



JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES

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CONTENTS

A faint, stylized floral graphic is visible in the background on the right side of the slide. It features a central stem with several leaves and a cluster of small, light-colored flowers or buds at the top.

- Representativeness
- Availability
- Adjustment and Anchoring
- Discussion

Representativeness

- What is probability that object A belongs to class B?
 - What is probability that event A originates from process B?
 - What is probability that process B will generate event A?
- representativeness heuristic: in which probabilities are evaluated by the degree to which A is representative of B? (by the degree to which A resembles B).
- Representativeness is not influenced by several factors (affect judgment of probability).

Representativeness

“Steve is very shy and withdrawn, invariably helpful but with little interest in people, or in the world of reality. A meek and tidy soul, he has a need for order and structure, and a passion for detail”.

→ Steve’s occupation: farmer, salesman, airline pilot, librarian or physician, ... ?

Representativeness

- **Insensitivity to prior probability of outcomes**

→ When no specific evidence is given, prior probabilities are properly utilized, when worthless evidence is given, prior probabilities are ignored.

- **Insensitivity to sample size**

→ If probabilities are assessed by representativeness, judged probability of sample statistic will be independent of sample size.

- **Misconceptions of chance**

→ Researcher put too much faith in results of small samples and overestimated the replicability of results. This bias leads to selection of samples of inadequate size and over interpretation of finding.

Representativeness

- **Insensitivity to predictability**

→ If people predict solely in terms of favorableness of description, their predictions will be insensitive to reliability of the evidence and to the expected accuracy of the prediction.

- **The illusion of validity**

→ Given input variables of stated validity, a prediction based on several such inputs can achieve higher accuracy when they are independent.

- **Misconceptions of regression**

→ Failure to understand the effect of regression leads one to overestimate the effectiveness of punishment and to underestimate the effectiveness of reward.

Availability

Availability is affected by factors than frequency and probability.

- **Biases due to the irretrievability of instances**

→ When the size of class is judged by availability of its instances, a class whose instances are easily retrieved will appear more numerous than a class of equal frequency whose instances are less retrievable.

- **Biases due to the effectiveness of a search set**

- **Biases of imaginability**

- **Illusory correlation**

Adjustment and Anchoring

- **Insufficient adjustment**

→ Anchoring occurs when starting point is given to the subject and when the subject bases his estimate on the result of some incomplete computation.

- **Biases in the evaluation of conjunctive and disjunctive events**

→ Overall probability will be estimated in conjunctive problems and underestimated in disjunctive problems.

- **Anchoring in the assessment of subjective probability distribution**

Discussion

- Cognitive biases stem from reliance on judgment heuristics.
- Representativeness & availability: people do not learn the relation between sample size and sampling variability.
- People do not detect the biases in their judgments of probability.
- Representativeness, availability, adjustment, anchoring are highly economical and effective but leads to systematic and predictable errors.
- Understanding heuristics and biases to improve judgments and decisions in uncertainty cases.

THANK YOU

