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*Indeed, the sage who's fully quenched  
Rests at ease in every way;  
No sense desire adheres to him or her  
Whose fires have cooled, deprived of fuel.*

*All attachments have been severed,  
The heart's been led away from pain;  
Tranquil, he or she rests with utmost ease.  
The mind has found its way to peace.*

The Buddha

---

# ***Equanimity***

**Chrysalis, March, 2011**

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**The Wellspring Institute for Neuroscience and Contemplative Wisdom**

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# Topics

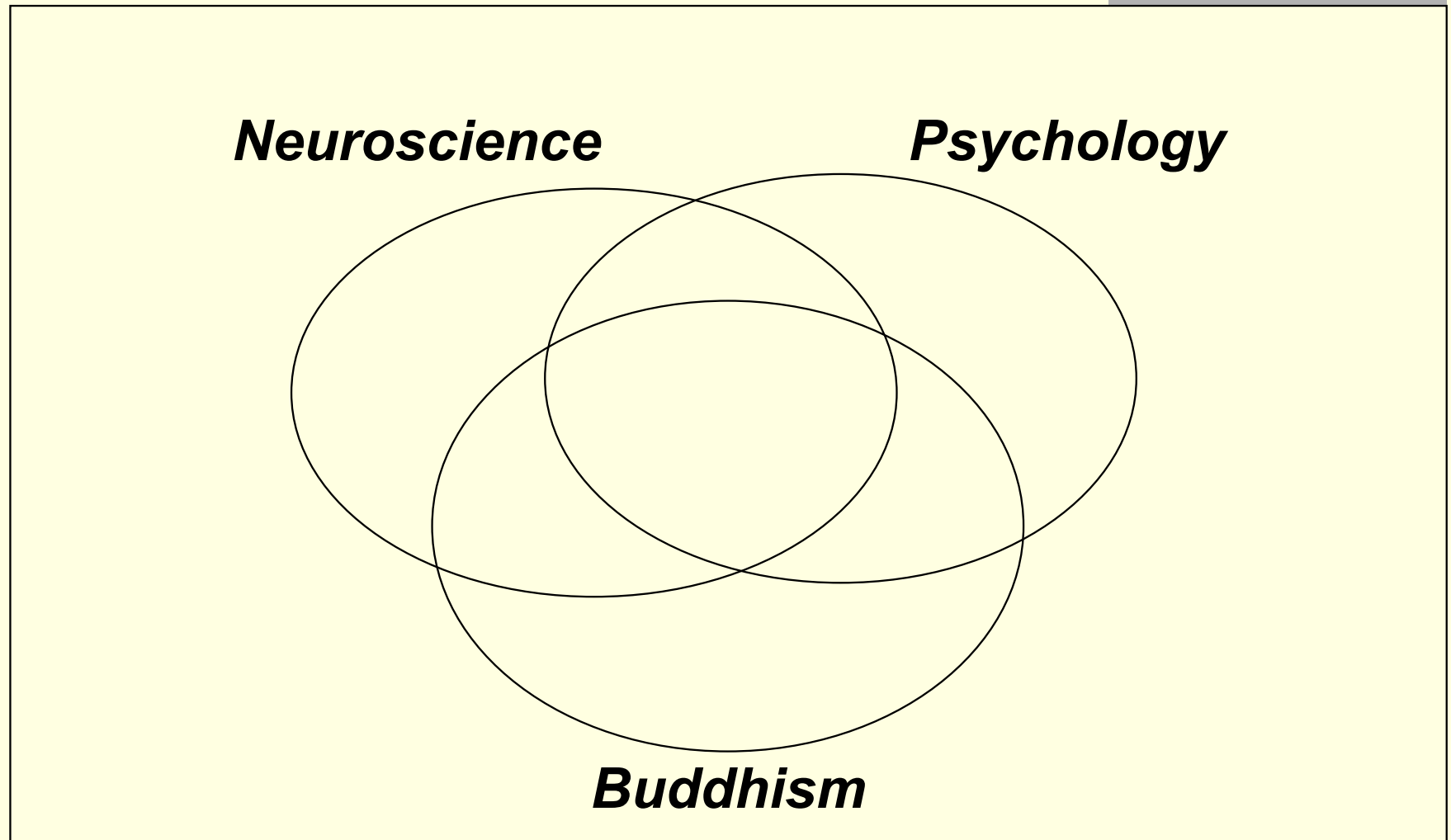
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- **What is equanimity?**
- **Steadiness of mind**
- **Insight into the evolution of suffering**
- **Cooling the fires**
- **Healing old pain**



# Perspectives

# Common - and Fertile - Ground



---

*The history of science is rich in the example  
of the fruitfulness of bringing  
two sets of techniques, two sets of ideas,  
developed in separate contexts  
for the pursuit of new truth,  
into touch with one another.*

J. Robert Oppenheimer

---

*When the facts change,  
I change my mind, sir.*

*What do you do?*

John Maynard Keynes

# Domains of Intervention


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- We can intervene in three domains:
  - World (including relationships)
  - Body
  - Mind
- All three are important. And they work together.
- We have limited influence over world and body.
- In the mind:
  - Much more influence
  - Changes are with us wherever we go



*The principal activities of brains  
are making changes in themselves.*

Marvin L. Minsky



# **What Is Equanimity?**

# Eight Worldly Winds

---

- Pleasure and pain
- Praise and blame
- Gain and loss
- Fame and ill repute

---

*Whose mind is like rock, steady, unmoved,  
dispassionate for things that spark passion,  
unangered by things that spark anger:*

*When one's mind is developed like this,  
from where can there come suffering & stress?*

The Buddha, Udāna 4.34

# Balanced, Steady, Present

---

- **Balance** - not reacting to fleeting experiences
- **Steadiness** - sustained through all circumstances
- **Presence** - engaged with the world but not troubled by it; guided by values and virtues, not reactions

The ancient circuitry of the brain continually triggers reactions. Equanimity is the circuit breaker that prevents the craving that leads to suffering.

---

*Equanimity is a perfect, unshakeable balance of mind.*

Nyanaponika Thera

*With equanimity, you can deal with situations with calm and reason while keeping your inner happiness.*

The Dalai Lama

# Equanimity in the Brain

---

- **Understanding and Intention** - Conceptual in prefrontal cortex; embodied in prefrontal cortex (action tendencies), parietal cortex (perspective), limbic system (emotion), and brainstem (arousal)
- **Steadiness of mind** - Sustained by oversight from the anterior cingulate cortex (ACC); over time, probably becomes a whole-brain stability of attention
- **Global coherence** - So as not to be caught by anything, experience presents itself as a coherent whole, probably enabled by large-scale gamma wave synchronization.
- **Calm and contentment** - Much parasympathetic activation, inhibiting fight-flight stress reactions; underlying well-being in the core motivational systems (Avoid, Approach, Attach)



# **Steadiness of Mind**

# Basics of Meditation

---

- Relax, in a posture that is comfortable and alert.
- Have simple good will toward yourself.
- Be aware of your body.
- Focus on something to steady your attention.
- Accept whatever passes through awareness.
- Gently settle into peaceful well-being.

# Foundations of Meditation

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- Setting an intention - “top-down” frontal lobes, “bottom-up” limbic system
- Relaxing the body - parasympathetic nervous system
- Feeling safer - inhibits amygdala/ hippocampus vigilance circuits
- Evoking positive emotion - dopamine, norepinephrine
- Absorbing the benefits - primes memory circuits throughout the brain

# Dual Modes

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## “Doing”

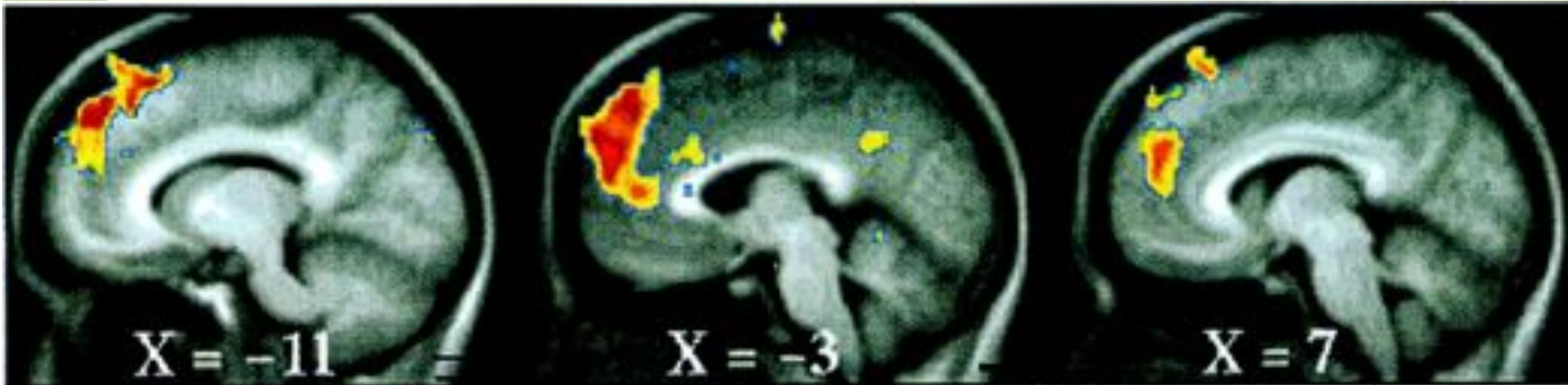
Mainly representational  
Much verbal activity  
Abstract  
Future- or past-focused  
Goal-directed  
Sense of craving  
Personal, self-oriented perspective  
Focal view  
Firm beliefs  
Evaluative  
Lost in thought, mind wandering  
Reverberation and recursion  
Tightly connected experiences  
Prominent self-as-object  
Prominent self-as-subject

## “Being”

Mainly sensory  
Little verbal activity  
Concrete  
Now-focused  
Nothing to do, nowhere to go  
Sense of peace  
Impersonal, 3<sup>rd</sup> person perspective  
Panoramic view  
Uncertainty, not-knowing  
Nonjudgmental  
Mindful presence  
Immediate and transient;  
Loosely connected experiences  
Minimal or no self-as-object  
Minimal or no self-as-subject

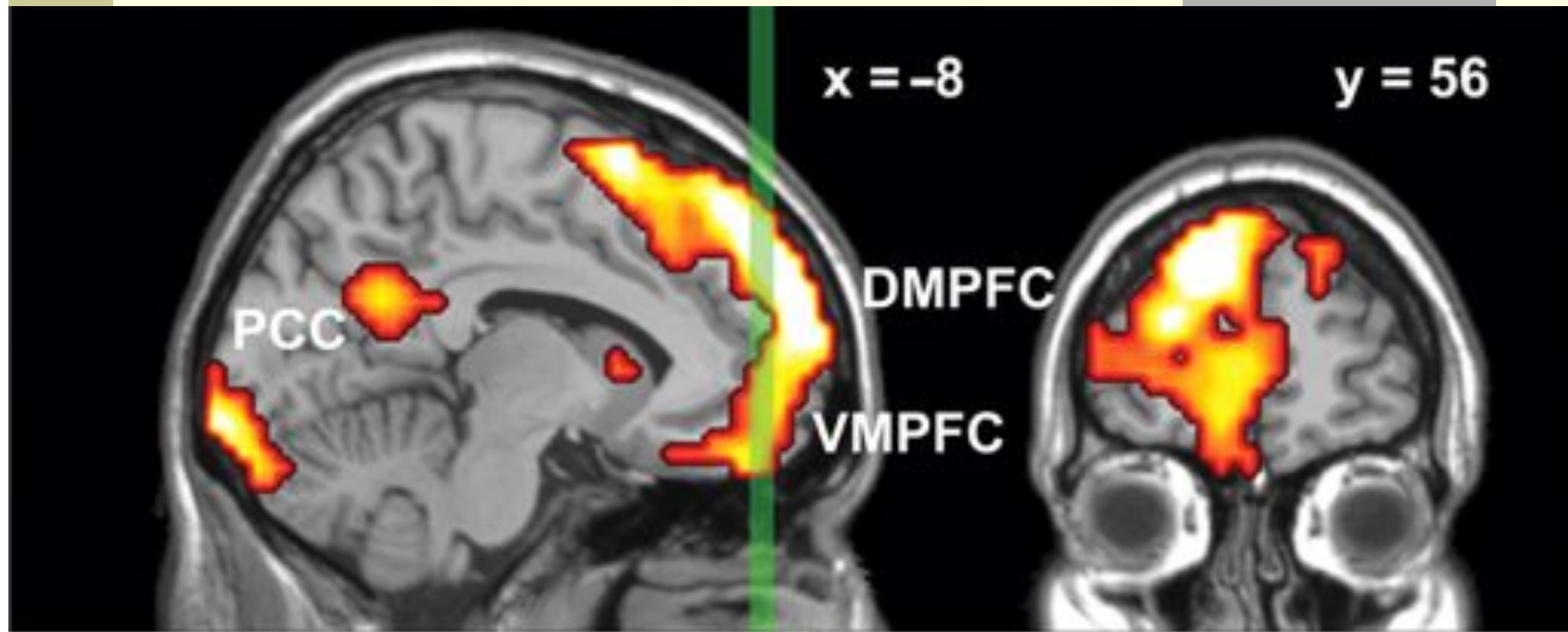
# Increased Medial PFC Activation Related to Self-Referencing Thought

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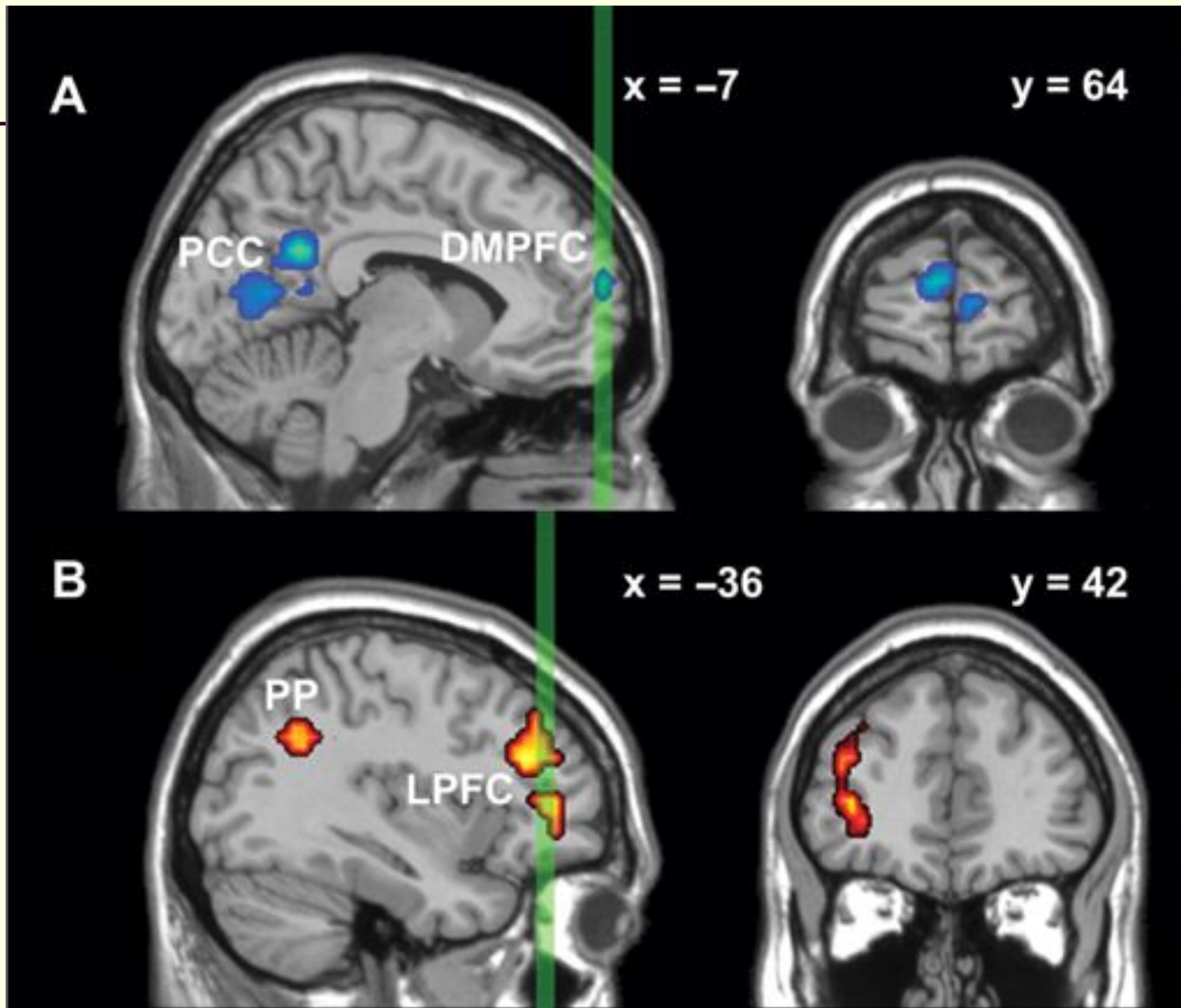
Gusnard D. A., et.al. 2001. *PNAS*, 98:4259-4264

# Cortical Midline Areas for Self-Referencing Thought



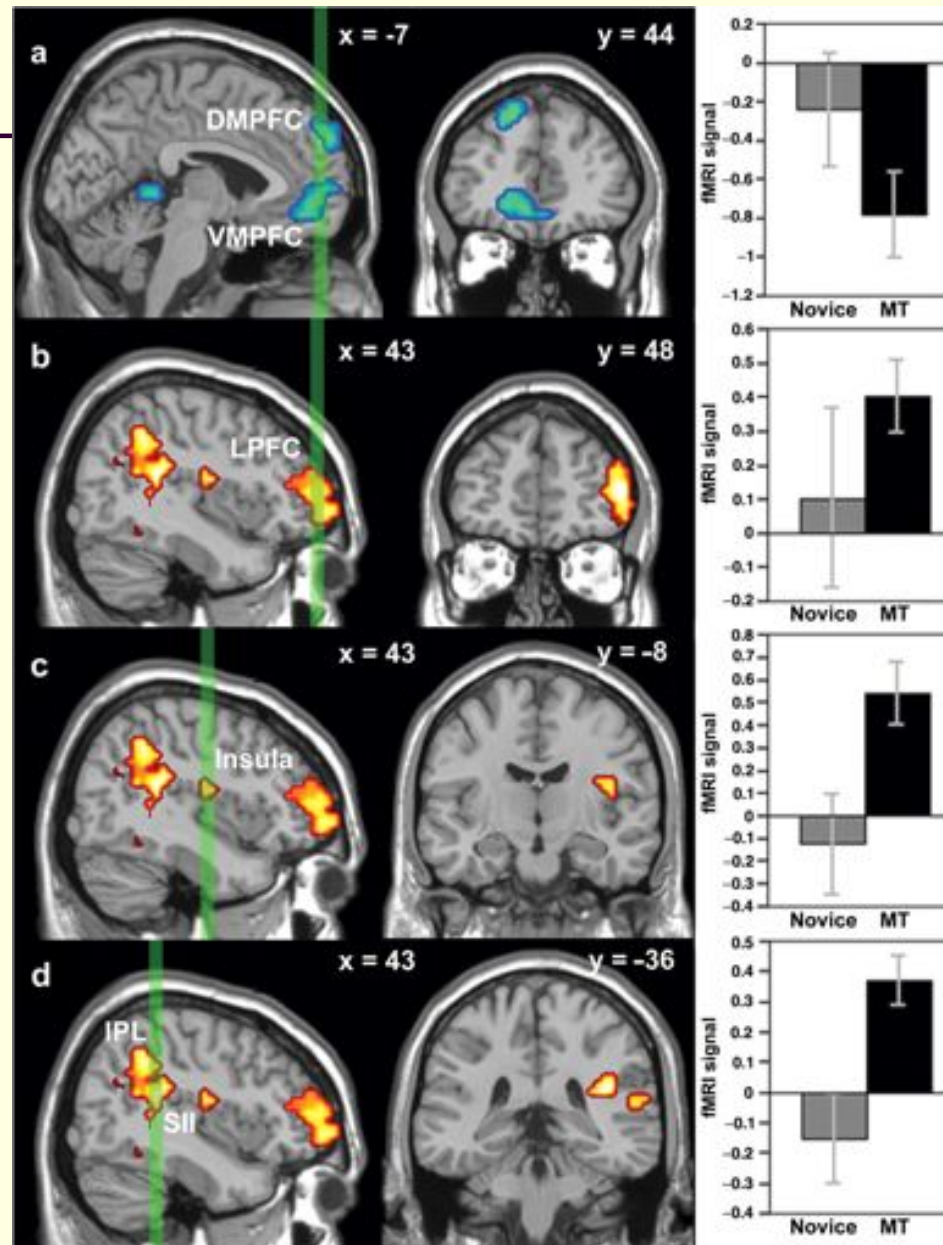
Farb, et al. 2007. *Social Cognitive Affective Neuroscience*, 2:313-322

# Self-Focused (blue) and Open Awareness (red) Conditions (in the novice, pre MT group)



Farb, et al. 2007. *Social Cognitive Affective Neuroscience*, 2:313-322

# Self-Focused (blue) vs Open Awareness (red) Conditions (following 8 weeks of MT)



# Dual Modes

---

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Mainly representational  
Much verbal activity  
Abstract  
Future- or past-focused  
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Loosely connected experiences  
Minimal or no self-as-object  
Minimal or no self-as-subject

# “Bahiya, you should train yourself thus.”

---

In reference to the seen, there will be only the seen. To the heard, only the heard. To the sensed, only the sensed. To the cognized, only the cognized.

When for you there will be only the seen in reference to the seen, only the heard in the heard, only the sensed in the sensed, only the cognized in the cognized, then, Bahiya, there's no you in that.

When there's no you in that, there's no you there. When there's no you there, you are neither here nor yonder nor between the two.

This, just this, is the end of all suffering.

# Ways to Activate “Being” Mode

---

- Relax
- Focus on bare sensations and perceptions
- Sense the body as a whole
- Take a panoramic, “bird’s-eye” view
- Engage “don’t-know mind”; release judgments
- Don’t try to connect mental contents together
- Let experience flow, staying here now
- Relax the sense of “I, me, and mine”

# Whole Body Awareness

---

- Sense the breath in one area (e.g., chest, upper lip)
- Sense the breath as a whole: one gestalt, percept
- Sense the body as a whole, a whole body breathing
- Sense experience as a whole: sensations, sounds, thoughts . . . all arising together as one unified thing
- It's natural for this sense of the whole to be present for a second or two, then crumble; just open up to it again and again.

# Panoramic Awareness

---

- Recall a bird's-eye view (e.g., mountain, airplane)
- Be aware of sounds coming and going in an open space of awareness, without any edges: boundless
- Open to other contents of mind, coming and going like clouds moving across the sky.
- Pleasant or unpleasant, no matter: just more clouds
- No cloud ever harms or taints the sky.

# Promoting Steadiness of Mind

---

- Daily meditation
- Concentration practices
- Attention to the neutral
- Disenchantment with the show in the mind



# **Insight into the Evolution of Suffering**

# Three Stages of Brain Evolution

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## ■ Reptilian:

- Brainstem, cerebellum, hypothalamus
- Reactive and reflexive
- **Avoid** hazards

## ■ Mammalian:

- Limbic system, cingulate, early cortex
- Memory, emotion, social behavior
- **Approach** rewards

## ■ Human:

- Massive cerebral cortex
- Abstract thought, language, cooperative planning, empathy
- **Attach** to “us”

# Reverse Engineering the Brain

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*What is the nature of the brain when a person is:*

- **Experiencing inner peace?**
- **Self-actualizing?**
- **Enlightened (or close to it)?**

# Home Base of the Human Brain

---

When not threatened, ill, in pain, hungry, upset, or chemically disturbed, most people settle into being:

- **Calm** (the Avoid system)
- **Contented** (the Approach system)
- **Caring** (the Attach system)
- **Creative** - synergy of all three systems

This is the brain in its *responsive* mode.

# Responsive Mode

---



# Behind the Obscurations

---

Sam sees “peeping among the cloud-wrack . . . a white star  
twinkle for a while.

*The beauty of it smote his heart, as he looked up out of the  
forsaken land, and hope returned to him.*

*For like a shaft, clear and cold, the thought pierced him that  
in the end the Shadow was only a small and passing thing:  
there was light and high beauty forever beyond its reach.”*

Tolkein, *The Lord of the Rings*

# Some Benefits of Responsive Mode

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- Recovery from “mobilizations” for survival:
  - Refueling after depleting outpourings
  - Restoring equilibrium to perturbed systems
  - Reinterpreting negative events in a positive frame
  - Reconciling after separations and conflicts
- Promotes prosocial behaviors:
  - Experiencing safety decreases aggression.
  - Experiencing sufficiency decreases envy.
  - Experiencing connection decreases jealousy.
  - We’re more generous when our own cup runneth over.

# But To Cope with Urgent Needs, We Leave Home . . .

---

**With activations of the three systems:**

- **Avoid:** When we are threatened or harmed
- **Approach:** When we can't attain important goals
- **Attach:** When we feel isolated, disconnected, unseen, unappreciated, unloved

This is the brain in its *reactive* mode of functioning  
- a kind of inner homelessness.

# Unavoidable Disturbances

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- Animals survive through three fundamental strategies. When these run into trouble, unpleasant alarm signals pulse through the nervous system.
- But trouble comes constantly: each strategy contains inherent contradictions, as the animal keeps trying:
  - To ***separate what is actually connected*** – in order to create a boundary between itself and the world
  - To ***stabilize what keeps changing*** – in order to maintain its internal systems within tight ranges
  - To ***hold onto fleeting pleasures and escape inevitable pains*** – in order to approach opportunities and avoid threats

# The First and Second Dart

---

- The Buddha referred to unavoidable discomfort - including disease, old age, death, and sorrow at harms befalling others - as the “first dart.”
- Then we add our reactions to that first dart. For example, one could react to a physical pain with anxiety, then anger at oneself for feeling anxious, then sadness linked to not being comforted as a child.
- Sometimes we react with suffering when there is no first dart at all, simply a condition that there is no need to get upset about.
- And sometimes we react with suffering to positive events, such as a compliment or an opportunity.
- The Buddha called these reactions “second darts” - the ones we throw ourselves.

# The Reactive Triangle



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**The urgency of survival needs have made the *reactive* mode very powerful in the rapidity, intensity, and inflexibility of its activations.**

# A Major Result of the Negativity Bias: Threat Reactivity

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- Two mistakes:
  - Thinking there is a tiger in the bushes when there isn't one.
  - Thinking there is no tiger in the bushes when there is one.
- We evolved to make the first mistake a hundred times to avoid making the second mistake even once.
- This evolutionary tendency is intensified by temperament, personal history, culture, and politics.
- Threat reactivity affects individuals, couples, families, organizations, nations, and the world as a whole.

# Results of Threat Reactivity (Personal, Organizational, National)

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- Our initial appraisals are mistaken:
  - Overestimating threats
  - Underestimating opportunities
  - Underestimating inner and outer resources
- We update these appraisals with information that confirms them; we ignore, devalue, or alter information that doesn't.
- Thus we end up with views of ourselves, others, and the world that are ignorant, selective, and distorted.

# Costs of Threat Reactivity

## (Personal, Organizational, National)

---

- Feeling threatened feels bad, and triggers stress consequences.
- We over-invest in threat protection.
- The boy who cried tiger: flooding with paper tigers makes it harder to see the real ones.
- Acting while feeling threatened leads to over-reactions, makes others feel threatened, and creates vicious cycles.
- The Approach system is inhibited, so we don't pursue opportunities, play small, or give up too soon.
- In the Attach system, we bond tighter to "us," with more fear and anger toward "them."

# Negative Experiences Can Have Benefits

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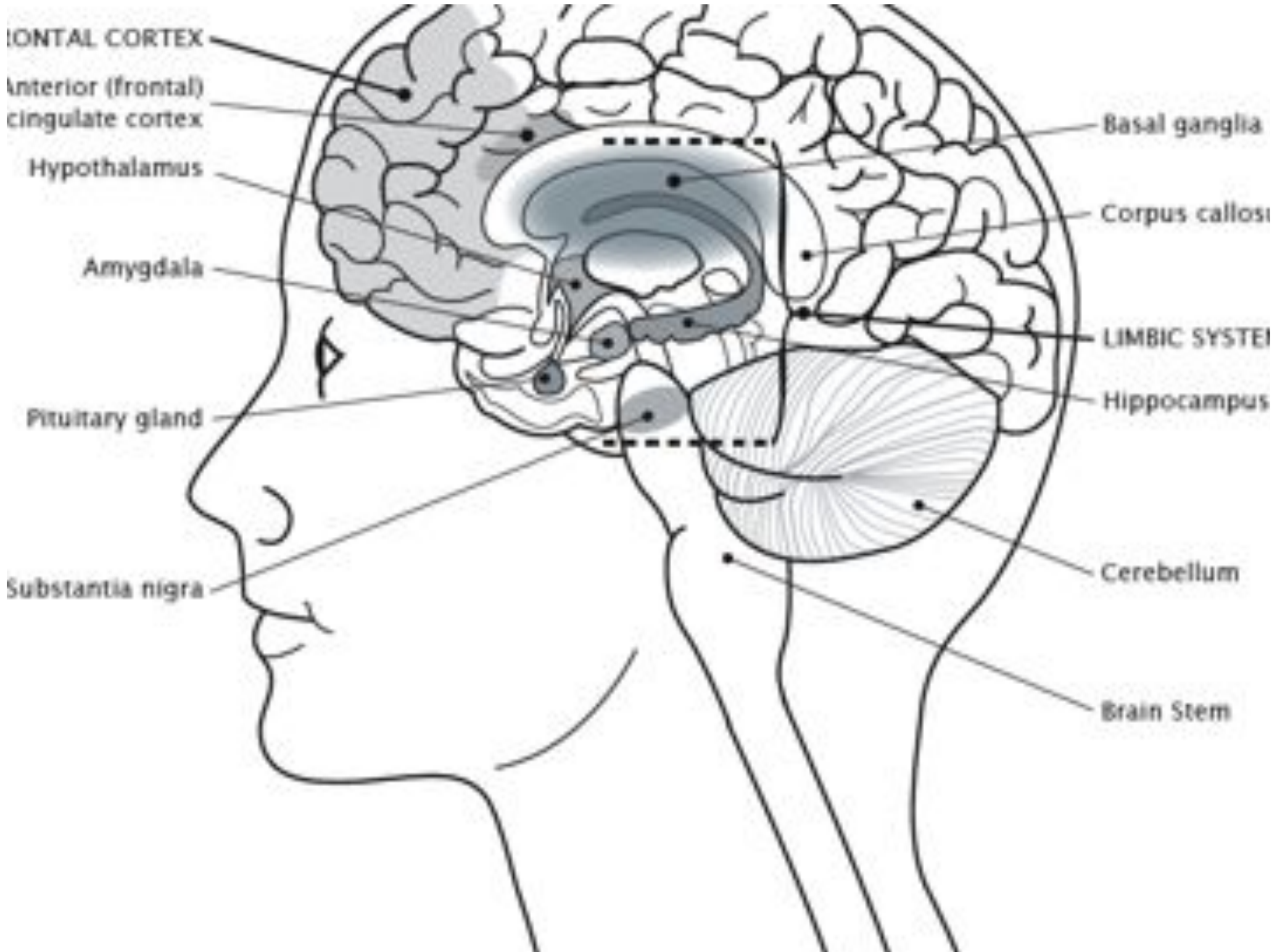
- There's a place for negative emotions:
  - Anxiety alerts us to inner and outer threats
  - Sorrow opens the heart
  - Remorse helps us steer a virtuous course
  - Anger highlights mistreatment; energizes to handle it
- Negative experiences can:
  - Increase tolerance for stress, emotional pain
  - Build grit, resilience, confidence
  - Increase compassion and tolerance for others

*But is there really any shortage of negative experiences?*

# One Neural Consequence of Negative Experiences

---

- Amygdala (“alarm bell”) initiates stress response
- Hippocampus:
  - Forms and retrieves contextual memories
  - Inhibits the amygdala
  - Inhibits cortisol production
- Cortisol:
  - Stimulates and sensitizes the amygdala
  - Inhibits and can shrink the hippocampus
- Consequently, chronic negative experiences:
  - Sensitize the amygdala alarm bell
  - Weaken the hippocampus: this reduces memory capacities and the inhibition of amygdala and cortisol production.
  - Thus creating vicious cycles in the NS, behavior, and mind



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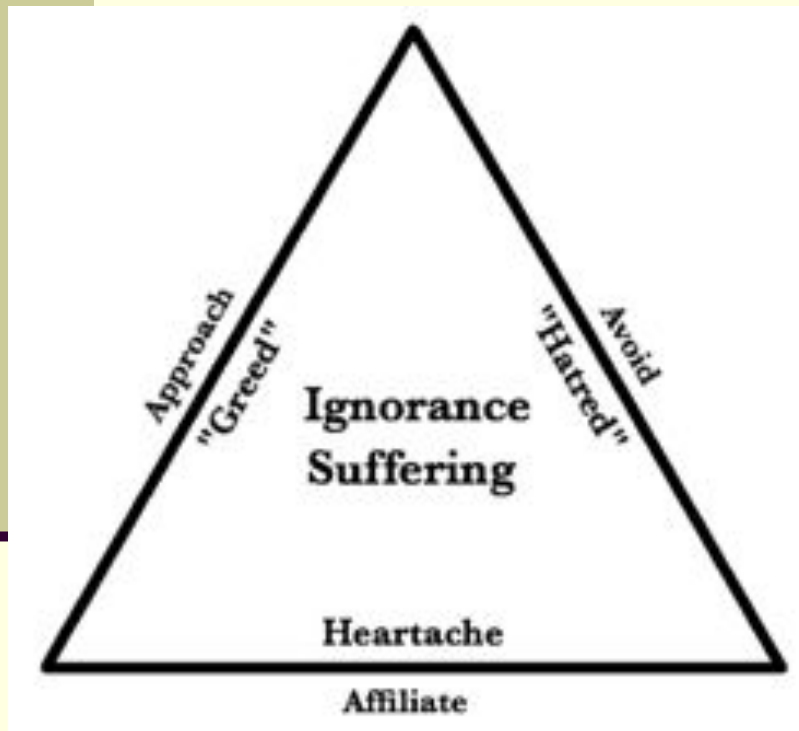
# Reactive Dysfunctions in Each System

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- **Approach** - Addiction; over-drinking, -eating, -gambling; compulsion; hoarding; driving for goals at great cost; spiritual materialism
- **Avoid** - Anxiety disorders; PTSD; panic, terror; rage; violence
- **Affiliate** - Borderline, narcissistic, antisocial PD; symbiosis; *folie a deux*; “looking for love in all the wrong places”

# Choices . . .

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**Reactive Mode**

**Or?**



**Responsive Mode**


# **“Taking the Fruit as the Path”**

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**Gladness**

**Love**

**Peace**



# Cooling the Fires

# Mindfulness of Threats and Fear

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- Mindfulness of the negativity bias itself:
  - Primes recognition of threat reactivity in general
  - Fuels correcting of cognitive errors
- Mindfulness alerts us to specific assumptions or exaggerations of threat.
- Through mindfulness, we disidentify from threat appraisals and the reactive cascade.
- Mindfulness draws us into a centered place that feels relatively strong and safe.

# Parasympathetic Activation

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- Parasympathetic inhibits sympathetic and hormonal arousal.
- Attitude: Regard stressful activation as an affliction.
- Methods for stimulating the parasympathetic nervous system:
  - Multiple, long exhalations
  - Relaxing the tongue
  - Pleasant tastes
  - Relaxing the body
- Get in the habit of rapidly activating a damping cascade when the body gets aroused.
- Regard bodily activation as just another compounded, “meaningless,” and impermanent phenomenon; don’t react to it.

# Feeling Cared About

---

- As we evolved, we increasingly turned to and relied on others to feel safer and less threatened.
  - Exile from the band was a death sentence in the Serengeti.
  - Attachment behaviors: relying on the secure base
  - The well-documented power of social support to buffer stress and aid recovery from painful experiences
- Methods:
  - Recognize it's kind to others to feel cared about yourself.
  - Look for occasions to feel cared about and take them in.
  - Deliberately bring to mind the experience of being cared about in challenging situations.
  - Be caring yourself.

# Feeling Stronger and Safer

---

- Be mindful of an experience of strength (e.g., physical challenge, standing up for someone).
- Staying grounded in strength, let things come to you without shaking your roots, like a mighty tree in a storm.
- Be mindful of:
  - Protections (e.g., being in a safe place, imagining a shield)
  - People who care about you
  - Resources inside and outside you
- Let yourself feel as safe as you reasonably can:
  - Noticing any anxiety about feeling safer
  - Feeling more relaxed, tranquil, peaceful
  - Releasing bracing, guardedness, vigilance

# Benefits of Unilateral Virtue

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- It simplifies things: all you have to do is just live by your own code, and others will do whatever they do.
- It feels good in its own right.
- It minimizes inflammatory triggers, evokes good treatment, empowers you to ask for it.
- It stands you on the moral high ground.

*Remaining virtuous in the face of provocation is a profound expression of non-harming and benevolence.*

---

*Wisdom is . . . all about understanding the underlying spacious and empty quality of the person and of all experienced phenomena.*

*To attain this quality of deep insight, we must have a mind that is quiet and malleable.*

*Achieving such a state of mind requires that we first develop the ability to regulate our body and speech so as to cause no conflict.*

Venerable Ani Tenzin Palmo

---

*There are those who do not realize that  
one day we all must die.  
But those who do realize this  
settle their quarrels.*

The Buddha

# Liking and Wanting

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- Distinct neural systems for liking and wanting
- In the brain: feeling tone --> enjoying (liking) --> wanting --> pursuing
  - Wanting without liking is hell.
  - Liking without wanting is heaven.
- The distinction between *chandha* (wholesome wishes and aspirations) and *tanha* (craving)
- But beware: the brain usually wants (craves) and pursues (clings) to what it likes.

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*I make myself rich by making my wants few.*

Henry David Thoreau

# Practicing with Wanting

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- *Chandha* crowds out *tanha*: energize wholesome wants (e.g., practice, sobriety, love, aspirations).
- 2nd Foundation of Mindfulness: Surround strongly pleasant or unpleasant feeling tones with spacious awareness - the “shock absorber” - without tipping into craving.
- Regard wants as just more mental content. Investigate them. Watch them come and go. No compulsion, no “must.”
- Be skeptical of the predicted rewards of acting on the feeling tone. They’re usually simplistic and inflated, based on the primitive subcortical regions that produce them. Disenchanted.
- Pick a key want and just don’t do it.

---

*The Great Way is easy.*

*For one with no preferences.*

Third Zen Patriarch


---

*If you let go a little, you will have a little happiness.*

*If you let go a lot, you will have a lot of happiness.*

*If you let go completely, you will be completely happy.*

Ajahn Chah



# Healing Old Pain

# How to Take in the Good

---

1. Look for positive **facts**, and let them become positive experiences.
2. Savor the positive experience:
  - Sustain it for 10-20-30 seconds.
  - Feel it in your body and emotions.
  - Intensify it.
3. Sense and intend that the positive experience is soaking into your brain and body - registering deeply in emotional memory.

# Using Memory Mechanisms to Help Heal Painful Experiences

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- The machinery of memory:
  - When explicit or implicit memory is re-activated, it is re-built from schematic elements, not retrieved *in toto*.
  - When attention moves on, elements of the memory get re-consolidated.
- The open processes of memory activation and consolidation create a window of opportunity for shaping your internal world.
- Activated memory tends to associate with other things in awareness (e.g., thoughts, sensations), esp. if they are prominent and lasting.
- When memory goes back into storage, it takes associations with it.
- You can imbue implicit and explicit memory with positive associations.

# The Fourth Step of TIG

---

- When you are having a positive experience:
  - Sense the current positive experience sinking down into old pain, and soothing and replacing it.
- When you are having a negative experience:
  - Bring to mind a positive experience that is its antidote.
- In both cases, have the positive experience be big and strong, in the forefront of awareness, while the negative experience is small and in the background.
- You are not resisting negative experiences or getting attached to positive ones. You are being kind to yourself and cultivating positive resources in your mind.

# Psychological Antidotes

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## Approaching Opportunities

- Satisfaction, fulfillment --> Frustration, disappointment
- Gladness, gratitude --> Sadness, discontentment, “blues”

## Affiliating with “Us”

- Attunement, inclusion --> Not seen, rejected, left out
- Recognition, acknowledgement --> Inadequacy, shame
- Friendship, love --> Abandonment, feeling unloved or unlovable

## Avoiding Threats

- Strength, efficacy --> Weakness, helplessness, pessimism
- Safety, security --> Alarm, anxiety
- Compassion for oneself and others --> Resentment, anger

# A Serenity Prayer

---

*May I find the serenity to accept the things that cannot be changed,  
the courage to change the things which should be changed,  
and the wisdom to distinguish the one from the other.*

*Living one day at a time,  
Enjoying one moment at a time,  
Accepting hardship as a pathway to peace,  
Taking this imperfect world as it is,  
Not as I would have it,  
Trusting in my refuges,  
May I be reasonably happy in this life,  
And supremely happy forever some day.*

# Great Books

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See [www.RickHanson.net](http://www.RickHanson.net) for other great books.

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See [www.RickHanson.net](http://www.RickHanson.net) for other scientific papers.

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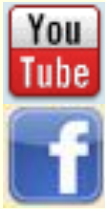
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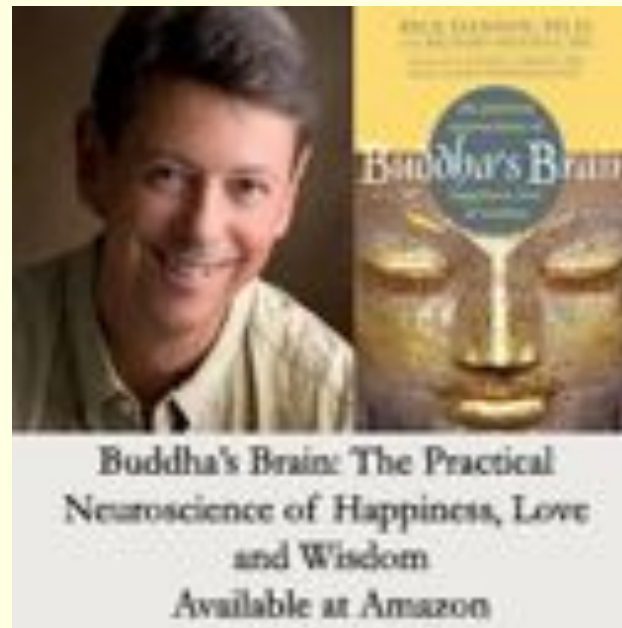
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