Aaron M. Bornstein **Updated: November 24, 2016**

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CITIZENSHIP USA

CURRENT POSITION Postdoctoral Research Associate, Princeton Neuroscience Institute

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, Norman KA Putting value in context: A role for context memory in decisions for reward. *bioRxiv* doi:10.1101/033662

Bornstein AM, Khaw MW, Shohamy D, Daw ND What's past is present: Reminders of past choices bias decisions for reward in humans. *bioRxiv* doi:10.1101/033910

REFEREED JOURNAL ARTICLES

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.

Bornstein AM, Daw ND (2012) Dissociating hippocampal and striatal contributions to sequential prediction learning. *European Journal of Neuroscience*, 35:1011-1023.

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.

Refereed articles in conference proceedings

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. *IEEE International Joint Conference on Neural Networks 2006*, 4605-4611.

Reviews, commentaries, book chapters

Bornstein AM, Miller KJ, Shenhav A (2015) Walking bundles of habits (and Response-Outcome associations). *European Journal of Neuroscience*, 41:1356-1357.

Wallisch P, **Bornstein AM** (2013) Enhanced motion perception as a psychophysical marker for autism? *Journal of Neuroscience*, 33(37):14631-14632.

Bornstein AM, Nylen EL, Steele SA (2011) Unblocking the neural substrates of model-based value. *Journal of Neuroscience*, 31(28):10117-10118.

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.

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)

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

Jan 2011 Parallel Distributed Processing meeting, Princeton University

Jan 2011 Kavli Institute, Harvard University

Positions

New York University New York, NY USA

Teaching assistant

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

Stanford University Stanford, CA

Jun 2005 – Jun 2007 *Research assistant*
Wagner lab for Learning and Memory

UCSF / San Francisco Veterans Affairs Hospital San Francisco, CA

Jan – Dec 2006 *Research consultant*
Deicken lab for Biological Psychiatry

Massachusetts Institute of Technology Cambridge, MA

Research assistant
Fall 2001 – Spr 2002 Media Lab, Electronic Publishing Group, Blogdex project

Teaching assistant
Spr 1999 6.823 Computer System Architecture (Graduate), Prof. Arvind
Fall 1999 1.00 Introduction to Computers and Engineering Problem Solving

Professional activities

2017 Co-editor (with Richard Morris & Amitai Shenhav), "Goal-Directed Decision Making: Computations and Circuits" *Elsevier*, 2017.

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; 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; Visual Cognition

Other teaching

Fall 2016 – Present Princeton Prison Teaching Initiative (High school algebra)

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

May 2006 "Brain day", Oakland charter school.

Other activities

Fall 2011 – Spr 2012	New York University Graduate Forum (Moderator)
Spr 2012	Advanced science writing workshop, Prof. Stephen Hall
Fall 2009 – Spr 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

Rejections and Failures

Publications

Bornstein & Shvartsman (unpublished): Rejected *J. Neuro* "journal club" submission
Bornstein & Daw (2013), *PLoS Computational Biology*: Rejected three times
Bornstein & Constantino (unpublished): Rejected *J. Neuro* "journal club" submission
Bornstein & Daw (2012), *European Journal of Neuroscience*: Rejected twice

Conference abstracts

COSYNE (2015)

Grants and fellowships

K99/R00 (NIDA, 2015 June)
NRSA (NIDA, 2015 August)
Scientific Research Center on Decision Neuroscience and Aging (2011)

SfN Greater NYC Chapter Travel Awards to Neuroscience (2010)
National Science Foundation Graduate Research Fellowship (2007)

School applications

Graduate (2007): Three (Caltech, Stanford Neuroscience, UCSF)
Undergraduate (1998): Three (Columbia, SUNY Binghamton, UPenn)

Faculty job applications

2015: 14 applications, 0 interviews.

Other

COSYNE workshop proposal (2014)
NeuWrite (2013)