

DOPAMINE

MODERATION

TEMPERANCE

How Daily Habits Shape the Brain's *Dopamine Response*

Why the reward system adapts to what it gets most often, and why earned rewards keep it working well.

OVERVIEW

In this guide

A short walk through how food, screens, and sleep change the brain's reward response, and what keeps it working well.

- 1 The Problem
- 2 The Numbers
- 3 The Science: How the Reward System Adapts
- 4 The Science: Earned vs. Effortless Rewards
- 5 A Word From Scripture
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PART ONE: The Problem

THE REFRAME

The belief: dopamine is the pleasure chemical, so more is better.

The truth: dopamine is a motivation signal, and the brain adjusts its sensitivity to what it gets most often.

Frequent, effortless rewards are linked to a weaker reward response. Sleep, effort, and movement are linked to a stronger one.

THE NUMBERS

What the research actually shows

40%

of U.S. teens ages 13 to 17 say they are online almost constantly (survey of 1,458 teens, fall 2025)

Pew Research Center, 2025

17% lower

D2 receptor availability in ten obese adults than in controls, falling as BMI rose

Wang et al., The Lancet, 2001

1 night

of sleep deprivation lowered D2/D3 receptor availability in the ventral striatum of 20 healthy men

Volkow et al., Journal of Neuroscience, 2012

178 adults

aged 64 to 68: more intense physical activity went with higher D2/D3 availability in the caudate

Köhncke et al., NeuroImage, 2018

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PART TWO: The Science

THE SCIENCE

The Reward System Adjusts to What It Gets

Dopamine works as a motivation and learning signal, and the brain tunes its sensitivity to the input it receives. In a six-month fMRI study, women who gained weight showed a weaker striatal response to eating palatable food than women whose weight held steady. Separately, obese adults have fewer D2 receptors than controls, with availability falling as BMI rises. Animal studies point to overeating as one cause, but the human data can't show which came first.

KEY TERMS

- Striatum
- D2 receptors
- Reward sensitivity
- Receptor downregulation

THE SCIENCE

How the Brain Responds to Earned and Effortless Rewards

In a PET study, playing a video game released dopamine in the striatum, and the release was greater in players who performed better. Adolescents shown Instagram photos with many likes had more nucleus accumbens activity than for photos with few. A like takes no effort to receive. Music offers a third case: dopamine was released during anticipation and again at peak emotional moments, in different regions.

KEY TERMS

- Ventral striatum
- Nucleus accumbens
- Performance-linked release
- Anticipation vs. experience

“The soul of the sluggard desireth, and hath nothing: but the soul of the diligent shall be made fat.”

PROVERBS 13:4, KJV

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PART THREE: The Original Plan's Answer

THE ORIGINAL PLAN'S ANSWER

Three practical steps

1

Protect sleep first

One night of lost sleep lowered D2/D3 receptor availability in healthy men. A fixed bedtime is the simplest place to start.

2

Earn most of your rewards

Choose rewards that follow effort: a walk, a skill you're practicing, a meal you cooked. In the video game study, release tracked performance.

3

Limit how often the effortless ones show up

The reward system adapts to what it gets most often. Put a time limit on the feed and keep the highest-intensity foods for occasions.

A NATURAL REMEDY

When everyday rewards stop feeling rewarding

If food, screens, or scrolling stop satisfying, the usual instinct is to reach for something stronger. The research points the other way: reduce how often, and build natural sources of reward back into the day.

TRY THIS

- Move daily, with some intensity. Among older adults, more intense activity went with higher D2/D3 availability.
- Listen to music with full attention. Anticipation and peak moments each released dopamine.
- Eat whole-food meals at regular times, and keep a steady bedtime.

“True temperance teaches us to dispense entirely with everything hurtful, and to use judiciously that which is healthful.”

ELLEN G. WHITE, PATRIARCHS AND PROPHETS, P. 562

THE TAKEAWAY

The brain adjusts to what you repeat.

Earn most of your rewards, protect your sleep, and keep the highest-intensity pleasures for occasions.

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