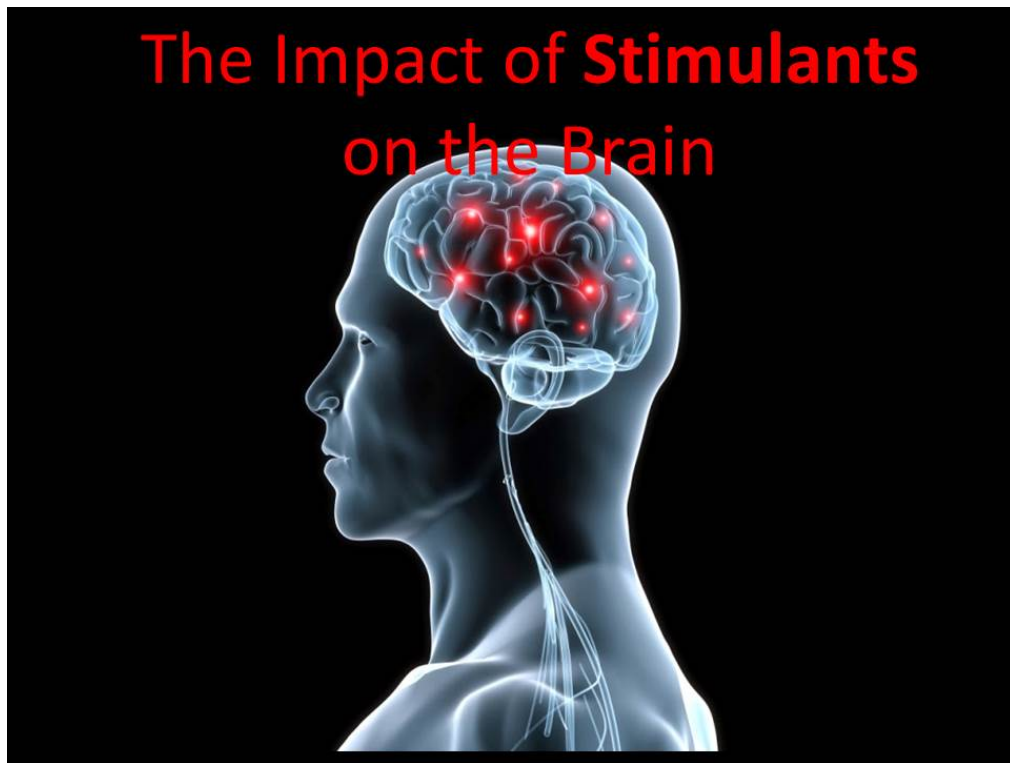


# Cocaine & Amphetamines and the Brain



Please take a few minutes to view this video:

Video @ <https://vimeo.com/599201666> (3:19 minutes)

From Study.com

Let's take a closer look at why cocaine is considered to be so dangerous. First, let's examine cocaine's effect on the human brain.

Cocaine affects three naturally-occurring chemicals in the brain. These chemicals are neurotransmitters, which are brain chemicals that communicate information throughout the brain and body. Neurotransmitters transmit signals between nerve cells. For example, the brain uses neurotransmitters to signal your lungs to breathe.

There are two main categories of neurotransmitters. Excitatory transmitters are those that stimulate the brain. Inhibitory transmitters are those that calm the brain.

Cocaine affects three major neurotransmitters: Dopamine, Serotonin and Adrenaline

Let's examine each of these. Dopamine plays a few different roles in the brain. But for the most part, dopamine releases into the brain to elicit feelings of reward and pleasure. For example, dopamine releases into many people's brains when eating a delicious meal. Dopamine is a special neurotransmitter, because it works as both an excitatory and an inhibitory transmitter.

Serotonin influences mood, appetite, and anger. This neurotransmitter also influences certain body functions like sleep cycles, body temperature, and blood pressure. Serotonin is an inhibitory transmitter.

Finally, adrenaline is responsible for the body's fight or flight response. A rush of adrenaline automatically increases the heart rate, triggers the release of glucose from energy stores, and increases blood flow to skeletal muscle. For instance, many people feel a sudden rush of adrenaline when surprised by a loud clap of thunder. Adrenaline is an excitatory transmitter.

So, when a person uses cocaine, these three neurotransmitters are quickly released into the brain. Usually, the neurotransmitters are reabsorbed soon after release. However, cocaine hinders this process. Instead, the chemicals accumulate in the brain. The accumulation causes the person to feel rewarded, euphoric, and energized. However, users can also feel fearful and jittery.

Note that each person has a limited supply of neurotransmitters. Once used, the body must take time to produce more. This is why users often end up feeling fatigued and depressed. It's also why first time drug users often achieve a more intense effect than is achieved on repeat uses.

This effect on the brain often leads to psychological dependence. Psychological dependence refers to a perceived need for a substance, based on a strong compulsion or urge to use the substance. The body may not physically depend on the drug, but the mind does.

(adapted from study.com)

## **Amphetamines and the Brain**


Each person has more than a hundred different neurotransmitters. Different neurotransmitters have different tasks. For example, Annie's brain uses one type of neurotransmitter to signal her lungs to breathe and another to tell her eyes to blink. Note that there are two main categories of neurotransmitters. Excitatory transmitters are those that stimulate the brain. Inhibitory transmitters are those that calm the brain. Amphetamines work on both types.

Like cocaine, amphetamines specifically enhance the effects of three key neurotransmitters: dopamine, serotonin and noradrenaline.

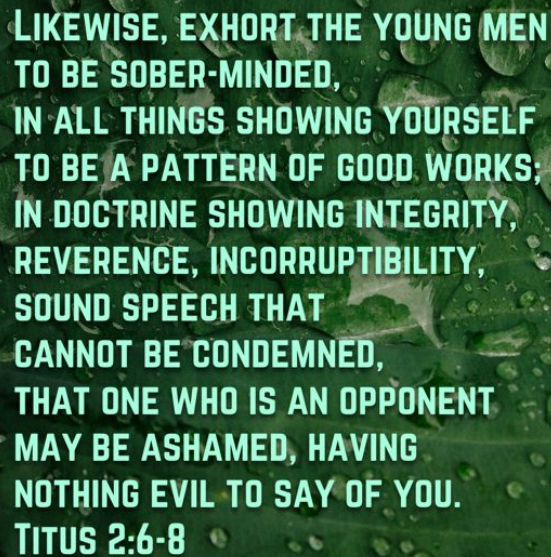
Noradrenaline is also called norepinephrine. This neurotransmitter is responsible for the body's fight or flight response. Noradrenaline helps produce the rush of adrenaline that gives the body its sudden alertness and energy. It automatically increases the heart rate, triggers the release of glucose from energy stores, and increases blood flow to skeletal muscle. For instance, Annie might feel a sudden rush of noradrenaline when she sees a mouse run across her path. Noradrenaline is an excitatory transmitter.

The following Scriptures are neurospiritual because they warn us to be “sober” (abstain from using intoxicants for pleasure), because drugs and alcohol harm the brain and lead to ruin.

## 1 Peter 5:6-9



“Therefore humble yourselves under the mighty hand of God, that He may exalt you in due time, casting all your care upon Him, for He cares for you. Be sober, be vigilant; because your adversary the devil walks about like a roaring lion, seeking whom he may devour. Resist him, steadfast in the faith, knowing that the same sufferings are experienced by your brotherhood in the world” (NKJV).



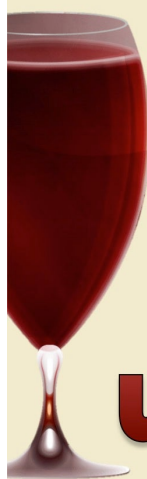
LIKELIKE, EXHORT THE YOUNG MEN  
TO BE SOBER-MINDED,  
IN ALL THINGS SHOWING YOURSELF  
TO BE A PATTERN OF GOOD WORKS;  
IN DOCTRINE SHOWING INTEGRITY,  
REVERENCE, INCORRUPTIBILITY,  
SOUND SPEECH THAT  
CANNOT BE CONDEMNED,  
THAT ONE WHO IS AN OPPONENT  
MAY BE ASHAMED, HAVING  
NOTHING EVIL TO SAY OF YOU.  
TITUS 2:6-8

## TITUS 2:11-12

The GRACE of GOD...  
bringing SALVATION  
to all people.

We are *instructed* to TURN  
from **godless living** and  
**sinful pleasures**.

We should *live* in this  
**evil world** with  
*wisdom, righteousness,* and  
*devotion* to GOD,



and be not drunk with wine  
which leads to debauchery  
**but be filled**  
**with the Spirit**

Ephesians 5:18



# **Cocaine, Amphetamines and the Brain**

Test and Answers

**Cocaine affects what three naturally occurring chemicals in the brain?**

Cocaine affects three naturally-occurring chemicals in the brain.

Cocaine affects three major neurotransmitters: Dopamine, Serotonin and Adrenaline

**What do Excitatory Transmitters do?**

Excitatory transmitters are those that stimulate the brain

**What do Inhibitory Transmitters do?**

Inhibitory transmitters are those that calm the brain.

**What three major neurotransmitters does cocaine and amphetamines activate?**

Dopamine, Serotonin and Adrenaline

**What does the neurotransmitter Dopamine do?**

Dopamine plays a few different roles in the brain. But for the most part, dopamine releases into the brain to elicit feelings of reward and pleasure. For example, dopamine releases into many people's brains when eating a delicious meal. Dopamine is a special neurotransmitter, because it works as both an excitatory and an inhibitory transmitter.

### **What does the neurotransmitter Serotonin do?**

Serotonin influences mood, appetite, and anger. This neurotransmitter also influences certain body functions like sleep cycles, body temperature, and blood pressure. Serotonin is an inhibitory transmitter.

### **What does the neurotransmitter Adrenaline do?**

Adrenaline is responsible for the body's fight or flight response. A rush of adrenaline automatically increases the heart rate, triggers the release of glucose from energy stores, and increases blood flow to skeletal muscle. For instance, many people feel a sudden rush of adrenaline when surprised by a loud clap of thunder. Adrenaline is an excitatory transmitter.

### **How does cocaine extend the time period a user feels rewarded, euphoric, and energized. However, users can also feel fearful and jittery?**

When a person uses cocaine, three neurotransmitters are quickly released into the brain. Usually, the neurotransmitters are reabsorbed soon after release. However, cocaine hinders this process. Instead, the chemicals accumulate in the brain. The accumulation causes the person to feel rewarded, euphoric, and energized. However, users can also feel fearful and jittery.

### **Why do cocaine users feel fatigued and depressed?**

Each person has a limited supply of neurotransmitters. Once used, the body must take time to produce more. This is why users often end up feeling fatigued and depressed. It's also why first time drug users often achieve a more intense effect than is achieved on repeat uses.

Each person has more than how many different neurotransmitters?

Each person has more than a hundred different neurotransmitters.

Name some things neurotransmitters do for our body to function:

Different neurotransmitters have different tasks. For example, Annie's brain uses one type of neurotransmitter to signal her lungs to breathe and another to tell her eyes to blink.

Why are 1 Peter 5:8, Titus 2:2,3,6 and Titus 2:11 neurospiritual Scriptures?

These passages warn us to be “sober,” and sober means to abstain from using intoxicants for pleasure like drugs and alcohol, because they harm the brain and lead to ruin.

Why is Ephesians 5:18 a neurospiritual Scripture:

This neurospiritual passage explains how to avoid ruin, have a healthy mind and enjoy a blessed life