WHEN THINKING ABOUT A POTENTIAL GAIN, YOU'RE WIRED TO ASK "HOW BIG IS IT?" NOT "HOW LIKELY IS IT?"

actual profit in very different ways. When you think you might make money, dopamine rushes into a region of emotional circuits toward the lower front of your brain called the nucleus accumbens. On the other hand, when you actually get the money, your emotional circuits quiet down and your prefrontal cortex, an area in the upper part of the brain involved in long-term planning and evaluating alternatives, takes over.

I learned this firsthand when I participated in an experiment run by neuroeconomist Brian Knutson at Stanford University. When I was presented with a chance at a big gain, a dopamine rush helped set my body atingle. Actually earning the money that I had hoped to make, however, activated the more analytical upper part of my brain, yielding a kind of drowsy satisfaction. Anticipating an investment score feels "hot," while pocketing it creates a kind of neural letdown.

Think about the power that this cycle of hot and cold exerts over the process of making investing decisions. The thrill of thinking we're going to make big money pushes us to take wild risks—and win or lose today, to try again tomorrow.

Gotta Get It Back

In Knutson's experiment, my brain's emotional centers quieted down when I actually received a gain that I had expected to get. Other experiments have shown, though, that an unexpectedly large gain—you strike it rich, in other words—can also trigger a dopamine surge. And the more uncertain or surprising your investing gain, the bigger the rush inside your brain. The result: If you score big, you are unlikely to forget the feeling—and you're likely to try pretty much anything to get that feeling back. A single stunning profit may affect your brain much like an addictive drug—creating an insatiable craving for more of the same. (Why do you think they call it dopamine?)

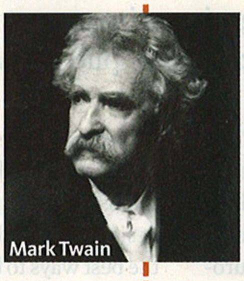
That makes it hard to learn quickly from your mistakes. According to Nobel-prizewinning economist Vernon Smith, people who earn big gains as stocks become overvalued—and then suffer big losses when prices come crashing down—will go right back and do it all over again. Smith's research shows that the adage "Once bitten, twice shy" is wrong for most people. Because the thrill of making money is so strong, even if the gain evaporates, it generally takes getting burned at least twice for investors to learn not to touch an overheated market.

Literary Genius, Skeptic, Sucker

Mark Twain, get-rich-quick addict

Some people never learn—like Mark Twain. In 1862 he and a partner struck a huge vein of silver ore in Nevada. Twain stayed up all night, "just as if an electric battery had been applied to me"—so full of fantasies of wealth that "my visions of the future whirled me bodily over in bed." For 10 glorious days, he was a paper multimillionaire. Then the partners' claim was voided on a technicality.

"Sick, grieved, broken-hearted," Twain never forgot the elation of thinking that he had struck it rich. For the rest of his life, he put money into one nutty investment after another, including a chalk-based printing process, spiral hatpins and an improved design for grape scissors. Why did this brilliant, tough-minded man so often fall prey to such stupid get-rich-quick schemes? The memory of the excitement he felt when he hit that vein of silver in Virginia City must have sent Twain's anticipation circuitry into overdrive whenever he thought about money. The result was a compulsive craving for the big score that sent him on wild swings from wealth to debt to bankruptcy and back again.



Mark Twain

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I'm in Charge Here

It turns out that something else fires up the emotional centers of your brain: making money as a result of your own actions rather than just earning it passively. "It's not just receiving money that fires up these areas, but how you receive it," explains Caroline Zink, a neuroscientist at the National Institutes of Health. "There seems to be a separate pleasure or arousal from feeling you did something to get it."

Zink need look no further for evidence than her little sister Laurie, who won $100,000 on a reality TV show in 2001. The joy of that windfall has been branded on Laurie's brain ever since. "Winning was so exciting—just a thrilling, thrilling moment," Laurie says, "almost like getting a new life." Laurie had never gambled before that, but now she plays Lotto—not all the time, but whenever the prize gets "really big."

"Rationally, I know I'm not going to win," says Laurie. "But I also know how good it feels if it does happen."

Caroline explains that her sister's windfall triggered that kind of rush because Laurie competed so hard to win the money. Lottery winners feel a similar high when they pick their own numbers, even though they were just very lucky.

And you feel it whenever a stock or mutual fund you picked goes through the roof. There's little harm in Laurie's attempt to recapture that high with the occasional small wager. Your attempt to pick the next killer investment is another matter entirely, as any tech stock investor circa 1999 or drug stock investor circa 2004 can tell you.

One of the problems with continually seeking a big score is that you stop paying attention to how big a risk you're taking. That's because the parts of your brain that anticipate a reward are much more sensitive to the amount of the potential gain than to the probability of actually earning it, according to research by Stanford's Knutson. Your anticipation circuits are wired to ask, "How big is it?" but not "How likely is it?" That helps explain why investors love long shots like initial public offerings, penny stocks, hot mutual funds or stocks in trendy industries—even though there's massive evidence that high-risk investments like these provide disappointing returns over the long run. And there is nothing thrilling about coming up short of your financial goals.

That's why the most successful investors learn the value of second-guessing themselves and planning ahead instead of just shooting from the hip. The rest of this special report will set you on the right path. **$**

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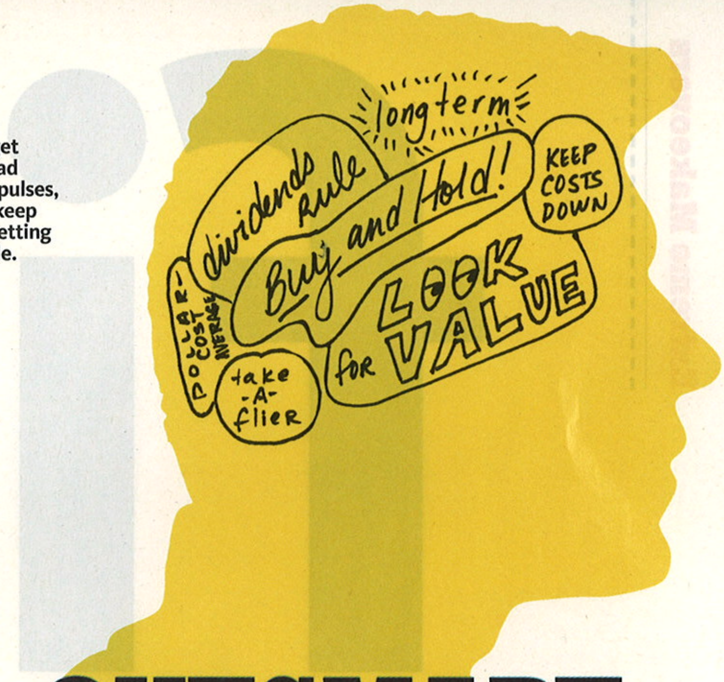
› You can't get rid of your bad investing impulses, but you can keep them from getting you in trouble.



OUTSMART YOUR BRAIN

These five take-home lessons of the new science of neuroeconomics can make you a better investor

Control What's Controllable

● Whether your investments beat the market is largely outside your control. But some things are entirely in your hands: cutting your tax and brokerage bills by trading less often, and keeping your expenses down by relying on index funds or lower-cost managed funds like those in the MONEY 65.

Kick the Habit

● If watching financial TV or clicking on investing websites gives you the itch to get rich quick, turn off the sound or use the "history" window on your Web browser to count how many times you visit the site each day. Just like a smoker trying to quit, you may need tricks like these to help bolster your self-control.

Chill Out

● "It's important to realize," says Stanford University neuroeconomist Brian Knutson, "that the magnitude of a long-shot reward is going to drive your behavior far more than the probabilities, which are minuscule." Making an investing decision while you're inflamed by the hope of a big gain is a terrible idea. Instead, reconsider after your anticipation circuits have cooled off. If you like a stock, try waiting two weeks without ever checking its price. Then study the company's financial reports to estimate the per-share value of the business. Afterward, you can check the current share price—and invest only if the business value is higher.

Separate Your Savings

● If you still can't resist "hot" investments, isolate them in a "mad money" account, funded with no more than 10% of your capital. Never put more than that at risk.

Plan Ahead

● A tip can itself be enough to inflame your anticipation circuits and overpower the analytical part of your brain. To reduce the odds that emotion will dominate your decisions, handcuff yourself in advance. By dollar-cost averaging (automatically investing a fixed amount every month into a mutual fund or brokerage account), you can be sure most of your money goes to work on autopilot, where the heat of the moment can't melt your resolve.