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
Hardwiring Happiness:
The New Brain Science of Lasting Inner Strength and Peace

Sounds True
Seattle, February 20-21, 2016

Rick Hanson, Ph.D.
The Wellspring Institute for Neuroscience and Contemplative Wisdom
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Topics 1

- It’s good to be happy
- How to be happy
- Experiencing positive neuroplasticity
- What is happening in your brain
- Self-compassion
- Self-directed neuroplasticity
- Self-compassion
Topics 2

- The missing link
- The negativity bias
- Getting good at getting better
- It’s good to take in the good
- Using HEAL with others
- Growing key strengths
- The Buddha’s drive theory of suffering
- Larger implications of mindful cultivation
It’s Good to Be Happy
(and strong, loving, and peaceful)
What Is Happiness?

Hedonia

Eudaimonia
Benefits of Happiness

- Feels good (duh)
- Better health
- Longer life
- Greater resilience
- More success
- Stronger relationships
- More cooperative, giving, and loving toward others
How to Be Happy
What Shapes Your Course?

- Challenges
- Vulnerabilities
- Resources
Where Are Resources Located?

World

Body

Mind
Resources in Your Mind

- Understandings
- Capabilities
- Positive emotions
- Attitudes
- Motivations
- Virtues
Two wolves in the heart
INNER STRENGTHS ARE BUILT FROM BRAIN STRUCTURE
How do you get these inner strengths into your brain?
Experiencing Positive Neuroplasticity
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:

**Speaker**: What are some of the good facts in your life these days?

**Listener**: Find a sincere gladness for the other person.

**Both**: Repeatedly take 5-10 seconds to feel and register enjoyable, beneficial experiences
What We’re Doing

1. Learning how to deliberately internalize beneficial experiences in implicit memory

2. Using internalization skills to cultivate what would be beneficial in your mind

3. Exploring different ways to encourage beneficial states and traits

→ #1 is the most important here.
What Is Happening in Your Brain
The Enchanted Loom
Mental activity entails underlying neural activity.
Rewards of Love
Christian Nuns, Recalling a Profound Spiritual Experience

Beauregard, et al., *Neuroscience Letters*, 9/25/06
Repeated mental activity entails repeated neural activity.

Repeated neural activity builds neural structure.
Neurons that fire together, wire together.
We can use the mind
To change the brain
To change the mind for the better
To benefit ourselves and other beings.
Self-Compassion
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.

- Self-compassion is hard for many people, due to feelings of unworthiness, self-criticism, or shame. 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.
  - 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
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
Self-Directed Neuroplasticity
We ask, “What is a thought?”

We don’t know,

yet we are thinking continually.

Venerable Tenzin Palmo
A Neuron
Ardent, Diligent, Resolute, and Mindful
Learning – changing neural structure and function – has two stages:

From short-term memory buffers to long-term storage

From state to trait

From activation to installation.
Two Kinds of Memory (background)

- Learning creates **memory**, broadly defined: a lasting change in neural structure or function.

- **Explicit** memory: recollections, “semantic knowledge” (e.g., what is a bicycle)

- **Implicit** memory: “procedural knowledge” (e.g., how to ride a bicycle), expectations, biases, relationship paradigms, emotional residues of lived experience, acquired helplessness or resilience
Inner strengths are grown from experiences of them – activated states – that are installed as traits.
You become more compassionate by installing experiences of compassion.

You become more grateful by installing experiences of gratitude.

You become more mindful by installing experiences of mindfulness.
Installation

Installation

Installation
Most experiences of inner strengths are enjoyable.

They feel good because they are good for us and others.
The Missing Link
An activated state is a necessary condition for learning, but not a sufficient one.

Without installation, there is no learning, no change in the brain.
Most of us are better at activation but than we are at installation.

This is the fundamental weakness in most character education, human resources training, psychotherapy, coaching, and mindfulness programs.
The same research that proves therapy works shows no improvement in outcomes over the last 30 or so years.

Scott Miller
Meanwhile, stressful, painful, harmful experiences are being rapidly converted into neural structure.
The Negativity Bias
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 than getting “carrots.”

1. So we scan for bad news,
2. Over-focus on it,
3. Over-react to it,
4. Install it quickly in implicit memory,
5. Sensitize the brain to the negative,
Sensitizing the Brain to the Negative

- Amygdala initiates stress response ("alarm bell")
- Hippocampus:
  - Inhibits the amygdala
  - Inhibits cortisol production
- Cortisol:
  - Stimulates and sensitzes the amygdala
  - Inhibits and can shrink the hippocampus
- Consequently, chronic negative experiences:
  - Sensitize the amygdala alarm bell
  - Weaken the hippocampus: this reduces memory capacities and the inhibition of amygdala and cortisol production
  - Thus creating vicious cycles in the NS, mind, and behavior
The Brain’s Negativity Bias

As our ancestors evolved, avoiding “sticks” was more important than getting “carrots.”

1. So we scan for bad news,
2. Over-focus on it,
3. Over-react to it,
4. Install it quickly in implicit memory,
5. Sensitize the brain to the negative, and
6. Create vicious cycles with others.
Velcro for Bad, Teflon for Good

The negativity bias

good experiences

bad experiences
The brain is good at learning from bad experiences but bad at learning from good ones.

Even though learning from good experiences is the primary way to grow resources in the mind.
The Negativity Bias
Stone age brains in the 21st century
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:

How does the \textit{negativity bias} operate in your own mind, in your own life?
Getting Good at Getting Better
Getting the Good Stuff into Your Brain
Have a Good Experience
Aspects of Experience

- **Thoughts** - expectations; paradigms of relationships; perspectives on self, world, past and future

- **Perceptions** - sensations; relaxation; vitality

- **Emotions** - both feelings and mood

- **Desires** - values, aspirations, passions, wants

- **Behaviors** - repertoire; inclinations
Two Ways To Have a Beneficial Experience

Notice one you are already having.
- In the foreground of awareness
- In the background

Create one.
Let’s Try It

- **Notice** the experience already in awareness that you are basically alright right now.

- **Create** the experience of recalling an enjoyable time in nature.
How to Create A Beneficial Experience (background)

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 (background)

- 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.
Enrich It
How to Enrich an Experience

- Duration
- Intensity
- Multimodality
- Novelty
- Salience
Let’s Try Enriching Gratitude!

Bring to mind one or more things you are thankful for or glad about.

- Have the experience.
- Enrich it through:
  - Duration
  - Intensity
  - Multimodality
  - Novelty
  - Salience
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”
Let’s Try Absorbing Feeling Strong

Bring to mind one or more times you felt strong.

- Have the experience.
- Enrich it.

Absorb it:

- Intend and sense that it is sinking into you, becoming a part of you.
- Be aware of what is rewarding or enjoyable about this experience.
- Receive it and let it establish itself in you.
Like a Nice Fire

Have a fire (notice or ignite one).

Enrich it by protecting it and adding fuel to keep it burning.

Absorb its warmth into yourself.
Cautions, Blocks, and Adaptations

- Cautions for people with:
  - severe depression
  - poor executive functions
  - high self-criticism
  - deliberate choiceless awareness

- Blocks are normal (e.g., “I don’t deserve to feel good”) and often a useful focus.

- Adapt target experiences and instructions based on setting, age, culture, etc.
Link Positive and Negative Material
Keys to the Link Step

- It’s common in everyday life (e.g., talking about an upset with a friend) and widely used for personal growth (e.g., replacing harmful beliefs).

- The person must be able to:
  - Hold two things in awareness
  - Keep the positive one more prominent
  - Not get hijacked by the negative one

- Drop the negative if it’s too powerful, and just do the first three (Have, Enrich, Absorb).
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
Let’s Try Linking Feeling Cared About

- Bring to mind one or more beings who care about you. Open to feeling included, seen, appreciated, liked, or loved.
  - Have the experience.
  - Enrich it.
  - Absorb it.
- Link it:
  - While feeling cared about, also be aware of a mild sense of not being fully appreciated by someone, off to the side of your mind.
HEAL Yourself

Have a positive experience.

Enrich it.

Absorb it.

Link positive and negative material.
The Definition of HEAL

The deliberate internalization of beneficial experiences in implicit memory
Have It, Enjoy It
It’s Good to Take in the Good
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
In the Garden of the Mind

1. Be with what is there.
2. Decrease what’s harmful.
3. Increase what’s beneficial.

Let be. Let go. Let in.
Mindfulness is present in all three.

“Being with” is primary – but not enough.
We also need “wise effort.”
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)
In the context of wisdom and virtue (*panna* and *sila*), practice is like a stool with three legs:

- **Metta** – warmheartedness, kindness, compassion
- **Sati** – mindfulness, concentration, seeing clearly
- **Bhavana** – cultivation, learning, growth
Know the mind.

Shape the mind.

Free the mind.
Using HEAL with Others
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
Using HEAL in Trainings

- Take five minutes to explain its rationale and teach it explicitly.

- In the flow, occasionally encourage enriching and absorbing, using natural language.

- Tell people they can use HEAL outside of class to deepen internalization of what they’re learning.

- Don’t use HEAL when it’s inappropriate (e.g., radically choiceless awareness, highly self-critical about any kind of performance).
Growing Key Strengths
What – if it were more present in the mind of a person – would really help?

How could the person have more experiences of this mental resource – that are internalized in the brain?
The Evolving Brain

The Triune Brain - (P. MacLean 1990)
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”
Meeting Three Fundamental Needs

<table>
<thead>
<tr>
<th>Need</th>
<th>Signal</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
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<td>Pleasant</td>
<td>Approaching</td>
</tr>
<tr>
<td>Connection</td>
<td>Heartfelt</td>
<td>Attaching</td>
</tr>
</tbody>
</table>
Mental Resources for Challenges

**Safety** – Grit, protection, relaxation, feeling alright right now, peace

**Satisfaction** – Gratitude, gladness, accomplishment, contentment

**Connection** – Belonging, appreciation, friendship, compassion, love
## Resources for Avoiding Harms

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weakness</td>
<td>Strength</td>
</tr>
<tr>
<td>Helplessness</td>
<td>Agency</td>
</tr>
<tr>
<td>Freezing, immobilization</td>
<td>Action, venting</td>
</tr>
<tr>
<td>Inflated threats</td>
<td>Accurate appraisal</td>
</tr>
<tr>
<td>Alarm</td>
<td>Protection, calming</td>
</tr>
<tr>
<td>Tension</td>
<td>Relaxation</td>
</tr>
<tr>
<td>Worry, fear</td>
<td>Feeling alright now, making a plan</td>
</tr>
<tr>
<td>Irritation, anger</td>
<td>Big picture, peace</td>
</tr>
</tbody>
</table>
## Resources for Approaching Rewards

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Resource</th>
</tr>
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<tbody>
<tr>
<td>What I don’t have</td>
<td>What I do have</td>
</tr>
<tr>
<td>Scarcity</td>
<td>Enoughness, fullness</td>
</tr>
<tr>
<td>Disappointed, sad</td>
<td>Gratitude, gladness</td>
</tr>
<tr>
<td>Frustration, failure</td>
<td>Accomplishment</td>
</tr>
<tr>
<td>Bored, numb</td>
<td>Pleasure, excitement</td>
</tr>
<tr>
<td>Grief</td>
<td>Loved and loving</td>
</tr>
<tr>
<td>Giving up</td>
<td>Aspire, lived by good</td>
</tr>
<tr>
<td>Drivenness</td>
<td>Already satisfied</td>
</tr>
<tr>
<td>Challenge</td>
<td>Resource</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Left out, excluded</td>
<td>Belonging, wanted</td>
</tr>
<tr>
<td>Inadequacy, shame</td>
<td>Appreciated, respected</td>
</tr>
<tr>
<td>Ignored, unseen</td>
<td>Receiving empathy</td>
</tr>
<tr>
<td>Lonely</td>
<td>Friendship, caring</td>
</tr>
<tr>
<td></td>
<td>to others and oneself</td>
</tr>
<tr>
<td>Resentment</td>
<td>Recognize it hurts you</td>
</tr>
<tr>
<td>Envy, jealousy</td>
<td>Self-compassion, take action, good will</td>
</tr>
<tr>
<td>Feeling stifled</td>
<td>Skillful assertiveness</td>
</tr>
</tbody>
</table>
Pet the Lizard
Feed the Mouse
Hug the Monkey
Peace

Contentment

Love
The Buddha’s Drive Theory of Suffering
The Buddhist drive theory
(summarized in the Four Noble Truths)
says that “craving” – resisting the unpleasant, chasing the pleasant, clinging to the heartfelt, ignoring the neutral –
causes suffering.

What causes “craving?”
### Meeting Three Core Needs

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The Reactive Red Zone

When there is a presumed or 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** (Avoiding)
- **Frustration** (Approaching)
- **Heartache** (Attaching)

The brain in allostatic, **Reactive**, **craving** mode
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** – Insecure attachment; borderline, narcissistic, antisocial PDs; “looking for love in all the wrong places”
The Responsive Green Zone

*With no presumed or 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** (Avoiding)
- **Contentment** (Approaching)
- **Love** (Attaching)

The brain in homeostatic, *Responsive*, **minimal** craving mode
Choices . . .

Reactive Mode

Responsive Mode

Or?
Can You Stay in the Green Zone When:

- Things are unpleasant?
- Things are pleasant?
- Things are heartfelt?
Coming Home, Staying Home

Experiences of core needs feeling met – the sense of safety, satisfaction, and connection: peace, contentment, and love – restore or deepen healthy equilibrium in body and mind: the 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.
Larger Implications of Mindful Cultivation
Societal Implications

- For most of the time our human and hominid ancestors have lived, it was not possible to meet the core needs of everyone. But now the resources and know-how exist to do this. How we handle this unprecedented opportunity will be the central theme of this century.

- Improving external conditions is vital – but not enough. Many affluent people dwell in anxiety and anger, frustration and drivenness, and hurt and ill will.

- Repeatedly internalizing Responsive experiences develops a “green brain” that is harder to manipulate with threats and fear, greed and consumerism, and “us” vs. “them” rivalries. A critical mass of “green brains” could help bring a tipping point that changes the course of human history.
In the Days Ahead

- Make taking in the good an informal daily habit
- At the end of any formal practices – meditation, exercise, journaling, prayer, yoga, walking the dog – take a few moments to take in the benefits
- Know what your current “vitamin C” is – and look for opportunities to feel it and internalize it
- Be mindful of the hedonic tone of experiences – unpleasant, pleasant, heartfelt, neutral – and help yourself tip toward the green zone about them
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
Peace

Contentment

Love
Thank you
Suggested Books

See www.RickHanson.net for other great books.

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