

BRAIN REWARD *System*



Lessons in Mental Health





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- Link: [Brain Reward System Presentation](#)
- Link: [Healthy Brain Presentation](#)
- Link: [Healthy Brain Student Reference Guide](#)
- PDF: [Printable Student Reference Guide](#)
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TODAY WE WILL....

- Learn how the brain's reward system works
- Understand the role of neurotransmitters
- Explore how healthy behaviors boost brain function
- Analyze how drug use can hijack the reward system
- Reflect on ways to protect and support brain health

BRAIN REWARD

Have you ever wondered why you feel so good after a run, even though it's hard work? Or why you feel so happy after spending time with loved ones?

THE ANSWER LIES IN YOUR
BRAIN'S REWARD SYSTEM.

BRAIN REWARD SYSTEM

The brain's reward system is a network of neurons that is responsible for making us feel good.

It's what motivates us to do things that are essential for survival, such as eating healthy foods, sleeping, exercising, and spending time with loved ones.





NEUROTRANSMITTERS

The brain reward system is controlled by Neurotransmitters.

Neurotransmitters are the brain's chemical messengers.

They allow neurons to communicate with each other, and they play a key role in many brain functions, including reward and motivation.

NEUROTRANSMITTERS

The three most critical neurotransmitters
to the brain reward system are

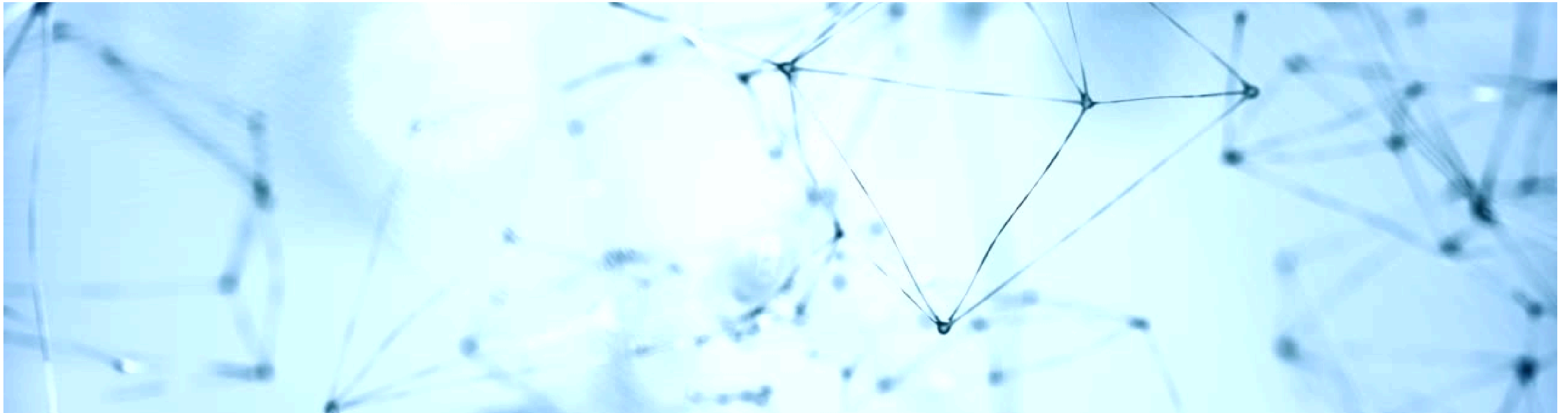
Dopamine

Endorphins

Serotonin

CHAIN REACTION

These neurotransmitters work together by binding to receptors on neurons, which starts a chain of cellular reactions that leads to feelings of pleasure.



DOPAMINE

THE “MOTIVATION &
REWARD” MESSENGER



DOPAMINE

Dopamine drives us to pursue our goals and experience the things that make us happy.

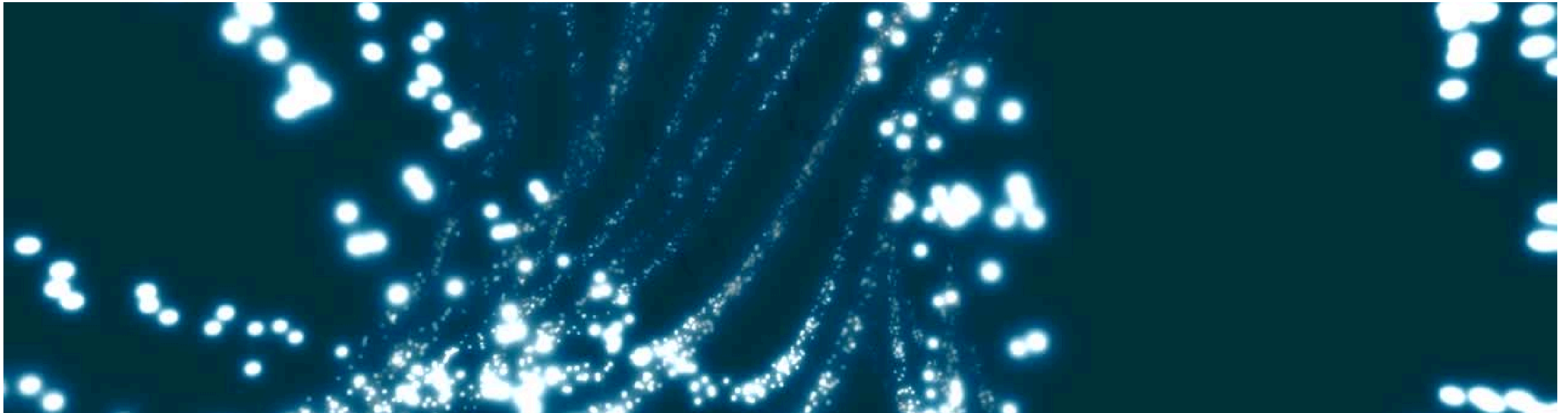
Natural ways to boost dopamine levels:

- Eating healthy foods
- Exercising regularly
- Getting enough sleep
- Spending time with loved ones
- Accomplishing goals



ENDORPHINS

THE BODY'S
NATURAL PAINKILLERS



A woman with long brown hair, wearing a bright green sleeveless dress, is performing a handstand in a lush green field filled with small white and yellow wildflowers. She is smiling and looking towards the camera. Her arms are extended upwards, and her legs are spread wide in the air. The background is a bright blue sky with scattered white clouds. The entire scene is framed by a light blue semi-transparent rectangle on the right side, which contains text.

ENDORPHINS

Endorphins are released in response to pain, stress, and exercise and are mood boosters.

Natural ways to boost endorphin levels:

- Exercising regularly, especially aerobic
- Eating spicy foods
- Laughing
- Meditating
- Getting a massage

SEROTONIN

THE "MOOD NEUROTRANSMITTER"



SEROTONIN

Regulates our mood, sleep, and appetite.

Natural ways to boost serotonin levels:

- Getting enough sunlight
- Eating foods that are rich in tryptophan (turkey, chicken, fish, eggs, dairy & nuts)
- Exercising regularly
- Spending time in nature
- Meditating



LOCK & KEY SYSTEM

Imagine the brain's reward system as a lock and neurotransmitters as the keys.

The keys bind to receptors on the brain's neurons, which unlocks the lock and releases a flood of positive feeling neurotransmitters.

This creates feelings of satisfaction and motivates us to seek out those pleasurable experiences again.

ADDICTION

Unhealthy behaviors and substances, on the other hand, act like master keys that bind to receptors and unlock the lock at much higher levels than healthy behaviors would.

This causes a much larger flood of dopamine and other neurotransmitters to be released, which can lead to addiction.





DRUG USE

Drug use causes an abnormally high release of dopamine in the brain, which can lead to changes in the brain's reward system, including:

Downregulation

Desensitization

Changes in signaling pathways

DOWNREGULATION

When we experience something rewarding, our brains release neurotransmitters, which bind to receptors on neurons.

Over time, the number of neurotransmitter receptors on neurons can decrease, which makes the brain less sensitive to neurotransmitters.



DESENSITIZATION

Neurotransmitter receptors can also become desensitized over time, meaning that they become less responsive to neurotransmitters.

This is thought to be caused by changes in the structure and function of the receptors.



PATHWAYS

The pathways that neurotransmitters travel through in the brain can also change over time.

This can make it more difficult for neurotransmitters to reach their target receptors.

REAL WORLD EXAMPLE

METHAMPHETAMINE

A powerful stimulant drug that hijacks the
brain's reward system



ADDICTION THEORY

Meth is a powerful stimulant drug that acts like a master key, unlocking dopamine receptors and releasing a flood of dopamine into the brain.

This is much more dopamine than the brain would normally release in response to natural rewards.

DOWNREGULATION

Meth is like a fake key that floods the brain's dopamine receptor lockbox with too much dopamine.

This causes the brain to reduce the number of locks (receptors) to compensate.

This reduction in dopamine receptors makes it harder for the brain to experience pleasure from natural rewards.





DESENSITIZATION

As people use drugs, the brain not only decreases the number of locks (receptors), but the ones that are left become less sensitive.

The receptors become accustomed to the drug (fake keys) and don't react as strongly.

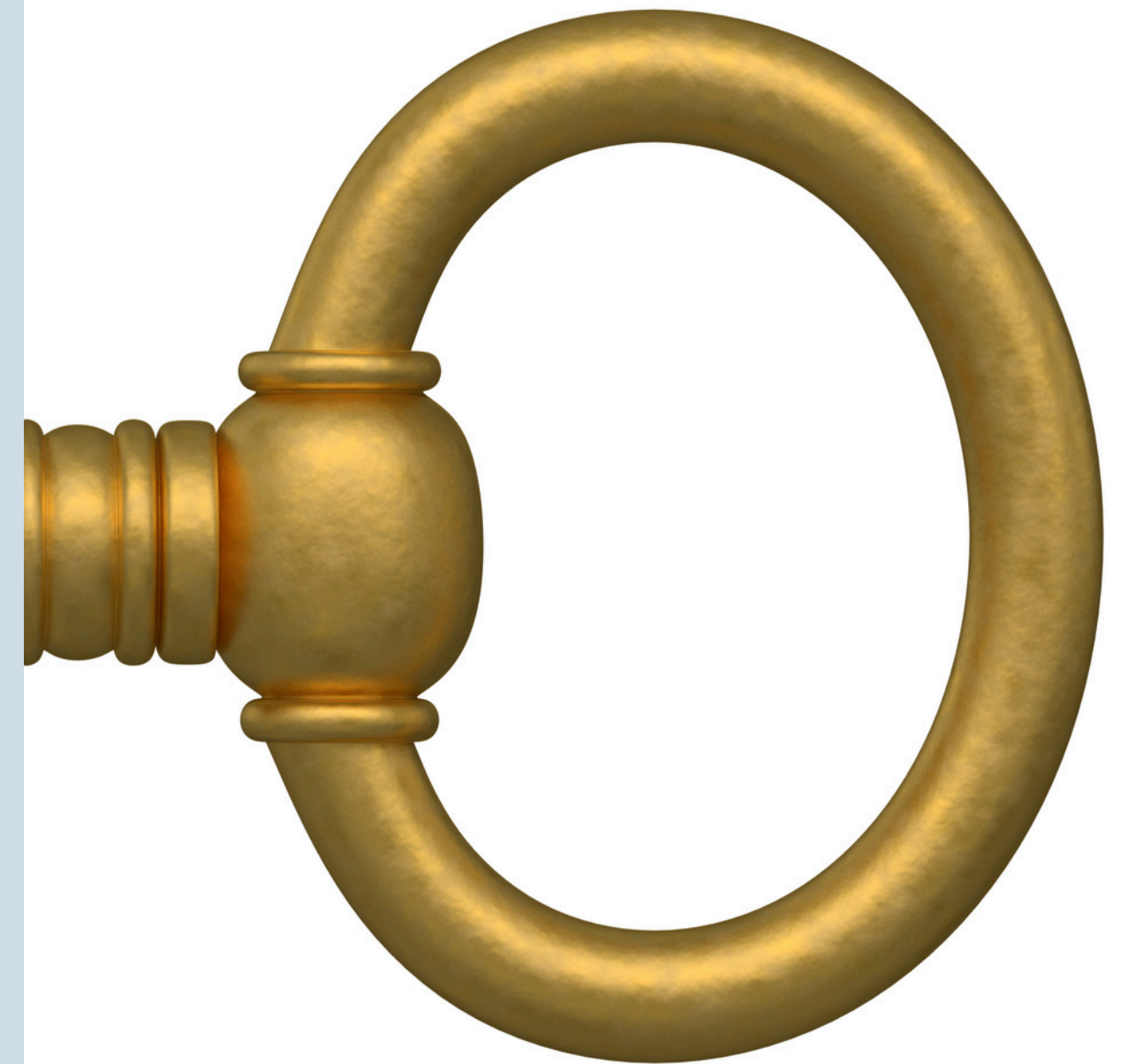
This makes it harder for the drug to produce the same pleasure it did initially, leading to a need for more of the substance.

PATHWAYS

Simultaneously, the brain decides to change the pathways, altering the usual routes the keys take to reach their locks.

With fewer available locks and less responsive receptors, the pathways shift.

This make it harder for the drug to open the locks and produce the same pleasure it did initially.



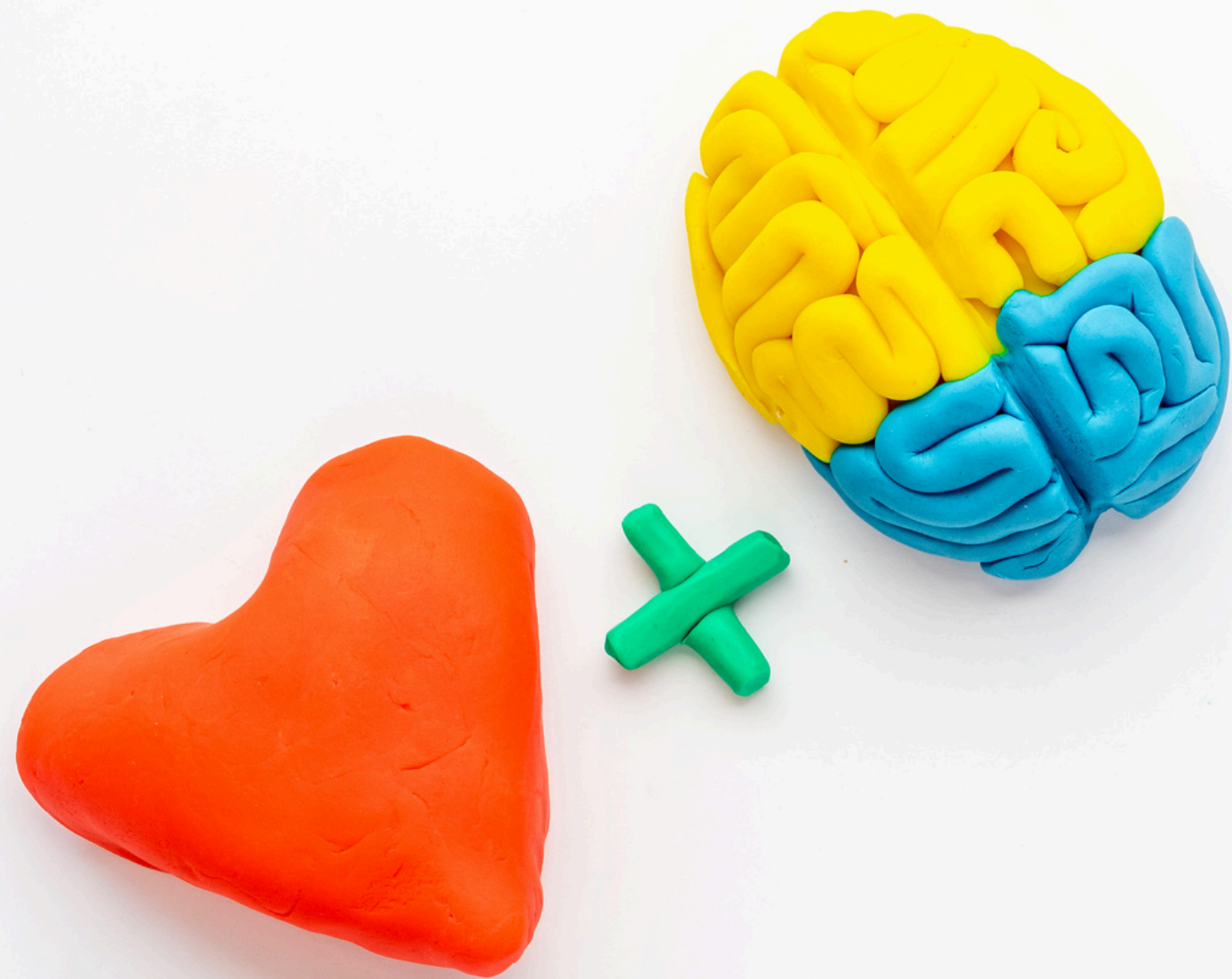
CONSEQUENCES OF ADDICTION ON OUR BRAIN

Addiction disrupts neurotransmitter function and brain structure, leading to tolerance, dependence, and permanent changes that make it difficult to recover.

BRAIN HEALTH

By supporting neurotransmitter function naturally and avoiding addictive substances, we can help to protect our brains and promote optimal mental health.





Healthy Brain
Guide

Connect what you
have learned —

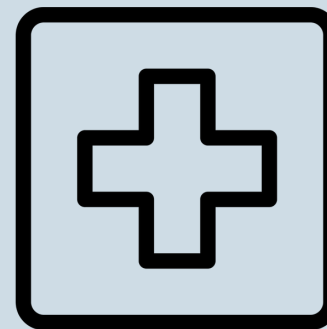
Click the link below
for the activity.



LEAD WITH COMPASSION, EDUCATE WITH PURPOSE.

Until our next lesson

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