Positive Neuroplasticity
And Human Potential

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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
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, 2006
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.
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.
Neurons that fire together, wire together.
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
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
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
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 Humility of Receptivity
The education of attention would be the education par excellence.

William James
Learning to Take in the Good
Have a Good Experience
“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.
- 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

Mean Score

Pre-Course  Post-Course  2-Months Later

TGC  Wait-list
Combined Sample: Depression (BDI) & Anxiety (BAI)

Mean Score

Pre-Course  Post-Course  2-Months Later

BDI

BAI
The Evolving Brain
Evolution of the Brain

The Triune Brain - (P. MacLean 1990)
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.
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**.
Choices . . .

Reactive Mode

Responsive Mode

Or?
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.

Dhammapada 9.122
Suggested Books

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

Key Papers - 1

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


Key Papers - 2


- Hanson, R. 2008. Seven facts about the brain that incline the mind to joy. In *Measuring the immeasurable: The scientific case for spirituality*. Sounds True.
Key Papers - 3


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