Examples of heuristics used by cognitive systems.

At times, cognitive systems prioritize computational efficiency over accuracy. This is called a heuristic approach to problem solving. A heuristic is a short cut in decision making, used in both natural and artificial systems (RPoldrack, 2011). Although heuristics are prone to error, they often yield desired outcomes while succeeding in efficiency. Efficiency is determined by saving time and energy either mentally or computationally (shorter codes). Three examples of this approach to problem solving are the familiarity heuristic, risk aversion, and searching and sorting algorithms.

A type of psychological heuristic approach used frequently by humans is the familiarity heuristic. This heuristic comes from a cognitive bias we have that things that are familiar to us are the better and safer choice (Herbert, 2010) For example, when choosing a restaurant we oftentimes select the venue we are familiar with over something new. We lead ourselves to believe that this is better than seeking a better restaurant, only because it’s familiar. This judgment saves time and saves the cognitive energy it would take to consider all the variables involved in the process of choosing a new location to eat at. Going with the familiar choice is safest and is efficient.

Another example of a psychological heuristic approach is risk aversion. Our decision making is sometimes influenced by our perception of the risk involved. These emotionally driven decisions come from our personal memories and schema (Harley, 2016). For example, say you are driving at night and have to make the choice between driving in a well-lit road and a darker road. An individual who has a fear of the dark from childhood would probably avoid the darker road, despite the possibility of it being a faster route to the destination. In this case, a quick decision is made based off of a risk aversion method to problem solving.

Searching and sorting algorithms are built to sort data in the most efficient way possible. A more specific example to illustrate this system is the organization of spam in emails. When sorting spam emails, the algorithm will identify key words in your inbox that are most consistent with the rest of your spam mail. This method is heuristic because searching for individual words is much more efficient (less complex) than examining entire emails.

A heuristic approach does not always yield perfect results, but is oftentimes worth the few mistakes it may make when efficiency is a priority.

Herbert, Wray. “Heuristics Revealed.” Association for Psychological Science, 1 Oct. 2010