

MINDFUL EDGE

LESSON 4 WHAT IS THE NEUROSCIENCE OF MINDFULNESS?

1. WHAT IS
STRESS?

2. WHAT IS
MINDFULNESS?

3. HOW TO
PRACTICE
MINDFULNESS?

5. HOW DO
THOUGHTS
IMPACT
EMOTIONS &
BEHAVIOURS?

6. HOW DO
EMOTIONS IMPACT
THOUGHTS &
BEHAVIOURS?

7. HOW TO
BEFRIEND
STRONG
EMOTIONS?

8. WHAT IS THE
SCIENCE OF
HAPPINESS?

My Mindful Journey Reflective Journal
Mindful Edge Interactive™
Skill for Being with the Ups and Downs of Life
(Stress Management and Life Strategies for Youth)
for use with MindfulEdge.ca interactive website for Youth

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WHAT IS THE NEUROSCIENCE OF MINDFULNESS?

HOW IS THE BRAIN IMPACTED BY MINDFULNESS?

WHAT CAN I LEARN ABOUT THE NEUROSCIENCE OF MINDFULNESS?

Key Points About Neuroscience

The brain can change and adapt throughout life (neuroplasticity)

Healthy habits like sleep, nutrition, and physical activity support brain function

Amygdala, Prefrontal Cortex, Hypothalamus regulate stress, focus, emotions, and well-being

Our perception shapes how we experience the world

Neuroscience of Mindfulness

Mindfulness can change the brain through **neuroplasticity**

- Regular practice reduces activity in the **amygdala**
- It strengthens the **prefrontal cortex**, improving focus and emotional control.

These changes can improve well-being, resilience, and self-awareness.

Mindfulness Changes the Brain - "Neuroplasticity"

Mindfulness creates space between reaction and response, shifting activity from the amygdala (fight-or-flight) to the prefrontal cortex (focus and self-control).

WITH PRACTICE, THIS CONSCIOUS RESPONSE WILL BECOME STRONGER THAN THE UNCONSCIOUS REACTION.

Rewiring the Brain
Our routines makes routes in our brains.

- 1 MENTAL ACTIVITY**
This can be a thought, feeling, or action.
- 2 CREATION OF NEW NEURAL STRUCTURES**
Neurons fire together, forming a brief connection by communicating through gaps called synapses.
- 3 REPETITION OF MENTAL ACTIVITY**
- 4 STRENGTHENING OF NEURAL CONNECTION**
Neurons wire together to make more lasting circuits.

We can strengthen neural connections by thinking in the way we want to be.

LEARN

Dopamine & Serotonin Pathways in the Brain

DOPAMINE FUNCTIONS

- Motivation & reward
- Pleasure
- Movement
- Habits

SEROTONIN FUNCTIONS

- Mood
- Memory
- Sleep
- Thinking & learning

WHICH ONES APPLY TO ME? COMPLETE QUIZ

Lack of Dopamine

LACK OF DOPAMINE IS ASSOCIATED WITH:

- FATIGUE
- APATHY (LACK OF CARE/ABOUT A LOT OF STUFF)
- LACK OF FOCUS/DIFFICULTY CONCENTRATING
- FORGETFULNESS
- MOODINESS
- INSOMNIA
- SUGAR CRAVINGS
- LOWER MOTIVATION

HOW CAN I BOOST MY DOPAMINE? COMPLETE CHART

Healthy Dopamine Boosters

Dopamine supports motivation, focus, mood, learning, and movement

- SLEEP**
- EAT TYROSINE-RICH FOODS**
- EXERCISE REGULARLY**
- COMPLETE SMALL TASKS**
- PRACTICE MINDFULNESS**
- SEEK NEW EXPERIENCES**
- LISTEN TO MUSIC**

Dopamine Boosting Foods

FRUITS

- Bananas
- Blueberries
- Strawberries
- Apples

PROTEINS

- Chicken
- Salmon
- Chickpeas
- Nuts
- Seeds

VEGGIES

- Onions
- Cauliflower
- Kale

WHICH ONES CAN I ADD?

DOPAMINE: THE REWARD CHEMICAL

- Eating food
- achieving a goal
- competing a task
- Taking care of yourself

How To Hack Your Happy Hormones

SERATONIN: THE LOVE HORMONE

- Socializing
- Physical Touch
- Patting Animals
- Helping Others

ENDORPHINS: THE PAIN KILLER

- Exercising
- Laughing
- Watching a Movie
- Listening to Music

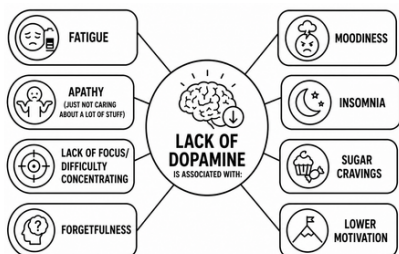
OXYTOCIN: THE MOOD STABILIZER

- Sun Exposure
- Being with Nature
- Practicing Mindfulness
- and self-compassion

LESSON 4: THE NEUROSCIENCE OF MINDFULNESS

DOPAMINE - THE CHEMICAL OF ATTENTION & HAPPINESS QUIZ

❖ Check your Dopamine level – do you experience any of the following?



- ☐ Fatigue
- ☐ Apathy
(just not caring about a lot of stuff)
- ☐ Lack of focus
- ☐ Forgetfulness
- ☐ Moodiness
- ☐ Moodiness
- ☐ Difficulty concentrating
- ☐ Insomnia
- ☐ Sugar cravings
- ☐ Lower motivation

HOW CAN YOU BOOST YOUR DOPAMINE?

Physical: Regular Exercise	Nutritional: Foods rich in Tyrosine	Emotional Support – Self Care
☐ Yoga	☐ Almonds	☐ Mindfulness Practice
☐ Walking	☐ Bananas	☐ Massage
☐ Dancing	☐ Avocados	☐ Sleep
☐ Martial Arts	☐ Eggs	☐ Listen to music
☐ Sports	☐ Beans	
☐ Running	☐ Fish	
	☐ Chicken	

❖ Which do you incorporate in your life? ❖ Which would you be willing to add?

Many of the things that people do to boost their focus and energy end up backfiring. Nicotine, caffeine, and sugar-laden, fat-filled treats are all very effective at increasing dopamine levels. However, these things that provide a quick boost end up disrupting the natural dopamine production process resulting in decreased dopamine production in the long-term.



HOW TO HACK YOUR HAPPY HORMONES? ACTIVITY

❖ Pick one thing from each category you are willing to do differently to hack your happy hormones this week:

Dopamine	
Oxytocin	
Endorphins	
Serotonin	

SLEEP STRATEGIES

❖ *How much uninterrupted sleep a night are you getting?*

(adapted from Mindsight Practice B –Brainstorm by Daniel J. Siegel)

The teenage brains cycle of waking and sleeping is on a different schedule than adults or children, with staying up later being a natural outcome for many adolescents, the early time of school makes this setup a chronic source or not getting enough sleep.

According to the United States National Sleep Foundation, most teens need about 8 ½ to 9 ¼ hours and most adults need 7 – 9 nine hours of sleep each night...

- for optimal **brain growth**
- for optimal **memory** consolidation of the day's learning
- for optimal **immune function** to fight off disease
- for optimal **response to stress** to deal with life's hassles, and
- for **focusing attention**, thinking, remembering, problem solving, handling your emotions, and **connecting with others** in relationships



❖ *What do you DO and what do you AVOID doing to support your sleep strategies?*

<u>I Do This (or plan on doing this):</u>	<u>I Avoid Doing This (or plan to avoid):</u>

LESSON 4 EVALUATION: WHAT IS THE NEUROSCIENCE OF MINDFULNESS?

❖ Which idea(s) and practices from the How Do Thoughts Impact Emotions and Behaviour? lesson did you find supportive/helpful/interesting that you might try and incorporate into your daily life?

Lesson Components	
Arriving	Colouring to Music
Check-in	Rose - Thorn - Bud
Breathing	Comparing 5-Finger vs Using the Hoberman Sphere
Focus	Mountain Visualization
Movement	4-Figure Hip Stretch
Neuroscience of Mindfulness	Information, Activities and Practices – please specify • Neuroscience of Mindfulness • Mindfulness Changes the Brain – “Neuroplasticity” • Dopamine Serotonin Pathways in the Brain • Culture, Gender & Families on Thought • Self-talk and Negativity Bias
Mindful Attitudes	• Patience
Healthy Habits	• Sleep

❖ Please list 1 thing you might try to incorporate into your daily life.

❖ What did you like least about this lesson or found challenging?