Cognitive bias

Ifeoma Adaji

Learning objectives

- Define cognitive bias and why it is important
- List and explain examples of cognitive biases and how we can reduce them
  - Social comparison
  - Anchoring effect
  - Conformity bias
  - Cognitive dissonance

Cognitive bias

- When our personal experience and preferences influence or limit our objective thinking

- Describes the tendency for people's feelings and experiences to affect their judgment.

- Result of one's brain attempting to simplify information processing

- Cognitive bias refers to one's thought processes

Why cognitive bias

- We are influenced by cognitive bias – think persuasive strategies
- Systems are developed taking advantage of our cognitive biases
  - Important to identify them and understand how they influence peoples' decisions
- Cognitive bias can be introduced into AI systems
- AI systems can be complicated by how humans analyze and interpret data and form human-level explanations
- The more we know about cognitive bias, the better we can work with AI and machine learning algorithms.

Types of cognitive biases

- Social comparison
- Anchoring effect
- Conformity bias
- Cognitive dissonance

Social comparison

- Based on Festinger (1954)'s theory of social comparison
- Hypothesized that:

  - *"Other people who are **similar** to an individual are especially useful for self-evaluation. "*
- People derive sense of self through comparing themselves with others
- Similarity can be based on attributes of people such as gender, age, physician condition, position, views/opinions culture, religion, etc.

Social comparison

- People constantly evaluate themselves, and others, in domains like attractiveness, wealth, intelligence, and success

- People determine their own social and personal worth based on how they compare against others

- Comparing self to others
  - May motivate people to improve
  - May lead to feelings of dissatisfaction, guilt, or remorse, and engage in destructive behaviors like lying or disordered eating

Motives for social comparison

Self evaluation of abilities

- Compare oneself with someone who performs some initial relevant task
  - A target similar to oneself
  - Means of measuring personal development
- "Can I do X?" anticipated success at unfamiliar tasks

Self evaluation of opinions

- Preference (e.g. "Do I like X?)
- Belief Evaluation (e.g. "Is X correct?")
- Preference Prediction (e.g. "Will I like it?")

Motives for social comparison

Self-enhancement

- To improve self-esteem
- Interpret information from self-comparison positively and use it to further enhance one's goals
- Upward comparison or downward comparison

Social comparison

Upward comparison

- We make upward comparisons consciously or subconsciously when we compare ourselves with others we think are "better"(e.g. on social media)
  - "Better" is subjective
- Can boost subjective well-being
  - Can help individuals self-evaluate and self-improve which could lead to self-enhancement
  - Can make people feel good about themselves; when they see similarities between themselves and others that are "elite" or "superior"
- Can harm subjective well-being
  - Can make one feel "less" than others. E.g. social media followers for influencers
    - But can be a source of motivation. E.g. using the picture of slimmer people to motivate one to lose weight

Social comparison

Downward comparison

- We make downward comparisons consciously or subconsciously when we compare ourselves with others we think we are "better" than
  - "Better" is subjective
  - Can be a defensive mechanism for self-evaluation
- Can boost subjective well-being
  - Can make people feel good about themselves; when they see they are *better* than many people
- Can harm subjective well-being
  - Can make one realize how "bad" things are for others
    - Could result in the feeling of guilt for some

Social comparison in social media

- Compared to offline setting, information on social media is more visible
- "When users are notified about other people's life updates through social media postings, they would spontaneously and unintentionally practice social comparison"
- "Social media generates ubiquitous comparison information and accessible feedback, such as the number of followers, likes, comments, and retweets."
  - "Such information allows people to form impressions of others quickly"
- "Patients use social media to compare themselves with other patients to find out how "bad" their health conditions are and how well the treatments work."

Source: Jiang, Shaohai, and Annabel Ngien. "The effects of instagram use, social comparison, and self-esteem on social anxiety: A survey study in Singapore." *Social Media+ Society* 6.2 (2020): 2056305120912488.

Social comparison and social media

- "Social comparison increased one's social anxiety"

- "Social media users often compare themselves with others' appearance, ability, popularity, and social skills (Feinstein et al., 2013)"

- "Such comparisons trigger strong psychological responses, particularly when others selectively present more positive information"

- "Instagram provides various filters to edit and enhance photos, and the exposure to these idealized images of others can activate negative emotions, contributing to poor psychological well-being such as social anxiety (Sherlock & Wagstaff, 2018)"

Source: Jiang, Shaohai, and Annabel Ngien. "The effects of instagram use, social comparison, and self-esteem on social anxiety: A survey study in Singapore." *Social Media+ Society* 6.2 (2020): 2056305120912488.

Social comparison and social media

- https://www.floridatechonline.com/blog/psychology/why-facebook-is-making-us-sad-social-comparison/
- https://www.socialmediatoday.com/news/facebook-shares-new-data-on-the-psychological-impacts-of-social-comparison/576771/

Anchoring effect

- A person's decisions are influenced by a particular reference point or "anchor"
  - This could be the first information we receive
- Once the anchor is established, you are biased towards it
- We tend to adjust our decisions from this reference point only
  - Reference point is our current emotional state
- the first impression or perception that we make of anything stays with us no matter how much we claim to have analyzed all possible factors in making a decision
- It influences the amount we pay for products

Anchoring effect

Customer: "This $50 shirt is too expensive for me"

Sales person: "We have this piece on sale. You can get it for 25% off"

Customer: "That sounds like a good deal. I will buy it. "

Group A: Are there more or fewer than 10 ethnic groups in Nigeria?

Group B: Are there more or fewer than 50 ethnic groups in Nigeria?

Group C: How many ethnic groups are there in Nigeria

Source: Holm, Charles. The 25 Cognitive Biases: Uncovering The Myth Of Rational Thinking

Anchoring effect

- A way to overcome the anchoring effect bias is to compare things
  - emotions, prices, characteristics
- Sticking to one will end up biasing your evaluation capability
- We should always be open to alternative options

Conformity bias

- Adapting our behaviours to that of others because of the need to belong or be similar to others
- Imitating others instead of using our individual judgements
- Could be unintentional
- People seem to be more comfortable behaving like others
  - We contribute to a charity if people we know are doing it
  - We follow someone if our friends have followed them too
- Could be used to make people change for the better but can have its disadvantages too
  - People doing something wrong because those around are doing it
  - Eating out with others, we order dessert if they do
- Consensus (social proof) strategy of Cialdini takes advantage of this

Conformity bias

Reducing conformity bias

- Practice in small ways
  - Make choices ahead, e.g. decide not to eat dessert before going to a restaurant with others
- Change social circle if possible or reduce group size
  - Conformity bias increases with group size
- Accept others with differing opinions so that others in the groups start to accept people with other opinions
  - Conformity bias reduces when there is at least one person with differing opinions

Cognitive dissonance

- We have an inner drive to hold all our attitudes and beliefs in harmony (or consistency) and avoid disharmony (dissonance)
  - Festinger's (1957) cognitive dissonance theory
- Mental conflict that occurs when a person's behaviors and beliefs do not align.
  - E.g. when a person holds 2 beliefs that contradict one another
- Causes feelings of unease and tension
- Commitment strategy of Cialdini takes advantage of this bias

Cognitive dissonance

Can be caused by

- Forced compliance. When one is asked to do something they really don't want to do
  - If behaviour Is carried out, dissonance will have to be reduced be re-evaluating their attitude towards the action

- Decision making. In making decisions, both alternatives have good and bad points
  - You have to accept the disadvantages of the chosen alternatives
  - You can't enjoy advantages of the unchosen alternative
  - To reduce dissonance, one can increase attractiveness of the chosen alternative and decrease attractiveness of the rejected alternative

- Effort. We often place a lot of value on things that we have achieved through considerable effort
  - Dissonance will be caused if we spent a lot of effort to achieve something and then valued it negatively.
  - To reduce dissonance, we re-evaluate the effort or the value of the thing

Cognitive dissonance

Can be reduced by:

- Changing existing beliefs
- Adopting new beliefs
- Reducing the importance of one's beliefs

Summary

- Cognitive bias describes the tendency for people's feelings and experiences to affect their judgment.
- Examples include
  - Social comparison
  - Anchoring effect
  - Conformity bias
  - Cognitive dissonance

References

- BIASES and HEURISTICS : The Complete Collection of Cognitive Biases and Heuristics That Impair Decisions in Banking, Finance and Everything Else by Henry Priest. July 2019. (The Psychology of Economic Decisions Book 7) . Cognitt Consulting

- Jiang, Shaohai, and Annabel Ngien. "The effects of instagram use, social comparison, and self-esteem on social anxiety: A survey study in Singapore." *Social Media+ Society* 6.2 (2020): 2056305120912488.

- Sherlock, M., Wagstaff, D. L. (2018). Exploring the relationship between frequency of Instagram use, exposure to idealized images, and psychological well-being in women. Psychology of Popular Media Culture, 8, 482–490.

- Yang, C.-c, Robinson, A. (2018). Not necessarily detrimental: Two social comparison orientations and their associations with social media use and college social adjustment. Computers in Human Behavior, 84, 49–57.

- Feinstein, B. A., Hershenberg, R., Bhatia, V., Latack, J. A., Meuwly, N., Davila, J. (2013). Negative social comparison on Facebook and depressive symptoms: Rumination as a mechanism. Psychology of Popular Media Culture, 2, 161–170.

- https://www.simplypsychology.org/cognitive-dissonance.html

- Solomon E. Asch, Effects of Group Pressure Upon the Modification and Distortion of Judgments. In Harold Guetzkow (ed.), Groups, Leadership and Men (Pittsburgh, PA: Carnegie Press, 1951) pp. 177–190; Solomon E. Asch, Studies of Independence and Conformity: I. A Minority of One Against a Unanimous Majority, *Psychological Monographs*, 70, 1-70 (1956).