Cognitive and Implicit Bias in Decision Making

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System 1 / System 2

- Thinking, Fast and Slow (2011)
- System 1
  - Fast, automatic, frequent, emotional, stereotypic, subconscious
- System 2
  - Slow, effortful, infrequent, logical calculating, conscious

System 1 / System 2
System 1 / System 2

Hueristics
- Mental shortcuts
  - Focus on the easy
  - Ignore the complex
- Upside
  - Fast
- Downside
  - Cognitive Bias

Some Types of Cognitive Biases
- Heuristics
  - Simplifying
  - Availability
- Biases
  - Hindsight
  - Confirmation
- Effects
  - Priming
  - Anchoring
Heuristics

• Conjunction Rule: $P(A \& B) \leq P(A) \lor P(B)$
  - The probability that (A) and (B) are both true cannot be greater than the probability that (A) or (B) are each true.

• Conjunction fallacy

Heuristics

• The “Linda problem”
  - “Linda is 31 years old, single, outspoken and very bright. She majored in philosophy. As a student, she was deeply concerned with the issue of discrimination and social justice, and also participated in antinuclear demonstrations.”

Heuristics

• Which alternative is more probable?
  - Linda is a bank teller.
  - Linda is a bank teller and is active in the feminist movement.
Heuristics

- Which alternative is more probable?
  - Linda is a bank teller.
  - Linda is a bank teller and is active in the feminist movement.

85%

Feminists  Bank Tellers

Judgment under Uncertainty

Anchoring Effect

- Judgment under uncertainty
- Irrelevant “anchors” contaminate results

Judgment under Uncertainty: Heuristics and Biases, Kahneman et al. (1974)
Anchoring Effect

- Is the percentage of African nations among UN members larger or smaller than the number?

- What is your best guess of the percentage of African nations in the UN?

Anchors can contaminate results

Judicial Decisions

- Extraneous factors
  - Food breaks
  - Time of day

Extraneous Factors in Judicial Decisions, Danziger et al. (2011)
Judicial Decisions

- Extraneous factors
  - Food breaks
  - Time of day

- Experienced judges
  - More releases early in the morning
  - More releases following meal breaks

- Less likely to take a risk when fatigued and hungry

Jury Decisions

- Intersection of morality and emotional choices
- Moral intuitions may not be internally consistent

Jury Decisions

- Case 1: A child suffered moderate burns when his pajamas caught fire as he was playing with matches. The firm that produced the pajamas had not made them adequately fire resistant.

- Case 2: The unscrupulous dealings of a bank caused another bank a loss of $10 million.
The Stroop Effect

- John Ridley Stroop, American psychologist
- Interference in the reaction time of a task
- Round 1
  - Read the written words
- Round 2
  - Say the colors of the letters (not the word)

Studies of interference in serial verbal reactions, Stroop (1935)

The Stroop Effect

- RED BLUE GREEN BLUE BLACK
- YELLOW GREEN ORANGE GREEN RED
- PINK BLACK BROWN YELLOW GRAY
- BLUE RED GREEN PINK BROWN
- ORANGE BLACK BLUE GREEN RED
The Stroop Effect

Automaticity
- Automatic reading does not need controlled attention, but still uses enough attentional resources to reduce the amount of attention accessible for color information processing
- Lack of a short cut slows reaction time

Implicit Association Test
- Detects strength of automatic associations
- Strong automatic associations will result in a faster and more accurate response

Implicit Association Test
- 2 fixed categories of “opposites” + 2 evaluative categories
- The more closely associated the categories, the easier and quicker it is to assign the words to the right category
Implicit Association Test

- Faster reaction times show implicit connections (bias)
- Implicit bias is a System 1 response, whereas egalitarianism or conscious racism are a System 2 responses.

Project Implicit

- Founded in 1998 by 3 scientists
  - Tony Greenwald (UW)
  - Mahzarin Banaji (Harvard)
  - Brian Nosek (UVA)
- Goal is to educate the public and collect data
- https://implicit.harvard.edu

Implicit Association Test (IAT)

Asian | Weight | Religion | Gender-Science | Weapons | Age | Gender-Career | Race | Arab-Muslim | Sexuality | Disability | Native | Skin Tone
Project Implicit

- **MALE/LEADER**
  - (Left Leg)

- **FEMALE/SUPPORTER**
  - (Right Leg)

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Project Implicit

Emily

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Project Implicit

Josh

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Project Implicit

- MALE/LEADER
  - (Left Leg)
- FEMALE/SUPPORTER
  - (Right Leg)

VS.

- MALE/SUPPORTER
  - (Left Leg)
- FEMALE/LEADER
  - (Right Leg)

Stanford Gender Study (2012)

- Used a Gender IAT specifically tailored to gender and leadership.
- When following instructions to sort images rapidly, the average person found it easier to pair words like "president", "governor", and "executive" with male names and words like "secretary", "assistant", and "aide" with female names.
- The more difficulty a person had in classifying a woman as a leader, the less likely the person was to vote for a woman.
- Those whom the IAT found to be the most biased against women leaders were 12 percent more likely to vote for a male candidate over an equally-qualified female candidate.


Self-Reporting

- Gallup Poll, March 2016:
  - "Clinton preferred for experience; Sanders preferred for care"
- Political polling only tests conscious preferences

Bias Test Results Reveal

- Most people tend to prefer white to African American, young to old, and heterosexual to LGBTQ.
- Members of traditionally disadvantaged groups tend to show the same set of preferences.

Implicit Bias: Scientific Foundations, Greenwald et al. (2006)

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Internalized Bias

“There is nothing more painful to me at this stage in my life than to walk down the street and hear footsteps and start thinking about robbery...then look around and see somebody white and feel relieved.”

-Reverend Jesse Jackson

In America: A Sea Change On Crime
By BOB HERBERT, New York Times
Published: December 12, 1993

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Implicit Biases

Implicit biases are:

- **Unintentional**. . .because they are not planned responses.
- **Involuntary**. . .because they occur automatically in the presence of an environmental cue.
- **Effortless**. . .because, as a short cut, they do not deplete an individual’s limited information processing resources.

Priming Unconscious Racial Stereotypes About Adolescent Offenders, Graham et al. (2004)
Conscious Thought Process

With a conscious thought process, there is no short cut and the thinker is:

- Aware of the thought
- Intends the thought
- The thought requires effort

Priming Unconscious Racial Stereotypes About Adolescent Offenders, Graham et al. (2004)

Favorable Conditions for Bias

Implicit biases are likely to be more influential when:

- Available information is limited
- Time allocated for decision-making is limited
- Decision-makers are cognitively taxed
- Decision-making is highly discretionary

Implicit Racial Bias in Public Defender Triage, Richardson et al. (2013)

Bias in Action

Implicit bias predicts real-world behaviors:

“We find strong and consistently negative correlations between the IAT score and the probability that the firm/recruiter invited the applicant with an Arab/Muslim sounding name for an interview. The results imply that the probability to invite job applicants with names such as Mohammed or Reza decreases by six percentage points when the recruiter has at least a moderate implicit stereotype toward Arab/Muslim men in Sweden.”

Implicit Discrimination in Hiring: Real World Evidence, Rooth (2007)
Bias in Action

Are Emily and Greg More Employable than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination

- In response to help-wanted ads in Chicago and Boston newspapers, the researchers sent out resumes with either African-American- or white-sounding names and then measured the number of callbacks each resume received for interviews.

- Job applicants with white names needed to send about 10 resumes to get one callback; those with African-American names needed to send around 15 resumes to get one callback.

- Race, the authors add, also affects the reward to having a better resume. Whites with higher quality resumes received 30 percent more callbacks than whites with lower quality resumes. But the positive impact of a better resume for those with African-American names was much smaller.

http://www.nber.org/papers/w9873

Legal System Implications

- Shooter bias in law enforcement
- Hiring and discipline decisions in law enforcement and legal employment
  - Legal profession is 90% white (Bureau of Labor)
  - Legal profession is 31% female (ABA Commission on Women in the Profession)
  - Composition of the bench “gavel gap”
  - Who is electable as DA or Sheriff
- Prosecutorial Discretion
- Public Defender Triage
  - More time on who seems innocent
- Release Decisions
- Sentencing
- Jury Selection

Gavel Gap

The racial and gender breakdown of State Court Judges

- The American people are 51% women
- And 38% people of color
MacArthur Report

- African-Americans are:
  - 4.2 times more likely to be referred to a DA for a case review
  - 4.1 times more likely to have a case accepted for prosecution
  - 4.4 times more likely to be convicted of an offense
  - 4.3 times more likely to be sentenced to jail
  - 3.7 times more likely to be sentenced to probation
  - 4.0 times more likely to be required to pay a fine as part of a judgment
  - Less likely to receive a citation in lieu of arrest
  - Less likely to be released on their own recognizance


Need for Debiasing Widespread

Public Defenders:

- Conscious attitudes are weakly related to implicit attitudes.
- Confidence in one’s own egalitarianism can be an obstacle to identifying implicit biases, meaning that individuals who became public defenders in order to fight racial injustice may be just as susceptible to the effects of implicit biases as those with other motives.
- Even if public defenders are nonwhite, they are in danger of being influenced by implicit biases.

Implicit Racial Bias in Public Defender Triage. Richardson et al. (2005)

Debiasing Through Feedback

- A recent study suggests that receiving feedback about IAT results can debias.
- The three components of this study tested and provided support for two main hypotheses: (1) IAT performance feedback leads to a reduction in bias, and (2) a self-regulation process facilitates this effect.

ABA Implicit Bias Task Force

- Education regarding existence of implicit bias
- Reduce cognitive load
  - More time and space for accurate reflection
- Pay attention to possible logic errors
- Employ checklists
  - Remember a broad range of factors in decision-making
- Make decisions with groups of people with differences
  - Help counteract biased thinking
- Reduce bias-related cues within the environment
- Redact first names and addresses from job applications
- Use guided imagery and "priming" to think positive thoughts about specific groups

Reducing Shooter Bias

- Unarmed African-Americans shot more often than unarmed whites.
- "...[I]f a target was African American, participants generally required less certainty that he was, in fact, holding a gun before they decided to shoot him."
- African-American targets shot more quickly than white targets
- Correlation between knowledge of cultural stereotype of African Americans as more violent and shooter bias.
  - Simply knowing the stereotype increases bias

The Police Officer's Dilemma: Using Ethnicity to Disambiguate Potentially Threatening Individuals, Correll (2002)

Reducing Shooter Bias

- When subjects formed a specific, goal-directed plan to ignore race, they were able to reduce shooter bias.
- Participants of the first study were instructed to ignore race.
- Participants of the second study were instructed to adopt the following strategy: "I will always shoot a person I see with a gun!" and "I will never shoot a person I see with an object!" Participants in the implementation intention strategy condition read, "If I see a person with a gun, then I will shoot!" and "If I see a person with an object, then I will not shoot!"

Cognitive Intervention and Bias

- British study investigated whether forming “implementation intentions” could promote fast responses to attitude-incongruent associations (e.g., woman-manager).
- Planning to associate women with science engendered fast IAT responses.
- Forming egalitarian goal intentions was less effective.
- Managers who planned to associate women with high status positions showed more neutral IAT scores and effects were maintained 3 weeks later.


National Implicit Bias Training

Department of Justice
Office of Public Affairs
FOR IMMEDIATE RELEASE
Monday, June 27, 2016

Department of Justice Announces New Department-Wide Implicit Bias Training for Personnel
The Department of Justice announced today that it will train all of its law enforcement agents and prosecutors to recognize and address implicit bias as part of its regular training curricula. The new training, based on the latest social science research and best practices in law enforcement, will begin across the department in the next few weeks.

Implicit Bias Lawsuit

- Plaintiffs advanced implicit bias theory
  - Allegations of subtle racial bias in virtually every hiring decision made by state agencies
- Statistics-driven argument
  - Plaintiff’s statistics showed fewer interviews and hiring of minority applicants
- All seven judges recognized impact of implicit bias
  - But no proof of systemic discrimination
- Pippen v. State, 854 N.W.2d 1, 27 (Iowa 2014)
THANK YOU!

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