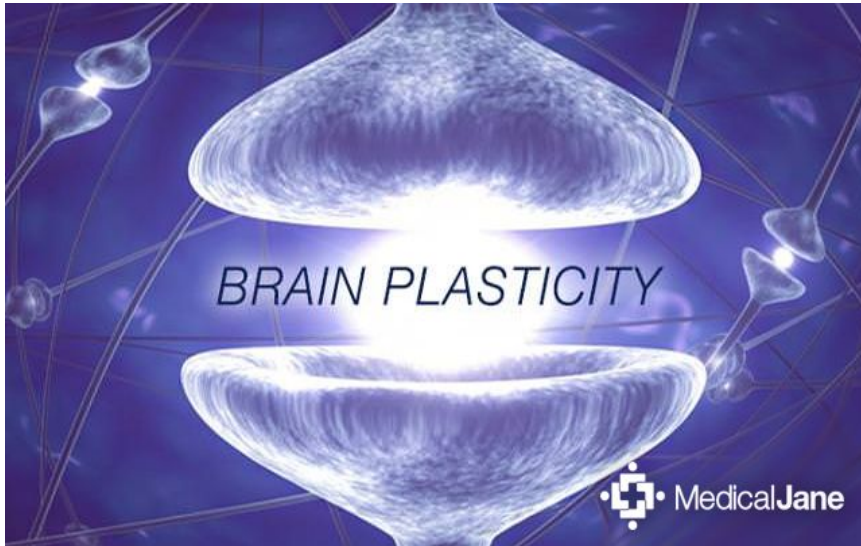


Understanding Neuroplasticity


The Science of Changing your Mind



Shawn Tepper-Levine, D.O.
November 10, 2020

Four Main Components That Nourish Our Body

1. The Foods We Eat
2. The Water We Drink
3. The Air We Breathe
4. The Thoughts We Think

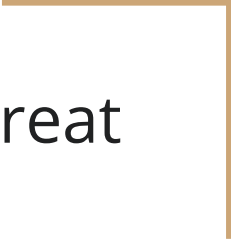
A small green plant with several leaves and a few tiny white flowers is growing out of a crack in a dark, weathered brick wall. The bricks are arranged in a traditional pattern and show signs of age and wear. The lighting is dramatic, with strong shadows and highlights, emphasizing the texture of the bricks and the vibrant green of the plant.

YOUR TASK IS NOT TO
SEEK FOR LOVE, BUT
MERELY TO SEEK AND
FIND ALL THE
BARRIERS WITHIN
YOURSELF THAT YOU
HAVE BUILT AGAINST IT.

Rumi

The Thoughts We Think

- Our thoughts influence our health
- Negative thoughts and attitudes promote a stress response
- Chronic negative thinking can become a habit
- A prolonged stress response leads to dis-ease
- We can change our thoughts and reverse dis-ease through the mechanism of neuroplasticity



“Brain exercises may be as useful as drugs to treat diseases as severe as schizophrenia – that plasticity exists from cradle to the grave, and that radical improvements in cognitive functioning – how we learn, think, perceive, and remember are possible even in the elderly.”

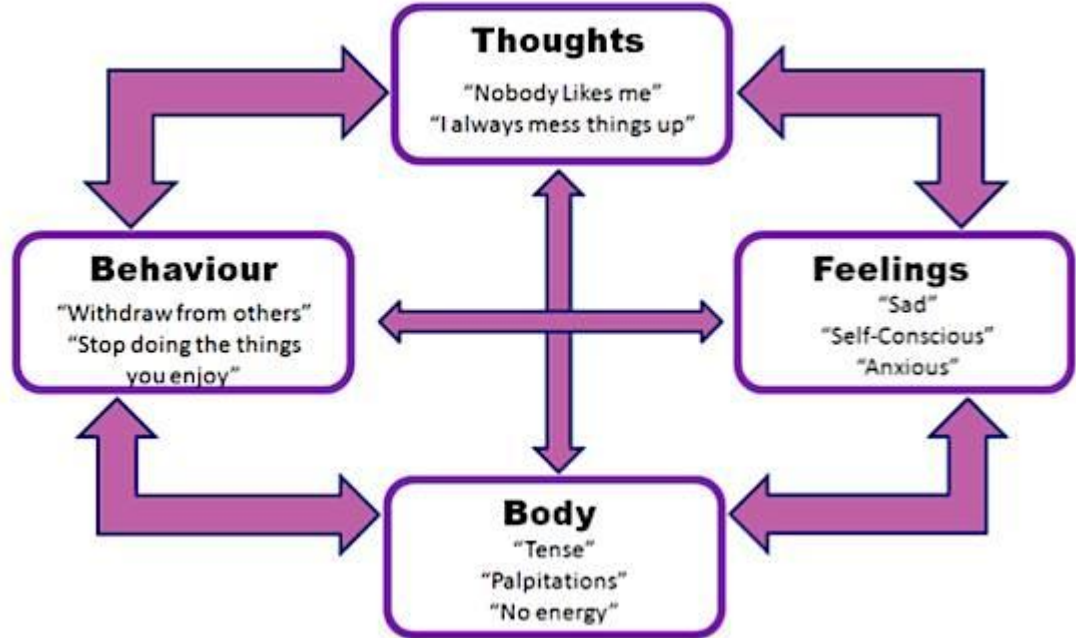


Dr. Michael Merzenich
Professor Emeritus, UCSF
Kavli Laureate in Neuroscience

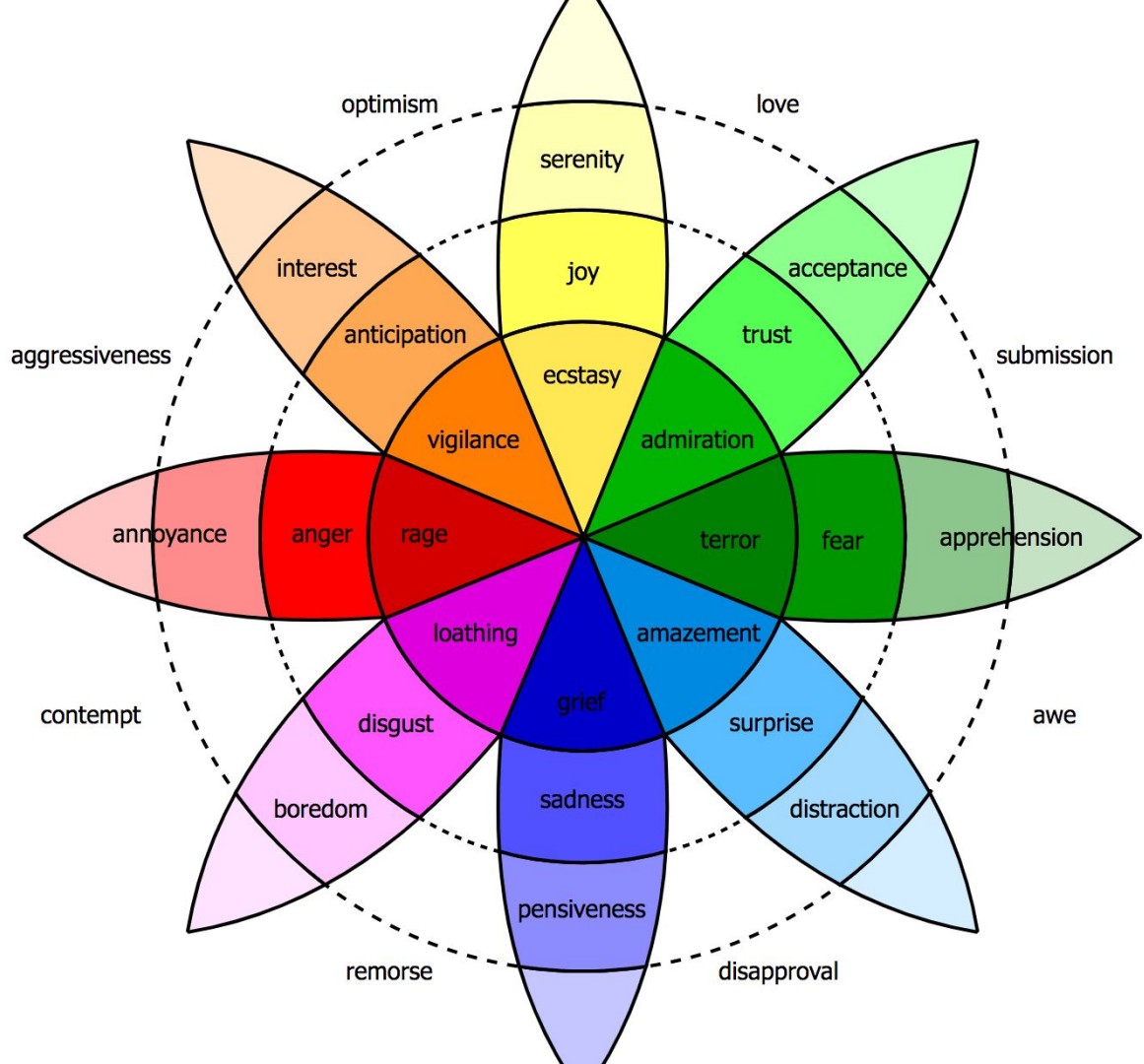
Our Thoughts,
Emotions and
Behaviors are
Reciprocally
Interrelated

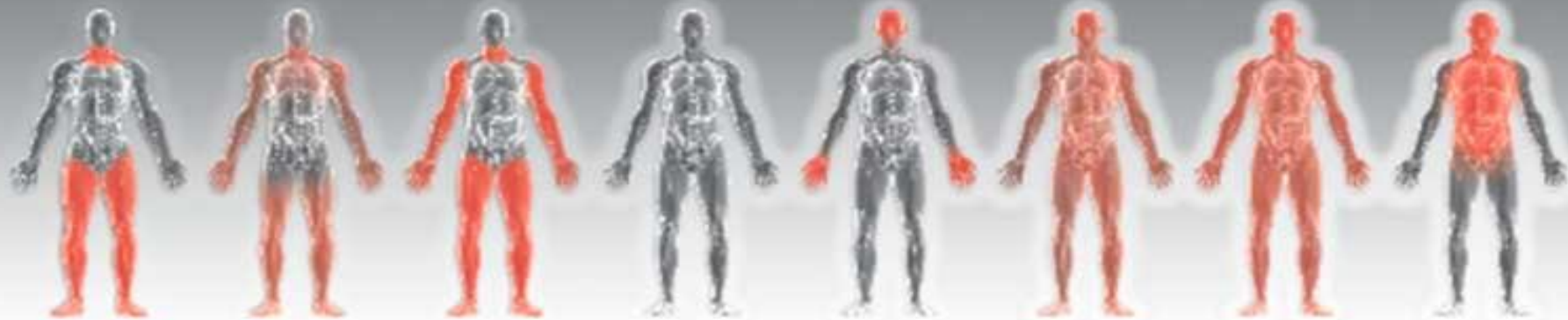


Example of Stress Response Feedback Looping



Humans Express A Full Spectrum Of Emotions





FEAR ANXIETY ANGER BOREDOM INTEREST HAPPINESS ENTHUSIASM SERENITY



CORTISOL / ADRENALIN

ACETYLCHOLINE

SYMPATHETIC

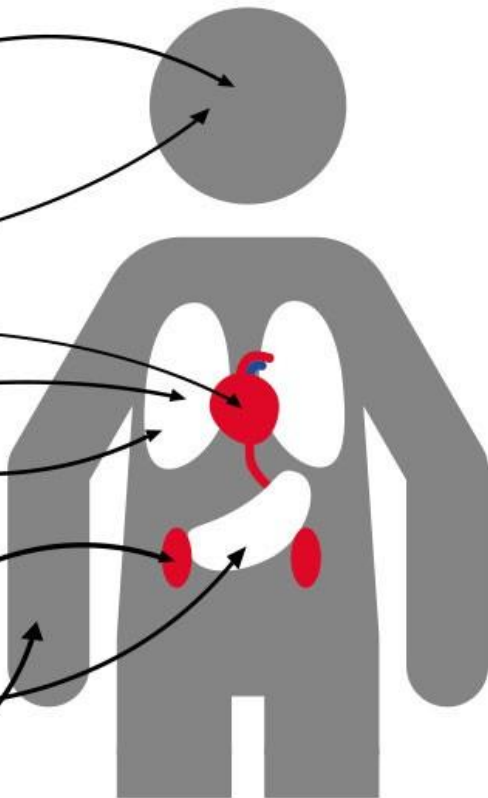
PARASYMPATHETIC

Relationship between emotional states, the synthesis of neurotransmitters and blood distribution.

“FIGHT OR FLIGHT”

ACUTE STRESS RESPONSE

- Increased blood flow to brain; Increased production of catecholamines (epinephrine, norepinephrine, dopamine) which help to facilitate cognitive performance
- Pupils dilate/Peripheral vision is reduced
- Heart rate increases
- Faster, deeper breathing
- Increased blood flow to large muscle groups
- Adrenal hormones (cortisol and DHEA) released, resulting in increased energy mobilization
- Digestion slows dramatically
- Blood pressure increases

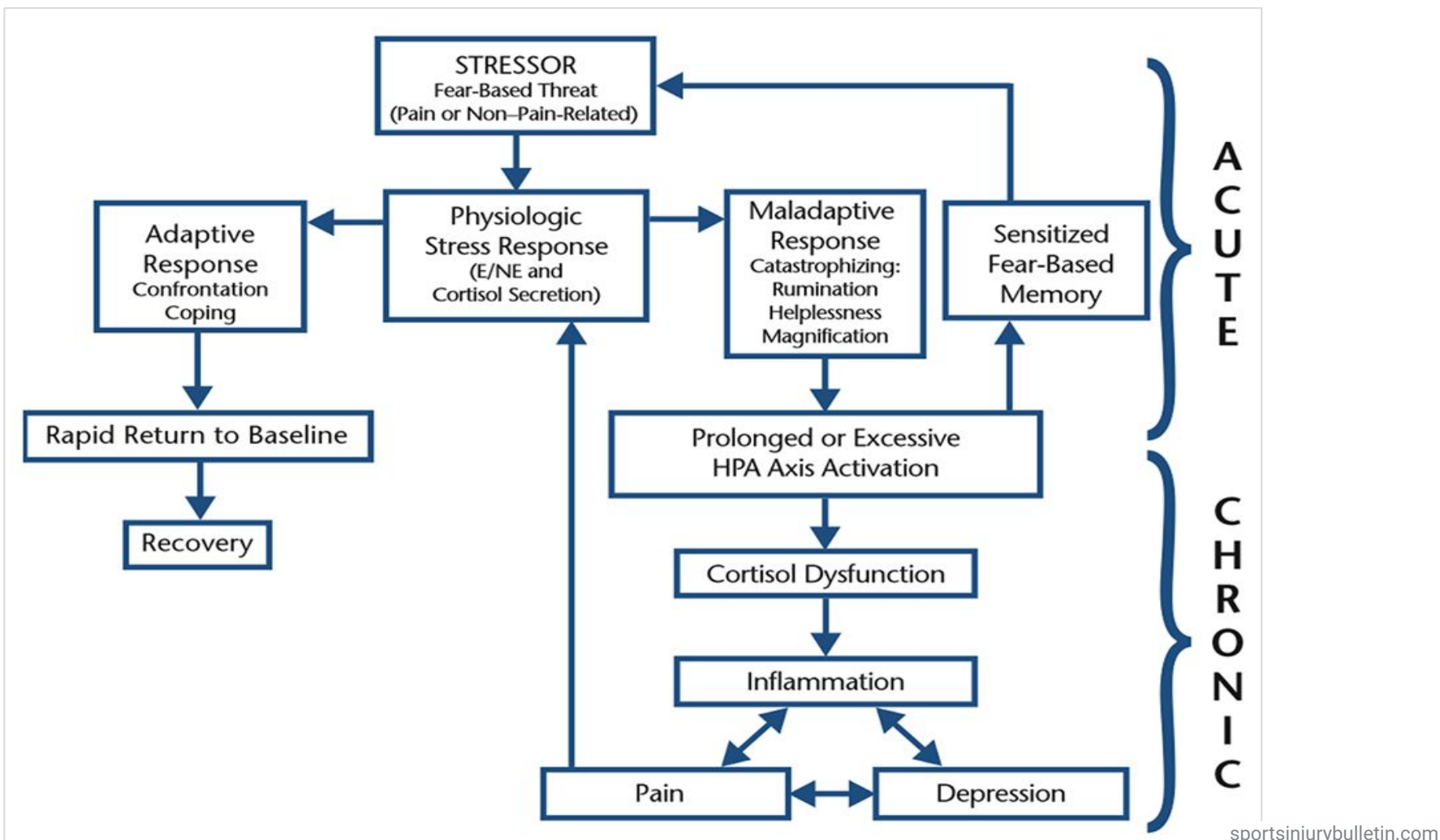


REACTIONS

- Increased alertness
- Increased short term strength
- Increased ability to handle stress
- Heightened ability to focus
- Increased oxygen to the brain
- Faster, deeper breathing
- Heightened sense of smell
- Body and mind are hyper-alert

OTHER RESPONSES

- Perspiration increases to cool body
- Muscle tension increases to prepare for “fight or flight”
- Saliva production decreases
- Metabolism speeds up considerably
- Inflammation increases
- Blood flow from skin surface is diverted to larger muscle groups & brain
- Body extremities can change temperature
- Blood pressure increases



“Central Nervous System Facilitation”

“Post Traumatic Stress Disorder”

“Sympathetic Overtone”

“Brain Injury”

Are all Terms to Describe a Maladaptive Stress Response

Predisposing Factors For Getting Stuck In a Chronic Maladaptive Stress Response

- Birth Trauma
- Early Childhood Stress or Trauma
- Repetitive Stressors or Trauma
- Traumatic Brain Injuries
- Hardwired programs in your brain from habitual negative thinking and reactivity
- Emotional Addictions

5 Stages of Neuroplastic Healing Described by Norman Doidge, MD

The Brain's Way of Healing: Remarkable Discoveries and Recoveries from the Frontiers of Neuroplasticity

1. Repair The Health of Nerve Cells

- a. Eliminate toxins
- b. Good nutrition

2. Neuromodulation

- a. Balancing the parasympathetic and sympathetic nervous system

3. Neuro Relaxation

- a. In a relaxed state the brain is available for learning

4. Neurostimulation of Nerve Cells

- a. Via repetitive sensory, mental or physical exercises

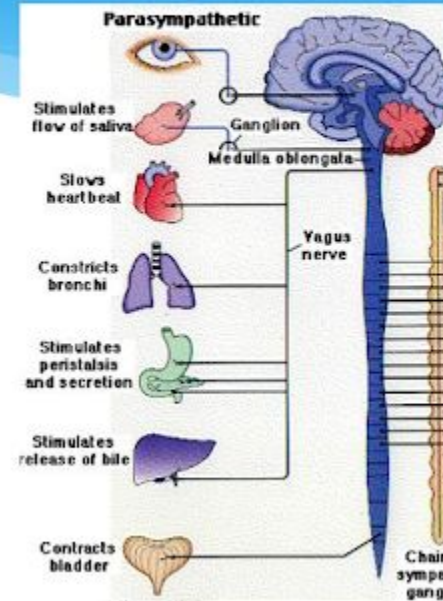
5. Neural Differentiation

- a. Once the brain is modulated and relaxed, attention is restored and the brain is better able to discern subtle differences in sensory experiences and to integrate them accurately.

Modulation via Activating the Parasympathetic Nervous System

Parasympathetic nervous system

- * Keeps the body working efficiently and counterbalances the activity initiated by the sympathetic nervous system
- * Restores the body to a state of calm, therefore maintaining homeostasis
- * Dominates the sympathetic nervous system most of the time



You Can Improve Parasympathetic Tone Yourself by Stimulating Your Vagus Nerve

Natural Techniques For Stimulating The Vagus Nerve



Exercise

Exercise is good for your brain's cognitive faculties, your mental health and your gut flow, thanks to its ability to stimulate the vagus nerve.



Deep, slow breathing

Breathing slowly and deeply activates your vagus nerve to send messages to your brain that help lower your blood pressure and heart rate.



Thoughtful meditation

You can improve your mood simply by silently repeating positive phrases about your friends and family.



Chill out

Exposure to cold dampens the fight or flight response and increases the rest and digest response, like taking a cold shower or drinking ice water.



Singing

Humming, chanting and singing are all exercises that increase heart rate variability (HRV). Higher HRV is linked with "reduced morbidity and mortality" and "improved psychological well-being and quality of life."

Singing also increases oxytocin, aka the love hormone, because it's an activity that brings people closer together.



Laughing

Laughter is a natural immune booster which, like singing, can increase HRV in a group setting.



Gargling

Gargling with water stimulates the muscles of the pallet and has been shown to improve working memory performance.



Yoga

Disciplines like yoga increase vagus nerve activity to help keep you calm and are particularly effective for people suffering from anxiety or depression.

Combat The Stress Response With Good Feelings

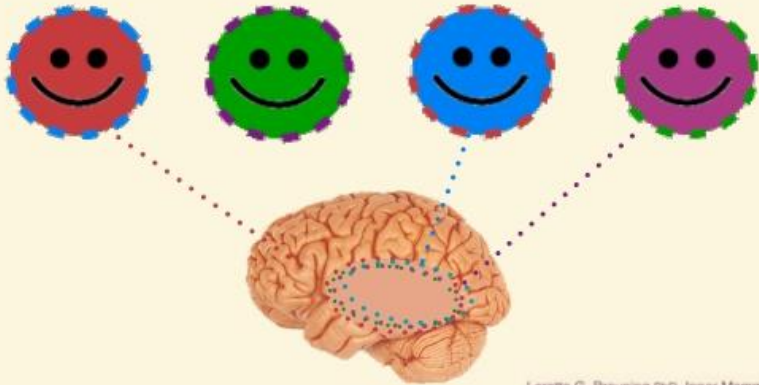
Good feelings come from 4 special brain chemicals

dopamine

serotonin

endorphin

oxytocin



Loretta G. Breuning PhD, Inner Mammal Institute ©2016

Happiness Chemicals and how to hack them



DOPAMINE THE REWARD CHEMICAL

- Completing a task
- Doing self-care activities
- Eating food
- Celebrating little wins



OXYTOCIN THE LOVE HORMONE

- Playing with a dog
- Playing with a baby
- Holding hand
- Hugging your family
- Give compliment



SEROTONIN THE MOOD STABILIZER

- Meditating
- Running
- Sun exposure
- Walk in nature
- Swimming
- Cycling



ENDORPHIN THE PAIN KILLER

- Laughter exercise
- Essential oils
- Watch a comedy
- Dark chocolate
- Exercising



www.reddit.com
www.reddit.com

Epub 2006 Mar 21.

The immune system and happiness

Yoram Barak ¹

Affiliations + expand

PMID: 17027886 DOI: 10.1016/j.autrev.2006.02.010

Abstract

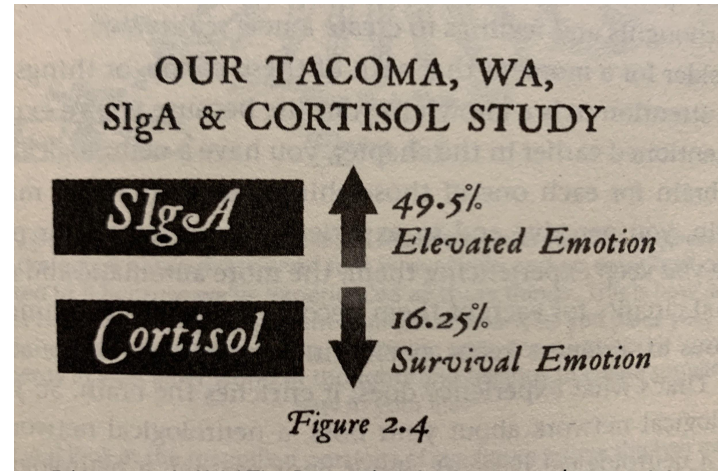
Human ability to experience negative and positive emotions has an evolutionary perspective and the presence of feelings designed to influence behavior should thus be reflected in physiological and immune interactions. The complex interactions between the immune system and the central nervous system have been studied extensively in schizophrenia and depression. On the other hand, effects of positive human emotions, especially happiness, on physiological parameters and immunity have received very little attention. Emotions are intimately involved in the initiation or progression of cancer, HIV, cardiovascular disease, and autoimmune disorders. The specific physiological responses induced by pleasant stimuli were recently investigated with the immune

The results revealed that an increase in secretory immunoglobulin A and a decrease in salivary cortisol were induced by pleasant emotions.

among physiological measures of affective style, psychological well-being, and immune function.

Dr. Joe Dispenza's SIgA Study in Tacoma Washington, 2016

- 117 test subject's secretory immunoglobulin A (SIgA) were measured at the start of his workshop and 4 days later
- During the workshop, test subjects were instructed to move into an elevated emotion (joy, love, gratitude, inspiration) for 10 minutes 3 times a day.
- The results are amazing:

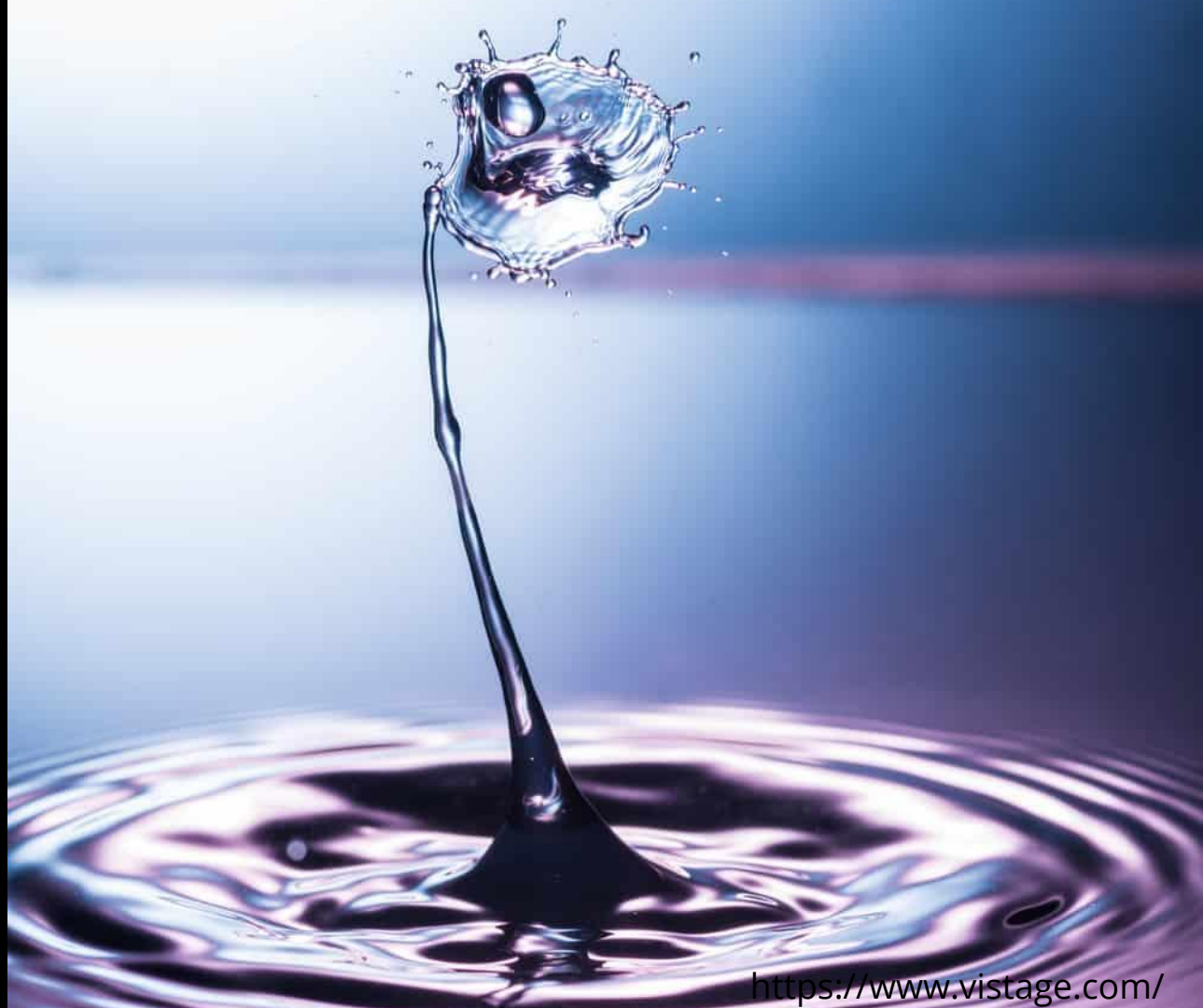


The Ripple Effect:

What vibrational frequency do you want to tune into?

What vibrational frequency do you want to transmit?

What is the ripple effect within you and around you from the choice you make in each moment?



CENTRAL NERVOUS SYSTEM

Balance is the key

SYMPATHETIC (GAS PEDAL)

- Fight or flight response
- Protection and survival
- Stress response
- Adrenal (stress) glands activated

PARASYMPATHETIC (BRAKE PEDAL)

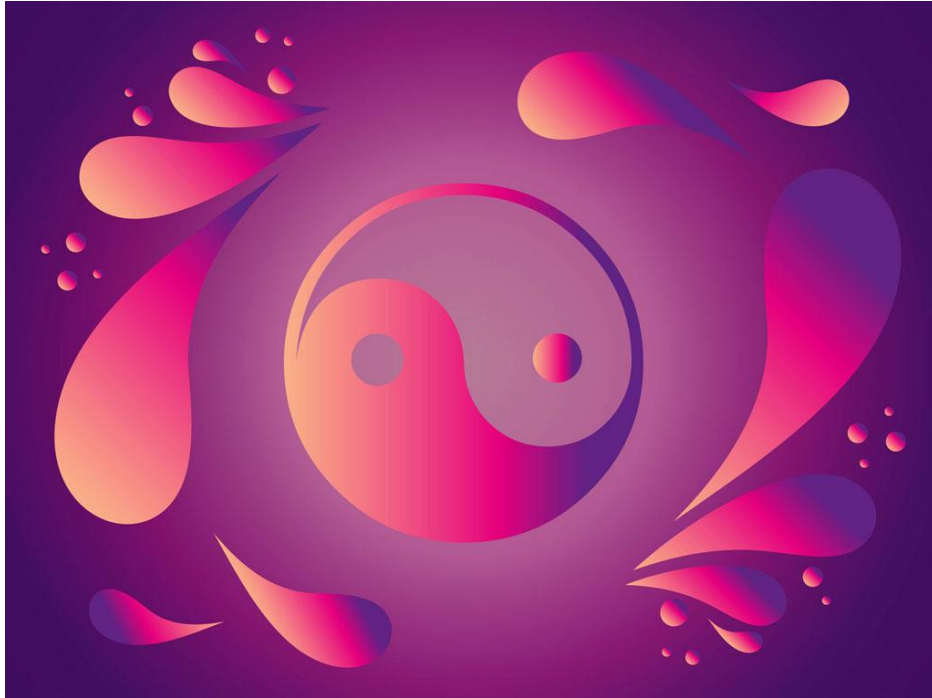
- Rest
- Digest
- Relax
- Growth & Development



"You can't be in growth and protection at the same time."

~ Dr. Bruce Lipton

It Is Always Possible to Create Balance



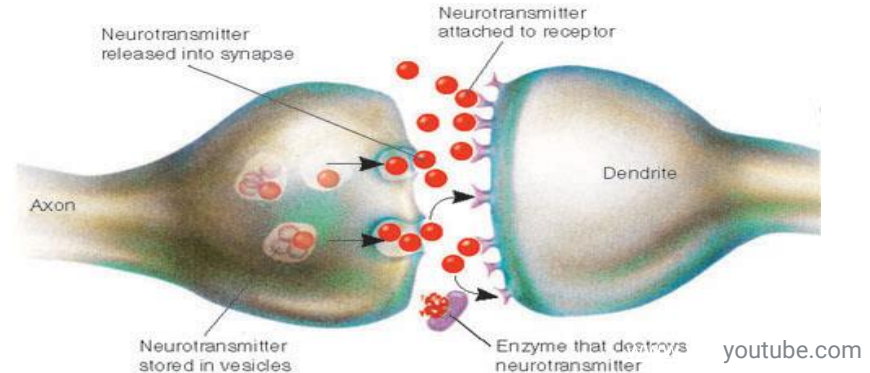
freevector.com

Because Our Brain Is
Neuroplastic

How the Brain Communicates

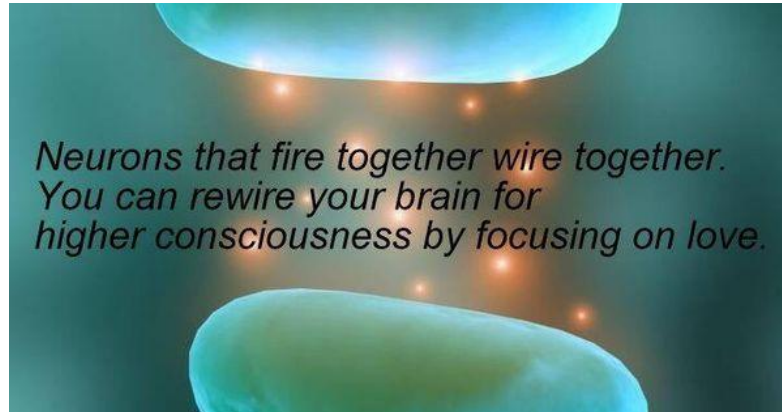
Neurophysiology 101

- **Neurons** are cells in the brain
- **Neurotransmitters** are chemicals released by a neuron to signal a message to a neighboring neuron
 - They are made up of substrates that we supply from our nutritional intake
 - They are stored in vesicles and are released when signalled
- **Neural Networks** are a team or community of neurons that fire together
- **Neuroplasticity** is the ability of the neural networks to change through growth and reorganization



Hebb's Rule: "Neurons that Fire Together Wire Together"

- Neuropsychologist, Donald Hebb coined this phrase in 1949
- Describes how pathways in the brain are formed and reinforced through repetition



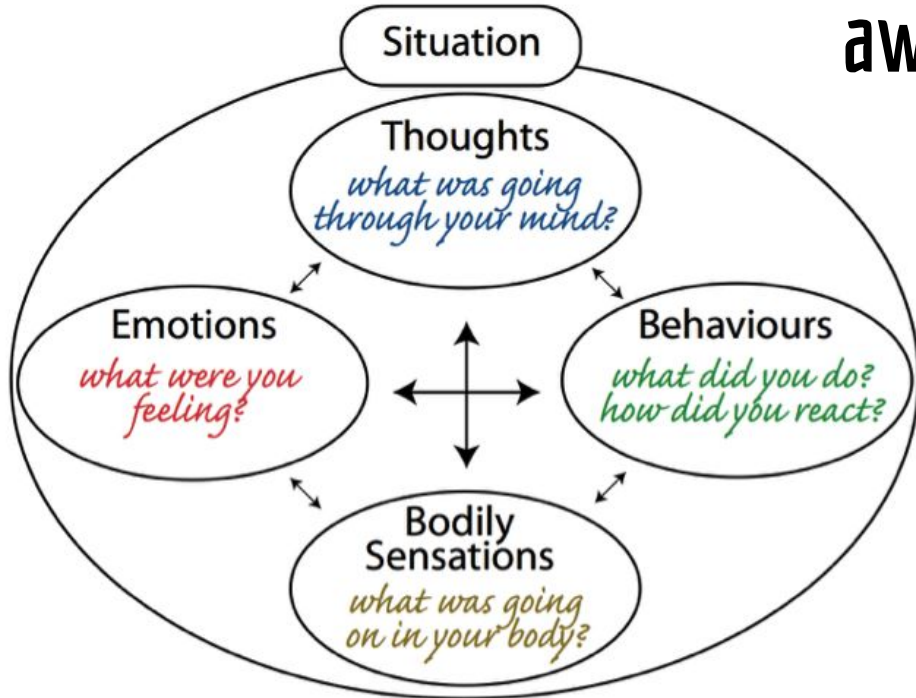
Building New Cerebral Architecture Requires:

-
- Learning: Through making new synaptic connections
 - Remembering or Repetition: maintains and sustains these new connections
 - The more meaning behind a new synaptic connection the more the neurons will fire together and wire together
 - Ex. Attaching an emotion to a thought will bring more meaning to that thought and create a stronger synaptic connection
 - When we wire the brain differently we are literally changing our minds



1st: Bring conscious awareness to your pattern

2nd: Chose To change





List of Feelings



Happy

Sad

Angry

Other feelings



Calm
Cheerful
Confident
Content
Delighted

Ashamed
Awful
Disappointed
Discouraged
Gloomy

Annoyed
Bugged
Destructive
Disgusted
Frustrated

Afraid
Anxious
Bored
Confused
Curious



Excited
Glad
Loved
Proud
Relaxed
Satisfied

Hurt
Lonely
Miserable
Sorry
Unhappy
Unloved
Withdrawn

Fuming
Furious
Grumpy
Irritated
Mad
Mean
Violent

Embarrassed
Jealous
Moody
Responsible
Scared
Shy
Uncomfortable
Worried



Silly
Terrific
Thankful
Tickled



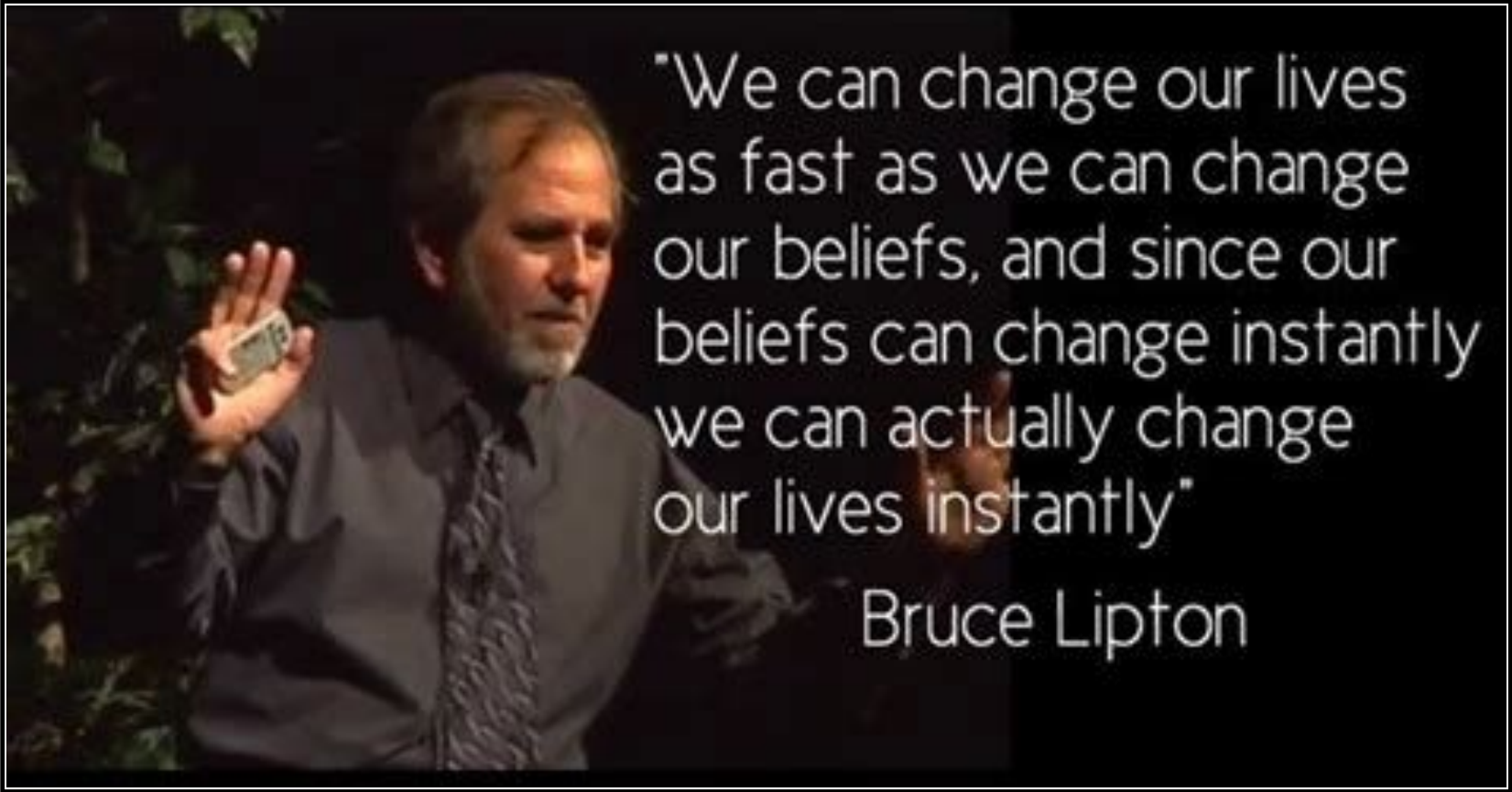
www.RewardCharts4Kids.com



Identify your feeling by naming it.

But I've Been Stuck Like This For So Long....



A photograph of Bruce Lipton, a man with a beard and grey hair, wearing a dark blue shirt and a patterned tie. He is gesturing with his hands, holding a small object in his right hand. The background is dark with some green foliage on the left. The image is framed by a white border.

"We can change our lives
as fast as we can change
our beliefs, and since our
beliefs can change instantly
we can actually change
our lives instantly"

Bruce Lipton






A woman and a child are sitting on a grey couch in a living room. The woman on the left is holding a real baby in a blue outfit high in the air. The child on the right is holding a doll in a pink outfit high in the air. The background consists of white window shutters. The text 'Mirror Neurons' is centered in the middle of the image.

Mirror Neurons



<https://www.youtube.com/watch?v=L49VXZwfup8>



“As our feelings change, this mixture of peptides travels throughout your body and your brain. And they’re literally changing the chemistry of every cell in your body.”

- Dr. Candace Pert

Make A Choice....

**YOUR THOUGHTS
AFFECT YOUR
EMOTIONS.
YOUR EMOTIONS
AFFECT YOUR
DECISIONS.
YOUR DECISIONS
AFFECT YOUR LIFE.**

inspiringandpositivequotes.com

“Change your Personality and You Change Your personal Reality” Dr. Joe Dispenza

How?

- Bring awareness to a negative repetitive behaviour and/or thought
- Make a conscious decision to change
- Create a new thought and attach a positive emotion to replace the old one
- Catch yourself and chose to change whenever you repeat your old pattern by using your new thought and positive emotion
- Practicing in a state of calm, like in meditation, will promote receptivity to change
- Your mind is more comfortable with the familiar, your will has to be stronger than your mind
- Make it fun, a game you play with yourself
- Repetition, repetition, repetition.....

Tips

-
- When you begin to fire a new thought, remember there are networks of neurons that are wired together from years of practice that you are working to overcome. Be patient with yourself.
 - Persistence, especially when you feel resistance
 - Be inspired by mirror neurons
 - Fake it til you make it
 - Practice daily Even better, several times a day
 - Make it fun
 - Laugh at yourself

What Would it Feel Like to be Triumphant?



A top-down photograph of a still life arrangement on a rustic wooden surface. On the left is a red ceramic mug filled with dark coffee. In the center is a white, textured paper napkin with the words "express your gratitude" printed in a blue, serif font. To the right of the napkin lies a silver ballpoint pen. The background is a wooden table with patches of blue paint.

express
your
gratitude



Resources:

- Bruce Lipton, MD:
 - *The Biology Of Belief*
- Annie Hopper: <https://retrainingthebrain.com>
- Dr. Joe Dispenza: <https://drjoedispenza.com>
 - *Becoming Supernatural*
 - *Breaking The Habit Of being Yourself*
- Norman Doidge, MD
 - *The Brain That Changes Itself*
 - *The Brain's Way of Healing*
- Candace Pert, Ph.D.
 - *Molecules of Emotions*
- Rick Hanson, Ph.D.
 - *Hardwiring Happiness*
- The 5 Minute Journal: <https://www.intelligentchange.com/>