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November 26, 2011

# Willpower: It's in Your Head

By GREG WALTON and CAROL DWECK

IS willpower an illusion? Is the traditional notion of a deep mental reservoir of strength a fiction?

In recent years, the popular answer has been yes. Our abilities, according to this argument, are constrained by the narrow limits of our biology. In her 2008 book, "Health at Every Size," the nutritionist Linda Bacon argues that, because of how the brain's hypothalamus works, it is a "myth" that anyone can will himself to lose weight by maintaining a diet. "It's not your fault!" she writes. "Biology is so powerful it can 'make' you break that diet."

This year, in their book "Willpower: Rediscovering the Greatest Human Strength," the social psychologist Roy F. Baumeister and the New York Times science writer John Tierney survey a large body of scientific research to conclude that willpower is limited and depends on a continuous supply of the simple sugar glucose. When glucose is depleted, you fall prey to impulse shopping, affairs and cookies. The solution? "Try to get some glucose in you," Mr. Tierney told NPR.

Such theories have an obvious appeal: attributing failures of willpower to our fixed biological limits justifies our procrastination as well as our growing waistlines. Not only that, we also get to consume more sugar. But are these theories correct?

We don't think so. In research that we conducted with the psychologist Veronika Job, we confirmed that willpower can indeed be quite limited — but only if you believe it is. When people believe that willpower is fixed and limited, their willpower is easily depleted. But when people believe that willpower is self-renewing — that when you work hard, you're energized to work more; that when you've resisted one temptation, you can better resist the next one — then people successfully exert more willpower. It turns out that willpower *is* in your head.

In one study, we first gave people either an easy, rote task (like crossing off every letter *e* in a page of typewritten text) or a more difficult task that involved self-control (like crossing out some *e*'s but not others according to a complex set of rules). Then everyone performed a tricky cognitive task in which they had to exert self-control to avoid making mistakes.

When the initial task was easy and willpower wasn't required, people did well on the tricky cognitive task, making few mistakes. But when the initial task was hard and involved self-control, people who believed that willpower was limited made almost twice as many mistakes on the tricky cognitive task as did the group that performed the initial easy task. This finding replicates many studies by Dr. Baumeister and others that have been interpreted as evidence that willpower is limited and easily depleted. But, strikingly, we found that people who believed that willpower was not limited continued to perform well on the second task, making few mistakes, even after facing the difficult initial task. They were not "depleted" and kept on doing well.

You may contend that these results show only that some people just happen to have more willpower — and know that they do. But on the contrary, we found that anyone can be prompted to think that willpower is not so limited. When we had people read statements that reminded them of the power of willpower like, "Sometimes, working on a strenuous mental task can make you feel energized for further challenging activities," they kept on working and performing well with no sign of depletion. They made half as many mistakes on a difficult cognitive task as people who read statements about limited willpower. In another study, they scored 15 percent better on I.Q. problems.

We also studied this phenomenon in the real world. In one study, we followed 153 college students over five weeks. During stressful times, like final-exam week, students who believed that willpower was not limited reported eating less junk food and procrastinating less than students who did not share that belief. They also showed more academic growth, earning better grades that term than their "pessimistic" counterparts.

Furthermore, when we taught college students that willpower was not so limited, they showed similar increases in willpower. They reported procrastinating only once or twice a week instead of the two to three times a week reported by students in a control condition, and they cut down on excess spending, going beyond their budgets less than once a week instead of once or twice a week.

How does this happen? People who think that willpower is limited are on the lookout for signs of fatigue. When they detect fatigue, they slack off. People who get the message that willpower is not so limited may feel tired, but for them this is no sign to give up — it's a sign to dig deeper and find more resources.

What about the glucose idea, which seems supported by so much science? Dr. Baumeister and Mr. Tierney describe studies showing that giving people glucose (in the form of a sugar drink) restores their willpower. But in our latest research we found that when people believe in willpower they don't need sugar — they perform well whether they consume sugar or not. Sugar helps people only when they think that willpower is sharply limited. It's not sugar we need; it's a change in mind-set.

To be sure, willpower is not completely unlimited. Food and rest are of course necessary for functioning, and many struggles that people face are quite difficult. The question is how often we need extra sugar boosts. Messages suggesting that willpower is severely limited and that we need constant sugar boosts are bound to further inflate the American waistline and hinder our ability to achieve our goals.

At stake in this debate is not just a question about the nature of willpower. It's also a question of what kind of people we want to be. Do we want to be a people who dismiss our weaknesses as unchangeable? When a student struggles in math, should we tell that student, "Don't worry, you're just not a math person"? Do we want him to give up in the name of biology? Or do we want him to work harder in the spirit of what he wants to become?

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