
Positive Neuroplasticity And Human Potential

Association for Humanistic Psychology

Sofia University

March 15, 2014

Rick Hanson, Ph.D.

The Wellspring Institute for Neuroscience and Contemplative Wisdom 1

WiseBrain.org RickHanson.net

Topics

- **Experience-dependent neuroplasticity**
- **Being on your own side**
- **Growing inner strengths**
- **The negativity bias**
- **Taking in the good**
- **Research on the HEAL process**
- **The evolving brain**
- **Key resource experiences**
- **The fruit as the path**



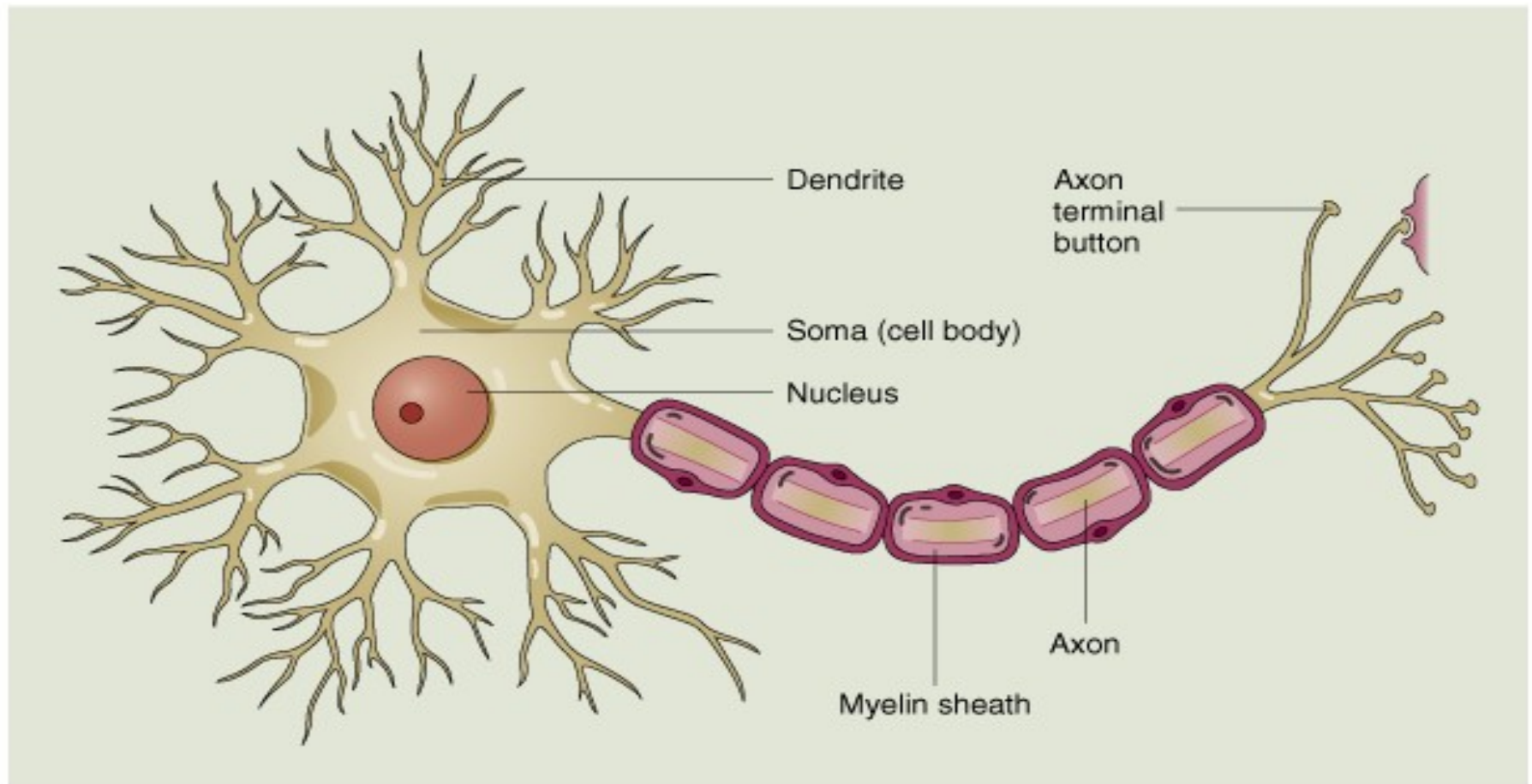
Experience-Dependent Neuroplasticity

*The brain is wider than the sky,
For, put them side by side,
The one the other will include
With ease, and you beside.*

Emily Dickinson



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.

The Natural Mind

Apart from the hypothetical influence of a transcendental X factor . . .

Awareness and unconsciousness, mindfulness and delusion, and happiness and suffering must be natural processes.

Mind is grounded in life.

Naturalizing Psychology

To “naturalize” something is to place it in the frame of the natural world, to operationalize it in natural terms.

Psychology often engages the *mental* causes of suffering and happiness. What could be the natural, *neurobiological* (NB) causes of those causes?


What could be a NB operationalization of suffering, desire, mindfulness, virtue, insight, love, wisdom, happiness, or cultivation?

We ask, "What is a thought?"

We don't know,

yet we are thinking continually.

Venerable Tenzin Palmo



**Mental activity entails
underlying neural activity.**

Steadiness of Mind



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

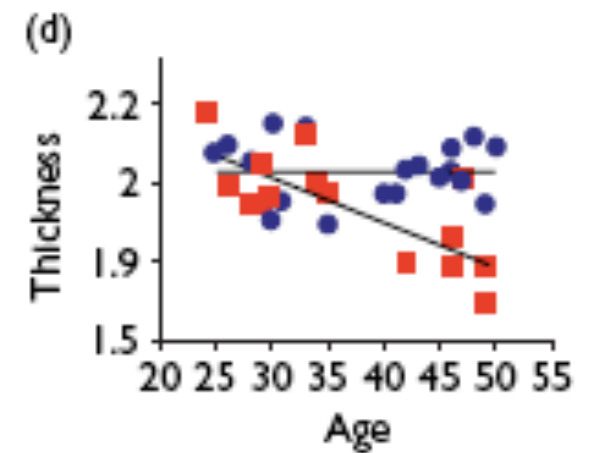
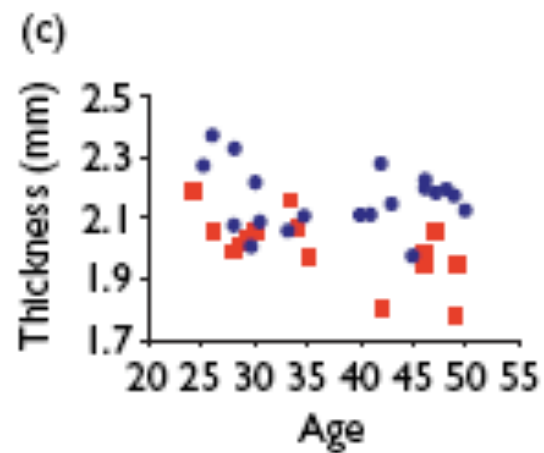
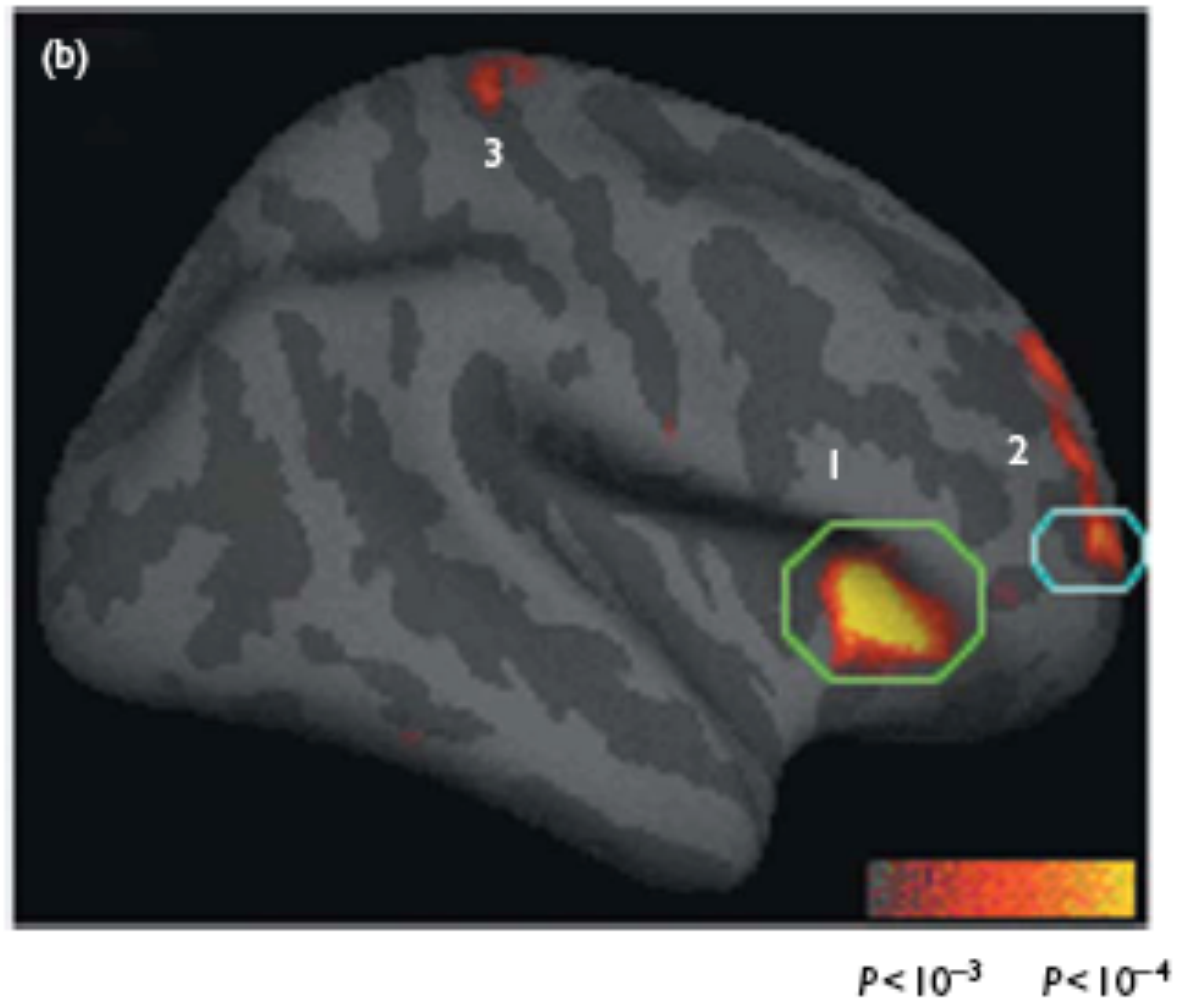
**Repeated neural activity
builds neural structure.**

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, creating a complex, interconnected structure. The central neuron is larger and more prominent, with a bright green nucleus and a glowing green cytoplasm. 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.




Self-Directed Neuroplasticity

We can use the mind

To change the brain

To change the mind for the better

To benefit ourselves and other beings.



Being on Your Own Side

*The good life, as I conceive it, is a happy life.
I do not mean that if you are good you will be happy;
I mean that if you are happy you will be good.*

Bertrand Russell

*The root of compassion is
compassion for oneself.*

Pema Chodron

“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



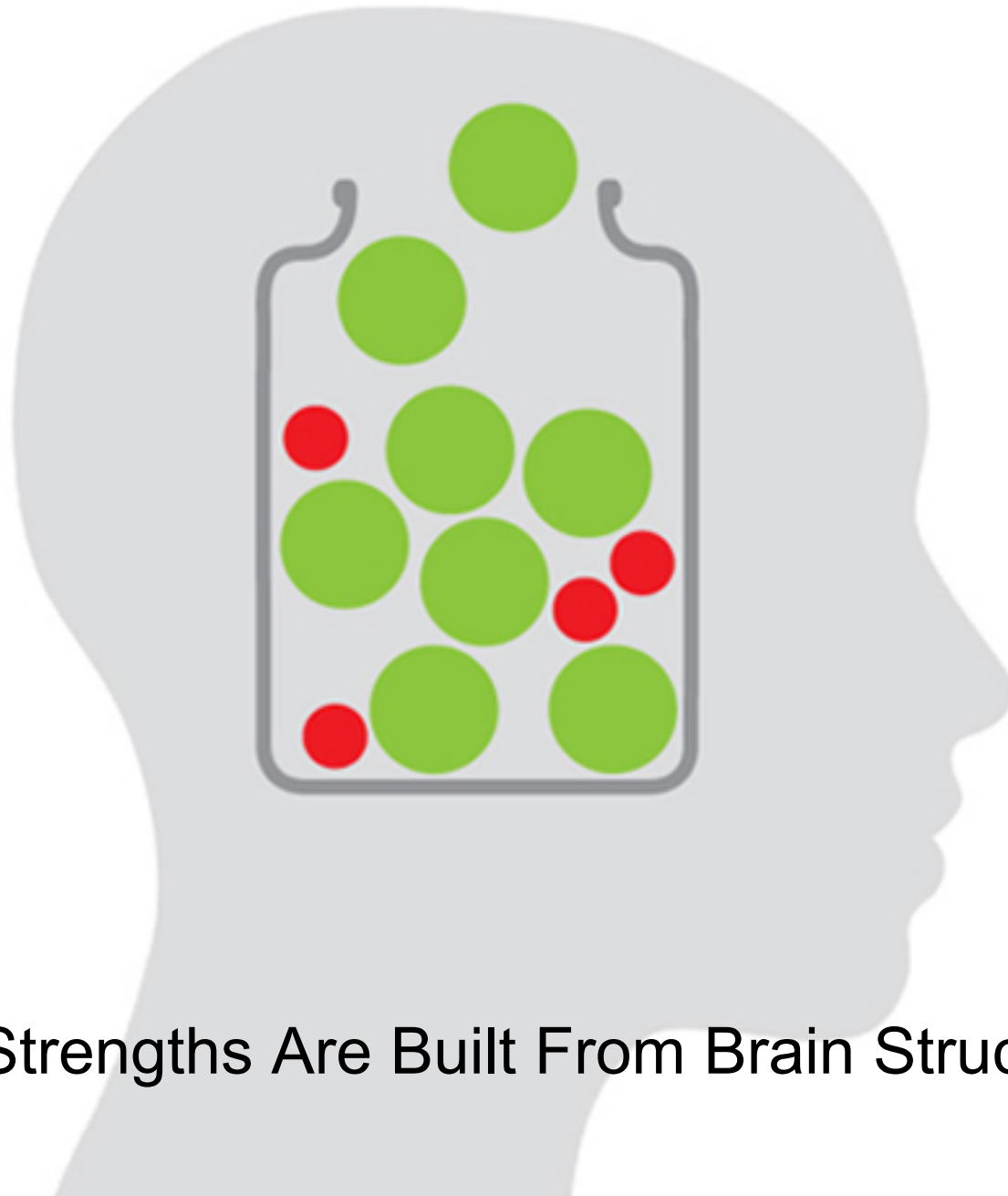
Growing Inner Strengths

The image is a split-screen composition. The left side shows a close-up of a wolf's face, which is smiling, showing its teeth and tongue. The right side shows a close-up of a wolf's face, which is snarling, showing its sharp teeth and a dark, menacing expression. The text "Two wolves in the heart" is overlaid in the center, spanning both images.

Two wolves in the heart

Inner Strengths Include

- **Virtues** (e.g., patience, energy, generosity, restraint)
- **Executive functions** (e.g., meta-cognition)
- **Attitudes** (e.g., optimism, openness, confidence)
- **Capabilities** (e.g., mindfulness, emotional intelligence, resilience)
- **Positive emotions** (e.g., gratitude, self-compassion)
- **Approach orientation** (e.g., curiosity, exploration)



Inner Strengths Are Built From Brain Structure

The Machinery of Memory

States are temporary, traits are enduring.

States foster traits, and traits foster states

Activated states --> Installed traits --> Reactivated states --> Reinforced traits

Negative states --> Negative traits --> Reactivated negative states --> Reinforced negative traits

Positive states --> Positive traits --> Reactivated positive states --> Reinforced positive traits

Growing Inner Strengths

Inner strengths are grown from positive mental states that are turned into positive neural traits.

Change in neural structure and function (learning, memory) involves activation and installation.

We become more compassionate by repeatedly internalizing feelings of compassion; etc.

Without **installation**, there is no growth, no learning, no lasting benefit.



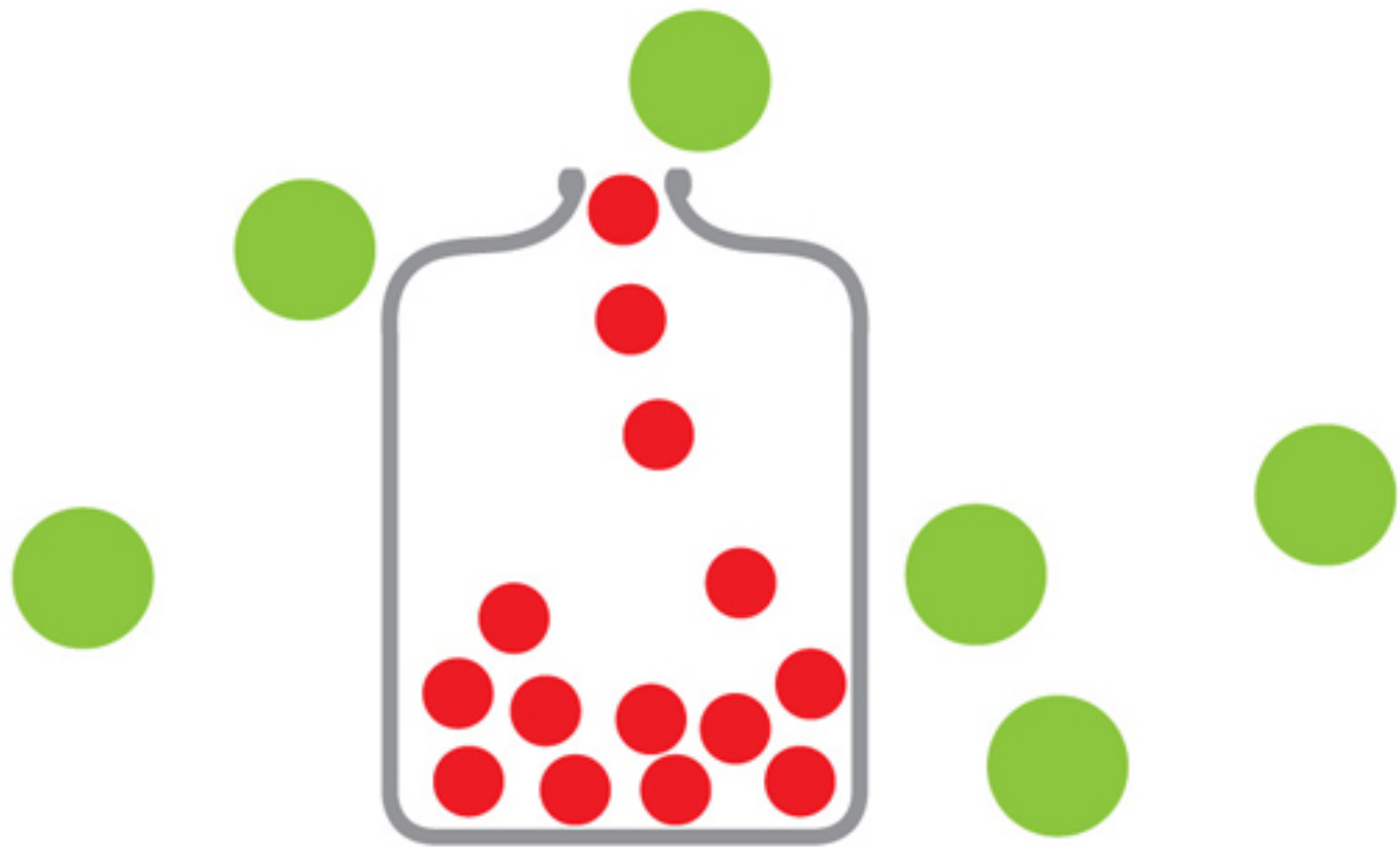
The Negativity Bias

Negative Experiences In Context

- Going negative about negative --> more negative
- Some inner strengths come only from negative experiences, e.g., knowing you'll do the hard thing.
- But negative experiences have inherent costs, in discomfort and stress.
- Many inner strengths could have been developed without the costs of negative experiences.
- Many negative 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




The Negativity Bias

A composite image showing Stone Age people in a park with modern buildings in the background. The scene is set in a lush green park with tall trees and manicured bushes. In the foreground, three Stone Age individuals are crouching in a grassy field. One man in the center has long, dark hair and a beard, wearing a simple animal skin garment. To his left, another man is sitting and looking towards him. To his right, a woman is seen from the back, also wearing animal skin. In the background, several modern high-rise apartment buildings with many windows rise above the trees, creating a stark contrast between the ancient and the modern. The text "Stone age brains in the 21st century" is overlaid in white serif font on a dark horizontal band across the middle of the image.

Stone age brains in the 21st century

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



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.

This is the fundamental weakness in most psychotherapy, human resources training, and spiritual practices.

We need to engage positive experiences actively to weave them into the brain.

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

Scott Miller



*To see what is in front of one's nose
takes a constant struggle.*

George Orwell

The Humility of Receptivity

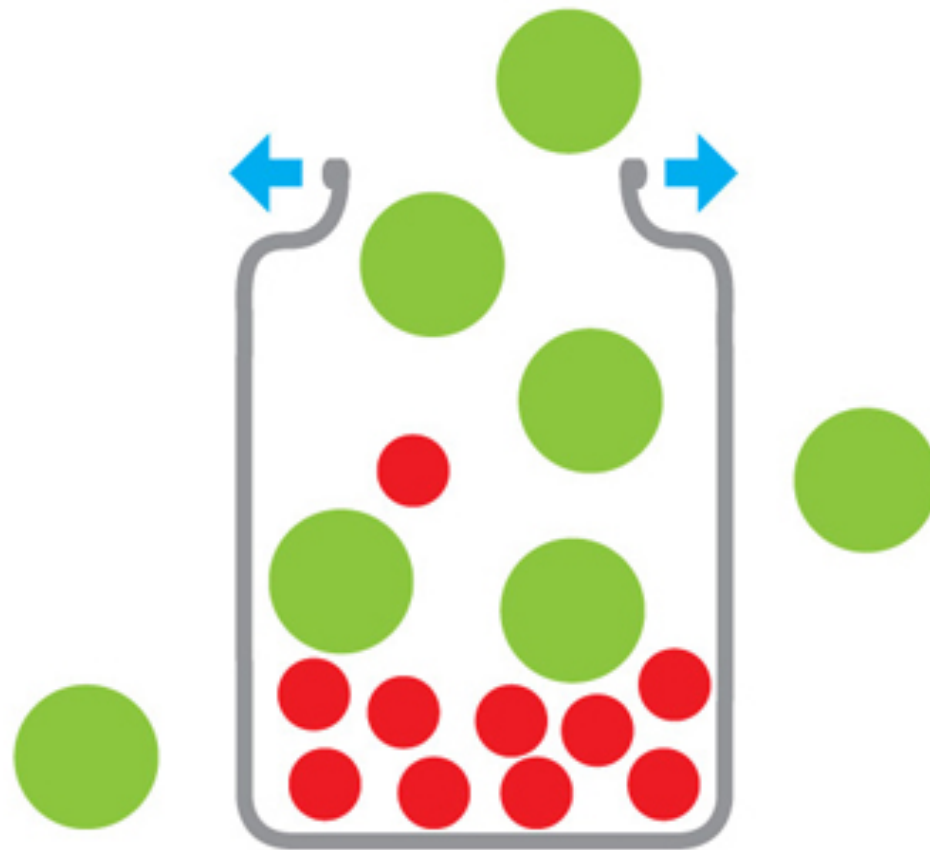
It's easy and tempting to be fascinated with the rapid flow of thought, and with a mind darting toward or away from anticipated pleasures or pains.

But the memory-making – neural structure and function changing – processes of the brain, especially for emotional, somatic, and motivational learning, are generally slower than cascading thought.

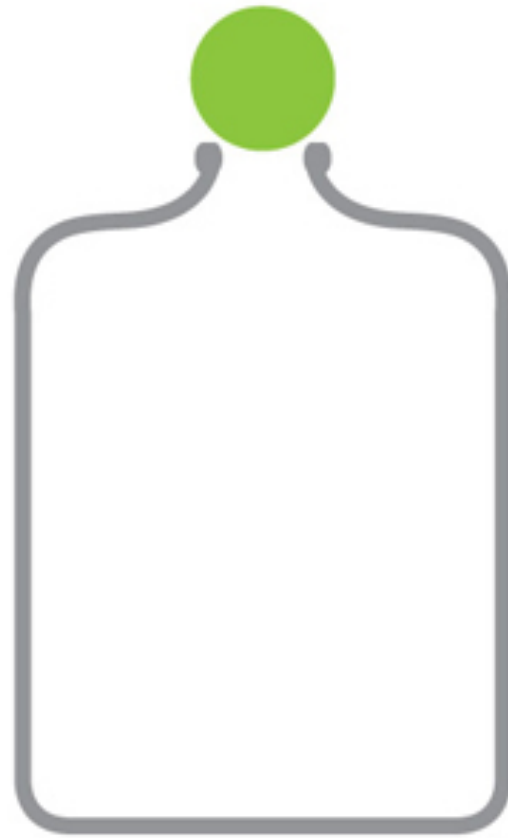
To consolidate useful experiences in the brain takes time . . . Accepting the rhythms of the flesh.

*The education of attention
would be the education par excellence.*

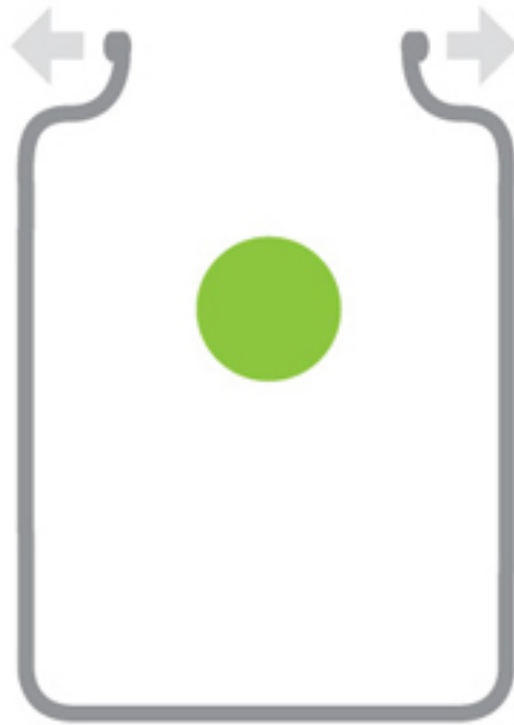
William James



Learning to Take in the Good



Have a Good Experience



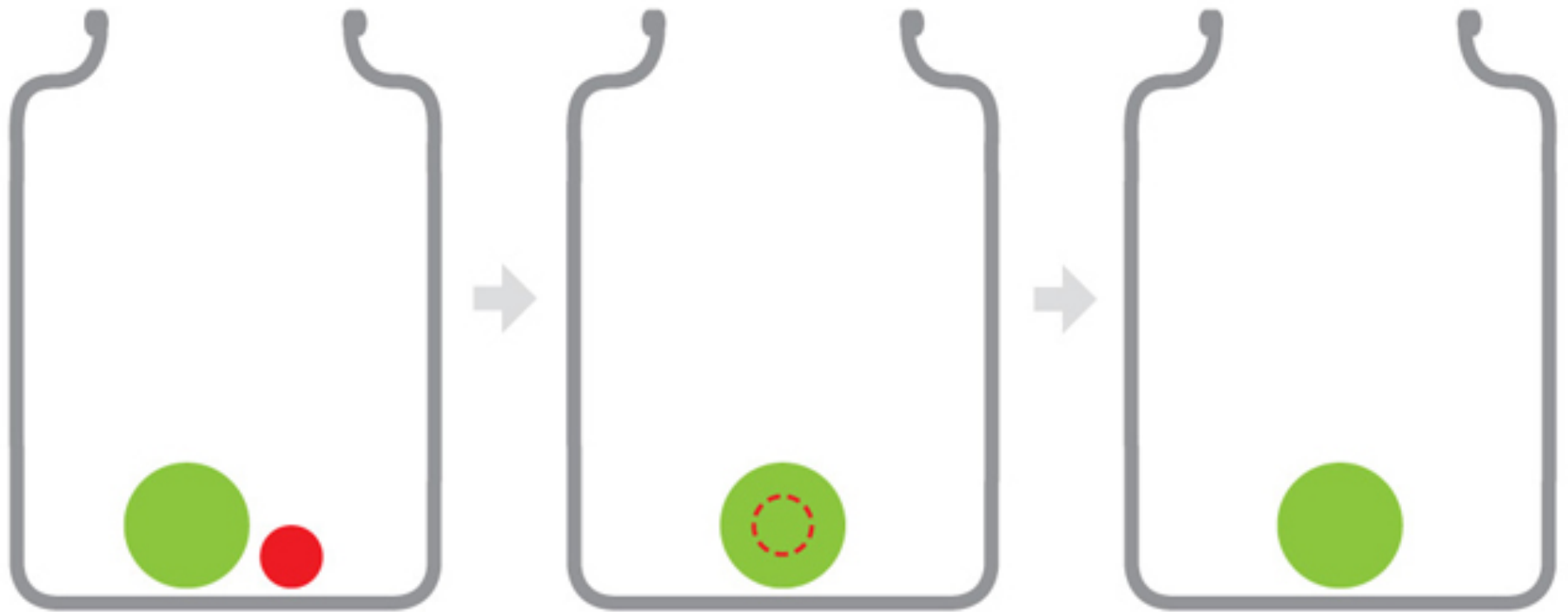
Enrich It

“Enriching” Factors

- Duration
- Intensity
- Multimodality – thought, perception, emotion, desire, action
- Novelty
- Personal relevance



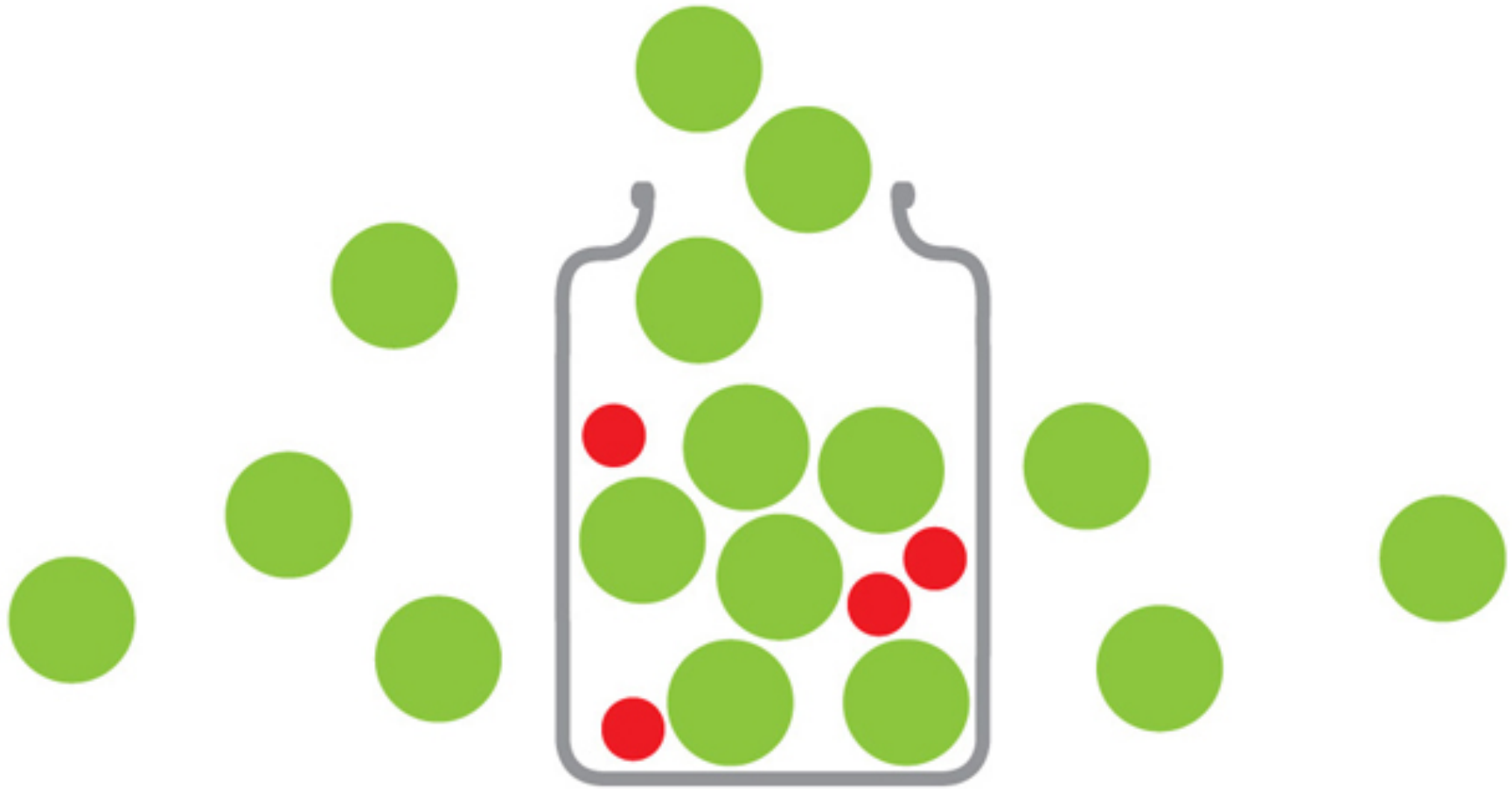
Absorb It



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

Let's Try It

- **Create** the experience of compassion
 - **Have** the experience – Bring to mind someone you care about . . . Be aware of the difficulties, stress, or suffering of this being . . . Open to the wish that this being not suffer . . . Open to warmth and tenderness
 - **Enrich** it – Stay with it . . . Feel compassion in your body . . . Let it grow more intense, pervading your mind
 - **Absorb** it – Intend and sense that compassion sink into you . . . Give yourself over to it . . .

It's Good to Take in the Good

- Development of specific inner strengths
 - General - resilience, positive mood, feeling loved
 - “Antidote experiences” - Healing old wounds, filling the hole in the heart
- 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

The Role of Cultivation

- Three fundamental 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 profound, it can be isolated and over-valued in some therapies or spiritual practices.
- Skillful means for decreasing the negative and increasing the positive have developed over thousands of years. Why not use them?



Research on the HEAL Process

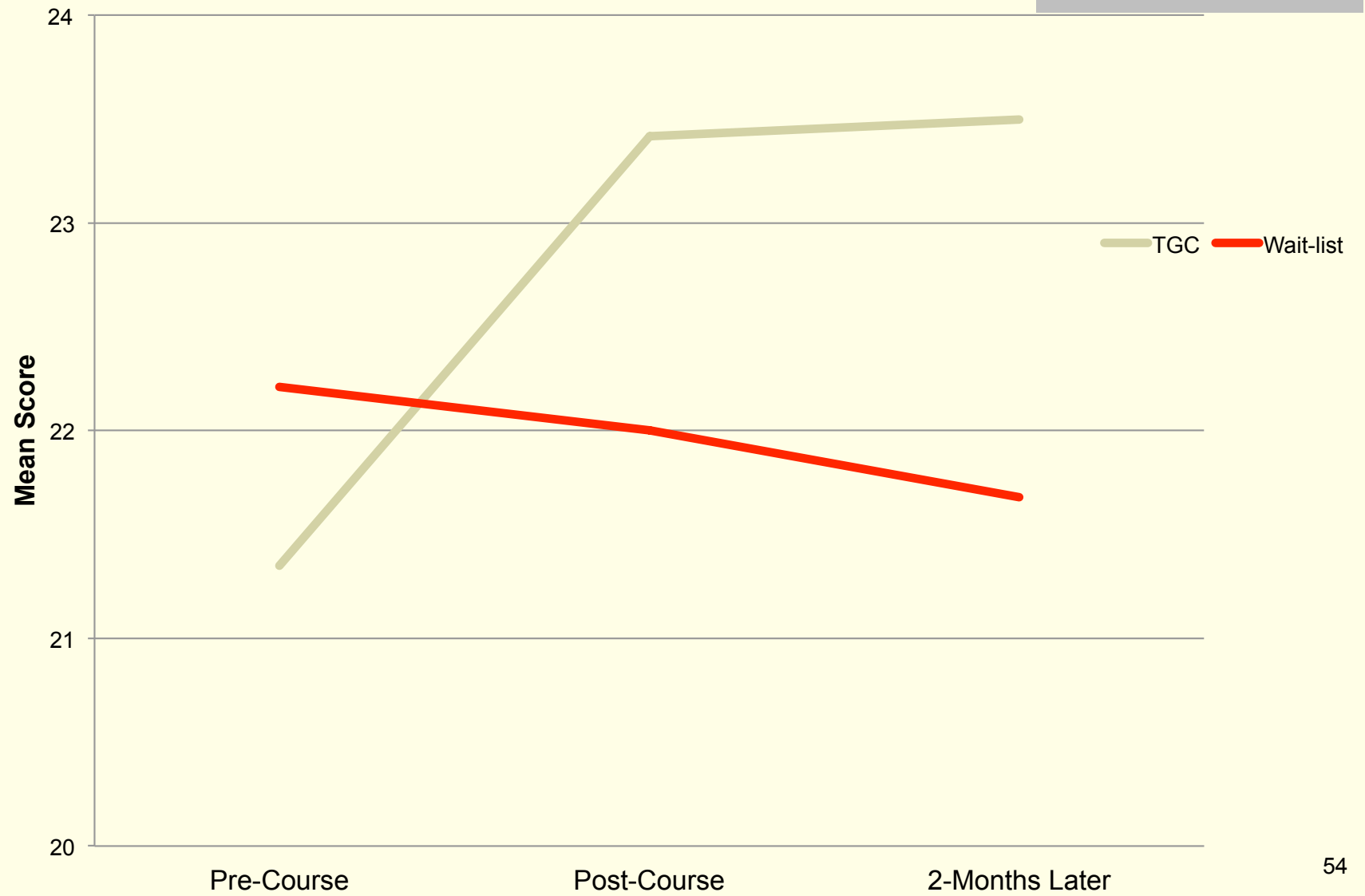
Teaching the HEAL Process

- 18 hour course, currently formatted in 3-hour classes spread over six or seven weeks
- First two classes lay a foundation and teach the first three steps of HEAL; third class teaches the fourth step (Link); remaining classes focus on internalizing experiences and growing inner strengths related to the Avoiding harms, Approaching rewards, and Attaching to others systems
- Information about taking the course, training in applying it in professional settings, and training to teach it is available at www.RickHanson.net.

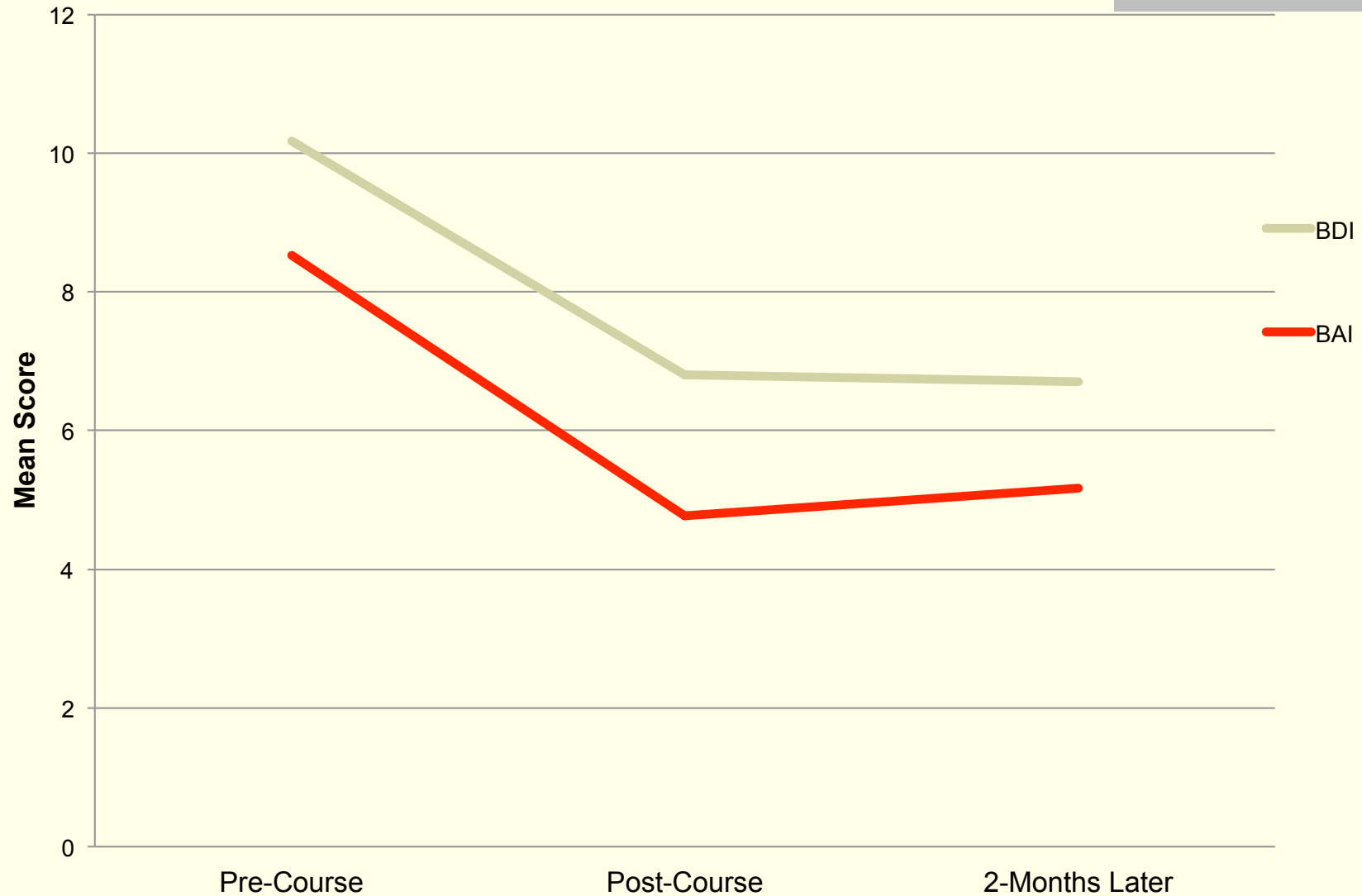
Study on the HEAL Process

- 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.

Self-Esteem



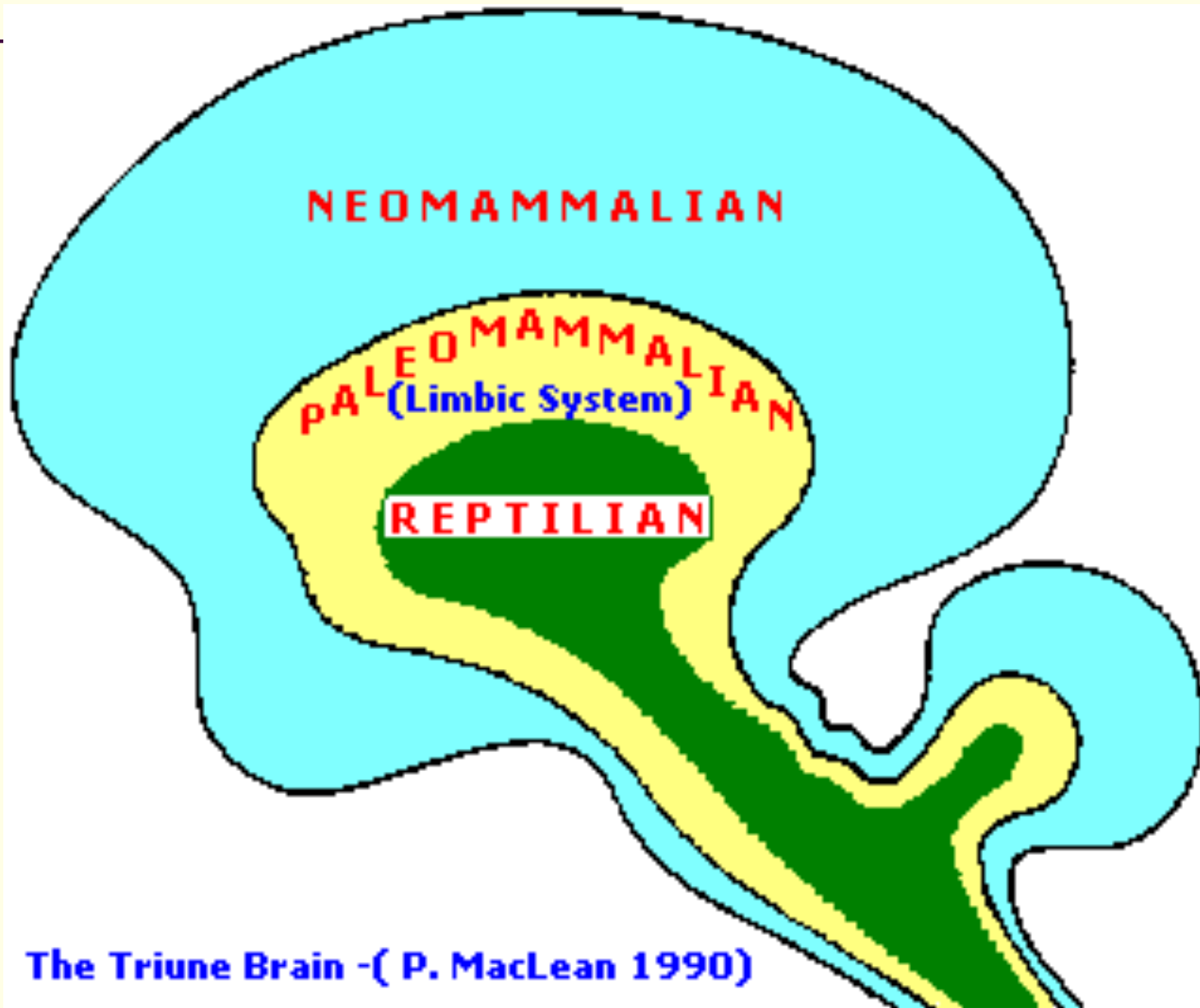
Combined Sample: Depression (BDI) & Anxiety (BAI)





The Evolving Brain

Evolution of the Brain



Three Motivational and Self-Regulatory Systems

■ Avoid Harms:

- Predators, natural hazards, aggression, pain
- Primary need, tends to trump all others

■ Approach Rewards:

- Food, shelter, mating, pleasure
- Mammals: rich emotions and sustained pursuit

■ Attach to Others:

- Bonding, language, empathy, cooperation, love
- Taps older Avoiding and Approaching networks

Each system can draw on the other two for its ends.⁵⁸

The Homeostatic Home Base

When not disturbed by threat, loss, or rejection [no felt deficit 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.

But to Cope with Urgent Needs, We Leave Home . . .

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

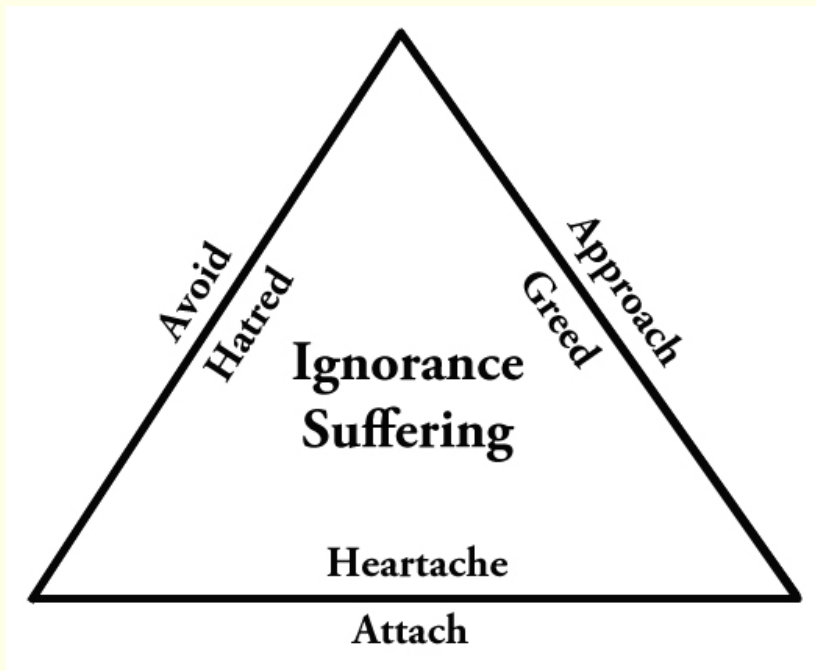
The body fires up into the stress response; outputs exceed inputs; long-term building is deferred.

The mind fires up into:

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

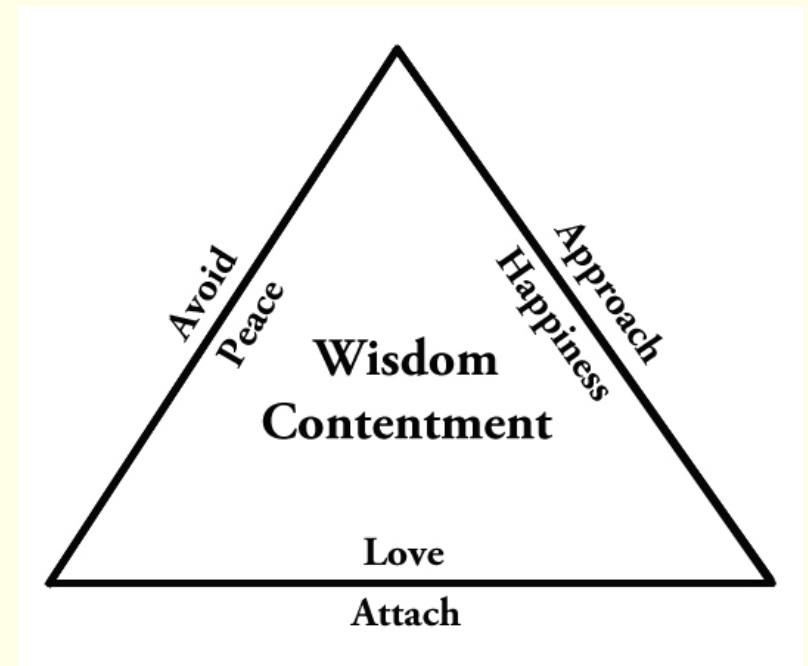
This is the brain in allostatic, **Reactive**, *craving* mode.⁶⁰

Choices . . .



Reactive Mode

Or?



Responsive Mode₁

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.



Key Resource Experiences

Pet the Lizard



Feed the Mouse



Hug the Monkey





Peace

Contentment

Love



The Fruit as the Path

Cultivation Undoes Craving

- Taking in the good is an openness to positive experience while letting go – allowing the experience in and through you.
- Much suffering and harm comes from “craving” – resisting the unpleasant, grasping after the pleasant, and clinging to the heartfelt – a drive state based on deficit or disturbance of core needs – safety, satisfaction, connection – being met.
- By repeatedly internalizing the felt sense of core needs being met, we gradually reduce the sense of deficit or disturbance, and rest increasingly 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.

*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.*

Suggested Books

See www.RickHanson.net for other suggestions.

- Austin, J. 2009. *Selfless Insight*. MIT Press.
- Begley, S. 2007. *Train Your Mind, Change Your Brain*. Ballantine.
- Carter, C. 2010. *Raising Happiness*. Ballantine.
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- Johnson, S. 2005. *Mind Wide Open*. Scribner.
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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.
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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.
- Farb, N.A.S., Segal, Z.V., Mayberg, H., Bean, J., McKeon, D., Fatima, Z., and Anderson, A.K. 2007. Attending to the present: Mindfulness meditation reveals distinct neural modes of self-reflection. *SCAN*, 2, 313-322.
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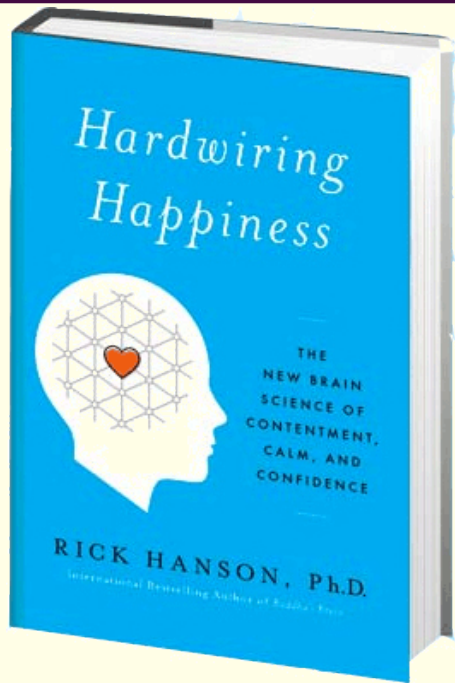
Key Papers - 3

- Lazar, S., Kerr, C., Wasserman, R., Gray, J., Greve, D., Treadway, M., McGarvey, M., Quinn, B., Dusek, J., Benson, H., Rauch, S., Moore, C., & Fischl, B. 2005. Meditation experience is associated with increased cortical thickness. *Neuroreport*. 16:1893-1897.
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Key Papers - 4

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Where to Find Rick Hanson Online



Hardwiring Happiness: The New Brain Science of Contentment, Calm, and Confidence

www.rickhanson.net/hardwiringhappiness

Personal website: www.rickhanson.net

Wellspring Institute: www.wisebrain.org



youtube.com/drrhanson



facebook.com/rickhansonphd