DEDUCTIVE REASONING

Deductive Reasoning

- Reaching a conclusion from some given premises.
  - All pop-stars are stupid
  - Merve is a popstar
  - Therefore, Merve is stupid

Conditional Reasoning

- Deductive validity
  - You can reach deductively valid conclusions that are completely untrue with respect to the world
  - People are more likely mistakenly to accept an illogical argument as logical if the conclusion is factually true

Conditional Reasoning

- Modus ponens
  - The reasoner affirms the antecedent

    If p then q

    p

    q
- Example
  - All apples are fruits
  - This is an apple
  - Therefore, this is a fruit

Conditional Reasoning

- Modus tollens
  - The reasoner denies the consequent
    If p then q
    non q
    non p
- Example
  - All apples are fruits
  - This is not a fruit
  - Therefore, this is not an apple

Conditional Reasoning

- Deductive fallacies
  - Denying the antecedent
  - Affirming the consequent

Conditional Reasoning

- Denying the andecedent

  If p then q

  not p

  not q (invalid)
- Example
  - All apples are fruits
  - This is not an apple
  - Therefore, this is not a fruit (invalid)

Conditional Reasoning

- Affirming the consequent
  - If p then q
  - q
  - p (invalid)
- Example
  - All apples are fruits
  - This is a fruit
  - Therefore, this is an apple (invalid)

Wason Selection Task

- Which cards do you need to turn over to obtain conclusive evidence of the following rule:
  A card with a vowel on it will have an even number on the other side

Wason Selection Task
Confirmation Bias

- Answer:
  - E – affirming the antecedent
  - 7 – denying the consequent
- E – 89%
- 7 – 25%
- K – 16%
- 4 – 62%

DECISION MAKING

Decision Making

- An interdisciplinary field
  - Economics
  - Political Science
  - Consumer Research
  - Sociology
  - Medicine
  - Psychology

Decision Making

- We use heuristics in making decisions
  - Heuristics: general strategies that typically produce correct solutions
- Heuristics sometimes lead us errors an biases

Decision Making

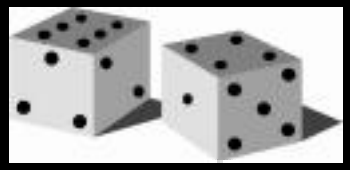
Heuristics and Biases

- Amos Tversky and Daniel Kahneman
  - People may be far more likely to make decisions based on biases and heuristics (short-cuts) than earlier decision-making research has suggested
  - These mental shortcuts lighten the cognitive load of making decisions, but they also allow for a much greater chance of error

Representativeness Heuristic

- Judgments strategy in which we make estimates on how similar (or representative) an event is to its population.

- Coin toss: Which is more likely to occur?
  - HHHHHTTTTT
  - HTHTHTTHHT



Representativeness Heuristic

- Judge probability of an event based on how it matches a prototype
- Can be accurate
- Can also lead to errors
- Most will overuse representativeness

Availability Heuristic

- In the English language, are there more words beginning with the letter K or more words with K in the third position?
- People often report 2 x as many words beginning with K
- But there are many more words with K in the third position than in the first.

Anchoring-and-Adjustment

- Participants asked to calculate in 5 secs the answer to one of the following problems:
  - 1 x 2 x 3 x 4 x 5 x 6 x 7 x 8= 512
  - 8 x 7 x 6 x 5 x 4 x 3 x 2 x 1= 2,250
- The order of presentation for these two groups had a significant impact on their estimates
- The correct answer, in both cases, is 40,320!

Anchoring-and-Adjustment Heuristic

- Begin by guessing a first approximation (an anchor)
- Make adjustments to that number on the basis of additional information
- Often leads to a reasonable answer
- Can lead to errors in some cases

Overconfidence

- Overconfidence
  - And individual's overvaluation of her or his own skills, knowledge, or judgments
  - People tend to overestimate the accuracy of their judgments
  - Example:
    - When people were 100% confident in their answers, they were right only 80% of the time

Illusory Correlations

- An illusory correlation is a perceived relationship that does not in fact exist
- Illusory correlations are formed by the pairing of two distinctive events
  - Redelmeier and Tversky (1996)
  - 18 arthritis patients observed over 15 months
  - The weather was also recorded
  - Most of the patients were certain that their condition was correlated with the weather
  - The actual correlation was close to zero

Framing

- Suppose you have invested in stock equivalent to the sum of $60,000 in a company that just filed a claim for bankruptcy. They offer two alternatives in order to save some of the invested money:
- Positive Framing
  - If Program A is adopted, $20,000 will be saved (certain outcome)
  - If Program B is adopted, there is a 1/3 probability that $60,000 will be saved and a 2/3 probability that no money will be saved (risky outcome)
- Negative Framing
  - If program A is adopted $40,000 will be lost (certain outcome)
  - If program B is adopted, there is a 1/3 probability that no money will be lost, and 2/3 probability that $60,000 will be lost (risky outcome)

Results

- Positive Framing
  - 78% choose program A
  - 22% choose program B
- Negative Framing
  - 22% choose program A
  - 78% choose program B


Viewer
THE END