Behavioral Decision Making, Learning, and Shared Understating

Applications to Policy Analysis

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This presentation is based on materials from Professors Stephen Weinberg, Thomas Stewart, David Andersen, and the presenter's research projects

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Introduction

- Health Policy Domain
- It's hard to get patients to do what you want them to
  - Lose weight
  - Have periodic check-ups
  - Get vaccines
  - Take medicine
- Do doctors make accurate judgments, and decisions?

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Introduction

- Urban Safety
- How do police officers make decisions in high risk, stressed environments?
- Do they learn as they gain experience?
- Can technology solve the problems of accuracy?

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Introduction

- Technology Management Domain
- Do organizations always invest in the best ideas? What is an idea?
- How about more complicated projects when different contractors should be involved?

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Agenda

- Judgment and Decision Making
  - Biases
  - Learning, Shared Understanding
- Libertarian Paternalism
  - The role of government
- Applications

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- Judgment and Decision Making
  - Biases
  - Learning, Shared Understanding
- I'm going to walk quickly through a whole buffet line of well-documented psychological phenomena.

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Biases

- People use shortcuts (AKA heuristics) to make decisions
- Use of heuristics → Bias

Examples of Biases

- Status Quo bias
- Anchoring
- Present-Biased Preferences
- Information and choice overload
- Loss Aversion
- Availability/vividness

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Status Quo Bias

- People are reluctant to disrupt the Status Quo
  - STRONG effect of default settings

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Anchoring

- Judgments are highly susceptible to irrelevant anchors
  - An $80 value, yours for $19.99!

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Present-Biased Preferences

- People can think patiently about the future
- People put a lot of weight on the present
- Choice inconsistency
- Hard to follow through on plans to
  - Lose weight
  - Quit smoking
  - Save money
  - Study

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Information and choice Overload

- Throwing information at people doesn't help
- Some variables get hidden
- Examples:
  - Swiss health care
  - School Choice in NC

- Results in staying with default

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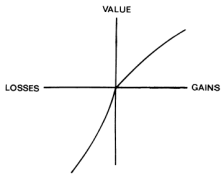
Loss Aversion

- People hate losses. A lot.
- Much easier to forego a gain.
- Prospect theory



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Availability/Vividness

- Availability
  - Judge probabilities by ease-of-recall
- Vividness
  - Stories given more weight than statistics

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Preference Malleability

- Lots of ways to "exploit" malleable preferences
  - Christian Children's Fund
  - Hiring
  - Discrimination, John List's experiments

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Learning/failing to learn?

- Repetitive tasks
- Outcome feedback
- Cognitive feedback
- Group learning
- Organizational learning
- Inter-organizational learning

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Libertarian Paternalism

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Libertarian Paternalism

- Premise 1: People are malleable
  - No such thing as a “neutral” presentation
  - Choice Architect
- Premise 2: Choice is good
  - Some people know what they want

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Libertarian Paternalism

- Libertarian Paternalism: let people choose for themselves, but try to "nudge" malleable people into acting in what's probably their best interest (or the common good)
- Obvious issues:
  - Ethics
  - Knowing what's best

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Libertarian Paternalism

- Examples:
  - Provide streamlined information (school choice)
  - Make preferred activity the default (organ donation)
  - Provide commitment devices so people can lock in their good intentions
  - Keep the number of choices manageable

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Libertarian Paternalism

- Libertarian Paternalism's greatest success: promoting 401(k) savings
- Active Enrollment
  - Status Quo bias
- Save More Tomorrow (SMarT) Plan
  - Present-biased preferences
  - Loss aversion
  - Status Quo bias

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A Few Cases

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Health Policy Domain

- Health Policy Domain
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Health Policy Domain

- The Dartmouth Atlas of Health Care projects.
- *A considerable portion of variation in health services (more than 60 percent) cannot be accounted for by the variation in patient health, income, and technology (Sutherland et al. 2009).*
- Decision-making factors are critical determinants of disparities.

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Health Policy Domain

- Evidences of practice variation in the cesarean surgery (Epstein and Nicholson 2009).
- *30 percent of variation in risk-adjusted c-section rates across physicians and years (i.e., controlled for patient conditions) is due to consistent doctor related factors excluding general characteristics such as experience, gender, and race.*
- Heterogeneity in the practice style persists over time.

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Health Policy Domain

	Within–physician	**Between–physician**
Within–patient	*Unreliability* Inconsistency in how a physician diagnoses and treats a single patient over time.	*Disagreement* Different styles of practice and disagreement among physicians on how to diagnose and treat a specific case.
Between –patient	*Bias* Treating patients within a practice differently based on variation in patients' preferences, and/or physicians' bias toward a group of patients.	*Interactive effects* Different doctors treat different groups of patients with different preferences, and different groups of patients choose different doctors.

Different forms of practice variation, Ghaffarzadegan and Martin (2010)

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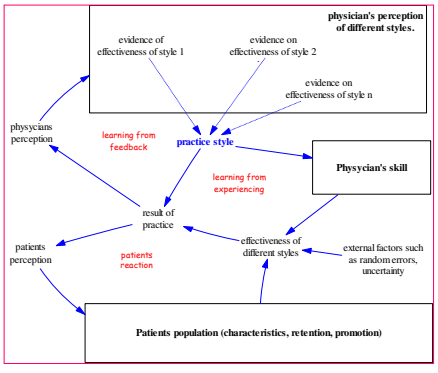

A big picture of the model of medical decision making for one physician

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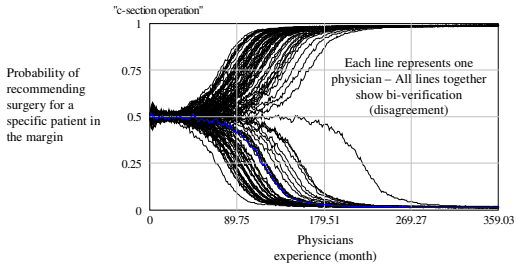

Dynamics of probability of recommending surgery for different doctors.

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Health Policy Domain

- Help focus on the most important information cues.
- Too much or too little information can cause inaccuracy.
- Mechanical methods, decision guidelines, checklists, or mathematical models.
- Sharing experiences and knowledge across organizations (such as hospitals).
- Information about unequal treatments.
- Providing financial incentives for physicians to improve communication with minorities.

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Security domain

- Urban Safety
- How do police officers make decisions in high risk, stressed environments?
- Do they learn as they gain experience?
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Security domain

- Uncertainties
- Feedback asymmetries
  - Feedback can be contingent on decision
  - Leads to bias
    - Examples:
      - passenger screening (feedback on low base rate)
      - Public places such as bars (feedback on high base rate)

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Security domain

- Experimental design

Stewart, Mumpower, Holzworth (2010)

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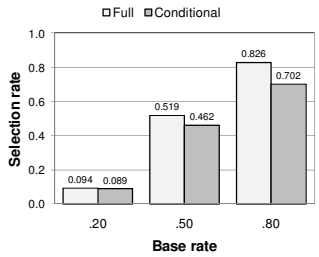
Security domain

- Experimental design (Stewart et al. 2010)



Stewart, Mumpower, Holzworth (2010)

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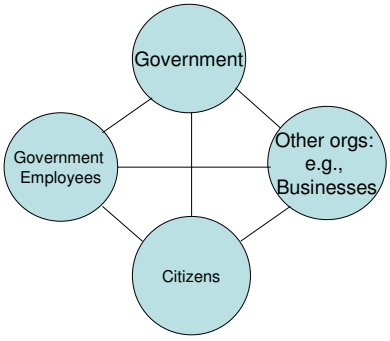
Security domain

- Hypotheses to test:

Policy
p1-a: Decreasing the confidence of subjects (medium)
p1-b: Decreasing the confidence of subjects (large)
p2: Encouraging subjects to change their thresholds at a slower rate
p3: Encouraging subjects to occasionally make wrong decisions
p4: Encouraging subjects to occasionally make false positive results
p5: Increasing officers' expertise in understanding information cues

Ghaffarzadegan, Stewart (2010) 34

Conclusion



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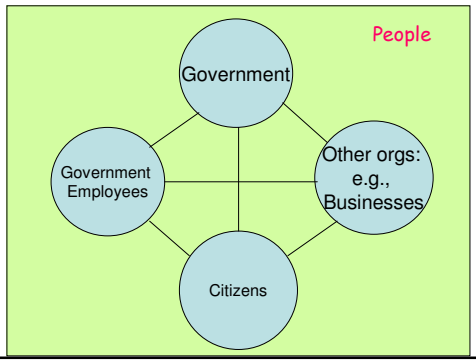
Conclusion



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Conclusion

- How do people react to policies?
- Do they necessarily make the best decisions? How about learning?
- What are the role of human decision making biases?
- How can we nudge? (Libertarian Paternalism)
- What is the default option?
- How things are framed? (Loss Aversion)
- Is there a clear path to the steady state level? Is there a unique equilibrium?

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Limitations

- So, technology is not by itself an answer to our problems.
- The performance of our policies can be sensitive to people's behavior.

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Limitations

- So, technology is not by itself an answer to our problems.
- The performance of our policies can be sensitive to people's behavior.

But

- Behavioral decision making is NOT our only tool in our tool box!

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- Thanks

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Technology Management Domain

- Technology Management Domain
- Do organizations always invest in the best ideas? What is an idea?
- How about more complicated projects when different contractors should be involved?

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Technology Management Domain

- Collaborating on innovative work in very large product and service development projects.
- Difficulties in communicating across different technical and organizational boundaries.
- an unanticipated lack of a shared understanding causes:
  - cost overruns
  - missed deadlines
  - scope escalation
  - ...

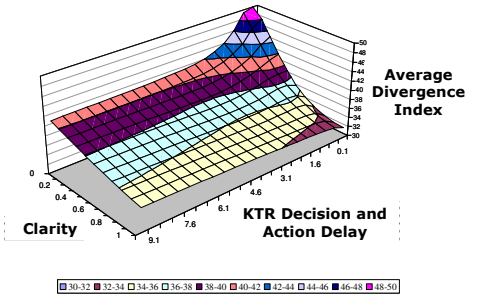
Ghaffarzadegan, Black, Greer, Andersen (2009) 42

Technology Management Domain

- Interviewees' causal explanations for disconnects centered on several themes:
  - People can't communicate.
  - The System Project Office (SPO) lacks expertise.
  - People are too slow in making sense of proposed changes.
  - People (esp. in the SPO) are too slow to act.
- failures in these projects can impose significant COSTS for the organizations. … BILLIONS of DOLLARS.
- We would like to explore more through a system dynamics model.

Ghaffarzadegan, Black, Greer, Andersen (2009) 43

Technology Management Domain



Ghaffarzadegan, Black, Greer, Andersen (2009) 44