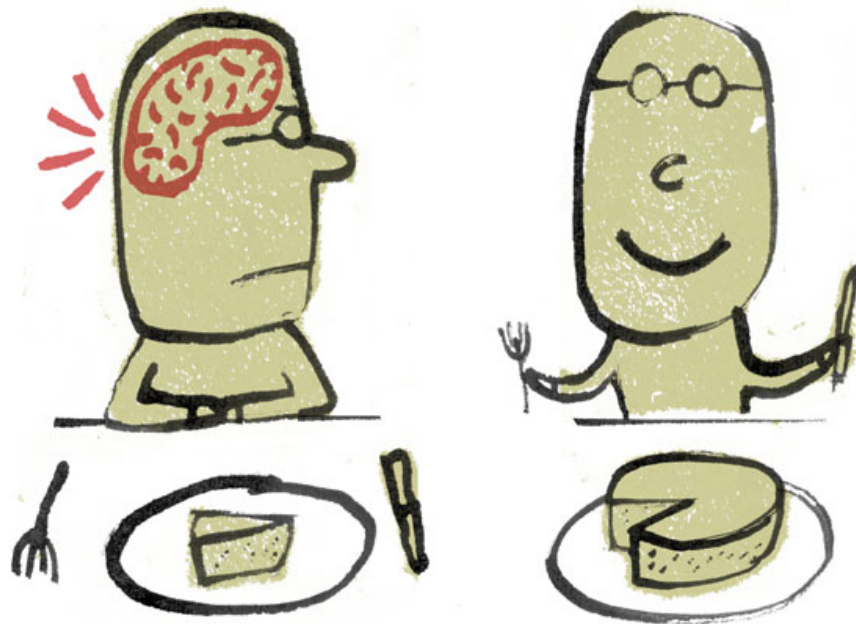


BASICS

In Pain and Joy of Envy, the Brain May Play a Role



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Most human vices have enough sense to be very, very tempting. Lust, gluttony, sloth, hurling powerful if unimaginative expletives at a member of the political opposition, buying a pair of Thierry Rabotin snakeskin printed shoes at 25 percent off even though you just bought a pair of cherry-red slingbacks last week — all these things feel awfully good to indulge in, which is why people must be repeatedly abjured not to.

One vice, however, dispenses with any hedonic trappings and instead feels so painful you would think it was a virtue, except that there's no gain in lean muscle mass at the end: envy. Skulking at sixth place on traditional lists of the seven deadly sins, right between wrath and pride, envy is the deep, often hostile resentment you feel toward somebody who has something you want, like wealth, beauty, a promotion or the admiration of peers. It is a vice few can avoid yet nobody craves, for to experience envy is to feel small and inferior, a loser shrink-wrapped in spite.

"Envy is corrosive and ugly, and it can ruin your life," said Richard H. Smith, a professor of [psychology](#) at the [University of Kentucky](#) who has written about envy. "If you're an envious person, you have a hard time appreciating a lot of the good things that are out there, because you're too busy worrying about how they reflect on the self."

Now researchers are gleaning insights into the neural and evolutionary underpinnings of envy, and why it can feel like a bodily illness or a physical blow. They're also tracing the pathway of envy's equally petty foil, the sensation of schadenfreude — taking pleasure when those whom you envied are themselves brought down low.

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Reporting in the current issue of the journal *Science*, researchers at the National Institute of Radiological Sciences in Japan and their colleagues [described brain-scanning studies of subjects who were told to imagine themselves as protagonists](#) in social dramas with characters of greater or lesser status or achievement. When confronting characters that the participants admitted to envying, brain regions involved in registering physical pain were aroused: the higher the subjects rated their envy, the more vigorously flared the pain nodes in the brain's dorsal anterior cingulate cortex and related areas.

Conversely, the researchers said, when subjects were given a chance to imagine the golden one's downfall, the brain's reward circuits were activated, again in proportion to the strength of envy's sting: the subjects who felt the greatest envy the first time around reacted to news of their rival's misfortune with a comparatively livelier response in the [dopamine](#)-rich pleasure centers of, for example, the ventral striatum. "We have a saying in Japanese, 'The misfortunes of others are the taste of honey,'" said Hidehiko Takahashi, the first author on the report. "The ventral striatum is processing that 'honey.'"

Matthew D. Lieberman of the psychology department at the University of California, Los Angeles, who co-wrote a commentary that accompanies the report, said he was impressed by how the neural correlates of envy and *schadenfreude* were tied together, with the magnitude of one predicting the strength of the other. "This is the way other needs-processing systems like hunger and thirst work," he said. "The hungrier or thirstier that you feel, the more pleasurable it is when you finally eat or drink."

The new findings are preliminary, and some scientists have expressed reservations about what they or other scanning results from the fast-moving field of behavioral neuroscience really mean. Nevertheless, the research throws a spotlight on a potent emotion that we deny or deride but ignore at our peril. Much of the recent economic crisis, Dr. Smith suggested, may well have been fueled by runaway envy, as financiers competed to avoid the shame of being a "mere" millionaire.

Envy can be seen in other social animals with personal reputations to defend. Frans de Waal of the Yerkes National Primate Research Center in Atlanta noted that monkeys were perfectly happy to work for cucumber slices until a person started giving one monkey a preferred treat like grapes. Then the others stopped working for cucumbers and started nursing a grudge. "The underlying emotion is likely envy or resentment," Dr. de Waal said.

When children realize they have siblings, their lives become dominated by the calipers of envy. Why does she always get to sit by the window? His cupcake has more sprinkles! No siblings? No problem: you can envy the cat.

Researchers often distinguish between envy and the jealousy you feel by, say, seeing a loved one flirt at a party. Jealousy is a triangle, Dr. Smith said, in which you fear losing a loved one to the embrace of another. Envy is a two-bodied affair, an arrow proceeding from your covetous breast to the heart of the well-endowed Other. Yet envy is restless and gregarious and can embrace popular cliques, honor rolls and entire nation-states. "It's a fact of life that we pay close attention to status, to who's doing well and who isn't and how we stand in comparison to others," said Colin W. Leach, an associate professor of psychology at the [University of Connecticut](#), in Storrs, who studies envy.

As a rule, we envy those who are like us in most ways — in sex, age, class and curriculum vitae. Potters envy potters, Aristotle observed.

Paradoxically, this most socially driven of emotions is among the least socially acceptable to confess to. Jealous hostility toward a romantic rival is an acceptable topic for conversation. Envious hostility toward a professional rival is more like an embarrassing body function: please do not share. When asked by researchers about their envy, study participants have said, "I'm privately ashamed of myself."

As evolutionary scientists see it, envy's salient features — its persistence and universality, its fixation with social status and the fact that it cohabits with shame — suggest that it serves a deep social role. They propose that our invidious impulses may help explain why

serves a deep social role. They propose that our invidious impulses may help explain why humans are comparatively less hierarchical than many primate species, more prone to a rough egalitarianism and to rebelling against kings and tycoons who hog more than their fair share.

Envy may also help keep us in line, making us so desperate to look good that we take the high road and start to act good, too. We struggle with our private envy, our longing for more esteem than we command, and the struggle only sharpens the painful contrast between the imagined perfection of the envied adversary that we have enshrined on an imaginary throne, and the defective merchandise that is ourselves.

“If you desire glory, you may envy Napoleon,” Bertrand Russell said. “But Napoleon envied Caesar, Caesar envied Alexander, and Alexander, I daresay, envied Hercules, who never existed.” If envy is a tax levied by civilization, it is one that everyone must pay.

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