Lecture Outline
Heuristics

Heuristics and Social Influence
Types of heuristics
Stereotypes as base rates
Dilution Effect
Other cognitive errors

Heuristics

Definition: Rules or principles that allow people to make social inferences rapidly and with reduced effort

- mental shortcuts
- rules of thumb

Social Inference

Social Inferences: 3 stages

1. Determine (ir)relevant information
2. Sample social information
3. Combine and integrate information

History of Cognitive Errors

- Up to 1960's
  People use formal statistical rules to make social inferences

- Around 1960
  People use formal statistical rules, but imperfectly

- Around 1970
  People don't use formal statistical rules at all
Kahneman & Tversky

Proposed 3 main ideas:

1. People rely on heuristics to make social inferences
2. Heuristics simplify the process of making social inferences
3. Heuristics sometimes lead to faulty reasoning

Representative Heuristic

Definition: categorizations made on the basis of similarity between instance and category members

Major shift in thinking:

Researchers began to focus on people’s weaknesses

Is using this heuristic always bad?

NO

An instance that IS a category member will share features with other category members.

But.................
Representative Heuristic

Similarity does not ensure category membership

<table>
<thead>
<tr>
<th>Category</th>
<th>Features of Category Members</th>
</tr>
</thead>
</table>
| People romantically interested in you | • Talk with you when together  
• Laugh at your jokes |

Features of New Instance

• Talks with you when together  
• Laughs at your jokes

Relying solely on similarity will often lead to incorrect categorizations

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Base Rate Study

Kahneman & Tversky (1973)

Purpose:

1. Show that people use the representative heuristic to make social inferences

2. Show that people fall prey to the “Base Rate Fallacy”

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Base Rate Fallacy

Definition: when people do not take prior probabilities into account when making social inferences.

Example of base rate:

50% of babies are girls  
50% are boys

If you estimate that your chances of having a girl is 65%, you are not using base rates to make your judgment
Base Rate Study
Kahneman & Tversky (1973)

Procedure:
1. Participants given following instructions:

Manipulation: Prior probability (base rate)
1/2 participants told of the 100
30% engineers
70% lawyers

1/2 participants told of the 100
70% engineers
30% lawyers

Competing Predictions:
1. People use the representative heuristic to make social inferences

Inferences will be based solely on similarity of target to category members
Base rates (70%-30%) will be ignored

Competing Predictions:
2. People use formal statistical rules to make social inferences

Inferences will be based on similarity of target to category members AND base rates (70%-30%)
**Base Rate Study**  
Kahneman & Tversky (1973)

**Results:**
Participants in the 30% condition judged Jack just as likely to be an engineer as participants in the 70% condition.

Which prediction does this support? Why?

**Base Rate Study**  
Kahneman & Tversky (1973)

**Conclusions:**
People *use* the representative heuristic when making social inferences

People *do not use* base rates when making social inferences

**Base Rate Study**  
Kahneman & Tversky (1973)

When asked: “Suppose that you are given no information whatsoever about an individual chosen at random from the sample. What is the probability that this man is one of the engineers?

**Result:** People used base rates when given no case information

**Base Rate Study**  
Kahneman & Tversky (1973)

**Conclusion #2:**
People use base rates when no case information is given

People do not use base rates when case information **is** given
Stereotypes as Base Rates

Definition of Stereotypes:
Generalized beliefs about the attributes that characterize members of a social group

Example: women tend to be passive men tend to be assertive

Kahneman & Tversky’s study showed that base rates only influenced social inferences in the ABSENCE of case information

Locksley et al. (1980) wanted to see if the same is true for stereotypes.

Assertiveness Study
Locksley, Borgida, Hepburn, Ortiz (1980)

Purpose: Test whether stereotypes act as base rates

Stereotype: Men are more assertive than women

Predictions:
1. When case information absent:
   sex stereotypes bias judgments of assertiveness

2. When case information present:
   sex stereotypes do not bias judgments of assertiveness
**Assertiveness Study**
Locksley et al. (1980)

**Procedures:**

**Step 1:** Participants read about 6 targets

**Step 2:** Participants rated each target’s assertiveness

“How often person behaves assertively in daily life”

(0 - 100% of the time)

**Targets:**

2 Targets = name only
(Susan and Paul)

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**Targets:**

2 Targets = name plus case information that was diagnostic of assertiveness

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**Example: Diagnostic case information**

The other day Nancy was in a class in which she wanted to make several points about the readings being discussed. But another student was dominating the class discussion so thoroughly that she had to abruptly interrupt this student in order to break into the discussion and express her own views.
Assertiveness Study
Locksley et al. (1980)

Targets:

2 Targets = name plus case information that was non-diagnostic of assertiveness

Example: Non-diagnostic case information

Yesterday Tom went to get his hair cut. He had an early morning appointment because he had classes that day. Since the place where he gets his hair cut is near campus, he had no trouble getting to class on time.

Locksley et al.'s Conclusion:

Diagnostic case information reduces people's reliance on base rates

Non-diagnostic information does not reduce people's reliance on base rates
Dilution Effect

Locksley’s study is not consistent with the dilution effect

Dilution Effect: the tendency for non-diagnostic information to weaken the effect of base rates on social inferences

Recap

Diagnostic information:
information that is relevant to a judgment

GPA is diagnostic of success in graduate school

Recap

Non-Diagnostic information:
information that is irrelevant to a judgment

Eating pizza for dinner is non-diagnostic of success in graduate school

Shock Study
Nisbett, Zukier, & Lemley (1981)

Purpose: Demonstrate that non-diagnostic information reduces effect of stereotypes on judgments
Pilot Study
Assessed stereotypes of college majors.
Engineering majors tolerate more electrical shock than music majors

Main Study
Step 1: Read study about pain suppressant
Step 2: Read vignette of two people in pain suppressant study
Step 3: Rate how much shock each tolerated in the study

Participants in study read about
Engineering major
Music major

Manipulation
Major only
Major plus non-diagnostic information

Prediction
Major only: big difference in shock tolerance, with engineer tolerating more
Major plus non-diagnostic information: small or no difference in shock tolerance
Note: The taller the bar, the more stereotypes influenced judgments of shock tolerance.

Assertiveness Study vs. Shock Study
Locksley et al. Vs. Nisbett et al.

Opposite results:

Locksley: non-diagnostic information does NOT weaken stereotyping

Nisbett: non-diagnostic information DOES weaken stereotyping

What caused the discrepancy?
Assertiveness Study vs. Shock Study
Locksley et al. Vs. Nisbett et al.

Locksley:
Non-diagnostic = generally useless
   Got a hair cut

Nisbett:
Non-diagnostic = generally useful
   Parent’s occupation

Clearly-irrelevant information

Not diagnostic of:
   particular judgment nor of judgments in general

Pseudo-irrelevant information

Not diagnostic of particular judgment, but is diagnostic of judgments in general

Bill H. Study
Hilton & Fein, 1989

Purpose: Test whether this distinction can reconcile discrepant results

Pilot Study: Assessed stereotypes of college majors
   Pre-med majors perceived as more competitive than social work majors
Main Study:

Step 1: Participants read about Bill H.

Step 2: Participants rated his assertiveness

Manipulations:

1. College major:
   - pre-med
   - social work

2. Type of information
   - clearly irrelevant
   - pseudo-irrelevant

Predictions:

1. Clearly-irrelevant information will NOT weaken stereotyping

2. Pseudo-irrelevant information WILL weaken stereotyping
Bill H. Study  
Hilton & Fein, 1989

Conclusion:

Pseudo-irrelevant information dilutes stereotyping, but clearly-irrelevant information does not

This clears up the discrepancy

Summary

People use prior probabilities when:
- no case information given
- or, clearly-irrelevant case information given

People do not use prior probabilities when:
- diagnostic case information given
- or, pseudo-irrelevant case information given

Other Cognitive Errors and Biases

- Sample Size
- Regression
- Conjunction Fallacy
- Illusory Correlation
- Confirmation bias
- Availability Heuristic

Sample Size

Failure to take sample size into account when making social inferences

\[ \text{Pop.} = 1000 \quad N_1 = 900 \quad N_2 = 20 \]
**Regression**

Observed score = true ability + chance

Whenever scores are influenced by chance, observed scores will over- or underestimate one’s true ability

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**Regression to the Mean**

- People don’t realize that……..
- Very high observed score lower next time
- Very low observed score higher next time

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**Conjunction Fallacy**

- False belief that two events have greater chance of co-occurring than either event by itself

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**Bank Teller Study**

Tversky & Kahneman (1983)

**Conjunction Fallacy**

Linda is 31 years old, single, outspoken, and very bright. She majored in philosophy. As a student, she was deeply concerned with issues of discrimination and social justice, and also participated in anti-nuclear demonstrations. Which of the following alternatives is more probable?

A) Linda is a bank teller
B) Linda is a bank teller and active in the feminist movement
**Bank Teller Study**  
Kahneman & Tversky (1983)

**Conjunction Fallacy**

Most participants picked ___.

If you picked ___, you have fallen prey to the conjunction fallacy

It is not possible for two events to be more probable than one of the events by itself

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**Illusory Correlation**

**Covariation Model**

Two events must co-vary to be seen as cause-effect

Steps of detecting Covariation

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**Illusory Correlation**

When people overestimate how strongly two events are correlated

Occur when one or more steps needed to assess co-variation goes wrong

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**Illusory Correlation**

**What might go wrong?**

Biased Sample

People often fail to realize that their sample is biased
**Confirmation Bias**

*What might go wrong?*

Confirmation biases in hypothesis testing

People often seek information that confirms rather than disconfirms their original hypothesis

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**Arthritis Study**  
Redelmeier & Tversky (1996)

Common Belief: Arthritis associated with changes in weather

Followed 18 arthritis patients for 15 months

2 x per month assessed:
- pain and joint tenderness
- weather

Correlated pain/tenderness with weather

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**Arthritis Study**  
Redelmeier & Tversky (1996)

Results:

Correlation between pain and weather near ZERO!!! in this study

Patients saw correlation that did not exist

Why? Confirmation biases in hypothesis testing............

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**Arthritis Study**  
Redelmeier & Tversky (1996)

Noticed when bad weather and pain co-occurred, but failed to notice when they didn't.

- Better memory for times that bad weather and pain co-occurred.
- Worse memory for times when bad weather and pain did not co-occur
Availability Heuristic

Tendency for people to make judgments of frequency on basis of how easily examples come to mind.

Availability Heuristic

Works when frequency correlated with ease of coming up with examples

But, sometimes frequency not correlated with ease of coming up with examples

The Letter “R” study
Tversky & Kahneman (1973)

Asked participants: “Is letter R more likely to be the 1st or 3rd letter in English words?

Most said R more probable as 1st letter

Reality: R appears much more often as the _____ letter, but easier to think of words where R is _____ letter

(you fill in the correct answers)