Positive Neuroplasticity:
The Practical Brain Science of Building Lasting Psychological Resources

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Mental Resources for Resilient Well-Being
Well-Being

Hedonia

Eudaimonia
Shaping the Course of a Life

Challenges

Vulnerabilities

Resources
Location of Resources

World

Body

Mind
Resources for Well-Being

Grit
Mindfulness
Secure Attachment
Self Regulation
Optimism
Self-Worth
Roughly half to two-thirds of the variation in psychological attributes involves non-heritable factors.

A large fraction of a typical person’s mental resources are acquired – learned – rather than innate.
Mental Resources Are Acquired Through Changes in Nervous System
A Taste of Taking in the Good
Mindful Cultivation: HEAL Process

**Activation**
1. Have a beneficial experience

**Installation**
2. Enrich the experience
3. Absorb the experience
4. Link positive and negative material (Optional)
Have a Beneficial Experience
Enrich It
Absorb It
Link Positive & Negative Material
Have It, Enjoy It
# Let’s Try It

<table>
<thead>
<tr>
<th>Notice</th>
<th>Create an experience of gladness, gratitude</th>
<th>Create an experience of caring about someone</th>
</tr>
</thead>
<tbody>
<tr>
<td>relaxing as you exhale</td>
<td>have the experience. Enrich it. Absorb it.</td>
<td></td>
</tr>
</tbody>
</table>

For each of the above:
Self-Directed Neuroplasticity
In the Garden of the Mind

1. Be with what is there
2. Decrease the negative
3. Increase the positive

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

“Being with” is primary – but not enough.
We also need “wise effort.”
Mental resources are acquired in two stages:

- Encoding ➔ Consolidation
- Activation ➔ Installation
- State ➔ Trait
Major Neural Mechanisms of Learning

(De)Sensitizing existing synapses
Building new synapses
Altered gene expression
Building and integrating new neurons
Increased ongoing activity in a region
Increased connectivity of regions
Altered neurochemical activity
Information from hippocampus to cortex
Modulation by stress hormones, cytokines
Slow wave and REM sleep
Neurons that fire together, 
wire together.
Mental resources are developed through experiences of them or related factors – activated states – that are installed as traits.
We become more **compassionate** by repeatedly installing experiences of compassion.

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

We become more **resilient** by repeatedly installing experiences of resilience.
In a positive cycle, beneficial traits — mental resources — foster beneficial states, which present another opportunity to reinforce the beneficial trait.
Most experiences of inner strengths – resilience, kindness, insight, mindfulness, self-worth, love, etc. – are enjoyable.

Positive hedonic tone is thus often a marker of an opportunity to develop a psychological resource.
Pick a partner and choose an A and a B (A’s go first). Then take turns, with one person speaking while the partner mainly listens, exploring this question:

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

As the listener, keep finding a genuine gladness about the good facts in the life of our partner.

If you’re alone, reflect or journal.
The Negativity Bias
Meanwhile, stressful, painful, harmful experiences are being rapidly converted into lasting changes in neural structure or function.
The Negativity Bias

During the 600 million year evolution of the nervous system, avoiding “sticks” was usually more consequential than getting “carrots.”

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

The negativity bias

bad experiences
good experiences
The Negativity Bias
Steepening Personal Growth Curves
Experiencing doesn’t equal learning.

Activation **without installation** may be pleasant, but no trait resources are acquired.

What fraction of our beneficial mental states ever become neural structure?
Professionals and the public are generally good at activation but bad at installation.
The same research that proves therapy works shows no improvement in outcome over the last 30 or so years.

Scott Miller
The installation phase of learning is the fundamental weakness — and **opportunity** — in much coaching, psychotherapy, human resources training, and mindfulness programs.
Four Learning Curves

Mental Resources vs. Time

Decline
Four Learning Curves

Mental Resources vs. Time

1. Decline
2. No growth
Four Learning Curves

- ① Decline
- ② No growth
- ③ Linear growth
Four Learning Curves

1. Decline
2. No growth
3. Linear growth
4. Exponential growth; learning how to learn

Mental Resources vs. Time
How can we increase the conversion rate from positive states to beneficial traits?
Learning Factors

Environmental – setting, social support

Behavioral – activities, repetition

Mental – motivation, engagement
Learning How To Learn
## Types of Mental Learning Factors

<table>
<thead>
<tr>
<th>Contextual</th>
<th>Engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Openness</td>
<td>Personal relevance</td>
</tr>
<tr>
<td>Mindfulness</td>
<td>Alertness, sense of novelty</td>
</tr>
<tr>
<td>View of positive experience</td>
<td>Arousal, enactment</td>
</tr>
<tr>
<td>Growth/learning mindset</td>
<td>Sense of reward</td>
</tr>
<tr>
<td>Motivation</td>
<td>Emotion</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>Granularity of attention</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>Interoception</td>
</tr>
<tr>
<td>Feeling supported</td>
<td>Maintenance, repetition</td>
</tr>
<tr>
<td>Sense of safety</td>
<td>Meaning, elaboration</td>
</tr>
</tbody>
</table>
Benefits of Mental Learning Factors

Benefits of both types of factors:

• Increase learning from the present experience
• Prime NS for future beneficial experiences
• Heighten consolidation of past experiences

Engagement factors have additional benefits:

• Regulate experience directly
• Increase initial processes of consolidation
• Are under volitional control
Mindful Cultivation: HEAL Process

**Activation**

1. **Have** a beneficial experience

**Installation**

2. **Enrich** the experience

3. **Absorb** the experience

4. **Link** positive and negative material (Optional)
Let’s Try It

Notice your own going on being:
- Foreground the experience in awareness
- Stay with it; open to it in your body; keep it fresh
- Be mindful of what is rewarding; sense it sinking in

Create an experience of compassion:
- Wish that beings not suffer, with warm concern
- Let it pervade the mind; find personal relevance
- Give over to it; imagine it spreading inside you
Have a Beneficial Experience
1. Have a Beneficial Experience

Experience: a beneficial thought, perception, emotion, desire, action, or blend

Notice an experience already present, in the foreground or background of awareness

Create an experience, such as:
- Bringing to mind various facts
- Imagining something
- Calling up somatic markers
- Taking action
Two Aspects of Installation

**Enriching:**
- Mind – big, rich, protected experience
- Brain – intensifying and maintaining neural activity

**Absorbing:**
- Mind – intending and sensing that the experience is received into oneself, with related rewards
- Brain – priming, sensitizing, and promoting more effective encoding and consolidation
Enrich It
Factors of Enriching

**Duration** – maintenance, repetition

**Intensity** – arousal

**Multimodality** – multiple aspects of experience

**Novelty** – alertness, sense of freshness, granularity of attention

**Salience** – personal relevance
Absorb It
Factors of Absorbing

**Intend** to internalize the experience (priming).

**Sense** the experience sinking in (sensitizing):
- Imagery – water into sponge, jewel in treasure chest
- Sensation – warm soothing balm spreading inside
- Knowing – “I am becoming a little more ______ .”
- Felt sense of shift – embodied registration of change

**Find rewards** in the experience (promoting encoding and consolidation)
Like a Nice Fire
## Let’s Try It

<table>
<thead>
<tr>
<th>Notice</th>
<th>Create</th>
<th>Create</th>
</tr>
</thead>
<tbody>
<tr>
<td>a pleasant</td>
<td>an experience of letting go</td>
<td>an experience of being</td>
</tr>
<tr>
<td>sound or</td>
<td>an experience of letting go</td>
<td>in nature</td>
</tr>
<tr>
<td>sight</td>
<td></td>
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</tr>
</tbody>
</table>

For each of the above:
- **Have the experience.**
- **Enrich it.**
- **Absorb it.**
This is the fundamental **how** of “experiential gain” that can be applied to any **what** – any psychological resource (including the results of healing) that a person would like to grow.

Aspects of Enriching and Absorbing are present in any effective psychotherapy, coaching, human resources training, and mindfulness program.

But systematic, explicit guidance for the **installation** phase of learning is uncommon.

And there has been no systematic training in the mental factors of emotional, somatic learning.
Link Positive & Negative Material
This step is optional:
• Not necessary for learning
• Risk of flooding, hijacking by negative material

It is common in everyday life and used widely in psychotherapy and related interventions.

Three conditions:
• Hold two things in awareness
• Keep the positive more prominent
• Drop the negative if it is overwhelming
Degree of Engagement with Negative

- The **idea** of the negative material
- A **felt sense** of the negative material
- The positive material **goes into** the negative material

Throughout, the positive material remains more prominent in awareness.
Have It, Enjoy It
It’s Good to Take in the Good

Develops psychological resources:

- General – resilience, positive mood, feeling loved
- Specific – matched to challenges, wounds, deficits

Has built-in, implicit benefits:

- Training attention and executive functions
- Being active rather than passive
-Treating oneself kindly, that one matters

May sensitize brain to the positive

Fuels positive cycles with others
Keep a green bough in your heart, and a singing bird will come.

Lao Tzu
Pilot Study on a Training in Mental Factors of Learning

Randomized waitlist control group study of the “Taking in the Good Course”

Six 3-hour classes over 7 weeks; 46 subjects; not yet peer-reviewed

Compared to controls, participants reported more Contentment, Self-Esteem, Satisfaction with Life, Savoring, and Gratitude.

After the course and at 2-month follow-up, pooled participants reported less Anxiety and Depression, and more Love, Compassion, Self-Compassion, Mindfulness, Self-Control, Positive Rumination, Joy, Amusement, Awe, and Happiness.
Compassion is the wish that beings not suffer, with warm-hearted concern. Compassion is sincere even if we can’t make things better.

Self-compassion simply applies this to oneself.

To encourage self-compassion:

1. Get the sense of being cared about.
2. Bring to mind beings you care about. Find compassion for them.
3. Shift the compassion to yourself.
“Anthem”

Ring the bells that can still 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
Body and Mind
At Rest
The Evolving Brain

- Cortex ("primate/human")
- Subcortex ("mammalian")
- Brainstem ("reptilian")
- Cerebellum
Three Fundamental Needs

Safety
- Avoid Harms

Satisfaction
- Approach Rewards

Connection
- Attach to Others
When Needs Feel Met

When there is a core sense of needs met – of **fullness** and **balance** – the brain defaults to its homeostatic resting state.

The body conserves resources, recovers from stress, refuels, and repairs itself.

In terms of safety, satisfaction, and connection, the mind is colored by a sense of **peace**, **contentment**, and **love**.

This is the body, brain, and mind in its Responsive mode – the “**Green Zone.**”
When needs do not feel met – of deficit and disturbance – the brain is perturbed into an allostatic drive state (“craving”).

The body burns resources, agitates its systems, halts long-term building, and accumulates stress load.

In terms of safety, satisfaction, and connection, the mind is colored by a sense of fear and anger, frustration and drivenness, and hurt and aggression.

This is the body, brain, and mind in its Reactive mode – the “Red Zone.”
People have long asked, what is human nature? We have two natures: Responsive and Reactive.

The Reactive mode helped our species evolve in harsh settings, and may sometimes be needed today.

But most of the time, our Stone Age brain in the Red Zone causes much suffering, health problems, and conflict, even war.
Pet the Lizard
Feed the Mouse
Hug the Monkey
Coming Home

Peace

Contentment

Love
Key Resources for Fundamental Needs
What – if it were more present in the mind of a person – would really help with challenges, temperament, or inner wounds or deficits?

How could a person have and install more experiences of these mental resources?
Pick a partner and choose an A and a B (A’s go first). Then take turns, with one person speaking while the partner mainly listens, exploring these questions:

What are some of the challenges in your life these days? (in the world, body, or mind)

What mental resources do – or could – help you with these challenges?

If you’re alone, reflect or journal.
<table>
<thead>
<tr>
<th>Safety</th>
<th>Satisfaction</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alertness</td>
<td>Gratitude</td>
<td>Empathy</td>
</tr>
<tr>
<td>Grit</td>
<td>Gladness</td>
<td>Compassion</td>
</tr>
<tr>
<td>Resolution</td>
<td>Capabilities</td>
<td>Kindness</td>
</tr>
<tr>
<td>Protections</td>
<td>Restraint</td>
<td>Assertiveness</td>
</tr>
<tr>
<td>Calm</td>
<td>Ambition</td>
<td>Self-worth</td>
</tr>
<tr>
<td>Relaxation</td>
<td>Enthusiasm</td>
<td>Confidence</td>
</tr>
<tr>
<td>Peace</td>
<td>Contentment</td>
<td>Love</td>
</tr>
</tbody>
</table>
In the fourth step of TG, you could try to get at the youngest, most vulnerable layer of painful material.

The “tip of the root” is commonly in childhood. The brain is generally more affected by the negative experiences that occur in early childhood than by ones occurring later in life.

**Prerequisites:**

1. Understanding the need to get at younger layers
2. Compassion and support for the inner child
3. Capacity to “presence” young material without flooding
Feeling Basically Alright Right Now

- Tuning into the body’s signals that all is well right now
- Aware of breathing going fine . . . the heart beating . . . awareness itself keeps on going no matter what arises . . .
- Letting go of the past, not worrying about the future. Noticing that at least in this moment you are OK.
- Being alright, you can let go of any need to struggle with anything unpleasant.
- Feeling alright sinking into places inside that haven’t . . .
Explore this setting for things that are beautiful (or otherwise pleasureable) to you: sounds, sights, tastes, touches, smells, and thoughts. Look for little things.

Really take in the sense of beauty (or the sense of pleasure in general).
Feeling of Worth

• It is natural and important to feel that you have worth as a person – which does not mean arrogance or ego.

• You develop this sense of worth through:
  – Others including, appreciating, liking, and loving you
  – You respecting yourself

• Take in experiences of being:
  – Capable, skillful, talented, helpful
  – Included, wanted, sought out, chosen
  – Appreciated, acknowledged, respected
  – Liked, befriended, supported
  – Loved, cherished, special
What have you learned so far?

What has been important for you?

Pick a partner and choose an A and a B (A’s go first). Then take turns, with one person speaking while the partner mainly listens, exploring these questions:

While listening, be as empathic as you can with your partner.

If you’re alone, reflect or journal.
Using HEAL
With Others
Resources for HEAL

Intention; willing to feel good
Identified target experience
Openness to the experience; embodiment
Mindfulness of the HEAL steps to sustain them
Working through blocks
The Four Ways to Offer a Method

Doing it implicitly

Teaching it and leaving it up to people

Doing it explicitly with people

Asking people to do it on their own
HEAL in Classes and Trainings

Take a few minutes to explain it and teach it.

In the flow, encourage Enriching and Absorbing, using natural language.

Encourage people to use HEAL on their own.

Do HEAL on regular occasions (e.g., at end of a therapy session, at end of mindfulness practice)
Promoting Motivation

- Identify what you want to encourage (thought, word, deed); be clear; what would it look like?

- Use HEAL to associate rewards to what you want to encourage:
  - Before doing it
  - While doing it
  - After doing it

- Give over to this new habit, let it carry you along.
Pick a partner and choose an A and a B (A’s go first). Then take turns, with one person speaking while the partner mainly listens, exploring these questions:

What mental resources in others you know could help them?

* How could you encourage greater installation of those resources?
Coming Home

Peace

Contentment

Love
Thank You
References
See RickHanson.net for other good books.

Selected References - 1

See www.RickHanson.net/key-papers/ for other suggested readings.


Selected References - 5


Supplemental Materials
RESOURCES FOR AVOIDING HARMS

**Challenge**
- Weakness
- Helplessness
- Freezing, immobilization
- Inflated threats
- Alarm
- Tension
- Worry, fear
- Irritation, anger

**Resource**
- Strength
- Agency
- Action, venting
- Accurate appraisal
- Protection, calming
- Relaxation
- Feeling alright now, making a plan
- Big picture, peace
# RESOURCES FOR APPROACHING REWARDS

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Resource</th>
</tr>
</thead>
<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>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Resource</th>
</tr>
</thead>
<tbody>
<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>
Implicit HEAL in Therapy

- Creating space for beneficial experiences
- Drawing attention to beneficial facts
- Encouraging positive experience of beneficial fact
- Drawing attention to key aspects of an experience
- Slowing the client down; not moving on
- Modeling taking in the good oneself
Teach the method

- Background helps about brain, negativity bias
- Emphasize facts and mild beneficial experiences.
- Surface blocks and work through them.
- Explain the idea of “risking the dreaded experience,” noticing the (usually) good results, and taking them in.
Explicit HEAL in Therapy

- Do HEAL with client(s) during a session
  - Reinforcing key resource states and traits
  - Linking rewards to desired thoughts or actions
  - When learning from therapy has worked well
  - When realistic views of self and world come true
  - Good qualities in client
  - New insights

- Encourage HEAL between sessions
  - Naming occasions
  - Identifying key beneficial facts and experiences
HEAL and Trauma

- **General considerations:**
  - People vary in their resources and their traumas.
  - Often the major action is with “failed protectors.”
  - Respect “yellow lights” and the client’s pace.

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

- Use the Link step to address peripheral features and themes of the trauma.

- With care, use Link to get at the heart of the trauma.
“Installs” key resources that support interactions (e.g., self-soothing, recognition of good intentions)

- Dampens vicious cycles
- Helps partner feel seen, credited for efforts
- Increases the sense of the good that is present
- Reduces clingingness, pursuing, or reproach that the other person withdraws from
Using HEAL with a Couple

- Basic steps (often informal):
  - Attention to a good fact
  - Evoking and sustaining a good experience
  - Managing blocks
  - 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
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
- Feeling like an active learner
- Developing child-specific inner strengths
Adaptations for Children

- Kids gain from HEAL – particularly 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: name benefits; “be the boss of your own mind.”
  - Down to earth, naturalistic
  - Scaffold based on executive functions, motivation, and need for autonomy.
  - Brief, concrete
Occasions for HEAL with Kids

- Explicit training in positive neuroplasticity
- Natural rhythms in the day (e.g., start of class, after a lesson or recess, end of day)
- When working with an individual child
- When dealing with classroom issues