
How to fail, correctly

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Other cognitive failures we didn't discuss in class:

Anchoring heuristic. Off the top of your head, what is the percent of African states in the UN? Tversky & Kahneman (1974) spun a wheel of fortune, rigged to land only on 10 and 65, then asked people whether they thought the number on the wheel was greater than or less than the percent of African states in the UN. Funnily enough, when asked to guess the percent of African nations in the UN, people who landed on 10 guessed a median of 25, while people who landed on 65 guessed a median of 45. Humans tend to anchor to irrelevant information which alters the way we process relevant information later on.

Availability heuristic. Which is greater—(a) the number of words beginning with letter *k*, or (b) the number of words with *k* as the third letter? Most people say (a), but (b) is actually greater. Why? Words starting with *k* pop up in our heads more easily than those with *k* as the third letter, and we overvalue and overestimate information that is quickly available to our brain in comparison to information that doesn't come to mind right away (Tversky & Kahneman 1973).

Perceptual set. Expecting something can make it (seem to) come true! When sneaky researchers claimed insanity to get admitted into mental health hospitals, the staff at the hospitals actually believed the researchers were insane, even perceiving normal behaviors as evidence of psychiatric illness (Rosenhan 1973). For instance, when a researcher took a stroll due to boredom, medical staff believed this was because a pathological nervousness forced him to get up and about—even though walking is a perfectly normal activity. Although this outcome can partly be explained by confirmation bias, this is more than seeking evidence—our *perceptions* are also altered by our existing expectations.

Cognitive dissonance. Soldiers protect people (good), but they also kill people (bad). What goes on inside the mind of people who live with contradiction? Like all humans, these soldiers will try to reduce mental contradiction (also called *dissonance*) by thinking new thoughts that justify the contradiction. For example, soldiers may try to reduce the dissonance between *I am a good person* and *I kill people* by adding new thoughts like *I am only doing my job*, which makes them feel better about doing things that they otherwise find morally wrong (Liebes & Blum-Kulka 1994).

Just world phenomenon. People cross-culturally tend to believe life is fair: that other people deserve what they get and get what they deserve (Lerner & Miller 1978; Furnham 2003). This may explain why a “blame the victim” mentality arises when people hear about sexual assault cases (Janoff-Bulmon et al. 1985).

Belief perseverance. Interestingly, in the “Dewey Defeats Truman” example (in the presentation, but not discussed in class), the same people predicting Dewey's victory actually praised various aspects of Truman's campaign. For instance, *Time* magazine acknowledged that huge crowds swarmed Truman's election speeches while Dewey's support was lackluster, but *Time* dismissed the turnout as driven “by the U.S. citizen's sympathy for the underdog, by his admiration for spunkiness, or by just plain curiosity” (Lemelin 2001). While confirmation bias makes you look for evidence that confirms your beliefs, *belief perseverance* makes you stick to your beliefs when evidence goes against it.

Survivorship bias. In World War II, as Nazi forces downed hundreds of American pilots, the US Army faced a dilemma: the more armor on a plane, the more it resists damage, but heavier armor makes planes harder to fly. The army inspected its planes and realized that bullet holes were 50% denser on the fuselage than on the engine. They realized they could save lives by putting more armor on the fuselage since that's where the bullets were... or so they thought, until a mathematician pointed out the planes that got shot down probably had more bullet holes on the engines—which would explain why only planes with fewer holes on engines returned back to base (Ellenberg 2014). The army had used an unrepresentative sample of planes because they only looked at survivors, and found a result that was out of touch with reality.

Further reading

- Ellenberg, J. *How not to be wrong*. (Penguin Group, 2014)
- Furnham, A. *Pers. Individ. Differ.*, **34**, 795, (2003).
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- Tversky, A., & Kahneman, D. *Science*, **185**, 1124, (1974).
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