Mental Shortcuts, Heuristics, and the T-Rex

I do not want to think – really, it just takes too much work.

Well, guess what, you're not alone.

Search on something, let's try a whatchamacallit, no, how about a thingamajig. Those two searches came back with over 800,000 and 2 Million hits respectively.

We cannot limit the amount of information out there, and with the overload of information, and our limited processing power, how do we cope?

Well, we need to make decisions, and we normally use one of two ways.

1) Reduce the amount of information
2) Reduce the amount of time thinking

We need these, as there is just too much information to evaluate. We then have the problem arising, as we introduce our own biases in our mental processing.

But how do we break this down, the amount of information we have, or the thinking about the information we have?

We often use Heuristics, and we have three common ones we use

1) The Availability Heuristic
2) The Anchoring Heuristic
3) The Representativeness Heuristic

The Availability Heuristic

These heuristics; and there are more help us to make decisions. Remember, too much information, not enough mental processing power, and we don't want to think anyway, so let's make it easier for ourselves.

Researcher's do not suggest this is a bad trait, it could just have developed over time as an evolutionary trait.

Is that a Tyrannosaurus or a Velociraptor (a Raptor for all you Jurassic Park fans), coming to eat me – I don't know, but it has very big teeth, (and the available information I have) is that I saw Joe get eaten by one, so I'm out of here.

How would this effect Cybersecurity professionals?

Remember you are not only concerned about how you would react but by the policies your implement for your end users.

The Representativeness Heuristic:

She looks like a nice person; I do not think she would engage in any social engineering attacks. He sounded so convincing on the phone and gave me his number, and I called him back, so he must be trustworthy.

Or, yep, he looks like a terrorist alright.

Whenever you begin to think of those terms (; I do not think, He sounded so, he must be, etc.) the Representativeness heuristic might be beginning to influence your cognitive thinking.

The Availability Heuristic:

We tend to think things are more likely to occur if they are easier to recall, e.g., hurricanes, tornados, Jaws, King Kong, snakes. We are afraid to go into the water where a shark might get us, yet more people die from bathroom falls.

Don't go into the tub!

I would never smoke, too dangerous, but I do like my donuts, and in reality, sugar kills more people than anything else in the world. It's available; there are many more commercials for bad food than tobacco products.

The Anchoring Heuristic

The Anchoring heuristic is an interesting phenomenon; we tend to base something's value on what we have seen or heard recently.

The game show the Price is Right is the classic example, the first person would say that dishwasher cost $500, and all the remaining contestants would keep in that ballpark. You would have $500, $450, $525, $550, you would not have $500, $450, $525, $1,300. In the lack of real data, we use what's available, i.e., what's available.

The Representativeness Heuristic

The Representativeness heuristic is used a lot when categorizing people, and it's on a scale of representativeness we apply to someone. Does he or she look like a movie star, does he or she appear to be smart enough to be an astronaut, does he or she appear old enough to be a doctor? We do this all the time, and most often we are wrong.

Last time I checked, employees are the biggest threat a company faces, I read it on the Internet. Every employee? So, when they fat-finger something and cause a problem, was it malicious, or was the system just too hard to use, and led to the chain of events and they were just the last one on that unlucky chain. Look at the 2003 U.S. electrical blackout of the East Coast, and the chain of events that started from a faulty fuse.

The Anchoring Heuristic

I was at this conference, and they said companies spent on average $10.5 million on cybersecurity. I went to this conference, and it showed companies spent $8 Million on cybersecurity attacks, then I went to this conference, and they reported companies spent $12 Million on cybersecurity attacks.

Again, consider the terms (they said, it showed, they reported), all associated with anchoring.

From a legal standpoint, it's good as it could show due-diligence, but really where do these numbers originate? Perhaps, a dishwasher for $500, $450, $525, $550. The money is not the issue; it's the closeness, how much should companies spend.

None of these decision-making tools are inherently wrong but understand when you make cybersecurity decisions, you may be using these mental shortcuts, and it's one thing that research has repeatedly shown that mental short-cuts are often wrong.

	Esgate, A. & Groome, D. (2005). An Introduction to Applied Cognitive Psychology. Psychology Press. p. 201. Kahneman, D. & Tversky, A. (1972). Subjective probability: A judgment of representativeness. Cognitive Psychology. 3 (3): 430–454.