Written Exam for the M.Sc. in Economics summer 2016

The Psychology of Choice
-
Experimental Theory and Methods

Final Exam/ Elective Course/ Master's Course

June 8, 2016

(3-hour closed book exam)

Please note that the language used in your exam paper must correspond to the language of the title for which you registered during exam registration. I.e. if you registered for the English title of the course, you must write your exam paper in English. Likewise, if you registered for the Danish title of the course or if you registered for the English title that was followed by "eksamen på dansk" in brackets, you must write your exam paper in Danish.

This exam question consists of 3 pages in total including this page.

(1) Attention

During the course we talked about attention and working memory. Especially, we talked about there being competition for limited cognitive resources and that this influences our choices.

a. Please explain the behavioral characteristics of this competition and how it relates to bottom-up and top-down biases.

   Points that should be included in the answer:
   See page 199 and conclusion of "*Desimone and Duncan (1995) "Neural Mechanisms of Selective Visual Attention, Annual Review of Neuroscience, 18, 193–222,"* and lecture "3b: Attention" slide 28-40.

b. In the article,

   Desimone and Duncan (1995) "Neural Mechanisms of Selective Visual Attention", Annual Review of Neuroscience, 18, 193–222,

   the authors outline the neurobiological limitations that make competition necessary. Please explain these limitations.

   Points that should be included in the answer:
   See page 195-198 of "*Desimone and Duncan (1995) "Neural Mechanisms of Selective Visual Attention, Annual Review of Neuroscience, 18, 193–222,"* and lecture "3b: Attention" slide 28-40.

c. Once the competition has ended, available information is stored in the working memory.

   Luck and Vogel (1997) "The Capacity of Visual Working Memory for Features and Conjunctions", Nature, 390(6657), 279–281,

   established the properties of this storage. Please describe these properties.

   Points that should be included in the answer:
   Last two paragraphs of *Luck and Vogel (1997) "The Capacity of Visual Working Memory for Features and Conjunctions", Nature, 390(6657), 279–281,* and lecture "3b: Attention" slide 6-12.

(2) Ref. Dependence, Framing and Loss Aversion

We also talked about framing effects—the fact that people are remarkably susceptible to the manner in which options are presented. Especially, we talked about framing of choices (or acts), framing of outcomes, and framing of probabilities (or contingencies).

a. Please describe each of the framing effects with a focus on the assumption of rational choice they violate.

   Points that should be included in the answer:
   See page 454-457 of *Tversky, A. and Kahneman, D. (1981) "The Framing of Decisions and the Psychology of Choice", Science, 211(4481), 453-458,"* and lecture "5: Ref. Dependence, Framing and Loss Aversion".

b. The framing of outcomes is the fundamental idea behind prospect theory. Please describe prospect theory's value function and discuss how it relates to framing.

   Points that should be included in the answer:
   See page 453-454 and 456-457 of *Tversky, A. and Kahneman, D. (1981) "The Framing of Decisions and the Psychology of Choice", Science, 211(4481), 453-458,"* and lecture "6: Ref. Dependence, Framing and Loss Aversion" slide 11-12.

c. In the article,

   De Martino, Kumara, Seymour and Dolan (2006) "Framing, Biases and Rational Decision-Making in the Human Brain", Science, 313 ,684–687,

   the authors study the neurobiological basis of framing. Please discuss their experimental design and results, with a special focus on the key role of the amygdala.

   Points that should be included in the answer:
   See page 684-687 of *De Martino, Kumara, Seymour and Dolan (2006) "Framing, Biases and Rational Decision-Making in the Human Brain", Science, 313 ,684–687,"* and lecture "5: Ref. Dependence, Framing and Loss Aversion" slide 26-31.

(3) Anchoring and Heuristics

During the course we talked about different heuristics (rules of thumb) that people use to evaluate the likelihood of uncertain events or uncertain quantities:

a. Please define these heuristics as clearly as possible.

   Points that should be included in this answer:
   See lectures slides and mandatory readings connected with lectures "9: Anchoring" and "10: Availability and Representativeness". As a start the answer should explain what the heuristics are and what they are used for, e.g. the intuitive evaluations of 'uncertainties' or 'uncertain values'. The anchoring, availability and representativeness heuristics are all three intuitive methods to evaluate the uncertainties that our decision environment entails. They are good because they

reduce complexity but they are bad – at the same time - because they lead to biases in our judgments. In defining these intuitive mechanisms – rules of thumb – it should become clear, what they are and where their similarities and differences lie.

b. What is the conjunction fallacy and why might the use of the representativeness heuristic lead to it.

   One way to answer this question is by example:
   We used the Linda example in class and talked about the conjunction rule/fallacy on slide 14-15 of lecture "10: Availability and Representativeness". The answer should explain why judging by representativeness might lead to the conjunction fallacy. More specifically it should be explained what the conjunction fallacy is and why judging by representativeness implies that we might make these falls judgments.

(4) Overconfidence

We also talked about overconfidence. Please explain why the authors of the article,

Glaser, Langer and Weber (2013) "True Overconfidence in Interval Estimates: Evidence Based On a New Measure of Miscalibration", Journal of Behavioral Decision Making, 26(5), 405–417,

call their measure of overconfidence a measure of 'true overconfidence'?

Points that should be included in this answer:
See page 406 of *Glaser, Langer and Weber (2013) "True Overconfidence in Interval Estimates: Evidence Based On a New Measure of Miscalibration", Journal of Behavioral Decision Making, 26(5), 405–417,"* as well as the subsection of their paper called 'Forecasting of artificially generated charts by confidence intervals: introducing a new measure of overconfidence' which starts on page 408.