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Who Falls to Addiction, and Who Is Unscathed?

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Shortly after the singer Amy Winehouse, 27, was found dead in her London home, the airwaves were ringing with her popular hit "Rehab," a song about her refusal to be treated for drug addiction.

The man said "Why you think you here?"

I said, "I got no idea."

I'm gonna, gonna lose my baby,

So I always keep a bottle near.

The official cause of Ms. Winehouse's death won't be announced until October pending toxicology reports, but her highly publicized battle with alcohol and drug addiction seems to have played a significant role. Indeed, her mother echoed a sentiment heard everywhere when she told The Sunday Mirror that her daughter's death was "only a matter of time."

But was it? Why is it that some people survive drug and alcohol abuse, even manage their lives with it, while others succumb to addiction? It's a question scientists have been wrestling with for decades, but only recently have they begun to find answers.

Illicit drug use in the United States, as in Britain, is very common and usually begins in adolescence. According to the 2008 National Survey of Drug Use and Health, 46 percent of Americans have tried an illicit drug at some point in their lives. But only 8 percent have used an illicit drug in the past month. By comparison, 51 percent have used alcohol in the past year.

Most people who experiment with drugs, then, do not become addicted. So who is at risk?

Clinicians have long been aware that patients with certain types of psychiatric illnesses — including mood, anxiety and personality disorders — are more likely to become addicts. According to the National Institute of Mental Health's Epidemiologic Catchment Area Study, patients with mental health problems are nearly three times as likely to have an addictive disorder as those without.

Conversely, 60 percent of people with a substance abuse disorder also suffer from another form of mental illness. Still, it's unclear whether addiction predisposes someone to mental illness, or vice versa.

Scientists do know that having a mental illness doesn't just increase the chance of intermittent drug abuse; it also

significantly raises the risk of outright dependence and addiction. The link represents a form of “self-medication” — that is, people are using drugs long-term to medicate their own misery.

There is clinical and epidemiologic evidence to support this notion. Alcohol and drugs affect mood and behavior by activating the same brain circuits that are disrupted in major psychiatric illnesses. No surprise, then, that depressed and anxious patients in particular turn to alcohol and other sedatives. But these substances are terrible antidepressants and only worsen the underlying problem, leading to a downward spiral of depression and addiction.

Certain personality disorders also raise the odds of drug abuse and alcohol abuse. Narcissistic patients, who constantly battle feelings of inadequacy, are frequently drawn to stimulants, like cocaine, that provide a fleeting sense of power and self-confidence. People with [borderline personality disorder](#), who struggle to control their impulses and anger, often resort to drugs and alcohol to soften their intolerable moods.

But precarious mental health is not the only risk for long-term addiction. Emerging evidence suggests that drug abuse can be a developmental brain disorder, and that people who become addicted are wired differently from those who do not.

Dr. Nora Volkow, director of the National Institute on Drug Abuse, has shown in several brain-imaging studies that people addicted to such drugs as cocaine, heroin and alcohol have fewer [dopamine](#) receptors in the brain’s reward pathways than nonaddicts. Dopamine is a neurotransmitter critical to the experience of pleasure and desire, and sends a signal to the brain: Pay attention, this is important.

When Dr. Volkow compared the responses of addicts and normal controls with an infusion of a stimulant, she discovered that controls with high numbers of D2 receptors, a subtype of dopamine receptors, found it aversive, while addicts with low receptor levels found it pleasurable.

This finding and others like it suggest that drug addicts may have blunted reward systems in the brain, and that for them everyday pleasures don’t come close to the powerful reward of drugs. There is some intriguing evidence that there is an increase in D2 receptors in addicts who abstain from drugs, though we don’t yet know if they fully normalize with time.

But people are not brains in a jar; we are heavily influenced by our environments, too. The world in which Ms. Winehouse traveled appears to have been awash in illicit drugs and alcohol whose use was not just accepted but encouraged. Even people who aren’t wired for addiction can become dependent on drugs and alcohol if they are constantly exposed to them, studies have found.

Drug use changes the brain. Primates that aren’t predisposed to addiction will become compulsive users of cocaine as the number of D2 receptors declines in their brains, Dr. Volkow noted. And one way to produce such a decline, she has found, is to place the animals in stressful social situations.

A stressful environment in which there is ready access to drugs can trump a low genetic risk of addiction in these animals. The same may be true for humans, too. And that’s a notion many find hard to believe: Just about

