

## Tomer D. Ullman

---

**CONTACT INFORMATION** Harvard University  
Department of Psychology [tullman@fas.harvard.edu](mailto:tullman@fas.harvard.edu)  
Northwest Building Room 190.02 <http://www.tomerullman.org>  
52 Oxford St., Cambridge, MA 02138 USA

**POSITION** Assistant Professor, Harvard Department of Psychology. Member of the Center for Brains, Minds, and Machines. Co-PI for the Science of Intelligence group at Harvard.

**RESEARCH INTERESTS** Computational cognitive modeling, intuitive theories, cognitive development, probabilistic programming, intuitive physics, intuitive psychology, common sense, machine learning, theory-of-self

**EDUCATION** **Massachusetts Institute of Technology and Harvard University**  
Postdoctoral associate at the Center for Brains, Minds & Machines (2016-2019)

**Massachusetts Institute of Technology**  
Ph.D. in Brain and Cognitive Sciences (2008-2015)

- Dissertation Topic: On the Nature and Origin of Intuitive Theories

**Hebrew University of Jerusalem**  
B.S. in Physics and Cognitive Science (double major, 2004-2008)

- *Magna Cum Laude*

### Grants and Funding

---

Dean's Competitive Fund for Promising Scholarship, Spring 2024, \$43,088, "Visual Pretense in People and Machines".

Radcliffe Exploratory Seminar, Spring 2024, \$20,00, "Loopholes: Spirit-vs-Letter of the Law at the Dawn of AI".

Jacobs Foundation Research Fellowship – September 2022 – September 2024, \$177,273.

NSF Science of Learning, September 2021 – September 2023, \$662,693, "Collaborative Research: Loopholes as a window into the learning of meaning", joint project with Harvard and MIT, Harvard component \$372,241.

DARPA MCS (Machine Common Sense), June 2019 – July 2023, \$12,100,000, "Building machine common sense the human way", Co-PI with six other investigators from IBM, MIT, Stanford, and Harvard. Harvard component, supporting Ullman, Spelke, and several RAs and postdoctoral researchers, is \$1,079,976.

Dean's Competitive Fund for Promising Scholarship, Spring 2021, \$39,449, "Learning from People Who Aren't There".

John Templeton Foundation, February 2020 – October 2022, \$234,000, "Play, a computational perspective".

Director of Science Education Lab Kit Funding, Spring 2021, Competitive proposal to fund novel at-home experiment kits as part of Harvard Class on Decision Making (PSY1322).

Templeton Experience Project, June 2015 – June 2017, \$90,000, “Computational models of the intuitive theory of transformative experiences”, with Josh Tenenbaum (PI).

(Trainee grant) Simons Center for the Social Brain, October 2020 – October 2022, \$134,912, postdoctoral fellowship studying loopholes and ASD awarded to Dr. Sophie Bridgers, Post-doctoral Fellow advised by Ullman and Schulz (MIT).

(Trainee grant) NSF STEM Education Fellowship, September 2023 – August 2025, \$338,170, postdoctoral fellowship studying pedagogy, learning, and detecting automatic behavior, Dr. Iona Bass, Post-doctoral Fellow advised by Ullman and Bonawitz (Harvard Graduate School of Education).

(Trainee grant) MBB Fellowship, July 2021 – July 2023, \$150,600, postdoctoral fellowship studying pedagogy, learning, and detecting automatic behavior, Dr. Iona Bass, Post-doctoral Fellow advised by Ullman and Bonawitz (Harvard Graduate School of Education).

## Publications

---

- SUBMITTED                      Balaban and Ullman. The capacity limits of tracking in the imagination.
- MANUSCRIPTS AND  
UNDER REVIEW                Bass and Ullman. The Detection of Automatic Behavior in Other People.
- Hu, Sosa, and Ullman. Shades of Zero: Distinguishing impossibility from inconceivability.
- Sosa, Gershman, and Ullman. Blending simulation and abstraction for physical reasoning.
- Qian, Bridgers, Taliaferro, Parece, and Ullman. Ambivalence by Design: A Computational Account of Loopholes.
- Wood, Ullman, Wood, Spelke, and Wood. Object permanence in newborn chicks is robust against opposing evidence
- Qian and Ullman. Shape Guides Visual Pretense.
- Balaban, Smith, Tenenbaum, and Ullman. Using EEG to uncover the dynamics of physical expectation violation and resolution.
- Paul, De Freitas, Ullman, and Tenenbaum. Reverse engineering the self.
- De Freitas, Uguralp, Uguralp, Kim, and Ullman. Summarizing the Mental Customer Journey.
- JOURNAL ARTICLES        Bass, I., Espinoza, C., Bonawitz, E., and Ullman, T. D. (2024). Teaching without

thinking: Negative evaluations of rote pedagogy. *Cognitive Science*.

Ullman, T. D., and Bridgers, S. (2024). Genies, lawyers, and smart-asses: Extending proxy failures to intentional misunderstandings. *Behavioral and Brain Sciences*, 47, e86.

Jonusaite, I., and Ullman, T. D. (2024). The invisible hand as an intuitive sociological explanation. *Journal of Experimental Social Psychology*.

De Freitas, J., Uguralp, A. K., Oguz-Uguralp, Z., Paul, L. A., Tenenbaum, J., and Ullman, T. D. (2023). Self-orienting in human and machine learning. *Nature Human Behaviour*.

Li, Y., Wang Y., Boger, T., Smith, K., Gershman S.J., and Ullman T.D. (2023). An approximate representation of objects underlies physical reasoning. *JEP: General*.

Bigelow, E., McCoy, J.P., and Ullman, T.D., (2023). Non-commitment in mental imagery. *Cognition*.

Boger, T. and Ullman, T.D., (2023) What is ‘Where’? Physics and Attention Modulate Object Representations. *Open Mind*.

Gershman, S. and Ullman, T.D., (2023). Causal Implicatures from Correlational Statements. *PLOS ONE*.

Burnell, R., Schellaert, W., Burden, J., Ullman, T.D., Martinez-Plumed, F., Tenenbaum, J.B., Rutar, D., Cheke, L.G., Sohl-Dickstein, J., Mitchell, M. and Kiela, D. (2023). Rethink reporting of evaluation results in AI. *Science*.

Gjata, N. N., Ullman, T. D., Spelke, E. S., and Liu, S. (2022). What could go wrong: adults and children calibrate predictions and explanations of others’ actions based on relative reward and danger. *Cognitive science*.

Bass, I., Smith, K. A., Bonawitz, E., and Ullman, T. D. (2022). Partial mental simulation explains fallacies in physical reasoning. *Cognitive Neuropsychology*.

Gjata, N. N., Ullman, T. D., Spelke, E. S., and Liu, S. (2022). What could go wrong: adults and children calibrate predictions and explanations of others’ actions based on relative reward and danger. *Cognitive Science*.

Liu, S., Ullman T.D., Tenenbaum, J., and Spelke, E. (2022). Dangerous ground: Thirteen-month-old infants are sensitive to peril in other people’s actions. *Open Mind*.

Kryven, M., Ullman, T.D., Cowan, W., and Tenenbaum, J.B., (2021) Plans or Outcomes: How do we attribute intelligence to others? *Cognitive Science*

Sosa, F. A., T. D. Ullman, J. B. Tenenbaum, S. J. Gershman, and T. Gerstenberg (2021), Moral dynamics: Grounding moral judgment in intuitive physics and intuitive psychology. *Cognition*.

Ullman, T.D. (2021). What are you talking about. *Nature Human Behaviour*.

Ullman, T.D. and Tenenbaum, J.B. (2020), Bayesian models of conceptual development: Learning as building models of the world. *Annual Review of Developmental*

*Psychology.*

Ullman, T.D. (2020) Heroes of our own story: Self-image and rationalizing in thought experiments. *Behavioral and Brain Sciences* 43.

McCoy, J. and Ullman, T. (2019) Transformative Decisions and Their Discontents. Part of a symposium on L.A. Paul's "Transformative Experience". *Rivista Internazionale di Filosofia e Psicologia*, 10(3), 339 - 345.

Bonawitz E., Ullman, T.D., Gopnik, A., and Tenenbaum, J.B. (2019), Sticking to the evidence? A Computational and behavioral case Study of micro-theory change in the domain of magnetism, *Cognitive Science*, 43(8), e12765.

Ullman, T.D. and McCoy, J.P. (2019), Judgments of effort for magical violations of intuitive physics. (2019) *PloS one*, 14(5), e0217513.

McCoy, J.P., and Ullman, T.D., A Minimal Turing Test. (2018). A Minimal Turing Test. *Journal of Experimental Social Psychology*, 79, 1-8.

Gerstenberg, T., Ullman, T.D., Nagel, J., Kleiman-Weiner, M., Lagnado, D., and Tenenbaum, J.B. (2018), Lucky or clever? From changed expectations to attributions of responsibility. *Cognition*.

Liu, S., Ullman, T.D., Tenenbaum J.B., and Spelke, E. (In press) 10-month-olds infer the value of goals from the costs of actions. *Science*, 358(6366), 1038-1041.

Ullman, T. D., Spelke, E. S., Battaglia, P., and Tenenbaum, J. B. (2017), Mind Games: Game Engines as an Architecture for Intuitive Physics. *Trends in Cognitive Science*, 21(9), 649-665.

Ullman, T. D., Stuhlmüller, A., Goodman, N.D., and Tenenbaum, J. B. (2017), Learning physical parameters from dynamic scenes. *Cognitive Psychology*.

Lake, B. M., Ullman, T. D., Tenenbaum, J. B., and Gershman, S. J. (2017), Building machines that learn and think like people. *Behavioral and Brain Sciences*, 1-101.

Hamlin, J. K., Ullman, T. D., Tenenbaum, J. B., Goodman, N. D., and Baker, C. L. (2013), The mentalistic basis of core social cognition: Experiments in preverbal infants and a computational model. *Developmental Science* 16(2), 209-226.

Ullman, T. D., Goodman, N. D., and Tenenbaum, J. B. (2012), Theory learning as stochastic search in the language of thought. *Cognitive Development* 27(4), 455-480.

Goodman, N. D., Ullman, T. D., and Tenenbaum, J. B. (2012), Learning a theory of causality. *Psychological Review*, 118(1), 110.

BOOK CHAPTERS

Bonawitz, E., and Ullman, T. D. (2024) Bayesian models of cognitive development. In *Bayesian Models of Cognition: Reverse Engineering the Mind*.

Smith, K. A., Hamrick, J. B., Sanborn, Adam N., Battaglia, P. W., Gerstenberg, T., Ullman, T. D. and Tenenbaum, J. B. (2024) Intuitive physics as probabilistic inference. In *Bayesian Models of Cognition: Reverse Engineering the Mind*.

Jara-Ettinger, J., Baker, C., Ullman, T. D. and Tenenbaum, J. B. (2024) Theory of

mind and inverse decision-making. In *Bayesian Models of Cognition: Reverse Engineering the Mind*.

Ullman, T.D. and Zimmerman, S., Models of transformative decision making, (2020) in *Becoming Someone New: Essays on Transformative Experience, Choice, and Change*, eds. Enoch Lambert and John Schwenkler, Oxford University Press.

Ullman, T. D., McCoy, J. P., and Paul, L. A., (2019), *Modal Prospection*. *Metaphysics and Cognitive Science*, eds. Alvin Goldman and Brian McLaughlin. Oxford University Press (US).

CONFERENCE  
PROCEEDINGS AND  
PREPRINTS

Hu, J., Sosa, F. A., and Ullman, T. D. (2024). Shades of Zero: Distinguishing impossibility from inconceivability. In *Proceedings of the Annual Meeting of the Cognitive Science Society*.

Chu, J., Hu, J., and Ullman, T. D. (2024). The Task Task: Creative problem generation in humans and language models. In *Proceedings of the Annual Meeting of the Cognitive Science Society*.

Parece, K., Bridgers, S., Ullman, T. D., and Schulz, L. (2024). Exploring Loophole Behavior: A Comparative Study of Autistic and Non-Autistic Populations. In *Proceedings of the Annual Meeting of the Cognitive Science Society*.

Bigelow, E. J., Lubana, E. S., Dick, R. P., Tanaka, H., and Ullman, T. D. (2023). In-context learning dynamics with random binary sequences. *arXiv preprint*.

Jin, C., Wu, Y., Cao, J., Xiang, J., Kuo, Y. L., Hu, Z., Ullman, T.D., and Shu, T. (2024). Mmtom-qa: Multimodal theory of mind question answering. *arXiv preprint*.

Ullman, T.D. (2023). Large Language Models Fail on Trivial Alterations to Theory-of-Mind Tasks. *arXiv preprint*.

Murthy, S., Parece, K., Bridgers, S., Qian, P., and Ullman, T. (2023). Comparing the Evaluation and Production of Loophole Behavior in Humans and Large Language Models. In *Findings of the Association for Computational Linguistics: EMNLP*.

Qian, P., and Ullman, T.D. (2023). Human Visual Pretense is Constrained Primarily by Shape. In *Society for Philosophy and Psychology (SPP)*.

Bass, I., Bonawitz, E., and Ullman, T. D. (2023). Negative Evaluations of Rote Teaching in Adults and Children. In *Society for Philosophy and Psychology (SPP)*.

Sosa, F., and Ullman, T.D. (2022). Type theory in human-like learning and inference. *arXiv preprint*.

Conwell, C., and Ullman, T. D. (2022). Testing Relational Understanding in Text-Guided Image Generation. *arXiv preprint*.

Bigelow, E. and Ullman, T. D. (2022). Opening the Black Box: People Evaluate Agents Based on the Algorithms that Drive their Behavior. In *Society for Philosophy and Psychology (SPP)*.

Jonusaite, I. and Ullman, T. D. (2022). The Invisible Hand as an Intuitive Sociological Explanation. In *Society for Philosophy and Psychology (SPP)*.

- Bass, I., Bonawitz, E., and Ullman, T. D. (2022). Adults' Evaluations of Rote and Reflective Teachers. *Proceedings of the Annual Meeting of the Cognitive Science Society*.
- Bass, I., Smith, I., Bonawitz, E., and Ullman, T. (2021). Efficient partial simulation quantitatively explains deviations from optimal physical predictions. *Presentation at refereed workshop as part of the 35th Annual Conference on Neural Information Processing Systems: Physical Reasoning and Inductive Biases for the Real World*.
- Bridgers, S., Glassman, E., Schulz, L.E., and Ullman, T.D. (2021). Loopholes: a Window into Value Alignment and the Learning of Meaning. *Presentation at refereed workshop as part of the 35th Annual Conference on Neural Information Processing Systems: Physical Reasoning and Inductive Biases for the Real World*.
- Xu, K., Srivastava, A., Gutfreund, D., Sosa, F., Ullman, T., Tenenbaum, J. B., and Sutton, C. (2021). A Bayesian-Symbolic Approach to Learning and Reasoning for Intuitive Physics. In *Advances in Neural Information Processing Systems (NeurIPS)*.
- Bridgers, S., Schulz, L.E., and Ullman, T.D. (2021). Loopholes, a Window into Value Alignment and the Learning of Meaning. *Proceedings of the 42nd Annual Meeting of the Cognitive Science Society*.
- Kim, P., De Freitas, J., and Ullman, T.D. (2021). Lifelines: Summarizing the Pattern of a Meaningful Life. In *Society for Philosophy and Psychology (SPP)*.
- Mao, J., Luo, Z., Gan, C., Tenenbaum, J.B., Wu, J., Kaelbling, J.P., and Ullman, T.D. (2021) Temporal and Object Quantification Networks. In *Thirtieth International Joint Conference on Artificial Intelligence (IJCAI)*.
- Shu, T., Bhandwadar, A., Gan, C., Smith, K.A., Liu, S., Gutfreund, D., Spelke, E., Tenenbaum, J.B. and Ullman, T.D. (2021). AGENT: A Benchmark for Core Psychological Reasoning. In *Thirty-eighth International Conference on Machine Learning (ICML)*.
- Du, Y., Smith, K., Ullman, T.D., Tenenbaum, J.B., and Wu, J. (2021). Unsupervised Discovery of 3D Physical Objects From Video. In *International Conference on Learning Representations (ICLR)*.
- Smith, K. A., Mei, L., Yao, S., Wu, J., Spelke, E., Tenenbaum, J. B., and Ullman, T. D. (2020). The fine structure of surprise in intuitive physics: when, why, and how much?. In *Proceedings of the 42nd Annual Meeting of the Cognitive Science Society*.
- Gjata, N., Ullman, T. D., Spelke, E. S., and Liu, S. (2020). Look before you leap: Quantitative tradeoffs between peril and reward in action understanding. In *Proceedings of the 42nd Annual Meeting of the Cognitive Science Society*.
- Shu, T., Kryven, M., Ullman, T.D., and Tenenbaum, J.B. (2020). Adventures in Flatland: Perceiving Social Interactions Under Physical Dynamics In *Proceedings of the 42nd Annual Meeting of the Cognitive Science Society*.
- Smith, K.\*, Mei, L.\*, Yao, S., Wu, J., Spelke, E., Tenenbaum, J.B., and Ullman, T.D., (2019) Modeling expectation violation in intuitive physics with coarse probabilistic object representations. *Advances in Neural Information Processing Systems*.
- Ullman, T. D., Kosoy, E., Yildirim, I., Soltani, A., Siegel, X., Tenenbaum J.B., and

Spelke, E., (2019), *Draping an Elephant: Uncovering Children's Reasoning About Cloth-Covered Objects Proceedings of the 41st Annual Conference of the Cognitive Science Society.*

Ullman, T. D., Alonso-Diaz, S., Ferringo, S., Zahid, S., and Kidd, C. (2017), Weight matters: The role of physical weight in non-physical language across age and culture. *Proceedings of the 39<sup>th</sup> Annual Conference of the Cognitive Science Society.*

Liu, S., Ullman, T.d., and McCoy, J.P., (2019), People's perception of others' risk preferences. *Proceedings of the 41st Annual Conference of the Cognitive Science Society.*

Liu, S., Ullman, T. D., Tenenbaum, J. B., and Spelke, E. S. (2017), What's worth the effort: Ten-month-old infants infer the value of goals from the costs of actions. *Proceedings of the 39<sup>th</sup> Annual Conference of the Cognitive Science Society.*

Kryven, M., Ullman, T. D., Cowan, W., and Tenenbaum, J. B. (2017), Thinking and guessing: Bayesian and empirical models of how humans search. *Proceedings of the 39<sup>th</sup> Annual Conference of the Cognitive Science Society.*

Chang, M. B., Ullman, T. D., Torralba, A., and Tenenbaum, J. B. (2017), A compositional object-based approach to learning physical dynamics. *International Conference on Learning Representations (ICLR).*

Ullman, T.D., Xu, Y. & Goodman, N.D. (2016), The Pragmatics of spatial language. *Proceedings of the 38<sup>th</sup> Annual Conference of the Cognitive Science Society.*

Ullman, T.D., Siegel, M., Tenenbaum, J.B. & Gershman, S.J. (2016), Coalescing the vapors of human experience into a viable and meaningful comprehension. *Proceedings of the 38<sup>th</sup> Annual Conference of the Cognitive Science Society.*

Kryven, M., Ullman, T.D., Cowan, W. & Tenenbaum, J.B. (2016), Outcome or strategy? A Bayesian model of intelligence attribution. *Proceedings of the 38<sup>th</sup> Annual Conference of the Cognitive Science Society.*

Gerstenberg, T., Ullman, T. D., Kleiman-Weiner, M., Lagnado, D. A. & Tenenbaum, J. B. (2014), Wins above Replacement: Responsibility attributions as counterfactual replacements. *Proceedings of the 36<sup>th</sup> Annual Conference of the Cognitive Science society.*

Ullman, T.D., Stuhlmüller A., Goodman, N.D. & Tenenbaum, J.B. (2014), Learning physics from dynamical scenes. *Proceedings of the 36<sup>th</sup> Annual Conference of the Cognitive Science society.*

Bonawitz E., Ullman, T.D., Gopnik, A. & Tenenbaum, J.B. (2012), Sticking to the evidence? A Computational and behavioral case Study of micro-theory change in the domain of magnetism, *International Conference Developmental Learning and Epigenetic Robotics; best paper award: experiment combined with computational model.*

Ullman, T.D.\*, McCoy, J.P.\*, Stuhlmüller, A., Gerstenberg, T. & Tenenbaum J.B. (2012), Why blame Bob? Probabilistic generative models, counterfactual reasoning, and blame attribution. *Proceedings of the 33rd Annual Conference of the Cognitive Science Society.*

Ullman, T.D., Goodman, N.D. & J. B. Tenenbaum (2010), Theory acquisition as

stochastic search. *Proceedings of the 32nd Annual Conference of the Cognitive Science Society*.

Ullman, T.D., Baker, C.L., Macindoe, O., Evans, O., Goodman, N.D. & Tenenbaum, J.B. (2010), Help or hinder: Bayesian models of social goal inference. *Advances in Neural Information Processing Systems (Vol. 22, pp. 1874-1882)*.

Goodman, N.D., Ullman, T.D. & Tenenbaum, J.B. (2009), Learning a theory of causality *Proceedings of the 31st Annual Conference of the Cognitive Science Society*.

## Invited Talks and Presentations

---

Through a Glass, Darkly.  
Invited Simons Workshop, Berkeley, 2024.

Through a Glass, Darkly.  
Invited ICDL Workshop, Texas, 2024.

The Physical Basis of Imagery and Imagination.  
Departmental Colloquium, University of Maryland, 2023.

The Physical Basis of Imagery and Imagination.  
Departmental Seminar, Central European University (online), 2023.

The Physical Basis of Imagery and Imagination.  
Special Workshop on The Puzzle of Imagistic Cognition, Salzburg, 2023.

Opening the Black Box: People Evaluate Agents Based on the Algorithms that Drive their Behavior.  
Society for Philosophy and Psychology (SPP), Milan, 2022.

Cognitive Evaluation with the Animal AI Environment  
AI Evaluation Beyond Metrics workshop, IJCAI, Vienna, 2022.

Approximations in physical simulators as hypotheses for intuitive physics.  
Neurotheory Center Kickoff, Harvard, 2022.

Models of Core Common Sense  
CBMM Summer Lecture Series, MIT, 2022.

Models of Core Common Sense  
CBS URM summer student workshop, Harvard, 2022.

Through a Glass Darkly: Approximations in physical simulators as working hypotheses for intuitive physics.  
NeurIPS 2021 workshop on Physical Reasoning and Inductive Biases for the Real World, 2021.

Interdisciplinary Approaches to Transformative Experience,  
Yale University, 2021.

(Keynote), Models of Core Common Sense in Infancy,



USC AI Symposium on AI with Common Sense, 2021.

Models of Core Knowledge (Physics, Really)  
Special Seminar, Department of Neurobiology, Weizmann Institute, 2021.

Computational Models of Core Physics  
Colloquium, Center for Cognitive Science, TU Darmstadt, 2021.

Reverse Engineering a Self,  
First Person Discussion Group, Columbia University (online), 2021.

Quantitative Methods Workshop,  
CBMM, MIT 2020

Models of Core Knowledge  
Cognitive Seminar Series, Brown University, 2020

Models of Core Knowledge  
Center for Human-Compatible AI at UC Berkeley (CHAI), 2020

Discussant in 'Is that so? How children evaluate claims and conjectures'  
Child Development Society (CDS) Meeting, Louisville, KY, 2019.

Computational Models of Core Intuitive Physics,  
Yale Current Works series, Yale, CN, 2019.

Neuro-symbolic Computing and Machine Common Sense  
AI Research Week, IBM, MA, 2019.

Computational Models of Core Intuitive Physics,  
Facebook Workshop on Understanding Human and Machine Intelligence, NYC, NY,  
2019.

Reverse Engineering a Self,  
Formal and Experimental Conference, Northeastern, MA, 2019

Thinking New Thoughts,  
Workshop on Possibility and Value, Radcliffe Institute for Advanced Studies, MA,  
2019.

Evaluating Future Selves,  
Workshop on Imagination, Simulation, and the Self, Tufts, MA, 2018.

Physics Meets Development,  
CVPR workshop on Vision Meets Cognition, Salt Lake City, UT, 2018.

Canonical Mass: Preschoolers Expectations of Dynamic Variables for Solid Objects,  
Society for Research in Child Development, Austin, TX. 2017.

Modal Imagination,  
Ranch Metaphysics Workshop, Tucson, AZ. 2017.

People and Things,  
Current Work in Developmental Psychology Colloquium. Boston College, MA. 2016.

Development, Psychology, Physics.  
DeepMind Technologies, London. 2016.

Modal Prospection  
Philosophy Seminar. Rutgers University, NJ. 2016.

Imagining and Evaluating Possible Future Selves,  
42<sup>nd</sup> Meeting of the Society for Philosophy and Psychology. Austin, TX. 2016.

Computational Cognitive Science,  
Interdisciplinary College on AI, Germany. 2016.

Probabilistic Programming,  
Interdisciplinary College on AI, Germany. 2016.

Effort as a Bridge Across Action and Action Understanding,  
The 20<sup>th</sup> International Congress on Infant Studies. New Orleans, LA. 2016.

Children's Learning as Stochastic Search,  
Society for Research in Child Development. Philadelphia, PA. 2015.

Theories, Imagination, and the Generation of New Ideas,  
Center for Brains, Minds and Machines Summer School. Woods Hole, MA. 2015.

Probabilistic Programming Tutorial,  
Center for Brains, Minds and Machines Summer School. Woods Hole, MA. 2015.

Theories of Physics,  
More on Development. Columbus, OH. 2015.

Modeling a Theory of the Self,  
Workshop on Transformative Experiences. Chicago, IL. 2015.

Deep Thoughts: The Value of Understanding,  
Commentator at 41<sup>th</sup> Meeting of the Society for Philosophy and Psychology. Duke University, NC. 2015.

Wins Above Replacement: Responsibility Attributions as Counterfactual Replacement,  
40<sup>th</sup> Meeting of the Society for Philosophy and Psychology. Vancouver, Canada. 2014.

Theories, Imagination, and the Generation of New Ideas,  
Center for Brains, Minds and Machines Summer School. Woods Hole, MA. 2014.

Probabilistic Programming Tutorial,  
Center for Brains, Minds and Machines Summer School. Woods Hole, MA. 2014.

Learning Physics from Dynamic Scenes,  
36<sup>th</sup> Annual Meeting of the Cognitive Science Society. Quebec, Canada. 2014.

Theories, Imagination, and the Generation of New ideas,  
Pre-conference debate at Child Development Society Meeting. Memphis, TN. 2013.

Help or Hinder? Bayesian Models of Social Goal Inference,  
Simons Center, MIT. 2010.

Why Blame Bob? Probabilistic Generative Models and Blame Attribution,  
34<sup>th</sup> Annual Meeting of the Cognitive Science Society. Sapporo, Japan. 2012.

Theory Learning as Stochastic Search,  
32<sup>nd</sup> Annual Meeting of the Cognitive Science Society. Portland, OR. 2010.

Help or Hinder? Bayesian Models of Social Goal Inference,  
Machine Learning Summer School, Cambridge, UK. 2009.

Help or Hinder? Bayesian Models of Social Goal Inference,  
23<sup>rd</sup> Annual Conference on Neural Information Processing Systems. Vancouver. 2009.

HONORS AND AWARDS	2024	APA Award for Distinguished Scientific Early Career Contributions to Psychology
	2021	Jacobs Foundation Research Fellowship
	2020	Harvard University Special Commendation: Extraordinary Teaching in Extraordinary Times
	2011	ICDL Best Paper Award: Experiment with computational model
	2011	MIT Continued Dedication to Teaching award
	2010	MIT Excellence in Teaching award
	2010	National Science Foundation (NSF) fellowship
	2009	Singleton Graduate Fellowship
	2009	National Science Foundation (NSF) honorable mention
2004-2007	Hebrew University of Jerusalem Scholarships of Excellence	

POPULAR PRESS      Work has been mentioned in, or have been interviewed for New York Times, The New Yorker, BBC, The Verge, Psychology Today, Discover Magazine, Scientific American, Wired, MIT Technology Review, Nature, This American Life, Washington Post.

TEACHING  
EXPERIENCE AND  
OUTREACH

2024 Instructor, 'Decisions Big and Small' (Harvard PSY1322)  
2023 Instructor, 'Imagination, Pretense, and Make-Believe Worlds' (Harvard PSY1340)  
2023 Guest lecturer, Israeli Arab and Jewish high school outreach  
2023 Co-organizer of funded workshop 'Computational Cognitive Models of Learning and Development'  
2023 Instructor, 'Decisions Big and Small' (Harvard PSY1322)  
2023 Guest lecturer, 'Biological and Artificial Intelligence' (Harvard NEURO140)  
2023 Guest lecturer, 'Mind and Brain' (Howard University)  
2022 Instructor, 'Decisions Big and Small' (Harvard PSY1322)  
2021 Instructor and organizer, 'Research Seminar in Cognition, Brain, and Behavior' (Harvard PSY3340)  
2021 Instructor, 'Imagination, Pretense, and Make-Believe Worlds' (Harvard PSY1340)  
2021 Instructor, 'Decisions Big and Small' (Harvard PSY1322)  
2021 Instructor and organizer, 'Research Seminar in Cognition, Brain, and Behavior' (Harvard PSY3340)  
2021 Guest lecturer, 'Biological and Artificial Intelligence' (Harvard NEURO140)  
2021 Guest lecturer, Harvard Developmental Seminars  
2021 Guest lecturer, Harvard Cognition, Brain, Behavior Seminar  
2021 Colloquium committee member, Harvard Psychology  
2020 Instructor, 'Imagination, Pretense, and Make-Believe Worlds' (Harvard PSY1340)  
2020 Instructor, 'Decisions Big and Small' (Harvard PSY1322)  
2020 Instructor and organizer, 'Research Seminar in Cognition, Brain, and Behavior' (Harvard PSY3340)  
2020 Colloquium committee member, Harvard Psychology  
2019 Guest lecturer, Harvard Developmental Seminars  
2018 Guest lecturer, Harvard Developmental Seminars  
2017 Lecturer and Teaching Assistant, CBMM summer school  
2015 Lecturer and Teaching Assistant, CBMM summer school  
2014 Lecturer and Teaching Assistant, CBMM summer school  
2012 Teaching Assistant, Topics in early childhood cognition (MIT 9.85)  
2011 Teaching Assistant, Cognitive processes (MIT 9.65)  
2010 Planning committee member, Cambridge Science Festival  
2009 Presenter and volunteer at Neuroscience Day, Museum of Science

SERVICE

Reviewer (partial): Brain and Behavioral Sciences, Cognition, Cognitive Psychology, Cognitive Development, Cognitive Science, Cognitive Research: Principles and Implications, Developmental Psychology, Developmental Science, JEP: General, Memory and Cognition, Nature Human Behavior, Nature Communications, Psychological Review, Proceedings of the Royal Society B, Topics in Cognitive Science, Philosophical Psychology, Psychonomic Bulletin, Neural Information Processing Systems (NeurIPS), The Annual Conference of the Cognitive Science Society (CogSci), AAAI, JoV, PLoS ONE

Grant and Award Reviews: Templeton Foundation, Israel Science Foundation (ISF), APA Dissertation Research Award, NSF SPRF, European Research Council (ERC)

Advised the Massachusetts Attorney General Office

Mentor in PPREP Harvard Workshop to help students from historically minoritized groups with their applications to positions in academia

Associate Editor for Open Mind

Guest Editor for Open Mind

Guest Editor for PNAS

Co-organizer of special workshop, ‘Computational Cognitive Models of Learning and Development’, funded by the Estes Fund through APS, Harvard (2023)

Ongoing organizer of Machine Common Sense reasoning meetings (intuitive psychology and general track, 2019-2021)

Co-organizer of “The Origins of Commonsense in Humans and Machines” Workshop, Cogsci (2020)

Co-organizer of Lorentz Center “Developing Models of the Word” Workshop, Leiden, Netherlands (2020)

Co-organizer of Cognition, Brain, Behavior lunch seminar series, Harvard (2019, 2020)

PC Member AAAI main track

Organizer of “More on Development (MOD)” special workshop on learning (Ohio, 2015)

Co-Organizer of Child Development Society pre-conference on “computational cognitive models and cognitive development” (2014)

MENTORED  
(PARTIAL LIST)

Ilona Bass (2022-, won an NSF STEM Education grant during this time), Peng Qian (2023-), Jennifer Hu (2023-, incoming faculty at JHU), Sonia Murthy (2022-), Eric Bigelow (2020-), Mariel Goddu (2020-2023), Sophie Bridgers (2020-2023, went on to become Cognitive Scientist at DeepMind), Yichen Li (2020-), YingQiao Wang (2020-), Tal Boger (2021-2023, went on to graduate studies at JHU), Brandon Woo (2020-2023, now faculty at UCSB), Izabele Jonusaite (2021-2023, went on to graduate studies at MIT), Colin Conwell (2019-), Pechthida Kim (2020-2021, won Mary Gordon Roberts MBB Research Fellowship during this time), Zana Bucina (2020), Konstantina Katsimeni (2020), Julian De Freitas (2020, now faculty at HBS), Arunima Sarin (2019-2023), Enosa Ogbeide (2019), Nensi Gjata (2019), Shari Liu (2018-2020, went on to post-doc at MIT and then faculty at JHU), Felix Sosa (2017-), Cameron Nieters (2017), Michael Chang (2016, 2017, went on to graduate studies at UC Berkeley), Eliza Kosoy (2016–2017, went on to graduate studies at Berkeley), Heather Tarr (2016, went on to graduate studies at Brown), Alexandra Wheeler (2016), Samuel Zimmerman (2016-2017), Marta Kryven (2016, went on to post-doc position at MIT)

MEMBERSHIP

American Psychological Association (APA)

Association for Psychological Science (APS)

Cognitive Science Society (CSS)

Society for Research in Child Development (SRCD)

Cognitive Development Society (CDS)

Society for Philosophy and Psychology (SPP)

Society for Personality and Social Psychology (SPSP)