

# Our Changing Beliefs: Errors, Attention, and (Mis)Learning

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In this mini-course, we will examine how people form and update beliefs under the broad umbrella of departures from the Bayesian benchmark. The lectures are designed to give a tour of the existing documented errors people make in statistical reasoning and then provide two specific mechanisms that allow those errors to persist: selective attention, and models of misspecified learning, in which agents update rationally given a model whose specification class does not contain the truth.

## Class Schedule

1. Errors in Statistical Reasoning
2. Failing to Pay Attention or Notice
3. Misinferring, Mislearning, and Misspecification

## Lecture 1 — Errors in Statistical Reasoning

### Main Reading

- Daniel J. Benjamin, "Errors in Probabilistic Reasoning and Judgment Biases," *Handbook of Behavioral Economics*, Volume 2, 69–186, 2019.
- Pietro Ortoleva, "Alternatives to Bayesian Updating," *Annual Review of Economics* 16, 545–570, 2024.

### Supplementary Sources

- David M. Grether, "Bayes Rule as a Descriptive Model: The Representativeness Heuristic," *Quarterly Journal of Economics* 95(3), 537–557, 1980.
- Matthew Rabin, "Inference by Believers in the Law of Small Numbers," *Quarterly Journal of Economics* 117(3), 775–816, 2002.
- Matthew Rabin and Joel L. Schrag, "First Impressions Matter: A Model of Confirmatory Bias," *Quarterly Journal of Economics* 114(1), 37–82, 1999.
- Daniel J. Benjamin, Matthew Rabin, and Collin Raymond, "A Model of Nonbelief in the Law of Large Numbers," *Journal of the European Economic Association* 14(2), 515–544, 2016.

- Ned Augenblick, Eben Lazarus, and Michael Thaler, "Overinference from Weak Signals and Underinference from Strong Signals," *Quarterly Journal of Economics* 140(1), 335–401, 2025.
- Pedro Bordalo, John J. Conlon, Nicola Gennaioli, Spencer Y. Kwon, and Andrei Shleifer, "Memory and Probability," *Quarterly Journal of Economics* 138(1), 265–311, 2023.
- Pedro Bordalo, John J. Conlon, Nicola Gennaioli, Spencer Kwon, and Andrei Shleifer, "How People Use Statistics," *Review of Economic Studies*, forthcoming.

## Lecture 2 — Failures to Notice

### Main Reading

- Joshua Schwartzstein, "Selective Attention and Learning," *Journal of the European Economic Association* 12(6), 1423–1452, 2014.
- Rema Hanna, Sendhil Mullainathan, and Joshua Schwartzstein, "Learning Through Noticing: Theory and Evidence from a Field Experiment," *Quarterly Journal of Economics* 129(3), 1311–1353, 2014.

### Supplementary Sources

- Tristan Gagnon-Bartsch, Matthew Rabin, and Joshua Schwartzstein, "Channeled Attention and Stable Errors," working paper, R&R at QJE, 2026.
- Joshua Schwartzstein and Adi Sunderam, "Using Models to Persuade," *American Economic Review* 111(1), 276–323, 2021.
- Benjamin Handel and Joshua Schwartzstein, "Frictions or Mental Gaps: What's Behind the Information We (Don't) Use and When Do We Care?" *Journal of Economic Perspectives* 32(1), 155–178, 2018.
- Pedro Bordalo, Nicola Gennaioli, and Andrei Shleifer, "Memory, Attention, and Choice," *Quarterly Journal of Economics*, 2017.
- Xavier Gabaix, "A Sparsity-Based Model of Bounded Rationality," *Quarterly Journal of Economics* 129(4), 1661–1710, 2014.

## Lecture 3 — Misinferring, Mislearning, and Misspecification

### Main Sources

- Ignacio Esponda and Demian Pouzo, "Berk-Nash Equilibrium: A Framework for Modeling Agents with Misspecified Models," *Econometrica* 84(3), 1093–1130, 2016.
- Paul Heidhues, Botond Kőszegi, and Philipp Strack, "Unrealistic Expectations and Misguided Learning," *Econometrica* 86(4), 1159–1214, 2018.

### Supplementary Sources

- Tristan Gagnon-Bartsch and Benjamin Bushong, "Learning with Misattribution of Reference Dependence," *Journal of Economic Theory* 203, 2022.
- Benjamin Bushong and Tristan Gagnon-Bartsch, "Reference Dependence and Attribution Bias: Evidence from Real-Effort Experiments," *American Economic Journal: Microeconomics* 15(2), 271–308, 2023.
- Drew Fudenberg, Giacomo Lanzani, and Philipp Strack, "Limit Points of Endogenous Misspecified Learning," *Econometrica* 89(3), 1065–1098, 2021.
- J. Aislinn Bohren and Daniel N. Hauser, "Social Learning with Model Misspecification: A Framework and a Robustness Result," *Econometrica* 89(6), 3025–3077, 2021.
- Mira Frick, Ryota Iijima, and Yuhta Ishii, "Misinterpreting Others and the Fragility of Social Learning," *Econometrica* 88(6), 2281–2328, 2020.