

Hardwiring Happiness:

The New Brain Science of Contentment, Calm, and Confidence

CMI, 2014

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Topics

- **Self-directed neuroplasticity**
- **How to grow inner strengths**
- **The negativity bias**

- **Taking in the good**
- **Key resource experiences**
- **Coming home**
- **Linking positive and negative material**

- **The fruit as the path**



**Waldo goes
to India,
finds himself.**



Self-Directed Neuroplasticity

Two wolves in the heart



What Shapes Your Course in Life?

Challenges

Vulnerabilities

Resources

What Can You Usually Affect the Most?

Resources

Where Are Resources Located?

The World

The Body

The Mind

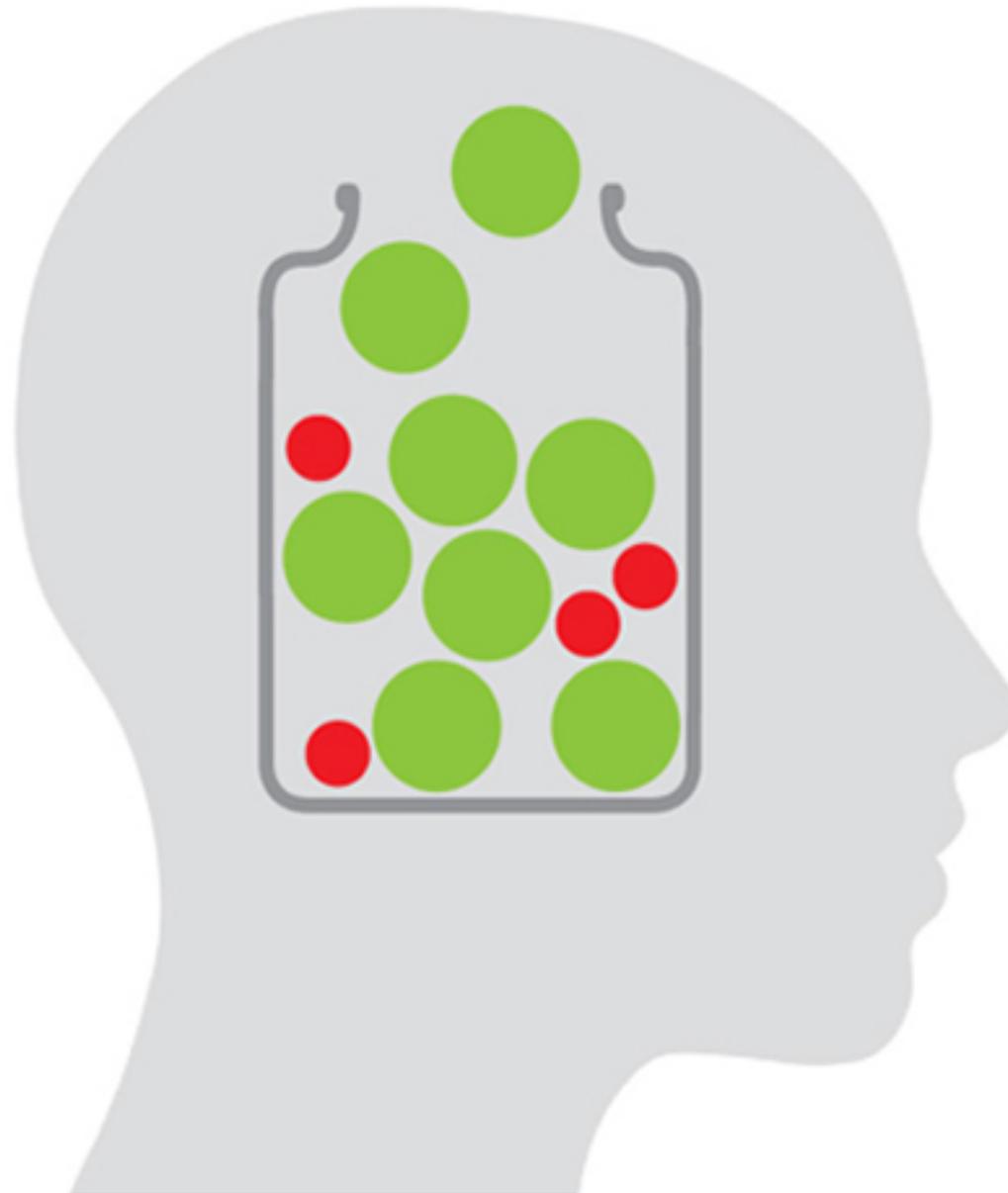
What Can You Usually Affect the Most?

The Mind

Inner Strengths

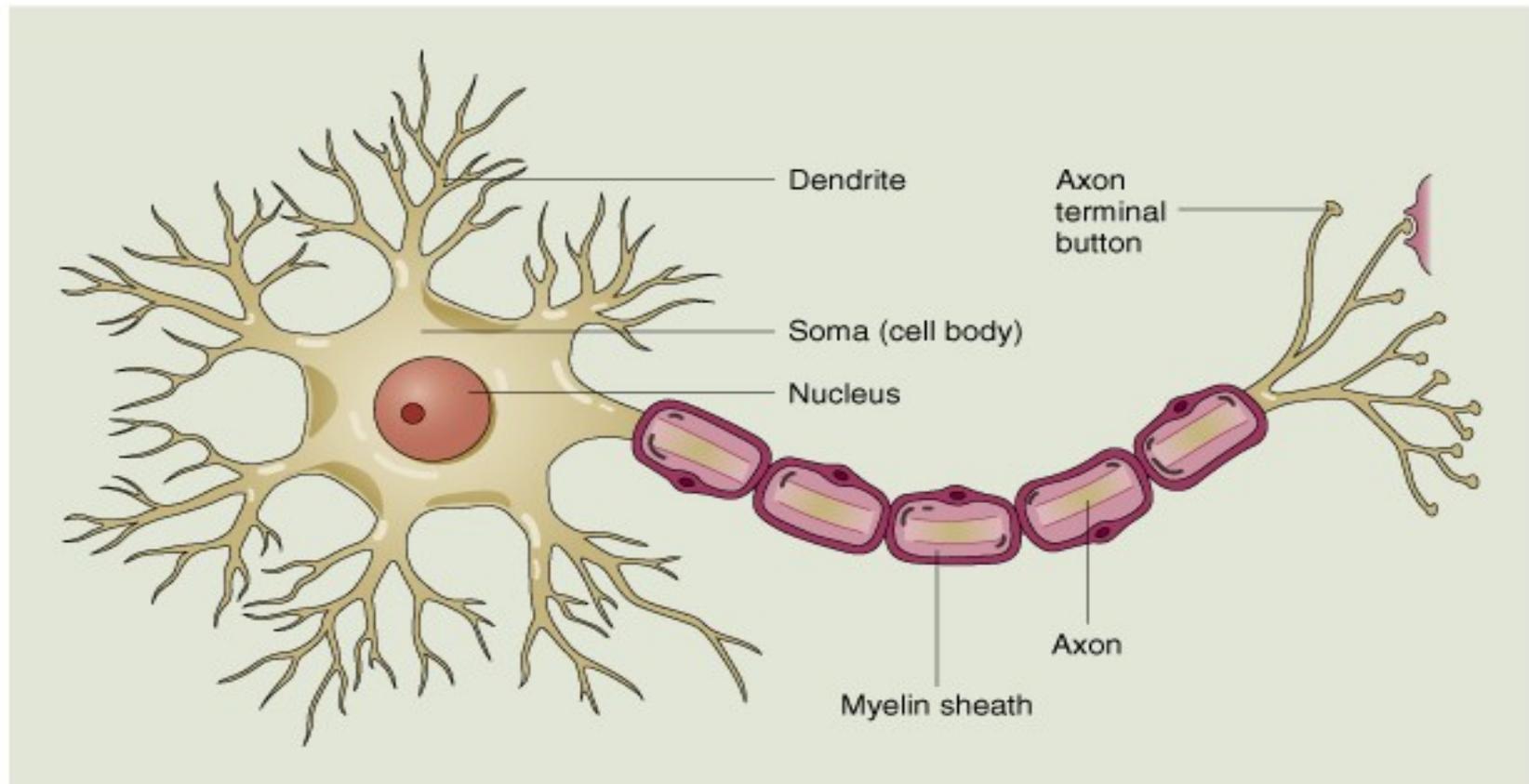
- **Understandings**
- **Capabilities**
- **Positive emotions**
- **Attitudes**
- **Motivations**
- **Virtues**

INNER STRENGTHS ARE BUILT FROM BRAIN STRUCTURE





A Neuron



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All cells have specialized functions. Brain cells have particular ways of processing information and communicating with each other. Nerve cells form complete circuits that carry and transform information.

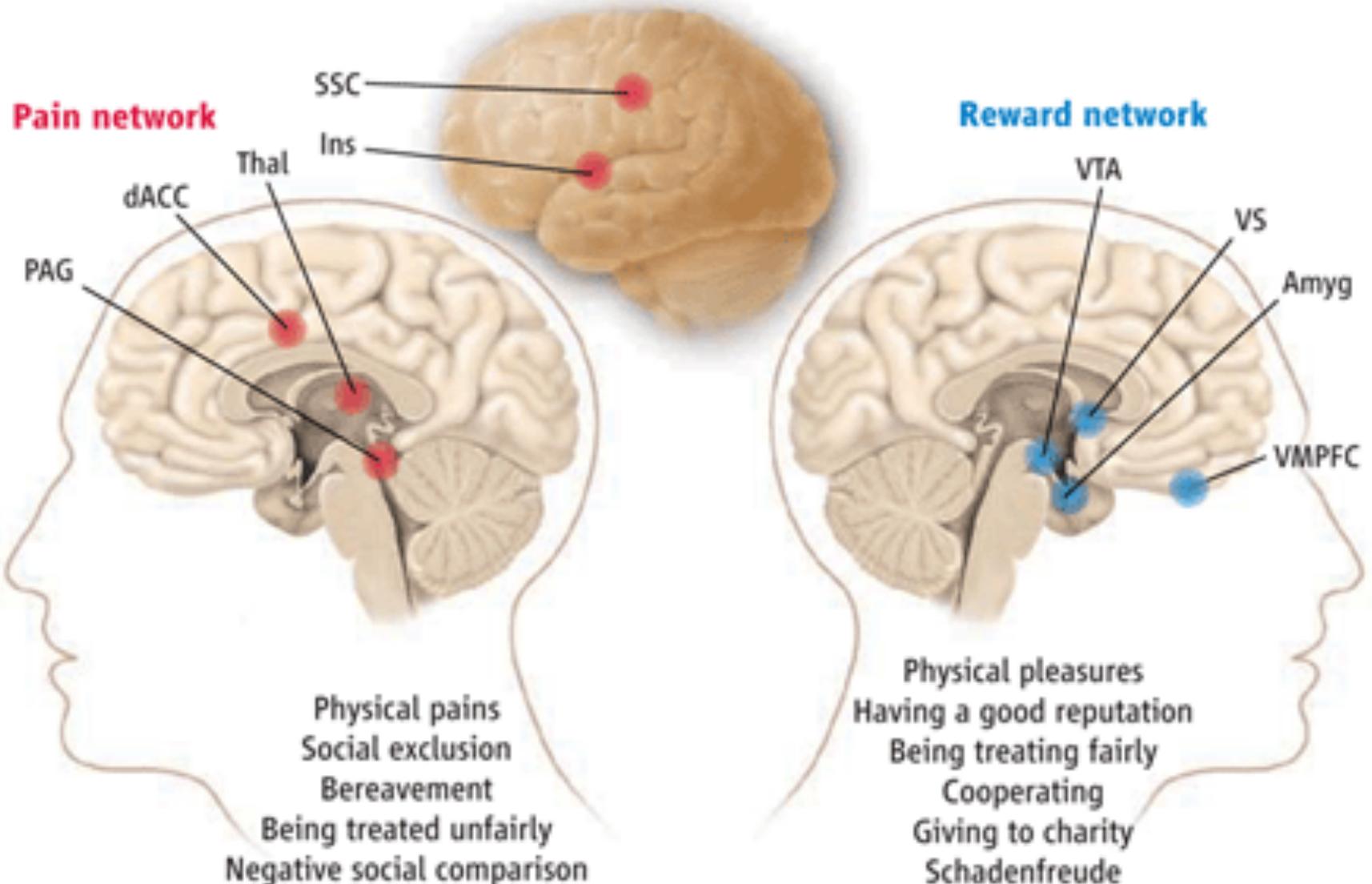
Electrical signaling represents the language of mind, the means whereby nerve cells, the building blocks of the brain, communicate with one another over great distances. Nerve cells generate electricity as a means of producing messages.

All animals have some form of mental life that reflects the architecture of their nervous system.

Eric R. Kandel



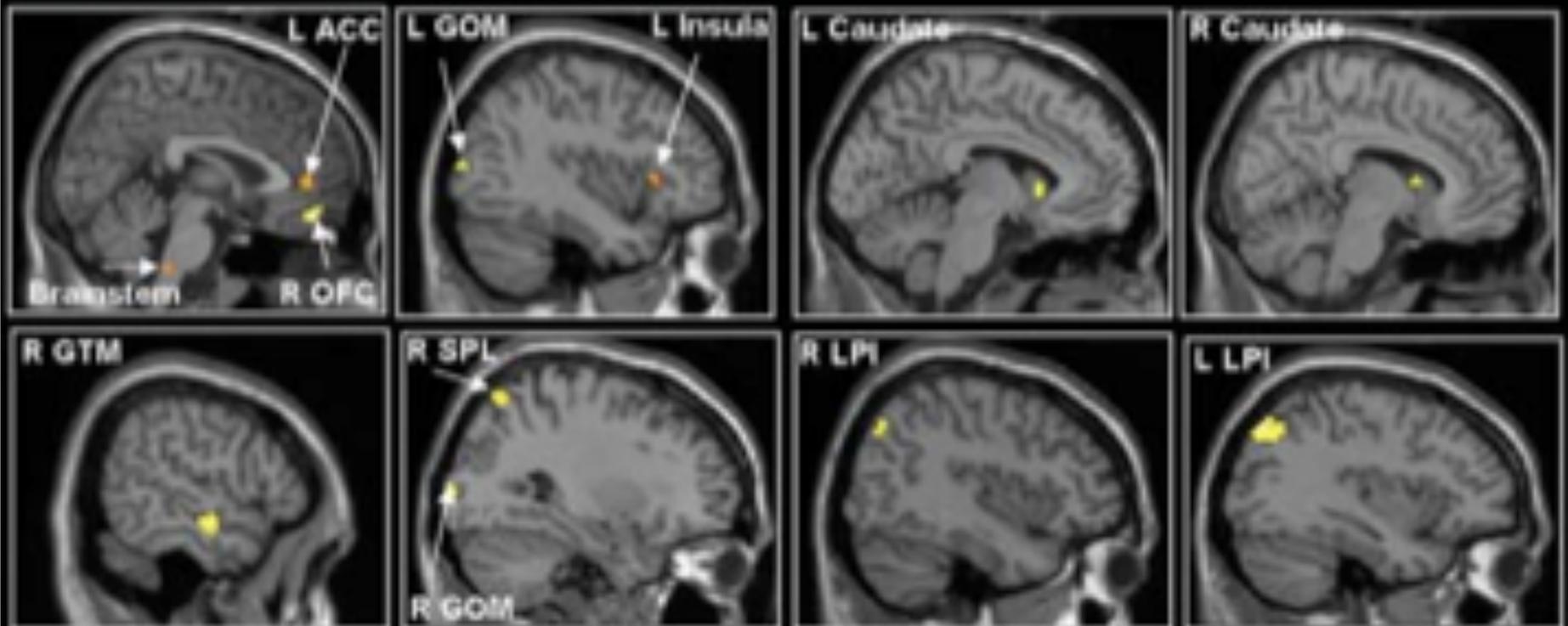
**Mental activity entails
underlying neural activity.**



Pain network: Dorsal anterior cingulate cortex (dACC), insula (Ins), somatosensory cortex (SSC), thalamus (Thal), and periaqueductal gray (PAG). Reward network: Ventral tegmental area (VTA), ventral striatum (VS), ventromedial prefrontal cortex (VMPFC), and amygdala (Amyg). K. Sutliff, in Lieberman & Eisenberger, 2009, *Science*, 323:890-891

Christian Nuns, Recalling a Profound Spiritual Experience

Mystical > Baseline



**Repeated mental activity entails
repeated neural activity.**

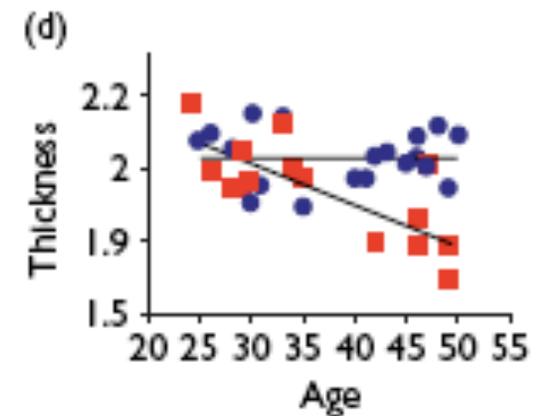
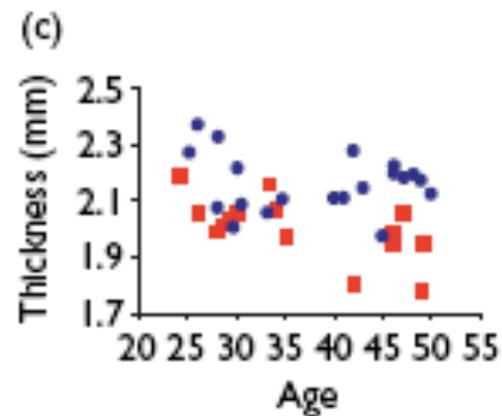
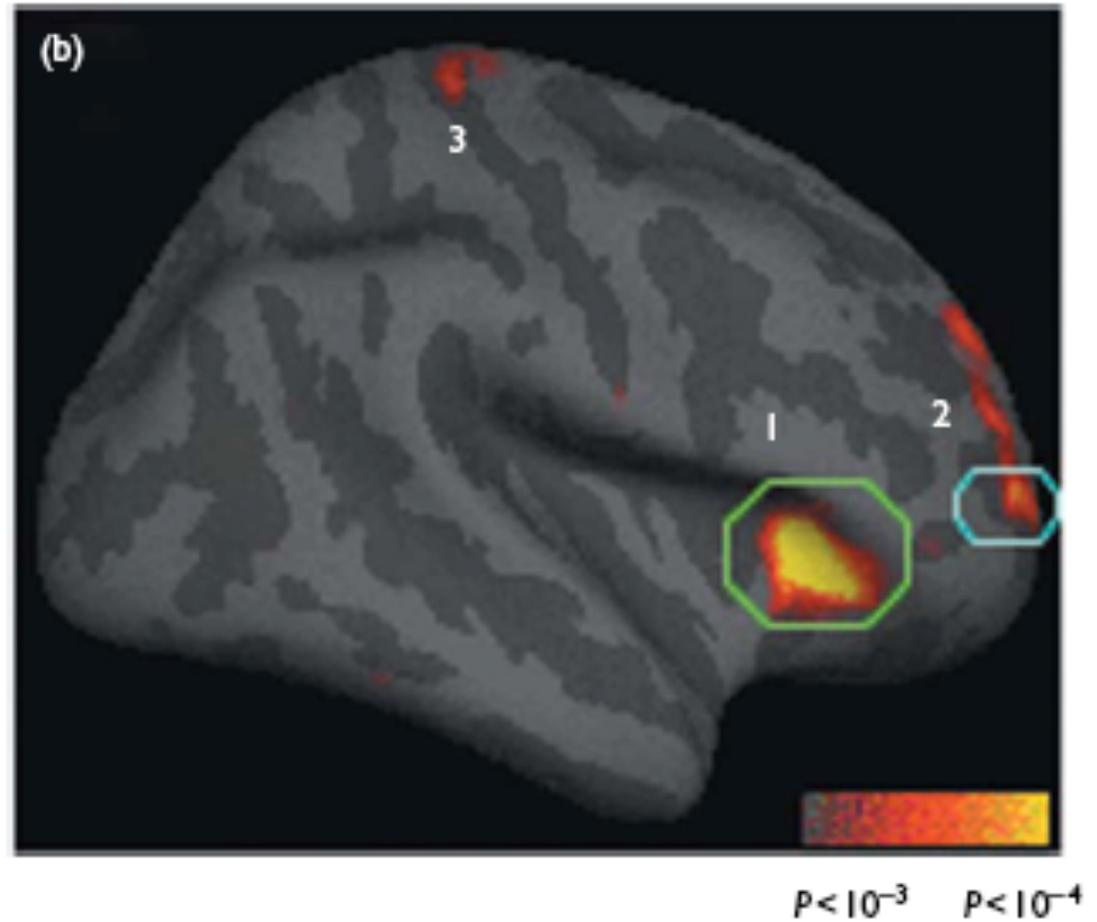
**Repeated neural activity
builds neural structure.**

A network of glowing yellow neurons with a central neuron highlighted in green. The neurons are interconnected by a dense web of thin, yellow fibers, resembling a neural network. The central neuron has a bright green nucleus and is surrounded by a complex network of yellow fibers. The background is dark, making the glowing neurons stand out.

Neurons that fire together,

wire together.

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



The Opportunity

We can use the mind

To change the brain

To change the mind for the better

To benefit ourselves and other beings.

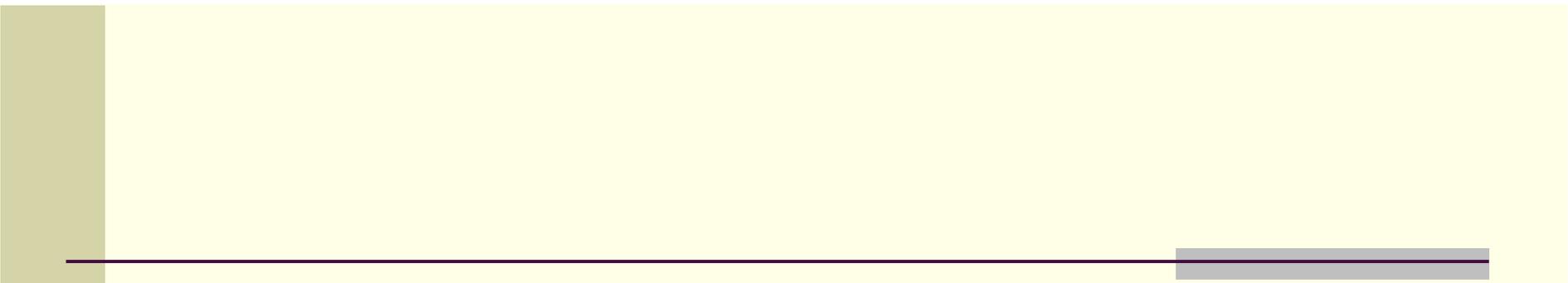
Self-Compassion

- Compassion is the wish that a being not suffer, combined with sympathetic concern. Self-compassion simply applies that to oneself. It is not self-pity, complaining, or wallowing in pain.
- Studies show that self-compassion buffers stress and increases resilience and self-worth.
- But self-compassion is hard for many people, due to feelings of unworthiness, self-criticism, or “internalized oppression.” To encourage the neural substrates of self-compassion:
 - Get the sense of being cared about by someone else.
 - Bring to mind someone you naturally feel compassion for
 - Sink into the experience of compassion in your body
 - Then shift the compassion to yourself, perhaps with phrases like: “May I not suffer. May the pain of this moment pass.”

“Anthem”

*Ring the bells that still can ring
Forget your perfect offering
There is a crack in everything
That's how the light gets in
That's how the light gets in*

Leonard Cohen



How to Grow Inner Strengths

Growing Gratitude

- Think of things you feel grateful for . . . Let this become a feeling of gratitude.
- Stay with this experience . . . Open to it.
- Imagine or sense that gratitude is sinking into you . . . As you sink into it.

The Neuropsychology of Learning

Learning – changing neural structure and function – proceeds in two stages:

From state to trait

From activation to installation

**From short-term memory buffers
to long-term storage**

Inner strengths are grown from experiences of them or related factors - activated states - that are installed as traits.

**You become more compassionate
by repeatedly installing experiences of compassion.**

**You become more grateful
by repeatedly installing experiences of gratitude.**

**You become more mindful
by repeatedly installing experiences of mindfulness.**

**Most experiences of inner strengths –
resilience, kindness, insight,
mindfulness, self-worth, love, etc. –
are enjoyable.**

**Without installation,
there is no learning,
no change in the brain.**

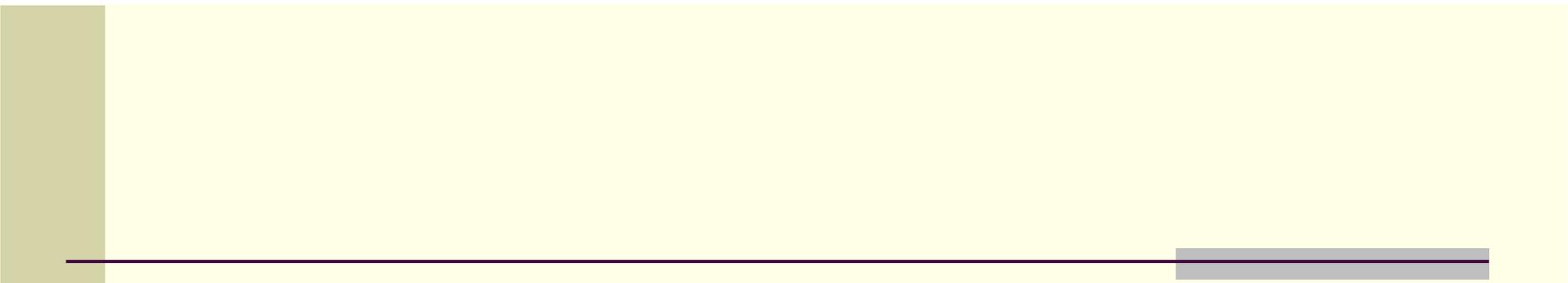
**We're good at activation
but bad at installation.**

**This is the fundamental weakness in
most patient education, human resources
training, psychotherapy, coaching,
and mindfulness training.**

*The same research that proves therapy works
shows no improvement in outcomes
over the last 30 or so years.*

Scott Miller

Installation



Installation

Installation

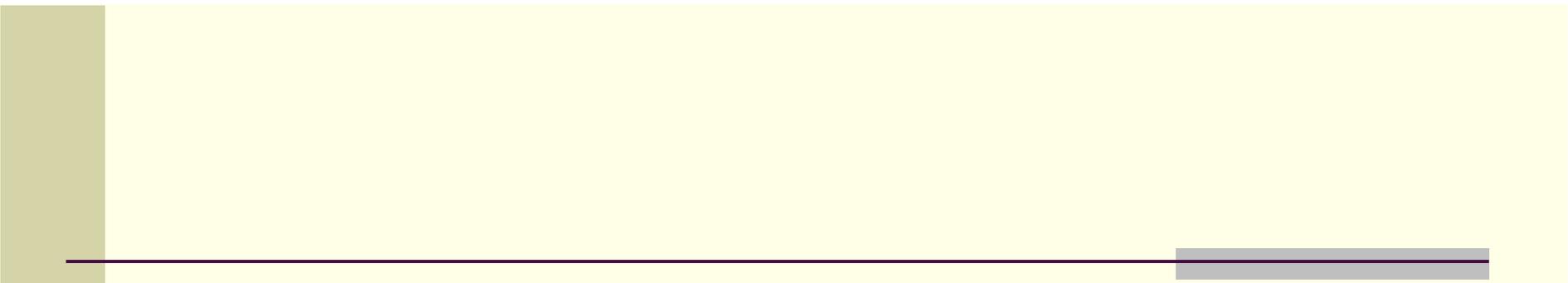


Installation

Installation

Installation

**Meanwhile your painful,
harmful experiences
are being rapidly converted
into neural structure.**



The Negativity Bias

Unpleasant Experiences In Context

- Life contains unavoidable unpleasant experiences. Resisting them just adds to the stress, upset, etc.
- Some inner strengths come only from unpleasant experiences, e.g., knowing you'll do the hard thing.
- But unpleasant experiences have inherent costs, in their discomfort and stress.
- Many inner strengths could have been developed without the costs of unpleasant experiences.
- Most unpleasant experiences are pain with no gain.

The Brain's Negativity Bias

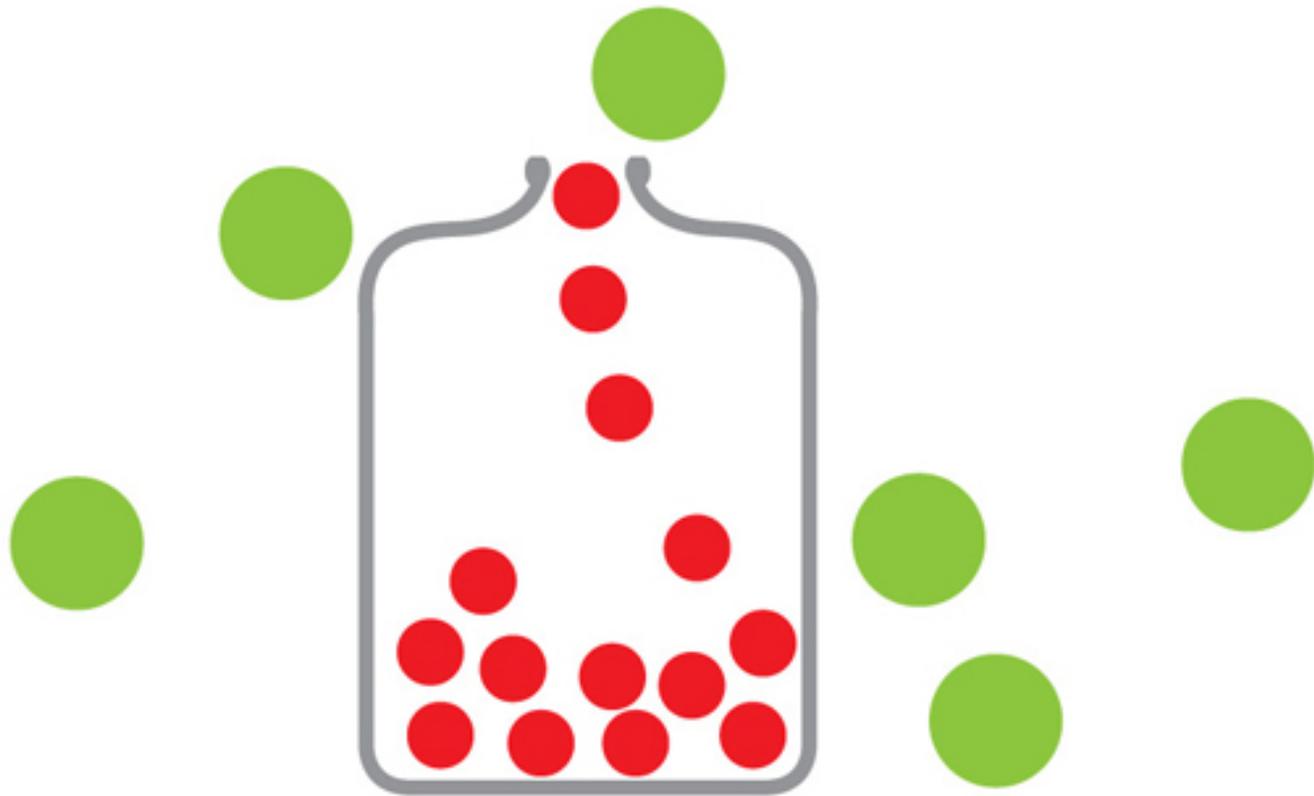
- As our ancestors evolved, avoiding “sticks” was more important for survival than getting “carrots.”
- Negative stimuli:
 - More attention and processing
 - Greater motivational focus: loss aversion
- Preferential encoding in implicit memory:
 - We learn faster from pain than pleasure.
 - Negative interactions: more impactful than positive
 - Easy to create learned helplessness, hard to undo
 - Rapid sensitization to negative through cortisol

Velcro for Bad, Teflon for Good

The negativity bias

bad experiences

good experiences



The Negativity Bias

Stone age brains in the 21st century



*We can deliberately use the mind
to change the brain for the better.*

Cultivation in Context

- Three ways to engage the mind:
 - Be with it. Decrease negative. Increase positive.
 - The garden: Observe. Pull weeds. Plant flowers.
 - Let be. Let go. Let in.
 - Mindfulness present in all three ways to engage mind
- While “being with” is primary, it’s often isolated in mindfulness-based practices.
- Skillful means for decreasing the negative and increasing the positive have developed over 2500 years. Why not use them?



SPIRIT ROCK MEDITATION CENTER



Join us for

**Cultivating Inner Strength - Monastic
Daylong [Dana - No Fee Day]**

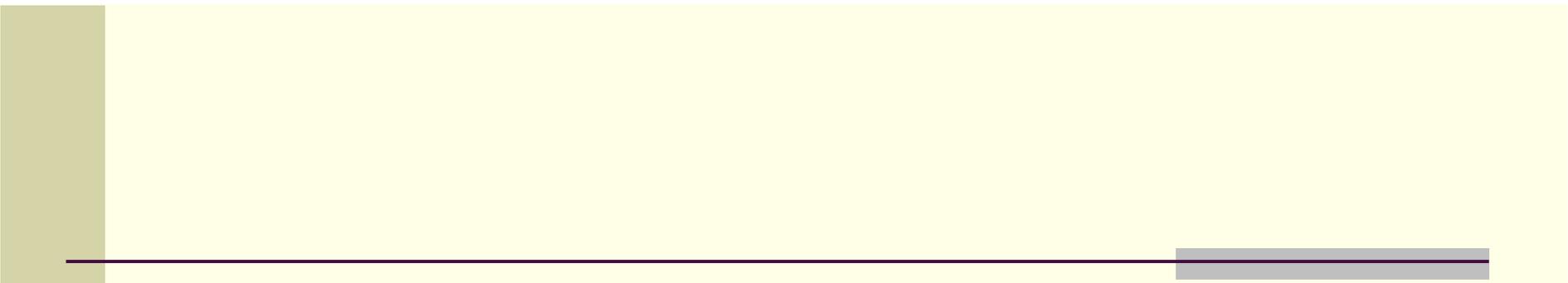
with Ayya Anandabodhi
and Ayya Santacitta

on

Sunday, July 8

from 9:30 am - 5 pm.

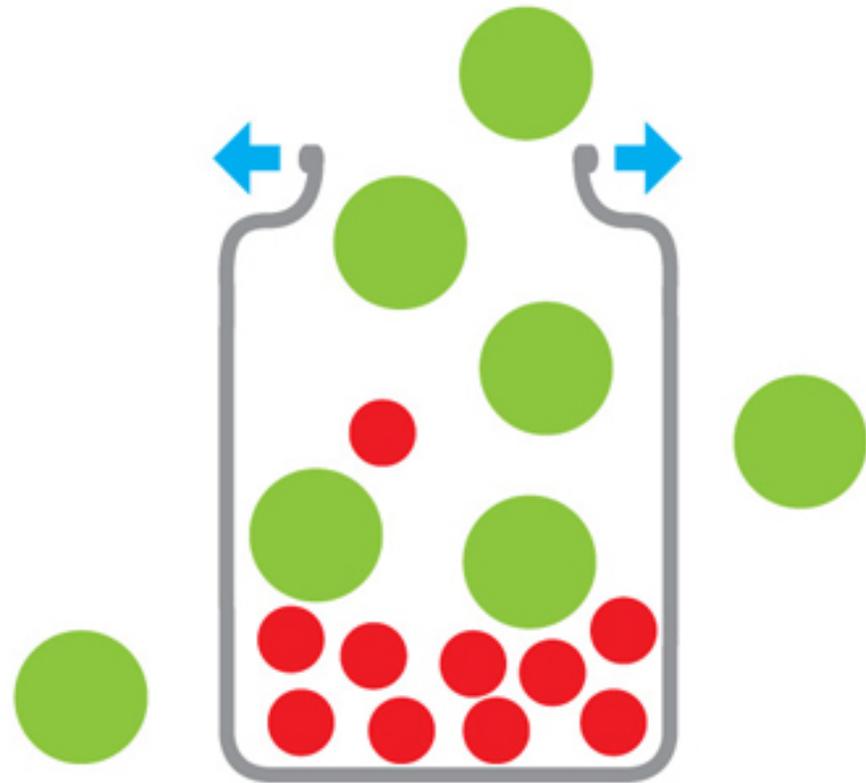
(Photo by Ed Ritger)



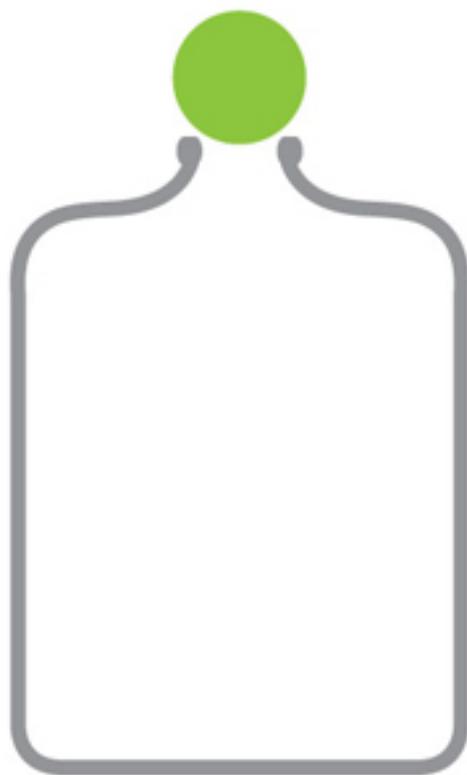
Taking in the Good

Growing Gratitude

- Think of things you feel grateful for . . . Let this become a feeling of gratitude.
- Stay with this experience . . . Open to it.
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Learning to Take in the Good



Have a Good Experience

The Two Ways To Have a Beneficial Experience

Notice one you are already having.

- In the foreground of awareness
- In the background

Create one.

Elements of Experience

- **Thoughts** – beliefs; expectations; relationship paradigms; perspectives; appraisals; attributions
- **Perceptions** - sensations; relaxation; vitality
- **Emotions** - both feelings and mood
- **Desires** – values; aspirations; passions; wants
- **Behaviors** - repertoire; inclinations

How to Create A Beneficial Experience

Look for good facts in:

1. Immediate situation
2. Current or recent events
3. Stable conditions
4. Your character
5. The past
6. The future
7. Bad situations
8. The lives of others
9. Your imagination
10. Care about others
11. Directly evoke a beneficial experience
12. Produce good facts
13. Share about good facts with others

Turning a Good Fact Into a Good Experience

- Bring awareness to your body.
- Soften and open yourself.
- Be a little active in your mind, recognizing aspects of the good fact that naturally elicit an experience.
- Imagine how another person might naturally feel in response to the good fact.
- Have kindness for yourself, encouraging yourself to have a beneficial experience.

Reflections So Far

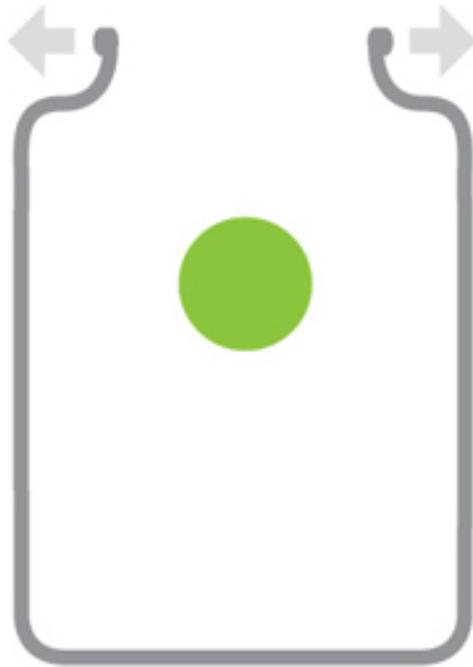
Noticing and creating an experience are different.

There are lots of ways to create experiences.

Beneficial experiences are usually based on facts.

Recognizing good facts does not deny bad ones.

Good facts about yourself are facts like any other.



Enrich It

How to Enrich an Experience

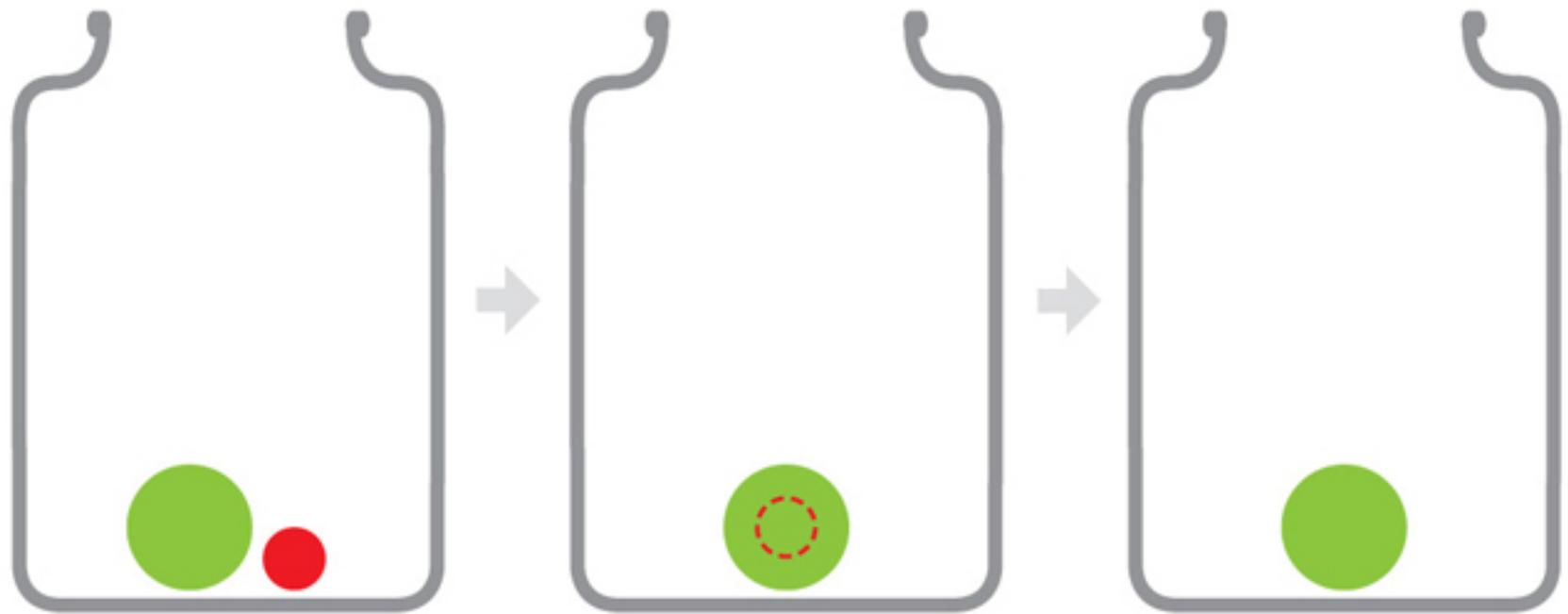
- **Duration** – 5+ seconds; protecting it; keeping it going
- **Intensity** – opening to it in the mind; helping it get big
- **Multimodality** – engaging multiple aspects of experience, especially perception and emotion
- **Novelty** – seeing what is fresh; “don’t know mind”
- **Salience** – seeing why this is personally relevant



Absorb It

How to Absorb an Experience

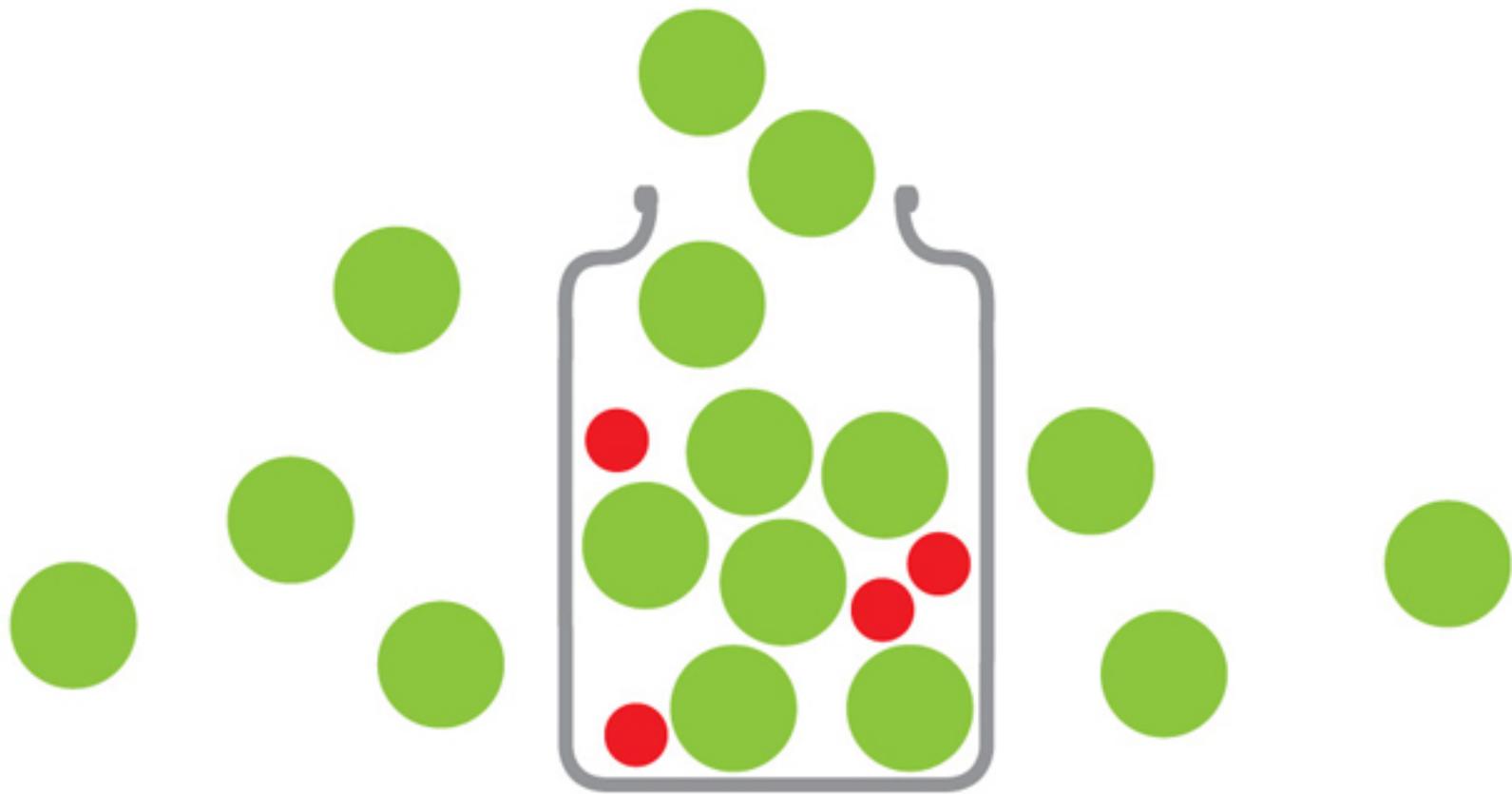
- Enriching makes the experience more powerful. Absorbing makes memory systems more receptive by priming and sensitizing them.
- Intend and sense the experience is sinking into you.
 - Imagery – Water into a sponge; golden dust sifting down; a jewel into the treasure chest of the heart
 - Sensation – Warm soothing balm
- Giving over to the experience; letting it change you
- Letting go of resisting, grasping, clinging: “craving”



Link Positive and Negative Material

HEAL by Taking in the Good

1. **Have** a positive experience. Notice it or create it.
2. **Enrich** the experience through duration, intensity, multimodality, novelty, personal relevance
3. **Absorb** the experience by intending and sensing that it is sinking into you as you sink into it.
4. **Link** positive and negative material. [optional]



Have It, Enjoy It

It's Good to Take in the Good

- Development of specific inner strengths
 - General - resilience, positive mood, feeling loved
 - Key resources – For challenges, deficits, wounds
- Implicit benefits:
 - Shows that there is still good in the world
 - Being active rather than passive
 - Treating yourself kindly, like you matter
 - Rights an unfair imbalance, given the negativity bias
 - Training of attention and executive functions
- Sensitizes brain to positive: like Velcro for good

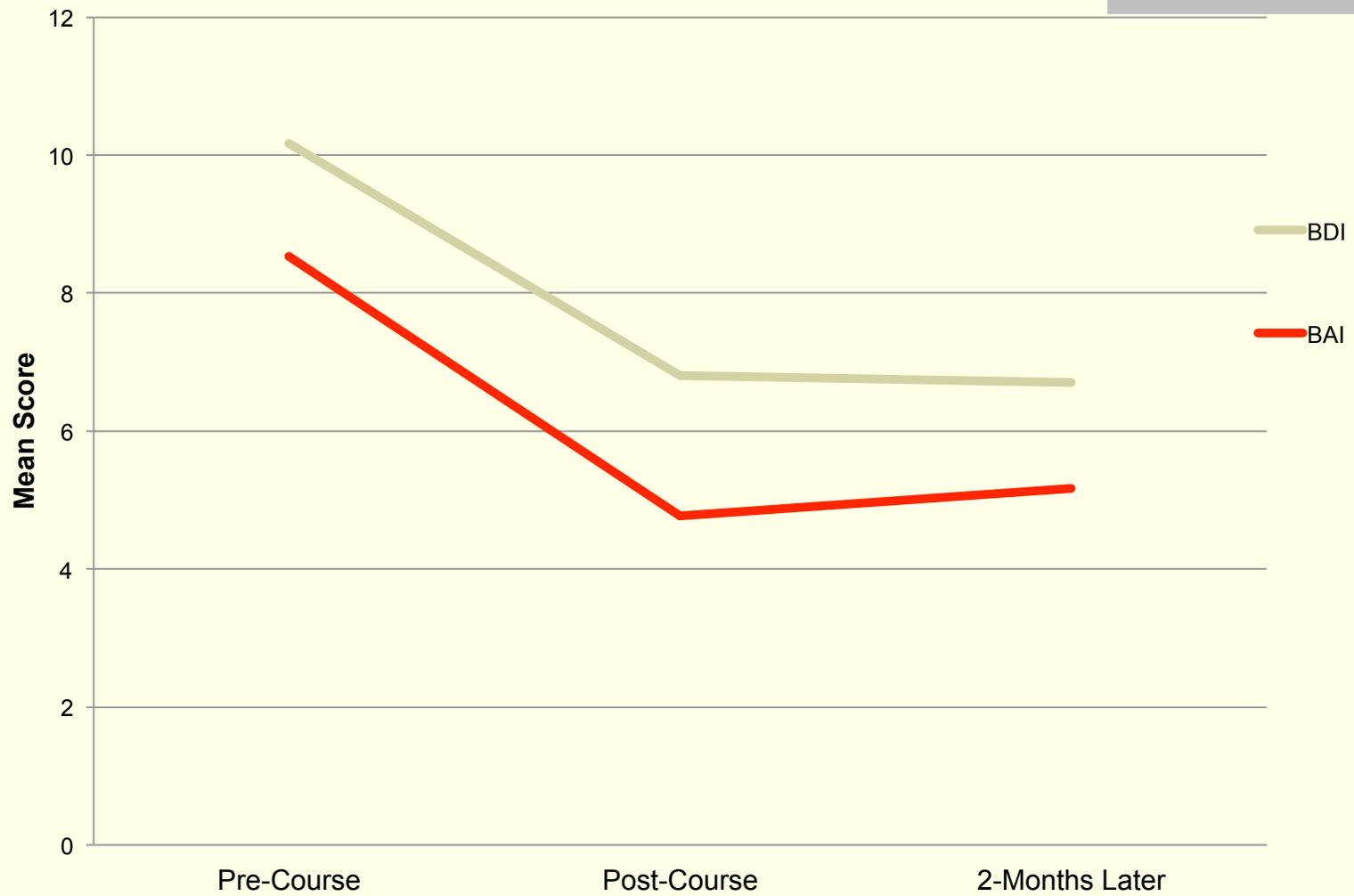
*Keep a green bough in your heart,
and a singing bird will come.*

Lao Tsu

Study on the HEAL Process

- With collaborators from the University of California, a 2013 study on the HEAL course, using a randomized waitlist control group design (46 subjects)
- Course participants, compared to the control group, reported more Contentment, Self-Esteem, Satisfaction with Life, Savoring, and Gratitude.
- After the course and at two month follow-up, pooled participants also reported more Love, Compassion, Self-Compassion, Mindfulness, Self-Control, Positive Rumination, Joy, Amusement, Awe, and Happiness, and less Anxiety and Depression.

Combined Sample: Depression (BDI) & Anxiety (BAI)





Practical Uses of the HEAL Process

The Four Ways to Offer a Method

- Doing it implicitly
- Teaching it and then leaving it up to the person
- Doing it explicitly with the person
- Asking the person to do it on his or her own

Resources for Taking in the Good

- Intention; willing to feel good
- Identified target experience
- Openness to the experience; embodiment
- Mindfulness of the steps of TG to sustain them
- Working through obstructions

Promoting Client Motivation

- During therapy and between sessions, TG:
 - Key resource experiences
 - When learning from therapy works well
 - When realistic views of you, the world, etc. come true
 - Good qualities in yourself
 - New insights

- Can be formalized in daily reflections, journaling

- Try appropriate risks of “dreaded experiences,” notice the (usually) good results, and then take these in.

Doing TG with a Couple

- Basic steps (often informal):
 - Attention to a good fact
 - Evoking and sustaining a good experience
 - Managing obstructions
 - Awareness of the impact on one's partner
 - Debriefing, often from both partners

- Pitfalls to avoid:
 - Seeming to side with one person
 - Unwittingly helping a person overlook real issues
 - Letting the other partner pile on

Adaptations for Children

- All kids benefit from TG. Particular benefits for mistreated, anxious, spirited/ ADHD, or LD children.

- Style:
 - Be matter of fact: this is mental/neural literacy.
 - A little brain talk goes a long way.
 - Be motivating: benefits, “be the boss of your own mind.”
 - Down to earth, naturalistic
 - Scaffold based on executive functions, motivation, and need for autonomy.
 - Brief, concrete

Uses for Children

- Registering curricular skills and other resources
- Motivation for learning; associating rewards
- Seeing the good in the world, others, and oneself – and in the past, present, and future
- Seeing life as opportunity
- Strengthening the sense of being an active learner
- Developing child-specific resources

Synergies of TG and Mindfulness

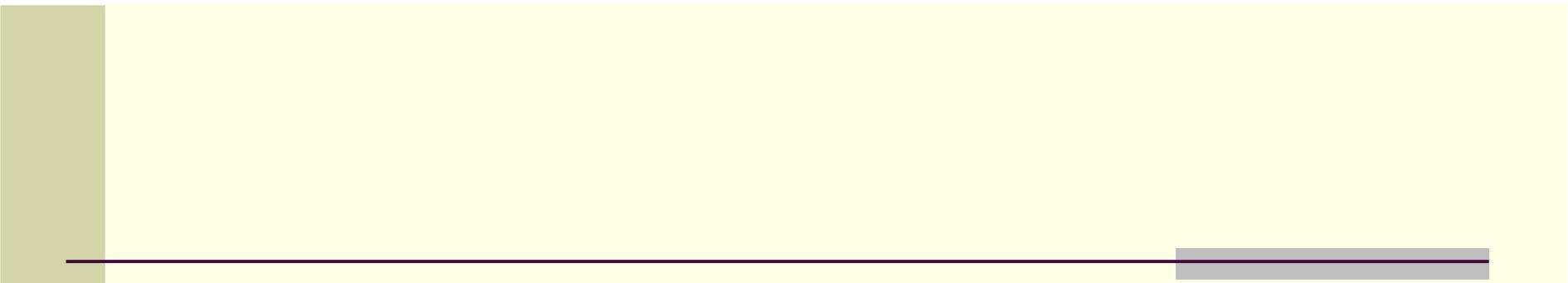
- Improved mindfulness enhances TG.
- TG increases factors of mindfulness (e.g., self-acceptance, self-compassion, distress tolerance).
- TG heightens learning from mindfulness:
 - The sense of stable presence itself
 - Confidence that awareness itself is never disturbed
 - Peace of realizing that experiences come and go

Obstructions to Taking in the Good

- General
 - Distractibility
 - Blocks to self-awareness in general
- Specific
 - Fears of losing one's edge or lowering one's guard
 - Sense of disloyalty to others (e.g., survivor guilt)
 - Culture (e.g., selfish, vain, sinful)
 - Gender style
 - Associations to painful states
 - Secondary gains in feeling bad
 - Not wanting to let someone off the hook
 - Thoughts that TG is craving that leads to suffering

Pick a partner and choose an A and a B (A's go first). Then you'll take turns, with one partner mainly speaking while the other person listens, exploring this question:

What are some ways that you could use the HEAL process with your clients?

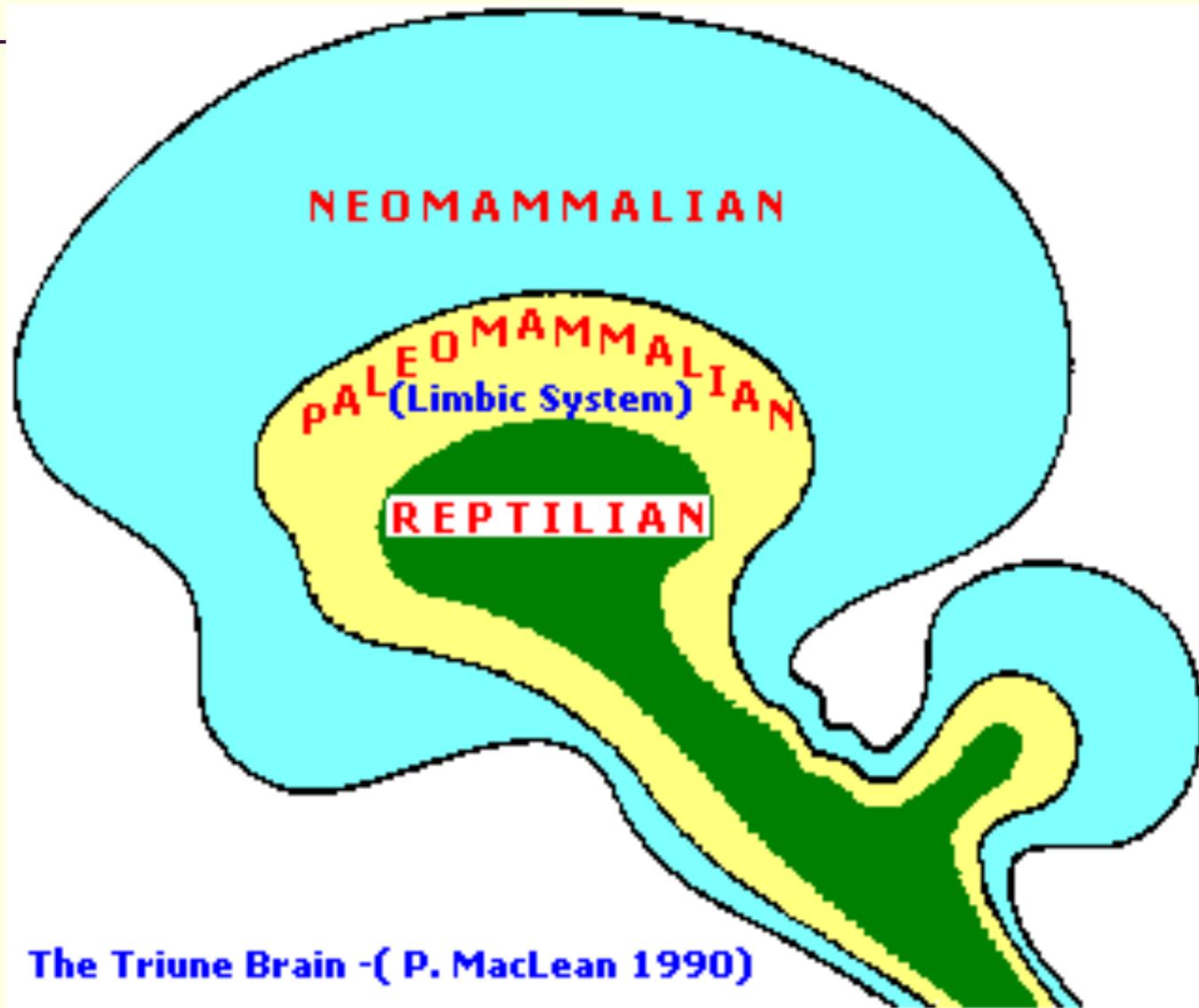


Key Resource Experiences

Biological 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: ancestor with chimpanzees
- 2.5 million years of tool-making
- 150,000 years of *homo sapiens*

The Evolving Brain





"With all due respects, I find your disparaging remarks about the 'reptilian brain' unnecessary"

Our Three Fundamental Needs

Safety

Satisfaction

Connection

Needs Met by Three Systems

Safety – Avoiding harms

Satisfaction – Approaching rewards

Connection – Attaching to others

Pet the Lizard



Feed the Mouse



Hug the Monkey



Some Types of Resource Experiences

Avoiding Harms

- Feeling basically alright right now
- Feeling protected, strong, safe, at peace
- The sense that awareness itself is untroubled

Approaching Rewards

- Feeling basically full, the enoughness in this moment as it is
- Feeling pleased, glad, grateful, satisfied
- Therapeutic, spiritual, or existential realizations

Attaching to Others

- Feeling basically connected
- Feeling included, seen, liked, appreciated, loved
- Feeling compassionate, kind, generous, loving

Coming Home

The Brain's Responsive Setting

When not invaded by threat, loss, or rejection [no felt deficit or disturbance of safety, satisfaction, and connection]

The body defaults to a sustainable equilibrium of refueling, repairing, and pleasant abiding.

The mind defaults to a sustainable equilibrium of:

- **Peace** (the Avoiding system)
- **Contentment** (the Approaching system)
- **Love** (the Attaching system)

This is the brain in its homeostatic ***Responsive,***
minimal craving mode.

The Brain's Reactive Setting

When invaded by threat, loss, or rejection [felt deficit or disturbance of safety, satisfaction, or connection]:

The body fires up into the stress response; outputs exceed inputs; long-term building is deferred.

The mind fires up into:

- **Fear** (the Avoiding system)
- **Frustration** (the Approaching system)
- **Heartache** (the Attaching system)

This is the brain in allostatic, **Reactive**, *craving* mode.⁸⁸

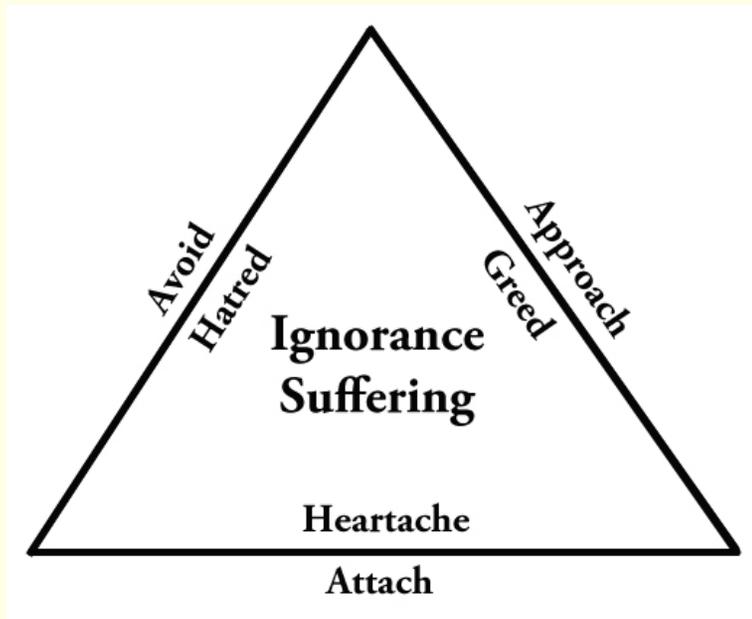
Reactive Dysfunctions in Each System

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

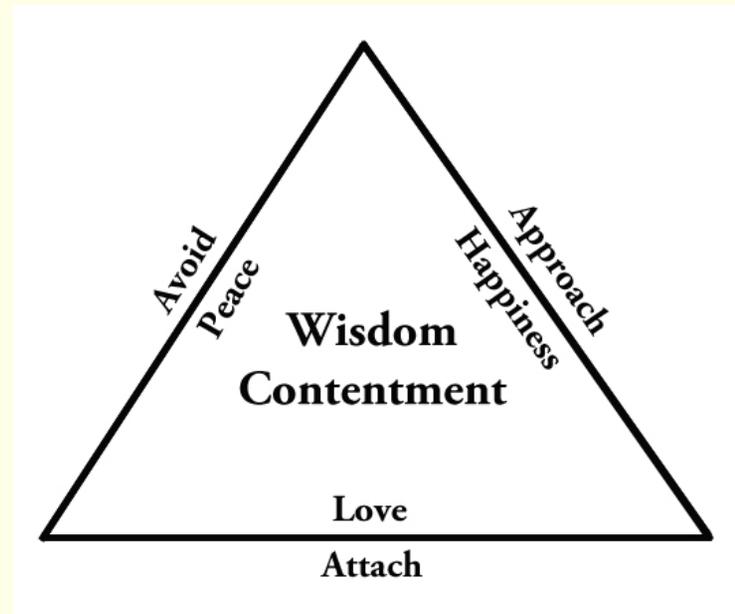


Choices . . .

Or?



Reactive Mode



Responsive Mode 91

Coming Home, Staying Home

Positive experiences of core needs met - the felt sense of safety, satisfaction, and connection - activate Responsive mode.

Activated Responsive states can become installed Responsive traits. Responsive traits foster Responsive states.

Responsive states and traits enable us to stay Responsive with challenges.



Linking Positive and Negative Material

Using Memory Mechanisms to Help Heal Painful Experiences

- 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 TG

- 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

Avoiding Harms

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

Approaching Rewards

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

Attaching to Others

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

The Tip of the Root

- For the fourth step of TIG, try to get at the youngest, most vulnerable layer of painful material.
- The “tip of the root” is commonly in childhood. In general, the brain is most responsive to negative experiences in early childhood.
- Prerequisites
 - Understanding the need to get at younger layers
 - Compassion and support for the inner child
 - Capacity to “presence” young material without flooding

TG and Trauma

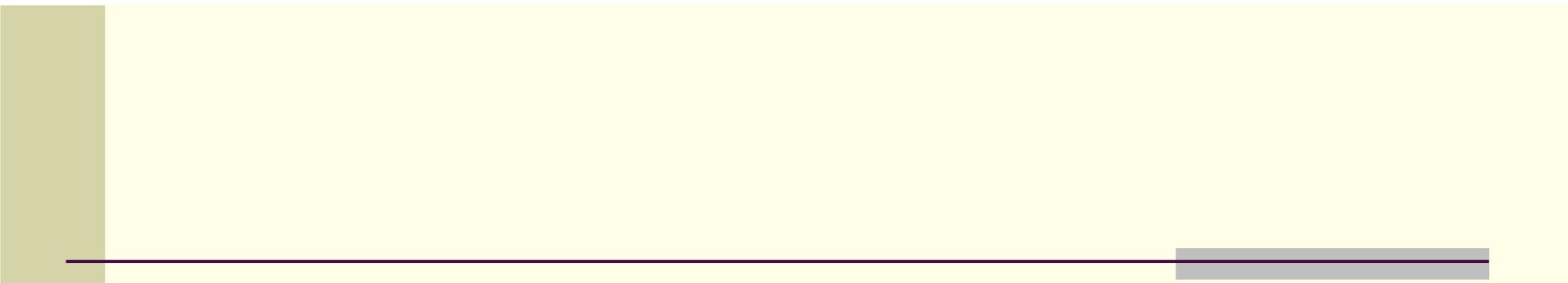
- General considerations:
 - People vary in their resources and their traumas.
 - Often the major action is with “failed protectors.”
 - Cautions for awareness of internal states, including positive
 - Respect “yellow lights” and the client’s pace.

- The first three steps of TG are generally safe. Use them to build resources for tackling the trauma directly.

- As indicated, use the fourth step of TG to address the peripheral features and themes of the trauma.

- Then, with care, use the fourth step to get at the heart of the trauma.

First of all, do no harm.



The Fruit as the Path

Cultivation Undoes Craving

- All life has goals. The brain continually seeks to avoid harms, approach rewards, and attach to others - even that of a sage.
- It is wholesome to wish for the happiness, welfare, and awakening of all beings - including the one with your nametag.
- We rest the mind upon positive states so that the brain may gradually take their shape. This disentangles us from craving as we increasingly rest in a peace, happiness, and love that is independent of external conditions.
- With time, even the practice of cultivation falls away - like a raft that is no longer needed once we reach the farther shore.

The Goal as the Method

Peace

Contentment

Love

*Think not lightly of good, saying,
"It will not come to me."*

Drop by drop is the water pot filled.

*Likewise, the wise one,
gathering it little by little,
fills oneself with good.*

Dhammapada 9.122

Thank you



Suggested Books

See www.RickHanson.net for other great books.

- Austin, J. 2009. *Selfless Insight*. MIT Press.
- Begley, S. 2007. *Train Your Mind, Change Your Brain*. Ballantine.
- Carter, C. 2010. *Raising Happiness*. Ballantine.
- Hanson, R. (with R. Mendius). 2009. *Buddha's Brain: The Practical Neuroscience of Happiness, Love, and Wisdom*. New Harbinger.
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- LeDoux, J. 2003. *Synaptic Self*. Penguin.
- Linden, D. 2008. *The Accidental Mind*. Belknap.
- Sapolsky, R. 2004. *Why Zebras Don't Get Ulcers*. Holt.
- Siegel, D. 2007. *The Mindful Brain*. Norton.
- Thompson, E. 2007. *Mind in Life*. Belknap.

Key Papers - 1

See www.RickHanson.net for other scientific papers.

- Atmanspacher, H. & Graben, P. 2007. Contextual emergence of mental states from neurodynamics. *Chaos & Complexity Letters*, 2:151-168.
- Baumeister, R., Bratlavsky, E., Finkenauer, C. & Vohs, K. 2001. Bad is stronger than good. *Review of General Psychology*, 5:323-370.
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Key Papers - 2

- Davidson, R.J. 2004. Well-being and affective style: neural substrates and biobehavioural correlates. *Philosophical Transactions of the Royal Society*. 359:1395-1411.
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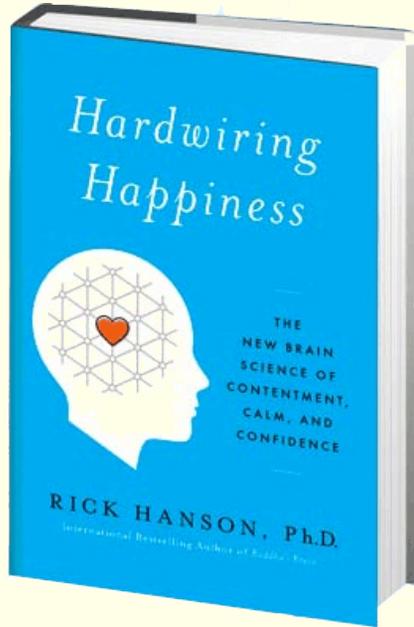
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