
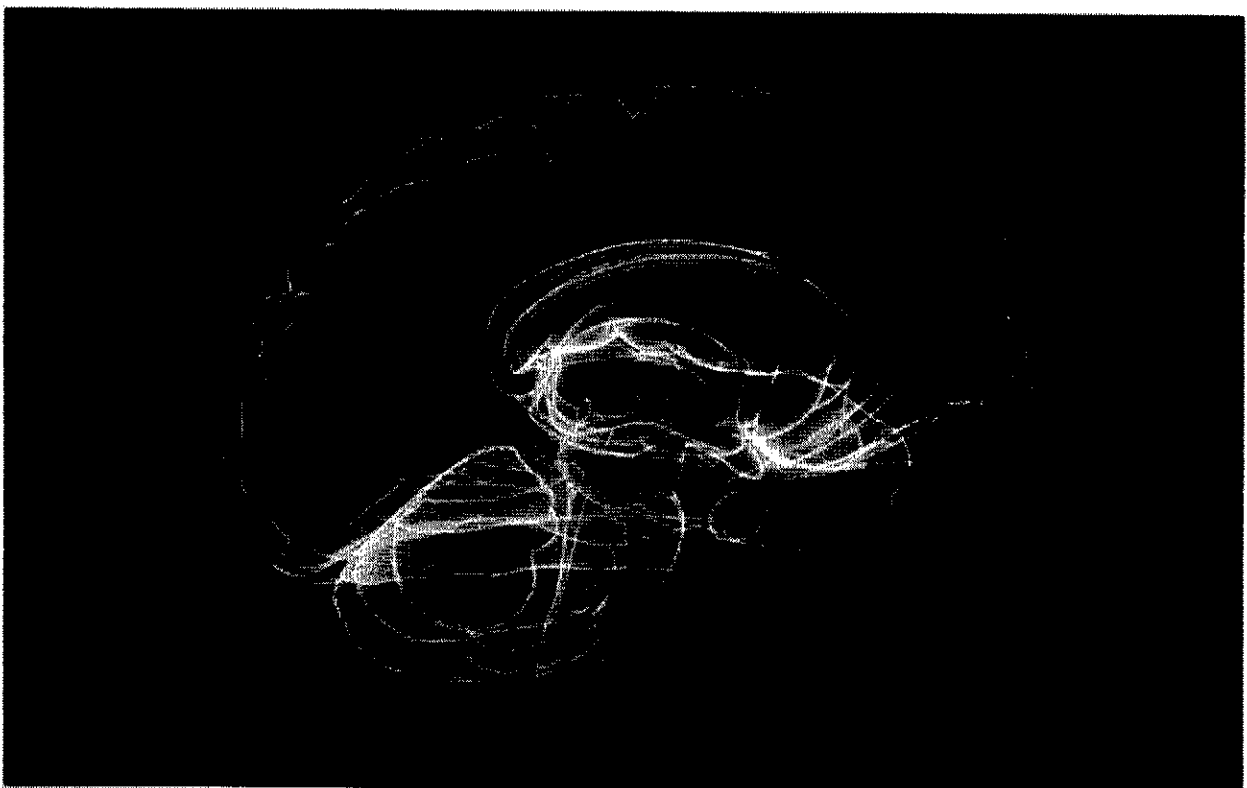




How Poverty Taxes the Brain

Scientists have discovered that being poor actually impairs our cognitive abilities.

EMILY BADGER | Aug 29, 2013 |  514 Comments



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Human mental bandwidth is finite. You've probably experienced this before (though maybe not in those terms): When you're lost in concentration trying to solve a problem like a broken computer, you're more likely to neglect other tasks, things like remembering to take the dog for a walk, or picking your kid

up from school. This is why people who use cell phones behind the wheel actually perform worse as drivers. It's why air traffic controllers focused on averting a mid-air collision are less likely to pay attention to other planes in the sky.

We only have so much cognitive capacity to spread around. It's a scarce resource.

This understanding of the brain's bandwidth could fundamentally change the way we think about poverty. Researchers publishing some groundbreaking findings today in the journal *Science* have concluded that poverty imposes such a massive cognitive load on the poor that they have little bandwidth left over to do many of the things that might lift them out of poverty – like go to night school, or search for a new job, or even remember to pay bills on time.

The condition of poverty imposed a mental burden akin to losing 13 IQ points

In a series of experiments run by researchers at Princeton, Harvard, and the University of Warwick, low-income people who were primed to think about financial problems performed poorly on a series of cognition tests, saddled with a mental load that was the equivalent of losing an entire night's sleep. Put another way, the condition of poverty imposed a mental burden akin to losing 13 IQ points, or comparable to the cognitive difference that's been observed between chronic alcoholics and normal adults.

The finding further undercuts the theory that poor people, through inherent weakness, are responsible for their own poverty – or that they ought to be able to lift themselves out of it with enough effort. This research suggests that the reality of poverty actually makes it harder to execute fundamental life skills.

Being poor means, as the authors write, "coping with not just a shortfall of money, but also with a concurrent shortfall of cognitive resources."

This explains, for example, why poor people who aren't good with money might also struggle to be good parents. The two problems aren't unconnected.

"It's the same bandwidth," says Princeton's [Eldar Shafir](#), one of the authors of the study alongside [Anandi Mani](#), [Sendhil Mullainathan](#), and [Jiaying Zhao](#). Poor people live in a constant state of scarcity (in this case, scarce mental bandwidth), a debilitating environment that Shafir and Mullainathan describe in a book to be published next week, *Scarcity: Why having too little means so much*.

What Shafir and his colleagues have identified is not exactly stress. Rather, poverty imposes something else on people that impedes them even when biological markers of stress (like elevated heart rates and blood pressure) aren't present. Stress can also positively affect us in small quantities. An athlete under stress, for example, may actually perform better. Stress follows a kind of classic curve: a little bit can help, but beyond a certain point, too much of it will harm us.

This picture of cognitive bandwidth looks different. To study it, the researchers performed two sets of experiments. In the first, about 400 randomly chosen people in a New Jersey mall were asked how they would respond to a scenario where their car required either \$150 or \$1,500 in repairs. Would they pay for the work in full, take out of a loan, or put off the repair? How would they make that decision? The subjects varied in annual income from \$20,000 to \$70,000.

Before responding, the subjects were given a series of common tests (identifying sequences of shapes and numbers, for example) measuring cognitive function and fluid intelligence. In the easier scenario, where the hypothetical repair cost only \$150, subjects classified as "poor" and "rich" performed equally well on these tests. But the "poor" subjects performed noticeably worse in the \$1,500 scenario. Simply asking these people to think about financial problems taxed their mental bandwidth.

"And these are not people in abject poverty," Shafir says. "These are regular folks going to the mall that day."

The "rich" subjects in the study experienced no such difficulty. In the second experiment, the researchers found similar results when working with a group of farmers in India who experience a natural annual cycle of poverty and plenty. These farmers receive 60 percent of their annual income in one lump sum after the sugarcane harvest. Beforehand, they are essentially poor. Afterward (briefly), they're not. In the state of pre-harvest poverty, however, they exhibited the same shortage of cognitive bandwidth seen in the American subjects in a New Jersey mall.

The design of these experiments wasn't particularly groundbreaking, which makes it all the more astounding that we've never previously understood this connection between cognition and poverty.

"This project, there's nothing new in it, there's no new technology, this could have been done years ago," Shafir says. But the work is the product of the relatively new field of behavioral economics. Previously, cognitive psychologists seldom studied the differences between different socio-economic populations ("a brain is a brain, a head is a head," Shafir says). Meanwhile, other psychology and economics fields were studying different populations but not cognition.

Now that all of these perspectives have come together, the implications for how we think about poverty – and design programs for people impacted by it – are enormous. Solutions that make financial life easier for poor people don't simply change their financial prospects. When a poor person receives a regular direct-deposited paycheck every Friday, that does more than simply relieve the worry over when money will come in next.

"When we do that, we liberate some bandwidth," Shafir says. Policymakers tend to evaluate the success of financial programs aimed at the poor by measuring how they do financially. "The interesting thing about this perspective is that it says if I make your financial life easier, if I give you more bandwidth, what I really ought to look at is how you're doing in your *life*. You

might be doing better parenting. You might be adhering to your medication better.”

The limited bandwidth created by poverty directly impacts the cognitive control and fluid intelligence that we need for all kinds of everyday tasks.

“When your bandwidth is loaded, in the case of the poor,” Shafir says, “you’re just more likely to not notice things, you’re more likely to not resist things you ought to resist, you’re more likely to forget things, you’re going to have less patience, less attention to devote to your children when they come back from school.”

At the macro level, this means we lost an enormous amount of cognitive ability during the recession. Millions of people had less bandwidth to give to their children, or to remember to take their medication.

Conversely, going forward, this also means that anti-poverty programs could have a huge benefit that we’ve never recognized before: Help people become more financially stable, and you also free up their cognitive resources to succeed in all kinds of other ways as well.

For all the value in this finding, it’s easy to imagine how proponents of hackneyed arguments about poverty might twist the fundamental relationship between cause-and-effect here. If living in poverty is the equivalent of losing 13 points in IQ, doesn’t that mean people with lower IQs wind up in poverty?

“We’ve definitely worried about that,” Shafir says. Science, though, is coalescing around the opposite explanation. “All the data shows it isn’t about poor people, it’s about people who *happen to be in poverty*. All the data suggests it is not the person, it’s the context they’re inhabiting.”

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