.io/5vksj

Peer-reviewed journal articles

- JP10 Rouhani N, Norman KA, Niv Y, **Bornstein AM** (2020). Reward prediction errors create event boundaries in memory. *Cognition*, 203:104269.
doi:10.1016/j.cognition.2020.104269
- JP9 **Bornstein AM***, Pickard H* (2020). Chasing the first high: Memory sampling in drug choice. *Neuropsychopharmacology*, 45(6):907-915.
doi:10.1038/s41386-019-0594-2
- JP8 Kane GA, **Bornstein AM**, Shenhav A, Wilson RC, Daw ND, Cohen JD (2019). Rats exhibit similar biases in foraging and intertemporal choice tasks. *eLife*, 8:e48429.
doi:10.7554/eLife.48429
- JP7 Millner AJ, den Ouden HEM, Gershman SJ, Glenn CR, Kearns J, **Bornstein AM**, Marx BP, Keane TM, Nock MK (2019). Suicidal thoughts and behaviors are associated with an increased decision-making bias for active responses to escape aversive states. *Journal of Abnormal Psychology*, 128(2):106-118.
doi:10.1037/abn0000395
- JP6 Hoskin AN, **Bornstein AM**, Norman KA, Cohen JD (2018). Refresh my memory: Episodic memory reinstatements intrude on working memory maintenance. *Cognitive, Affective, & Behavioral Neuroscience*, 19:338-354.
doi:10.3758/s13415-018-00674-z
doi:10.18112/openneuro.ds001576.v1.0.0
- JP5 **Bornstein AM**, Khaw MW, Shohamy D, Daw ND (2017). Reminders of past choices bias decisions for reward in humans. *Nature Communications*, 8:15958.
doi:10.1038/ncomms15958
- JP4 **Bornstein AM**, Norman KA (2017). Reinstated episodic context guides sampling-based decisions for reward. *Nature Neuroscience*, 20:997-1003.
doi:10.1038/nn.4573
doi:10.18112/openneuro.ds001607.v1.0.1
- JP3 **Bornstein AM**, Daw ND (2013). Cortical and hippocampal correlates of deliberation during model-based decisions for rewards in humans. *PLoS Computational Biology*, 9(12):e1003387.
doi:10.1371/journal.pcbi.1003387
- JP2 **Bornstein AM**, Daw ND (2012). Dissociating hippocampal and striatal contributions to sequential prediction learning. *European Journal of Neuroscience*, 35:1011-1023.
doi:10.1111/j.1460-9568.2011.07920.x
- JP1 Preston AR, **Bornstein AM**, Hutchinson JB, Gaare ME, Glover GH, Wagner AD (2010). High-resolution fMRI of content-sensitive subsequent memory responses in human medial temporal lobe. *Journal of Cognitive Neuroscience*, 22:156-173.
doi:10.1162/jocn.2009.21195

Peer-reviewed articles in conference proceedings

- CP2 Kane GA, **Bornstein AM**, Shenhav A, Wilson RC, Daw ND, Cohen JD (2017). Mechanisms of overharvesting in patch foraging. *Proceedings of the 39th Annual Conference of the Cognitive Science Society*, 637-642.
- CP1 Floares A, Jakary A, **Bornstein A**, Deicken R (2006). Neural networks and classification and regression trees are able to distinguish females with major depression from healthy controls using neuroimaging data. *Proceedings of the IEEE International Joint Conference of Neural Networks, 2006*, 4605-4611.
doi:10.1109/ijcnn.2006.247090

Reviews, commentaries

- RP6 **Bornstein AM***, Constantino SM* (2017). Nudge back: Towards a taxonomy of scientific rationalities. *London Conference in Critical Thought*.
- RP5 **Bornstein AM**, Miller KJ, Shenhav A (2015). Walking bundles of habits (and Response-Outcome associations). *European Journal of Neuroscience*, 41:1356-1357.
doi:10.1111/ejn.12906
- RP4 **Bornstein AM** (2014). Functions of the hippocampal memory system in instrumental control (Doctoral dissertation).
Available from ProQuest Dissertations & Theses Global (3614853).
- RP3 Wallisch P, **Bornstein AM** (2013). Enhanced motion perception as a psychophysical marker for autism? *Journal of Neuroscience*, 33(37):14631-14632.
doi:10.1523/jneurosci.2945-13.2013
- RP2 **Bornstein AM**, Nylen EL, Steele SA (2011). Unblocking the neural substrates of model-based value. *Journal of Neuroscience*, 31(28):10117-10118.
doi:10.1523/jneurosci.1883-11.2011
- RP1 **Bornstein AM**, Daw ND (2011). Multiplicity of control in the basal ganglia: computational roles of striatal subregions. *Current Opinion in Neurobiology*, 21(3):374-380.
doi:10.1016/j.conb.2011.02.009

ABSTRACTS IN
CONFERENCE
PROCEEDINGS
(SELECTED)

- CA15 Pariyadath V*, Paulus M*, **Bornstein AM**, Chiu P, Gu X, Smith R. Advancing Treatment of Substance Use Disorders Through Computational Modeling. Society of Biological Psychiatry Annual Meeting, San Diego, CA. May 2021.
- CA14 Cooper KW, Li L, Agostinelli F, Saraf M, Elias GA, Baldi P, **Bornstein AM**, Shahbaba B, Fortin N. Theta-associated nonspatial sequence coding in hippocampus. Society for Neuroscience Global Connectome. January 2021.

- CA13 Harhen NC, Hartley CA, **Bornstein AM**. Foraging behavior adjusts to multiple scales of context. Society for Neuroeconomics Annual Meeting, October 2020.
- CA12 Vlasceanu M, Morais MJ, Zhao Z, **Bornstein AM**, Tamir D, Norman K, Coman AC. Self-other similarity modulates the socially-triggered context-based prediction error effect on memory Cognitive Science Society Annual Meeting, Toronto, ON. July 2020.
- CA11 Rouhani N, Niv Y, Norman KA, **Bornstein AM**. Reward Prediction Errors Create Event Boundaries in Memory. Psychonomic Society Annual Meeting, Montreal, Quebec. November 2019.
- CA10 Rmus M, Ritz H, Hunter LE, **Bornstein AM**, Shenhav A. Model-based decision making is associated with structure inference ability. Society for Neuroeconomics Annual Meeting, Philadelphia, PA. October 2018.
- CA9 Hunter LE*, **Bornstein AM***, Hartley CA. Two paths to patience: Individual differences in deliberate, but not automatic, intertemporal choice predict model-based planning in humans. Society for Neuroeconomics Annual Meeting, Philadelphia, PA. October 2018.
- CA8 Hoskin AN, **Bornstein AM**, Norman KA, Cohen JD. Refresh my memory: Context information from episodic memory affects working memory maintenance. Society for Neuroscience Annual Meeting. Washington, DC. November 2017.
- CA7 **Bornstein AM**, Aly M, Feng SF, Turk-Browne NB, Norman KA, Cohen JD. Memory-guided perception: Sampling from past experience during perceptual inference. Society for Neuroscience Annual Meeting. San Diego, CA. November 2016.
- CA6 Morris RW*, Shenhav A*, **Bornstein AM**, Collins AGE, Gershman SJ, Gillan CM, Liljeholm M. Minisymposium: Understanding goal-directed decision-making in humans: computations and circuits. Society for Neuroscience Annual Meeting. Chicago, IL. October 2015.
- CA5 **Bornstein AM**, Norman KA. Context of recalled choice events affects subsequent decisions for reward. Society for Neuroeconomics Annual Meeting. Miami, FL. September 2014. [Spotlight poster]
- CA4 **Bornstein AM**, Khaw MW, Daw ND. Episodic cues affect decisions for reward in humans. Society for Neuroeconomics Annual Meeting. Lausanne, Switzerland. September 2013.
- CA3 Khaw MW, **Bornstein AM**, Daw ND. Evidence for decision by sampling in reinforcement learning. COSYNE. Salt Lake City, Utah. March 2013.
- CA2 **Bornstein AM**, Geib TA, Daw ND. A hippocampal-cortical network underlies model-based planning in humans. COSYNE. Salt Lake City, Utah. February 2012.
- CA1 **Bornstein AM**, Daw ND. Computational mechanisms of transition learning in unrewarded sequences. Society for Neuroscience Annual Meeting. Chicago, IL, October 2009.

RESEARCH
FUNDING

2021-2023 [BBRF NARSAD Young Investigator award](#)
Direct costs: \$67,361
2020-2021 [NIMH/UCI Silvio O. Conte Center seed award](#)
P50 MH096889; Direct costs: \$29,637.13
2011-2013 [NIMH Ruth Kirchstein Predoctoral fellowship](#)
F31 MH095501; Direct costs: \$69,790

OTHER AWARDS
& HONORS
(SELECTED)

2020 [Association for Psychological Science “Rising Star” Award](#)
2019,2020 [UC Irvine School of Social Sciences Research & Travel awards](#)
2014 [Spotlight poster, Society for Neuroeconomics annual meeting](#)
2013 [Society for Neuroeconomics travel award](#)
2012 [COSYNE travel award](#)
2010 [Central European University summer scholarship](#)
2009,10 [NYU Dean’s travel awards](#)
2009-12 [NYU Graduate Forum](#)
2009 [Advanced Course in Computational Neuroscience scholarship](#)
2007-2012 [NYU Opportunity fellowship](#)
2005,6,8 [Honorable mention, NSF Graduate Research Fellowship](#)
2000 [Runner up, MIT \\$50k Business Plan competition](#)

FUNDING &
AWARDS TO
TRAINEES,
SPONSORED

2020-2023 [National Defense Science & Engineering Graduate fellowship \(Nora Harhen\)](#)
2019 [UCI Summer Undergraduate Research Fellowship \(Brianna Sarcos\)](#)

INVITED TALKS
(SELECTED)

IT17 Aug 2020 [University of California Los Angeles](#)
IT16 Mar 2020 [Claremont Colleges](#)
IT15 Feb 2020 [University of California Riverside](#)
IT14 Jan 2020 [Winter Conference on Learning and Memory](#)
IT13 Sep 2019 [Facebook Research Labs](#)
IT12 May 2019 [University of California](#)
IT11 Apr 2019 [Brown University](#)
IT10 Jan 2019 [National Institute of Drug Abuse Extramural, Behavioral and Cognitive Neuroscience](#)

IT9 Jan 2019 National Institute of Drug Abuse Intramural, Behavioral Neuroscience Research Branch

IT8 Mar 2018 Cosyne workshop “Hippocampal computations and interactions supporting statistical learning and decision-making”

IT7 Dec 2017 Cognition and Brain Sciences Unit, Cambridge University

IT6 Oct 2017 Johns Hopkins University

IT5 Feb 2015 Mount Sinai School of Medicine

IT4 Jun 2014 Sackler Institute, Weill-Cornell Medical College

IT3 Mar 2014 Workshop on the Neurobiology of Prediction and Surprise, Rutgers University

IT2 Jan 2011 Parallel Distributed Processing meeting, Princeton University

IT1 Jan 2011 Kavli Institute, Harvard University

TEACHING

University of California, Irvine

Irvine, CA USA

Spring 2020 Topics in Reinforcement Learning (Graduate; with Prof. Mimi Liljeholm)

Spring 2019, 2020 Research in Exp Psych (Undergraduate; with Prof. Nadia Chernyak)

Winter 2019, 2020 Advanced Experimental Psychology (Undergraduate)

New York University

New York, NY USA

Fall 2011 Machine Learning (Graduate), TA (Prof. Yann Lecun)

Fall 2009 Cognitive Neuroscience, TA (Prof. Nathaniel D. Daw)

Fall 2008 Lab in Perception, TA (Dr. Shani Offen, Prof. David J. Heeger)

Spring 2008 Cognition, TA (Prof. Robert E. Rehder)

Massachusetts Institute of Technology

Cambridge, MA

Fall 1999 Introduction to Computers and Engineering Problem Solving, LA

Spr 1999 Computer System Architecture (Graduate), TA (Prof. Arvind)

OTHER TEACHING	July 2018 Cold Spring Harbor Computational & Cognitive Neuroscience Summer School, Suzhou, China (Faculty, reinforcement learning module)
	Fall 2016 – Fall 2018 Princeton Prison Teaching Initiative (Instructor, co-organizer; Highschool & College Algebra, Statistics, English Composition)
	Summer 2007, 2008 MIT Middle East Education through Technology (MEET), Jerusalem. (Lead instructor)
PROFESSIONAL SERVICE	2020 Co-organizer (with Lulu Chen) Center for Neurobiology of Learning and Memory Spring Meeting
	2018 Co-organizer (with Ahmed El Hady) Princeton Neuroscience Institute “Inside-Out” seminar series
	2018 Co-editor (with Richard Morris & Amitai Shenhav), “Goal-Directed Decision Making: Computations and Circuits” <i>Elsevier</i>
	2015 Co-organizer (with G. Elliott Wimmer), COSYNE Workshop “Memory in action: The role(s) of the hippocampus in decisions for reward”
	2010-Present Ad-hoc reviewer: Acta Psychologica; Attention, Perception, & Psychophysics; Biological Cybernetics; Biological Psychiatry; BMC Neuroscience; Cerebral Cortex; Cognition; Cognitive, Affective, and Behavioral Neuroscience; Cognitive Science; Cortex; COSYNE; eNeuro; European Journal of Neuroscience; European Neuropsychopharmacology; Frontiers in Behavioral Neuroscience; Human Brain Mapping; ICDL; Israel Science Foundation; Journal of Cognitive Neuroscience; Journal of Memory & Language; Journal of Neuroscience; Nature Communications; Nature Human Behavior; Neuroimage: Clinical; PLoS Computational Biology; PLoS ONE; PNAS; Reinforcement Learning & Decision-Making; Topics in Cognitive Science; Visual Cognition
OTHER ACTIVITIES	2011-2012 New York University Graduate Forum (Moderator)
	Spr 2012 Advanced science writing workshop, Prof. Stephen Hall
	2009-2011 New York University Graduate Forum (Member)
	Fall 2010 Science writing workshop, Prof. Stephen Hall
	Jul 2010 CEU Summer School on “Probabilistic models of cognitive systems.” Budapest, Hungary
	Aug 2009 Advanced Course in Computational Neuroscience. Freiburg, Germany