

CONTACT aaron.bornstein@uci.edu

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

CURRENT

POSITION 2019- Assistant Professor, Department of Cognitive Sciences
Faculty, Institute for Mathematical Behavioral Sciences
Fellow, Center for the Neurobiology of Learning and Memory
University of California, Irvine

PREVIOUS

APPOINT- 2018 Associate Research Scholar, Princeton Neuroscience Institute
MENTS 2013-2018 Postdoctoral Research Associate, Princeton Neuroscience Institute
2007-2013 PhD candidate, Cognition & Perception, New York University
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
2003 S.B., Mathematics (additional concentration in Economics)
Massachusetts Institute of Technology

PUBLICATIONS

Preprints

- PP4 **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](https://doi.org/10.1101/186817)
[doi:10.18112/openneuro.ds001614.v1.0.1](https://doi.org/10.18112/openneuro.ds001614.v1.0.1)
- PP3 Hunter LE*, **Bornstein AM***, Hartley CA. A common deliberative process underlies model-based planning and patient intertemporal choice. *bioRxiv*.
[doi:10.1101/499707](https://doi.org/10.1101/499707)
- PP2 Rmus M, Ritz H, Hunter LE, **Bornstein AM***, Shenhav A*. Individual differences in model-based planning are linked to the ability to infer latent structure. *bioRxiv*.
[doi:10.1101/732072](https://doi.org/10.1101/732072)
- PP1 Wang S*, Feng SF, **Bornstein AM**. Mixing memory and desire: How decisions for reward depend on the dynamics and content of memory reinstatement. *PsyArXiv*.
[doi:10.31234/osf.io/5vksj](https://doi.org/10.31234/osf.io/5vksj)

Peer-reviewed journal articles

- JP11 Rouhani N, Norman KA, Niv Y, **Bornstein AM** (2020). Reward prediction errors create event boundaries in memory. *Cognition*, 203:104269.
doi:10.1016/j.cognition.2020.104269
- JP10 **Bornstein AM***, Pickard H* (2020). Chasing the first high: Memory sampling in drug choice. *Neuropsychopharmacology*, 45(6):907-915.
doi:10.1038/s41386-019-0594-2
- JP9 Kane GA, **Bornstein AM**, Shenhav A, Wilson RC, Daw ND, Cohen JD (2019). Rats exhibit similar biases in foraging and intertemporal choice tasks. *eLife*, 8:e48429.
doi:10.7554/eLife.48429
- JP8 Millner AJ, den Ouden HEM, Gershman SJ, Glenn CR, Kearns J, **Bornstein AM**, Marx BP, Keane TM, Nock MK (2019). Suicidal thoughts and behaviors are associated with an increased decision-making bias for active responses to escape aversive states. *Journal of Abnormal Psychology*, 128(2):106-118.
doi:10.1037/abn0000395
- JP7 Hoskin AN, **Bornstein AM**, Norman KA, Cohen JD (2018). Refresh my memory: Episodic memory reinstatements intrude on working memory maintenance. *Cognitive, Affective, & Behavioral Neuroscience*, 19:338-354.
doi:10.3758/s13415-018-00674-z
doi:10.18112/openneuro.ds001576.v1.0.0
- JP6 **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
- JP5 **Bornstein AM**, Norman KA (2017). Reinstated episodic context guides sampling-based decisions for reward. *Nature Neuroscience*, 20:997-1003.
doi:10.1038/nn.4573
doi:10.18112/openneuro.ds001607.v1.0.1
- JP4 **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
- JP3 **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
- JP2 **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
- JP1 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

- CP3 Harhen NC, Hartley CA, **Bornstein AM** (2021). Model-based foraging using latent-cause inference. *Proceedings of the 43rd Annual Conference of the Cognitive Science Society*.
- CP2 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.
- CP1 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](https://doi.org/10.1109/ijcnn.2006.247090)

Commentaries

- RP5 **Bornstein AM***, Constantino SM* (2017). Nudge back: Towards a taxonomy of scientific rationalities. *London Conference in Critical Thought*.
- RP4 **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](https://doi.org/10.1111/ejn.12906)
- RP3 **Bornstein AM** (2014). Functions of the hippocampal memory system in instrumental control (Doctoral dissertation).
Available from ProQuest Dissertations & Theses Global (3614853).
- RP2 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](https://doi.org/10.1523/jneurosci.2945-13.2013)
- RP1 **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](https://doi.org/10.1523/jneurosci.1883-11.2011)

RESEARCH

FUNDING

2021-2023 NIA R21AG072673 (PI Bornstein)
“Improving multi-step planning in aging by overcoming deficits in memory encoding”
2021-2023 [BBRF](#) NARSAD Young Investigator award (PI Bornstein)
“Determining the role of episodic memory in substance use disorder”
2020-2021 NIMH P50MH096889 (PI Baram; Sub-PI Bornstein)
“Early life adversity effects on event segmentation”
2011-2013 NIMH F31MH095501 (PI Bornstein)
“Computational mechanisms of goal-directed control”

AWARDS

2020	Association for Psychological Science “ Rising Star ” Award
2020	Brain and Behavior Research Foundation NARSAD Young Investigator Award
2014	Spotlight poster, Society for Neuroeconomics annual meeting
2007-2012	NYU Opportunity fellowship
2005,6,8	Honorable mention, NSF Graduate Research Fellowship
2000	Runner up, MIT \$50k Business Plan competition

To trainees

2020-2023	National Defense Science & Engineering Graduate fellowship (Nora Harhen)
2019	UCI Summer Undergraduate Research Fellowship (Brianna Sarcos)

TALKS

IT17 Feb 2021	University of California Los Angeles
IT16 Feb 2021	Context and Affective Memory meeting
IT15 Aug 2020	University of California Los Angeles
IT14 Mar 2020	Claremont Colleges
IT13 Feb 2020	University of California Riverside
IT12 Jan 2020	Winter Conference on Learning and Memory
IT11 Sep 2019	Facebook Research Labs
IT10 May 2019	University of California Los Angeles
IT9 Apr 2019	Brown University
IT8 Jan 2019	National Institute of Drug Abuse
IT7 Dec 2017	Cognition and Brain Sciences Unit, Cambridge University
IT6 Oct 2017	Johns Hopkins University
IT5 Feb 2015	Mount Sinai School of Medicine
IT4 Jun 2014	Weill-Cornell Medical College
IT3 Mar 2014 University	Workshop on the Neurobiology of Prediction and Surprise, Rutgers
IT2 Jan 2011	Parallel Distributed Processing meeting, Princeton University
IT1 Jan 2011	Kavli Institute, Harvard University

TEACHING/SERVICE

UC Irvine

Spr 2021	Decision making & Problem solving (Graduate; with Prof. Zygmunt Pizlo)
Spr 2020	Topics in Reinforcement Learning (Graduate; with Prof. Mimi Liljeholm)
Spr 2019-21	Research in Exp Psych (Undergraduate; with Prof. Nadia Chernyak)
Win 2019-21	Advanced Experimental Psychology (Undergraduate)

Other teaching/mentorship

Fall 2020	Neuromatch academy mentor
Summer 2020	Neuromatch academy group leader
Summer 2020	GSMI Cientifico Latino
2019	MEET alumni mentor
Summer 2018	Computational & Cognitive Neuroscience Summer School, Suzhou, China
2016-2018	Princeton Prison Teaching Initiative
Summer 2007,08	MIT Middle East Education through Technology (MEET), Jerusalem

University service

2021	CNLM Spring meeting program committee
2021	CogSci Undergraduate Association interview
2020	CNLM “Evening to Remember” organizational committee
2020-	UCI End Racism Initiative, Outreach to Black students working group
2020	Campuswide honors program coffee hour
2019-	First generation, First quarter program, Faculty ally
2019-	UCI Prison Bachelor’s program, advisory board, curriculum committee
2019	Cognitive Sciences faculty search committee
2019	KUCI Public Affairs interview
2018,2020	Cognitive Sciences PhD admissions committee

Organizational service

2021	Co-organizer (with Lulu Chen) Center for Neurobiology of Learning and Memory Spring Meeting
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”