A Tale from the Trenches: Cognitive Biases and Software Development

ICSE 2020, 23-29 May 2020, Seoul, South Korea

Category	Cognitive Bias	Definition	Mohanani Cat. ⁱ
Preconceptions	Confirmation	The tendency to search for, interpret, focus on and remember information in a way that confirms one's preconceptions.	Interest
	Selective perception	The tendency for different people to perceive the same events differently.	Perception
Ownership	IKEA effect	The tendency for people to ascribe greater value to items that they have created, designed or assembled.	Interest
	Endowment effect	The tendency to demand more to give up an object than one is willing to pay to acquire it.	Stability
Fixation	Anchoring and adjustment	The tendency to give excessive weight to the initial starting value (or anchor), and only ascribe minor changes (or adjustments) from that initial value.	Stability
	Belief preservation	The tendency to maintain a belief even after the information has been refuted or otherwise shown to be inaccurate.	Stability
	Semmelweiss reflex	Unthinking rejection of new information that contradicts established beliefs or paradigms	Pattern recognition
	Fixation	The tendency to disproportionately focus on one aspect of an event, object, or situation.	Pattern recognition
Resort to Default	Default	The tendency to choose preselected options over superior, unselected options.	Stability
	Status-quo	The tendency to irrationally prefer, maintain and defend current conditions, operating procedures, status, or social order.	Stability
	Sunk Cost	The tendency to invest more future resources in a situation in which a prior investment has been made, compared to a similar situation in which a prior investment has not been made	Decision
Optimism	Valence effect	The tendency to give undue weight to the degree to which an outcome is considered as positive or negative when estimating the probability of its occurrence.	Interest
	Invincibility, Overoptimism, Overconfidence	The tendency to over-trust and overestimate one's own abilities, and to overestimate favorable and pleasing outcomes.	Action-oriented
	Wishful Thinking	The tendency to underestimate the likelihood of a negative outcome and vice versa	interest
Convenience	Hyperbolic discounting	The tendency of people to prefer options that offer smaller rewards with more immediate pay-off to options that with larger rewards promised for future.	Memory / Decision
	Time-based bias	The tendency to reduce attention via short-term thinking and hyperbolic discounting errors	Memory
	Miserly information processing	The tendency to avoid deep or complex information processing.	Action-oriented
Subconscious action	Misleading information	The tendency to blindly follow provided information without being able to self-evaluate.	Action-oriented
	Validity effect	The validity effect occurs when the mere repetition of information affects the perceived truthfulness of that information.	Interest
Blissful ignorance	Normalcy effect	The tendency to systematically underestimate the probability or extent of expected disruption during a disaster.	Action-oriented
	Contrast effect	The enhancement or reduction of a certain perception's stimuli when compared with a recently observed, contrasting object.	Perception
	Framing effect	The tendency to give different responses to problems that have surface dissimilarities but that are really formally identical.	Perception
	Halo effect	The tendency to use global evaluations to make judgements about specific traits.	Perception
	Representativeness	The tendency to reduce many inferential tasks to simple similarity judgements.	Perception
Memory bias	Primacy/Recency Effects	The tendency to remember the first and last few items in a sequence more than those in the middle.	Perception
	Availability	Tendency of being influenced by information that is easy to recall and by the information that is recently or widely publicized.	Pattern Recognition

Definitions of Cognitive Biases

ⁱ Mohanani Category refers to the cognitive bias categories described by Mohanani et al.[30]