

Where has your willpower gone?

Stuff your face if you want to get thinner, defer your treats – and if you are up for parole, make sure you see the judge after lunch, says **Roy F. Baumeister**

AS THE last of your New Year's resolutions unravels in front of your eyes, you probably feel like a moral pygmy. But before you sink into a heap of self-loathing, consider this.

After decades of research, psychologists now reckon two traits are most likely to make us successful. The first is intelligence, with smart people doing better at all jobs.

Unluckily, there is little evidence that you can make lasting improvements to intelligence.

The other trait is self-control, the ability to change thoughts, emotions, actions and level of performance on duties and tasks. Of course, goals, moral rules, laws, social expectations, personal commitments and other forces play a role, but the more you can change yourself, the more successful you tend to be.

Studies on self-control have their roots in the "marshmallow test" devised by Walter Mischel at Stanford University, California, in 1972. More than 600 children aged between 4 and 6 were offered treats (an Oreo cookie, marshmallow or pretzel). The children could eat the treat, but if they waited 15 minutes without giving into temptation, they would be rewarded with two treats. Mischel watched as some children covered their eyes or turned around so that they couldn't see the treat, others kicked the desk, tugged their pigtails or stroked the marshmallow as if it were a stuffed animal. Some waited for the researchers to leave the room before eating the treat.

A minority ate the treat immediately.

PROFILE

Roy F. Baumeister is Francis Eppes Eminent Scholar at Florida State University, Tallahassee. He received the Jack Block Award for distinguished contribution to personality psychology last year. His new book is *Willpower*, co-authored with John Tierney (Penguin UK)

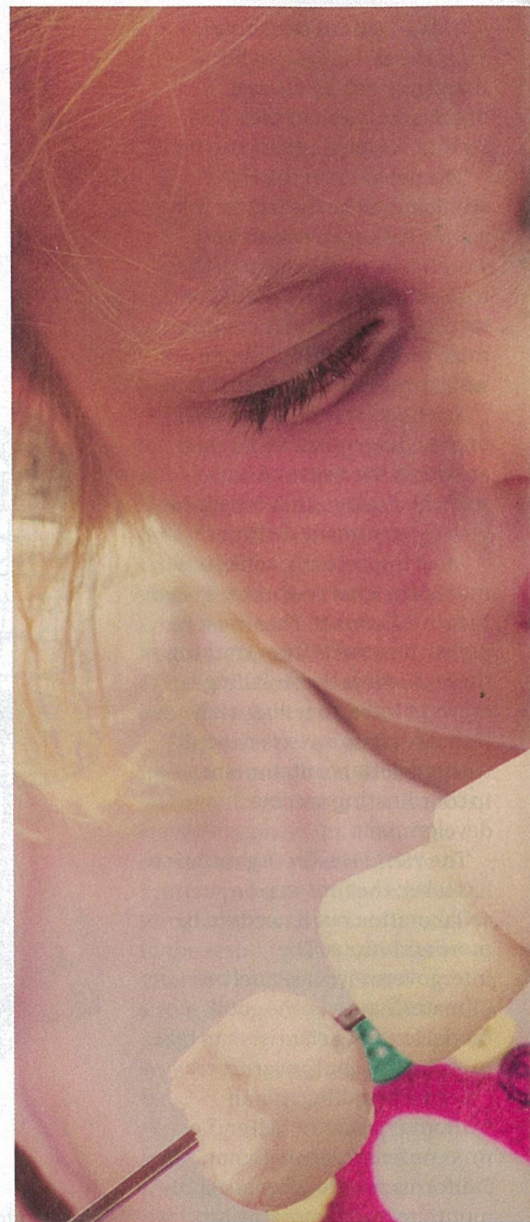
Of those attempting to delay, one-third deferred gratification long enough to get the second treat. Age was a major factor, with older children doing better. Years later, Mischel's researchers tracked down the children and found that those who had done best at 4 grew up to be more successful in school and work, and to be more popular.

Other studies support this. People with stronger self-control do better at school, earn more and are more respected by co-workers. They are also less likely to be arrested, have fewer personal problems and less stress.

So what is this amazing thing called self-control? The common sense view is it depends on using willpower to resist temptation and to enable the right action. Our research suggests this notion is not entirely fanciful but that it lacks a key dimension. Research has shown repeatedly that after people exert self-control, they tend to perform relatively poorly on a subsequent, seemingly irrelevant test of self-control. The most plausible explanation is that "energy" was consumed and depleted during the first test, leaving less for more challenges.

Evidence for this depletion of willpower comes from studies like ours in 1998 at Case Western Reserve University in Cleveland, Ohio, when we had people turn up at our lab hungry. They were shown into a room full of the scent of freshly baked chocolate cookies and seated at a table facing a tray of them. Also on the table was a bowl of radishes. Some subjects were allowed to eat radishes only. They were left, ostensibly to eat radishes, but in fact had to use willpower to resist cookies.

Later, we measured how long people persevered before giving up on a difficult (actually unsolvable) puzzle. Those who had depleted their willpower resisting the cookie temptation gave up faster than controls – some of whom had eaten cookies, others who



"People spend a staggering three to four hours a day resisting temptations"

had eaten nothing. Resisting the cookies had used up some of their willpower, leaving less to help them persevere with the puzzle.

Another study led by Wilhelm Hofmann, now at the University of Chicago, had 200 German adults wear beepers for a week. When the beeper went off, they reported what they were doing. This provided snapshots into the daily patterns of desire and resistance in ordinary people. Extrapolating from the beepers, Hofmann found that people spend a staggering three to four hours a day on



It's no good, I can't resist any longer... no matter what you promise me

may cut back effort to conserve what remains. In fact, willpower looks as if it is indeed a kind of energy, tied to levels of the chemical glucose used to carry energy from the digestive system and fat stores to muscles and other organs. Neurotransmitters, that enable brain cells to fire, are made from glucose.

The standard willpower depletion effect, confirmed by a 2010 meta-analysis of 83 studies, shows that after exerting self-control, people perform worse on the next self-control task without being given glucose between tasks. Researchers use lemonade these days: one batch sweetened with sugar (plenty of glucose), the other with diet sweetener (no glucose). After allowing up to 15 minutes for the lemonade to reach the bloodstream, subjects drinking sugared lemonade perform quite well at the next test, while those on diet lemonade fare less well.

This glucose research also suggests why dieting is so fiendishly difficult. In order to resist tempting foods, we need willpower but to have willpower, we must eat. The essence of dieting (restricting food intake) robs us of the psychological strength needed to succeed. Perhaps dieters should concentrate on filling up with healthy food so they have the willpower to resist fattening stuff.

If research continues to implicate glucose in willpower, it could be a powerful key to understanding the human mind since self-control is such a vital part of daily life. But willpower is also used in making choices and decisions, so here's a startling thought: could daily decision-making impair self-control?

Jonathan Levav at Stanford University, Shai Danziger and Liora Avnaim-Pesso, both at Ben-Gurion University of the Negev, Israel, came up with important clues last year when they studied parole judges in Israel. The safe and easy decision is to refuse parole since parole carries the risk of a convict committing further crimes – and making the judge look bad. The researchers found judges often granted parole in the early morning, but as the day wore on and they made more decisions, they were less willing to take a chance and sent most people back to prison. After a snack, or after lunch, the likelihood of parole went up. In other words, the food seemed to restock the willpower depleted by making many choices, leaving the judge more willing to take a riskier step and grant parole to the next applicant.

So bear that in mind should you end up in court after a bad bout of glucose depletion! ■

HELENRUSHBROOK/FLICKR/GETTY

average just resisting temptations and desires.

Not surprisingly, as the day wears on, the more often the person exercises self-control to try to resist what they desire, the more likely they are to give in to whatever temptation comes along: it's not the time of day that matters, but the cumulative exertion that saps your willpower. If you do not have many temptations to resist, your willpower stays relatively strong, and you may well be able to resist new temptations.

So rather than seeing willpower as a moral quality, the scientific view is that it is like a muscle that tires. After you exert self-control, you have less willpower so you are less able to resist a new demand. Self-control is only temporarily weakened and can recharge after

a rest. Willpower resembles a muscle also in that it can be strengthened by exercise.

Two clear facts about willpower have emerged so far. Willpower is what researchers call "domain-general": controlling thoughts, emotions and feelings, restraining impulses, and performing tasks and duties will draw on one pool of willpower, not, as people tend to imagine, multiple pools with different quantities for, say, dieting or exercise.

The second fact is that the resource is limited. Even a few minutes of exerting self-control is enough to cause a decline in performance on a subsequent, seemingly unrelated test. That might suggest human willpower is scarce, but no: willpower is like a muscle. When a muscle gets tired, an athlete