

Buddha's Brain:

Practical Steps toward Not-Self in Your Brain

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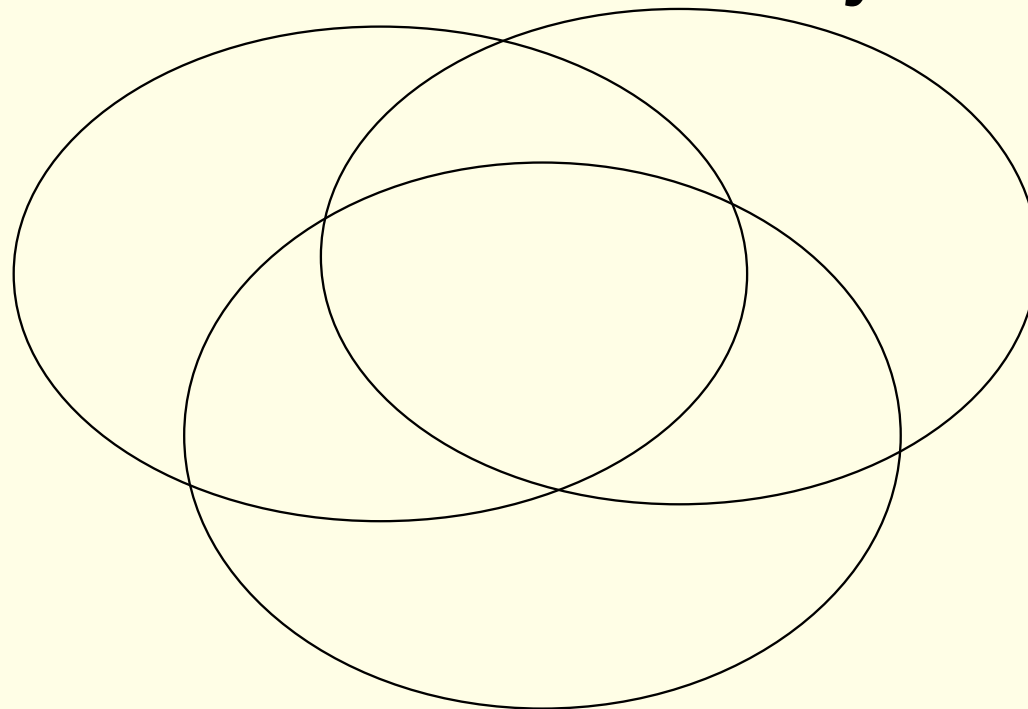
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Common - and Fertile - Ground

Neuroscience

Psychology

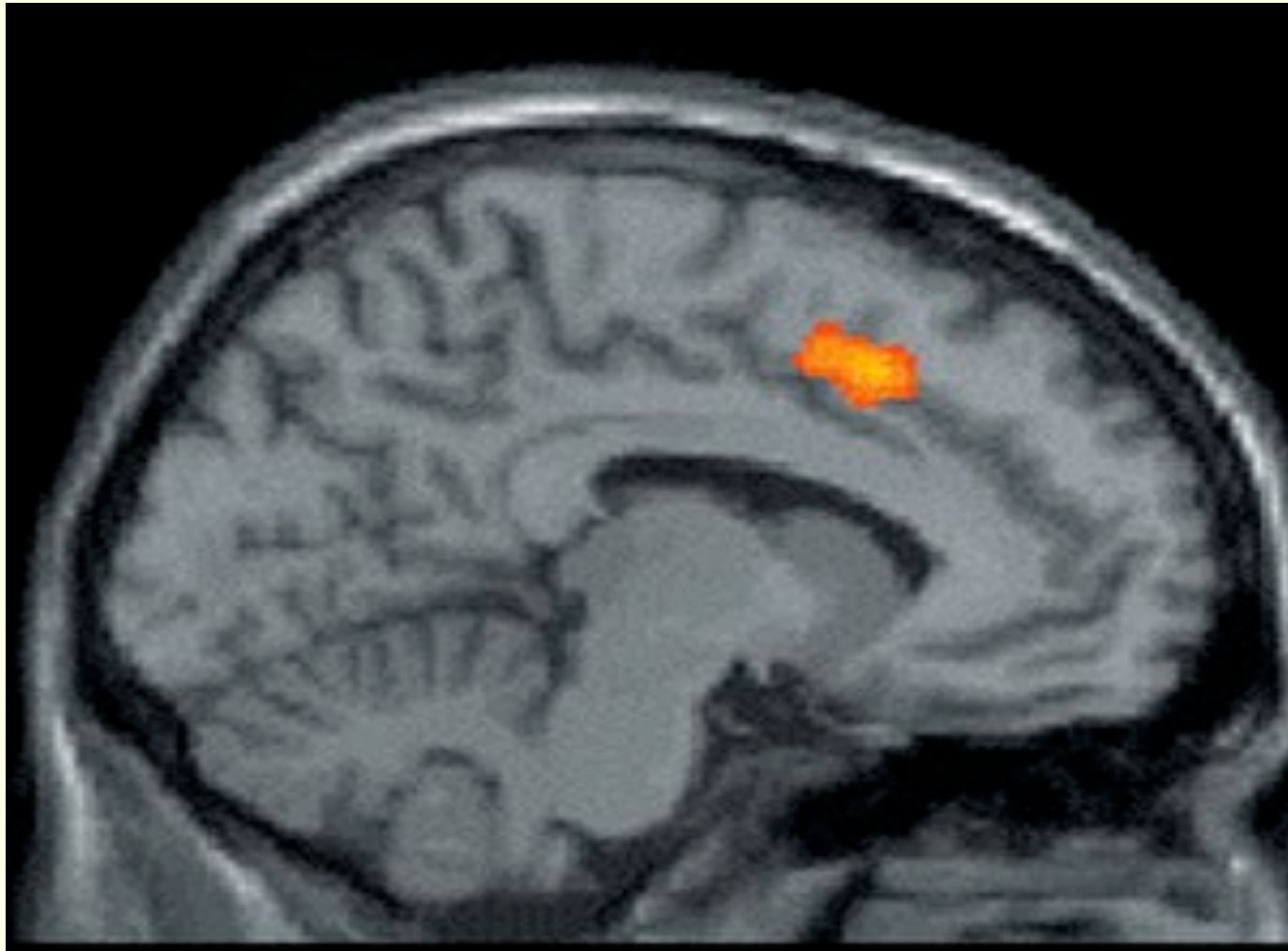


Buddhism

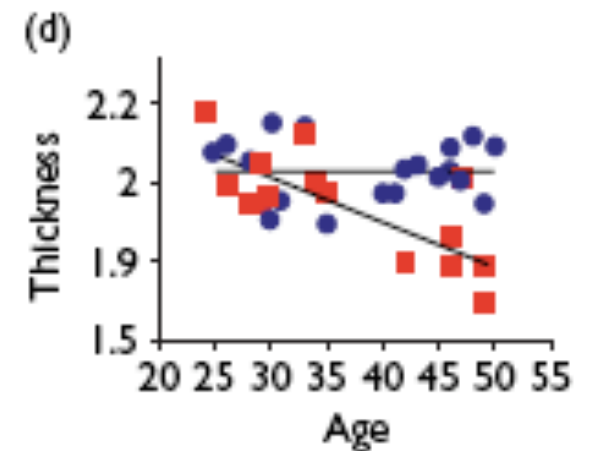
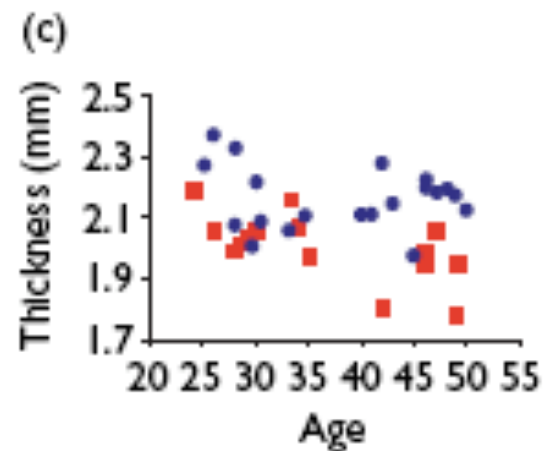
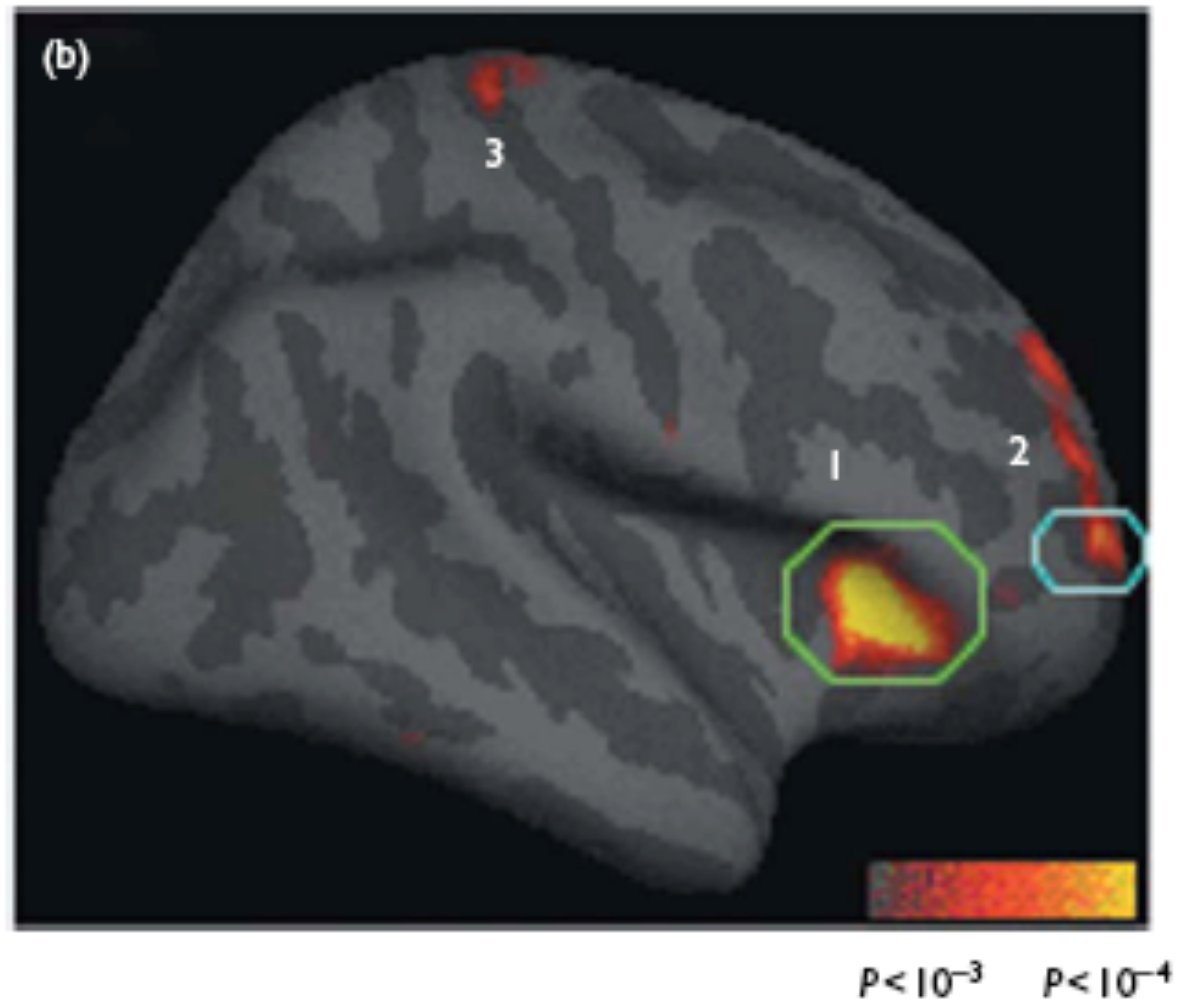
The Mind/Brain System

- “Mind” = flow of information within the nervous system
 - Information is represented by the nervous system.
 - Most of the mind is forever unconscious.
 - The headquarters of the nervous system is the brain.
- In essence then, apart from hypothetical transcendental factors, your mind *is* what your brain *does*.
- As brain changes, mind changes. As mind changes, brain changes. Mental activity - the flow of information - maps to neural activity, the flow of matter and energy.
- Therefore, you can use your mind to change your brain to change your mind - to benefit your whole being and every other being you touch.

“Ardent, Resolute, Diligent, and Mindful”



Lazar, et al. 2005.
Meditation experience is associated with increased cortical thickness.
Neuroreport, 16, 1893-1897.





"We ask, 'What is a thought?'

We don't know,

yet we are thinking continually."

- Ven. Tenzin Palmo



Definitions

- **Person** - The body-mind as a whole
 - Contains knowledge, personal memories, skills, temperament, personality tendencies, mood, etc.
 - Has considerable consistency over time
 - Deserves kindness and justice; is morally culpable

- **Self** - “I, me, and mine”
 - The psychological self; the “I” in “I am happy, I want a cookie, I know $2+2=4$, I am for justice”; the “me” in “Do you love me?”
 - Sense of being the owner of experiences and the agent of actions

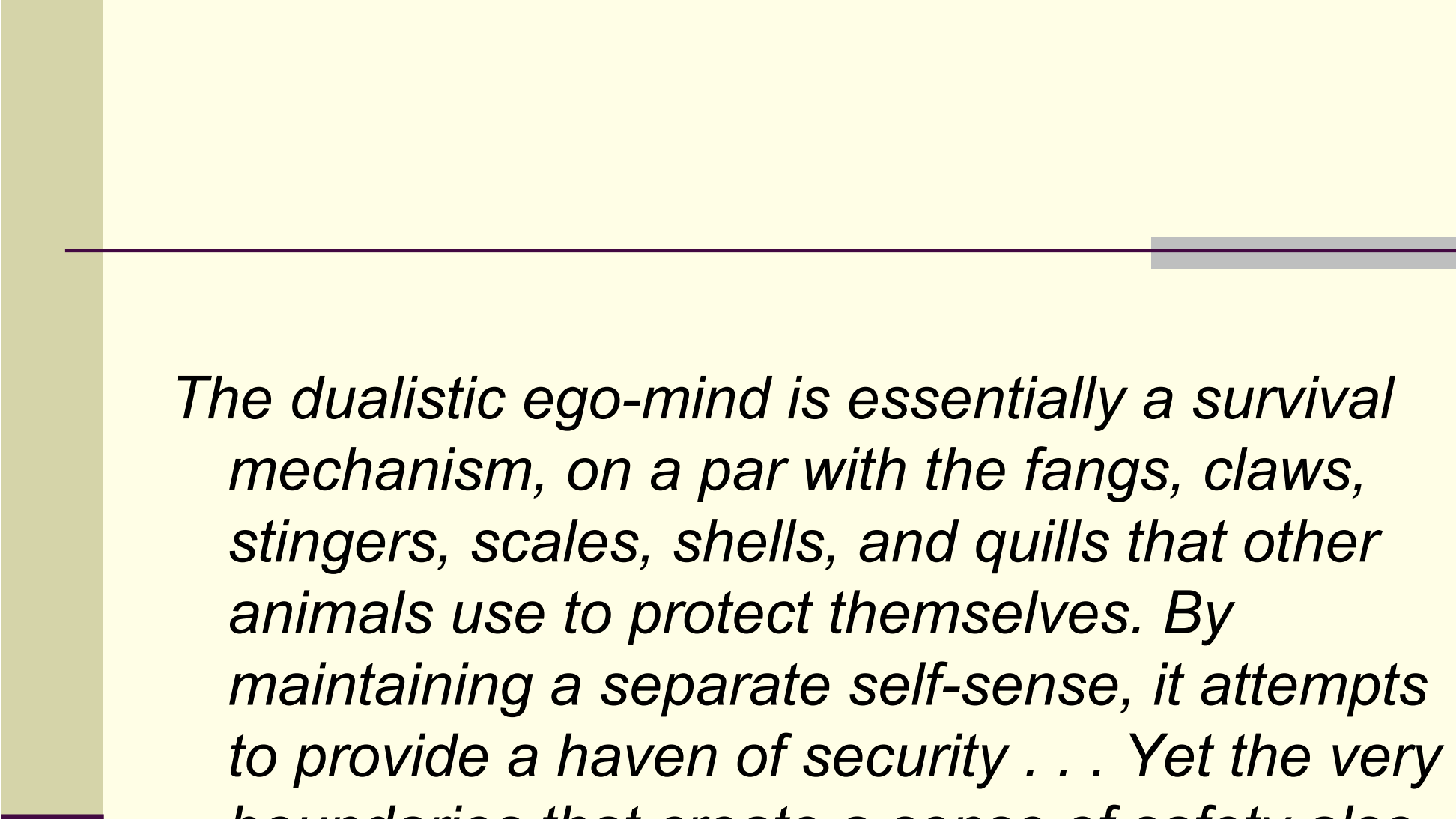
- **Awareness** - The field in which the mind (as yet mysteriously) represents aspects of the mind to itself
 - The “global workspace” in which representations of the person, self-related functions, and subjectivity arise and pass away

Conventional Notions of “Self”

- **Unified** - coherent; just one; a being, an entity; some one looking out through your eyes.
- **Stable** - unchanging in its fundamentals; the core self as a child still feels present in you today
- **Independent** - things happen to the self, but it remains free of their effects in its essence.
- **Identity** - That which one is; that with which there is the greatest identification

Actual Experience of “Self”

- **Compounded** – Made up of many parts; one self vows to exercise early, another self turns off the alarm clock
- **Impermanent** – More or less present at different times; different aspects come forward at different times
- **Dependent** – Developed in interactions with caregivers and peers and encounters with the world; grounded in evolution; activating and deactivating as a means to the ends of the organism; especially responsive to opportunities and threats; self organizes around clinging; there is a process of *selfing* rather than a static, fixed, unchanging entity.
- **Part of the person** – There is awareness of aspects of self as contents within awareness like any others

A decorative vertical bar in a light olive green color runs along the left edge of the slide. A thin horizontal line in a dark purple color spans the width of the slide, intersecting the vertical bar. On the right side of the horizontal line, there is a small rectangular block in a light grey color.

The dualistic ego-mind is essentially a survival mechanism, on a par with the fangs, claws, stingers, scales, shells, and quills that other animals use to protect themselves. By maintaining a separate self-sense, it attempts to provide a haven of security . . . Yet the very boundaries that create a sense of safety also leave us feeling cut off and disconnected.

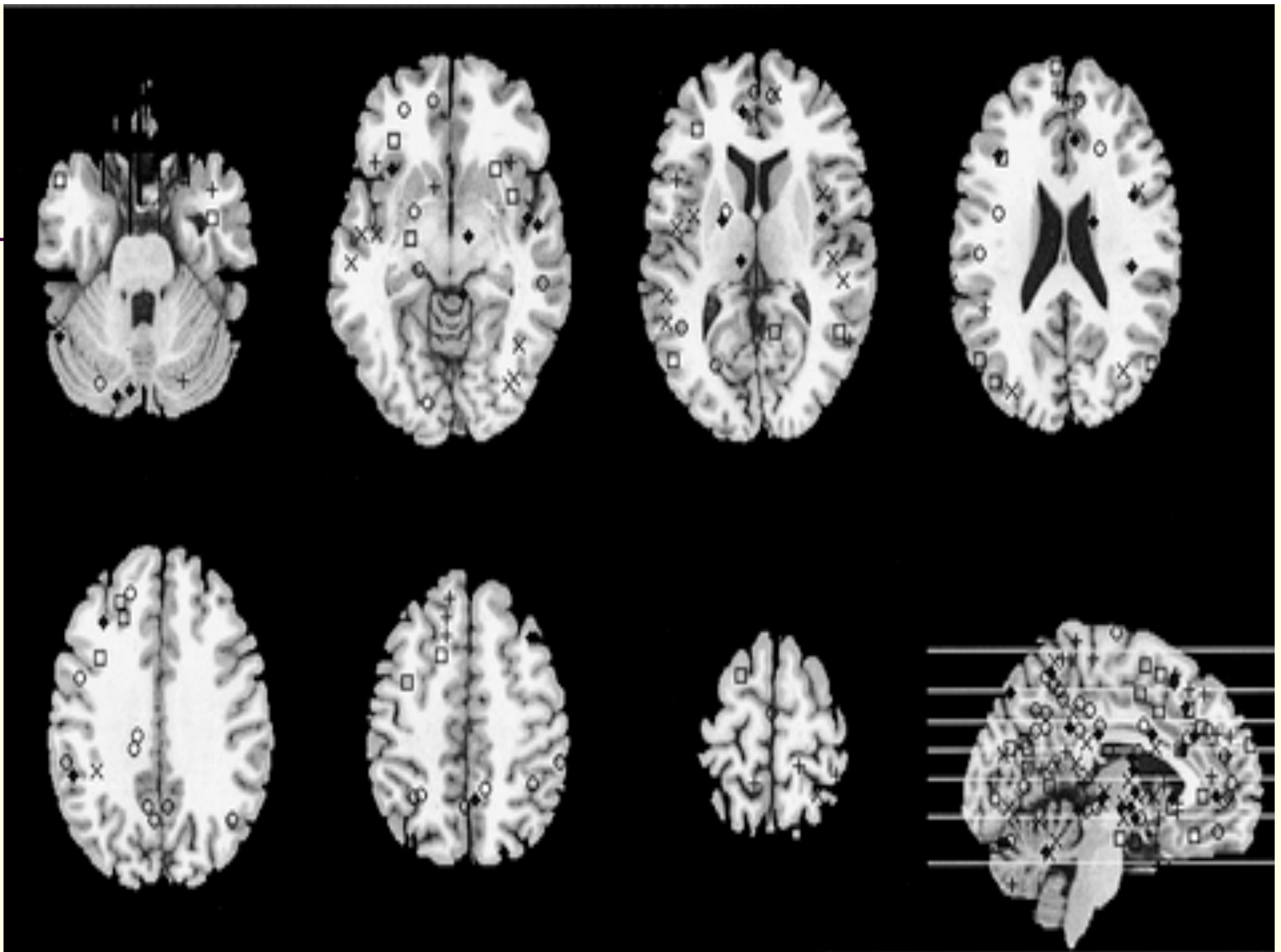
John Welwood

Actual Experience of “Self”

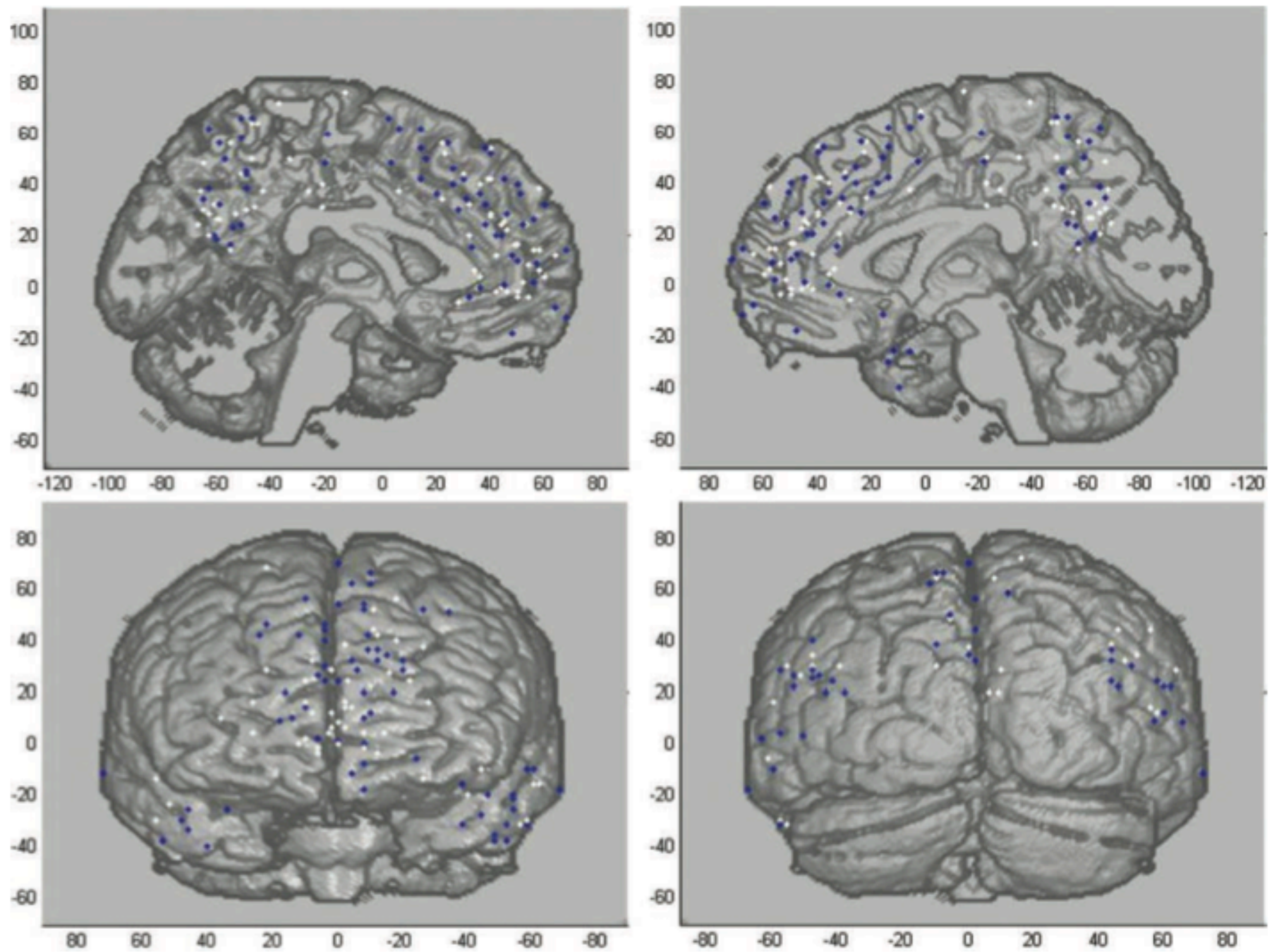
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Properties of Self in Your Brain

- **Compounded** – Distributed systems and sub-systems; no homunculus looking through your eyes
- **Impermanent** – Circuits light up and deactivate; fluid, transient
- **Dependent** – Dependent on neural structures and processes; dependent on the evolution of specialized neural tissues (e.g., spindle cells); responsive to stimuli;
- **Part of the person** – Self-related activations in neural circuitry are just a tiny fraction of the total activations in the brain
 - The neural circuitry associated with self representations or functions also performs many other activities unrelated to self.
 - In the brain, self is not special.



Brain activations of “selfing” - Gillihan, et al., Psych Bulletin, 1/2005



Legrand and Ruby, 2009. What is self-specific? [White = self; blue = other]

Subjectivity Doesn't Equal a Subject

- Ordinary awareness has an inherent subjectivity, a localization to a particular perspective (e.g., to my body, not yours).
- The brain indexes across experiences of subjectivity to create an apparent subject.
- That apparent subject is elaborated and layered through the maturation of the brain, notably regions of the prefrontal cortex.
- But there is no subject *inherent* in subjectivity!
- Awareness requires subjectivity, but not a subject.

What Self?


In sum, from a neurological standpoint, the everyday feeling of being a unified self is an utter illusion:

- The apparently coherent and solid “I” is actually built from many neural subsystems, with no fixed center.
- The apparently stable “I” is produced by variable and transient activations of neural circuits.
- The apparently independent “I” depends on neural circuitry, the evolutionary processes that built them, critical interactions with others to shape those circuits, and the stimuli of the moment.

Neurologically, self is “empty” - without absolute, inherent existence.


Self Is Like a Unicorn

- Self-related patterns of information and neural activity are as real as those that underlie the smell of roses.
- But that which they point to – a unified, enduring, independent “I” – just doesn’t exist.
- Just because we have a sense of self does not mean that we are a self. The brain strings together heterogenous moments of self-ing and subjectivity into an illusion of homogenous coherence and continuity.
- Real representations in the brain of a horse point to something that is also real. But the real representations of a unicorn in the brain point to something that is not real.
- The real representations of the self in the brain point to another mythical creature: the apparent self.



Selflessness is not a case of something that existed in the past becoming nonexistent. Rather, this sort of “self” is something that never did exist. What is needed is to identify as nonexistent something that always was nonexistent.

The Dalai Lama



When we recognize that the things we identify as our self are impermanent and bound up with suffering, we realize they lack the essential marks of authentic selfhood and we thereby stop identifying with them.

Bhikkhu Bodhi

“Self” Has Its Uses

- A convenient way to distinguish one person from another
- Brings a sense of continuity to life's experiences
- Adds verve and commitment to relationships
- People without self structures have impaired relationships.
- Self-related processes helped our ancestors succeed in increasingly social hunter-gatherer bands in which interpersonal dynamics played a strong role in survival.
- The evolution of relationships fostered the evolution of self and vice versa; the benefits of self have thus been a factor in the evolution of the brain.
- Self has been stitched into human DNA by reproductive advantages slowly accumulating across a hundred thousand generations.

Selfing Leads to Suffering

- When “I, me, and mine” are mental objects like any other, there’s no problem.
 - For example, the Buddha routinely used “I” and “you.”
- But when we privilege self-representations through identifying with them or defending or glorifying them . . . Then we suffer, and create suffering for others.
- The key is to be able to move dextrously into and back out of self-representations; that’s skillful means.

“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.

Dual Modes of Being

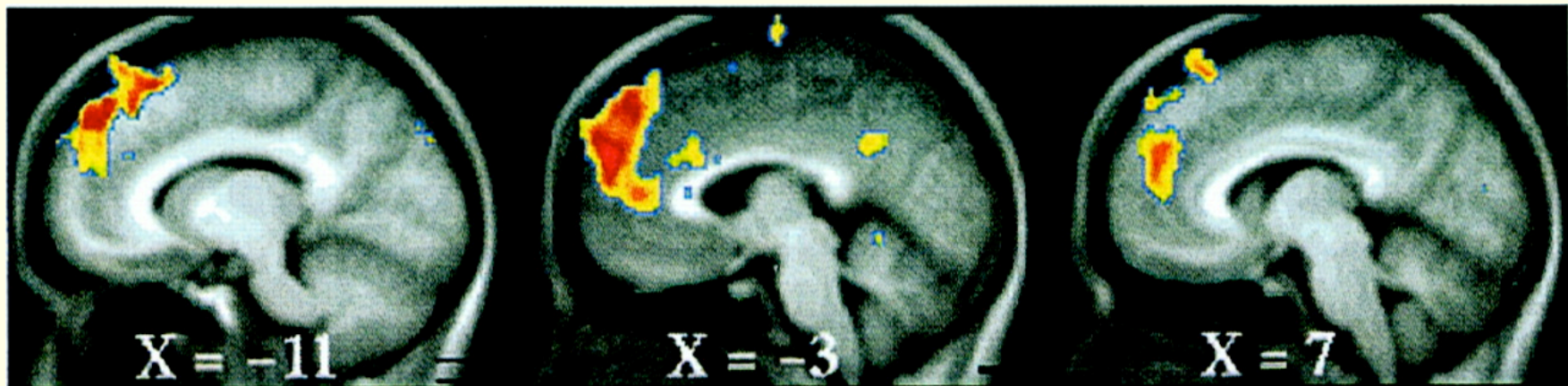
[Medial]

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

[Lateral]

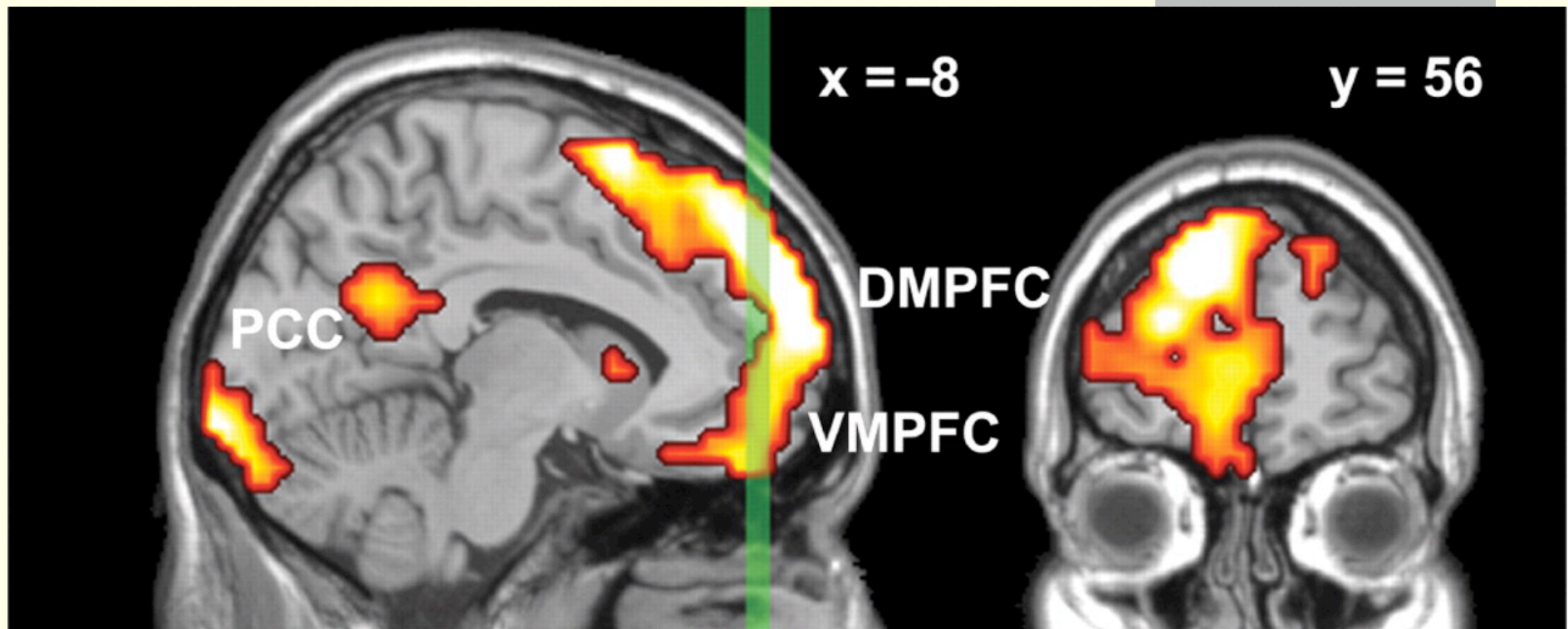
Mainly sensory
Little verbal activity
Concrete
Now-focused
Nothing to do, nowhere to go
Sense of peace
Impersonal, 3rd person perspective
Panoramic view
Uncertainty, not-knowing
Nonjudgmental
Mindful presence
Immediate and transient;
Loosely connected experiences
Minimal or no self-as-object
Minimal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

Increased Dorsal MPFC Activation Related to Self-Referencing Thought

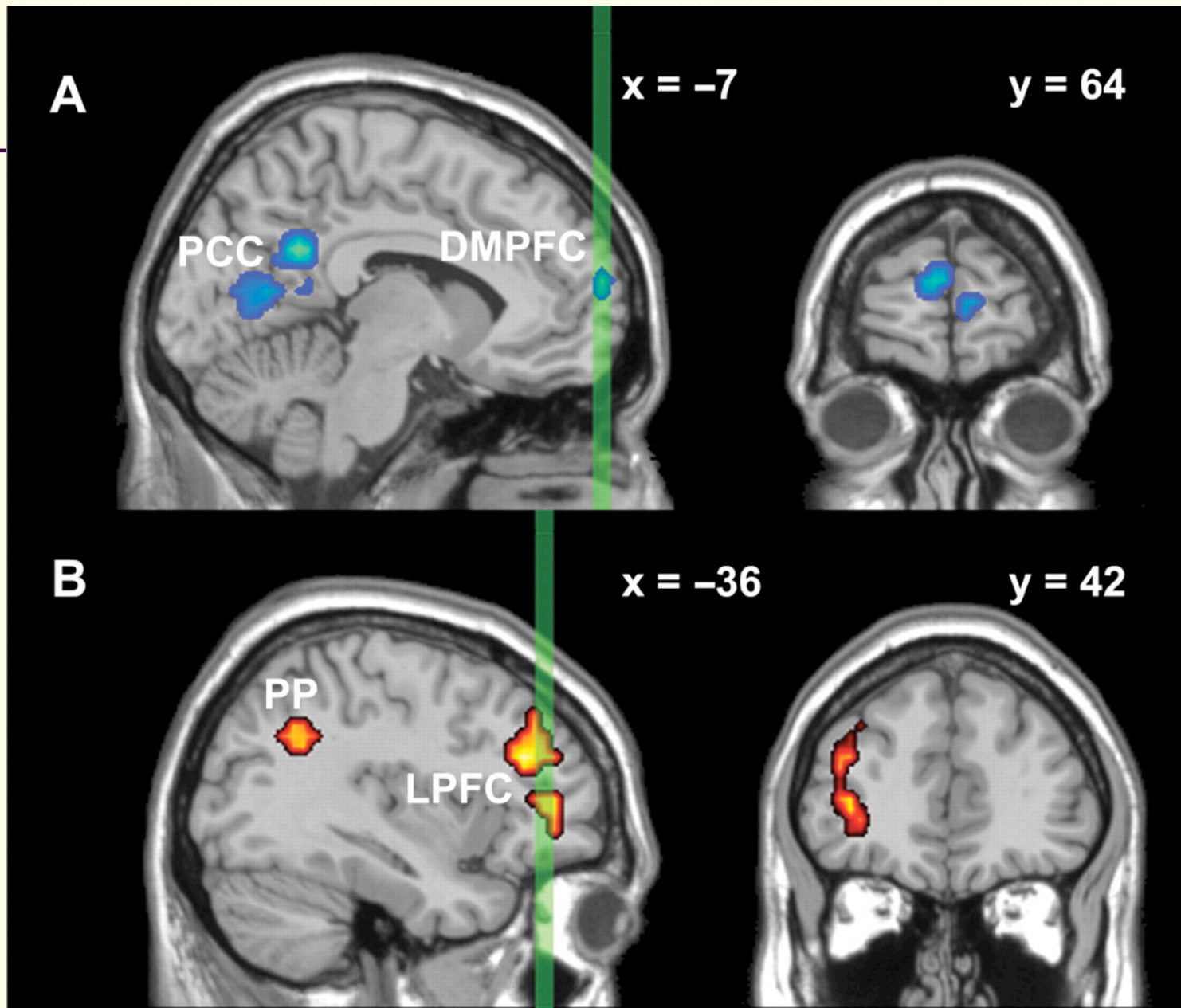


Gusnard D. A. et.al. PNAS 2001;98:4259-4264

Cortical midline areas associated with the narrative self focus condition, combining both MT (following 8 weeks of mindfulness training) and novice (pre MT) groups

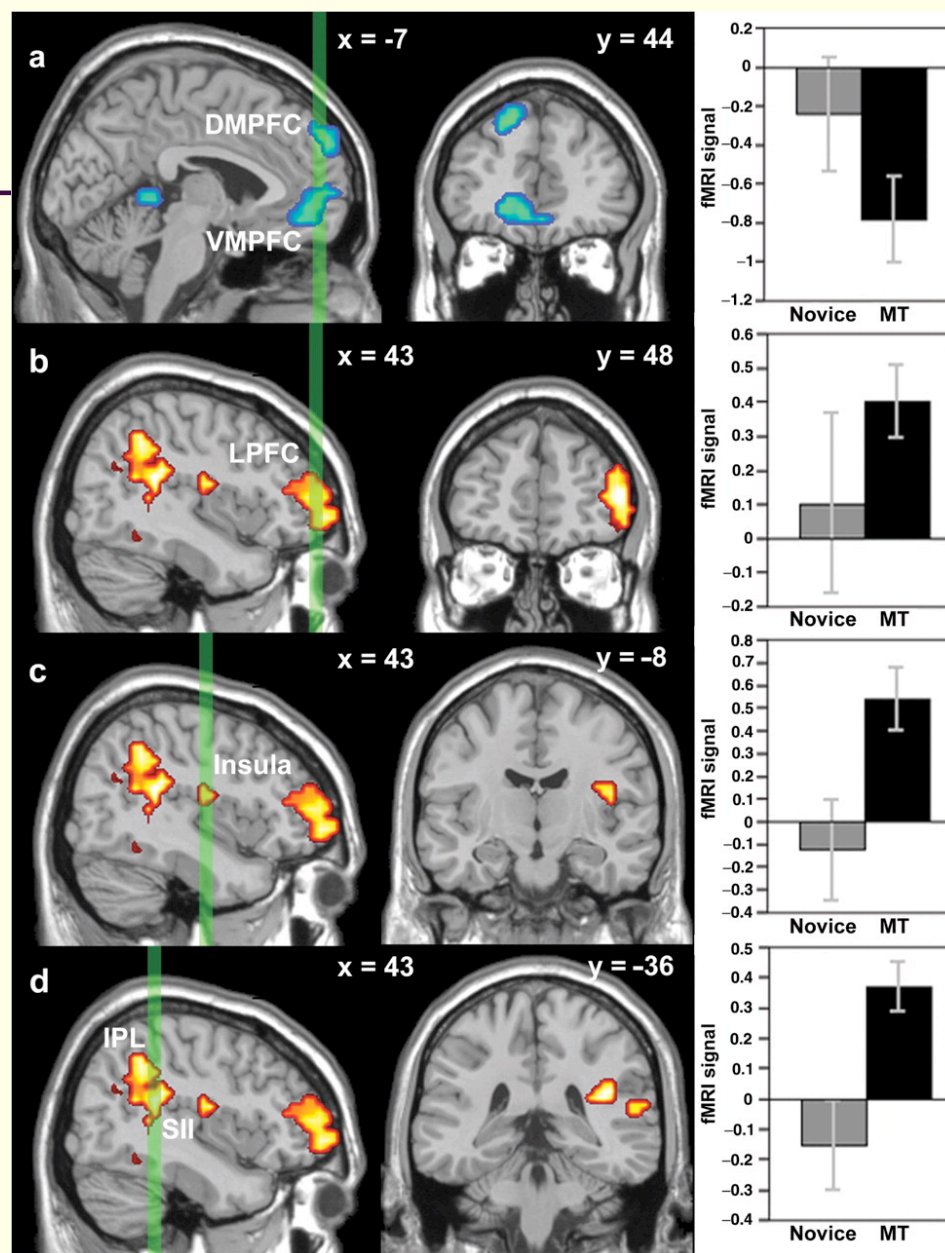


Narrative (blue) and Experiential (red) conditions in the novice (pre MT) group



Farb, et al. Soc Cogn Affect Neurosci 2007 2:313-322

Narrative (blue) vs Experiential (red) conditions following 8 weeks of MT

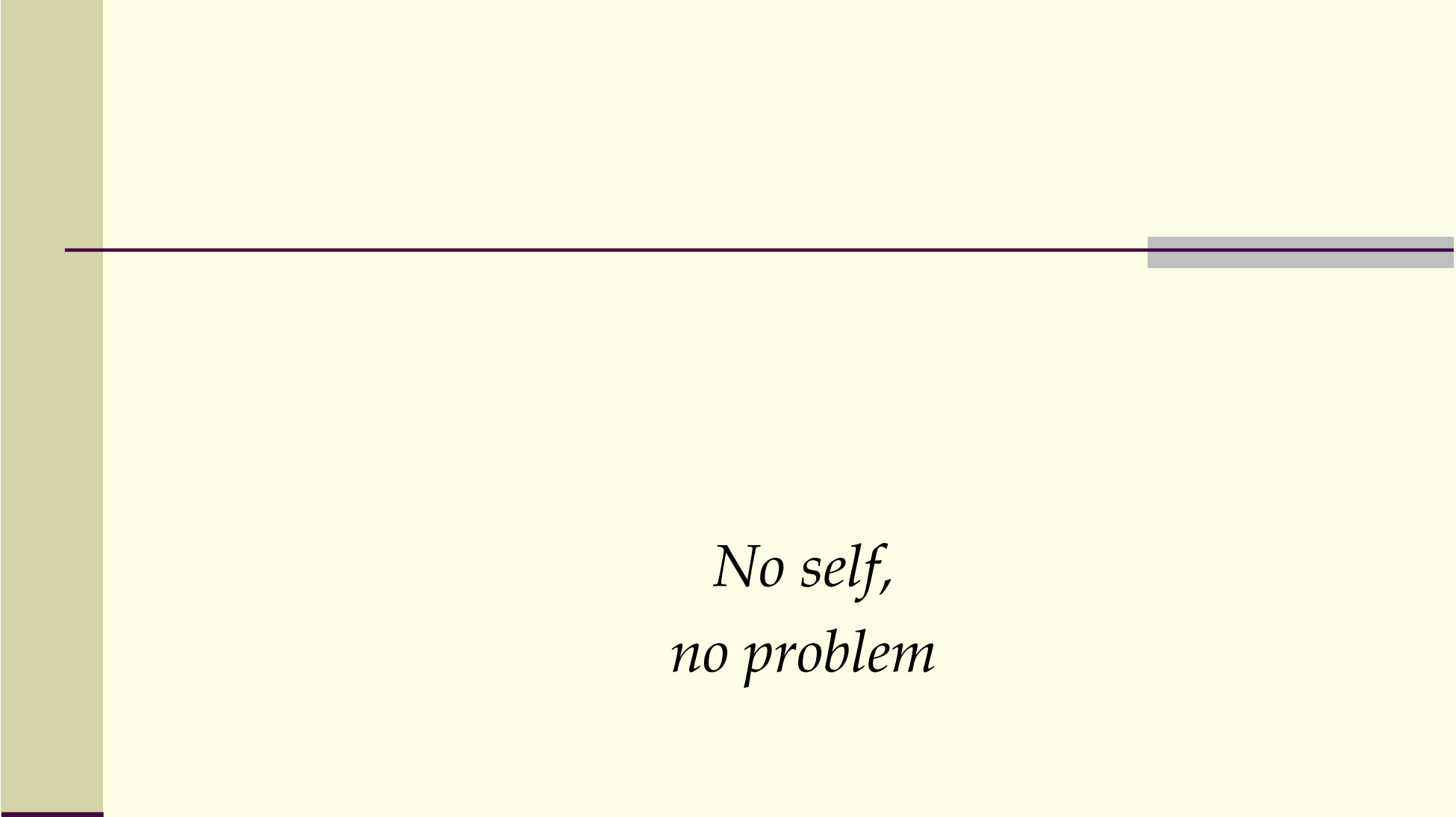


Farb, et al. Soc Cogn Affect Neurosci 2007 2:313-322


Ways to Activate the Two Modes

- Ways to shift into medial mode:
 - Verbal thought
 - Task focus
 - Sense of threat or opportunity
 - Mini-movies in the mental simulator

- Ways to shift into lateral mode:
 - Sensory awareness
 - Sense of the body as a whole
 - “Don’t-know mind”
 - Panoramic view
 - Open space awareness



*No self,
no problem*



To study the Way is to study the self.

To study the self is to forget the self.

*To forget the self is
To be enlightened by all things.*

Dogen

Thank you

*Be still
Listen to the stones of the wall
Be silent, they try
To speak your*

*Name.
Listen to the living walls.
Who are you?
Who
Are you? Whose
Silence are you?*

Thomas Merton