40948: Information in Markets and Organizations

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Office Hours: By appointment in Roentgen 1, 3-E2-09

Class Meetings:

- Time: Wednesdays 8.30am-10.00am and Thursdays 14.45pm-16.15pm
- Location: Roentgen 1, Room 5-D3-SR01

Class Website: you can find the course website on Blackboard

Synopsis. This course introduces selected topics in the theory and empirics of the economics of information. The course covers some of the classic literature and explores the current research frontier. The focus of the course is somewhat idiosyncratic based on my interests.

Audience. This course is designed for 2nd-year PhD students in Economics with a background in theory and an interest in both theory and empirics. However, it is also meant to be useful to students specializing in other fields. Students will be encouraged to present papers aligned with their interests.

Prerequisites. A proof-based course in real analysis and a rigorous course in probability theory. This is a (strong) suggestion, not a requirement.

Evaluation. A term paper either surveying the literature or proposing new research (60%), and one (or two depending on the number of students) in-class presentations of a paper from the literature (40%).

Literature reviews should be at most 15 pages double spaced, in a font equivalent to Times New Roman 12.

Research proposals should be at most 10 pages double spaced, in a font equivalent to Times New Roman 12.

Schedule & References. You can find a list of topics I plan to cover on the next page. I will either weave into the lectures or simply present the papers marked with (*). Some students will have to discuss papers marked with (+) for their in-class presentations. All other papers in the list below can be picked for the in-class presentations, subject to my approval. Papers not on the list below can also be picked for the in-class presentations, once again subject to my approval.

I will primarily cover papers and use lecture notes. The main reference will be:

Annie Liang, "Lecture Notes: Information and Learning in Economic Theory," (2021) available at https://www.anniehliang.com/lecture-notes

The following are also potentially relevant:

Patrick Billingsley, “Probability and measure,” Third edition, *Wiley series in probability and mathematical statistics*, (1995)

Thomas M. Cover and Joy A. Thomas, “*Elements of Information Theory*,” 2nd edition, *Wiley-Interscience*, (2006)

Schedule

Week	Class	Topic
1	1	Intro + Bayesian updating and beliefs (Lecture, 90 min)
	2	Basic learning (Lecture, 90 min)
2	3	Bayesian persuasion (Student presentation, 45 min) A paper of choice from sections 1, 2 or 3 (Student presentation, 45 min)
	4	A paper of choice from sections 1, 2, or 3 (Student presentation, 45 min) Another paper of choice from sections 1, 2, or 3 (Student presentation, 45 min)
3	5	Blackwell order (Lecture, 90 min)
	6	Lehmann (Student presentation, 45 min) Information transmission (Lecture, 45 min)
4	7	Biased decoding and the foundations of communication (Lecture, 90 min)
	8	Political correctness, social image, and information transmission (Lecture, 90 min)
5	9	A paper of choice from sections 4, 5, 6, or 7 (Student presentation, 45 min) Another paper of choice from sections 1, 2, or 3 (Student presentation, 45 min)
	10	The self-perpetuation of biased beliefs (Student presentation, 30 min) Media bias and reputation (Student presentation, 30 min) The market for news (Student presentation, 30 min)
6	11	The slant of online news (Lecture, 90 min)
	12	A paper of choice from any section (Student presentation, 45 min) Another paper of choice from any section (Student presentation, 45 min)

0. Broad (and Partial) Surveys of the Literature in Information Economics

Stiglitz and Kosenko, "The Economics of Information in a World of Disinformation: A Survey Part 1: Indirect Communication," *Working Paper*, (2024)

Stiglitz and Kosenko, "The Economics of Information in a World of Disinformation: A Survey Part 2: Direct Communication," *Working Paper*, (2024)

1. Bayesian Updating and Beliefs

Theory Topics Covered: probability theory preliminaries, signal structures, Bayes' rule, Bayes plausibility

Patrick Billingsley, "Probability and measure," *Wiley series in probability and mathematical statistics*, (1995)

Related Theory Topics Not Covered: *information design*

Information Design

Dirk Bergemann, Benjamin Brooks, Stephen Morris, "The Limits of Price Discrimination," *American Economic Review*, Vol. 105 No. 3, (2015)

Dirk Bergemann, Alessandro Bonatti, Alex Smolin, "The Design and Price of Information," *American Economic Review*, Vol. 108 No. 1, (2018)

Dirk Bergemann, Alessandro Bonatti, "Markets for Information: An Introduction," *Annual Review of Economics*, Vol. 11, (2019)

Dirk Bergemann, Stephen Morris, "Information Design - A Unified Perspective," *Journal of Economic Litrature*, Vol. 57 No. 1, (2019)

Matthew Gentzkow and Emir Kamenica, "A Rothschild-Stiglitz Approach to Bayesian Persuasion," AEA Papers and Proceedings, Vol. 106 No. 5, (2016)

Emir Kamenica, "Bayesian Persuasion and Information Design," *Annual Review of Economics*, Vol. 11, (2019)

(+) Emir Kamenica and Matthew Gentzkow. "Bayesian Persuasion," *American Economic Review,* Vol. 101 No. 6, (2011): 2590–2615

Anton Kolotilin, Tymofiy Mylovanov, Andriy Zapechelnyuk, and Ming Li, "Persuasion of a Privately Informed Receiver," *Econometrica*, Vol. 85 No. 6, (2017)

Anne-Katrin Roesler, and Balázs Szentes, “Buyer Optimal Learning and Monopoly Pricing,” *American Economic Review*, Vol. 107 No. 7, (2017)

2. Basic Learning

Theory Topics Covered: Doob’s Consistency Theorem, Blackwell and Dubins’ theorem

(*) David Blackwell, and Lester Dubins, “Merging of Opinions with Increasing Information” *Annals of Mathematical Statistics*, Vol. 33 No. 3, (1962)

Perci Diaconis, and David Freedman, “On the consistency of Bayes’ estimates,” *Annals of Statistics*, Vol. 14 No. 1. (1986): 1-26

(*) Joseph L. Doob, “Application of the theory of martingales,” in *Actes du Colloque International Le Calcul des Probabilités et ses Applications*, *Paris CNRS*, (1949)

Ehud Lehrer and Rann Smorodinsky, “Merging and learning,” *Lecture Notes-Monograph Series*, (1996)

Ehud Kalai and Ehud Lehrer, “Weak and strong merging of opinions,” *Journal of Mathematical Economics*, Vol. 23. No. 1, (1994): 73-86

Jeffrey W. Miller, “A detailed treatment of Doob’s theorem,” *Working Paper*, (2018)

Ronald I. Miller, and Chris William Sanchirico, “The role of absolute continuity in merging opinions and rational learning,” *Games and Economic Behavior*, Vol. 29. No. 2, (1999): 170-190

Related Theory Topics Not Covered: information partitions and knowledge

Information Partitions and Knowledge

Robert J. Aumann, “Agreeing to Disagree,” *The Annals of Statistics*, Vol. 4. Vol 6, (1976): 1236-1239

John D. Geanakoplos, and Herakles M. Polemarchakis, "We can't disagree forever," *Journal of Economic Theory.* Vol. 28. Issue 1. (1982): 1192–200

Ariel Rubinstein, “The Electronic Mail Game: Strategic Behavior under Almost Common Knowledge,” *American Economics Review*, Vol. 79 No. 3, (1989): 385-391

3. Taking Stock and Empirics

Theory Topics Not Covered: reasons for disagreement

Reasons For Disagreement

T. Renee Bowen, Danil Dmitriev, Simone Galperti, "Learning from Shared News: When Abundant Information Leads to Belief Polarization," *The Quarterly Journal of Economics*, Vol. 138 No. 2 (2023): 955–1000

Simone Cerreia-Vioglio, Roberto Corrao, and Giacomo Lanzani, "Dynamic Opinion Aggregation: Long-Run Stability and Disagreement," *Review of Economic Studies*, Forthcoming

George J. Mailath, and Larry Samuelson, "Learning under Diverse World Views: Model-Based Inference," *American Economic Review*, Vol. 110 No. 5, (2020)

Empirical Topics Not Covered: errors in probabilistic reasoning and judgment biases, motivated reasoning, biased memory, self-persuasion, information avoidance, visual evidence, political beliefs and polarization

Errors in Probabilistic Reasoning and Judgment Biases

Ned Augenblick, Eben Lazarus, and Michael Thaler, "Overinference from weak signals and underinference from strong signals," *Working Paper*, (2023)

Ned Augenblick and Matthew Rabin. "Belief movement, uncertainty reduction, and rational updating." *The Quarterly Journal of Economics* 136, no. 2 (2021): 933-985

Daniel Benjamin, "Errors in probabilistic reasoning and judgment biases," *Handbook of Behavioral Economics*, Volume 2, (2019)

Pedro Bordalo, John J. Conlon, Nicola Gennaioli, Spencer Wongwook Kwon, and Andrei Shleifer, "How people use statistics," *Working Paper*, (2023)

Ignacio Esponda, Ryan Oprea, and Sevgi Yuksel, "Seeing What is Representative," *The Quarterly Journal of Economics*, Vol. 138 No. 4 (2023): 2607–2657

Biased Memory

Pedro Bordalo, John J. Conlon, Nicola Gennaioli, Spencer Wongwook Kwon, and Andrei Shleifer, "Memory and Probability," *Quarterly Journal of Economics*, (2022)

Thomas Graeber, Christopher Roth, and Florian Zimmermann, "Stories, Statistics, and Memory," *Working Paper*, (2023)

Motivated Reasoning (Including Motivated Memory)

Andrea Amelio and Florian Zimmermann, "Motivated Memory in Economics – A Review," Games, Vol. 14 No. 1, (2023)

Markus Möbius, Muriel Niederle, Paul Niehaus, and Tanya S. Rosenblat, "Managing self-confidence: theory and experimental evidence," Management Science, Vol. 68 No. 11, (2022)

Michael Thaler, "The fake news effect: experimentally identifying motivated reasoning using trust in news," *American Economic Journal: Microeconomics*, forthcoming (2023)

Florian Zimmermann, "The dynamics of motivated beliefs," *American Economic Review*, Vol. 110 No. 2, (2020)

Self-persuasion

Peter Schwardmann, Egon Tripodi, and Joël J. Van der Weele. "Self-persuasion: Evidence from field experiments at international debating competitions." *American Economic Review* 112, no. 4 (2022): 1118-1146

Information Avoidance

Russell Golman, David Hagmann, and George Lowenstein, "Information avoidance," *Journal of Economic Literature*, Vol. 55 No. 1, (2017)

Eleonora Freddi, "Do people avoid morally relevant information? Evidence from the refugee crisis," *Review of Economics and Statistics*, Vol. 103 No. 4, (2021)

Emily Oster, Ira Shoulson, and E. Ray Dorsey, "Optimal Expectations and Limited Medical Testing: Evidence from Huntington Disease," *American Economic Review*, Vol. 103 No. 2, (2013)

Visual Evidence

Giulia Caprini, "Visual Bias," *Working Paper*, (2023)

Christina Korting, Carl Lieberman, Jordan Matsudaira, Zhuan Pei, Yi Shen, "Visual Inference and Graphical Representation in Regression Discontinuity Designs," *The Quarterly Journal of Economics*, Vol. 138 No. 3 (2023): 1977–2019

Political Beliefs and Polarization

Ceren Baysan "Persistent Polarizing Effects of Persuasion: Experimental Evidence from Turkey," *American Economic Review*, Vol. 112 No. 11 (2022): 3528-46.

Leonardo Bursztyn, Aakaash Rao, Christopher Roth, David Yanagizawa-Drott, "Opinions as Facts," *Review of Economic Studies*, Vol. 90 No. 4, (2023): 1832–1864

4. Comparing Information: the Blackwell Order

Theory Topics Covered: decision problems, value of sample information, value of perfect information, Blackwell's theorem on the comparison of experiments

(*) David Blackwell, "Comparison of Experiments," *Proceedings of the Second Berkeley Symposium on Mathematical Statistics and Probability*, (1951)

(*) David Blackwell, "Equivalent Comparison of Experiments," *Annals of Mathematical Statistics*, vol. 24 no. 2, (1953): 265-272

David Blackwell and M. A. Girshick, "Theory of Games and Statistical Decisions," *Wiley*, (1954)

(*) Henrique de Oliveira. "Blackwell's informativeness theorem using diagrams," *Games and Economic Behavior*, 109 (2018): 126-131

Mark Whitmeyer, "Bayes=Blackwell, almost," *Working Paper*, (2023)

Related Theory Topics Not Covered: comparison of experiments on restricted domain of decision problems, marginal value of information, repeated Blackwell experiments, other

Comparison of experiments on restricted domain of decision problems

Susan Athey and Jonathan Levin, "The value of information in monotone decision problems," *Research in Economics*, Vol. 72 No. 1, (2018)

Ian Jewitt, "Information order in decision and agency problems," *Working Paper*, (2007)

(+) Erich L. Lehmann, "Comparing location experiments," *Annals of Statistics*, Vol. 16 No. 2, (1988)

Nicola Persico, "Information acquisition in auctions," *Econometrica*, Vol. 68, No. 1, (2000)

John K. H. Quah and Bruno Strulovici, "Comparative statics, informativeness, and the interval dominance order," *Econometrica*, Vol. 77 No. 6, (2009)

Marginal Value of Information

Roy Radner and Joseph Stiglitz. "A nonconcavity in the value of information," *in 'Bayesian Models of Economic Theory,' Elsevier*, (1984)

Hector Chade and Edward Schlee, "Another look at the Radner-Stiglitz non-concavity in the value of information," *Journal of Economic Theory,* Vol. 107 No. 2, (2002)

Repeated Blackwell Experiments

Yaron Azrieli. “Comment on ‘The law of large demand for information’ ", *Econometrica*, Vol. 82 No. 1, (2014)

Eitan Greenshtein, “Comparison of sequential experiments,” *Annals of Statistics*, Vol. 24 No. 1, (1996)

Giuseppe Moscarini and Lones Smith. “The law of large demand for information.” *Econometrica*, Vol. 70 No. 6, (2002)

Xiaosheng Mu, Luciano Pomatto, Philipp Strack, and Omer Tamuz, “From Blackwell dominance in large samples to Rényi divergences and back again,” *Econometrica*, Vol. 89 No. 1, (2021)

Other

Tilman Börgers, Angel Hernando-Veciana, and Daniel Krähmer, “When are signals complements or substitutes?” *Journal of Economic Theory*, Vol. 148 No. 1, (2013)

Benjamin Brooks, Alexander Frankel, and Emir Kamenica, “Information hierarchies,” *Econometrica*, Vol. 90, No. 5, (2022)

5. Information Transmission and the Cost of Information

Theory Topics Covered: proper scoring rules, measures of uncertainty and information transmission, entropy

Proper Scoring Rules

Tillmann Gneiting and Adrian Raftery, “Strictly proper scoring rules, prediction, and estimation,” *Journal of the American Statistical Association*, Vol. 102, (2007)

Philip Dawid, “Coherent measures of discrepancy, uncertainty and dependence, with applications to Bayesian predictive experimental design,” *Working Paper*, (1998)

Phil Dawid and Monica Musio, “Theory and Applications of Proper Scoring Rules,” Metron, vol. 72, (2014): 169-173

Measures of Uncertainty and Information Transmission

(*) Alex Frankel and Emir Kamenica. “Quantifying information and uncertainty,” *American Economic Review*, Vol. 109 No. 10, (2019): 3650–3680

Entropy

János Aczél and Zoltán Daróczy, “On Measures of Information and Their Characterization,” *Academic Press Inc.*, (1975)

Thomas M. Cover and Joy A. Thomas, “Elements of Information Theory,” *John Wiley & Sons,* (2006)

Related Theory Topics Not Covered: rational inattention

Andrew Caplin, Mark Dean, and John Leahy, “Revealed Preference, Rational Inattention, and Costly Information Acquisition,” *American Economic Review*, Vol. 105 No. 7, (2015)

Andrew Caplin, Mark Dean, and John Leahy, “Rational Inattention, Optimal Consideration Sets and Stochastic Choice,” *Review of Economic Studies*, Vol. 86 No. 3, (2019)

Andrew Caplin, Mark Dean, and John Leahy, “Rationalizing Inattentive Behavior: Characterizing and Generalizing Shannon entropy,” *Journal of Political Economy*, Vol. 130 No. 6, (2022)

Tommaso Denti, “Posterior Separable Cost of Information,” *American Economic Review*, Vol. 112 No. 10, (2022)

Tommaso Denti, Massimo Marinacci, and Luigi Montrucchio, “A note on rational inattention and rate distortion theory,” *Decisions in Economics and Finance*, Vol. 43 No. 1, (2020): 75–89

Bartosz Maćkowiak, Filip Matejka, and Mirko Wiederholt, “Rational inattention: A review,” *Journal of Economic Literature*, Vol. 61 No. 1, (2023)

Filip Matejka and Alisdair McKay, “Rational Inattention to Discrete Choices: A New Foundation for the Multinomial Logit Model,” *American Economic Review*, Vol. 105 No. 1, (2015)

Christopher A. Sims, “Implications of Rational Inattention,” *Journal of Monetary Economics*, Vol. 50 No. 3, (2003)

Christopher A. Sims, “Rational Inattention and Monetary Economics,” in *Handbook of Monetary Economics*, Vol. 3, (2010)

Botond Koszegi and Filip Matejka. “Choice Simplification: A Theory of Mental Budgeting and Naïve Diversification,” *Quarterly Journal of Economics*, Vol. 135 No. 2, (2020): 1153–1207

Chad Fulton, “Choosing what to pay attention to,” *Theoretical Economics*, Vol. 17 No. 1, (2021)

6. Model Uncertainty and Misspecification

Theory Topics Covered: one-shot decisions under model misspecifications, meaningful information transmission

(*) Luca Braghieri, "Biased Decoding and the Foundations of Communication," *Working Paper*, (2023)

Mira Frick, Ryota Iijima, Yuhta Ishii, "Welfare Comparisons for Biased Learning," *Working Paper*, (2023)

Stephen Morris and Hyun Song Shin. "The Rationality and Efficacy of Decisions under Uncertainty and the Value of an Experiment." *Economic Theory*, Vol. 9, No. 2 (1997): 309–24

Related Theory Topics Not Covered: model uncertainty, learning with misspecified models

Model Uncertainty

Daron Acemoglu, Victor Chernozhukov, and Muhamet Yildiz, "Fragility of Asymptotic Agreement under Bayesian Learning," *Theoretical Economics*, Vol. 11 No. 1, (2015)

Learning with Mis-specified Models

J.Aislinn Bohren, "Informational herding with model misspecification," Journal of Economic Theory, Vol. 163, (2016)

J. Aislinn Bohren and Daniel N Hauser, "Learning with heterogeneous misspecified models: Characterization and robustness," *Econometrica*, Vol. 89 No. 6, (2021)

Ignacio Esponda, and Demian Pouzo, "Berk-Nash Equilibrium: A framework for modeling agents with misspecified models," *Econometrica*, Vol. 84 No. 3, (2016)

Ignacio Esponda, Demian Pouzo, and Yuichi Yamamoto "Asymptotic behavior of Bayesian learners with misspecified models," *Journal of Economic Theory*, Vol. 195, (2021)

Mira Frick, Ryota Iijima, and Yuhta Ishii, "Misinterpreting others and the fragility of social learning," *Econometrica*, Vol. 88 No. 6, (2020)

Mira Frick, Ryota Iijima, and Yuhta Ishii, "Belief converegence under misspecified learning: A martingale approach," *Review of Economic Studies*, Vol. 90 No. 2, (2023)

Drew Fudenberg, Giacomo Lanzani, and Philipp Strack, "Limit points of endogenous misspecified learning," *Econometrica*, Vol. 89 No. 3, (2021)

Drew Fudenberg, Giacomo Lanzani, and Philipp Strack, "Pathwise concentration bounds for Bayesian beliefs," *Theoretical Economics*, Vol. 18 No. 4, (2023)

Drew Fudenberg, Giacomo Lanzani, and Philipp Strack, "Selective memory equilibrium," *Journal of Political Economy*, forthcoming (2024)

Paul Heidhues, Botond Kószegi, and Philipp Strack, "Unrealistic expectations and misguided learning," *Econometrica*, Vol. 86 No. 4, (2018)

Giacomo Lanzani, "Dynamic concerns for misspecification," *Working Paper*, (2024)

7. Taking Stock and Empirics

Theory Topics Not Covered: non-instrumental value of beliefs

Non-instrumental Value of Beliefs

Roland Bénabou and Jean Tirole, "Identity, morals, and taboos: beliefs as assets," *Quarterly Journal of Economics*, Vol. 126 No. 2, (2011)

Roland Bénabou and Jean Tirole, "Mindful Economics: the production, consumption, and value of beliefs," *Journal of Economic Perspectives*, Vol. 30 No. 3, (2016)

Markus K. Brunnermeier and Jonathan A. Parker, "Optimal expectations," *American Economic Review,* Vol. 95 No. 4, (2005)

Andrew Caplin and John Leahy, "Psychological expected utility theory and anticipatory feelings," *Quarterly Journal of Economics*, Vol. 116 No. 1, (2001)

Jeffrey Ely, Alexander Frankel, and Emir Kamenica, "Suspense and surprise," *Journal of Political Economy,* Vol. 123 No. 1, (2015)

Empirical Topics Not Covered: mental models and misspecification

Mental Models & Misspecification

Peter Andre, Ingar Haaland, Christopher Roth, and Johannes Wohlfart, "Narratives about the macroeconomy," *Working Paper*, (2023)

Peter Andre, Christopher Roth, Carlo Pizzinelli, and Johannes Wohlfart, "Subjective models of the macroeconomy: evidence from experts and representative samples," *Review of Economic Studies*, Vol. 89 No. 6, (2022): 2958-2991

(*) Luca Braghieri, "Political Correctness, Social Image, and Information Transmission," *Working Paper*, 2021

Benjamin Enke, "What you see is all there is," *Quarterly Journal of Economics*, Vol. 135, No. 3, (2020)

Benjamin Enke and Florian Zimmermann, "Correlation neglect in belief formation," *Review of Economic Studies*, Vol. 86, No. 1, (2019)

Ignacio Esponda, Emanuel Vespa, and Sevgi Yuksel, “Mental Models and Learning: The Case of Base-Rate Neglect,” *American Economic Review*, forthcoming, (2024)

En Hua Hu, “Confidence in inference,” *Working Paper*, (2023)

Yihong Huang and Yuen Ho, “Breaking the Spiral of Silence,” *Working Paper*, (2023)

David Huffman, Collin Raymond, and Julia Shvets, "Persistent Overconfidence and Biased Memory: Evidence from Managers" *American Economic Review*, Vol. 112 No. 10, (2022): 3141-75

Melis Kartal and Jean-Robert Tyran, "Fake News, Voter Overconfidence, and the Quality of Democratic Choice." *American Economic Review*, Vol. 112 No. 10, (2022): 3367-97

8. The Market for News

Theory Topics Not Covered: demand for biased news

(+) Matthew Gentzkow, and Jesse M. Shapiro, “Media bias and reputation,” *Journal of Political Economy*, Vol. 114 No. 2, (2006)

(+) Sendhil Mullainathan and Andrei Shleifer, “The market for news,” *American Economic Review*, Vol. 95 No. 4, (2005)

(+) Wing Suen, “The self-perpetuation of biased beliefs,” *Economic Journal*, Vol. 114 No. 495, (2004)

Matthew Gentzkow, Jesse M. Shapiro, and Daniel F. Stone, “Chapter 14 - Media Bias in the Marketplace: Theory,” *Handbook of Media Economics*, *North-Holland,* (2015): 623-645

Empirical Topics Covered: the demand and supply of slanted news

(*) Luca Braghieri, Sarah Eichmeyer, Ro’ee Levy, Markus Möbius, Jacob Steinhardt, and Ruiqi Zhong, “The Slant of Online News,” *Working Paper*, (2023)

Felix Chopra, Ingar Haaland, and Christopher Roth, “The demand for news: accuracy concerns versus belief confirmation motives,” *Working Paper*, (2024)

Matthew Gentzkow, and Jesse M. Shapiro, “What drives media slant? Evidence from U.S. daily newspapers,” *Econometrica*, Vol. 78 No. 1, (2010)

Matthew Gentzkow, and Jesse M. Shapiro, “Ideological segregation online and offline,” *Quarterly Journal of Economics*, Vol. 126 No. 4, (2011)

Matthew Gentzkow, Jesse M. Shapiro, and Michael Sinkinson, “Competition and ideological diversity: historical evidence from U.S. newspapers,” *American Economic Review*, Vol. 104 No. 10, (2014)

Sandra González-Bailón et al., "Asymmetric ideological segregation in exposure to political news on Facebook," *Science*, Vol. 381 No. 6656, (2023)

Empirical Topics Not Covered: misperceptions about the politics, social media

Andrew Guess et al., "How do social media feed algorithms affect attitudes and behavior in an election campaign," *Science*, Vol. 381 No. 6656, (2023)

Andrew Guess et al., "Reshares on social media amplify political news but do not detectably affect beliefs or opinions," *Science*, Vol. 381 No. 6656, (2023)

Ro'ee Levy, "Social media, news consumption and polarization: evidence from a field experiment," *American Economic Review*, Vol. 111 No. 3, (2021)

Brendan Nyhan, "Facts and myths about misperceptions," *Journal of Economic Perspectives*, Vol. 34 No. 3, (2020)

Brendan Nyhan et al., "Like-minded sources on Facebook are prevalent but not polarizing," *Nature*, Vol. 620, (2023)

Big Theory Topics Omitted

Reputation, Social Learning, Experimentation, Strategic Communication