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PUBLICATIONS

(∗ = *Equal contribution*; + = *UCI Lab member.*)

*Preprints*

PP4 Harhen NC+, Budiono R, Hartley CA*, **Bornstein AM***. Developmental differences in exploration reveal underlying differences in structure inference. *PsyArXiv*. doi:10.31234/osf.io/t8hpr_v1 **Under review**

PP3 Noh SM+, Cooper KW, Kerr T, Stark CEL, **Bornstein AM**. Multi-step inference can be improved across the lifespan with individualized memory interventions. *PsyArXiv*. doi:10.31234/osf.io/3mhj6 **Invited revision, Nature Communications Psychology**

PP2 Wang W, Chierchia G, Cooley BJ, Chang T, **Bornstein AM**, Schweizer S. Social decision-making under uncertainty. *PsyArXiv*. doi:10.31234/osf.io/z6vej **Submitted, Nature Human Behaviour**

PP1 Yoo J+, **Bornstein AM**. Temporal dynamics of model-based control reveal arbitration between multiple task representations. *PsyArXiv*. doi:10.31234/osf.io/sgcy5 **Submitted, Proceedings of the National Academy of Sciences**

*Peer-reviewed journal articles*

JP24 Hadj-Amar B, **Bornstein AM**, Guindani M, Vannuci M (2025). Discrete Autoregressive Switching Processes in Sparse Graphical Modeling of Multivariate Time Series Data. *Journal of Computational and Graphical Statistics*.

JP23 Schetzsle B, Lee J, **Bornstein AM**, Shahbaba B, Guindani M (2025). A Bayesian Time-Varying Psychophysiological Interaction Model. *Data Science in Science*, 4(1):2519436. doi:10.1080/26941899.2025.2519436

JP22 Khoudary A+, Peters MAK*, **Bornstein AM*** (2025). Reasoning goals and representational decisions in computational cognitive neuroscience: lessons from the drift diffusion model. *European Journal of Neuroscience*, 61:e7009. doi:10.1111/ejn.70098

JP21 Banavar NV+, Noh SM+, Wahlheim CN, Cassidy BS, Kirwan CB, Stark CEL, **Bornstein AM** (2024). A response time model of the three-choice Mnemonic Similarity Task provides stable, mechanistically interpretable individual-difference measures. *Frontiers in Human Neuroscience*, 18:137928. doi:10.3389/fnhum.2024.137928

JP20 Yoo J+, Chrastil ER, **Bornstein AM** (2024). Cognitive graphs: Representational substrates for planning. *Decision*, 11(4), 537-556. doi:10.1037/dec0000249

JP19 Chen J, **Bornstein AM** (2024). The causal structure and computational value of narratives. *Trends in Cognitive Sciences*, 28(8):769-781. doi:10.1016/j.tics.2024.04.003

JP18 Harhen NC+, **Bornstein AM** (2024). Interval timing as a computational pathway from early life adversity to affective disorders. *Topics in Cognitive Science*, 16(2024):92-112. doi:10.1111/tops.12701

JP17 Noh SM+, Singla UK, Bennett IJ, **Bornstein AM** (2023). Memory precision and age differentially predict the use of decision-making strategies across the lifespan. *Scientific Reports*, 13:17014. doi:10.1038/s41598-023-44107-5

JP16 **Bornstein AM**, Aly M, Feng SF, Turk-Browne NB, Norman KA, Cohen JD (2023). Associative memory retrieval modulates upcoming perceptual decisions. *Cognitive, Affective, & Behavioral Neuroscience*, 23:645665. doi:10.3758/s13415-023-01092-6 doi:10.18112/openneuro.ds001614.v1.0.1

JP15 Harhen NC+, **Bornstein AM** (2023). Overharvesting in human patch foraging reflects rational structure learning and adaptive planning. *Proceedings of the National Academy of Sciences*, 120(13):e2216524120. doi:10.1073/pnas.2216524120

JP14 Otto AR, Devine S, Schultz E, **Bornstein AM***, Louie K* (2022). Context-dependent choice and evaluation in real-world consumer behavior. *Scientific Reports*, 12:17744. doi:10.1038/s41598-022-22416-5 doi:10.17605/OSF.IO/EC5DX

JP13 Rmus M, Ritz H, Hunter LE, **Bornstein AM***, Shenhav A* (2022). Humans can navigate complex graph structures acquired during latent learning. *Cognition*, 225:105103. doi:10.1016/j.cognition.2022.105103

JP12 Wang S, Feng SF, **Bornstein AM** (2021). Mixing memory and desire: How decisions for reward depend on the dynamics and content of memory reinstatement. *Wiley Interdisciplinary Reviews: Cognitive Science*, e1581. doi:10.1002/wcs.1581
**Featured on the cover.**
**Recognized as one of the top-ten most-cited papers from this journal/year.**

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 **Featured on the cover.**

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

*Articles in conference proceedings*

CP16 Khoudary A+, **Bornstein AM***, Peters MAK* (2025). Subjective and objective cue probability interact to shape perceptual decisions. *Proceedings of the 47th Annual Conference of the Cognitive Science Society.*

CP15 Chen Y+, Harhen NC+, Stout DA, **Bornstein AM** (2024). Early life unpredictability modulates planning horizon in a structured foraging task. *Cognitive Computational Neuroscience.*

CP14 Harhen NC+, Hartley CA*, **Bornstein AM*** (2024). Development of structure inference contributes to age-related differences in exploration. *Cognitive Computational Neuroscience.*

CP13 Yoo J+, Zhou D+, **Bornstein AM** (2024). Latent cause inference as an efficient and flexible learning rule for cognitive graphs. *Cognitive Computational Neuroscience.*

CP12 Zhou D+, Noh SM+, Yassa MA, **Bornstein AM** (2024). Pattern separation using compressed and semantic representations of memory. *Cognitive Computational Neuroscience.*

CP11 Khoudary A+, Peters MAK*, **Bornstein AM*** (2022). Precision-weighted evidence integration predicts time-varying influence of memory on perceptual decisions. *Cognitive Computational Neuroscience.*

CP10 Banavar NV+, **Bornstein AM** (2022). Response time modeling provides stable and mechanistically interpretable measures of individual differences in behavioral pattern separation. *Proceedings of the 20th International Conference on Cognitive Modeling.*
**Selected for a talk.**

CP9 Harhen NC+, **Bornstein AM** (2022). Learning to expect change: Volatility during early experience alters reward expectations in a model of interval timing. *Proceedings of the 20th International Conference on Cognitive Modeling.*
**Selected for a talk.**
**Selected for a best paper award.**

CP8 Banavar NV+, **Bornstein AM** (2022). Decision difficulty modulates the re-use of computations across trials in non-sequential decision tasks. *Proceedings of the 5th Multidisciplinary Conference on Reinforcement Learning and Decision Making (RLDM 2022)*

CP7 Harhen NC+, **Bornstein AM** (2022). Humans adapt their foraging strategies and computations to environment complexity. *Proceedings of the 5th Multidisciplinary Conference on Reinforcement Learning and Decision Making (RLDM 2022)*

CP6 Yoo J+, **Bornstein AM** (2022). Two-stage task with increased state space complexity to assess online planning. *Proceedings of the 5th Multidisciplinary Conference on Reinforcement Learning and Decision Making (RLDM 2022)*

CP5 Banavar NV+, Lee MD, **Bornstein AM** (2021). Sequential effects in non-sequential tasks. *Proceedings of the 19th International Conference on Cognitive Modeling.*

CP4 Harhen NC+, **Bornstein AM** (2021). Structure learning as a mechanism of overharvesting. *Proceedings of the 19th International Conference on Cognitive Modeling.*

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.*
doi:10.31234/osf.io/dfztu
https://github.com/uciccnl/CogSci2021-HarhenHartleyBornstein

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

*Accepted conference abstracts (since 2019)*

CA51 Booras A+, Chrastil ER*, **Bornstein AM*** (2025). Humans adaptively discount successor representations when navigating graph-structured spaces. *Bay Area Memory Meeting.*

CA50 Khoudary A+, Peters MAK*, **Bornstein AM*** (2025). Uncertainty resolution explains dynamic effects of memory on perceptual decisions *Bay Area Memory Meeting.*
**Selected for a talk.**

CA49 Zhou D+, Yassa MA*, **Bornstein AM*** (2025). A lossy compression account of mnemonic discrimination: Computational theory and multimodal evidence. *Bay Area Memory Meeting.*
**Selected for a talk.**

CA48 Booras A+, Chrastil ER, **Bornstein AM** (2025). Humans adaptively discount successor representations when navigating graph-structured spaces. *Society for Neuroscience Annual Meeting.*

CA47 Guo S+*, Palsule R+*, Noh SM+*, Preston AR, **Bornstein AM** (2025). The impact of learning sequences in encouraging distinct memory representations to support associative inference in older-adults. *Society for Neuroscience Annual Meeting.*

CA46 Khoudary A+, **Bornstein AM***, Peters MAK* (2025). A philosophical toolkit for computational modeling of cognition. *Society for Neuroscience Annual Meeting.*

CA45 Khoudary A+, Peters MAK*, **Bornstein AM*** (2025). Precision-weighted integration explains dynamic effects of expectations on perceptual decisions. *Society for Neuroscience Annual Meeting.*

CA44 Leonard BT+, Martínez-Ortíz MA, Hartley CA, Yassa MA, **Bornstein AM** (2025). Motivational conflict resolution is shaped by early life unpredictability. *Society for Neuroscience Annual Meeting.*

CA43 Palsule R+*, Guo S+*, Noh SM+*, **Bornstein AM** (2025). Naturalistic task framing improves older adults' ability to infer and navigate complex associative networks. *Society for Neuroscience Annual Meeting.*

CA42 Yoo J+, Zhou D+, Goeschel A+, **Bornstein AM** (2025). Contingency-dependent state augmentation as a normative learning rule for non-Markovian tasks. *Society for Neuroscience Annual Meeting.*

CA41 Field M, Copeland A, Hogarth L, Pun M, Ryan F, Pickard H, **Bornstein AM**, Murphy J, Strickland J (2025). Meaning in life and value-based decision-making in alcohol use disorder. *55th EABCT Congress.*

CA40 Zhou D*, Noh SM*, Cooper KW, Guo S, Dinh ET, **Bornstein AM** (2025). Sparse and distributed memory constraints drive representational change as a function of temporal learning sequence. *47th Annual Conference of the Cognitive Science Society.*

CA39 Khoudary A+, Peters MAK*, **Bornstein AM*** (2025). A principled model of uncertainty resolution explains dynamic effects of expectations in perceptual decision making. *Society for Philosophy and Neuroscience 2025.*
**Selected for a talk.**

CA38 Kapogianis T, **Bornstein AM**, Chrastil ER (2024). Size and community structure affect abstract graph learning. *45th Annual Conference of the Cognitive Science Society.*

CA37 Azimihashemi M+, Banavar NV+, Guo S+, **Bornstein AM** (2024). Does alcohol dependence differentially influence episodic and semantic contributions to recognition priming in older adults? *SRNDNA Summer Symposium 2024.*

CA36 Yamamoto A+, Guo S+, Nadkarni M+, Rouhani N, **Bornstein AM** (2024). Alcohol Prediction Errors in Individuals With Varying Levels of Alcohol Use. *SRNDNA Summer Symposium 2024.*

CA35 Dinh ET+, Zhou D+, Guo S+, Noh SM+, Cooper KW, **Bornstein AM** (2024). Autoencoder models of human graph learning reveal that sparse and dense representations differentially support planning and recall *Society for Neuroscience Annual Meeting.*

CA34 Harhen NC+, **Bornstein AM***, Hartley CA* (2024). Reinstated episodes and context differentially guide decision making across development. *Society for Neuroscience Annual Meeting.*

CA33 Chen Y+, Harhen NC+, Stout DA, **Bornstein AM** (2024). Early-life unpredictability modulates planning horizon in a structured foraging task. *Society for Neuroscience Annual Meeting.*

CA32 Yoo J+, **Bornstein AM** (2024). Goal-directed control evolves in tandem with multiple task representations. *Society for Neuroscience Annual Meeting.*

CA31 Khoudary A+, **Bornstein AM***, Peters MAK* (2024). Reasoning goals and representational decisions in computational cognitive neuroscience: a case study from bounded evidence accumulation. *Philosophy and Neuroscience at the Gulf VII.*

CA30 Martínez-Ortiz MA, Leonard B+, Yassa MA, **Bornstein AM**, Hartley CA (2024). Exploring the relationship between Early Life Adversity (ELA) dimensions and the development of decision-making strategies under motivational conflict. *The Flux Society Congress for Integrative Developmental Neuroscience.*

CA29 Khoudary A+, Peters MAK*, **Bornstein AM*** (2024). Explaining dynamic effects of memory on perceptual decisions. *Learning and Memory 2024.*

CA28 Khoudary A, **Bornstein AM***, Peters MAK* (2023). Characterizing dynamic effects of memory on perceptual evidence accumulation. *RIKEN CBS Summer Program*

CA27 Chen Y+, Yoo J+,Harhen NC+, Noh SM+, Stout DA*, **Bornstein AM*** (2023). Adult and early-life adversity influences on memory-guided planning. *UCI Conte Center annual symposium.*

CA26 Harhen NC+, Noh SM+, Stough-Lacking S+, **Bornstein AM** (2023). Suboptimal or locally rational? Foraging as a window onto the universal mechanisms of decisions under uncertainty. *Healing the Brain: Bridging the Gap in Low-and Middle-Income Countries.*

CA25 Harhen NC+, **Bornstein AM** (2023). Temporal representation optimization provides a computational link between early life adversity and anhedonia. *Computational Psychiatry 2023.*

CA24 Banavar NV+, **Bornstein AM** (2023). Decomposing behavioral pattern separation: A model-based analysis. *Learning and Memory 2023.*

CA23 Harhen NC+, **Bornstein AM** (2023). Temporal representation adaptation as a computational link between early life unpredictability and anhedonia. *Learning and Memory 2023.*

CA22 Khoudary A+, Peters MAK*, **Bornstein AM*** (2023). Characterizing dynamic effects of memory on perceptual decisions. *Learning and Memory 2023.*

CA21 Noh SM+, **Bornstein AM** (2023). Memory encoding ability interacts with training interventions to improve memory-guided inference decisions *Learning and Memory 2023.*

CA20 Yoo J+, **Bornstein AM** (2023). Humans build configural representations for planning in complex environments *Learning and Memory 2023.*

CA19 Stout DM, Harhen NC+, **Bornstein AM**, Vinograd M, Spadoni A, Simmons AN, Yassa MA, Davis EP, Glynn LM, Baram TZ, Baker DG, Risbrough VB (2023). Unpredictable early-life experiences moderate the effect of anhedonia and PTSD symptoms on neural measures of reward learning in adulthood. *Anxiety and Depression Association of America.*

CA18 Harhen NC+, **Bornstein AM** (2023). Interval timing as a computational framework for examining the pathway from early life unpredictability to affective disorders. *UCI Conte Center annual symposium.*
**Best abstract award.**
**Selected for a short talk.**

CA17 Khoudary A+, **Bornstein AM***, Peters MAK* (2023). Perceptual decisions result from dynamic precision-weighted integration of memory and visual information. *Association*

*of Scientific Studies of Consciousness.*
**Selected for a talk.**

CA16 Kapogianis T, **Bornstein AM**, Chrastil ER (2022). Graph Metrics and Non-Spatial Navigational Learning. *Society for Neuroscience Annual Meeting.*

CA15 Harhen NC+, Hartley CA*, **Bornstein AM*** (2022). Memory-guided decision-making develops alongside model-based planning. *The Flux Society Congress for Integrative Developmental Neuroscience.*

CA14 Harhen NC+, **Bornstein AM** (2022). Representation learning & adaptation in human foraging. *CNLM annual meeting.*
**Selected for a short talk.**

CA13 Yoo J+, **Bornstein AM** (2022). Task complexity and experience modulate the use of online planning. *CNLM annual meeting.*

CA12 Noh SM+, Stark CEL, **Bornstein AM** (2022). Mnemonic Discrimination Ability Predicts Optimal Training Condition for Memory-Guided Inference Decisions. *Annual meeting of the Cognitive Neuroscience Society.*
**Selected for a short talk.**

CA11 Yoo J+, **Bornstein AM** (2021). Task complexity and experience dictate the use of online, versus offline, planning in humans. *Annual meeting of the Society for Neuroeconomics.*

CA10 Noh SM+, Kerr T, Bennett IA*, **Bornstein AM*** (2021). Age-related differences in memory-guided decisions are driven by a trade-off between multiple decision systems. *Society for Neuroscience Annual Meeting.*

CA9 Noh SM+, Kerr T, **Bornstein AM** (2021). Pattern Separation Predicts Which Memories Are Sampled During Decisions for Reward *Psychonomics.*

CA8 Noh SM+, **Bornstein AM** (2021). Pattern separation mediates the types of memories sampled during decisions for reward. *CNLM annual meeting.*

CA7 Banavar NV+, **Bornstein AM** (2021). Deliberative evaluation in intertemporal choice is shaped by experiment structure. *Annual meeting of the Society for Neuroeconomics*
**Selected for a short talk.**

CA6 Devine SM, Otto AR, **Bornstein AM***, Louie K* (2021). Context-dependent choice and evaluation in real-world consumer behavior *Mathematical Psychology*

CA5 Harhen NC+, Yassa MA, Baram TZ, **Bornstein AM** (2021). Exploring a latent cause model of substance use disorder symptoms. *Biological Psychiatry*
doi:10.1016/j.biopsych.2021.02.479

CA4 Cooper KW+, Li L, Agostinelli F, Saraf M, Elias GA, Baldi P, **Bornstein AM**, Shahbaba B, Fortin N (2021). Theta-associated nonspatial sequence coding in hippocampus. *Society for Neuroscience Global Connectome.*

CA3 Harhen NC+, Hartley CA, **Bornstein AM** (2020). Foraging behavior adjusts to multiple scales of context. *Annual meeting of the Society for Neuroeconomics*
**Selected for a talk.**

CA2 Vlasceanu M, Morais MJ, Zhao Z, **Bornstein AM**, Norman KA, Coman AC (2020). Self-Other Similarity Modulates the Socially-Triggered Context-Based Prediction Error Effect on Memory. *41st Annual Conference of the Cognitive Science Society*

CA1 Rouhani N, Norman KA, Niv Y, **Bornstein AM** (2019). Reward prediction errors create event boundaries in memory *Psychonomics*