Aaron M. Bornstein **Updated: December 5, 2018**

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CITIZENSHIP USA

POSITIONS

2019-	Assistant Professor, Department of Cognitive Science Fellow, Center for the Neurobiology of Learning and Memory University of California, Irvine
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 Thesis: "Functions of the hippocampal memory system in instrumental control."
2003	S.B., Mathematics (additional concentration in Economics) **Massachusetts Institute of Technology**

WORKING PAPERS

Hunter LE*, **Bornstein AM***, Hartley CA. A common deliberative process underlies model-based planning and patient intertemporal choice.

Kane GA, **Bornstein AM**, Shenhav A, Wilson RC, Aston-Jones G, Daw ND, Cohen JD. Rats exhibit similar biases in foraging and intertemporal choice tasks.

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

Peer-reviewed journal articles

Hoskin AN, **Bornstein AM**, Norman KA, Cohen JD (2018). Refresh my memory: Episodic memory reinstatements intrude on working memory maintenance. *Cognitive, Affective, & Behavioral Neuroscience*. doi:10.3758/s13415-018-00674-z

Millner AJ, den Ouden HEM, Gershman SJ, Glenn CR, Kearns J, **Bornstein AM**, Marx BP, Keane TM, Knock MK (in press). Suicidal thoughts and behaviors are associated with an increased decision-making bias for active responses to escape aversive states. *Journal of Abnormal Psychology*. doi:10.1037/abn0000395

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

Bornstein AM, Norman KA (2017). Reinstated episodic context guides sampling-based decisions for reward. *Nature Neuroscience*, 20:997-1003. doi:10.1038/nn.4573

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

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

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

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.

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, BOOK CHAPTERS

Bornstein AM*, Constantino SM* (2017). Nudge back: Towards a taxonomy of scientific rationalities. *London Conference in Critical Thought.*

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

Bornstein AM (2014). Functions of the hippocampal memory system in instrumental control (Doctoral dissertation). Available from ProQuest Dissertations & Theses Global (3614853).

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

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

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)

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.

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.

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.

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.

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.

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]

Bornstein AM, Khaw MW, Daw ND. Episodic cues affect decisions for reward in humans. Society for Neuroeconomics Annual Meeting. Lausanne, Switzerland. September 2013.

Khaw MW, **Bornstein AM**, Daw ND. Evidence for decision by sampling in reinforcement learning. COSYNE. Salt Lake City, Utah. March 2013.

Bornstein AM, Geib TA, Daw ND. A hippocampal-cortical network underlies model-based planning in humans. COSYNE. Salt Lake City, Utah. February 2012.

Bornstein AM, Daw ND. Computational mechanisms of transition learning in unrewarded sequences. Society for Neuroscience Annual Meeting. Chicago, IL, October 2009.

Invited talks (selected)

Apr 2019 Brown University Cognition Seminar Series

Mar 2018 Cosyne workshop "Hippocampal computations and interactions supporting statistical learning and decision-making"

Dec 2017 Cognition and Brain Sciences Unit, Cambridge University

Oct 2017 Johns Hopkins University

Feb 2015 Mount Sinai School of Medicine

Jun 2014 Sackler Institute, Weill-Cornell Medical College

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

Jan 2011 Parallel Distributed Processing meeting, Princeton University

Jan 2011 Kavli Institute, Harvard University

Awards & honors (selected)

2011-2013 NIH/NIMH Predoctoral fellowship (NRSA)
2007-2012 NYU Opportunity fellowship
2005,6,8 Honorable mention, NSF Graduate Research Fellowship

Teaching

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

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

Fall 1999 Introduction to Computers and Engineering Problem Solving LA

Other teaching

July 2018 Cold Spring Harbor Computational & Cognitive Neuroscience Summer School, Suzhou, China (Faculty, reinforcement learning module)

Fall 2016 – Present Princeton Prison Teaching Initiative (Instructor, co-organizer; Highschool & College Algebra, Statistics, Composition)

Summer 2007, 2008 MIT Middle East Education through Technology (MEET), Jerusalem. (Lead instructor; Software development)

Professional activities

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" *Elsevier*.

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; BMC Neuroscience; Cerebral Cortex; Cognitive, Affective, and Behavioral Neuroscience; Cognitive Science; Cortex; COSYNE; European Journal of Neuroscience; European Neuropsychopharmacology; Frontiers in Behavioral Neuroscience; Human Brain Mapping; ICDL; Journal of Cognitive Neuroscience; Journal of Neuroscience; Nature Communications; Nature Human Behavior; Neuroimage: Clinical; PLoS Computational Biology; PLoS ONE; PNAS; 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