GUEST ESSAY

This Is What Neuroscientists and Philosophers Understand About Addiction

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When I was arrested and charged with possession with intent to sell cocaine in 1986, I was addicted to both coke and heroin. Although I was facing a 15 years-to-life sentence, the first thing I did after my parents bailed me out and held a family meeting was to find and secretly inject some prescription opioids that I knew the police hadn't confiscated.

I knew that doing this further jeopardized my life prospects and my relationships with everyone I cared about. I knew it made no sense. But I didn't believe that I could cope in any other way. Until I finally recognized that I

needed treatment and began recovery in 1988 — with the prospect of that lengthy sentence under New York's draconian Rockefeller laws still occluding my future — I didn't think I had any real choice.

Was my brain hijacked by drugs — or was I willfully choosing to risk it all for a few hours of selfish pleasure? What makes people continue taking drugs like street fentanyl, which put them at daily risk of death?

These questions are at the heart of drug policy and the way we view and treat addiction. But simplistic answers have stymied efforts to ameliorate drug use disorders and reduce stigma.

Research now shows that addiction doesn't mean either being completely subject to irresistible impulses, or making totally free choices. Addiction's effects on decision-making are complex. Understanding them can help policymakers, treatment providers and family members aid recovery.

Claims that people with addiction are unable to control themselves are belied by basic facts. Few of us inject drugs in front of the police, which means that most are capable of delaying use. Addicted people often make complicated plans over days and months to obtain drugs and hide use from others, again indicating purposeful activity. Those given the option will use clean needles. Moreover, small rewards for drug-free urine tests — used in a treatment called contingency management — are quite successful at helping people quit, which couldn't be possible if addiction obliterated choice.

However, those who contend that substance use disorder is just a series of self-centered decisions face conflicting evidence, too. The most obvious is the persistence of addiction despite dire losses like being cut off by family members or friends, getting fired, becoming homeless, contracting infectious diseases or being repeatedly incarcerated.

Most people who try drugs don't get addicted, even to opioids or methamphetamine, which suggests that factors other than simply being exposed to a drug can contribute to addiction. The majority of people who do get hooked have other psychiatric disorders, traumatic childhoods or both — only 7 percent report no history of mental illness. Nearly 75 percent of women with heroin addiction were sexually abused as children — and most people with any type of addiction have suffered at least one and often many forms of childhood trauma. This data implies that genetic and environmental vulnerabilities influence risk.

So how does addiction affect choice? Neuroscientists and philosophers are beginning to converge on answers, which could help make policy more humane and more effective.

Brains can be seen as prediction engines, constantly calculating what is most likely to happen next and whether it will be beneficial or harmful. As children grow up, their emotions and desires get calibrated to guide them toward what their brains predict will meet their social and physical needs. Ideally, as we develop, we gain more control and optimize the ability to choose.

But there are many ways that these varied processes can go awry in addiction and alter how a person makes choices and responds to consequences.

Traditionally, researchers focused on how the drug experience changes during addiction. At first, using is fun, perhaps exciting, perhaps soothing. It solves a problem like social anxiety or an absence of pleasure. Then, however, it becomes less effective: More is needed to get the desired effects, and coping without it begins to seem impossible. As addiction becomes ingrained, the craving for drugs intensifies even as they become less enjoyable.

In my own experience with cocaine, this disconnect was pronounced. At first, I found it euphoric. Toward the end of my addiction, I was injecting dozens of times a day, desperately wanting coke but also knowing it would make me feel

hideous. The incentive salience theory suggests that addiction is a problem of outsized “wanting” despite reduced “liking,” which becomes less amenable to cognitive control over time.

During addiction, people also tend to prioritize short-term rewards over long-term gains, which means that they postpone the pain associated with quitting, often indefinitely. This idea, which is known as “delay discounting” further helps explain why people with chaotic childhoods and precarious incomes are at higher risk: When a better future seems unlikely, it is rational to get whatever joy you can in the present.

Chandra Sripada, professor of psychiatry and philosophy at the University of Michigan, argues that distorted thinking is more important in addictive behavior than overwhelming desire, leading to what he calls “unreliable” control over use. He focuses on how addiction affects our stream of consciousness.

During addiction, he contends, despairing thoughts about oneself and the future — not just thoughts about how good the drug is — predominate. At the same time, thoughts about negative consequences of use are minimized, as are those about alternative ways of coping. Drugs are overvalued as a way to mitigate distress; everything else is undervalued. The result is an unstable balance, which, more often than not, tips toward getting high.

This theory is helpful for explaining who is most likely to get addicted and what is most likely to generate recovery. Risk factors like poverty, a traumatic childhood and mental illness generate excess stress while tending to produce negative thoughts about oneself. In my case, I was depressed and isolated because of what I later learned was undiagnosed autism spectrum disorder — and hated myself for my inability to connect. The result was a mental climate conducive to relying on drugs, even when they no longer provided relief.