

The Games People Play: The Psychology of Strategic Decision Making

Psych GU4289 (3 points)

Spring 2019

Location TBD

Tuesday, 2:10-4pm

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Office Hours: Tuesdays, 4-5pm or by appointment

Bulletin Description

A seminar course exploring strategic decision making (also known as behavioral game theory). This course examines the psychology underlying situations in which outcomes are determined by choices made by multiple decision makers. The prime objective will be to examine the use of experimental games to test psychological theories.

Prerequisites

PSYC UN 2235 Thinking and Decision Making or an equivalent course on judgment and decision making, and the instructor's permission.

Enrollment limit: 12. If the course is full, PhD students in the Psychology department, senior Psychology majors, senior Neuroscience and Behavior majors, and Psychology postbacs in the Certificate Program will have priority, followed by junior majors, followed by non-majors. Other things being equal, students who have the best preparation and strongest motivation will be selected.

Textbook

In addition to original research papers, the course has the following required text:

Camerer, Colin F. Behavioral game theory: Experiments in strategic interaction. Princeton University Press, 2011.

Multiple reserve copies are available at the Business School library.

Role in the Psychology Curriculum

GU4289 is open to graduate students and advanced undergraduates. It fulfills the following degree requirements:

- For undergraduates pursuing a Psychology major or concentration in the College or GS or for students in the Psychology Postbac Certificate Program, this course meets the Group I (Cognition and Perception) distribution requirement.
- For Psychology majors and Psychology Postbac students, it fulfills the seminar requirement.
- For undergraduates pursuing the Neuroscience & Behavior major, it fulfills the advanced seminar requirement in the Psychology portion of the major.

Motivating Questions

1. How can we use empirical research to make better predictions about the choices made by people in strategic environments?
2. How can we use empirical research to develop better theories about human psychological processes?
3. How can we use empirical research to make better strategic decisions?

Course Overview

A strategic decision is one whose outcome depends both on one's own choice and on the choices made by other agents pursuing their own objectives. Some examples: should a server in tennis aim for the left or right side of the court? Should a used car buyer pay what is asked, offer a lower price, or walk away? Should a pharmaceutical company invest in developing a drug that another company is also working on? Should a country try to develop a nuclear weapon? What assets should savers invest in?

The scientific study of strategic decisions began in 1944 with the publication of *Theory of games and economic behaviour*; written by the mathematician John von Neumann and the economist Oskar Morganstern. Over the next several decades, game theory was developed as a mathematical tool allowing economists, political scientists and biologists to model interactions among multiple individuals, companies, or countries using normative theories, i.e. theories based on assumptions about how rational decision makers *should* behave in a given context.

More recently, however, social scientists have begun running experiments to build better descriptive (i.e. "behavioral") theories of how humans actually *do* make decisions in strategic settings and have found that normative theories often fail in important ways. In this class, we will read and discuss recent original empirical research papers with the primary goal of better understanding human psychological processes in strategic environments. We will examine in particular the evidence for and implications of the importance of strategic decision making in human evolution, i.e. the theory that human psychology and behaviors are adapted to a social

environment as much as, or more than a physical environment.

Given that this course asks students to critically examine the evidence presented in the papers discussed, a secondary goal of the class will be to give students a better understanding of the choices behavioral game theorists themselves face as they design their experiments. The final project will therefore require students to develop their own psychological theory about strategic behavior and a methodology to test it in a laboratory setting.

Given the central role that behavior under strategic uncertainty plays in economic theory, a third goal of the class will be to give students a better understanding of the issues raised by behavioral evidence questioning the traditional economic model of humans as perfectly rational and purely self-centered (sometimes called “homo economicus”), in particular with regards to financial markets.

Finally, given that the accuracy of our predictions about the behavior of others is a central element in determining the quality of our own strategic decisions, the final goal of the class will be to improve the quality of students’ own strategic decision making process.

Course Objectives

1. Students will gain a deeper understanding of the normative and descriptive theories of strategic decision-making.
2. Students will have a better understanding of the assumptions underlying economic theories of behavior.
3. Students will improve their ability to predict the behavior of others in strategic environments, and hence to improve their own strategic decision-making ability.
4. Students will leave the course with a deep familiarity with current research on decision making: they will be able to recognize and critique commonly used methodologies, to assess the validity and reliability of experimental designs, and to interpret and judge the inferences and conclusions that other researchers lay out in their papers.

Course Organization

Class

This class will meet once a week for two hours and will consist primarily of discussion of one or two recent research papers focused on a particular game. For each game discussed, we will examine the following questions, with the vast bulk of the time focused on the last set regarding experimental evidence:

- What aspect(s) of human behavior is this game meant to elucidate?

- What real-world situation(s) is this game meant to mimic?

- What is the normative theory of how the game should be played?

- Considering the experimental evidence:
 - Does the normative theory predict actual behavior? Why not?

 - Which contextual features influence the answers to the above question? Why?

 - What are the implications of this difference for people playing the game?

 - What are the implications of this difference for theorists trying to model the game?

Assignments

Response posts. Before each week's class session with papers assigned by the instructor, you will submit a short (250- to 350-word) response to one of the assigned readings. You'll post your response on our CourseWorks discussion board, which will allow you to preview what your classmates are thinking about the topic of the week. Your posts will also help me get a sense for what everyone is thinking about the week's papers, including any common points of confusion.

Response posts should demonstrate a thorough reading of at least one of the week's papers, and should show that you are thinking carefully about the topics at hand. Although they don't need to be perfectly crafted examples of scientific prose, they should be clearly written, with appropriate attention to grammar, spelling, etc. (translation: you should read back through what you've written before posting it). All that said, the content and focus of your posts can vary quite widely. You might identify a connection between a theory or method discussed in the current paper and one used in another reading; you could lay out a theoretical or empirical question that the paper

sparked in you; you could offer a substantive critique of a paper's methods or its interpretations of results; you could identify a real-world application for a theory or effect from the paper and discuss its possible implications. You might also choose to write a response to another student's response post, e.g., if someone else asks a question that you feel inspired to try to answer.

Each post is due by midnight on two days before class [i.e., Sunday], starting with our second week of class, and is worth 2% of your grade. Posts made after midnight on Sunday but before midnight on Monday are worth 1%. Since there will be 9 weeks of response posts but they count for no more than 15% of your overall course grade, you may skip one response post, and submit another one late (or submit three late) and still end up with the full 15% for response posts.

Student presentations. Three classes (April 9, 16 and 23) have been set aside for student presentations on topics to be selected by students. While these discussions could be based on games or topics already covered in class, you may choose any relevant topic; a list of topics/games not covered in the current syllabus is included below. No later than the beginning of class on March 12, students should submit a topic along with the bibliographic reference information for a published research paper on that topic to the instructor for approval.

Each student will have 35 minutes of class time; you should prepare a 15-20 minute presentation briefly covering the paper's important points and scientific value, the study's methods and results, and also a critical assessment of the work in the context of other course materials. Presentations should also include questions to start a discussion which the student will lead.

Detailed requirements for the presentation will be discussed during the first class meeting, when we will also go over the list of topics and tentative schedule. Please bring your calendars with you to the first class meeting to facilitate our creation of the schedule.

Final paper. The final paper is a 10-page proposal for an experiment to test a theory developed by the student. In essence, you will prepare the Introduction, Theoretical Background, Methods, and Discussion section for a scientific paper (i.e. you will not need to generate Results).

The paper should: (1) offer a real-world strategic situation relevant to the topic (2) review the normative theory or theories that would apply (3) review aspects of descriptive psychological theory that explain your hypothesis (4) describe the experimental method(s) to be used in testing the theory (5) discuss possible results (both confirmatory and disconfirmatory) and their implications.

Students who are interested in writing any other format of final paper that is around the same length and scope as the assignment described above, may request permission from the instructor. If you think you might like to write a different kind of paper, please come talk to me about your ideas as soon as possible, but no less than two weeks before the final paper is due.

Detailed requirements and grading information for the paper will be posted midway through the semester. Final papers are due via Courseworks by **Friday May 10** (the first day of final exams).

If your final exam schedule would make it particularly difficult to submit your paper by this due date, please contact me at least two weeks beforehand to discuss an extension. I am generally happy to arrange extensions, but only for students who consult with me *before* the due date, so plan ahead!

Grading

Participation: 25%

Response posts: 15%

Class presentation: 25%

Final Paper: 35%

There is no extra credit for this course. For students who are on the border between grades, I will consider their participation in discussions throughout the term to decide whether to bump them up to the next highest grade (e.g., a very high B+ could be bumped to an A-).

Class Policies

Class attendance. Participation is an essential component of this course and of your grade, and you are expected to attend each class period. Each student may miss one class meeting, for any reason, without any penalty to their participation grade. After that free miss, excused absences require a note from your doctor or advising dean, and unexcused absences will count against your participation grade.

Class Conduct. Please turn off or silence your cell phones during class. Laptops are fine to use, but please respect your classmates and instructor by refraining from non-class-related activities such as email, Facebook browsing, and online shopping. Though you may have a preternatural ability to multi-task, using a laptop for purposes other than taking notes can be distracting to those around you (and also, studies show that people are actually pretty terrible at multitasking).

Academic Integrity. Academic honesty includes presenting only your own work in exams and assignments, and correctly attributing others' ideas where appropriate. Taking credit for work that is not your own is a serious violation within the academic community, and anyone found to be cheating or plagiarizing in this class will be reported to the university. Detailed definitions and examples of academic dishonesty (and a rundown of the consequences) are available in Columbia's Guide to Academic Integrity (<http://www.college.columbia.edu/academics/integrity>). That said, I appreciate that the lines aren't always clear, so if you have any questions about how to properly cite a source or build upon others' ideas, or if you're feeling stressed out about the class workload (or about anything else), you should feel free to speak with me.

Students with Disabilities. Students with special needs who may require accommodations should make an appointment to see me as soon as possible. If you have not already done so, stop by the Office of Disability Services (ODS) on the 7th floor of Lerner Hall to register for support services. ODS often requires two weeks to process an application, so please contact them as soon as you can, preferably before the course begins.

Psychology 4289 Reading Assignments Spring 2019

Date	Topic	Game	Camerer	Papers	
1/22/19	Introduction				
1/29/19	What do people “really” want?	Dictator and Ultimatum Games	1-12, 43-83	Benenson, Joyce F., Joanna Pascoe, and Nicola Radmore. "Children's altruistic behavior in the dictator game." <i>Evolution and Human Behavior</i> 28.3 (2007): 168-175.	
2/5/19				Ifcher, John, and Homa Zarghamee. "The Rapid Evolution of Homo Economicus: Brief Exposure to Neoclassical Assumptions Increases Self-Interested Behavior." <i>Journal of Behavioral and Experimental Economics</i> (2018).	CLASS CHOICE: Mendoza, Saaid A., Sean P. Lane, and David M. Amodio. "For Members Only: Ingroup Punishment of Fairness Norm Violations in the Ultimatum Game." <i>Social Psychological and Personality Science</i> 5.6 (2014): 662-670 OR Calvillo, Dustin P., and Jessica N. Burgeno. "Cognitive reflection predicts the acceptance of unfair ultimatum game offers." <i>Judgment & Decision Making</i> 10.4 (2015).
2/12/19	Are we competing?	Prisoner's Dilemma		Mao, Andrew, et al. "Resilient cooperators stabilize long-run cooperation in the finitely repeated Prisoner's Dilemma." <i>Nature communications</i> 8 (2017): 13800.	Capraro, Valerio. "Women are slightly more cooperative than men (in one-shot Prisoner's dilemma games played online)." <i>arXiv preprint arXiv:1805.08046</i> (2018).
2/19/19	What are we actually studying?		34-42	Alekseev, Aleksandr, Gary Charness, and Uri Gneezy. "Experimental methods: When and why contextual instructions are important." <i>Journal of Economic Behavior & Organization</i> 134 (2017): 48-59.	Belot, Duch, and Miller. "A comprehensive comparison of students and non-students in classic experimental games." <i>Journal of Economic Behavior & Organization</i> 113 (2015): 26-33.
2/26/19	Are we cooperating?	Stag Hunt	375-380	Brunnlieb, C., Nave, G., Camerer, C. F., Schosser, S., Vogt, B., Münte, T. F., & Heldmann, M. (2016). Vasopressin increases human risky cooperative behavior. <i>Proceedings of the National Academy of Sciences</i> , 201518825	Bullinger, Anke F., et al. "Coordination of chimpanzees (Pan troglodytes) in a stag hunt game." <i>International Journal of Primatology</i> 32.6 (2011): 1296-1310.
3/5/19	Are we frenemies?	Battle of the Sexes	353-367	Crawford, V. P., Gneezy, U., & Rottenstreich, Y. (2008). The power of focal points is limited: Even minute payoff asymmetry may yield large coordination failures. <i>American Economic Review</i> , 98(4), 1443-58.	Hu, Y., Kagel, J. H., Yang, H., & Zhang, L. (2018). The Effects of Pre-Play Communication in a Coordination Game with Incomplete Information. (pre-published on Social Science Resource Network)
3/12/19	Levels of Reasoning	Beauty Contest	16-20, 209-218	Bosch-Domenech, Antoni, et al. "One, two,(three), infinity,...: Newspaper and lab beauty-contest experiments." <i>American Economic Review</i> 92.5 (2002): 1687-1701.	Lahav, Y. (2015). Eliciting beliefs in beauty contest experiments. <i>Economics Letters</i> , 137, 45-49.
3/26/19	Strategic substitutes vs. complements	Market Entry Game	367-375	Camerer, Colin, and Dan Lovo. "Overconfidence and excess entry: An experimental approach." <i>American economic review</i> 89.1 (1999): 306-318.	Camerer, Colin F., and Ernst Fehr. "When does "economic man" dominate social behavior?." <i>Science</i> 311.5757 (2006): 47-52.
4/2/19	In the real world...	Experimental Asset Markets		Eckel, Catherine C., and Sascha C. Füllbrunn. "Thar she blows? Gender, competition, and bubbles in experimental asset markets." <i>American Economic Review</i> 105.2 (2015): 906-20.	Schoenberg, Eric J. & Ernan Haruvy (2012). Relative Performance Information in Asset Markets: An Experimental Approach. <i>Journal of Economic Psychology</i> , 33, 1143-55.
4/9/19	STUDENT PRESENTATIONS				
4/16/19					
4/23/19					
4/30/19	Wrap-up		465-476	TBD	

Possible Topics for Student Presentations

Topic	Game/concept	Camerer
Social dilemmas (social prefs, trust, risk, learning)	Public goods games	45-48, [Baron 433-461]
Coordination (learning)	Weak Link games	381-386
Trust	Investment (Trust) Game	83-95
Reciprocity	Gift exchange	95-100
Mixed Strategy Equilibrium	Zero-sum games	118-147
Mixed Strategy Equilibrium	Location Games	142-144
Zero-sum games	Maximin Strategy	118-119
Zero-sum betting (financial markets)	“Groucho Marx” theorem	239-242
Bargaining	Structured vs. unstructured	151-196
Markets	Sealed bid auctions/call markets	187-196
Learning		265-332
Signalling and Reputation	Signalling games	408-462
Communication	Sender-receiver games	357-362
Backward induction	Centipede games	94-95
Order-statistic games	Continental Divide games	308-317, 399-400
Nash equilibrium		27-30