

CONTACT aaron@bornstein.org <http://aaron.bornstein.org/>

CITIZENSHIP USA

POSITIONS

2013-Present 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)

2012 COSYNE travel award
 2011-13 [NIH/NIMH](#) Predoctoral fellowship (NRSA)
 2007-12 NYU Opportunity fellowship
 2005,6,8 Honorable mention, [NSF Graduate Research Fellowship](#)

WORKING PAPERS

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 mem-
 ory 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 in rodents. *Proceedings of the 39th Annual Conference of the Cognitive Science Society*.
- 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, 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)

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.

Novick AS, **Bornstein AM**, Norman KA, Cohen JD. Refresh my memory: Context information from episodic memory affects working memory maintenance. Society for Neuroscience Annual Meeting. Chicago, IL. October 2015.

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. 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)

Oct 2017	Johns Hopkins University
Feb 2015	Mood & Anxiety Disorders group, 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
Feb 2013	Functional Imaging Lab, University College London
Jun 2011	Memory and Decisions meeting, Stanford 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), 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

Massachusetts Institute of Technology

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 Algebra, English Composition)

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

PROFESSIONAL
ACTIVITIES

(forthcoming) Co-editor (with Richard Morris & Amitai Shenhav), “Goal-Directed Decision Making: Computations and Circuits” *Elsevier*.

2015 Co-organizer (with G. Elliott Wimmer), COSYNE 2015 Workshop “Memory in action: The role(s) of the hippocampus in decisions for reward.”

2010-Present Ad-hoc reviewer: Attention, Perception, & Psychophysics; Biological Cybernetics; 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; Neuroimage: Clinical; PLoS Computational Biology; PLoS ONE; PNAS; Visual Cognition

OTHER
ACTIVITIES

Spr 2018 “Inside-out Seminars” (Co-organizer, with Ahmed El Hady)
 Princeton Neuroscience Institute
 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