

Paper Tiger Paranoia

Networker Symposium

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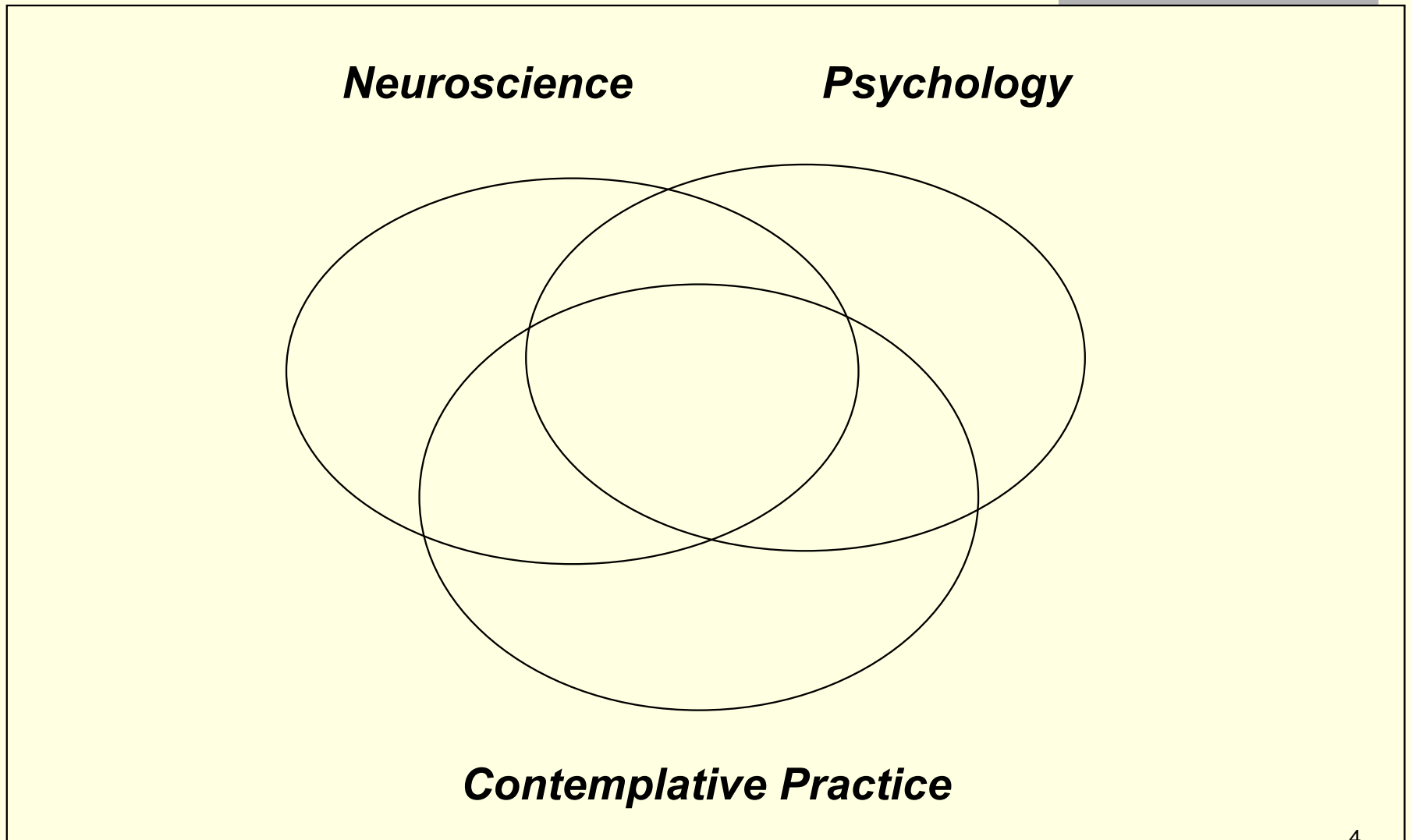
Topics

- **Perspectives**
- **The evolution of fear**
- **Taking in the good**
- **Internalizing safety**
- **Neural networks of inner peace**



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



**You can use your mind
to change your brain
to change your mind for the better.**



This is self-directed neuroplasticity.

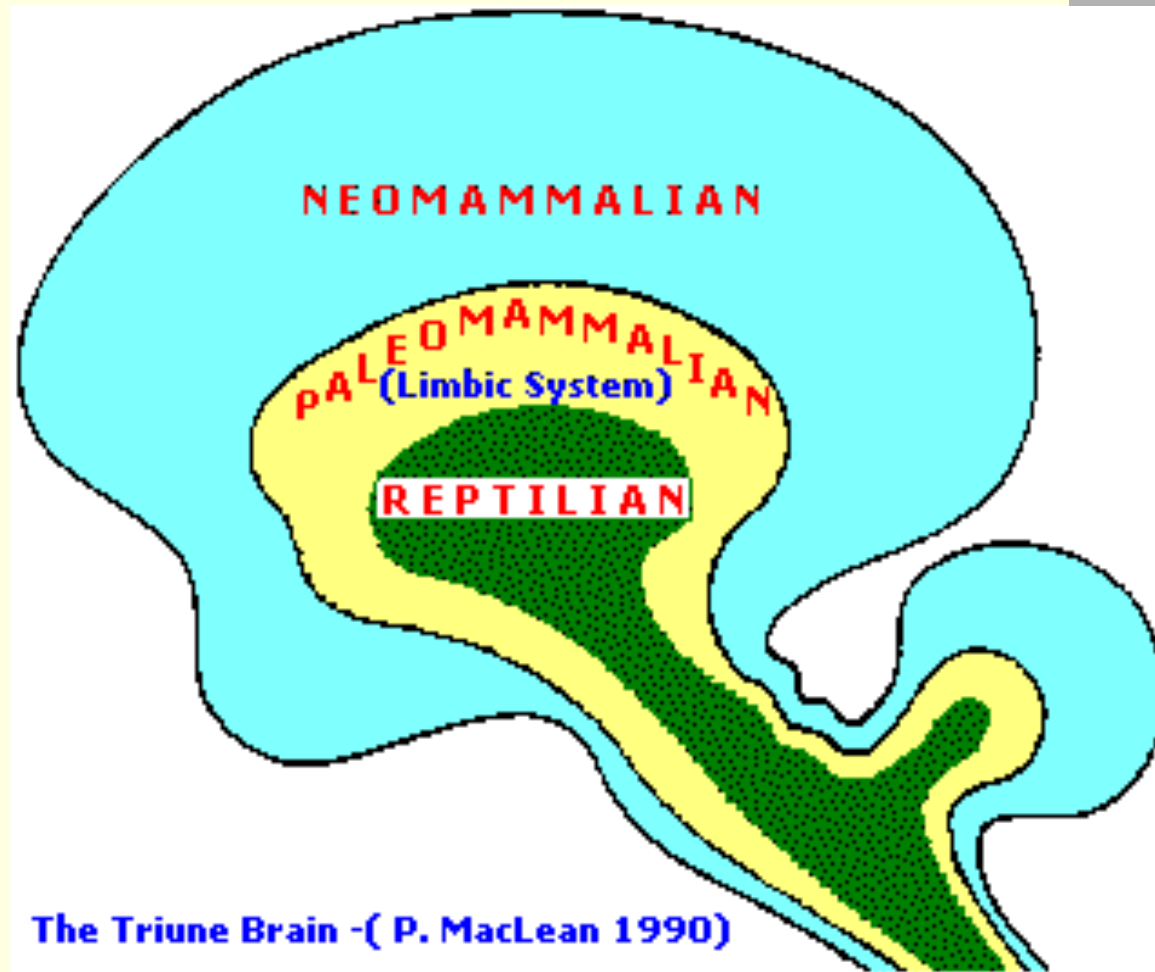


The Evolution of Fear

Evolution

- ~ 4+ billion years of earth
- 3.5 billion years of life
- 650 million years of multi-celled organisms
- 600 million years of nervous system
- ~ 200 million years of mammals
- ~ 60 million years of primates
- ~ 6 million years ago: last common ancestor with chimpanzees, our closest relative among the “great apes” (gorillas, orangutans, chimpanzees, bonobos, humans)
- 2.5 million years of tool-making (starting with brains 1/3 our size)
- ~ 150,000 years of *homo sapiens*
- ~ 50,000 years of modern humans
- ~ 5000 years of blue, green, hazel eyes

Evolutionary History



The Triune Brain

Three Stages of Brain Evolution

■ 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”

Negativity Bias: Causes in Evolution

- “Sticks” - Predators, natural hazards, social aggression, pain (physical and psychological)
- “Carrots” - Food, sex, shelter, social support, pleasure (physical and psychological)
- During evolution, avoiding “sticks” usually had more influence over survival than approaching “carrots.”
 - Urgency - Usually, sticks must be dealt with immediately, while carrots allow a longer approach.
 - Impact - Sticks usually determine mortality, carrots not; if you fail to get a carrot today, you’ll likely have a chance at a carrot tomorrow; but if you fail to avoid a stick today - whap!¹²
- no more carrots forever.

With the negativity bias, the Avoid system hijacks the Approach and Attach systems, inhibiting them or using them for its ends.

Negativity Bias: Physiology and Neuropsychology

- Physiology:
 - Greater bodily arousal to negative stimuli
 - Pain is produced anywhere; pleasure is circumscribed.
- Neuropsychology:
 - Separate, low-level systems for negative and positive stimuli
 - Right hemisphere specialized for negative stimuli
 - Greater brainwave responses to negative stimuli
 - ~ 65% of amygdala sifts for negative stimuli
 - The amygdala-hippocampus system flags negative experiences prominently in memory: *like Velcro for negative experiences but Teflon for positive ones.*
 - More negative “basic” emotions than positive ones

Negativity Bias: Attention and Learning

- Negative stimuli command more attention.
 - They're less common and thus more informative.
 - They're perceived more easily and quickly.
 - Reaction times are faster for angry faces than happy ones.
 - Empathy is elicited more for negative experiences.
- In nature: multiple chances to learn how to approach rewards, but no chance for trial-and-error learning about dangers.
 - Learning based on punishments is generally faster.
 - Strong dislikes are acquired more quickly than strong likes.

Negativity Bias: Consequences (1)

- Negative beats positive head to head:
 - “Endowment effect,” “prospect function,” “loss aversion”:
People will do more to avoid a loss than to acquire a gain.
 - Immorality contaminates more than morality elevates.
 - “Pariahs” contaminate more than “saints” elevate.

- Negative beats positive in combination:
 - Negative information about a person shapes opinions most.
 - It’s easy to create learned helplessness, but hard to undo.
 - In health, parenting, and relationships, absence of negative generally matters more than presence of positive.

Negativity Bias: Consequences (2)

- Negative is more differentiated:
 - There are more words for negative experiences.
- Negative is more alarming than positive is reassuring:
 - Negativity of negative stimuli grows faster with approach in time or space than positivity of positive stimuli.
- Negative vicious cycles:
 - Minimal inhibitory feedback on cortisol
 - Negative social behaviors produce confirming feedback.
- Individual differences in negativity bias: vulnerabilities for reactivity, stress, anxiety, anger, and depression ¹⁷

Health Consequences of Chronic Stress

■ Physical:

- Weakened immune system
- Inhibits GI system; reduced nutrient absorption
- Reduced, dysregulated reproductive hormones
- Increased vulnerabilities in cardiovascular system
- Disturbed nervous system

■ Mental:

- Lowers mood; increases pessimism
- Increases anxiety and irritability
- Increases learned helplessness (especially if no escape)
- Often reduces approach behaviors (less for women)
- Primes aversion (SNS-HPAA negativity bias)

A Major Result of the Negativity Bias: Threat Reactivity

- 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)

- 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."

Three Requirements of Survival

- To survive, living organisms *must* try to:
 - Separate themselves from the world (e.g., membrane of microbe, skin of primate, personal identity of human)
 - Stabilize equilibria inside the body and mind, and within systems (e.g., “optimal distance” in relationship)
 - Attain rewards and avoid harms
- Alarms sound whenever these necessary strategies run into trouble.
- Animals have a nervous system: alarms below awareness create a background of unease; those entering awareness are unpleasant, even painful.

The Three Marks of Existence

Unfortunately, these strategies are at odds with core characteristics of existence (noted by the Buddha):


- Everything is connected to everything else - so it's impossible to separate body and nature, me and you.
- Everything changes - so it's impossible to keep things stable in the body, mind, relationships, or world.
- Rewards are fleeting, costly, or unobtainable, and harms are inevitable - so it's impossible to hold onto pleasure and escape pain.

The Truth of Suffering

- The contradictions between what animals need to do to survive, and the nature of existence, create ongoing alarm signals: physical and emotional discomfort, ranging from mild to intense.
- In Pali - the language of early Buddhism - the word used for this discomfort is *dukkha*, typically translated as “suffering.” Its roots are “du,” meaning not-good or not-right, and “kha,” which is where the hub of a wheel meets an axle: a “wobbly grinding.”
- To live, we must bear inevitable, continual wobbly grinding in the body, mind, relationships, and world.

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.



Taking in the Good

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.

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.

Kinds of “Good” to Take in

- The small pleasures of ordinary life
- The satisfaction of attaining goals or recognizing accomplishments - especially small, everyday ones
- Feeling grateful, contented, and fulfilled

- Things are alright; nothing is wrong; there is no threat
- Feeling safe and strong
- The peace and relief of forgiveness

- Being included, valued, liked, respected, loved by others
- The good feelings that come from being kind, fair, generous
- Feeling loving

- Recognizing your positive character traits
- Spiritual or existential realizations

Benefits of Positive Emotions

- The benefits of positive emotions are a proxy for many of the benefits of TIG.
- Emotions organize the brain as a whole, so positive ones have far-reaching benefits, including:
 - Promote exploratory, “approach” behaviors
 - Lift mood; increase optimism, resilience
 - Counteract trauma
 - Strengthen immune and protect cardiovascular systems
 - Overall: “broaden and build”
 - Create positive cycles

TIG and the Stress Response

- Activates and thereby strengthens general, top-down PFC-hippocampal (PFC-H) capabilities, which become enhanced resources for coping
- Generally desensitizes amygdaloid-sympathetic nervous system (A-SNS) networks
- Internalizes specific regulatory resources, which strengthens PFC-H and inhibits A-SNS (e.g., feeling soothed or encouraged)

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.

Neuropsychology of TIG4

- Extinction, through pairing a negative experience with a powerful positive one.
- Reinforces maintaining PFC-H activation and control during A-SNS arousal, so PFC-H is not swamped or hijacked
- Reinforcement of self-directed regulation of negative experiences; enhances sense of efficacy
- Dampens secondary associations to negative material; that reduces negative experiences and behavior, which also reduces vicious cycles
- Reduces defenses around negative material; thus more amenable to therapeutic help, and to insight

Psychological Antidotes

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



Internalizing Safety

Parasympathetic Nervous System

- The “rest-and-digest” parasympathetic nervous system (PNS) balances and dials down the “fight-or-flight” sympathetic nervous system
- It soothes, resets, renews the body-mind. Though the SNS gets more press, the PNS is more primary.

Cooling the Fires

- Regard stressful activation as an affliction.
- Get in the habit of rapidly activating a PNS, “cooling” cascade when the body activates:
 - Inhale super-fully; hold it; l-o-n-g exhalation; repeat
 - Relax the tongue
 - Touch the lips
 - Relax the body
- Regard bodily activation as just another compounded, “meaningless,” and impermanent phenomenon; don’t react to it.

Elemental Safety

- Fear learning associates an inherently unpleasant stimulus - the “unconditioned stimulus” (US) - with a “conditioned stimulus” (CS) that is not inherently aversive - e.g., rats trained to expect an awful noise (US) following a puff of air (CS).
- Living itself can become the conditioned stimulus for anxious people.
- What’s needed are many small moments of associating basic parasympathetic alrightness to life: this breath is alright; this interaction is alright; I’m actually alright even if there is anxiety.
- Repeatedly practice feeling safe while engaged in basic, simple, brief bodily activities, such as touching, breathing, chewing, walking, hearing, seeing, etc.



Neural Networks of Inner Peace

Dual Modes

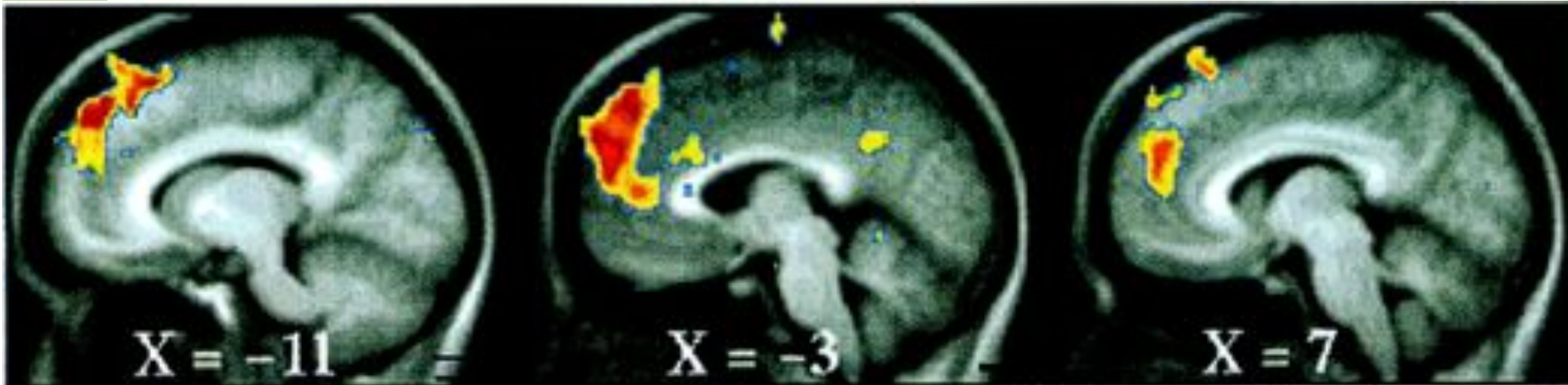
“Doing”

Focused attention
Goal-directed
Sense of craving
Personal, self-oriented perspective
Lost in thought, mind wandering
Conceptual
Future- or past-focused
Much verbal activity
Firm beliefs
Evaluative
Looping contents of mind
Tightly connected experiences
Focal view
Prominent self-as-object
Prominent self-as-subject

“Being”

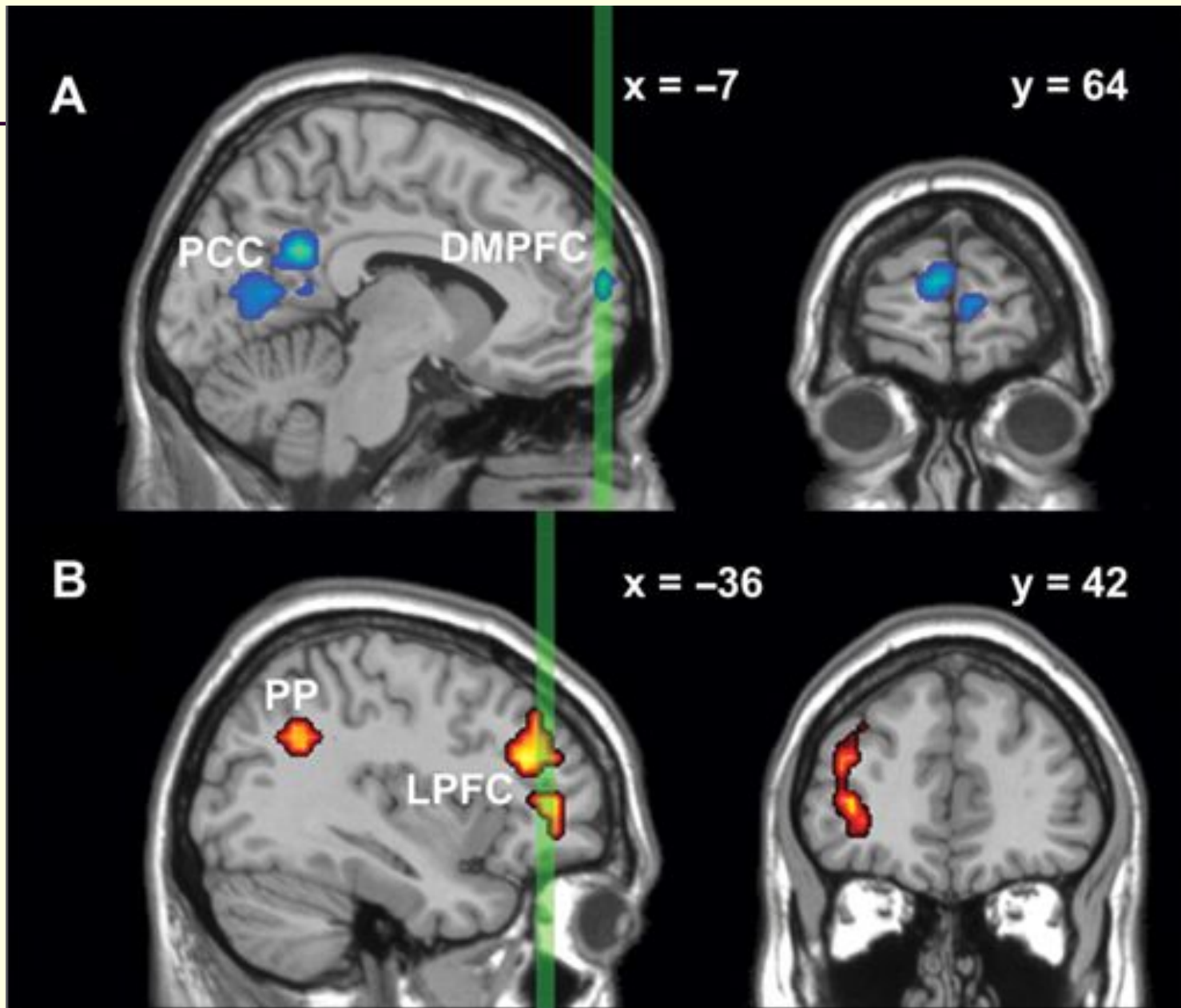
Open awareness
Nothing to do, nowhere to go
Sense of peace
Impersonal, 3rd person perspective
Mindful presence
Sensory
Now-focused
Little verbal activity
Uncertainty, not-knowing
Nonjudgmental
Transient contents of mind
Loosely connected experiences
Panoramic view
Minimal or no self-as-object
Minimal or no self-as-subject

Increased Medial PFC Activation Related to Self-Referencing Thought



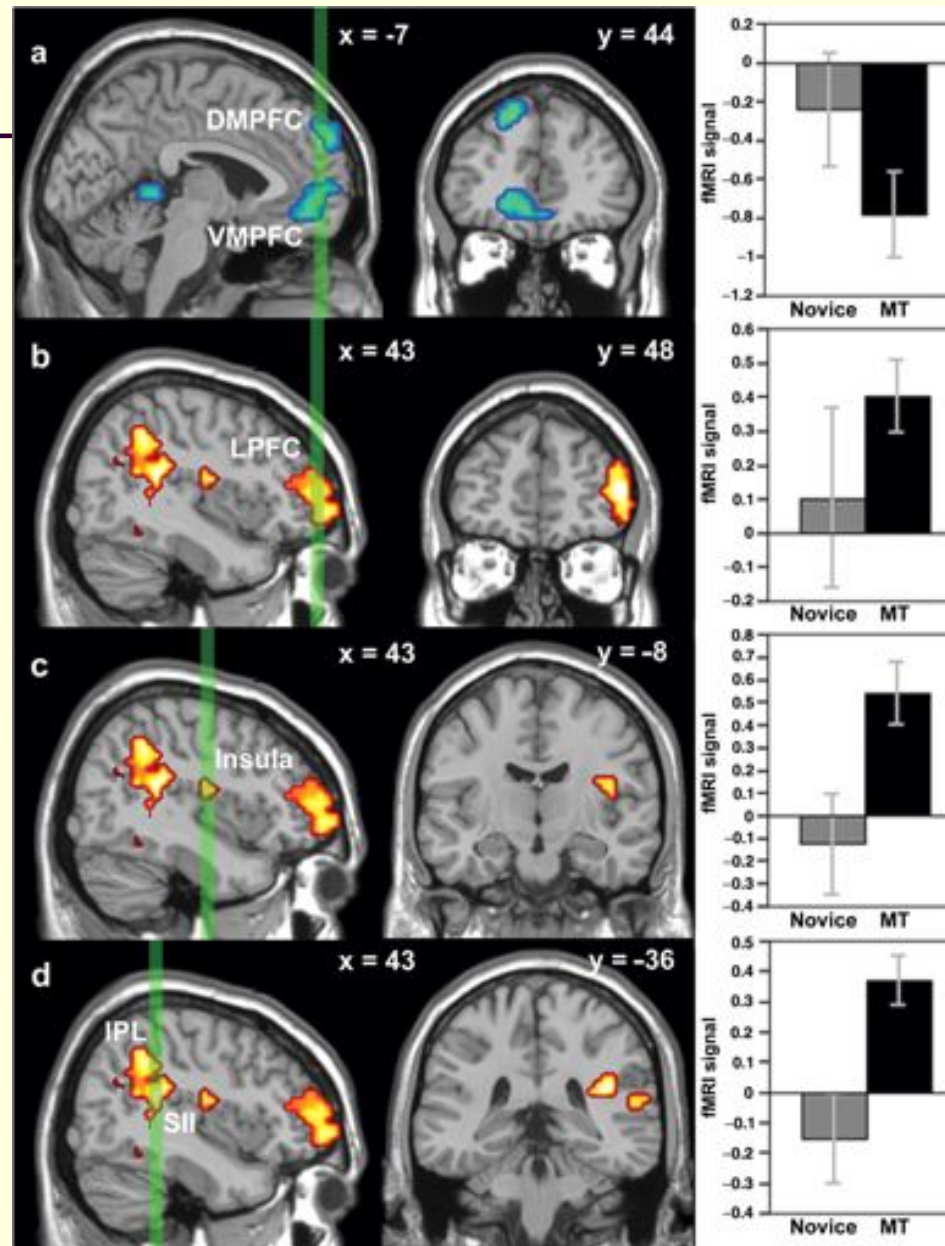
Gusnard D. A., et.al. 2001. *PNAS*, 98:4259-4264

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) and Open Awareness (red) Conditions (following 8 weeks of MT)



Dual Modes

“Doing”

Focused attention
Goal-directed
Sense of craving
Personal, self-oriented perspective
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Future- or past-focused
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Minimal or no self-as-object
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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

- Involves insula and mesial (middle) parietal lobes, which integrate sensory maps of the body, plus right hemisphere, for holistic (gestalt) perception
- Practice
 - 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
- This sense of the whole may be present for a second or two, then crumble; just open up to it 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.

*Trust in awareness, in being awake,
rather than in transient and unstable conditions.*

Ajahn Sumedho

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

See www.RickHanson.net for other great books.

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- Begley, S. 2007. *Train Your Mind, Change Your Brain*. Ballantine.
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Key Papers - 1

See www.RickHanson.net for other scientific papers.

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Key Papers - 2

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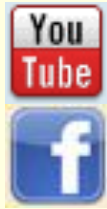
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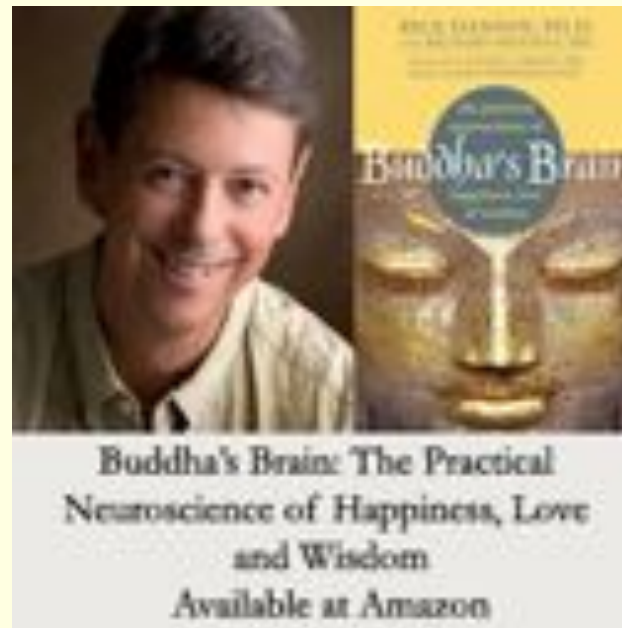
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Where to Find Rick Hanson Online



<http://www.youtube.com/BuddhasBrain>

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