Excerpts from article

Do You Suffer from Decision Fatigue?

by John Tierney

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Decision fatigue is the newest discovery involving a phenomenon called ego depletion, a term coined by the social psychologist Roy F. Baumeister in homage to a Freudian hypothesis. Freud speculated that the self, or ego, depended on mental activities involving the transfer of energy. He was vague about the details, though, and quite wrong about some of them (like his idea that artists "sublimate" sexual energy into their work, which would imply that adultery should be especially rare at artists' colonies). Freud's energy model of the self was generally ignored until the end of the century, when Baumeister began studying mental discipline in a series of experiments, first at Case Western and then at Florida State University.

These experiments demonstrated that there is a finite store of mental energy for exerting self-control. When people fended off the temptation to scarf down M&M's or freshly baked chocolate-chip cookies, they were then less able to resist other temptations. When they forced themselves to remain stoic during a tearjerker movie, afterward they gave up more quickly on lab tasks requiring self-discipline, like working on a geometry puzzle or squeezing a hand-grip exerciser. Willpower turned out to be more than a folk concept or a metaphor. It really was a form of mental energy that could be exhausted. The experiments confirmed the 19th-century notion of willpower being like a muscle that was fatigued with use, a force that could be conserved by avoiding temptation.

Once you're mentally depleted, you become reluctant to make trade-offs, which involve a particularly advanced and taxing form of decision making. In the rest of the animal kingdom, there aren't a lot of protracted negotiations between predators and prey. To compromise is a complex human ability and therefore one of the first to decline when willpower is depleted. You become what researchers call a cognitive miser, hoarding your energy. If you're shopping, you're liable to look at only one dimension, like price: just give me the cheapest. Or you indulge yourself by looking at quality: I want the very best (an especially easy strategy if someone else is paying). Decision fatigue leaves you vulnerable to

marketers who know how to time their sales, as Jonathan Levav, the Stanford professor, demonstrated in experiments involving tailored suits and new cars.

The idea for these experiments also happened to come in the preparations for a wedding, a ritual that seems to be the decision-fatigue equivalent of Hell Week. At his fiancée's suggestion, Levav visited a tailor to have a bespoke suit made and began going through the choices of fabric, type of lining and style of buttons, lapels, cuffs and so forth.

"By the time I got through the third pile of fabric swatches, I wanted to kill myself," Levav recalls. "I couldn't tell the choices apart anymore. After a while my only response to the tailor became 'What do you recommend?' I just couldn't take it."

Levav ended up not buying any kind of bespoke suit (the $2,000 price made that decision easy enough), but he put the experience to use in a pair of experiments conducted with Mark Heitmann, then at Christian-Albrechts University in Germany; Andreas Herrmann, at the University of St. Gallen in Switzerland; and Sheena Iyengar, of Columbia. One involved asking M.B.A. students in Switzerland to choose a bespoke suit; the other was conducted at German car dealerships, where customers ordered options for their new sedans. The car buyers — and these were real customers spending their own money — had to choose, for instance, among 4 styles of gearshift knobs, 13 kinds of wheel rims, 25 configurations of the engine and gearbox and a palette of 56 colors for the interior.

As they started picking features, customers would carefully weigh the choices, but as decision fatigue set in, they would start settling for whatever the default option was. And the more tough choices they encountered early in the process — like going through those 56 colors to choose the precise shade of gray or brown — the quicker people became fatigued and settled for the path of least resistance by taking the default option. By manipulating the order of the car buyers' choices, the researchers found that the customers would end up settling for different kinds of options, and the average difference totaled more than 1,500 euros per car (about $2,000 at the time). Whether the customers paid a little extra for fancy wheel rims or a lot extra for a more powerful engine depended on when the choice was offered and how much willpower was left in the customer.

Shopping can be especially tiring for the poor, who have to struggle continually with trade-offs. Most of us in America won't spend a lot of time agonizing over whether we can afford to buy soap, but it can be a depleting choice in rural India. Dean Spears, an economist at

Princeton, offered people in 20 villages in Rajasthan in northwestern India the chance to buy a couple of bars of brand-name soap for the equivalent of less than 20 cents. It was a steep discount off the regular price, yet even that sum was a strain for the people in the 10 poorest villages. Whether or not they bought the soap, the act of making the decision left them with less willpower, as measured afterward in a test of how long they could squeeze a hand grip. In the slightly more affluent villages, people's willpower wasn't affected significantly. Because they had more money, they didn't have to spend as much effort weighing the merits of the soap versus, say, food or medicine.

Spears and other researchers argue that this sort of decision fatigue is a major — and hitherto ignored — factor in trapping people in poverty. Because their financial situation forces them to make so many trade-offs, they have less willpower to devote to school, work and other activities that might get them into the middle class. It's hard to know exactly how important this factor is, but there's no doubt that willpower is a special problem for poor people. Study after study has shown that low self-control correlates with low income as well as with a host of other problems, including poor achievement in school, divorce, crime, alcoholism and poor health. Lapses in self-control have led to the notion of the "undeserving poor" — epitomized by the image of the welfare mom using food stamps to buy junk food — but Spears urges sympathy for someone who makes decisions all day on a tight budget. In one study, he found that when the poor and the rich go shopping, the poor are much more likely to eat during the shopping trip. This might seem like confirmation of their weak character — after all, they could presumably save money and improve their nutrition by eating meals at home instead of buying ready-to-eat snacks like Cinnabons, which contribute to the higher rate of obesity among the poor. But if a trip to the supermarket induces more decision fatigue in the poor than in the rich — because each purchase requires more mental trade-offs — by the time they reach the cash register, they'll have less willpower left to resist the Mars bars and Skittles. Not for nothing are these items called impulse purchases.

And this isn't the only reason that sweet snacks are featured prominently at the cash register, just when shoppers are depleted after all their decisions in the aisles. With their willpower reduced, they're more likely to yield to any kind of temptation, but they're especially vulnerable to candy and soda and anything else offering a quick hit of sugar. While supermarkets figured this out a long time ago, only recently did researchers discover why.

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Apparently ego depletion causes activity to rise in some parts of the brain and to decline in others. Your brain does not stop working when glucose is low. It stops doing some things and starts doing others. It responds more strongly to immediate rewards and pays less attention to long-term prospects.

The discoveries about glucose help explain why dieting is a uniquely difficult test of self-control — and why even people with phenomenally strong willpower in the rest of their lives can have such a hard time losing weight. They start out the day with virtuous intentions, resisting croissants at breakfast and dessert at lunch, but each act of resistance further lowers their willpower. As their willpower weakens late in the day, they need to replenish it. But to resupply that energy, they need to give the body glucose. They're trapped in a nutritional catch-22:

1. In order not to eat, a dieter needs willpower.

2. In order to have willpower, a dieter needs to eat.

As the body uses up glucose, it looks for a quick way to replenish the fuel, leading to a craving for sugar. After performing a lab task requiring self-control, people tend to eat more candy but not other kinds of snacks, like salty, fatty potato chips. The mere expectation of having to exert self-control makes people hunger for sweets. A similar effect helps explain why many women yearn for chocolate and other sugary treats just before menstruation: their bodies are seeking a quick replacement as glucose levels fluctuate. A sugar-filled snack or drink will provide a quick improvement in self-control (that's why it's convenient to use in experiments), but it's just a temporary solution. The problem is that what we identify as sugar doesn't help as much over the course of the day as the steadier supply of glucose we would get from eating proteins and other more nutritious foods.

The results suggested that people spend between three and four hours a day resisting desire. Put another way, if you tapped four or five people at any random moment of the day, one of them would be using willpower to resist a desire. The most commonly resisted desires in the phone study were the urges to eat and sleep, followed by the urge for leisure, like taking a break from work by doing a puzzle or playing a game instead of writing a memo. Sexual urges were next on the list of most-resisted desires, a little ahead of urges for other kinds of interactions, like checking Facebook. To ward off temptation, people reported using various strategies. The most popular was to look for a distraction or to undertake a new activity,

although sometimes they tried suppressing it directly or simply toughing their way through it. Their success was decidedly mixed. They were pretty good at avoiding sleep, sex and the urge to spend money, but not so good at resisting the lure of television or the Web or the general temptation to relax instead of work.

When there were fewer decisions, there was less decision fatigue. Today we feel overwhelmed because there are so many choices. The cumulative effect of these temptations and decisions isn't intuitively obvious. Virtually no one has a gut-level sense of just how tiring it is to decide. Big decisions, small decisions, they all add up. Choosing what to have for breakfast, where to go on vacation, whom to hire, how much to spend — these all deplete willpower, and there's no telltale symptom of when that willpower is low. It's not like getting winded or hitting the wall during a marathon. Ego depletion manifests itself not as one feeling but rather as a propensity to experience everything more intensely. When the brain's regulatory powers weaken, frustrations seem more irritating than usual. Impulses to eat, drink, spend and say stupid things feel more powerful (and alcohol causes self-control to decline further). Like those dogs in the experiment, ego-depleted humans become more likely to get into needless fights over turf. In making decisions, they take illogical shortcuts and tend to favor short-term gains and delayed costs.

"Good decision making is not a trait of the person, in the sense that it's always there," Baumeister says. "It's a state that fluctuates." His studies show that people with the best self-control are the ones who structure their lives so as to conserve willpower. They don't schedule endless back-to-back meetings. They avoid temptations like all-you-can-eat buffets, and they establish habits that eliminate the mental effort of making choices. Instead of deciding every morning whether or not to force themselves to exercise, they set up regular appointments to work out with a friend. Instead of counting on willpower to remain robust all day, they conserve it so that it's available for emergencies and important decisions.

"Even the wisest people won't make good choices when they're not rested and their glucose is low," Baumeister points out. That's why the truly wise don't restructure the company at 4 p.m. They don't make major commitments during the cocktail hour. And if a decision must be made late in the day, they know not to do it on an empty stomach. "The best decision makers," Baumeister says, "are the ones who know when *not* to trust themselves."

John Tierney (tierneylab@nytimes.com) is a science columnist for The Times. His essay is adapted from a book he wrote with Roy F. Baumeister, "Willpower: Rediscovering the Greatest Human Strength," which comes out next month.

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