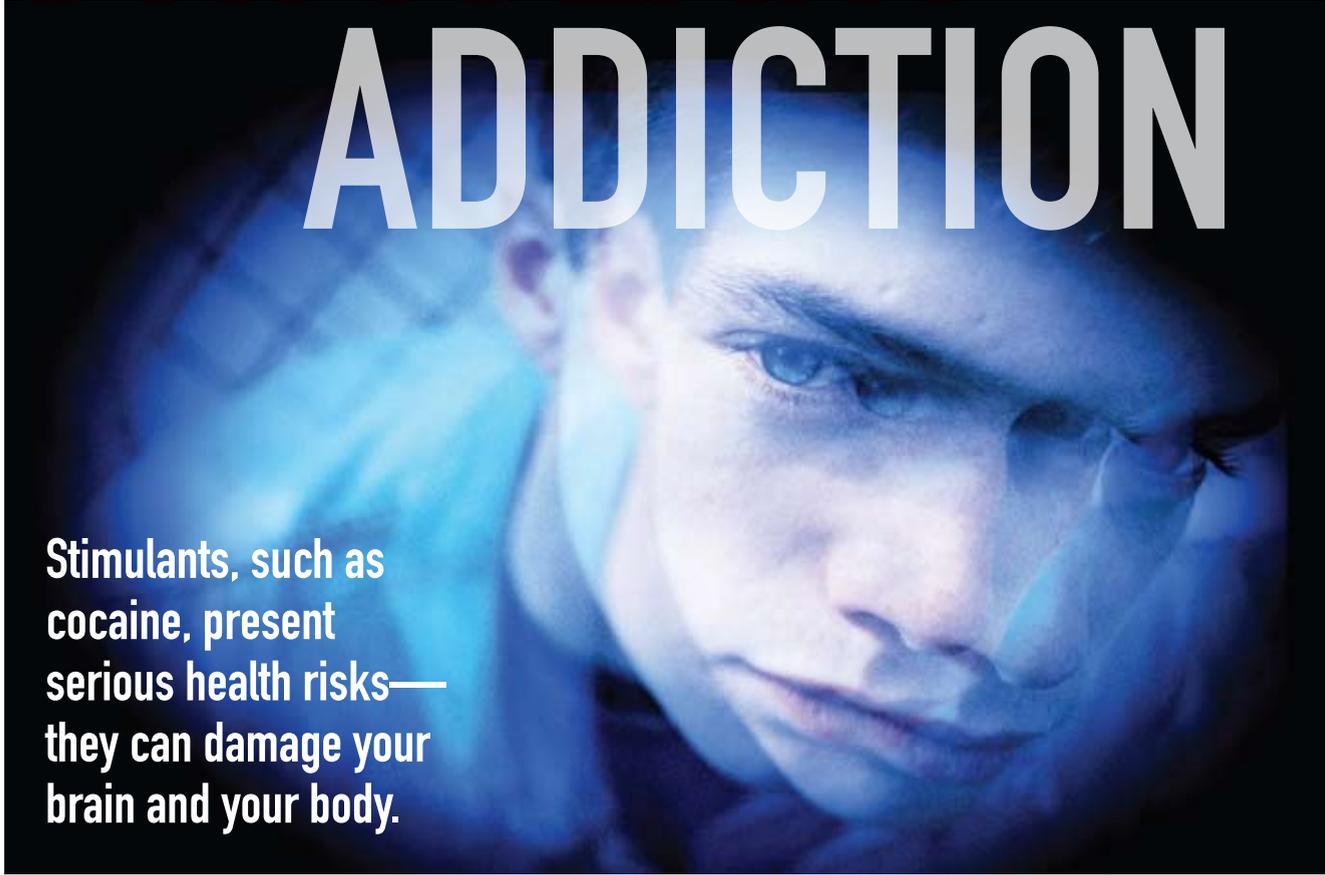


# STIMULANT ADDICTION



Stimulants, such as cocaine, present serious health risks—they can damage your brain and your body.

Jeremy had always been popular in school. But when he was 13 years old, he began to change. Jeremy started worrying more about whether he was “cool” and if people liked him. “I became shy and introverted,” says Jeremy.

Around the same time, Jeremy began noticing a group of kids at school. He remembers seeing them complaining after class one day, looking very unhappy. Then the students left for lunch. “When they came back, they were laughing and having a great time,” says Jeremy. “I wondered what could make that happen.”

Jeremy began hanging out with the kids and discovered that they were using alcohol and

marijuana, among other drugs. Hoping to capture the happy feeling he had witnessed, Jeremy began using too. When his friends started experimenting with new drugs, including the stimulants cocaine and methamphetamine, Jeremy did too. Jeremy discovered that when he used drugs he didn't worry so much. “I felt comfortable and accepted,” he says. Jeremy began using drugs, especially stimulants, regularly. “I used them to check out from the problems in my life,” he says. But what Jeremy didn't know was that these powerfully addictive drugs would soon take over his life.

## What Are Stimulants?

Stimulants are a class of drugs that “stimulate” the brain and central nervous system, temporarily increasing energy and alertness.

Not all stimulants are the same. There is great variation in how different stimulants affect the body and how dangerous they can be to your health. The stimulant class of drugs includes a range of substances, such as caffeine, cocaine, nicotine, methamphetamine (“meth”), MDMA (“ecstasy”) as well as the prescription drugs Adderall® and Concerta®, which are used to treat Attention-Deficit Hyperactivity Disorder (ADHD).

## Brain in Overdrive

Like Jeremy, many people start abusing stimulants because the drugs give them an artificial feeling of happiness. “I knew it wasn’t real,” says Jeremy. “But with stimulants, all of my insecurities were taken away.”

When you do something enjoyable—such as eat chocolate or laugh with friends—the brain releases a chemical known as dopamine, which makes you feel good. Stimulants like cocaine interrupt the natural flow of dopamine, causing it to build up in the brain, putting the “reward system” into overdrive (see sidebar).

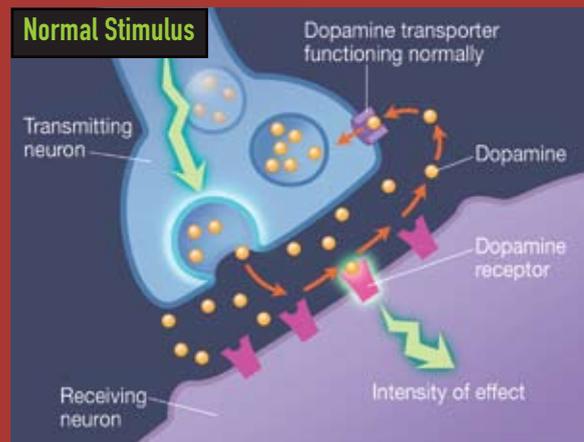
For some users, this causes a powerful but temporary sense of euphoria. Stimulants can also make users feel jittery, anxious, irritable, and paranoid. “One of the biggest side effects I experienced was paranoia,” says Jeremy. Some people may even experience a paranoid

## How Cocaine Interferes with the Brain’s “Reward System”

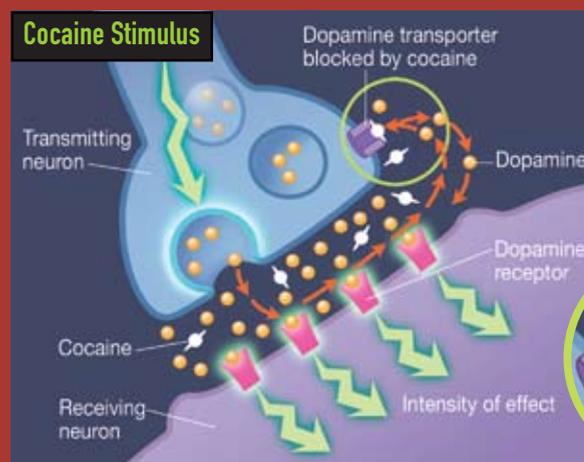
The brain has many different “systems” that control how our bodies function. In the “reward system” the brain chemical dopamine is released, producing feelings of pleasure. By releasing dopamine when you perform activities that you enjoy—like eating a favorite food—your brain is telling you to perform that activity again.

In response to a pleasurable activity, dopamine is sent from a transmitting brain cell, or neuron, to a receiving neuron. Dopamine attaches to a dopamine receptor on the receiving neuron, and sends a signal that tells you that you feel good. Afterward, dopamine detaches from the receiving neuron, and returns to the transmitting neuron through dopamine transporters.

Cocaine interferes with the brain’s reward system by blocking the dopamine transporters, preventing them from taking up the dopamine for recycling. With nowhere to go, the dopamine builds up and reattaches to the receiving neurons, resulting in a magnified feeling of pleasure. With repeated use, the brain requires more and more cocaine to produce this effect. Plus, the brain may no longer release the same amount of dopamine in response to natural rewards.



Dopamine travels between neurons across a gap called the synaptic cleft. It binds to the receptor and sends a signal. Then it detaches and returns to the transmitting neuron through dopamine transporters.



Cocaine blocks dopamine transporters. Dopamine floods the synaptic cleft and reattaches to the receptors, magnifying the pleasurable signal.

psychosis, in which they lose touch with reality and hear voices that are not there.

### Overworking the Body

Stimulants put more than just the brain into overdrive. The effects on the body vary depending on the type of stimulant, how it is taken (orally, snorted, or injected), how much of the drug is taken, and what other substances are used at the same time. Stimulants increase heart rate and blood pressure. They can cause shortness of breath, vomiting, and diarrhea.

Stimulant abuse can also result in death, even after just one use. For example, cocaine constricts the blood vessels, forcing the heart to work harder to keep blood flowing through the body. The heart can work so hard that it temporarily loses its natural rhythm. This condition, called arrhythmia, can lead to a heart attack or stroke.

### Powerfully Addictive

Cocaine and other stimulants are also powerfully addictive. Jeremy found that out the hard way. “The craving became more important than my need for food or sleep,” he says. “It was the most important thing in my life.” As his troubles grew at home and at school, Jeremy felt the urge to use stimulants more. Eventually, Jeremy couldn’t feel happy without the drugs. “I needed the drug to function rather than for fun,” he says. This happens because over time the brain of a stimulant abuser changes. As Dr. Nora Volkow, Director of the National Institute on Drug Abuse (NIDA), explains, “Cocaine abusers often develop

## Where to Find Out More

- For more information on the harmful effects of stimulants and other drugs, visit <http://teens.drugabuse.gov> or [www.scholastic.com/headsup](http://www.scholastic.com/headsup).
- To order additional publications about drugs and your body, call NIDA DrugPubs at **1-877-643-2644** or visit [www.drugabuse.gov](http://www.drugabuse.gov).
- To locate a treatment center, contact **1-800-662-HELP** or visit <http://findtreatment.samhsa.gov>.
- If you need immediate help with a crisis, contact **1-800-273-TALK**.



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**“The craving became more important than my need for food or sleep.”**

a tolerance to the drug, so that they require more and more of the drug to get high. This effect can lead to addiction—the compulsive pursuit and use of the drug, despite devastating consequences.”

### Lasting Harm

Once “hooked,” stimulant abusers put many parts of their bodies at risk. Snorting cocaine or methamphetamine damages the skin on the inside of the nose. It can result in a permanently runny nose, frequent nosebleeds, and loss of the sense of smell. Swallowing certain stimulants can cause bowel gangrene, a condition in which the tissue in a person’s bowels dies due to a lack of blood. People who

inject stimulants run a high risk of contracting blood-borne diseases, such as hepatitis C and HIV, if they share needles.

In the years that Jeremy used drugs, he experienced many physical changes. He had frequent bloody noses and experienced seizures. Addiction also caused his personality to change. “I would do anything—steal, lie, manipulate—to get drugs,” he says. He was arrested multiple times and kicked out of school. He was sent to a juvenile detention center. There, he began treatment that would eventually help him stop using drugs.

Jeremy has been drug free for more than four years, but he still experiences challenges related to his past addiction; he still struggles with cravings when he is stressed. “It never goes away,” he says. Jeremy now knows that, through treatment, recovery is possible. But for some, like him, it can be a long-term process.

**CRITICAL THINKING** 1. What are some reasons that a person might try drugs?  
2. What health risks does drug abuse present that teens might not face otherwise?