Course Description

Prerequisites

Admission to the polyvalent bachelor's program in psychology at the University of Tübingen.

Contents

After a general introduction to the Heuristics and Biases framework, we will focus on specific examples during the seminar, such as anchoring effects, wisdom of crowds, egocentric discounting, algorithm aversion/appreciation, hindsight bias, and confirmation bias. This list can also be adapted and expanded depending on the interests of the participants.

Literature

The list of topics, including literature for the presentations, will be announced at the beginning of the course.

Learning Outcomes

Students …

- will acquire detailed knowledge of selected topics in economic psychology.
- will be able to apply theories and findings from economic psychology research to situations in everyday work life and other economic contexts.
- can critically reflect on relevant literature and relate it to their knowledge.

Assessment

- Literature search and reading
- Group work and discussions
- Presentations
- Final report: Approx. 3-page, literature-based essay on a heuristic/bias of your choice

Grading Scheme

Points	Grade
> 95	1.0
90 – 94	1.3
85 – 89	1.7
80 – 84	2.0
75 – 79	2.3
70 – 74	2.7
65 – 69	3.0
60 – 64	3.3
55 – 59	3.7
50 – 54	4.0
< 50	Fail

Preliminary Schedule

Note that the following tentative schedule is subject to change based on the progress in class.

Date	Topic
16.10.2024	Introduction
23.10.2024	Module 1
30.10.2024	Module 2 + Special Guest Talk
06.11.2024	Module 3
13.11.2024	Module 4 + Wrap-Up

Preliminary Module Overview

Note that the following tentative module overview and associated reference list are subject to change based on the progress in class.

Introduction to Heuristics and Biases

- Prospect Theory (Kahneman & Tversky, 1979)
- Dual Processing (Kahneman, 2011), Including Critique (e.g., Fiedler & Hütter, 2014)
- Common Heuristics and Important Cognitive Biases

Module 1: Dependent Judgments

1.1. Anchoring

- Insufficient Adjustment (Tversky & Kahneman, 1974)
- Plausible Values (Epley & Gilovich, 2006)
- Bidirectional Adjustment (Röseler et al., 2023)

1.2. Advice Taking

- The Judge-Advisor System (Sniezek & Buckley, 1995)
- Distance Effects and Duality of Advice Taking (Schultze et al., 2015)
- Genuine Advice vs. Arbitrary Anchors (Hütter & Fiedler, 2019)

1.3. Hindsight Bias

- Hindsight vs. Foresight (Fischhoff, 1975)
- Adaptive Knowledge Updating (Hoffrage et al., 2000)
- Age & Initial Accuracy (Groß & Pachur, 2019)

1.4. Synthesis

- Common Framework and Reliability Comparisons (Röseler et al., 2024)

Module 2: Wisdom of Crowds

2.1. Aggregation Mechanisms

- The Averaging Principle (Galton, 1907)
- Group Size Effects (Hogarth, 1978)
- Aggregation (Mis-)Appreciation (Larrick & Soll, 2006)

2.2. Improvements

- Wisdom of the Inner Crowd (Herzog & Hertwig, 2009)
- Wisdom of Select Crowds (Mannes et al., 2014)
- Wisdom of Sequential Crowds (Mayer & Heck, 2024)

2.3. Synthesis: Special Guest Talk

- Boosting the Wisdom of Crowds Within a Single Judgment Problem (Palley & Satopää, 2023)

Module 3: Role of the Self

3.1. Egocentric Discounting

- Mere Ownership Effect (Beggan, 1992)
- Status quo (Baron & Ritov, 1994)
- Information Asymmetry (Yaniv & Kleinberger, 2000)

3.2. Confirmation Bias

- Imbalanced Search for Information (Wason, 1960)
- "Consider-the-Opposite" Interventions (Lord et al., 1984)
- Disfluency Interventions (Hernandez & Preston, 2013)

3.3. Availability Heuristic

- Availability and Illusory Correlations (Tversky & Kahneman, 1973, see also 1974)
- Availability vs. Accessibility (Schwarz et al., 1991)
- Availability vs. Affect (Pachur et al., 2012)

4.4. Synthesis

- Judgment Aggregation Including the Self (Soll & Mannes, 2011)

Module 4: Artificial Intelligence + Wrap-Up

4.1. Aversion vs. Appreciation

- Algorithm Aversion (Dietvorst et al., 2015)
- Algorithm Appreciation (Logg et al., 2019)
- Theory of Machine (Logg, 2022)

4.2. Explainable and Generative AI

- Artificial Cognition (Taylor & Taylor, 2021)
- Shared Human Biases (Binz & Schulz, 2023)
- Metacognitive Myopia (Scholten et al., 2024)

4.3. Synthesis

- Theory of Machine 2.0 (Rebholz, 2024)

4.4. Wrap-Up

- Beyond Heuristics and Biases (Gigerenzer, 1991)

References

Baron, J., & Ritov, I. (1994). Reference points and omission bias. *Organizational Behavior and Human Decision Processes*, *59*(3), 475–498. https://doi.org/10.1006/obhd.1994.1070

Beggan, J. K. (1992). On the social nature of nonsocial perception: The mere ownership effect. *Journal of Personality and Social Psychology*, *62*(2), 229–237. https://doi.org/10.1037/0022-3514.62.2.229

Binz, M., & Schulz, E. (2023). Using cognitive psychology to understand GPT-3. *Proceedings of the National Academy of Sciences*, *120*(6), e2218523120. https://doi.org/10.1073/pnas.2218523120

Dietvorst, B. J., Simmons, J. P., & Massey, C. (2015). Algorithm aversion: People erroneously avoid algorithms after seeing them err. *Journal of Experimental Psychology: General*, *144*(1), 114–126. https://doi.org/10.1037/xge0000033

Epley, N., & Gilovich, T. (2006). The anchoring-and-adjustment heuristic: Why the adjustments are insufficient. *Psychological Science*, *17*(4), 311–318. https://doi.org/10.1111/j.1467-9280.2006.01704.x

Fiedler, K., & Hütter, M. (2014). The limits of automaticity. In J. W. Sherman, B. Gawronski, & Y. Trope (Eds.), *Dual-process theories of the social mind* (pp. 497–513). The Guilford Press.

Fischhoff, B. (1975). Hindsight is not equal to foresight: The effect of outcome knowledge on judgment under uncertainty. *Journal of Experimental Psychology: Human Perception and Performance*, *1*(3), 288–299. https://doi.org/10.1037/0096-1523.1.3.288

Galton, F. (1907). Vox Populi. *Nature*, *75*(1949), 450–451. https://doi.org/10.1038/075450a0

Gigerenzer, G. (1991). How to make cognitive illusions disappear: Beyond "Heuristics and Biases." *European Review of Social Psychology*, *2*(1), 83–115. https://doi.org/10.1080/14792779143000033

Groß, J., & Pachur, T. (2019). Age differences in hindsight bias: A meta-analysis. *Psychology and Aging*, *34*(2), 294–310. https://doi.org/10.1037/pag0000329

Hernandez, I., & Preston, J. L. (2013). Disfluency disrupts the confirmation bias. *Journal of Experimental Social Psychology*, *49*(1), 178–182. https://doi.org/10.1016/j.jesp.2012.08.010

Herzog, S. M., & Hertwig, R. (2009). The wisdom of many in one mind: Improving individual judgments with dialectical bootstrapping. *Psychological Science*, *20*(2), 231–237. https://doi.org/10.1111/j.1467-9280.2009.02271.x

Hoffrage, U., Hertwig, R., & Gigerenzer, G. (2000). Hindsight bias: A by-product of knowledge updating? *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *26*(3), 566–581. https://doi.org/10.1037/0278-7393.26.3.566

Hogarth, R. M. (1978). A note on aggregating opinions. *Organizational Behavior and Human Performance*, *21*(1), 40–46. https://doi.org/10.1016/0030-5073(78)90037-5

Hütter, M., & Fiedler, K. (2019). Advice taking under uncertainty: The impact of genuine advice versus arbitrary anchors on judgment. *Journal of Experimental Social Psychology*, *85*, 103829. https://doi.org/10.1016/j.jesp.2019.103829

Kahneman, D. (2011). *Thinking, fast and slow*. Farrar, Straus and Giroux.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, *47*(2), 263–291. https://doi.org/10.2307/1914185

Larrick, R. P., & Soll, J. B. (2006). Intuitions about combining opinions: Misappreciation of the averaging principle. *Management Science*, *52*(1), 111–127. https://doi.org/10.1287/mnsc.1050.0459

Logg, J. M. (2022). The psychology of big data: Developing a "Theory of Machine" to examine perceptions of algorithms. In S. C. Matz (Ed.), *The psychology of technology: Social science research in the age of big data* (pp. 349–378). American Psychological Association. https://doi.org/10.1037/0000290-011

Logg, J. M., Minson, J. A., & Moore, D. A. (2019). Algorithm appreciation: People prefer algorithmic to human judgment. *Organizational Behavior and Human Decision Processes*, *151*, 90–103. https://doi.org/10.1016/j.obhdp.2018.12.005

Lord, C. G., Lepper, M. R., & Preston, E. (1984). Considering the opposite: A corrective strategy for social judgment. *Journal of Personality and Social Psychology*, *47*(6), 1231–1243. https://doi.org/10.1037/0022-3514.47.6.1231

Mannes, A. E., Soll, J. B., & Larrick, R. P. (2014). The wisdom of select crowds. *Journal of Personality and Social Psychology*, *107*(2), 276–299. https://doi.org/10.1037/a0036677

Mayer, M., & Heck, D. W. (2024). Sequential collaboration: The accuracy of dependent, incremental judgments. *Decision*, *11*(1), 212–237. https://doi.org/10.1037/dec0000193

Pachur, T., Hertwig, R., & Steinmann, F. (2012). How do people judge risks: Availability heuristic, affect heuristic, or both? *Journal of Experimental Psychology: Applied*, *18*(3), 314–330. https://doi.org/10.1037/a0028279

Palley, A. B., & Satopää, V. A. (2023). Boosting the Wisdom of Crowds Within a Single Judgment Problem: Weighted Averaging Based on Peer Predictions. *Management Science*, *69*(9), 5128–5146. https://doi.org/10.1287/mnsc.2022.4648

Rebholz, T. R. (2024). *Theory of Machine 2.0: Artificial versus artificial intelligence*. PsyArXiv. https://doi.org/10.31234/osf.io/ekz9a

Röseler, L., Groß, J., & Rebholz, T. R. (2024). *Starting points in numeric judgments: Comparison of anchoring, advice taking, and hindsight biases* [Manuscript in preparation]. Department of Psychology, University of Münster.

Röseler, L., Incerti, L., Rebholz, T. R., Seida, C., & Papenmeier, F. (2023). *Falsifying the insufficient adjustment model: No evidence for unidirectional adjustment from anchors*. PsyArXiv. https://doi.org/10.31234/osf.io/jztk2

Scholten, F., Rebholz, T. R., & Hütter, M. (2024). *Metacognitive myopia in large language models*. arXiv. https://doi.org/10.48550/arXiv.2408.05568

Schultze, T., Rakotoarisoa, A.-F., & Schulz-Hardt, S. (2015). Effects of distance between initial estimates and advice on advice utilization. *Judgment and Decision Making*, *10*(2), 144–171. https://doi.org/10.1017/S1930297500003922

Schwarz, N., Bless, H., Strack, F., Klumpp, G., Rittenauer-Schatka, H., & Simons, A. (1991). Ease of retrieval as information: Another look at the availability heuristic. *Journal of Personality and Social Psychology*, *61*(2), 195–202. https://doi.org/10.1037/0022-3514.61.2.195

Sniezek, J. A., & Buckley, T. (1995). Cueing and cognitive conflict in judge-advisor decision making. *Organizational Behavior and Human Decision Processes*, *62*(2), 159–174. https://doi.org/10.1006/obhd.1995.1040

Soll, J. B., & Mannes, A. E. (2011). Judgmental aggregation strategies depend on whether the self is involved. *International Journal of Forecasting*, *27*(1), 81–102. https://doi.org/10.1016/j.ijforecast.2010.05.003

Taylor, J. E. T., & Taylor, G. W. (2021). Artificial cognition: How experimental psychology can help generate explainable artificial intelligence. *Psychonomic Bulletin & Review*, *28*(2), 454–475. https://doi.org/10.3758/s13423-020-01825-5

Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology*, *5*(2), 207–232. https://doi.org/10.1016/0010-0285(73)90033-9

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, *185*(4157), 1124–1131. https://doi.org/10.1126/science.185.4157.1124

Wason, P. C. (1960). On the failure to eliminate hypotheses in a conceptual task. *Quarterly Journal of Experimental Psychology*, *12*(3), 129–140. https://doi.org/10.1080/17470216008416717

Yaniv, I., & Kleinberger, E. (2000). Advice taking in decision making: Egocentric discounting and reputation formation. *Organizational Behavior and Human Decision Processes*, *83*(2), 260–281. https://doi.org/10.1006/obhd.2000.2909