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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

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 **Bornstein AM**, Khaw MW, Shohamy D, Daw ND (2017). Reminders of past
JOURNAL choices bias decisions for reward in humans. *Nature Communications*, 8:15958.
ARTICLES 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 de-
liberation during model-based decisions for rewards in humans. *PLoS Com-
putational Biology*, 9(12):e1003387. doi:10.1371/journal.pcbi.1003387

Bornstein AM, Daw ND (2012). Dissociating hippocampal and striatal contri-
butions 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 Kane GA, **Bornstein AM**, Shenhav A, Wilson RC, Daw ND, Cohen JD (2017).
ARTICLES IN Mechanisms of overharvesting in patch foraging. *Proceedings of the 39th An-
CONFERENCE nual Conference of the Cognitive Science Society*, 637-642.
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. *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 (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 **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

2018 Co-organizer (with Ahmed El Hady) Princeton Neuroscience Institute
“Inside-Out” seminar series.

2018 Co-editor (with Richard Morris & Amitai Shenhav), “Goal-Directed Deci-
sion 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: Attention, Perception, & Psychophysics; Biolog-
ical Cybernetics; Cerebral Cortex; Cognitive, Affective, and Behavioral Neu-
roscience; Cognitive Science; Cortex; COSYNE; European Journal of Neuro-
science; European Neuropsychopharmacology; Frontiers in Behavioral Neuro-
science; 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