



## What We Say Feeds White and Grey: Brain-Enhancing Strategies for Effective Therapeutic Communication

### Combined Sections Meeting 2014

Speaker(s): Karen Mueller, PT,DPT PhD

Session Type: Educational Sessions

Session Level: Multiple Level

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**February 3-6, 2014**

Las Vegas, Nevada

[www.aptahpa.org](http://www.aptahpa.org)

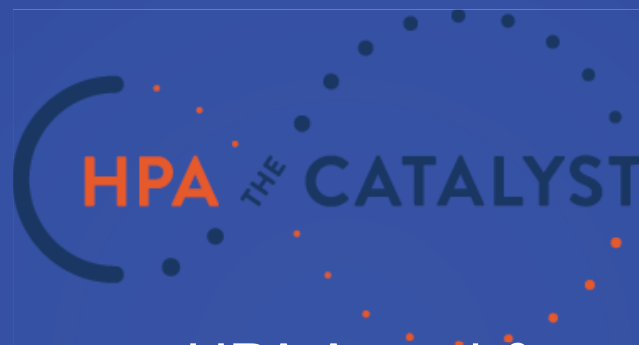
Section on Health Policy & Administration  
of the American Physical Therapy Association

38 Pages Total

**What You Say  
Feeds White and Grey**  
*Brain Enhancing Strategies  
for Effective  
Therapeutic Communication*

**APTA Combined Sections Meeting  
February 6, 2014  
Las Vegas, NV**

Karen Mueller, PT, DPT, PhD  
Northern Arizona University  
Flagstaff AZ



**HPA Award &  
Global Health Reception**

Wednesday, February 5, 2014  
8:00 pm – 10:00 pm  
Light fare and cocktails

*HPA The Catalyst is the Section on Health Policy & Administration of APTA*

## Our path

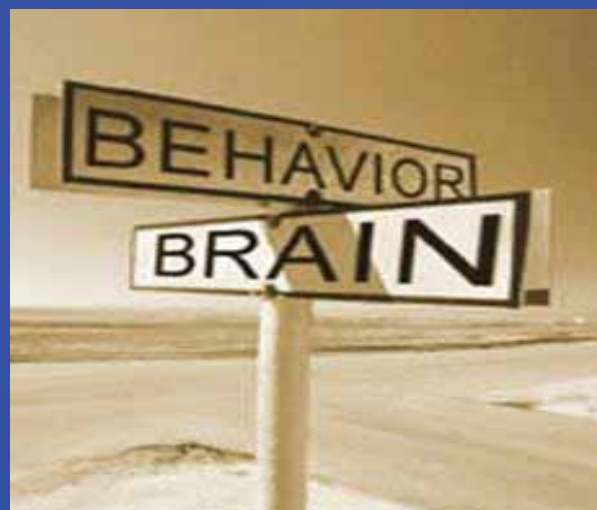
*“The physical therapy profession will transform society by optimizing movement for all people of all ages to improve the human experience”.*

-APTA Beyond 2020  
Vision Statement



## Transformation = Outcomes

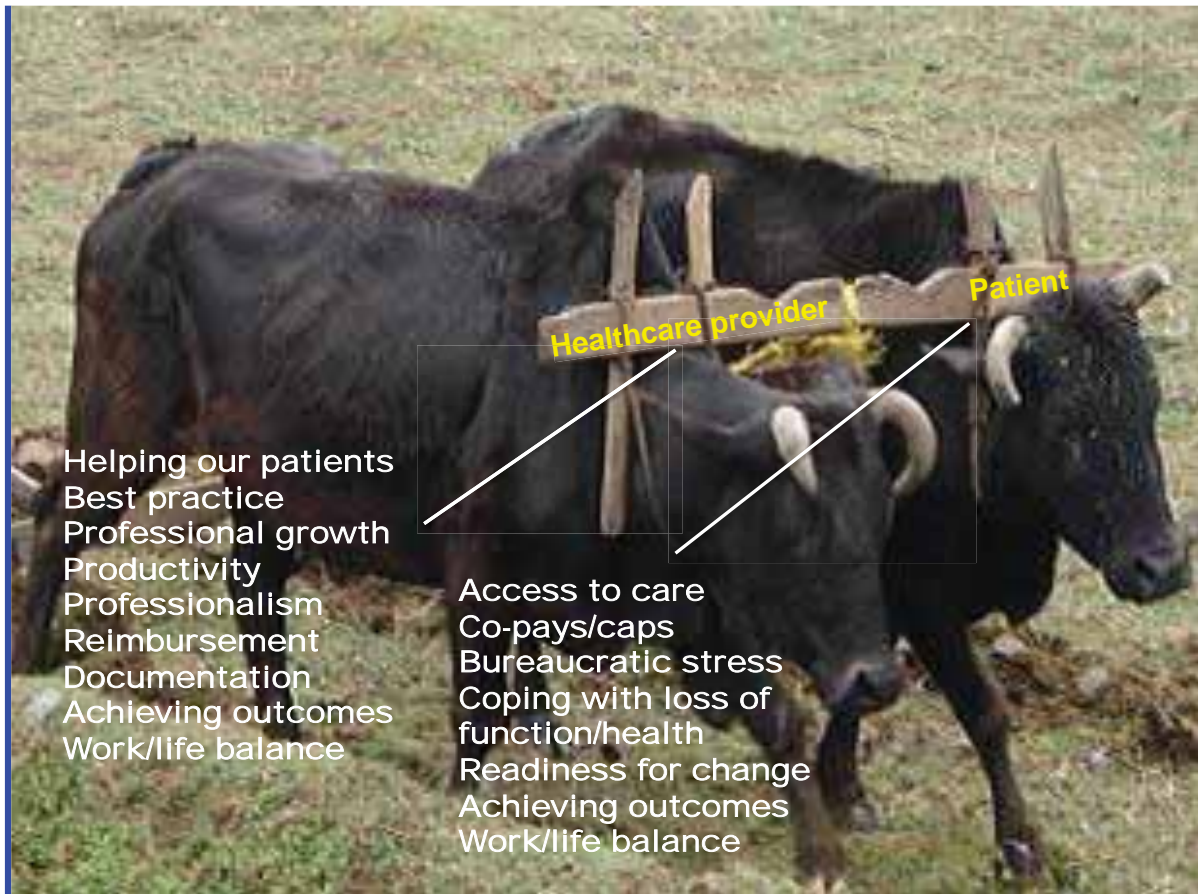
- The measurable outcome in our profession is behavior change



# Behavior change is hard

*American College of Preventive Medicine, 2011*

- 20% to 50% of patients are non-adherent to medical therapy
- Non-adherence costs \$100 to \$300 billion per year
- 35% adherence to PT (Slujis et al, 1997)
- Adherence rates have not significantly changed in the last 3 decades, despite WHO and Institute of Medicine (IOM) improvement goals



# Brain obstacles to change

I don't know how

I don't have time

I forgot

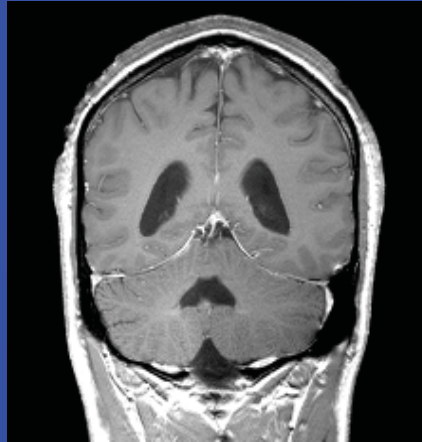
Who cares?

I'm scared of failing

Its too hard

What's the point?

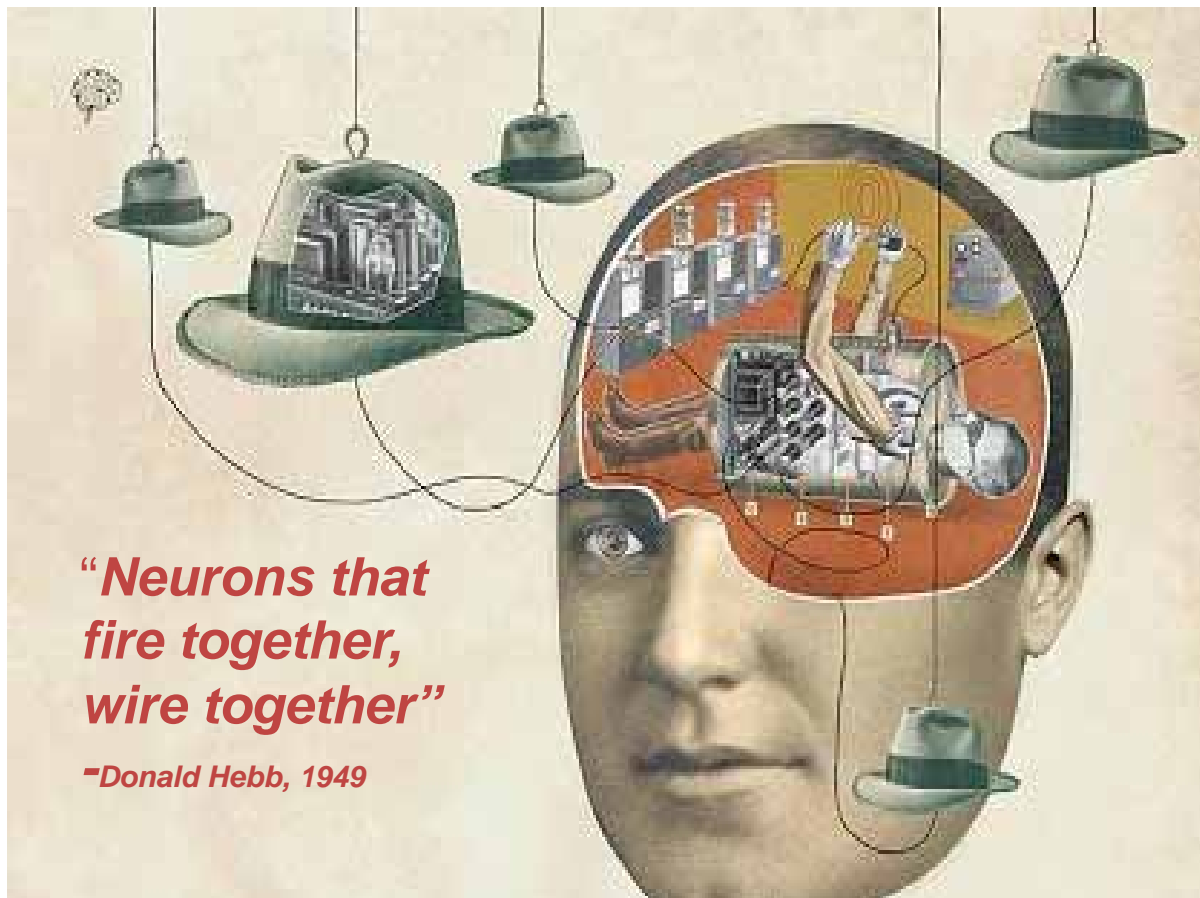
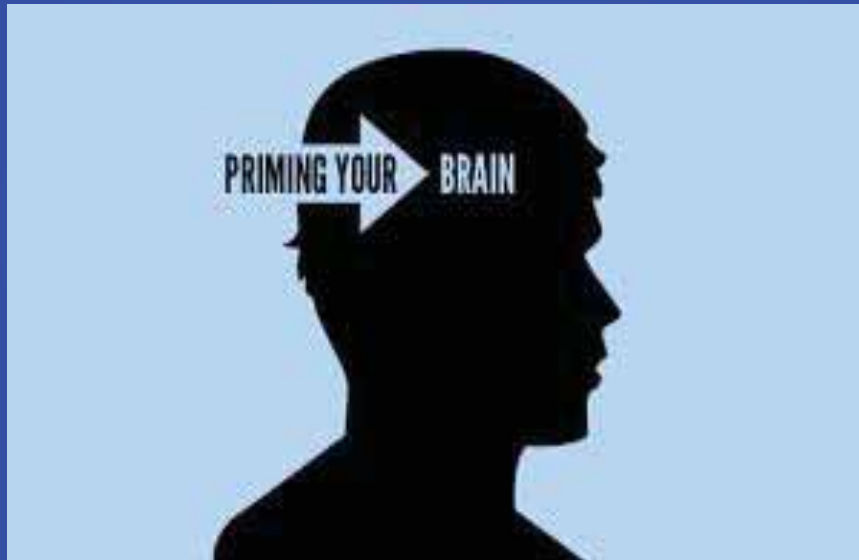
Its no fun



# How do we lift the harness ?



Its all about.....



***“Neurons that  
fire together,  
wire together”***

***—Donald Hebb, 1949***

## A two way street

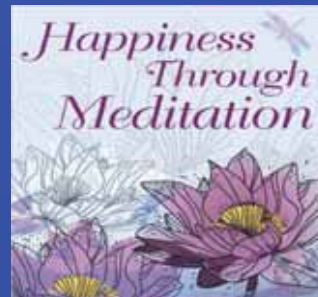
### Alter brain to change mind

- Brain activity manifests as affect (fearful, calm )
- Common routes: Medication, electrical inputs, surgery



### Alter mind to change brain

- Activity dependent neuroplasticity (what we do with our mind) influences brain structure and activity
- Voluntary mental practices can improve our mental function and outlook



## Brain building for success

- Our brains direct thoughts, behaviors, moods and ACTIONS
- We can train **our** brains for optimal interactions
- We can help our patients to train **their** brains for optimal success



# Our journey today

- A three level model of brain optimization
- Sources of evidence:
  - Affective neuroscience
  - Positive psychology
- In: Mindfulness meditation
- Out: positivity
- Up: Empathic connections



## Why me?





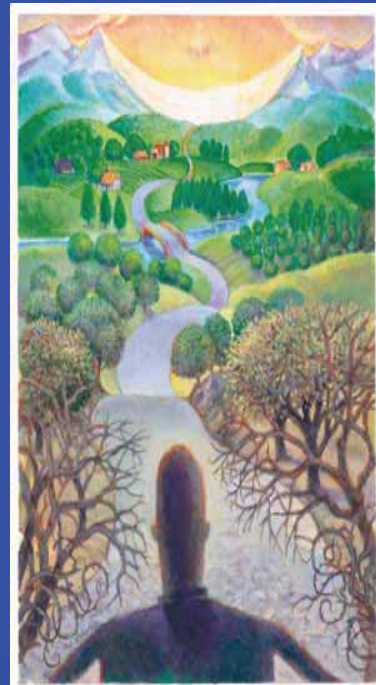
## Three Dimensions

- **IN:** Mindfulness  
Meditation
- **UP:** Positive  
Outlook
- **OUT:** Empathic  
Connections



## What is Positive Psychology?

- *Positive Psychology studies the traits, attitudes and behaviors of engaged, successful and happy people*
- *Positive Psychology includes a practical approach to optimizing these attributes*
- *Positive Psychology is an evidence based science with a growing body of support*

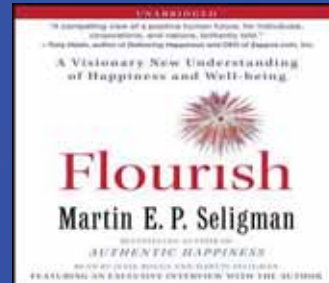


# THE HISTORY OF POSITIVE PSYCHOLOGY

- Origins of psychology field rooted in curing mental illness; less emphasis on determining elements of success and happiness
- After WWI, psychology focused entirely on mental illness (VA founded in 1946 and directed efforts to veterans)
- 1998: Martin Seligman president of dedicated his tenure as APA president to furthering evidence in positive psychology
- Current focus in schools, business, healthcare



**Ice Pick Lobotomy, 1949**



**A new model of well-being, 2011**

## Current Topics in Positive Psychology

- Engagement and flow
- Strategies for sustaining a positive state of mind
- How can we improve our happiness and engagement in life and work?
- Effect of positivity in healthcare outcomes



# The Three Types of Employees

1

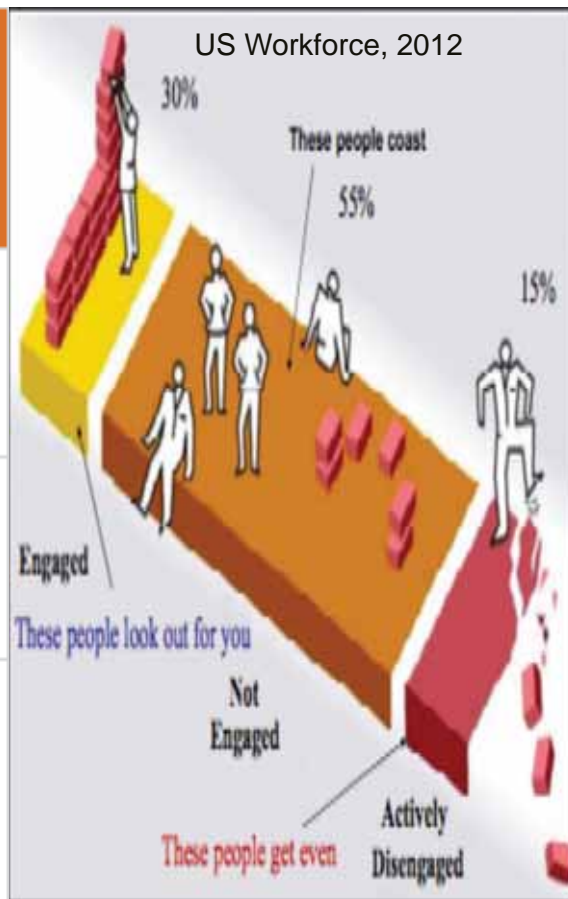
**ENGAGED** employees work with passion and feel a profound connection to their company. They drive innovation and move the organization forward.

2

**NOT-ENGAGED** employees are essentially "checked out." They're sleepwalking through their workday, putting time -- but not energy or passion -- into their work.

3

**ACTIVELY DISENGAGED** employees aren't just unhappy at work; they're busy acting out their unhappiness. Every day, these workers undermine what their engaged coworkers accomplish.



## A new model of well-being

(Seligman, 2011)

### The PERMA Model of Well-Being

#### Positive Emotion

Positive emotions are an essential part of our well-being. Happy people look back on the past with gladness; look into the future with hope; and they enjoy and cherish the present.

#### Relationships

Everyone needs someone. We enhance our well-being and share it with others by building strong relationships with the people around us - family, friends, coworkers, neighbours.

#### Accomplishment

Everyone needs to win sometimes. To achieve well-being and happiness, we must be able to look back on our lives with a sense of accomplishment: 'I did it, and I did it well'.

#### Engagement

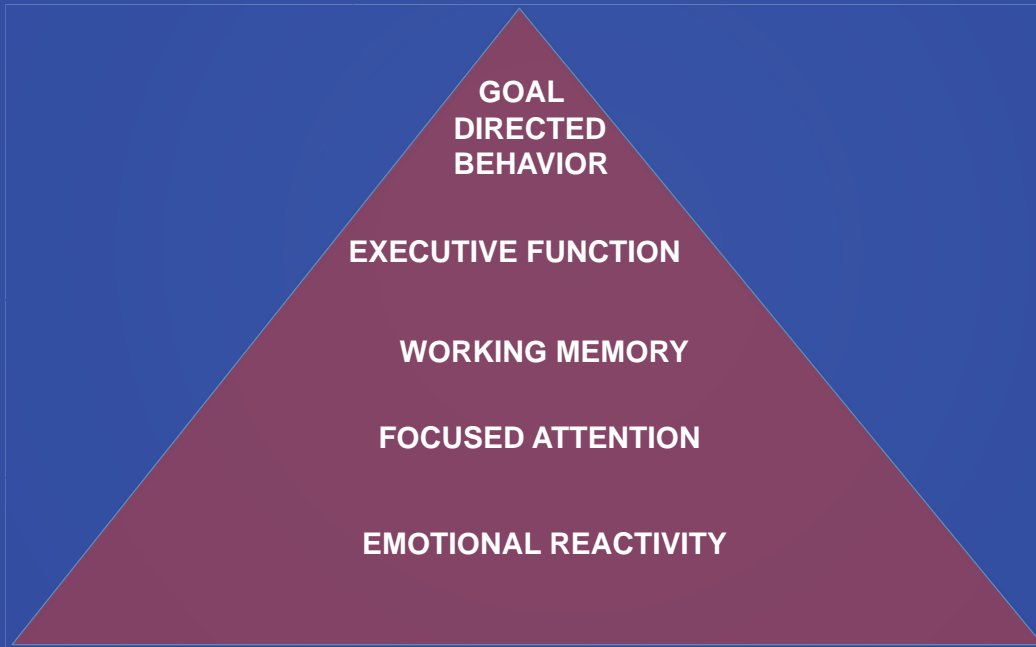
When we focus on doing the things we truly enjoy and care about, we can begin to engage completely with the present moment and enter the state of being known as 'flow'.

#### Meaning

We are at our best when we dedicate time to something greater than ourselves. This might be religious faith, community work, family, politics, a charity, a professional or creative goal.

From Martin Seligman's *Flourish*, 2011

# Cognitive elements we can train



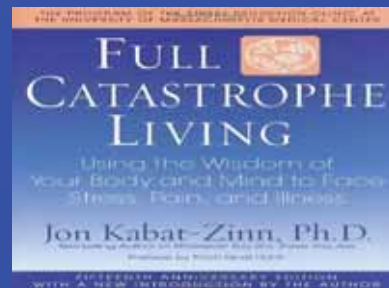
## What is Mindfulness?

Krasner and Epstein, JAMA 2009

- The purposeful direction of focused attention to the internal and external experiences of our lives
- Acceptance of the present moment, without resistance, “*as if you had purposefully chosen it*”
- The ability to identify and disengage from automatic and negative thoughts, habits and behaviors
- The capacity for lowering ones’ reactivity to challenging experiences

# The history of mindfulness

- **Spiritual tradition**  
Buddhist philosophy  
Escape from suffering
- **Medical tradition**  
Mindfulness-based  
stress reduction



## Mindfulness is Intentional Attention



## Self Monitoring of our internal landscape (Krasner and Epstein, 2009)

- “The ability to attend, moment to moment to our own actions
  - Curiosity to examine the effects of those actions
  - Willingness to use these observations to improve thinking and behavior
- High quality internal data facilitates access to cognitive processes that improve reasoning, creativity and outlook



## Lack of Self Monitoring = Mindlessness

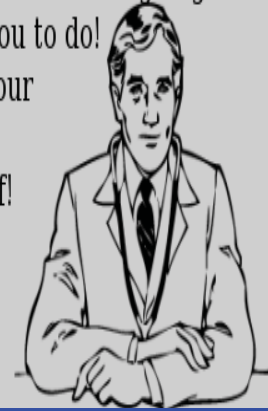
- Living reflexively based on past behaviors
- Driven by ANTS (automatic negative thoughts)
- Narrow attentional focus (seeing what we expect to see)
- Mental inflexibility: Refusal to change perspective in face of conflicting data
- Living with resistance



# Our internal landscape

- Constant distractions
- Thoughts and their stories
- ANTS
- Restlessness

Come on brain, don't get distracted. Stop being rebellious. You're going to do what I tell you to do! I will not fall to your level. GAH! Stop talking to yourself! Crap, what was I doing...



## THE ANATOMY OF ANXIETY

### 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

**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

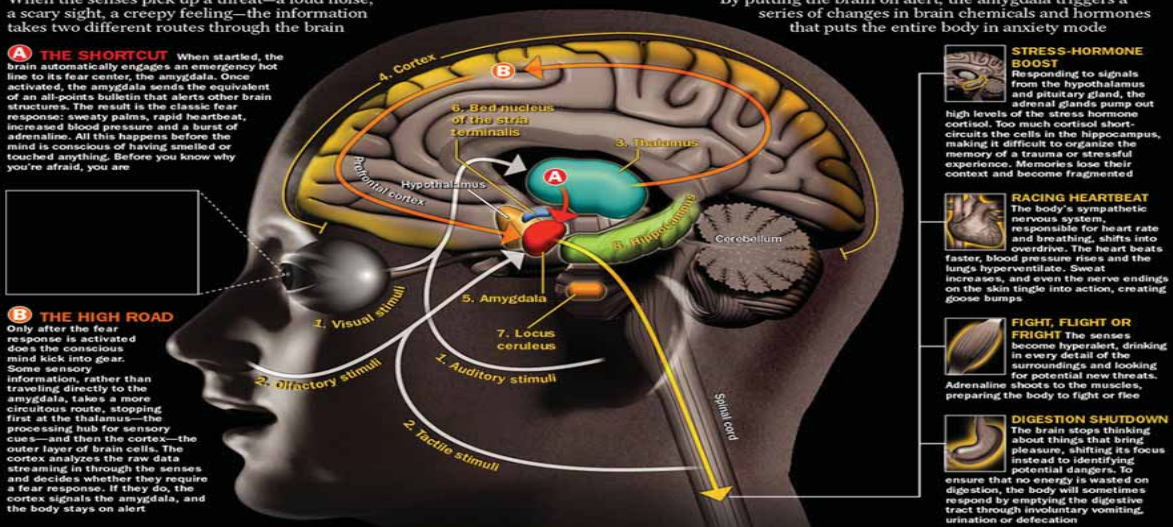
### B THE HIGH ROAD

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

### ... 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

TIME Diagram by Joe Lertola. Text by Alice Park



**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

**1. Auditory and visual stimuli** Sights and sounds are processed first by the thalamus, which filters the incoming cues and shunts 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 unease typical of anxiety

**7. Locus ceruleus** It receives signals from the amygdala and is responsible for initiating many of the classic anxiety response: 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

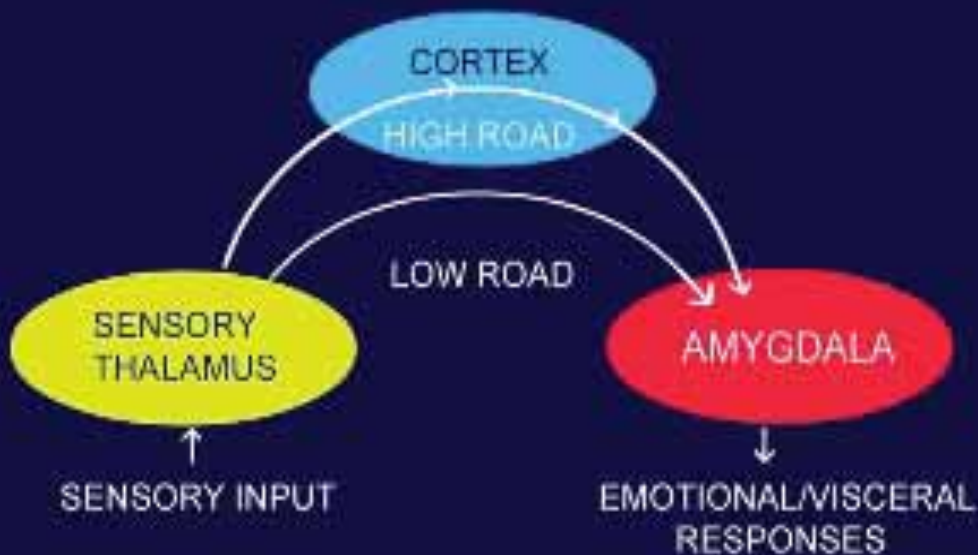
Source: Dennis S. Charney, M.D., National Institute of Mental Health

## Downward Spiral of Chronic Pain, Stress, and Addiction



Garland, 2012

## Two paths, two destinations



Adapted from LeDoux, NYU Center for Neural Science website

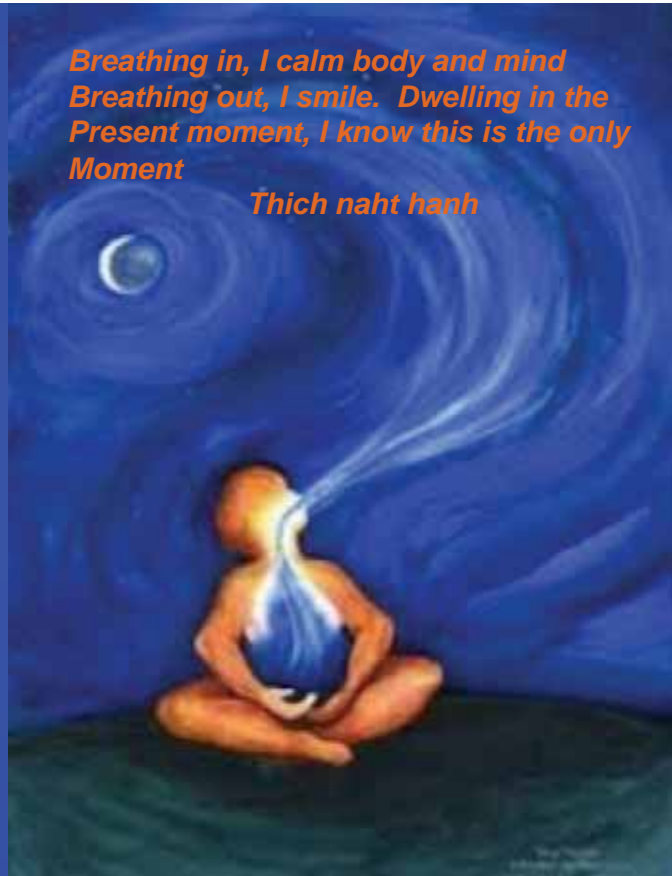


# Mindfulness meditation

*The cognitive process of directing and redirecting focused attention on an internal physiologic process*

*Breathing in, I calm body and mind  
Breathing out, I smile. Dwelling in the  
Present moment, I know this is the only  
Moment*

*Thich naht hanh*

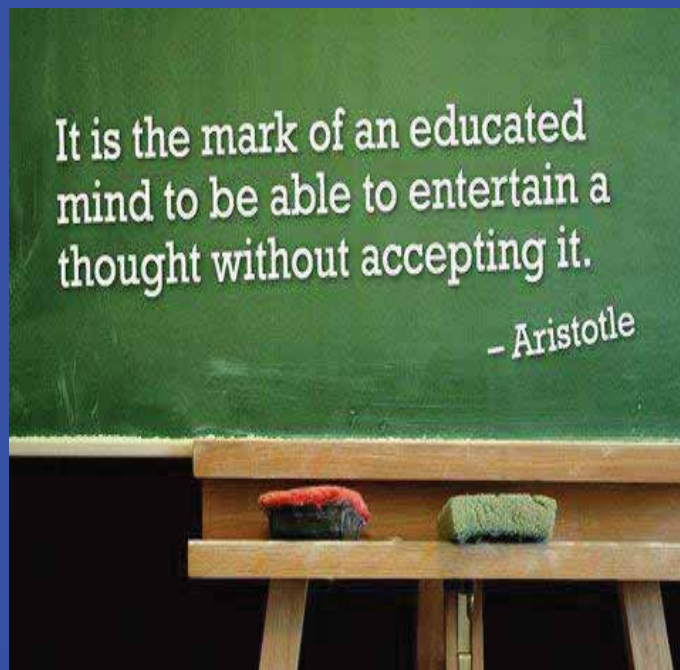


# Elements of mindfulness meditation

- Intention
- Attentional control
- Open acceptance to all that arises
- Separating thought and feeling from content

It is the mark of an educated mind to be able to entertain a thought without accepting it.

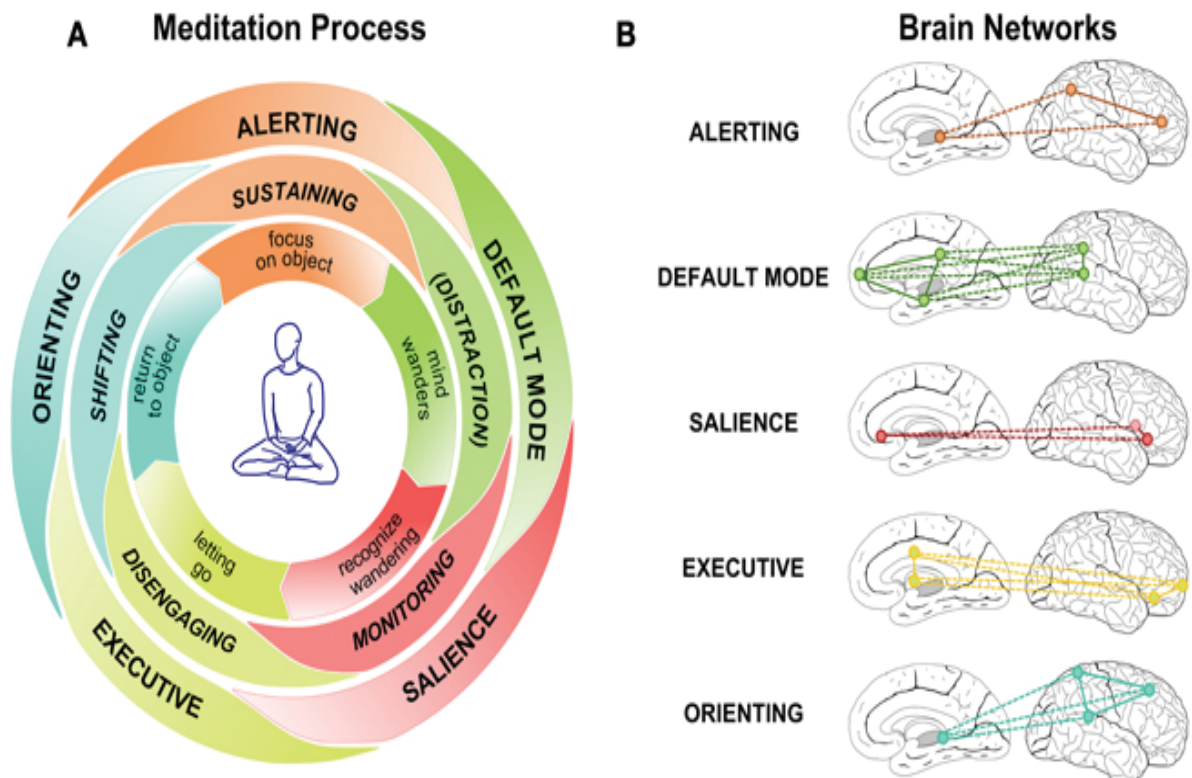
- Aristotle



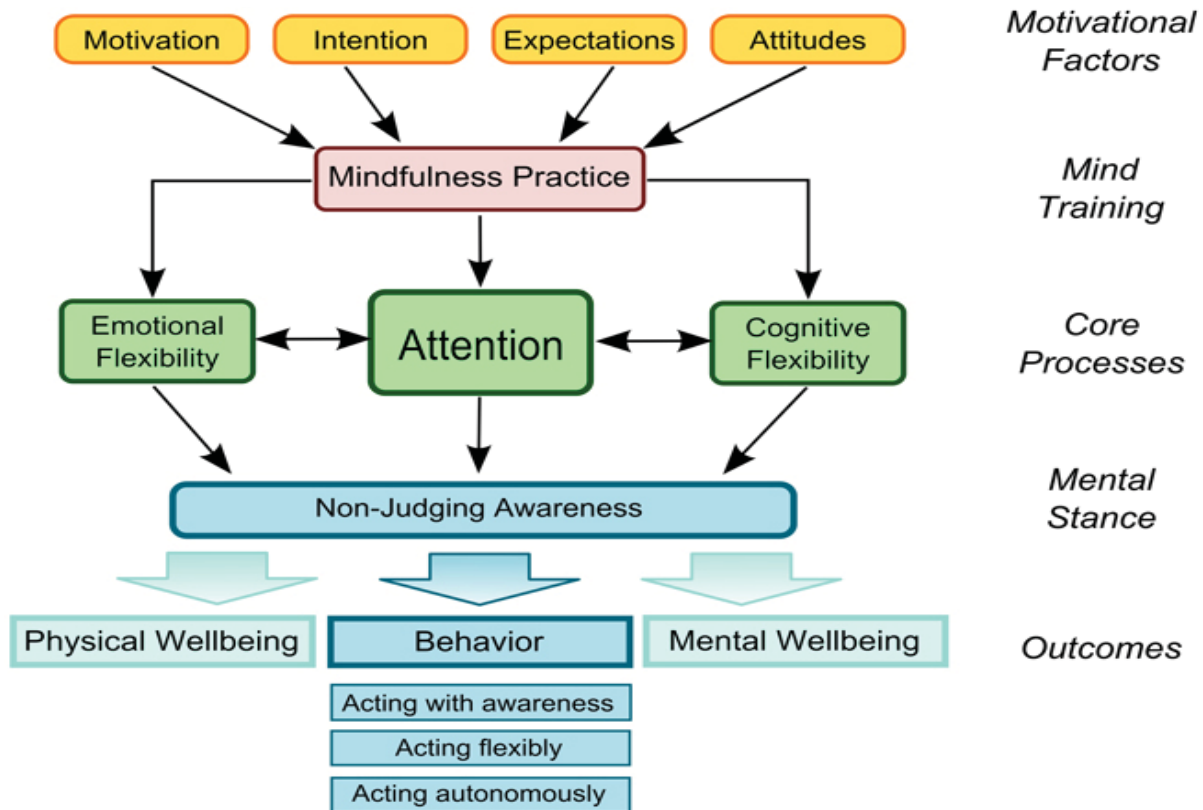
# Attentional Networks in Mindfulness Meditation

Malinowski, 2013

- **Alerting:** Right frontal and parietal cortices and thalamus
- **Orienting:** Superior parietal cortex, temporal parietal junction, frontal eye fields, superior colliculus
- **Executive Control:** Ant cingulate cortex, lateral ventral cortex and basal ganglia
- **Default network:** Post cingulate cortex, medial prefrontal cortex, post lat parietal/temporal cortex, parahippocampal gyrus
- **Salience network:** Dorsal ant cingulate, ventrolateral prefrontal cortex and ant insula



Malinowski P. Neural mechanisms of attentional control in mindfulness meditation. *Front Neurosci*, Feb 4, 2013, Vol 7. pp. 1-11



Liverpool Mindfulness Model. Malinowski P. Neural mechanisms of attentional control In mindfulness meditation. *Front Neurosci*, Feb 4, 2013, Vol 7. pp. 1-11

## Does mindfulness training improve cognition?

- Associated with improved selective and sustained attention, working memory (Chlesa et al, 2013)
- Associated with improved cognitive flexibility (Moore et al, 2009)
- Associated with reduced reactivity (Van den hurk et al 2010)

## Does mindfulness improve the therapeutic alliance?

(Beach et al, 2013)

- Multi-center study of 45 clinicians and 437 patients
- Clinicians with high scores on MAAS
  - Demonstrated greater rapport building
  - A stronger pattern of patient centered communication
  - More positive emotional tone with patients
  - Had patients who were more satisfied with care

## Mindfulness and treatment outcomes

- Reduction in long term mental fatigue of 29 patients with stroke and TBI (Johnson et al, 2012)
- Improvements in QOL, fatigue and depression in 76 patients with MS (Grossman et al, 2010)
- Reduced pain attentional bias in patients with chronic pain (Garland and Howard, 2013)

## Take Home Messages

- Mindfulness training can improve our ability to connect with patients and to self assess in productive ways that improve the effectiveness of our interventions.

## Take home messages

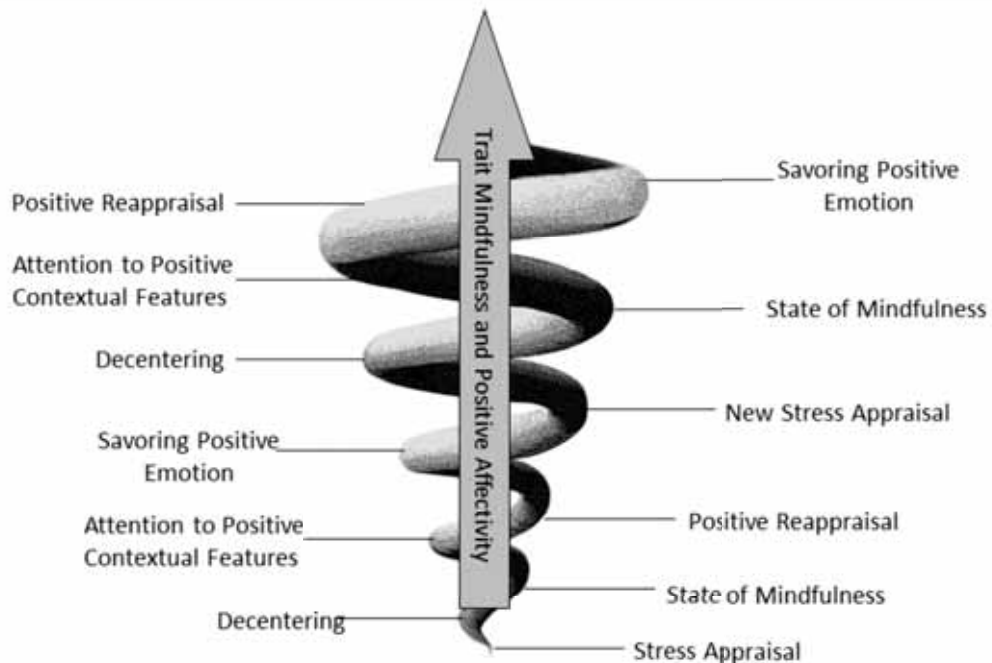
- Mindfulness training may be a helpful intervention in facilitating patient attentional processes that drive goal directed behavior

# UP

- The intentional cultivation of positive emotions, mood and outlook

**POSITIVITY**  
*can change*  
**YOUR LIFE**

## Upward Spiral of Mindfulness, Meaning, and Positivity



# Meet Your Happy Chemicals

Dopamine



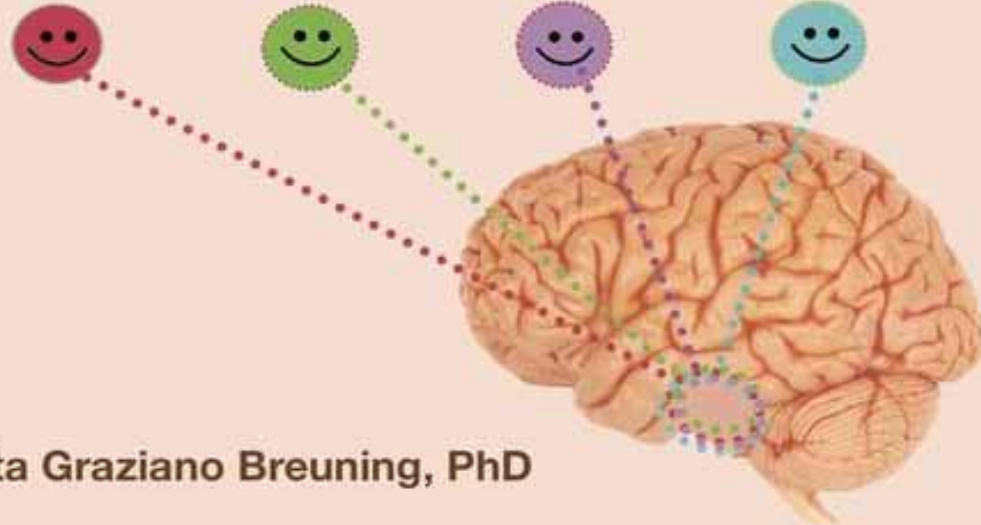
Serotonin



Oxytocin



Endorphin



Loretta Graziano Breuning, PhD

Intentional positivity attenuates the negativity bias



# Powering UP

Hanson 2005, 2013

- Positive experiences need to be held in awareness (between 5-20 seconds) to encode in emotional memory
- A single negative event is more memorable than 1000 good times
- Hardwiring positivity requires conscious deliberate practice



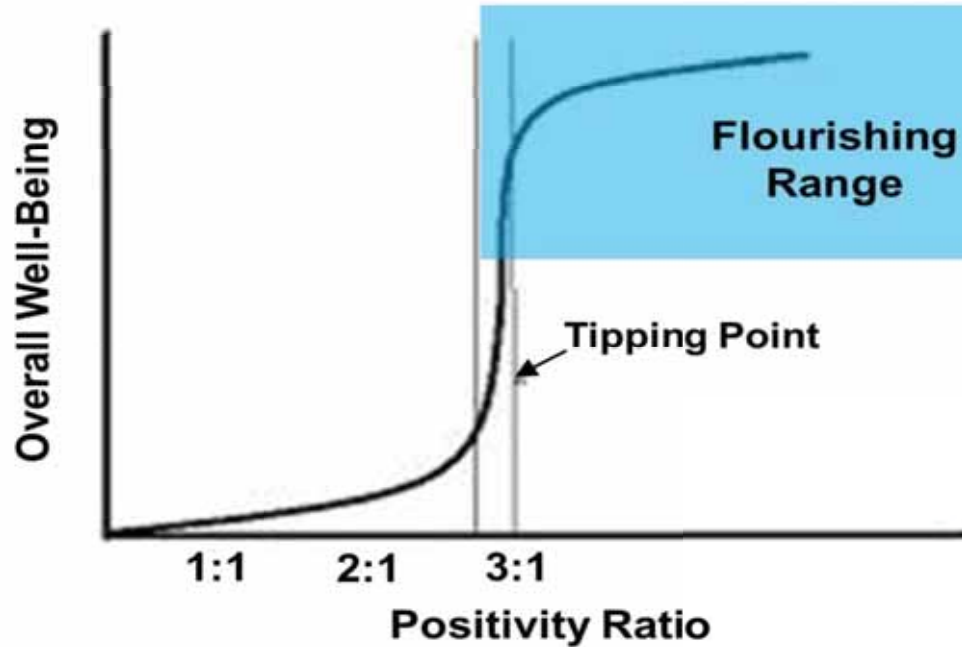
## Key experiences Hanson,

- Feeling safe and secure
- Gratitude and appreciation
- Strength, resilience
- Feeling loved, cared for, listened to, validated





# Positivity tipping point

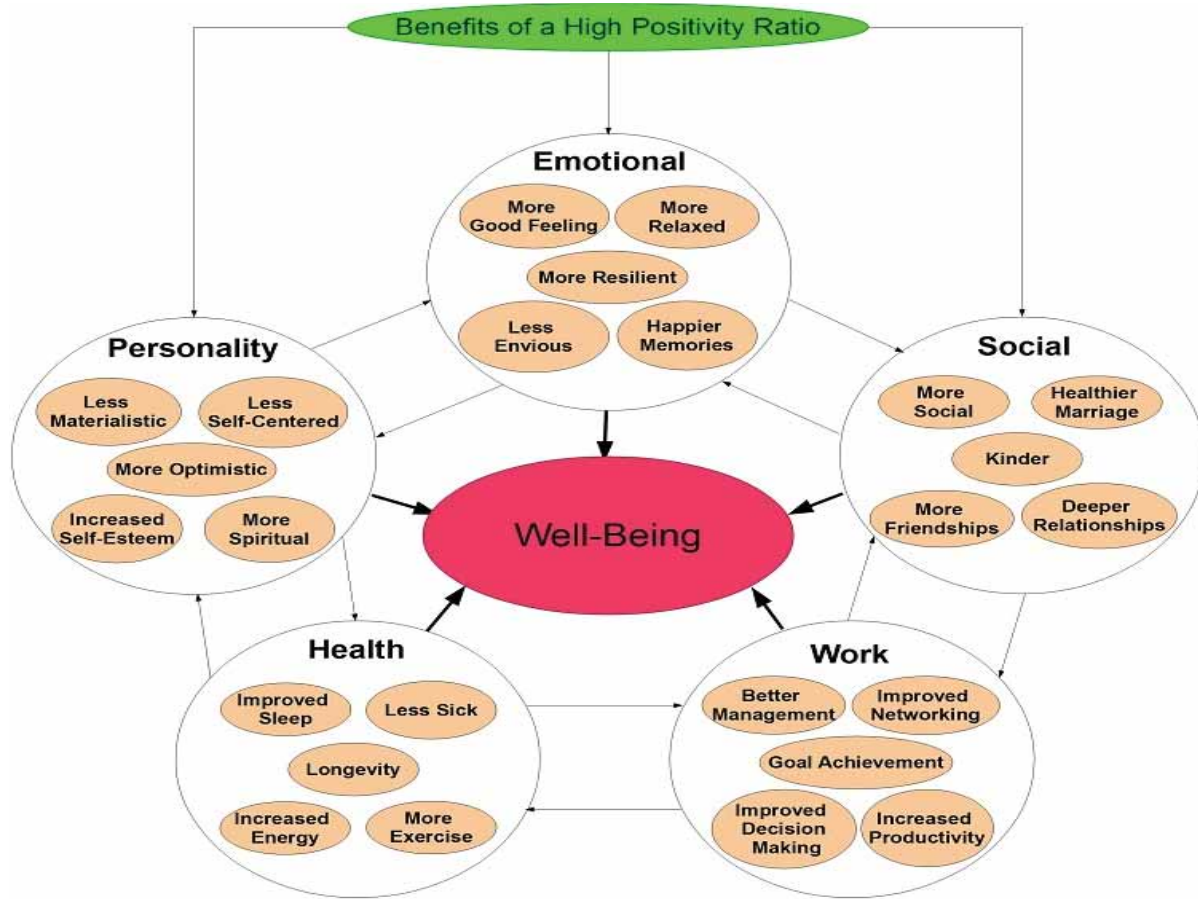


# Broaden-and-build theory

Fredrickson, 1998, 2001 2004

- Positive emotions appears to *broaden* ones' thought-action repertoires and *build* enduring personal resources including:
  - Creativity
  - Resilience
  - Social relationships
  - Overall health and wellbeing





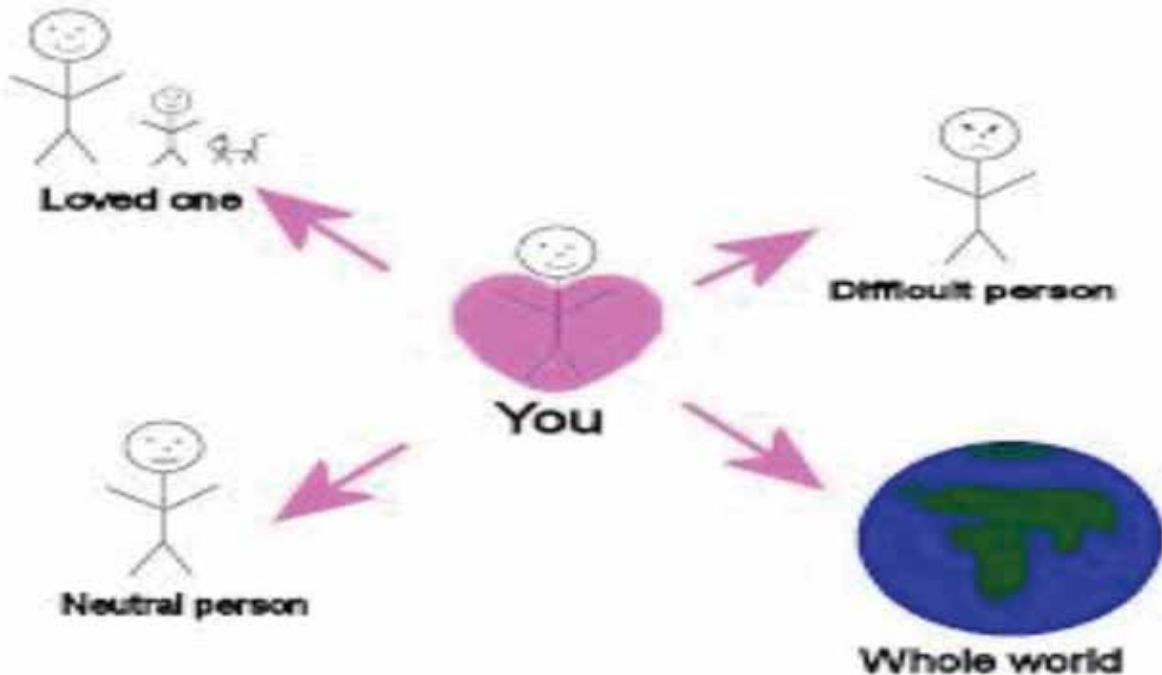
## Increase positivity

- Our brains are wired towards a negativity bias (primitive self protection)
- **A 3:1 ratio of positive to negative** thoughts/words/experiences is needed for optimal mental well being (Fredrickson, 2010)
  - CEOs who routinely do this with staff have more productive and more profitable companies (Newberg, 2012)
  - Acknowledging differences positively improves negotiation
- The science of positive psychology has shown numerous physical, cognitive and emotional benefits of cultivating positivity on a regular basis

# Self compassion



# Loving Kindness Meditation



## Top 10 Positive Emotions (Fredrickson, 2009)

- Joy
- Gratitude
- Serenity
- Interest
- Hope
- Pride
- Amusement
- Inspiration
- Awe
- Love



## Evidence based positivity enhancing interventions (Seligman, 2005, 2011)

- Gratitude visit (1 mo.)
- Three blessings (1 week/6 mos)
- Signature strengths exercise

# Taking in the good

Hanson 2013

- Note a pleasant moment or feeling
- Feel it with all your senses (embodied awareness)
- Extend the experience (longer, broader), up to 30 seconds
- Let it fill you with positive feelings
- Savor the experience
- Repeat throughout day



## Changing Our Mindset

Carol Dweck, world-renowned Stanford University psychologist, talks about the power of our mindset or our beliefs (especially around challenge). We can either have a Fixed Mindset where we let failure (or even success) define who we are, or a Growth Mindset where we see setbacks as opportunities to grow and improve ourselves. Just like how we learned how to walk... there are many stumbles along the way, but to reach our potential and live the life we desire, it takes practice and perseverance. We always have a choice about which view we adopt for ourselves... and it's never too late to change. What's your view?

*It's up to you!*



### FIXED MINDSET

Belief that my intelligence, personality and character are carved in stone; my potential is determined at birth



### GROWTH MINDSET

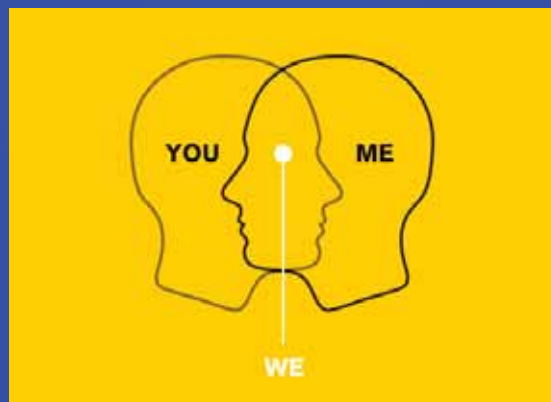
Belief that my intelligence, personality and character can be developed! A person's true potential is unknown (and unknowable).

	FIXED MINDSET	GROWTH MINDSET
<b>DEIRE</b>	Look smart in every situation and prove myself over and over again. Never fail!!	Stretch myself, take risks and learn. Bring on the challenges!
<b>EVALUATION OF SITUATIONS</b>	Will I succeed or fail? Will I look smart or dumb?	Will this allow me to grow? Will this help me overcome some of my challenges?
<b>DEALING WITH SETBACKS</b>	"I'm a failure" (identity) "I'm an idiot"	"I failed" (action) "I'll try harder next time"
<b>CHALLENGES</b>	Avoid challenges, get defensive or give up easily.	Embrace challenges, persist in the face of setbacks.
<b>EFFORT</b>	Why bother? It's not going to change anything.	Growth and learning require effort.
<b>CRITICISM</b>	Ignore constructive criticism.	Learn from criticism. How can I improve?
<b>SUCCESS OF OTHERS</b>	Feel threatened by the success of others. If you succeed, then I fail.	Finds lessons & inspiration in other people's success.
<b>RESULT...</b>	Plateau early, achieve less than my full potential.	Reach ever-higher levels of achievement.

## Take Home Message

- Positive emotions can undo the harmful effects of stress, and reduce the impact of future distress. Scientific research in neuroplasticity suggests that positive emotional states may trigger lasting, durable changes in the structure and function of the brain

## OUT Communication for Empathic Connections

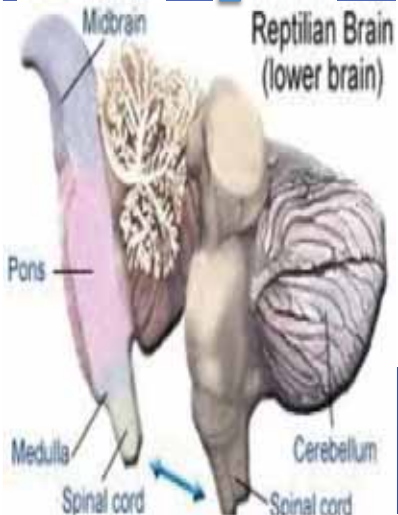


*“Communication is not an ancillary or a chore....*

*rather, it is the core therapeutic medium of our discipline”*

*- Ira Byock, MD*

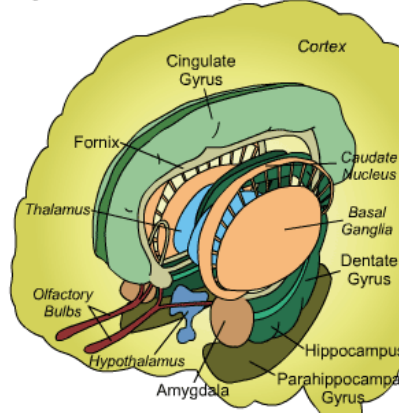
Safety



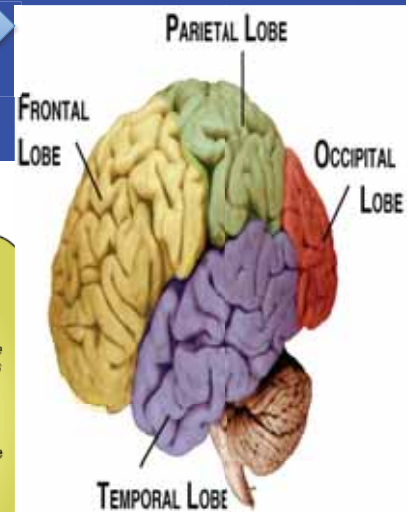
Reptilian Brain (lower brain)

Connectedness

Figure AB-16: Limbic System



Engagement

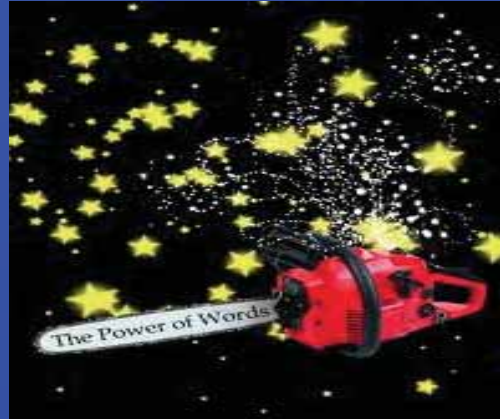


Brain border patrol

## The power of words

- *“The way we choose our words can improve the neural functioning of the brain, in fact a single word has the power to influence the expression of genes that regulate physical and emotional stress”*

- Andrew Newberg, MD



## Positivity predicts marital stability (Gottman, 2002)

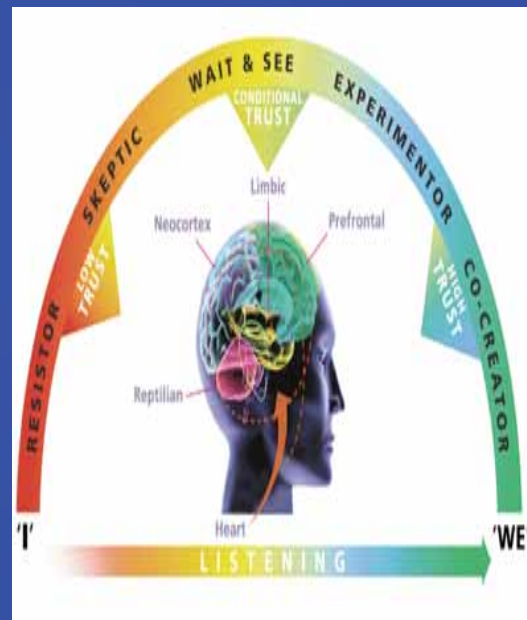
- Longitudinal analysis of recorded conversations between 677 married couples over 14 years
- 94% accuracy in predicting who would divorce within 3 years
- Determined that a 5:1 ratio of positive to negative comments was the tipping point for marriage stability



## Conversational intelligence for crucial conversations

Patterson et al, 2002; Glaser, 2013

- T**ransparency: Make it safe
- R**elationship: Start with heart
- U**nderstanding: Identify needs
- S**hared success: Brainstorm
- T**elling the truth: Reframe our stories



## Elements of Mindful Communication (Newberg and Waldman, 2012)

**Express Appreciation**

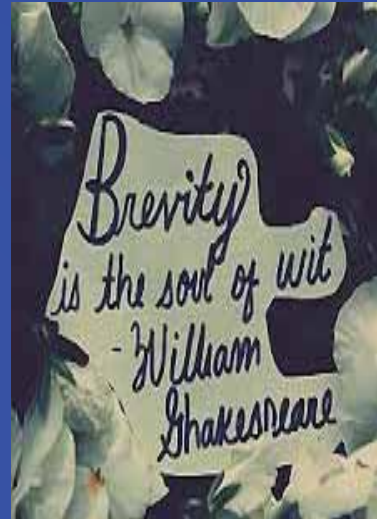
**Speak slowly**

**Speak Briefly**

**Listen Deeply**

## Speak Briefly

- 30 seconds or less
- Check for understanding
- Limits negativity
- Facilitates retention
- Working memory can only hold 4-5 “chunks of information at a time (listener tunes out)



## Speak Slowly

- Engages the listener
- Increases comprehension
- Facilitates appropriate words
- Slower speech increases trust
- Reduces anxiety



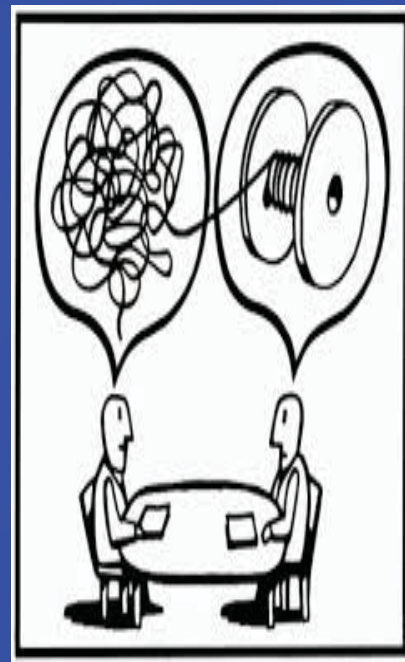
## Practice Dialogue

- **Consciously slow your speech and speak for no more than 30 seconds. Then pause and let the other person react to what has been said**
- **Continue for two minutes, then switch roles**



## Listen Deeply: W.A.I.T

- **Mindfulness in conversation**
- **Intentional attention to other**
- **Improves patient interactions**
- **promotes patient self efficacy**





## AI questions in clinical practice

- Describe a time when you felt healthy and strong
- What is your vision for health and wellbeing?
- What would you like more of in your life?
- What is one thing you might change in the next month?



## Neurologic correlates of connection

- Mediated by mirror neurons in pre-motor cortex
- Promotes empathic connection by synchronizing affect, gestures and expression



# Teach back

Agency for Healthcare Research and Quality

1. Use simple lay language; explain or demonstrate the process without medical jargon
2. Ask the patient to repeat what they have just heard in their own words, or to demonstrate the process
3. Identify and correct any misunderstandings or incorrect procedure
4. Ask the patient to demonstrate or re-explain to demonstrate understanding
5. Repeat steps 3 and 4 until clinician is convinced that patient understanding is adequate and safe

***Watch your thoughts-  
they become words.***

***Watch your words-  
they become actions.***

***Watch your actions-  
they become habits.***

***Watch your habits-  
they become character.***

***Watch your character-  
it becomes your destiny***

