Psychology and Personal Finance

Heuristics and Biases
Overview

• Heuristics
  – What “shortcuts” are we using?
• Biases
  – When are we predictably wrong?
• Other Behavioral Principles
  – Why do we behave the way we do?
• Assignment 1 Overview
Remember This Exercise?

Is it 5000....

...or 4100?

Sometimes, heuristics can lead to the wrong answer!
Heuristics and Biases

• Heuristics = “Quick Rules of Thumb”
  – Optimal decision NOT guaranteed

• Biases = “Applying Heuristics Inappropriately”
  – Can negatively influence decision making process
Question:

Which is the more likely cause of death?

Falling Plane Part  Shark Attack

Death by falling plane parts is 30x MORE likely

Source: http://www.learner.org/discoveringpsychology/11/e11expand.html
Availability Heuristic

Readily available events in memory affect the judgment of frequency
What We’ve Learned (So Far)

• Heuristics
  – Availability: readily available events in memory affect the judgment of frequency
Roulette Anyone?

Roulette is a casino game where a wheel and a ball are spun in opposite directions and eventually, the ball falls into a space. Bets can be placed on whether the ball will fall into a red, black, or green space.

There are 18 red spaces, 18 black, and 1 green
Question:

You’re in Vegas and walk up to roulette tables with the 5 previous spins posted as:

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Table 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>27</td>
<td>36</td>
</tr>
<tr>
<td>31</td>
<td>7</td>
</tr>
<tr>
<td>26</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>9</td>
</tr>
</tbody>
</table>

Which table would you feel more comfortable placing a bet on “black”? 
Representativeness Heuristic

• Representativeness Heuristic
  – Belief that even small samples should be representative of the population
  – People also think that the recent past is indicative of the future

• The Gambler’s Fallacy says:
  – 5 “reds” in a row in a fair game...black is due!
What We’ve Learned (So Far)

• Heuristics
  – Availability
  – Representativeness
    • Gambler’s Fallacy: 5 “reds” in a row in a fair game...black is due!
Question: What Will Google’s Price Be In The Future?

Source: www.morningstar.com
What We’ve Learned (So Far)

• Heuristics
  – Availability
  – Representativeness
  • Gambler’s Fallacy
  • Excessive Extrapolation: 3 years of increases...it’s bound to increase again!
Do You Believe...

There is a SI Cover “Jinx”?  

This is a Future Tennis Prodigy?
Question:

What would you predict these 3 students’ college GPAs to be based on their high school GPAs?

<table>
<thead>
<tr>
<th>Student</th>
<th>High School GPA</th>
<th>Predicted College GPA</th>
<th>Actual College GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3.80</td>
<td>3.46</td>
<td>3.30</td>
</tr>
<tr>
<td>B</td>
<td>3.00</td>
<td>2.77</td>
<td>2.93</td>
</tr>
<tr>
<td>C</td>
<td>2.20</td>
<td>2.03</td>
<td>2.70</td>
</tr>
</tbody>
</table>

Source: Shefrin (2000)
Regression Toward the Mean

Extreme scores or performances measured at any one point in time will probably be less extreme the next time they are measured.
What We’ve Learned (So Far)

• Heuristics
  – Availability
  – Representativeness
    • Gambler’s Fallacy
    • Excessive Extrapolation
    • Regression Toward the Mean: extreme observations will most likely revert to the mean
Question:

(1) Write down the last 4 digits of your SSN
(2) Do you think that a Gronitz PCM-5 CC Tuba costs more or less than this number?
(3) What is your best estimate of the cost of a Gronitz PCM-5 CC Tuba?
Anchoring

• The tuba costs ~$12,000 according to www.tubaexchange.com

• Any arbitrary number can influence your guess by “anchoring” you to that number
What We’ve Learned (So Far)

• Heuristics
  – Availability
  – Representativeness
  – Anchoring: any arbitrary number can influence your guess by “anchoring” you to that number
Affect Heuristic

Why do entertainers change their names?
– Less attractive names are judged to be of lower quality

Judy Garland or Frances Gumm?  
Tom Cruise or Tom Mapother?  
Ice-T or Tracy Marrow?  
Jane Seymour or Joyce Frankenburg?

Source: Slovic, et. al (2002)
Affect Heuristic

An emotional evaluation that occurs before conscious reasoning

“The stock market is more likely to go up on sunny than on cloudy days...”

Source: http://heuristics.behaviouralfinance.net/affect/
What We’ve Learned (So Far)

- Heuristics
  - Availability
  - Representativeness
  - Anchoring
  - Affect: an emotional evaluation that occurs before conscious reasoning
What grade do you expect to get in this class?
Optimism

Knowing somewhere there is a glass that is half full
What We’ve Learned (So Far)

- Heuristics
  - Availability
  - Representativeness
  - Anchoring
  - Affect

- Biases
  - Optimism
Question:

What’s your range with 90% confidence on what it would cost to have your own private island in the Maldives for a day?
Overconfidence

This is going to end in disaster, and you have no one to blame but yourself.
What We’ve Learned (So Far)

- Heuristics
  - Availability
  - Representativeness
  - Anchoring
  - Affect

- Biases
  - Optimism
  - Overconfidence
Organ Donation Consent Rates

What We’ve Learned (So Far)

• Heuristics
  – Availability
  – Representativeness
  – Anchoring
  – Affect

• Biases
  – Optimism
  – Overconfidence

• Other Principles
  – Inertia
Blackjack Rules

The dealer hands you two cards, facing up. The dealer also receives two cards, but you can only see one. To win, your cards must total more than the dealer’s.

You can request more cards to increase your total, but if your total exceeds 21, you lose immediately.
Let’s Play A Game…

Hit or Stand?
Blackjack

• Experts say you should take another card (hit)

• Most players do not take a card (stand)

• Why?
Regret Aversion

• Taking action and losing feels worse than “doing nothing” and losing

• Although the outcome is the same, regret plays a larger role post-action
What We’ve Learned (So Far)

• Heuristics
  – Availability
  – Representativeness
  – Anchoring
  – Affect

• Biases
  – Optimism
  – Overconfidence

• Other Principles
  – Inertia
  – Regret Aversion
Illusion of Control

- Craps players throw harder when they want higher numbers and softer for lower numbers
- People choose their own lottery numbers, thinking they can pick the winners

Source: Henslin, (1967)
What We’ve Learned (So Far)

• Heuristics
  – Availability
  – Representativeness
  – Anchoring
  – Affect

• Biases
  – Optimism
  – Overconfidence

• Other Principles
  – Inertia
  – Regret Aversion
  – Illusion of Control
Question:

Do you think that the price of crude oil was higher in 1981 or 2007?
Money Illusion – Price of Crude Oil

What We’ve Learned (So Far)

• Heuristics
  – Availability
  – Representativeness
  – Anchoring
  – Affect

• Biases
  – Optimism
  – Overconfidence

• Other Principles
  – Inertia
  – Regret Aversion
  – Illusion of Control
  – Money Illusion
Driving in Bolivia

The Stremnaya Road is extremely beautiful with gorgeous mountains, cliffs and greenery. While the road offers dramatic scenery, it is considered by some the most dangerous road in the world. The combination of extremely narrow roads and tall cliffs could easily result in a deadly accident, and an average of two vehicles per month fall from the road. The danger of the road ironically though has made it a popular tourist destination starting in the 1990s. Mountain biker enthusiasts, in particular, have made it a favorite destination for downhill biking.
Question:

Would you be interested in taking an all expenses paid trip to the Stremnaya Road?

___ Yes
___ No
___ I am not sure
Would you be interested in taking an all expenses paid trip to the Stremnaya Road?

__ Yes
__ No
__ I am not sure
# Intuitive vs. Deliberative Self

<table>
<thead>
<tr>
<th>Cognitive / Deliberative</th>
<th>Intuitive / Affective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relatively slow</td>
<td>Relatively fast</td>
</tr>
<tr>
<td>Demanding of cognitive capacity</td>
<td>Undemanding of cognitive capacity</td>
</tr>
<tr>
<td>Controlled</td>
<td>Automatic</td>
</tr>
<tr>
<td>Analytic</td>
<td>Holistic</td>
</tr>
<tr>
<td>Rule-based</td>
<td>Associative</td>
</tr>
</tbody>
</table>

Sources: Stanovich and West (2002)
Consequences

Affective processing can result in...

- Paying more to save a panda bear
- Taking less risk in a variety of domains (from smoking to choosing travel destinations)
- Saving more for retirement

Sources: Hsee and Rottenstreich (2004), Hammond et al. (2004, 2006)
What We’ve Learned

• Heuristics
  – Availability
  – Representativeness
  – Anchoring
  – Affect

• Biases
  – Optimism
  – Overconfidence

• Other Principles
  – Inertia
  – Regret Aversion
  – Illusion of Control
  – Money Illusion
  – Intuitive vs. deliberative self
Additional Concepts

- Mental Accounting
- Ambiguity Aversion
- Familiarity Bias
- Choice Overload
- Elderly Innumeracy
- Ease of Evaluation