

CONTACT            [aaronmb@princeton.edu](mailto:aaronmb@princeton.edu)            <http://aaron.bornstein.org/>

CITIZENSHIP        USA

#### POSITIONS

2019-            Assistant Professor, Department of Cognitive Science  
                     University of California, Irvine  
 2013-2018 Postdoc, Norman & Cohen labs, Princeton  
 2007-2013 Graduate researcher, Daw lab, NYU  
 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**

#### AWARDS &

##### HONORS

(SELECTED)

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

#### WORKING PAPERS

Millner AJ, den Ouden HEM, Gershman SJ, Glenn CR, Kearns J, **Bornstein AM**, Marx BP, Keane TM, Knock MK. Suicidal thoughts and behaviors are associated with an increased decision-making bias for active responses to escape aversive states.

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

Hoskin AN, **Bornstein AM**, Norman KA, Cohen JD. Episodic memory reinstatements intrude on working memory maintenance. *bioRxiv*. doi:10.1101/170720

- PEER-REVIEWED JOURNAL ARTICLES **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)

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)

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

## 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, English 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