

Is addiction a brain disease?

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The opioid abuse epidemic is a full-fledged item in the 2016 campaign, and with it questions about how to combat the problem and treat people who are addicted.

At a debate in December Bernie Sanders described [addiction](#) as a "[disease, not a criminal activity](#)." And Hillary Clinton has laid out a plan on her website on how to fight the epidemic. There, substance use

disorders are described as "[chronic diseases that affect the brain](#)."

The National Institutes for Drug Addiction describe addiction as "[a chronic, relapsing brain disease](#)." But a number of scholars, myself included, question the usefulness of the concept of addiction as a [brain disease](#).

Psychologists such as Gene Heyman in his 2012 book, "[Addiction a Disorder of Choice](#)," Marc Lewis in his 2015 book, "[Addiction is Not a Disease](#)" and a roster of international academics in a letter to [Nature](#) are questioning the value of the designation.

So, what exactly is addiction? What role, if any, does choice play? And if addiction involves choice, how can we call it a "brain disease," with its implications of involuntariness?

As a clinician who treats people with drug problems, I was spurred to ask these questions when NIDA dubbed addiction a "brain disease." It struck me as too narrow a perspective from which to understand the complexity of addiction. Addiction is not a problem of the brain, though the brain is surely involved: it is a problem of the person.

Why call addiction a brain disease?

In the mid-1990s, the National Institute on Drug Abuse (NIDA) introduced the idea that addiction is a "[brain disease](#)." NIDA explains that addiction is a "brain disease" [state](#) because it is tied to changes in brain structure and function.

True enough, repeated use of drugs such as heroin, cocaine, alcohol and nicotine do change the brain with respect to the circuitry involved in memory, anticipation and pleasure. Some observers consider addiction a form of learning: as people discover that a substance – or an activity,

such as gambling – helps them assuage pain or elevate their mood, they form a strong attachment to it. Internally, [synaptic connections strengthen](#) to form the association.

But I would argue that the critical question is not whether [brain changes](#) occur – they do – but whether these changes block the factors that sustain self-control for people.

Is addiction truly beyond the control of an addict in the same way that the symptoms of Alzheimer's disease or multiple sclerosis are beyond the control of the afflicted?

It is not. No amount of reinforcement or punishment can alter the course of an entirely autonomous biological condition. Imagine bribing an Alzheimer's patient to keep her dementia from worsening, or threatening to impose a penalty on her if it did.

The point is that addicts do respond to consequences and [rewards](#) routinely. So while brain changes do occur, describing addiction as a brain disease is limited and misleading, as I will explain.

Recovery is possible

Take, for example, the case of physicians and pilots with drug or [alcohol addiction](#). When these individuals are reported to their oversight boards, they are monitored closely for several years. They are suspended for a period of time and return to work on probation and under strict supervision.

If they don't comply with set rules, they have a lot to lose (jobs, income, status). It is no coincidence that their recovery rates [are high](#).

And here are a few other examples to consider.

In so-called [contingency management experiments](#), subjects addicted to cocaine or heroin are rewarded with vouchers redeemable for cash, household goods or clothes. Those randomized to the voucher arm routinely enjoy better results than those receiving treatment as usual.

Consider [a study](#) of contingency management by psychologist Kenneth Silverman at Johns Hopkins. Addicted subjects were offered US\$10 an hour to work in a "therapeutic workplace" if they submitted clean urine samples. If the sample tests positive or if the person refuses to give a sample, he or she cannot attend work and collect pay for that day. Workplace participants provided significantly more opiate-negative urine samples than people in the comparison arm of the study and worked more days, had higher employment income and spent less money on drugs.

Through [drug courts](#), the criminal justice system applies swift and certain sanctions to drug offenders who fail drug tests. The threat of jail time if tests are repeatedly failed is the stick, while the carrot is the promise that charges are expunged if the program is completed. Participants in drug courts tend to [fare significantly better](#) in terms of rearrest and alcohol use than their counterparts who have been adjudicated as usual.

These examples show the importance – indeed, the possibility – of behavioral shaping through external incentives and sanctions.

A disease of choice?

In a choice model, full-blown addiction is the triumph of feel-good immediate decisions – to quell psychological discomfort or regulate mood – over long-term consequences such as family deterioration, job loss, health and financial problems.

But if addiction is a choice, why would anyone "choose" to engage in such a self-destructive behavior? People don't choose to use addictive drugs because they want to be addicted. People choose take addictive substances because they want immediate relief.

Let's follow a typical trajectory. At the start of an episode of addiction, the drug increases in enjoyment value while once-rewarding activities such as relationships, job or family recede in value. Although the appeal of using starts to fade as consequences pile up – spending too much money, disappointing loved ones, attracting suspicion at work – the drug still retains value because it salves psychic pain, suppresses withdrawal symptoms and douses intense craving.

In treatment, medications like methadone and buprenorphine for opiate dependence, or Antabuse or [naltrexone](#) for [alcoholism](#), can certainly help suppress withdrawal and craving, but rarely [are they sufficient](#) in the absence of counseling or therapy to help patients achieve lasting recovery. Motivation is essential to [make needed changes](#).

Understanding capacity for choice needs to be part of treatment

The disease-versus-choice dichotomy does have some value because it leads to emphasis on treatment over incarceration. But it *deemphasizes* the kind of treatment that works best: namely, treatment that relies on improving patient choice-making and self-control and that leverages the power of incentives and sanctions. This is what addicted people deserve to help them make better decisions in the future.

It is far more productive, in my view, to view addiction as a behavior that operates on several levels, ranging from molecular function and structure and brain physiology to psychology, psychosocial environment

and social relations.

But NIDA researchers claim that the more we understand the neurobiological elements of addiction, the more we will see that addiction [is a brain disease](#). To me, this makes as much sense as concluding that because now we know more about the role of personality traits, such as anxiety, in increasing addiction risk, we can, at last, recognize that addiction is a disease of personality. It's neither. Addiction is not a problem of one dimension.

Official rhetoric does addicts a disservice when it implies they are merely helpless victims of their own hijacked brains.

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