



CNS 5037
NEUROPHILOSOPHY

Day 4 - Happiness

Agenda for “Happiness” Day



- Introduction:
 - Grounding Exercise
 - Self-Assessment and Review of Last Class
 - Homework Discussion
- What is Happiness? How can I be Happy?
 - Happiness & Emotions
 - Happiness Beyond Emotions
- Other Philosophical Questions Pertaining to the Pursuit of Happiness
- Final Thoughts:
 - How much happier would we be if we treated happiness as the highest currency rather than material goods in our lives?”

Self-Assessment of Day #3

1. What does Hanson call our unnecessary thoughts/judgments that prolong the suffering initially caused by unpleasant circumstances?

- A. Habitual Pattern Recognition
- B. The Negativity Bias
- C. Second Darts
- D. Ego

2. Our programmed tendency to focus on possible dangers rather than rewards is referred to as _____.

- A. Habitual Pattern Recognition
- B. The Negativity Bias
- C. Second Darts
- D. Ego

3. This part of our brain's limbic system is responsible for alerting us of threats.

- A. Thalamus
- B. Dopamine
- C. Hippocampus
- D. Amygdala



Self-Assessment of Day #3



4. Which of the following were discussed in class as contributing to the development of (and sustained experience of) a sense of a separate self (ego)?

- A. Differences in how brain hemispheres process information.
- B. The structure and use of language.
- C. Hormones that are released during puberty.

5. While our thoughts affect how we feel, which of the following did we discuss in class as examples of how our embodied experiences (feelings) affect how we think?

- A. The Iowa Gambling Task
- B. Lakoff's examples of embodied metaphors.
- C. Studies with participants holding warm cups of coffee.

6. There are several theories that try to explain how cognition (thinking) works. Which theory asserts that thinking does not just occur in the brain, but includes the body and the environment in which the body is a part of?

- a. Connectionism
- b. Computationalism
- c. Dynamical Systems
- c. Environmentalism

Journal Experience

- In diads, share your experience with this week's "Happiness Journal" practice.
- Share specifics of your practice including various feelings or thoughts that came about on particular days, or about your feelings and thoughts about the experience as a whole.
- Based on your discussion, how much of your happiness is the result of "happenstance" and how much was the result of "your own doing?"


What makes you happy?

Happiness

- Honest spouse
- Money
- Shopping
- Beer
- A raise or promotion at work
- Sunset
- Getting a new car
- My child's smile
- Good weather
- Good pizza! Good food.
- My favorite sports team winning
- My friends
- Nice teachers

Unhappiness

- Bills
- Bad drivers
- Rude people
- Not getting the job I wanted
- My kid crying or throwing a tantrum
- Homework/quizzes
- Cheating boyfriends/girlfriends
- My favorite team losing
- Cell phone or computer freezing
- When my boss yells at me
- Broken nails
- Dirty dishes
- Mean teachers



What do all of these
have in common?

External Conditions.
Circumstances.

The Choice of Happiness

Psychologist Martin Seligman,
Dr. Sonja Lyubomirsky

$$H = S + C + V$$

S = genetic set point

C = circumstances/conditions of living

V = voluntary activity

↙
Your thoughts.

↘
Your choices
and actions.



50%

10%

40%

*What was your initial response
to this research result?*

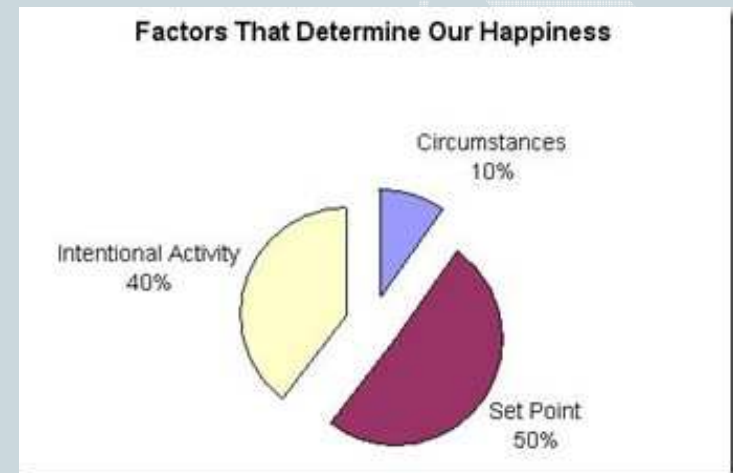
The Choice of Happiness

Psychologist Martin Seligman,
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$$H = S + C + V$$

At least two major questions arise:

1. What is happiness?
 - *Many think it is the attainment of our desires...*
2. What choices can we make to be happy?



We'll specifically ask how neuroscience can inform our answers to these two questions.

Hanson – Take in the Good: How To Deal with Negativity Bias of Memory

According to Hanson, how might a happiness journal help improve our happiness?

Foster positive memories to make them permanent parts of yourself.



Hanson – Take in the Good: How To Deal with Negativity Bias of Memory

Hanson: Key is sculpting implicit memory. Why?

What's the difference between explicit & implicit memory?



- Implicit memory is much larger than explicit memory. Resources are embedded mainly in implicit memory.
- Therefore, the key target is implicit memory. So what matters most is not the explicit recollection of positive events but the implicit **emotional residue** of positive experiences.
- What does this mean we should do?

Hanson – Take in the Good: How To Deal with Negativity Bias of Memory

Hanson: *Key is sculpting implicit memory.*

1. “Stockpile” Positive Experiences



Hanson – Take in the Good: How To Deal with Negativity Bias of Memory

Hanson: Key is sculpting implicit memory.

2. “Reshape” Past Negative Experiences



How?

Bring positive emotions and perspectives to a “negative” memory when the memory is active.

Hanson – Take in the Good: How To Deal with Negativity Bias of Memory

So do we just think happy thoughts?

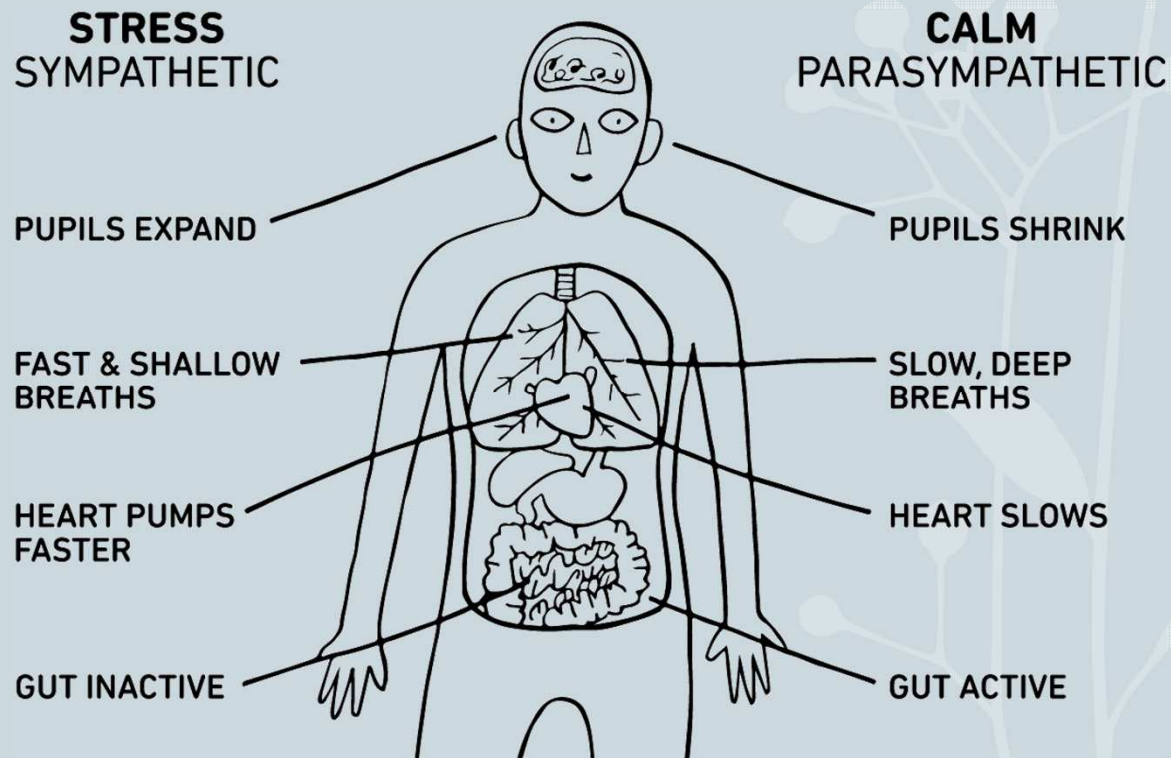
- Just having positive experiences is not enough.
- They pass through the brain like water through a sieve, while negative experiences are caught.
- We need to engage positive experiences actively to weave them into the brain.



Hanson – Cooling The Fires

What does this refer to?

Consciously compensating for an over-active sympathetic nervous system.



How?

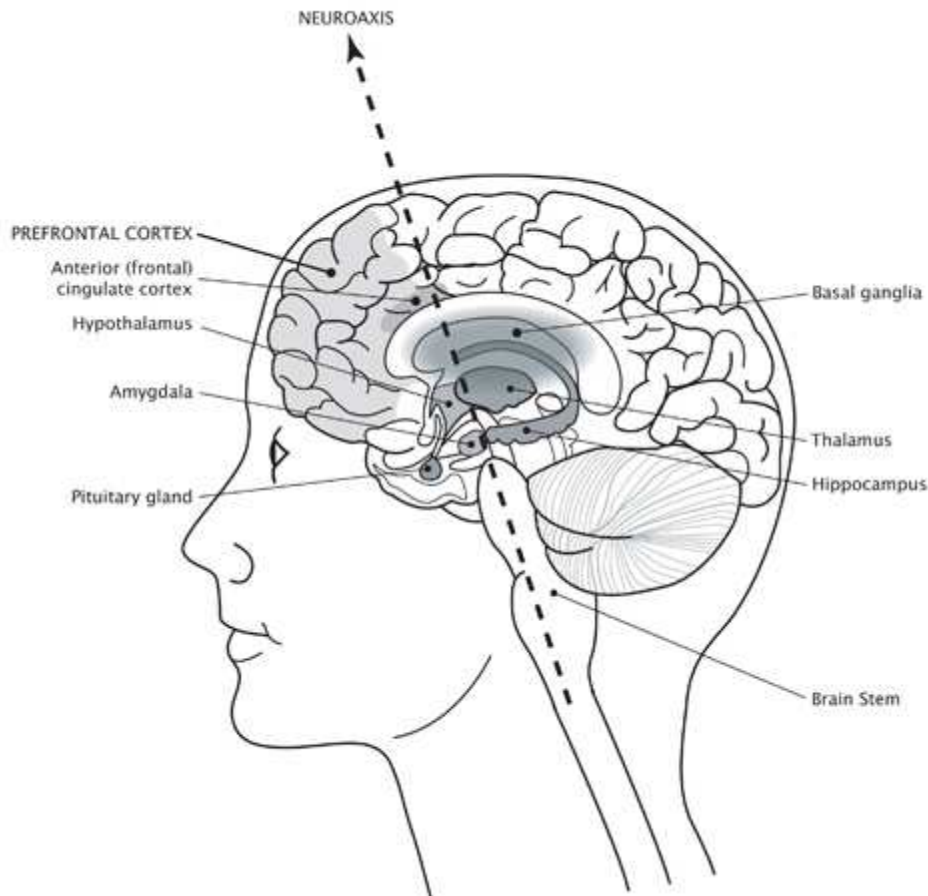
Meditation. Breathing exercises. Mindfulness practices.

Hanson – Exercise Strong Intention

Anyone have difficulty motivating yourself to participate in the happiness practice daily?

Practice use of PFC & ACC

- PFC makes plans & shapes (guide/inhibit) our emotions
- ACC steadies our attention, monitors our plans, and helps integrate thinking and feeling (at the center of our deliberate, reasoned motivations).
- ACC is the first mate of the PFC's Captain.
- Exercise our muscle for conscious, wholesome intentions.

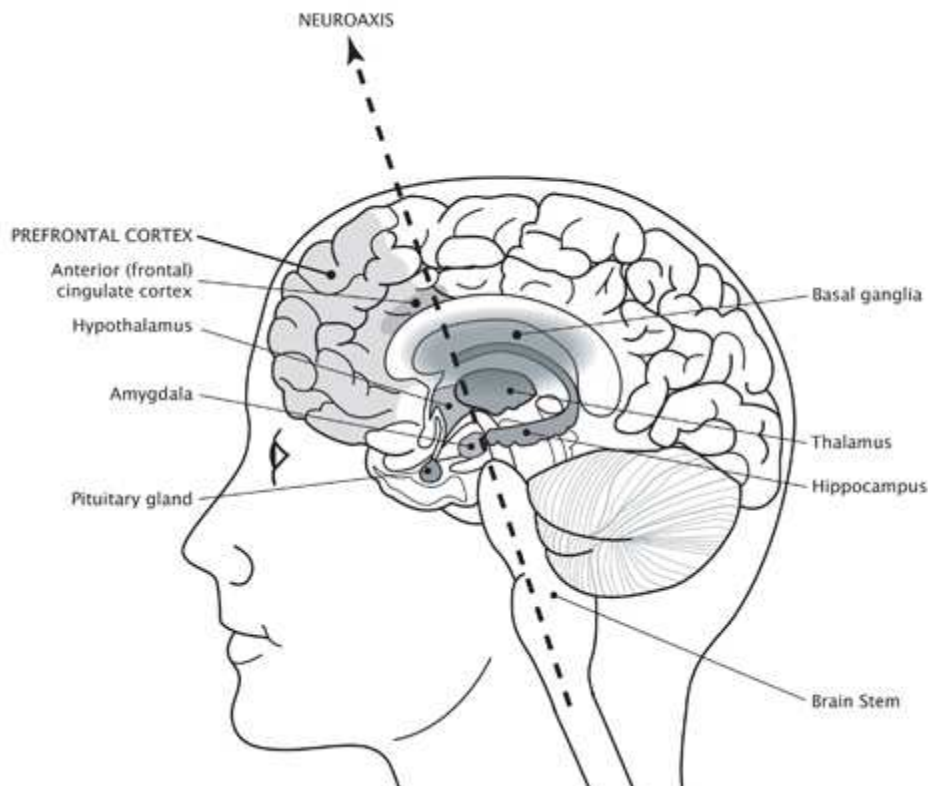


Hanson – Develop Equanimity

What is it?

Mental calmness. Not reacting to your reactions.

Rather than riding the waves of neural activity, you become an observer of them.



Exercise #1: Appreciating Blessings in Disguise

When one door of happiness closes, another opens, but often we look so long at the closed door that we do not see the one that has been opened for us.

– Helen Keller

- Begin by focusing on your breath...
- Slowly bring to mind one thing that did not go well for you recently, or an event that you wish did not occur.
- Then for each, ask yourself how it could be perceived as a blessing in disguise.
 - What can be learned from this experience?
 - How might this lead to growth?
 - How could it directly, or indirectly, lead you to a better place?

Questions:

What is occurring in the brain while doing the exercise?

How is this related to Hanson's approach to happiness?

Hanson & Happiness

What “Type” of Brain Functioning Does Hanson’s Approach to Happiness Address?

- **Take in the Good**
- **Cool Down the Fires**
- **Exercise Strong Intentions**
- **Develop Equanimity**

Is the brain’s function solely for identifying and dealing with dangers?

Is happiness just about tempering negativity? Just “not feeling bad”?

What about positive feelings for their own sake?

Happiness: The Case for Positive Emotions

Barbara Fredrickson

Psychology Professor at University of North Carolina

What do these “negative” emotions have in common?

- *Anger*: fight, hurt, defeat, kill.
- *Fear*: run, avoid, prevent harm.
- *Despair*: freeze, play dead, survive by passivity.

Negative emotions (fear, anger, despair) are for **SURVIVAL**

What do these “positive” emotions have in common?

- Interest and Curiosity?
- Joy and pleasure?

Positive emotions (curiosity, delight, interest, joy, etc) are for **GROWTH**

*Positive emotions are more than just absence of negative ones
and are for more than just simple survival.*



Happiness: The Case for Positive Emotions

We Know we Have Circuitry for Suffering

THIS IS YOUR BRAIN ON FEAR

It's time for that product presentation. The neural pathway of fear begins with sensory data: stepping onto the stage, seeing the bright lights, hearing the noise of a packed house on Demo Day.

Sensory data is gathered and relayed through the brain stem to the...

- Thalamus**, essentially a giant switchboard that directs information to other parts of the brain.
- Hypothalamus**, where the fight-or-flight response is activated. Messages are sent to the kidneys' adrenal glands, which release stress hormones.
- Hippocampus**, sensory cortex and amygdala, areas of the brain that establish situational and emotional context and officially deem the situation as fearful.
- Frontal and temporal lobes**, higher cortical areas where experiences of dread occur, release chemicals like dopamine that can cause panicked, irrational behavior.

Entrepreneur

THE ANATOMY OF ANXIETY

TIME Diagram by Joe Lertola. Text by Alice Park

WHAT TRIGGERS IT ...

When the senses pick up a threat—a loud noise, a scary sight, a creepy feeling—the information takes two different routes through the brain

... AND HOW THE BODY RESPONDS

By putting the brain on alert, the amygdala triggers a series of changes in brain chemicals and hormones that puts the entire body in anxiety mode

A THE SHORTCUT When startled, the brain automatically engages an emergency hot line to its fear center, the amygdala. Once activated, the amygdala sends the equivalent of an all-points bulletin that alerts other brain structures. The result is the classic fear response: sweaty palms, rapid heartbeat, increased blood pressure and a burst of adrenaline. All this happens before the mind is conscious of having smelled or touched anything. Before you know why you're afraid, you are

B THE HIGH ROAD Only after the fear response is activated does the conscious mind kick into gear. Some sensory information, rather than traveling directly to the amygdala, takes a more circuitous route, stopping first at the thalamus—the processing hub for sensory cues—and then the cortex—the outer layer of brain cells. The cortex analyzes the raw data streaming in through the senses and decides whether they require a fear response. If they do, the cortex signals the amygdala, and the body stays on alert

1. Auditory and visual stimuli
Sights and sounds are processed first by the thalamus, which filters the incoming cues and shuts them either directly to the amygdala or to the appropriate parts of the cortex

2. Olfactory and tactile stimuli
Smells and touch sensations bypass the thalamus altogether, taking a shortcut directly to the amygdala. Smells, therefore, often evoke stronger memories or feelings than do sights or sounds

3. Thalamus
The hub for sights and sounds, the thalamus breaks down incoming visual cues by size, shape and color, and auditory cues by volume and dissonance, and then signals the appropriate parts of the cortex

4. Cortex
It gives raw sights and sounds meaning, enabling the brain to become conscious of what it is seeing or hearing. One region, the prefrontal cortex, may be vital to turning off the anxiety response once a threat has passed

5. Amygdala
The emotional core of the brain, the amygdala has the primary role of triggering the fear response. Information that passes through the amygdala is tagged with emotional significance

6. Bed nucleus of the stria terminalis
Unlike the amygdala, which sets off an immediate burst of fear, the BNST perpetuates the fear response, causing the longer-term ones are typical of anxiety

7. Locus ceruleus
It receives signals from the amygdala and is responsible for initiating many of the classic anxiety responses: rapid heartbeat, increased blood pressure, sweating and pupil dilation

8. Hippocampus
This is the memory center, vital to storing the raw information coming in from the senses, along with the emotional baggage attached to the data during their trip through the amygdala

STRESS-HORMONE BOOST
Responding to signals from the hypothalamus and pituitary gland, the adrenal glands pump out high levels of the stress hormone cortisol. Too much cortisol short-circuits the cells in the hippocampus, making it difficult to organize the memory of a trauma or stressful experience. Memories lose their context and become fragmented

RACING HEARTBEAT
The body's sympathetic nervous system, responsible for heart rate and breathing, shifts into overdrive. The heart beats faster, blood pressure rises and the lungs hyperventilate. Sweat increases, and even the nerve endings on the skin tingle into action, creating goose bumps

FIGHT, FLIGHT OR FRIGHT
The senses become hyper-alert, drinking in every detail of the surroundings and looking for potential new threats. Adrenaline shoots to the muscles, preparing the body to fight or flee

DIGESTION SHUTDOWN
The brain stops thinking about things that bring pleasure, shifting its focus instead to identifying potential dangers. To ensure that no energy is wasted on digestion, the body will sometimes respond by emptying the digestive tract through involuntary vomiting, urination or defecation

Source: David S. Chaney, M.D., National Institute of Mental Health

Happiness: The Case for Positive Emotions

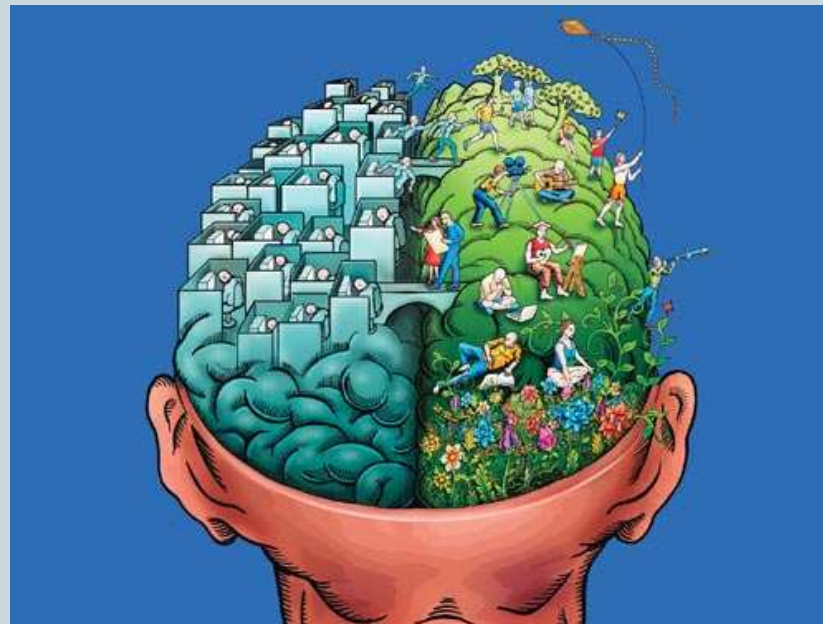
We also have Dedicated Circuitry for “Feeling Good”

LH:

More active when feelings are positive.

Blood clots in prefrontal cortex have left patients in perpetual cheerfulness.

When infants given sweet drinks, prefrontal cortex highly active.



Seems as if the brain's prefrontal cortex also has a division of labor.

- Left side processes **unpleasant**.
- Right side processes **pleasant**.

RH:

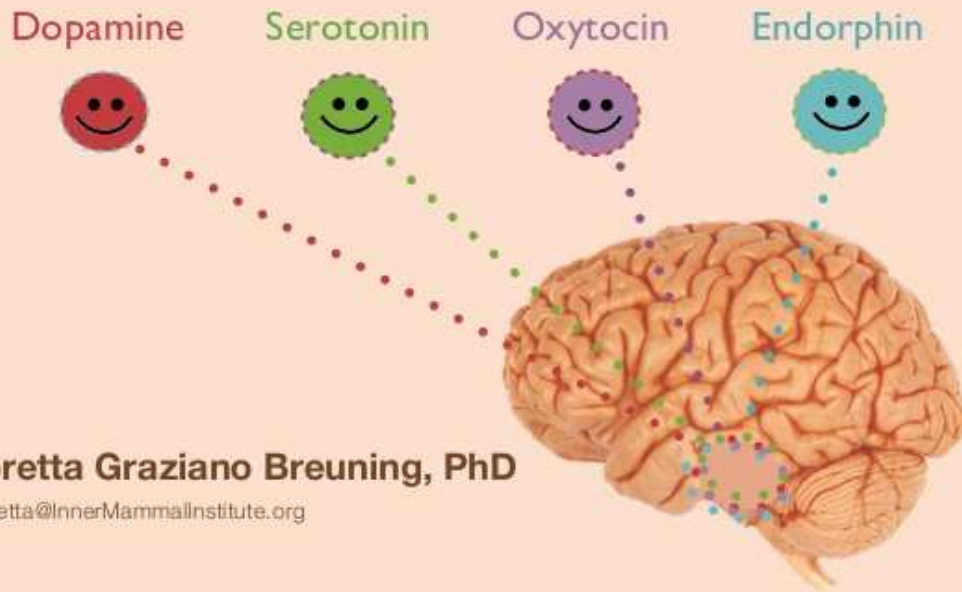
More active when feelings are negative.

Damage to prefrontal cortex sink into depression

When infants react to biting acidity of lemon juice, prefrontal cortex more active

Happiness: The Case for Positive Emotions

Meet Your Happy Chemicals



Loretta Graziano Breuning, PhD
Loretta@InnerMammalInstitute.org

Dopamine:
Associated with attaining/seeking rewards.

Serotonin:
Associated with mood regulation, self-appraisal.

Oxytocin:
Associated with positive social/physical interaction.

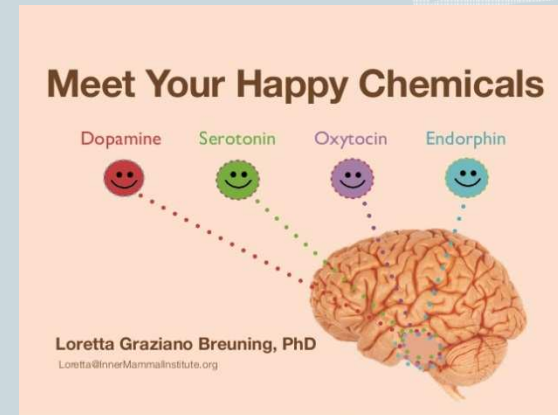
Endorphins:
Associated with tempering experience of pain.

Happiness Neurochemistry

Happiness: The Case for Positive Emotions

So are we then built to feel good?

Are we neurologically justified in our pursuit of pleasure? (Hedonism)



When asked to reflect on our “happiness” we have a **positivity bias**:

- Easier for our brain to consciously recall the details of a positive experience than a negative one.
- More likely to remember the good. (why might this be a problem?)

More “feel good” brain chemicals than “feel bad” chemicals.

- Other than possibly cortisol, “feeling bad” is mostly the result of chemical imbalances
- As if feeling good is more the default design of the brain.

Happiness: The Case for Positive Emotions

**So are we then built to be “feel good” beings?
Are we neurologically justified in our pursuit of pleasure?**

This ever happen to you?



Sensory Adaptation

Happiness: The Case for Positive Emotions

Sensory Adaptation

Neural or sensory receptors change/reduce their sensitivity to a continuous, unchanging stimuli.

You become habituated to an experience.



What does this say about how we may want to maximize our experience of something pleasurable?

Happiness: The Case for Positive Emotions

Can you relate sensory adaptation to the limited impact of “C”?

Hedonic Adaptation

You become habituated to a circumstance of your life that once had a positive impact on your happiness.



Hedonic Treadmill

- Want more!
- Want bigger!
- Want better!

But if we are always wanting more, can we ever be satisfied?

Exercise #2: Practicing Delayed Gratification

The pleasure which we most rarely experience gives us greatest delight.

– Epictetus

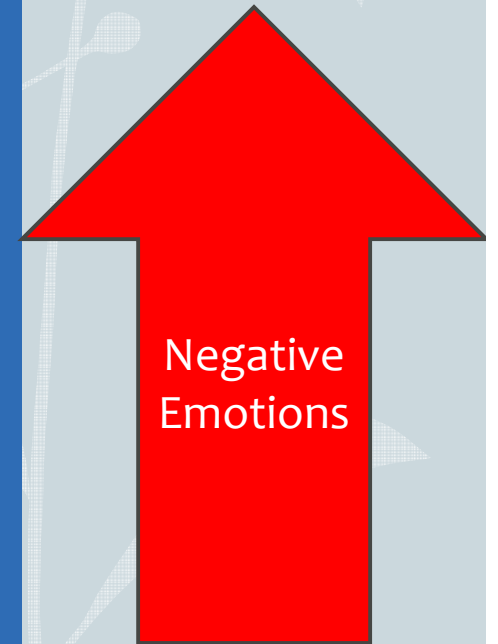
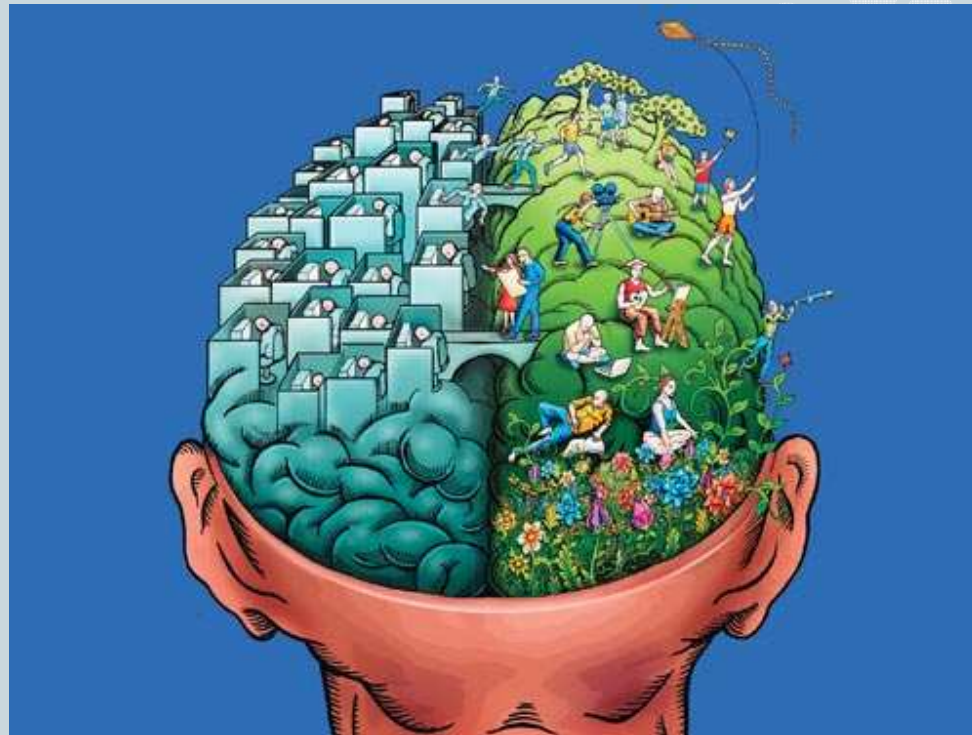
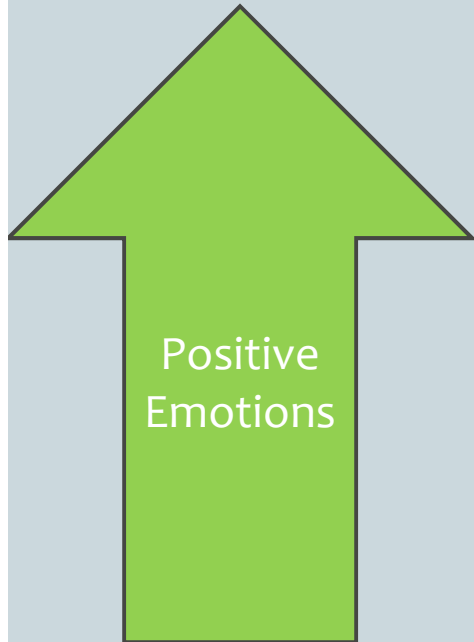
- Make a list of pleasures and joys that you experience on a regular basis.
- Now pick one to practice delayed gratification.
- Instead of experiencing this as frequently as you usually do, attempt to delay your experience.
 - If your routine is to experience this early in the day, you may want to postpone it until later in the day.
 - You can also experience the pleasure less frequently. If it is a daily pleasure, try to experience it every other day, or every third day.

Question

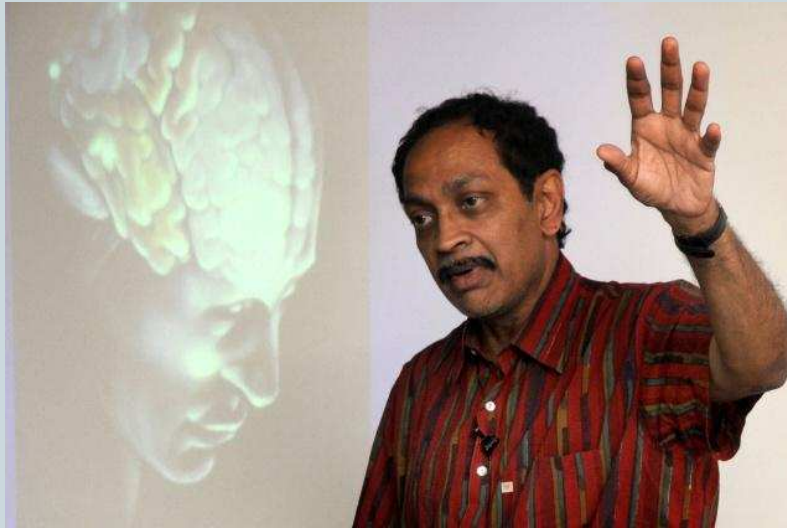
What is occurring in the brain while doing the exercise?

Happiness Beyond Feeling Good & Not Feeling Bad A Closer Look at Brain Hemispheres

Happiness: Right vs. Left Hemispheres



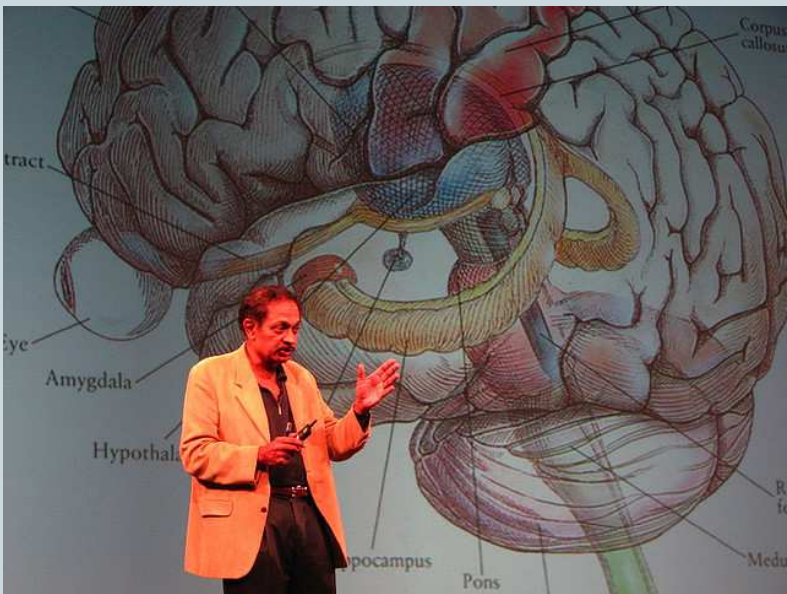
Happiness Beyond Feeling Good & Not Feeling Bad A Closer Look at Brain Hemispheres



V. S. Ramachandran

U.C. San Diego Neurologist

- Mrs. Dodds – stroke patient with total paralysis of left side of her body.
- Means damage was to right hemisphere.
- Denied left side paralysis and would make absurd claims.
- How might you explain this?
- Some believe this might be related to the left hemispheres “positive” system.



Happiness Beyond Feeling Good & Not Feeling Bad A Closer Look at Brain Hemispheres

Happiness: Right vs. Left Hemispheres

Groups

While studies seem to say happiness “resides” in the left hemisphere, Jill Bolte Taylor describes being happy “without” her left hemisphere.

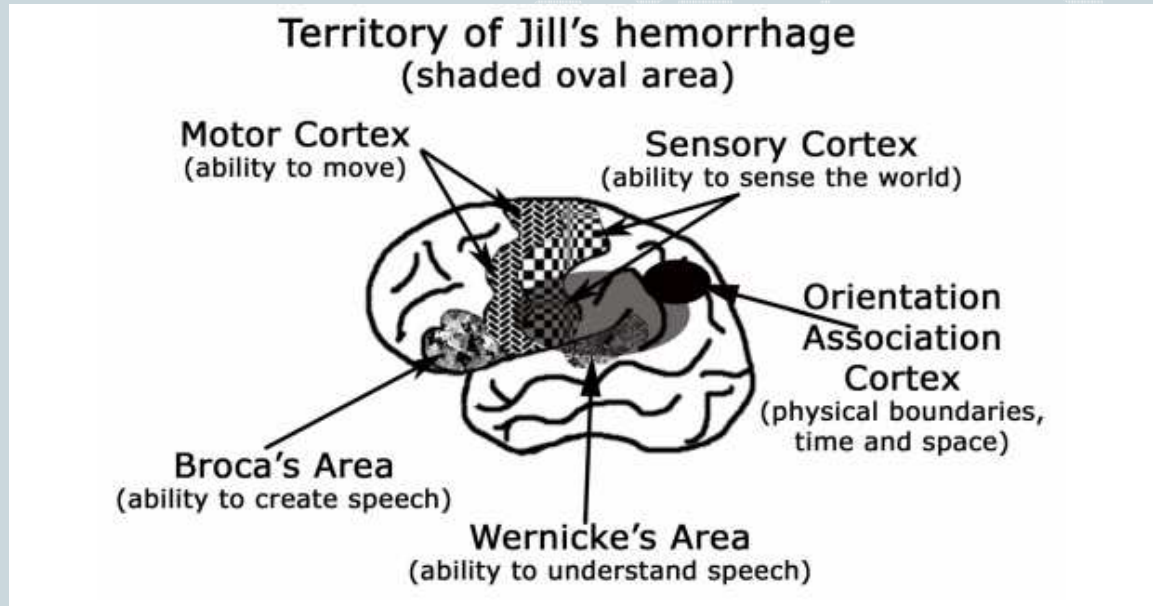
Try to recall Taylor’s description of her experience while having her stroke. How might this inform our understanding of what it means to be happy?

Besides lack of unpleasant emotions and abundance of positive ones, what else might it mean to be happy?



Happiness Beyond Feeling Good & Not Feeling Bad A Closer Look at Brain Hemispheres

Jill Bolte Taylor & Happiness



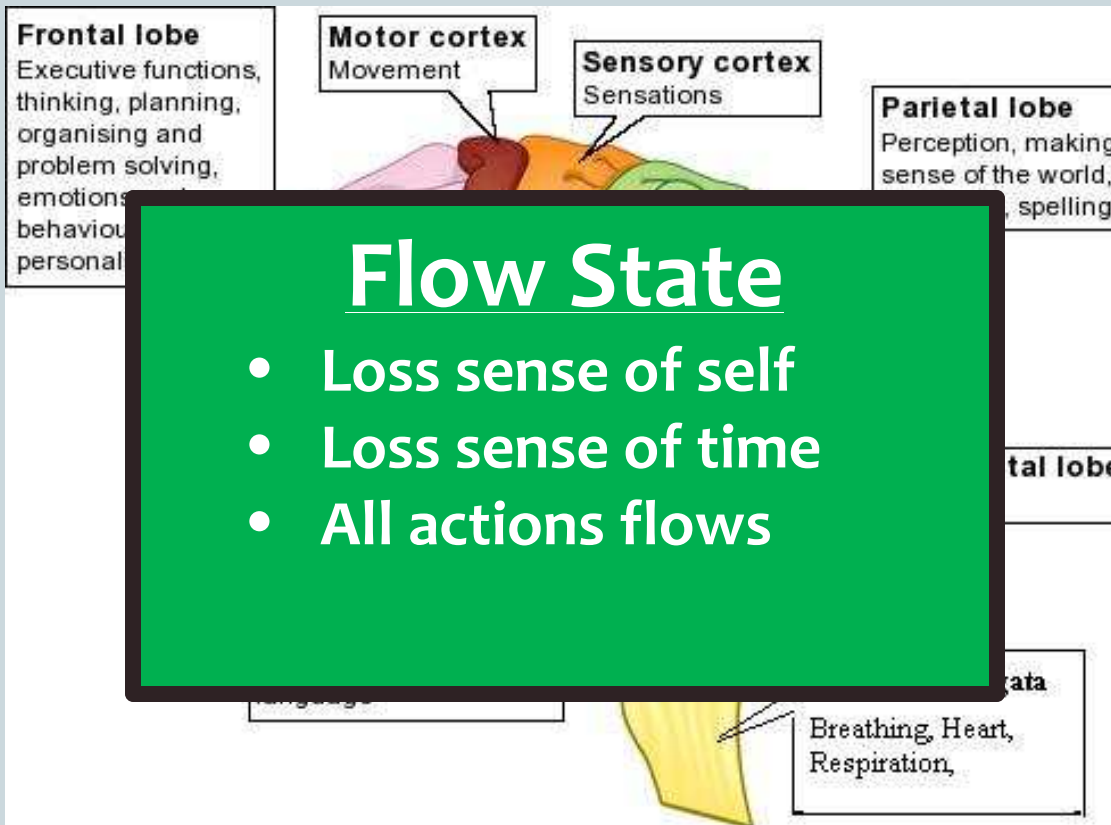
- Part of something greater than finite self.
- Experience herself more “authentically” – beyond constructed narratives
- Felt in the “flow” – one with her environment.
- Experienced greater meaning. Live meaningfully.

Happiness: Beyond Feeling Good & Not Feeling Bad

Besides danger & rewards responder.

What does the brain do?

Mihaly Csikszentmihalyi: Information Synthesizer



- As our human brain increased in complexity, the ability to integrate and synthesize information also developed.
- We experience optimal experiences (happiness) when consciousness works smoothly.
- When thoughts, intentions, feelings, all senses are focused on the same goal. Experience is in **harmony**.

Happiness: Beyond Feeling Good & Not Feeling Bad

Besides danger & rewards responder.

What does the brain do?

Mihaly Csikszentmihalyi: Information Synthesizer

Flow

Began when Mihaly studied creative artists and those who excelled at an endeavor.

1. Found that clear purpose with feedback needed.
2. Easier to enter if activity was autotelic – doing it for its own sake (authentic values).
3. Found that skill & difficulty matched.



Happiness: Beyond Feeling Good & Not Feeling Bad

The Need to Understand Happiness

Social Economist Daniel Kahneman:

The Experiencing Self is very different than the Remembering Self.

- **Experiencing Self:** in the moment
- **Remembering Self:** reflect on past

- Decisions for the future often relies on the remembering self

- But the remembering self is not very accurate about happy experiences.
 - Sometimes over values pleasurable experiences
 - Neglects to recall gratifying or meaningful ones.

- Makes the pursuit of happiness difficult.

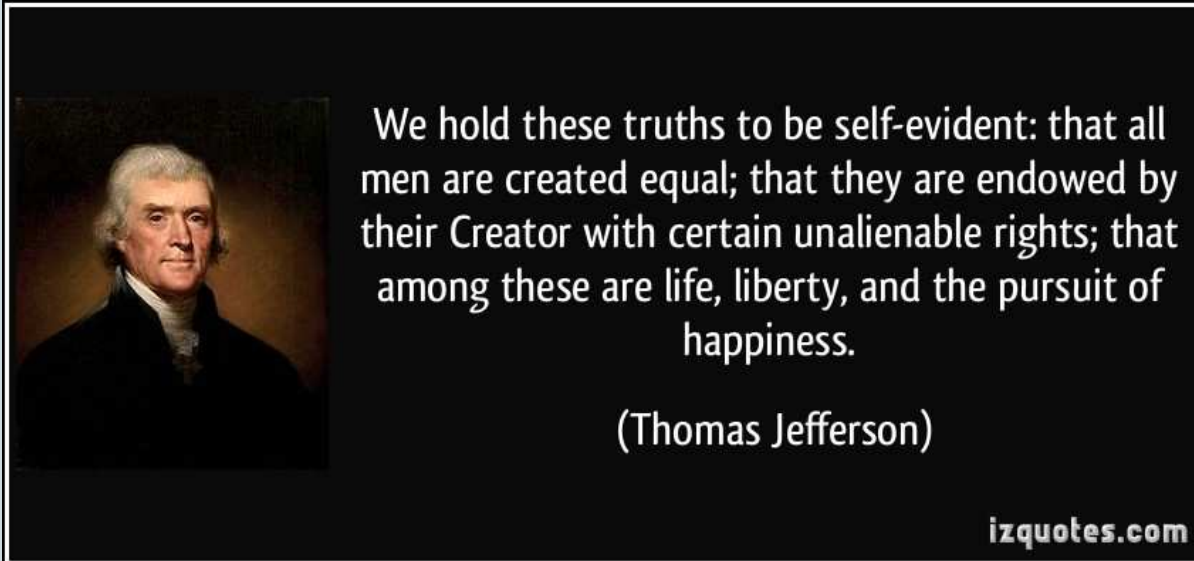
Exercise #3: Entering Flow

The two enemies of human happiness are pain and boredom.

– Arthur Schopenhauer

- Bring to mind an activity that you regularly partake in that you do not often find enjoyable or look forward to doing; possibly something mundane or too difficult.
- If it often causes frustration, can you think of a way of making it easier?
 - Can you simplify it? Break it down to more manageable parts?
 - Approach it with a new strategy?
 - Reduce your goals or expectations?
 - Get help, gather external resources, or develop internal resources?
- If it causes boredom, can you think of a way of making it more challenging?
 - Can you add rules, obstacles, handicaps?
 - Can you increase the complexity, set boundaries, increase your expectations?
 - Can you turn it into a game?

Neurophilosophy & Happiness



- What is this “happiness” we have the right to pursue?
- What is the best way to pursue it?
- Is happiness the end goal, ultimate purpose, of life?
- To what extent do I really have the right pursuit happiness?

The Right to Pursue Happiness?

Peter Singer (1946 -)

*Australian born Princeton Philosophy Professor
Controversial, thought-provoking, practical moral philosopher.*

#1. Central Station Argument

- Poor, retired, school teacher (Dora) can get \$1000, just needs to get homeless boy to go to certain address for adoption.
- After using money to buy television, she later finds out that boy will be killed for his organs.

How many of you think Dora a moral responsibility to save the boy?

