Cognitive Biases and Heuristics

“The confidence people have in their beliefs is not a measure of the quality of evidence but of the coherence of the story the mind has managed to construct.”
Daniel Kahneman

Cognitive Biases: flaws in the way our brains process information.
• Our thinking is too easily influenced by biases and superficial factors.
• We are influenced by how information is presented.
• We often make irrational decisions for emotional or quirky reasons.

Cognitive flaws and biases can be mitigated by metacognition, which is “thinking about thinking”.
• Skepticism is a systematic effort in metacognition, which means understanding how we think and avoiding common mental pitfalls.
• A cognitive bias is a tendency to think in a certain way:
  • To favor certain kinds of information.
  • To prefer some conclusions over others.

Heuristics: rules of thumb or mental shortcuts that are not reliably true.
• Rules of thumb that allow you to approximate a likely answer quickly.
• Not strictly true and often result in error.
• Oversimplified and may result in a cognitive bias.

Cognitive Biases

Does it really matter if an item is priced at $19.99 instead of $20.00?
• Leftmost digit bias: we’re mainly influenced by the left most digit in any number.
• Handedness bias: given the choice between two objects, right-handed subjects were more likely to choose the option on the right; left-handed subjects, to choose the option on the left.
• Framing bias: how you think about something can be dramatically affected by how it is presented to you. (good news and bad news)

Gambler’s fallacy: thinking that past events influence future events, even when there is no causal connection.
• In group bias: making much more favorable judgments of our in-group than an out-group.
• Self bias: favoring our own judgments over the judgments of others.
• Projection bias: assuming that other people do think or should think like we do.
Consensus bias: assuming that our opinions are in the majority.
Hindsight bias: believing that a certain outcome was inevitable, destined to happen, even if it was a close call.

Heuristics are a form of cognitive bias but can be semi-useful.

If you always assume a situation is more complicated than it appears, you will be right most of the time.
Availability heuristic: the unstated assumption that if we can easily call an example of something to mind, it must therefore be common or important.
  • Someone at the DMV was rude.
  • Someone you know was mugged in New York.

Representativeness heuristic: thinking someone or something belongs to a category if they have features typical of that category.
Anchoring heuristic: a common marketing tool based on the tendency to attach or anchor to an initial offer or bid.

Anchoring goes beyond money. We also anchor things in time or place, and we anchor value judgments.

The next time you see a commercial or watch the news, or simply chat with friends, try to get into the “metacognition zone.”

• How are you processing and evaluating information?
• How are your judgments biased?
• How are you being psychologically manipulated?

Confirmation Bias: the tendency of individuals to seek out or interpret new information for previously held notions or beliefs, even when such interpretations don’t hold up to statistical scrutiny.

Confirmation Bias:
  • Tends to notice, accept, and remember information that appears to support an existing belief.
  • Tends to ignore, distort, explain away, or forget information that seems to contradict an existing belief.

In an effort to make sense of all the information we encounter, we produce a specific worldview – a framework, narrative, or paradigm.

• The narratives we use to understand the world don’t just organize information; they curate and filter it to serve those very narratives.
• **Confirmation bias** is often subtle and nuanced, and because of this, it’s especially pernicious.
• **Confirmation bias** is a more unconscious bias, possibly undermining the rational process.

How **confirmation bias** works:

• Relying on your subjective perception isn’t only unreliable, it’s biased by your existing beliefs.
  • A husband believes he always puts down the toilet seat.
  • His wife, with whom he shares a bathroom, believes he never puts down the toilet seat.
  • They are working from the same set of data but arrive at opposite conclusions. **WHY?**
  
    • Well, the husband notices when he remembers to put down the seat.
    • The wife notices when he doesn’t.
    • He doesn’t notice when he forgets (that’s what it means to forget).
    • She doesn’t notice when he does put the seat down because it’s a nonevent.

**Confirmation bias** works subtly in our everyday lives.

We may have a narrative that blue-eyed people are rude.
• Whenever someone is rude to you, you may look to see what color eyes he/she has.
  • If blue eyes, this confirms your narrative and you remember it as evidence to support it.
  • If not blue eyes, you dismiss that information as an exception and promptly forget the encounter.

*This is often how bigotry is formed and maintained.*

The concept of an exception implies a conclusion.

• An exception, then, should be treated as data, data as valid as the instances that support your narrative.
• However, we subconsciously treat confirming instances as data and contradictory instances as exceptions.
• Or we make a specific excuse, such as, “The brown-eyed person wasn’t THAT rude.”
Further examples of confirmation bias:

- The “toupee fallacy”: Some people believe they can always tell when someone is wearing a toupee (breast implants, contact lenses, lifts, etc.).
  - Confirmation bias of this belief comes from all the times when someone was wearing a toupee and they noticed.
- Let’s say you make the observation that people who drive sports cars are more likely to have cats as pets.
  - In order to test your hypothesis, you randomly ask people you encounter with sports cars if they own a pet and what type.
  - You then tally up how many sports car owners have cats.
  - You might think you have tested your hypothesis, but you haven’t. You have only looked to confirm your hypothesis.

It’s important to remember that knowing about cognitive biases does not make you immune to them.

- Metacognitive skills are tools.
- Awareness of metacognitive skills is just a start.
- Practice and reflection are necessary to put these skills to use.
- Doing this will help you minimize your flaws and biases, but you can never be rid of them.

*In the end, if you want to test a hypothesis, try to prove it wrong. Do not only look for evidence to prove it right.*