Psychology 512. The Science of Decision-Making

Instructor: Mauricio Delgado
Course Information: Smith 371A, Wed: 9:00-11:50
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Course Description: An introduction to behavioral, psychological and neural mechanisms underlying decision-making and decision theory. The class is organized into four basic sections covering the integration of ideas from psychology, neuroscience and economics that inspire research in the new disciplines of neuroeconomics and social neuroscience.

Part I – Value in the brain: How does the brain compute value? How do we develop preferences?

Part II – Decision-making theory and representation in the brain: What theories drive new interdisciplinary research in the field of neuroeconomics? (e.g., are we susceptible to the “framing” of particular decisions?)

Part III – Social influences on decision-making: How are reputations acquired and trusting bonds formed? Does the perception of unfairness lead to aggressive decisions (e.g., revenge)?

Part IV – When decision-making goes awry: How is value computed in the face of potentially harmful situations (e.g., addiction)? Why are adolescents more inclined to behave in a risky manner?

Course Requirements (TBD):

Special Note for Ph.D. students from Rutgers Business School:

This syllabus is from a version of this course offered to psychology and neuroscience students in 2008. It is an example of the general structure of the course objectives. The syllabus for 2011 will feature more decision theory and focus on psychological (e.g., emotional, social) influences on decision-making. Neural information will be used to complement the psychological theories and evidence presented, particularly when neural data is influential in informing decision-making (e.g., Somatic Marker Hypothesis posited by Antonio Damasio). Finally, we will discuss how (or if) psychology/neuroscience can inform economic theory and the future of this interdisciplinary venture.
Course Schedule:

I- Value in the Brain

23 Jan – Introduction

30 Jan – Organization of the Nervous System/Reward Systems

A- Background

B- Neuroscience of reward systems

6 Feb – Rewards, learning and choice behavior

A- Rewards

B- Rewards & Learning
- Niv & Schoenbaum (draft) Dialogues on prediction errors.

C-Learning & Simple Choices

13 Feb – Beyond simple choices: Preferences & Discounting

A- Preferences
- "BrainScam" editorial *Nature Neuroscience*

**B- Preference & choice**

**C-Discounting**

**II- Decision-Making Theory & Representation in the Brain**

**20 Feb – Somatic markers**

**A- Pro:**

**B- Con:**

**27 Feb – Rational Choice Theory, Prospect Theory & Framing of Decisions**

**A- Theory**
- Chapter 1 - Kahneman & Tversky (2000). *Choices, values and frames.*
- Chapter 8 - Kahneman & Tversky (2000). *Choices, values and frames.*
- Chapter 12- Kahneman & Tversky (2000). *Choices, values and frames.*

**B- Neural correlates**

**5 Mar – Aversions, fear and the brain**

**A- Loss aversion, ambiguity and uncertainty**

**B- Fear**


**III- Social Influences on Decision-Making**

12 Mar – Moral Decision Making

- Looking for the lie – NYTtimes Magazine
- The brain on the stand – NYTimes Magazine

19 Mar – *Spring Break*: Choose your actions carefully...

26 Mar – Midterm

**2 April – Social/Group Influences on Decision-making**

A- Love & attractiveness

- Greg Berns – *Satisfaction*

B- Social comparisons


**9 April – Trust, Fairness & Consequences**

A- Trust

- Fehr, E. Oxytocin & trust & moral decisions (*in press*).

B- Fairness & Consequences

IV- When Decision-Making Goes Awry

16 April – Addiction

23 April – Risky decision-making and development

30 April – Presentation Day

7 May – Final Paper Due