Overloaded brains impacting ability to make decisions

By Sharon Begley, Newsweek

Imagine the most mind-numbing choice you've faced lately, one in which the possibilities almost paralyzed you: buying a car, choosing a health-care plan, figuring out what to do with your 401(k). The anxiety you felt might have been just the well-known consequence of information overload, but Angelika Dimoka, director of the Center for Neural Decision Making at Temple University, suspects that a more complicated biological phenomenon is at work. To confirm it, she needed to find a problem that overtaxes people's decision-making abilities, so she joined forces with economists and computer scientists who study "combinatorial auctions," bidding wars that bear almost no resemblance to the eBay version. Bidders consider a dizzying number of items that can be bought either alone or bundled, such as airport landing slots. The challenge is to buy the combination you want at the lowest price—a diabolical puzzle if you're considering, say, 100 landing slots at LAX. As the number of items and combinations explodes, so does the quantity of information bidders must juggle: passenger load, weather, connecting flights. Even experts become anxious and mentally exhausted. In fact, the more information they try to absorb, the fewer of the desired items they get and the more they overpay or make critical errors.

This is where Dimoka comes in. She recruited volunteers to try their hand at combinatorial auctions, and as they did she measured their brain activity with fMRI. As the information load increased, she found, so did activity in the dorsolateral prefrontal cortex, a region behind the forehead that is responsible for decision making and control of emotions. But as the researchers gave the bidders more and more information, activity in the dorsolateral PFC suddenly fell off, as if a

circuit breaker had popped. “The bidders reach cognitive and information overload,” says Dimoka. They start making stupid mistakes and bad choices because the brain region responsible for smart decision making has essentially left the premises. For the same reason, their frustration and anxiety soar: the brain’s emotion regions—previously held in check by the dorsolateral PFC—run as wild as toddlers on a sugar high. The two effects build on one another. “With too much information, ” says Dimoka, “people’s decisions make less and less sense.”

So much for the ideal of making well-informed decisions. For earlier generations, that mean simply the due diligence of looking things up in a reference book. Today, with Twitter and Facebook and countless apps fed into our smart phones, the flow of facts and opinion never stops. That can be a good thing, as when information empowers workers and consumers, not to mention whistle-blowers and revolutionaries. You can find out a used car’s accident history, a doctor’s malpractice record, a restaurant’s health-inspection results. Yet research like Dimoka’s is showing that a surfeit of information is changing the way we think, not always for the better. Maybe you consulted scores of travel websites to pick a vacation spot—only to be so overwhelmed with information that you opted for a staycation. Maybe you were this close to choosing a college, when suddenly older friends swamped your inbox with all the reasons to go somewhere else—which made you completely forget why you’d chosen the other school. Maybe you had the Date From Hell after being so inundated with information on “matches” that you chose at random. If so, then you are a victim of info-paralysis.

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