



Judgment and Decision Making under Uncertainty

February 2012

Psychology

Section: Applied Social Cognition

Syllabus

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Overview

Think for a moment about all of the relevant factors involved in judgment and decision making. Think about daily mundane judgments such as deciding what to have for breakfast or what to wear; or the likelihood of perhaps more important issues such as a current relationship leading to marriage or a sports team winning a game; or even some of the appraisals and decisions that has immersed the western world in the current status of economic and financial crisis.

These mental experiences are usually enough to make us aware of the simple fact that the events of the world are too complex to predict accurately, and yet that does not stop us from judging and deciding most of the time with ease and confidence.

This course provides an overview of the topics in judgment and decision making under conditions of uncertainty. I am particularly interested in examining with you the scientific study of mental processes underlying human judgments and decisions from seemingly simple processes such as memory, knowledge, reasoning, as well as their interplay with emotions and human motives. At the end of the day, the course will endow you with the cognitive tools to conduct a critical analysis of the issues raised above and other related questions.

Objectives

By the end of this course you should be able to:

1. Demonstrate deep understanding of the psychological processes involved in judgment and decision making and understand when and why those processes lead to (more or less) accurate and inaccurate judgments.

I will evaluate your progress toward this goal mainly based on the quality of your performance on the following course requirements: the integration paper and the research report (Discussion section).

2. Compare and contrast different theories that explain how people perceive, attend to, and process information to make judgments and decisions.

I will evaluate your progress toward this goal mainly based on the quality of your performance on the following course requirements: the take-home questions and research report (Introduction section).

3. Assess the quality of empirical research supporting the different theories and discuss its limitations.

I will evaluate your progress toward this goal mainly based on the quality of your performance on the following course requirements: the papers presentations assignments and take home questions.

Class organization

Classes will be divided into two parts of about 1 hour and 50 minutes each. The first part concerns the presentation and discussion of previously assigned readings. Each readings will be presented by a group of students and discussed with the rest of the class under the instructor's supervision (please see *Papers presentation* in the *Course Requirements* Section). After a 20 minutes recess, the second part will typically be a lecture during which the instructor explores the theoretical and practical implications of central issues raised by the assigned papers, putting them in a broader conceptual context.

Readings

There is no required text book. Assigned *reading* (see the *Class Schedule* attached to this syllabus) will cover the course's main topics (to have online access to the readings via Dropbox please send me an email message and I will give you online access to the *course papers folder*).

However, two books on Judgment and decision making work well as a first approach to many of the topics we will be discussing in the course:

The psychology of judgment and decision making by Scott Plous (1993). It's a concise, extremely well written book that works well as a first introduction to Judgment and decision making.

The Blackwell Handbook of Judgment and Decision Making (2004), edited by Derek Koehler and Nigel Harvey. It is the first Judgment and decision making book that presents the state of the art in theory and research (until 2004) in an accessible but rigorous way. You will be referred to some chapters from this handbook as *further recommendations*.

Please note, these references do not, ever, replace required readings. They are just complementary reading suggestions.

Course Requirements

Papers Presentation (group assignment – max. 3 students per group)

Every week a group of students will summarize and present to the class the main ideas of the selected readings for that week. Regardless of the *media* you decide to use (e.g., PowerPoint; Videos; hand-outs, class-room illustrations), be sure to cover the following points in your presentation: a) clearly express the problems and initial hypotheses motivating the work you are presenting; b) describe the essential aspects of the experimental research (avoiding accessory or trivial information); c) explain why the research design is able to answer the problems that motivated the research; d) describe and explain the main results; e) discuss how and to what extent the results shed light into the problems under study; f) comment on the limitations of the presented research.

The assigned readings for each presentation and their due dates are provided in the schedule attached to this syllabus (as well as some further recommended readings when you feel like exploring a theme further). Your first step is to form a group with two other students and choose your three preferred readings for presentation by the end of the first week of classes.

Email me your choices and I will do my best to come up with a presentation calendar that might not be an optimal fit but will be *satisficing* (curious about this concept? see point 2 of the course topics).

Take-home questions (Individual assignments)

Every week, before you leave class, I will present you with a question related to the themes lectured in class for you to respond in 10 lines or less (lettering Times New Roman; size 12; left and right margins 3,17). These assignments are to be handed in one week later at the beginning of class. These questions are intended to keep you up to date in relation to the course material. They are not particularly hard questions; but they do assume that you will be able to allocate some out-of-class hours to this course. Keeping up with your reading assignments is half way through to answer the take-home questions with ease.

Integration paper (individual assignments)

During the second part of the semester I will present you with an intriguing question for you to reflect upon and respond to in an integration paper (up to 5000 characters including spaces, excluding references). This question usually point to an interesting paradox, apparent contradiction or unresolved matter in the literature of judgment and decision making that we will discuss during classes. I am eager to know your informed perspective on this. There are no straightforward right or wrong answers so don't lose your time looking for one in assigned readings. Instead, you should take these questions as an opportunity to develop a) a deep understanding of theory and research on the issues involved; b) your ability to integrate and communicate abilities in an intelligible and coherent way; and c) your intellectual creativity. It is hard work but I will be available to give you detailed feedback on a previous version of your response one week before you hand in your final paper (see Assignments due dates in the attached class schedule).

Research report (group assignment – max 3 students per group)

Research has repeatedly demonstrated that one of the best ways to learn is to actively engage in the domain that you are studying. As such, you are welcome to participate in a research project which will be developed during the semester and which includes class discussion of the central theme of the project and main hypothesis under scrutiny, pre-test of research material (whenever needed), implementation of one experiment in the experimental psychology lab, followed by data collection and data analysis. The results from the lab experiment will then be discussed in class. Regardless of your level of involvement (I understand that not all of you may be equally involved in the different phases of the lab work), the end goal of all this is for you to write a research report in collaboration with your colleagues (groups of 3 students). The research report should have the structure of an experimental short paper including a theoretical review of the scientific literature relevant for the project research, ending with a clear statement of the hypothesis under study, a methods section, followed by description, analysis and discussion of the results.

“Muddiest points” questions (individual assignment)

In the end of theoretical lectures you will be asked to write down what was “the muddiest point in today's class”; and if possible to add what the teacher could have done to make it clearer. Think of this as an opportunity to give me important feedback on the extent to which I am reaching my students and what things you and I can improve together. This “muddiest point” questions will not be graded but they are an important aspect of this course evaluation. Your questions will *help me help you*, for the best of everyone!

Grading Policy

Possible points: 200		Point value		% of grade
Assessment item	Assessment Frequency	Each	Total	
Take-home questions	12 (1 each week)	4	48	24
Papers presentation	1		42	21
Integration paper	1		50	25
Research report	1		60	30

Final grade equals your points divided by 10 and rounded to the closest integer.

Make up policy and penalties

If you are not satisfied with your paper presentation grade you can always try to improve it. You can prepare an improved version of your presentation in PowerPoint (or a similar medium) and send it to me. I will then set up a time to discuss it with you (ideally you will work as a group but if the other members of your group are not interested in trying to improve their grades you can do this individually).

If you miss a class you can send me your take-home question assignment by email until the end of the day.

The Integration paper and Research report due dates are defined in the assignments due dates (see the attached schedule). Integration papers and Research reports will be accepted until a maximum of 5 days of delay but there will be a penalty of 10 points for each day of delay.

Class attendance

Attendance, by itself, will not be considered as part of your grade. However, attendance will benefit you in several ways. Firstly, class discussion will present information in ways that are not covered in the assigned readings but it will appear in take-home questions and it will be relevant for your research report. Secondly, your understanding of the course material is enhanced by exposure to the same material (i.e., in class and in the text) from different perspectives. Thirdly, and regardless of the above, the current policy of our department establishes that a minimum of 2/3 of the classes must be attended in order for a student to pass.

If you must be absent from class for an emergency (e.g., serious illness) please contact me as soon as possible since absences excused in this manner will not be considered for the 2/3 of attendances rule. However be prepared to formally justify your absence (e.g., medical report).

Exceptional circumstances involving class requirements and attendance

The University of Lisbon established specific rules concerning attendance to classes and course requirements (e.g., assignment due dates) for students considered being in exceptional circumstances (working students, high competition athletes, students in the Army, students with young children, students with special educational needs). Such rules will, of course, apply to this course. You are advised to check with the University services for any doubts concerning your eligibility to one of the above "exceptional circumstances".

Cheating and plagiarism

Cheating and plagiarism are serious forms of academic misconduct and are strictly prohibited.

Plagiarism is defined as using another person's words, phrases, or ideas as your own without giving that person credit. Cheating includes (but is not limited to):

a) copying another student's response, b) falsely signing another student's name, c) having another student write a paper for you.

Plagiarism or Cheating will result in a failing grade in the course and a referral to the Dean of Students' Office for further action. For those who are still not sure what constitutes academic misconduct, please contact me.

Overview of course main topics

1. Inferential social judgment and Decision Making models

1.1. Summary of the inductive judgment research before Tversky and Kahneman: formal models of decision making.

1.2. The *Bounded Rationality* approach: a first answer to the limitations of the decision making models

2. The research in Heuristics and decision making developed from the initial contribution of Tversky and Kahneman

2.1. The research program on Heuristics and biases initiated by Tversky and Kahneman: a new approach to judgment under uncertainty

2.2. Judgmental Heuristics: structure and function

2.3. Recent developments of the Heuristics and biases research program

3. Alternative and complementary approaches to the initial Heuristics

3.1. Human statistical intuition versus heuristic judgment: Conditions of incidence of one and the other

3.2. On The illusion of some heuristics

3.3. Simple and smart heuristics

3.4. Individual differences in judgment under uncertainty

4. New perspectives on inferential reasoning.

4.1. Computational models: for an integrated explanation of heuristic judgment.

4.2. Dual process approaches of judgment under uncertainty: integrating heuristics with rule-based judgment under uncertainty

5. Implications and applications of judgment and decision making research

6. Research project

6.1 Presentation, organization and development of the research

6.2. Presentation and discussion of the results; preparation of the research report.

Class Schedule

Classes include the presentation and discussion of reading assignments by one group of students and lectures on the class topics by the instructor

Tentative Dates	Class topic	<p><i>Assigned readings</i> correspond to papers for weekly paper presentations.</p> <p><i>Further recommendations</i> correspond to papers that will be referred to and discussed during the lectures (in addition to the assigned readings). They easily allow you to further explore a given class topic.</p>
Week 1 Feb 22	Introduction and Syllabus presentation	No assigned readings
Week 2 Feb 29	1.1. Summary of the inductive judgment research before Tversky and Kahneman	<p><i>Assigned readings</i></p> <p>Peterson, C. R., & Beach, L. R. (1967). Man as an intuitive statistician. <i>Psychological Bulletin</i>, 68, 29-46.</p> <p>Edwards, W. (1982). Conservatism in human information processing. In D. Kahneman, P. Slovic, & A. Tversky (Eds.), <i>Judgment under uncertainty: Heuristics and biases</i> (p. 359-369). Cambridge: Cambridge University Press. (Excerpts from a chapter in B. Kleinmuntz (Ed.), <i>Formal representation of human judgment</i> (p. 17-52), 1968. New York: Wiley.)</p> <p><i>Further recommendations</i></p> <p>Becker, G. M., & McClintock, C., G. (1967). Value: behavioral decision theory. <i>Annual Review of Psychology</i>. 18, 239-286.</p> <p>Cohen, J. (1960). <i>Chance, Skill and Luck: The Psychology of Guessing and Gambling</i>. Baltimore.</p>
Week 3 March 7	1.2. The Bounded Rationality approach	<p><i>Assigned readings</i></p> <p>Simon, H. A. (1981). <i>As ciências do artificial</i> (p. 59-102).Coimbra: Arménio Amado Editor</p> <p>Simon, H. A. (1989) <i>A razão nas coisas humanas</i> (p. 11-48). Lisboa, Gradiva.</p> <p><i>Further recommendations</i></p> <p>Over, D. (2004). Rationality and the Normative/Descriptive Distinction. In D. Koehler & N. Harvey (Eds.), <i>Blackwell Handbook of Judgment and Decision Making</i> (pp.3-18). Oxford, UK: Blackwell Publishing.</p>

		<p>Selten, R. (2001). What is bounded rationality? In G., Gigerenzer & R. Selten (Eds.) <i>Bounded Rationality: The Adaptive Toolbox</i> (p. 13-36). MIT Press: Cambridge, MA</p>
<p>Week 4 March 14</p>	<p>2.1. The research program on Heuristics and biases</p>	<p><i>Assigned readings</i></p> <p>Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. <i>Science</i>, 185, 1124–1131</p> <p>Kahneman, D., & Tversky, A. (1973). On the psychology of prediction. <i>Psychological Review</i>, 80, 237-251.</p> <p><i>Further recommendations</i></p> <p>Griffin, D., Gonzalez, R., & Varey, C. (2001). The heuristics and biases approach to judgment under uncertainty. In A. Tesser & N. Schwarz (Eds.), <i>Blackwell handbook of social psychology: Intraindividual processes</i> (Vol. 1, p. 207–235). London: Blackwell.</p> <p>Weber, E., & Johnson, E. (2009). Mindful judgment and decision making. <i>Annual Review of Psychology</i>, 60, 53-85.</p>
<p>Week 5 March 21</p>	<p>2.2. Judgmental Heuristics: structure and function</p>	<p><i>Assigned readings</i></p> <p>Kahnemann, D. & Tversky, A. (1982). Variants of uncertainty. In D. Kahneman, P. Slovic & A. Tversky (eds.). <i>Judgment under uncertainty: Heuristics and biases</i>. Cambridge: Cambridge University Press. 509-520.</p> <p>Tversky, A. & Kahneman, D. (1983). Extension versus intuitive reasoning: The conjunction fallacy in probability judgment. <i>Psychological Review</i>, 90, 293–315.</p> <p><i>Further recommendations</i></p> <p>Lagnado, D. & Sloman, S.A., (2004). Inside and outside probability judgment. D. J. Koehler and N. Harvey (Eds.) <i>Blackwell Handbook of Judgment and Decision Making</i>, (pp. 157-176). Oxford, UK: Blackwell Publishing.</p> <p>Sherman, S. J., & Corty, E. (1984). Cognitive heuristics. In R. S. Wyer & T. K. Srull (Eds.), <i>Handbook of social cognition</i> (Vol. 1, pp. 189–286). Mahwah, NJ: Erlbaum.</p>
<p>Week 6 March 28</p>	<p>2.3. Recent developments of the Heuristics and biases research program</p>	<p><i>Assigned readings</i></p> <p>Pham, Michel Tuan and Tamar Avnet. (2009). “Contingent Reliance on the Affect Heuristic as a Function of Regulatory Focus,” <i>Organizational Behavior and Human Decision Processes</i>, 108, 267-278.</p> <p>Dunn, E. W., & Ashton-James, C. (2008). On emotional innumeracy: Predicted and actual affective responses to grand-scale tragedies. <i>Journal of Experimental Social Psychology</i>, 44, 692–698.</p>

		<p><i>Further recommendations</i></p> <p>Slovic, P., Finucane, M., Peters, E., & MacGregor, D. G. (2002). The affect heuristic. In T. Gilovich, D. Griffin, & D. Kahneman (Eds.), <i>Heuristics and biases: The psychology of intuitive judgment</i> (pp. 397–420). New York: Cambridge University Press.</p> <p>Kahneman, D., & Frederick, S. (2002). Representativeness revisited: Attribute substitution in intuitive judgment. In T. Gilovich, D. Griffin, & D. Kahneman (Eds.), <i>Heuristics and biases: The psychology of intuitive judgment</i> (pp. 49–81). New York: Cambridge University Press.</p>
<p>Week 7 April 4</p>	<p>3.1. Human statistical intuition versus heuristic judgment: Conditions of incidence of one and the other</p>	<p><i>Assigned readings</i></p> <p>Nisbett, R. E., Krantz, D. H. Jepson, S. D., & Kunda, Z. (1983) The use of statistical heuristics in everyday reasoning. <i>Psychological Review</i>, 90, 339-363.</p> <p>Ferreira, M. B., & Garcia-Marques, L. (2003). O papel do reconhecimento do acaso no raciocínio indutivo. The role of perception of randomness on inductive reasoning. <i>Análise Psicológica</i>, 3, 353–374.</p> <p><i>Further recommendations</i></p> <p>Hogarth, R. M. (2010). Intuition: A challenge for psychological research on decision making. <i>Psychological Inquiry</i>, 21, 338-353.</p> <p>Oppenheimer, D. M. (2008). The secret life of fluency. <i>Trends in Cognitive Sciences</i>, 14, 237-241</p>
<p>Week 8 April 11</p>	<p>3.2. On The illusion of some heuristics</p>	<p><i>Assigned readings</i></p> <p>Gigerenzer, G. (1991). How to make cognitive illusions disappear: Beyond “heuristics and biases”. In W. Stroebe & M. Hewstone (Eds.), <i>European review of social psychology</i> (Vol. 2, pp. 83–115). Chichester, England: Wiley.</p> <p>Kahneman, D., & Tversky, A. (1996). On the reality of cognitive illusions. <i>Psychological Review</i>, 103, 582-591.</p> <p><i>Further recommendations</i></p> <p>Hogarth, R. M. (1981). Beyond discrete biases: Functional and dysfunctional aspects of judgmental heuristics. <i>Psychological Bulletin</i>, 90, 197-217.</p> <p>Gigerenzer, G. (2008). Why heuristics work. <i>Perspectives on Psychological Science</i>, 3, 20-29.</p>
<p>Week 9</p>	<p>3.3. Simple and smart heuristics</p>	<p><i>Assigned readings</i></p> <p>Gigerenzer, G., & Goldstein, D. G. (1996). Reasoning the fast and frugal way: Models of bounded rationality. <i>Psychological</i></p>

<p>April 18</p>		<p><i>Review, 103, 650–669.</i></p> <p>Dougherty, M. R., Franco-Watkins, A., & Thomas, R. P. (2008). The psychological plausibility of fast and frugal heuristics. <i>Psychological Review, 115</i>, 199 - 211.</p> <p><i>Further recommendations</i></p> <p>Newell, B. R., & Fernandez, D. (2006). On the binary quality of recognition and the inconsequentiality of further knowledge: Two critical tests of the recognition heuristic. <i>Journal of Behavioral Decision Making, 19</i>, 333–346.</p> <p>Hogarth, R. M. (in press). When simple is hard to accept. In P. M. Todd, G. Gigerenzer, & The ABC Research Group (Eds.), <i>Ecological rationality: Intelligence in the world</i>. Oxford: Oxford University Press.</p>
<p>April 25</p>	<p>No classes</p>	<p>National holiday – no assigned readings</p>
<p>Week 10 May 2</p>	<p>3.4. Individual differences in judgment under uncertainty</p>	<p><i>Assigned readings</i></p> <p>Stanovich, K. E., & West, R. F. (1998). Individual differences in rational thought. <i>Journal of Experimental Psychology: General, 127</i>, 161–188.</p> <p>Stanovich, K. E., & West, R. F. (2008). On the relative independence of thinking biases and cognitive ability. <i>Journal of Personality and Social Psychology, 94</i>, 672-95.</p> <p><i>Further recommendations</i></p> <p>Larrick, R. P., Nisbett, R. E., & Morgan, J. N. (1993). Who uses the cost-benefit rules of choice? Implications for the normative status of microeconomic theory. <i>Organizational Behavior and Human Decision Processes, 56</i>, 331-347.</p> <p>Stanovich, K. E., West, R. F., & Toplak, M. E. (2011). Individual differences as essential components of heuristics and biases research. In K. Manktelow, D. Over, & S. Elqayam (Eds.), <i>The science of reason: A festschrift for Jonathan St. B. T. Evans</i> (pp. 335-396). New York: Psychology Press.</p>
<p>Week 11 May 9</p>	<p>Computational models: for an integrated explanation of heuristic judgment</p>	<p><i>Assigned readings</i></p> <p>Dougherty, M. R. P., Gettys, C. F., & Ogden, E. E. (1999). MINERVA-DM: A memory processes model for judgments of likelihood. <i>Psychological Review, 106</i>, 180-209.</p> <p><i>Further recommendations</i></p>

		<p>Busemeyer, J. R. & Johnson, J. G. (2004). Computational models of decision making. In D. Koehler & N. Harvey (Eds.), <i>Blackwell Handbook of Judgment and Decision Making</i> (pp. 133-154). Oxford, UK: Blackwell Publishing.</p> <p>Thomas, R., Dougherty, M. R., Sprenger, A. M., & Harbison, J. I. (2008). Diagnostic hypothesis generation and human judgment. <i>Psychological Review</i>, <i>115</i>, 155–185.</p>
<p>Week 12 May 16</p>	<p>Dual process approaches of judgment under uncertainty</p>	<p><i>Assigned readings</i></p> <p>Ferreira, M. B., Garcia-Marques, L., Sherman, S. J., & Sherman, J. (2006). A dual-process approach to judgment under uncertainty. <i>Journal of Personality and Social Psychology</i>, <i>91</i>, 797-813.</p> <p><i>Further recommendations</i></p> <p>Alter, A. L., Oppenheimer, D. M., Epley, N., Eyre, R. N. (2007). Overcoming intuition: Metacognitive difficulty activates analytic reasoning. <i>Journal of Experimental Psychology: General</i>, <i>136</i>, 569-576.</p> <p>Evans, J. (2003). In two minds: Dual-process accounts of reasoning. <i>Trends in Cognitive Sciences</i>, <i>7</i>, 454-459.</p>
<p>Week 13 May 23</p>	<p>Implications and applications of judgment and decision making research</p>	<p><i>Assigned readings</i></p> <p>Pidgeon, N.F. and Gregory, R. (2004) Judgment, decision making and public policy. In D. Koehler and N. Harvey (eds.) <i>Blackwell Handbook of Judgment and Decision Making</i> (pp. 604-623). Oxford, UK: Blackwell Publishing.</p> <p>Ariely, D., Norton. M. I. (2011). From thinking too little to thinking too much: a continuum of decision making. <i>Interdisciplinary Reviews: Cognitive Science</i>, <i>2</i>, 39–46</p> <p><i>Further recommendations</i></p> <p>Chapman, G.B. (2004). The psychology of medical decision making. In D.J. Koehler and N. Harvey (Eds.) <i>Blackwell Handbook of Judgment and Decision Making</i> (pp. 585-603). Oxford, UK: Blackwell Publishing.</p> <p>Rachlinski, J. J. (2004). Heuristics, biases, and governance. In D. J. Koehler & N. Harvey (Eds.), <i>The Blackwell handbook of judgment and decision making</i> (pp. 567-584). Oxford, UK: Blackwell Publishing.</p> <p>Bazerman, M. H., and D. Moore (2008). <i>Judgment in managerial decision making</i>, 7th ed. New York: John Wiley & Sons.</p>

Week 14 June 30	Research project	No reading assignments Presentation and discussion of experimental results; clearing up doubts concerning the research report (introduction and methods)
Week 15 June 6	Research Project	No reading assignments Clearing up doubts concerning the research report (Discussion of results and general discussion)

Assignments due dates

From Week 2 (February 29) to Week 13 (May 23)	Paper presentations and take home questions assignments are due weekly starting in the second week of class and for the following 11 weeks.
Week 7 (April 4)	Release of question for integration paper
Week 10 (May 2)	First version of integration paper is due for feedback (optional)
Week 11 (May 9)	Feedback on first version of integration paper (feedback will be sent by email to the students who requested it)
Week 12 (May 16)	Integration paper due
June 20 (1 st evaluation period)	Research report due (1 st chance)
July 10 (2 nd evaluation period)	Research report due (2 nd chance) (If not handed in the first date or if you are not satisfied with your grade and want to submit an improved version for evaluation)

