

CONTACT            aaronmb@princeton.edu            <http://aaron.bornstein.org/>

CITIZENSHIP        USA

#### POSITIONS

2013-            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

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

**Bornstein AM** (in press). Mixing memory and desire: How episodic memory aids goal-directed decisions. To appear in: Morris RM, Bornstein AM, Shenhav A (eds.) *Goal-Directed Decision Making: Computations and Circuits*. Amsterdam: Elsevier.

**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	<b>New York University</b>	New York, NY USA
	Fall 2011	Machine Learning (Graduate), Prof. Yann Lecun
	Fall 2009	Cognitive Neuroscience, Prof. Nathaniel D. Daw
	Fall 2008	Lab in Perception, Dr. Shani Offen, Prof. David J. Heeger
	Spring 2008	Cognition, Prof. Robert E. Rehder
	<b>Massachusetts Institute of Technology</b>	Cambridge, MA
	Spr 1999 6.823	Computer System Architecture (Graduate), Prof. Arvind
	Fall 1999 1.00	Introduction to Computers and Engineering Problem Solving
OTHER TEACHING	Fall 2016 – Present	Princeton Prison Teaching Initiative (Instructor, organizer; High school & College Intro Algebra, Intro Stats, English Composition)
	Summer 2007, 2008	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” <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; 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 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