

Critical Thinking and Decision Making

Professor: Tom Kida
Office: 222B SOM

Course Objective: We make decisions in every aspect of our personal and professional lives. In a sense, our lives are determined and defined by the decisions we face and the choices we make. The purpose of this course is to examine how we make decisions. Since our decisions are intricately tied to our beliefs, the course will also examine how we form beliefs. Particular attention will be paid to why we often hold erroneous and questionable beliefs and make faulty decisions. As a consequence, the course should enhance our critical thinking and decision making skills.

A variety of topics will be covered. For example, we start by examining the difference between pseudoscientific and scientific thinking, and address the importance of skeptical and critical thinking. We then discuss the role of chance and coincidence in life, and explore the problems we have in perceiving the world, focusing on how they can affect the accuracy of our judgments. A number of decision heuristics or “rules of thumb” that we use to simplify decision making are then examined, along with the biases that can occur from using those heuristics. We will also explore different ways to model decision processes and the strategies we use to gather and evaluate data, considering their effects on decision accuracy. In addition, we will examine how we make risky decisions, and how the decision frame can affect our choices. Finally, the impact of memory, affective reactions and group behavior on beliefs and decisions will be discussed.

The course content comes from two general areas. The first concerns the difference between science and pseudoscience (along with the critical thinking skills of science), while the second involves behavioral decision making. The field of behavioral decision making is interdisciplinary. Related research is conducted in such disciplines as psychology, business, economics, medicine and public policy. As a consequence, readings will come from a variety of areas, and should be applicable to a wide range of professional, personal, and social decision contexts.

Grading: Your grade will be determined by two exams and a paper.

Paper: Find a belief or decision that you think is wrong. Describe it, explain why you believe it’s wrong, and indicate what can be done to correct the thinking process. Bring in topics from class when discussing these issues.

Readings: Course readings will come from a variety of books and journal articles.

Since most of the readings come from three primary sources, the following books are required.

Kida, T., *Don't Believe Everything You Think: The 6 Basic Mistakes We Make in Thinking*, Prometheus Books, Amherst, New York, 2006.

Schick, T., and Vaughn, L., *How to Think About Weird Things*, McGraw-Hill, New York, New York, Fourth Edition, 2005.

Plous, S., *The Psychology of Judgment and Decision Making*, McGraw-Hill, New York, New York, 1993.

Additional readings are tied to the reference list at the end of the syllabus. Readings that are listed in parentheses are recommended, but not required.

Topics Covered

Readings

Introduction to Behavioral Decision Making

Overview of course and completion of decision problems.

Handout distributed in class

Science, Pseudoscience and Weird Beliefs

Pseudoscientific thinking

 Weird, erroneous and questionable beliefs

 Problems with anecdotal evidence

The importance of skeptical and critical thinking

 Extraordinary claims/extraordinary evidence

 Consider alternative explanations

The SEARCH procedure

 Criteria of Adequacy

Thinking like a scientist

 Controlled experimentation

 How science progresses

 What distinguishes science from pseudoscience

A baloney detection kit

Kida, Introduction, Ch. 1

Schick and Vaughn, Ch. 1

Kida, Ch. 2; Shermer, Ch. 1

Schick and Vaughn, Ch. 2,

(Ch. 5, pp. 114 - 142)

Schick and Vaughn, Ch. 7,

pp. 271 - 300, (Ch. 8)

Kida, Ch. 3; Shermer, Ch. 2;

(Sagan, Ch. 1, 2)

Sagan, Ch. 12; Shermer, Ch. 3

The Role of Chance and Coincidence

The bell curve

Seeing order in randomness

 Gambler's fallacy

 Hot hand

Coincidence

 Superstition

Kida, Ch. 4; Plous, Ch., 14

Problems in Perceiving Data

- Selective perception
 - Contrast effects
 - Seeing what we expect
 - Seeing what we want
 - Halo effects
- Hallucinations
 - Mass hysteria
- Neurobiological problems

Kida, Ch. 5; Plous, Ch. 1
Plous, Ch. 4
Schick and Vaughn, pp. 35-55

Seeing Associations That Aren't There

- Illusory correlation
- Correlation
- Problems in interpreting correlations

Kida, Ch. 6; Plous, Ch. 15

Hypothesis Testing

- Confirmatory hypothesis testing
- Effect of initial hypothesis
- Effect of hypothesis set size

Kida, Ch. 8; Plous, Ch. 20

Predicting the Unpredictable

- Psychics and astrology
- The stock market
- Economic forecasting
- The weather
- Chaos and complexity

Kida, Ch. 7
Sherden, Ch. 1, 9, (Ch. 4)

Decision Heuristics and Biases

- Representativeness
 - Neglect of base rates
 - Disregard for sample size
 - Misperceptions of random sequences
 - Insensitivity to data predictability
 - Conjunction fallacy
- Availability
 - Inappropriate assessment
- Anchoring and Adjustment
 - Insufficient adjustment
 - Use of irrelevant anchor
- Hindsight
- Overconfidence

Kida, Ch. 9; Plous, Ch. 10

Plous, Ch. 11

Plous, Ch. 13
Tversky & Kahneman

Plous, Ch. 3
Plous, Ch. 19

Risky Decision Making - Models and Issues

Framing Effects	Kida, Ch. 10; Plous, Ch. 6
Mental Accounts	
Expected Utility Theory	Baron, pp. 315-329
Axioms of EUT	Plous, Ch. 7, 8
Violations of Axioms	
Prospect Theory	Plous, Ch. 9
Main features and predictions	Kahneman & Tversky
Additional Topics	
Multiple Reference Points	

Additional Problems in Perceiving and Evaluating Data

Order Effects (Primacy/Recency)	Plous, pp. 42-44
Functional and Data Fixation	Baron, pp.53-57
Dilution Effect	
Interference Effects	

Linear and Nonlinear Modeling of Decisions

Modeling Approaches	Baron, pp.401-411
Regression Analysis	Libby, Ch. 2
Discriminant Analysis	
ANOVA	
The Lens Model-Overview	
The Lens Model-Major Findings	
Linear Predictability	
Judgment Accuracy	
Intuitive versus statistical prediction	Dawes (b), Ch. 3
Insight into cue usage	
Consensus and Consistency	
Bootstrapping	
Feedback	

Decision Strategies and Process Tracing

Process Tracing Techniques	Hogarth (a), Ch. 4
Verbal Protocol Analysis	
Information Boards	
Decision Strategies	
Compensatory Strategies	
Noncompensatory Strategies	
Adaptive Decision Making	
Decision Accuracy	

Memory and Encoding Issues in Decision Making

Impact of short term (working) memory

Impact of long term memory

Memory errors

Impact of encoding and retrieval

Kida, Ch. 11; Reisberg, Ch. 7

Loftus, Feldman, and Dashiell
pp. 62-66

Aronson, pp. 145-150

Impact of Affective Reactions on Decision Making

Evaluations, Emotions, Moods

Positive and Negative Affect

Fairness and Regret

Isen, pp.187-210

Social and Group Influences on Decision Making

Diffusion of Responsibility

Conformity

Accountability

Groupthink

Group polarization

Group vs. individual decision making

Kida, Ch. 12; Plous, Ch. 17,18

Overview of Behavioral Decision Research

Summary of consistent findings

Hogarth (b)

Kida, Epilogue

Additional Sources

The following books and journal articles relate to critical thinking and decision making. Some of the references are listed on the syllabus. However, most are here to provide a resource to anyone who is interested in reading more in the area.

Arkes, H., and Hammond, K., *Judgment and Decision Making: An Interdisciplinary Reader*, Cambridge University Press, England, 1986.

Aronson, E., *The Social Animal*, W. H. Freeman and Company, New York, New York, 1995.

Baron, J., *Thinking and Deciding*, Cambridge University Press, England, 1994.

Belsky, G., and Gilovich, T., *Why Smart People Make Big Money Mistakes*, Simon and Schuster, New York, New York, 1999.

Dawes (a), R., *Rational Choice in an Uncertain World*, Harcourt Brace Jovanovich, New York, New York, 1988.

Dawes (b), R., *House of Cards: Psychology and Psychotherapy Built on Myth*, The Free Press, New York, New York, 1994.

Glassner, B., *The Culture of Fear*, Basic Books, New York, New York, 1999.

- Gilovich, T., *How We Know What Isn't So*, The Free Press, New York, New York, 1991.
- Goldstein, W., and Hogarth, R., *Research on Judgment and Decision Making: Current, Connections and Controversies*, Cambridge University Press, 1997.
- Hammond, J. Keeney, R. and Raiffa, H., *Smart Choices: A Practical Guide to Making Better Decisions*, Harvard Business School Press, Boston, Ma, 1999.
- Hogarth (a), R., *Judgment and Choice*, John Wiley & Sons, New York, New York, 1987.
- Hogarth (b), R., "Accounting for Decisions and Decisions for Accounting," *Accounting, Organizations and Society*, 18, 1993, p. 407.
- Isen, A., "Toward Understanding the Role of Affect in Cognition," in *Handbook of Social Psychology*, Wyer, R., and Srull, T., eds., Lawrence Erlbaum Associates, Hillsdale, New Jersey, 1984.
- Kahneman, D., and Tversky, A., *Choices, Values, and Frames*, *American Psychologist*, 39, 1984, p.341.
- Kahneman, D., Slovic, P., and Tversky, A., *Judgment Under Uncertainty: Heuristics and Biases*, Cambridge University Press, England, 1982.
- Kida, T., *Don't Believe Everything You Think: The 6 Basic Mistakes We Make in Thinking*, Prometheus Books, Amherst, New York, 2006.
- Kleindorfer, P., Kunreuther, H., and Schoemaker, P., *Decision Sciences: An Integrative Perspective*, Cambridge University Press, England, 1993.
- Kuhn, T., *The Structure of Scientific Revolutions*, The University of Chicago Press, Chicago, Ill., 1970.
- Lewis, H., *Why Flip a Coin? The Art and Science of Good Decisions*, John Wiley and Sons, New York, New York, 1997.
- Libby, R., *Accounting and Human Information Processing: Theory and Applications*, Prentice-Hall, Englewood Cliffs, N.J., 1981, pp. 18-48.
- Loftus, E., Feldman, J., and Dashiell, R., "The Reality of Illusory Memories," in *Memory Distortion*, ed. by Schacter, D., Harvard University Press, Cambridge, MA, 1995.
- Malkiel, B. *A Random Walk Down Wall Street*, W. W. Norton & Company, 1999.

- Matlin, M., *Cognition*, Holt, Rinehart, Winston, Chicago Ill., 1998.
- Mowen, J., *Judgment Calls: High Stakes Decisions in a Risky World*, Simon and Schuster, New York, New York, 1993.
- Myers, D., *Intuition*, Yale University Press, New Haven, CT, 2002.
- Plous, S., *The Psychology of Judgment and Decision Making*, McGraw-Hill, New York, NY, 1993.
- Reisberg, D., *Cognition*, W. W., Norton & Co., New York, New York, 2001.
- Russo, J., and Schoemaker, P., *Decision Traps: The Ten Barriers to Brilliant Decision-Making and how to Overcome Them*, Simon and Schuster Inc., New York, New York, 1989.
- Sagan, C., *The Demon-Haunted World*, Random House, New York, New York, 1995.
- Schacter, D., *The Seven Sins of Memory*, Houghton Mifflin Company, New York, New York, 2001.
- Schacter, D., *Memory Distortion: How Minds, Brains, and Societies Reconstruct the Past*, Harvard University Press, Cambridge, MA, 1995.
- Schick, T., and Vaughn, L., *How to Think About Weird Things*, McGraw-Hill, New York, New York, Fourth Edition, 2005.
- Shermer, M., *Why People Believe Weird Things*, Freeman and Company, New York, New York, 1997.
- Sherden, W., *The Fortune Sellers: The Big Business of Buying and Selling Predictions*, John Wiley and Sons, New York, New York, 1998.
- Stanovich, K., *How to Think Straight About Psychology*, Allyn and Bacon, Boston, MA, 2001.
- Sutherland, S., *Irrationality: Why We Don't Think Straight*, Rutgers University Press, New Brunswick, N.J., 1992.
- Tversky, A. and Kahneman, D., "Judgment under Uncertainty: Heuristics and Biases," *Science*, 185, 1974, p.1124.
- Vyse, S., *Believing in Magic: The Psychology of Superstition*, Oxford University Press, New York, New York, 1997.