

ECPS6005: COGNITION IN ACTION

DECISION-MAKING IN REAL-WORLD SETTINGS:

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FACTS VS. ASSUMPTIONS



■ Fact - defined as:

- "info about circumstances that exist or events that have occurred"
- "known to be true that can be shown to be true, to exist, or happened"

■ Assumption - defined as:

- "something taken for granted: believed to be true without proof"

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INTERACTIVE TASK



Read the following paragraph:

Jones, is a psychiatrist within the health board.
He was scheduled for a meeting in Davenport's office to discuss a private matter at 10:00am.
On the way to that office Jones tripped outside over a loose paving stone and injured his knee badly.
By the time Davenport was notified of the incident, Jones was on the way to A&E for x-rays.
Davenport rang the hospital to enquire, but no one there knew anything about Jones.
It is possible Davenport called the wrong hospital.

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INTERACTIVE TASK



- Based on the information in the table in your worksheet, note which statements are fact and which are assumptions based on the information in the paragraph.
- Each statement can only be one or the other.

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INTERACTIVE TASK

- Was that an easy or difficult task?**
 - Let's have a look at the answers to each statement?

Statement	Fact	Assumption
Jones was a psychiatrist		X
Jones is male		X
Jones was supposed to meet with Davenport		X
Jones was scheduled for a 10:00am meeting		X
The incident occurred on the health boards premises		X
Jones was taken to hospital for x-rays		X
Nobody at the hospital knew anything about Jones		X
Davenport called the wrong hospital		X

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**HOW COULD THIS
HAVE AN
INFLUENCE ON
JURY DECISIONS
FROM AN
EYEWITNESS
TESTIMONY?**

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INTERACTIVE TASK

- Did you assume there would be a mix of facts and assumptions?
- This is an assumption people tend to make with multiple choice tests.
- Having this expectation may influence decision making due to **confirmation bias**.

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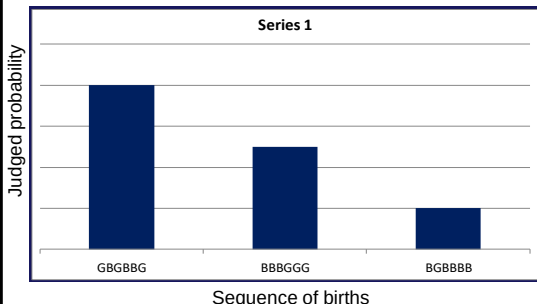
INFLUENCES ON DECISION MAKING

- In families of six children, which is the most likely sequence of boys and girls?

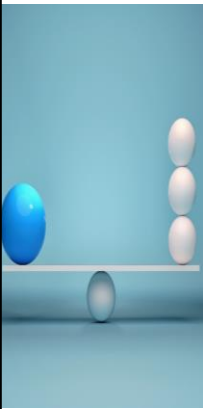
1. G B G B B G
2. B G B B B B
3. B B B G G G

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JUDGMENT OF LIKELIHOOD KAHNEMAN AND TVERSKY



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INFLUENCES ON DECISION MAKING

- Probability of any newborn being a boy is 50% (or .5)
 - Probabilities are independent of each other
 - Thus, all equally likely
- First one seems random as more distributed
 - G B G B B G
 - A judgment based on similarity to concept of randomness

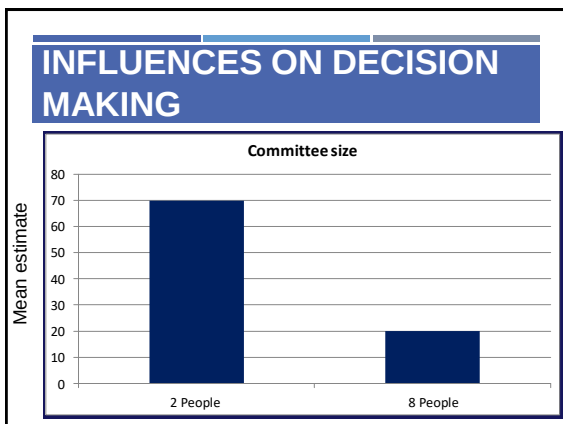
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INFLUENCES ON DECISION MAKING



- Given a group of 10 people:
 - How many different committees of 2 people can you create?
 - E.g., A and B, B and C, C and A, D and ...
 - How many different committees of 8 people?
 - E.g., A,B,C,D,E,F,G,H

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IT CAN BE WORKED OUT MATHEMATICALLY...

Formula for combination of choosing r unique ways from n possibilities is given by:

$${}^nC_r = \frac{n!}{r!(n-r)!}$$

Therefore...

$${}^{10}C_2 = \frac{10!}{2!(10-2)!}$$

$${}^{10}C_8 = \frac{10!}{8!(10-8)!}$$

Both work out to 45

$!$ is the symbol for factorial.

$n!$ is the product (multiplication) of all the numbers from n down to 1, inclusive e.g., $10 \times 9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$

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INFLUENCES ON DECISION MAKING



■ Availability Heuristic

- Judgements based on ease instances can be recalled
- Frequency and fluency affects availability

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HOW COULD
THIS
INFLUENCE AN
EYEWITNESS'S
DECISION
DURING A
LINE-UP?



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EMOTION AND DECISION-MAKING

POSITIVE AND NEGATIVE FRAMING

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INTERACTIVE TASK



- You will be presented with a series of scenarios.
- Your task will be to decide whether you want to take up the offers presented in the scenarios or not.

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TIME DECISION



- This scenario is expected to take *one hour*.
- You must decide whether to **GAMBLE** or **NOT GAMBLE** with your time.
- If you decide to **NOT GAMBLE**, you will perform a reading task for **40 minutes**.
- Read a paper on Probability theory and submit a summary of each section.
- If you decide to **GAMBLE**, you will be asked to choose one of three cards.
- One of the cards has a coloured tab on it.
- If you choose the coloured tab card, you will not perform the reading task and **not have to stay at all**.
- If you choose a card without a coloured tab, you will perform the reading task and **stay for one hour**.
- So, you have $1/3$ chance of **not staying at all** and a $2/3$ chance of **staying for one hour**.

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WHAT DO YOU CHOOSE TO DO?





GAMBLE?

OR NOT?

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TIME DECISION



- This scenario is expected to take *one hour*.
- You must decide whether to **GAMBLE** or **NOT GAMBLE** with your time.
- If you decide to **NOT GAMBLE**, you will perform a reading task and **be allowed to leave 20 minutes early**.
- Read a paper on Probability theory and submit a summary of each section.
- If you decide to **GAMBLE**, you will be asked to choose one of three cards.
- One of the cards has a coloured tab on it.
- If you choose the coloured tab card, you will not perform the reading task and **leave one hour early**.
- If you choose a card without a coloured tab, you will do the reading task and **not be allowed to leave one hour early**.
- So, you have $\frac{1}{3}$ chance of **leaving one hour early** and a $\frac{2}{3}$ chance of **not leaving early**.

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WHAT DO YOU CHOOSE TO DO?





GAMBLE?

OR NOT?

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MESSAGE COMPLIANCE DESIGN

- Scenario 1 was negatively framed
- Scenario 2 was positively framed
- Most students take gamble, especially in negatively framed condition.

■ Paese, P.W. (1995). Effects of framing on actual time allocation decisions. *Organizational Behavior and Human Decision Processes*, 61(1), 67-76.



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HEALTHCARE DECISION



National Cancer Institute has 2 possible treatments.



If treatment 1 adopted, of every 1000 people who get cancer 400 will be saved.



If treatment 2 adopted, there is 2/5 chance that 1000 of every 1000 will be saved and 3/5 chance that no people of every 1000 will be saved.



Only adequate resources to implement one option.



Which would you favour for national implementation? 1 or 2?

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HEALTHCARE DECISION



National Cancer Institute has 2 possible treatments.



If treatment 1 adopted, of every 1000 people who get cancer 600 will die.



If treatment 2 adopted, there is 2/5 chance that no people of every 1000 will die and 3/5 chance that 1000 of every 1000 will die.



Only adequate resources to implement one option.



Which would you favour for national implementation? 1 or 2?

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HEALTHCARE DECISION

- What were the rationales for your choices in each scenario?
- Can you tell which scenario was framed positively and which was framed negatively?
- Most chose risk averse irrespective of framing.
- Fagley, N.S., & Miller, P.M. (1987). The effects of decision framing on choice of risky vs certain options, *Organizational Behavior and Human Decision Processes*, 39(2), 264-277.

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Due to economic losses, a large car manufacturer must terminate up to 6,000 jobs. The vice-president has been identifying ways to avoid this situation.



They have developed two plans:

Plan A: 2,000 of the 6,000 jobs will be saved.

Plan B: 1/3 probability of saving all 6,000 jobs and 2/3 probability of saving no jobs.



Which plan should they adopt? A or B?

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JOB LOSS DECISION

What if the plans were:

- Plan A: 4,000 of the 6,000 jobs will be lost.
- Plan B: 1/3 probability of losing no jobs, and 2/3 probability of losing all 6,000 jobs

Which plan should they adopt? A or B?

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JOB LOSS DECISION

- Scenario 1 plans framed as Positive/Gains prospects
- Scenario 2 plans framed as Negative/Loss prospects
- Risk seeking higher in loss prospects than gain prospects.
- But small effect.
- Highhouse, S., & Paese, P.W. (1996). Problem domain and prospect frame: Choice under opportunity versus threat. *Personality and Social Psychology Bulletin*, 22(2), 124-132.

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ARE THERE ANY DIFFERENCES
BETWEEN THE 3 EXAMPLES?

DOES ANY DIFFERENCE INFLUENCE
THE OPTION YOU WOULD CHOOSE?

KÜHBERGER, A. (1998). THE INFLUENCE
OF FRAMING ON RISKY DECISIONS: A
META-ANALYSIS. *ORGANIZATIONAL
BEHAVIOR AND HUMAN DECISION
PROCESSES*, 75, 23-55.

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DISCUSSION TAKS - MESSAGE FRAMING IN THE COURTROOM



**How could
message framing
be used to
manipulate jury
decision-making?**

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