

# How to Grow Resilient Well-Being In Your Brain and Your Life

Workforce Health Symposium  
December 4, 2018



**Rick Hanson, Ph.D.**

Greater Good Science Center, UC Berkeley

[www.RickHanson.net](http://www.RickHanson.net)



The Value of  
Inner Resources



To deal with challenges  
and have lasting well-being  
in a changing world,  
we've got to be **resilient**.

To be resilient,  
we've got to have  
**inner strengths**.



**In one word,  
what is an inner strength you use  
to deal with your challenges?**



# Some Inner Strengths

Mindfulness

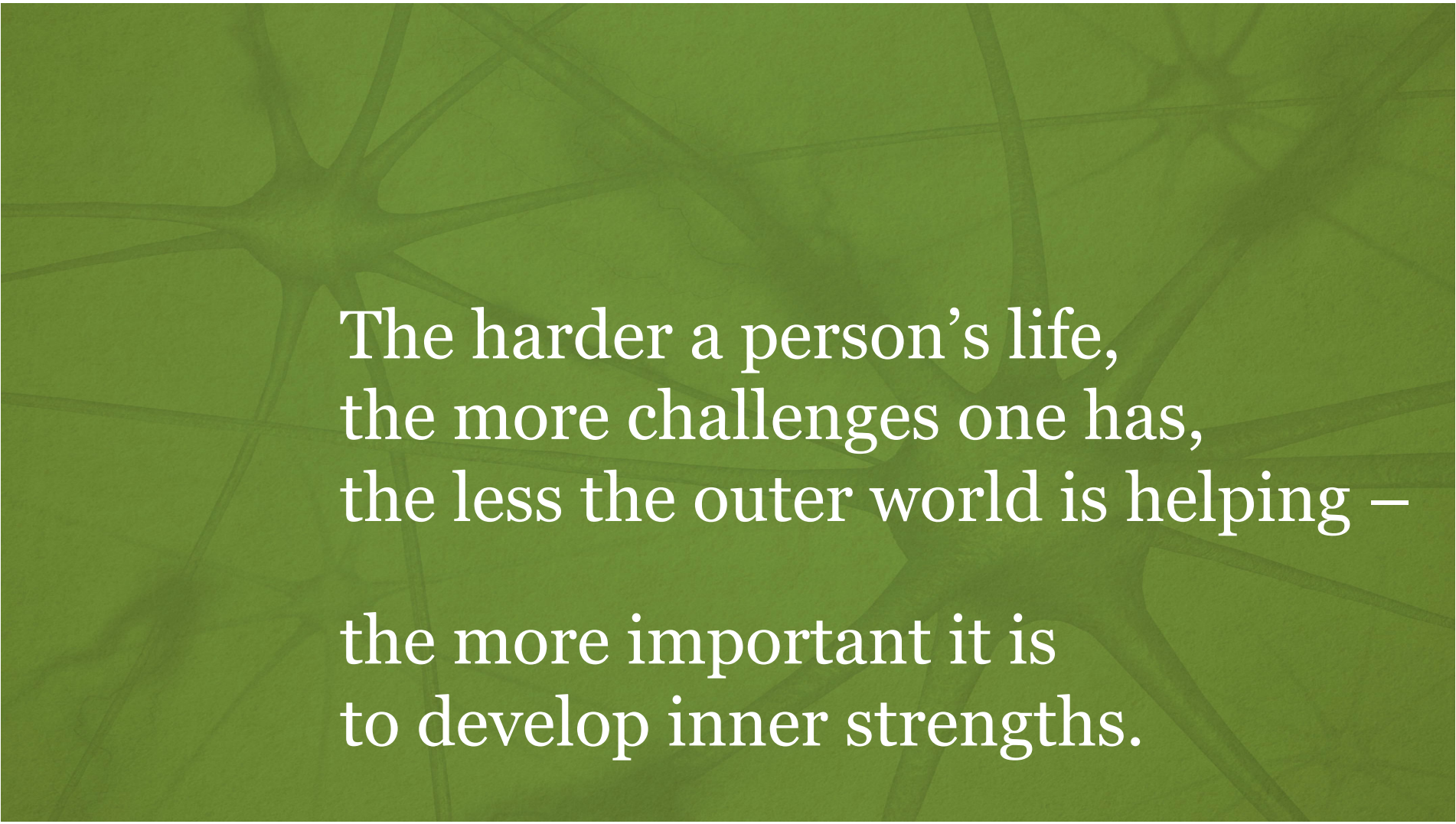
Patience, Determination, Grit

Emotional Intelligence

Character Virtues

Positive Emotions

Interpersonal Skills



The harder a person's life,  
the more challenges one has,  
the less the outer world is helping –  
the more important it is  
to develop inner strengths.

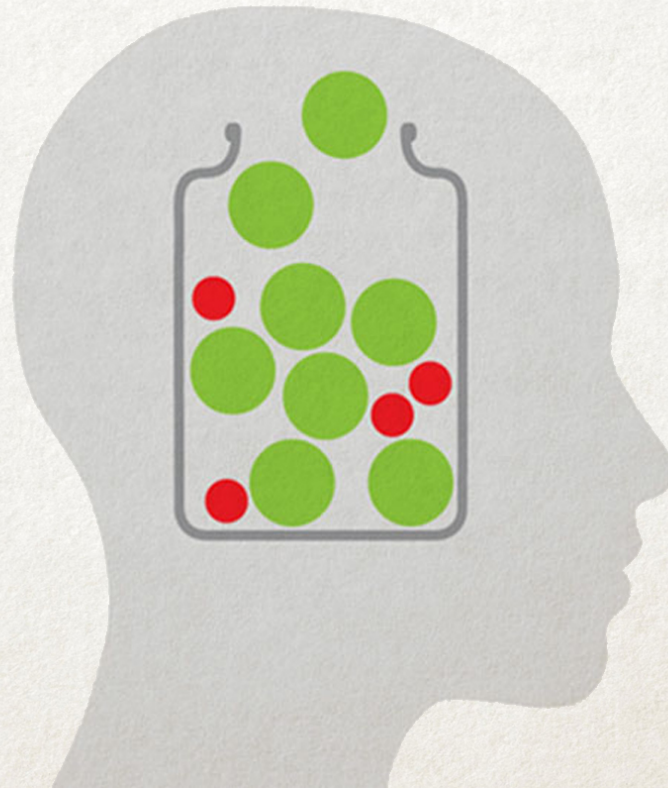


The majority  
of our inner strengths  
are acquired,

through emotional, somatic,  
social, and motivational  
**learning** –

which is fundamentally hopeful.

# And Which Means Changing the Brain For the Better







# Self-Directed Neuroplasticity

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

Neurons that fire together,

wire together.



# Inner strengths are acquired in two stages:

Encoding



Consolidation

Activation



Installation

State



Trait

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

---

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

---

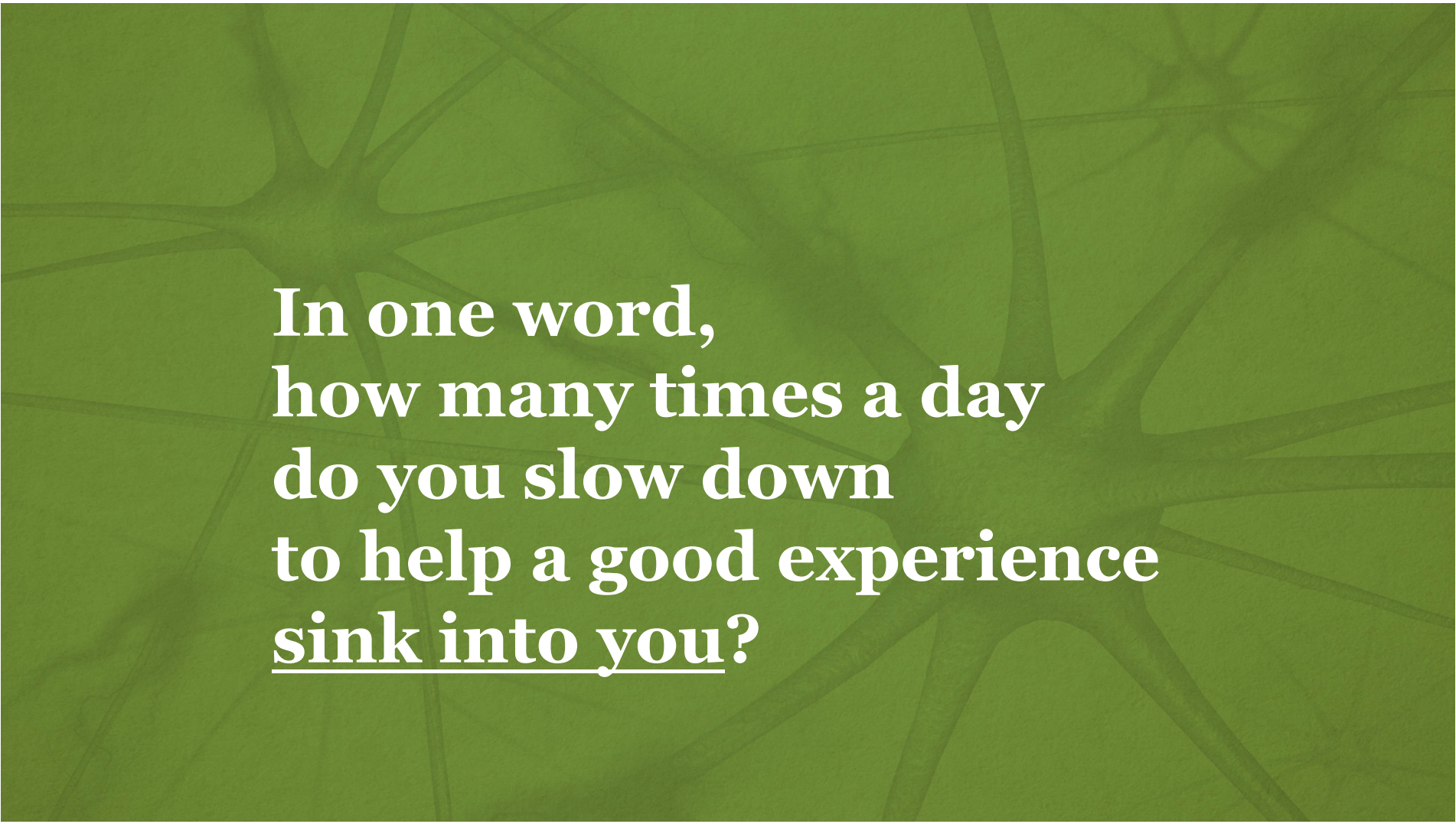
We become more **mindful** by repeatedly installing experiences of mindfulness.



**BUT: Experiencing doesn't equal learning.**

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

What fraction of our  
beneficial mental states lead to lasting  
changes in neural structure or function?



**In one word,  
how many times a day  
do you slow down  
to help a good experience  
sink into you?**



People focus more on activation than on installation.

This reduces the gains from mindfulness programs, human resources training, coaching, psychotherapy, and self-help activities.

Learning  
is the strength of strengths,  
since it's the one we use  
to grow the rest of them.

Knowing how to learn  
the things that are important to you  
could be the greatest strength of all.



---

# The Negativity Bias

---

# Velcro for Bad, Teflon for Good



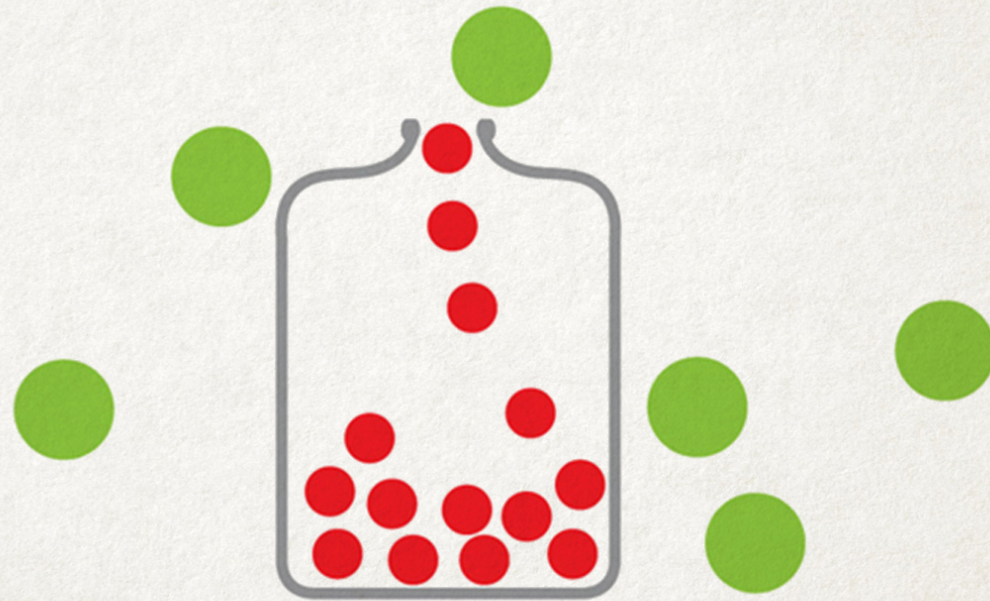
**The negativity bias**



# The Negativity Bias

As the nervous system evolved, **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. Turn it quickly into (implicit) memory,
5. Sensitize the brain to the negative, and
6. Get into vicious cycles with others.



## The Negativity Bias



# Two Wolves in the Heart



---

# Taking in the Good

---



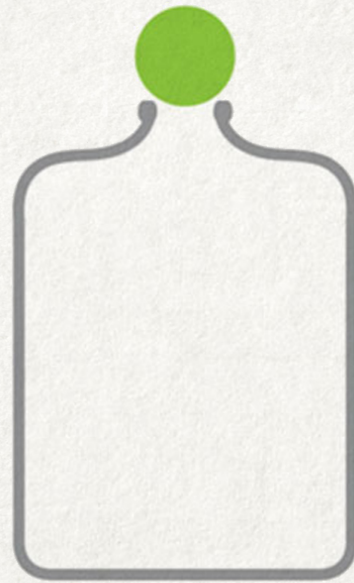
# HEAL: Hardwiring Inner Strengths

## Activation

1. **Have** a beneficial experience

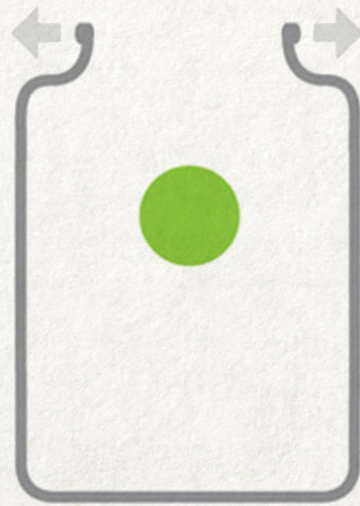
## Installation

2. **Enrich** the experience
3. **Absorb** the experience
4. **Link** positive and negative material  
(Optional)

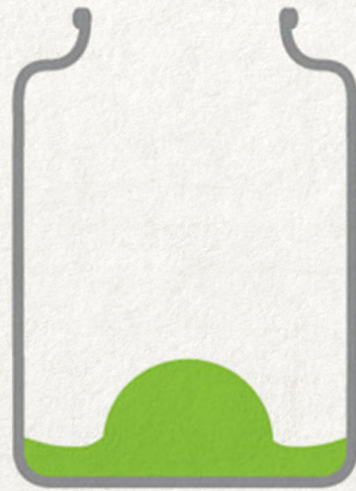


**H**ave a Beneficial Experience



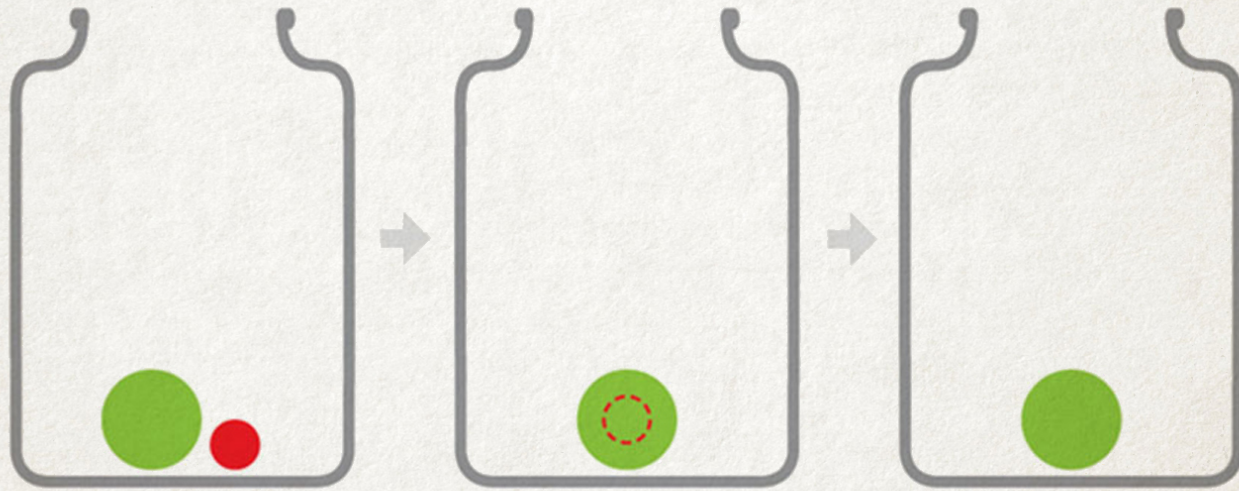


**E**nrich It

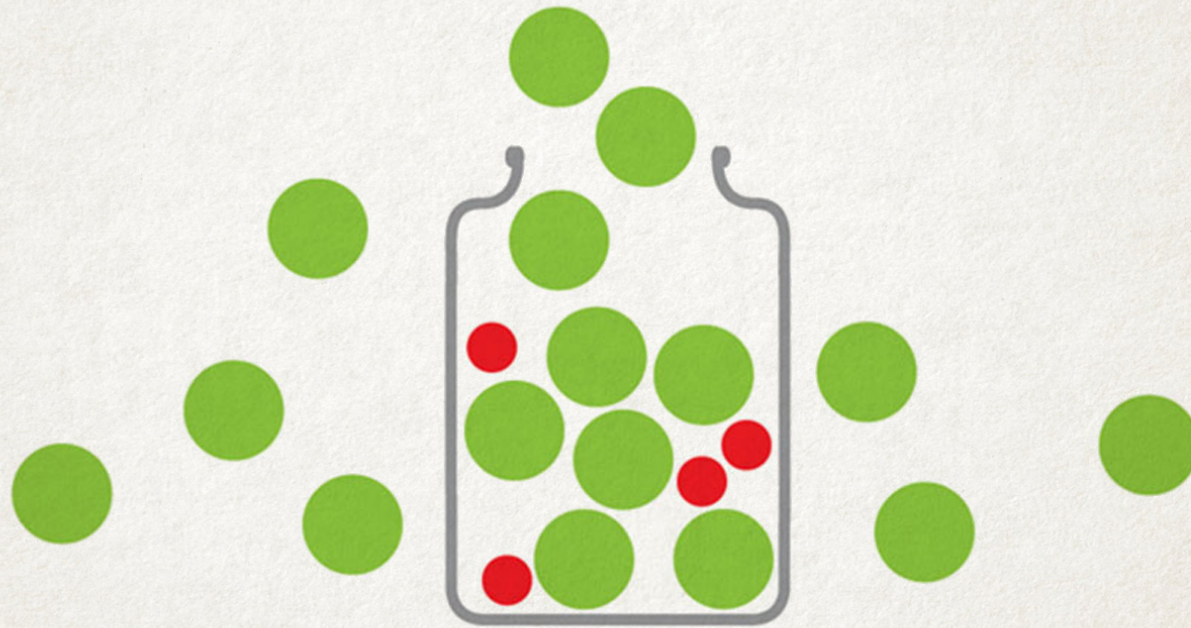


**A**bsorb It





**Link Positive & Negative Material**



Have It, Enjoy It





---

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:

**TIP:** If you're by yourself, reflect or journal.

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 your partner.

# It's Good to Take in the Good

Develops psychological resources:

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

Has built-in, implicit benefits:

- Training attention and executive functions
- Treating oneself kindly, that one matters

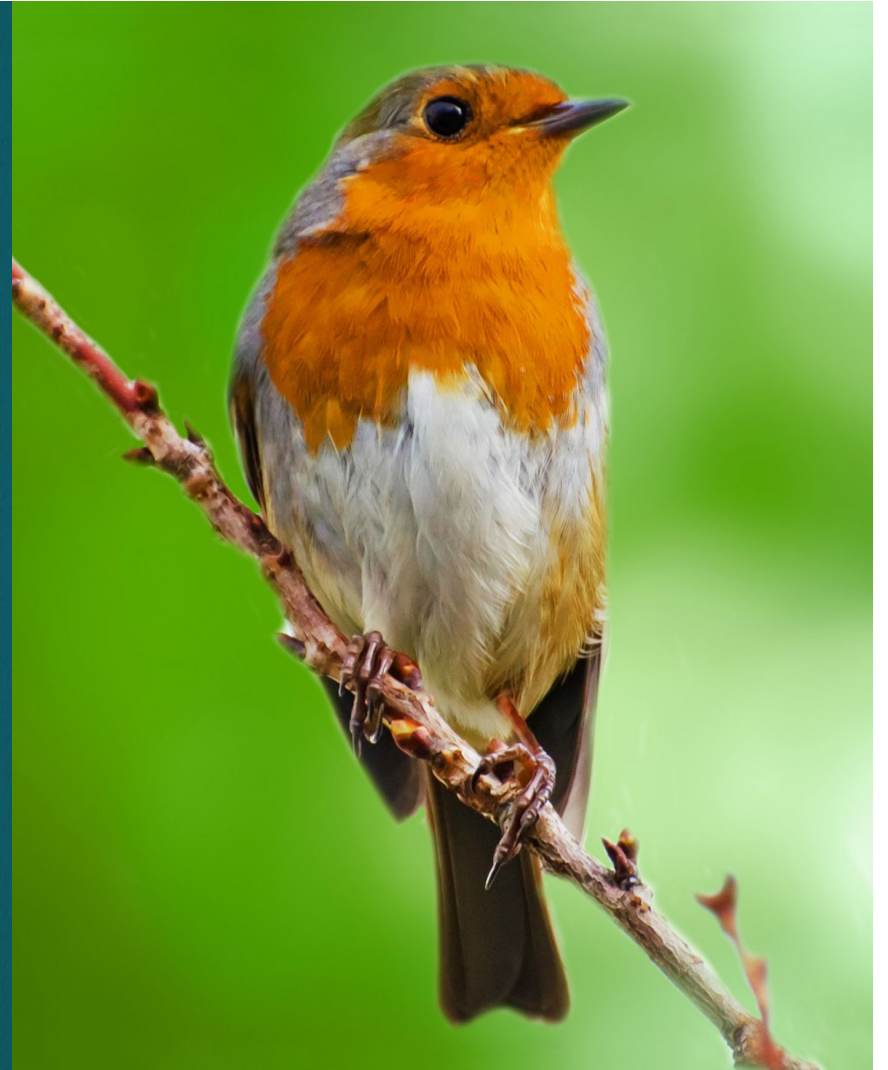
May sensitize the brain to the positive

Fuels positive cycles with others



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

**Lao Tzu**



---

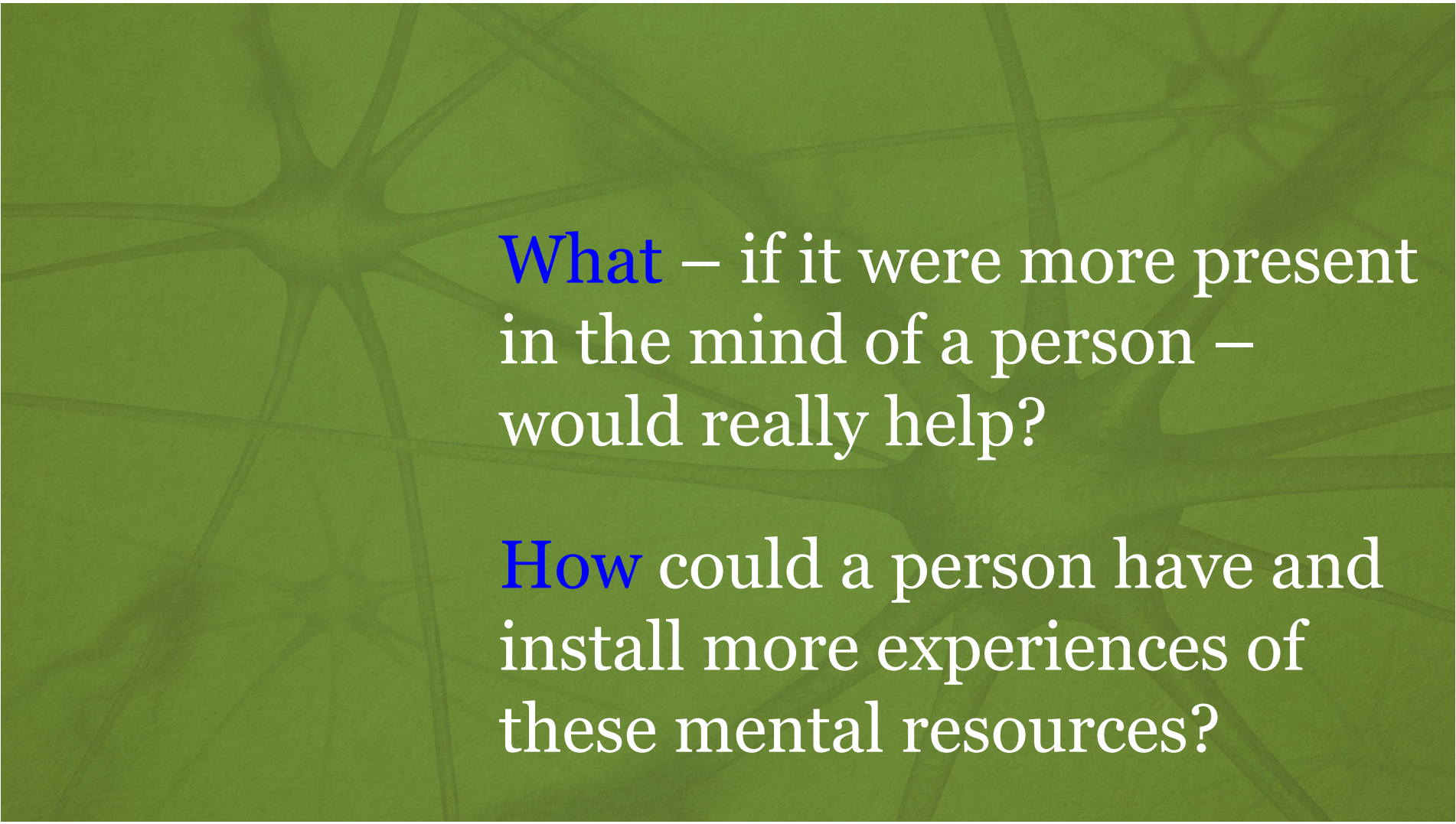
# Growing Key Resources

---



Resilience is required  
for challenges to our needs.

Understanding the need  
that is challenged  
helps us identify, grow, and use  
the specific mental resource(s)  
that are best matched to it.



**What** – if it were more present  
in the mind of a person –  
would really help?

**How** could a person have and  
install more experiences of  
these mental resources?



# Meeting Our Three Fundamental Needs



**Safety**

**Avoiding**  
harms



**Satisfaction**

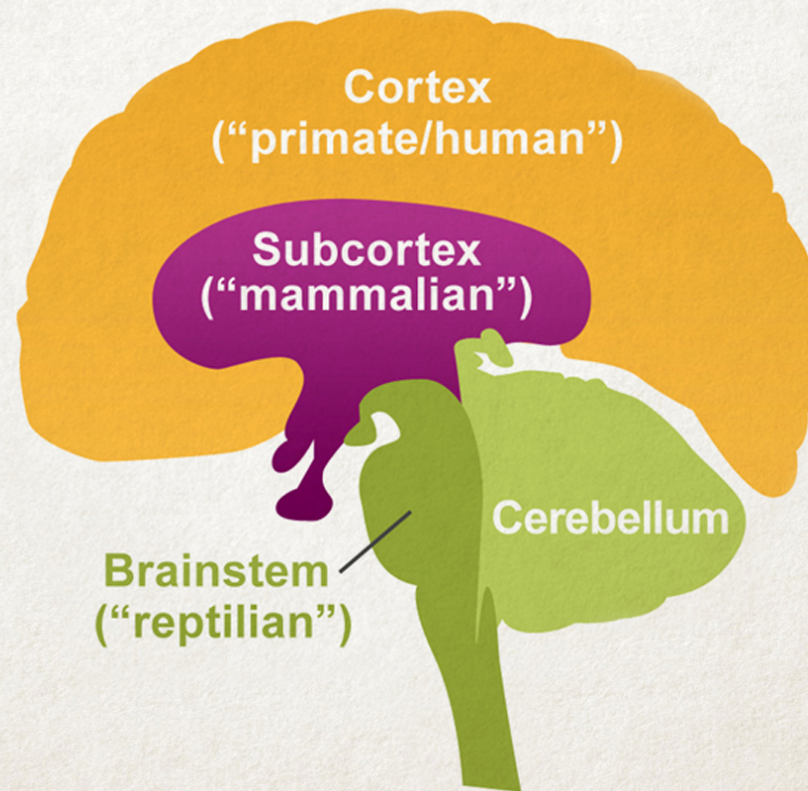
**Approaching**  
rewards



**Connection**

**Attaching**  
to others

# The Evolving Brain





# Pet the Lizard



# Feed the Mouse





# Hug the Monkey



# Coming Home

**Peace**

**Contentment**

**Love**



# Matching Resources to Needs

## Safety

See actual threats  
See resources  
Grit, fortitude  
Feel protected  
Alright right now  
Relaxation  
Calm

## Peace

## Satisfaction

Gratitude  
Gladness  
Feel successful  
Healthy pleasures  
Impulse control  
Aspiration  
Enthusiasm

## Contentment

## Connection

Empathy  
Compassion  
Kindness  
Wide circle of “us”  
Assertiveness  
Self-worth  
Confidence

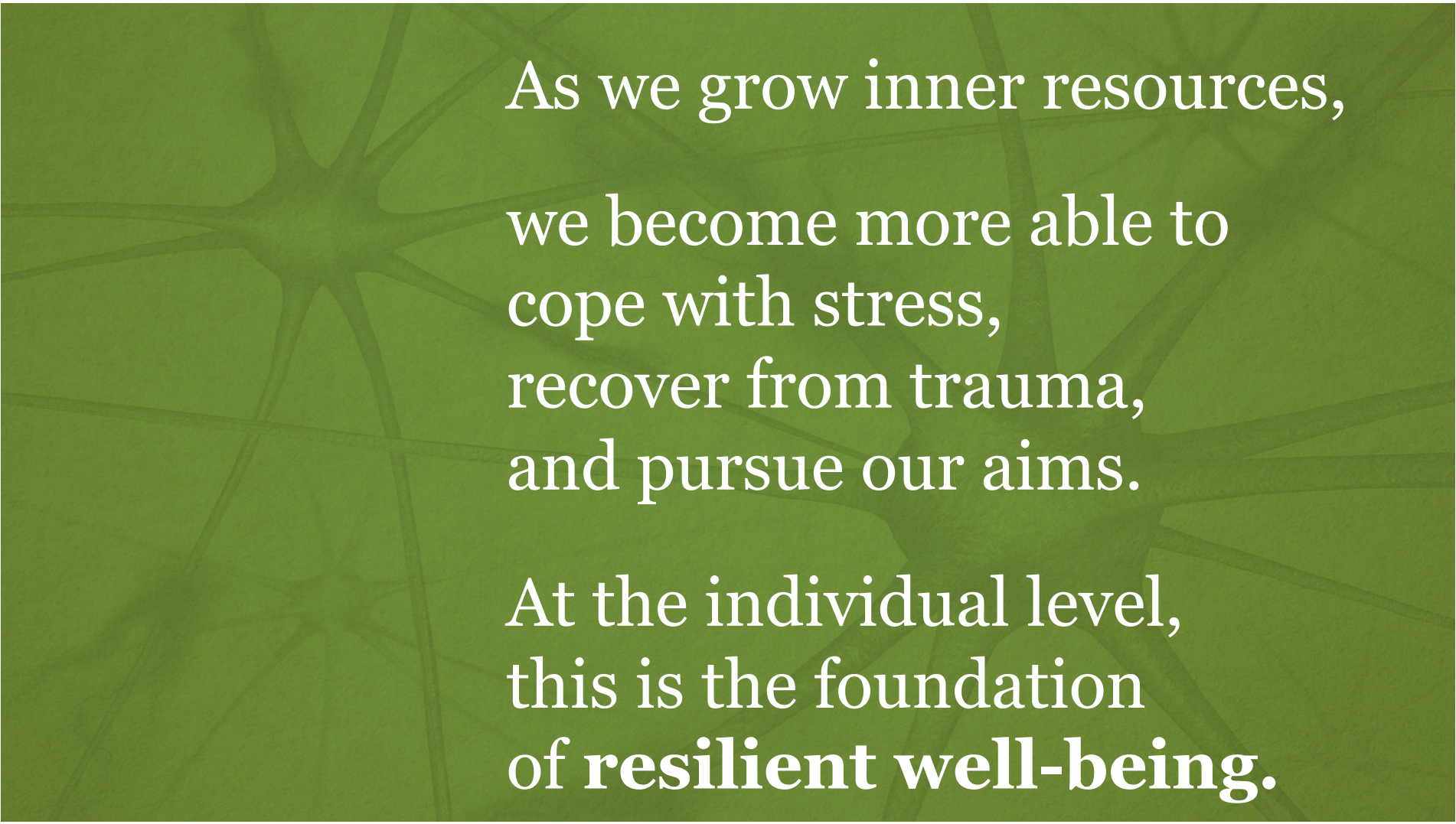
## Love

---

# Wider Implications

---





As we grow inner resources,  
we become more able to  
cope with stress,  
recover from trauma,  
and pursue our aims.

At the individual level,  
this is the foundation  
of **resilient well-being.**

At the level of groups and countries,  
people become less vulnerable  
to the classic manipulations of  
fear and anger,  
greed and possessiveness,  
and “us” against “them” conflicts.

Which has big implications for our world.

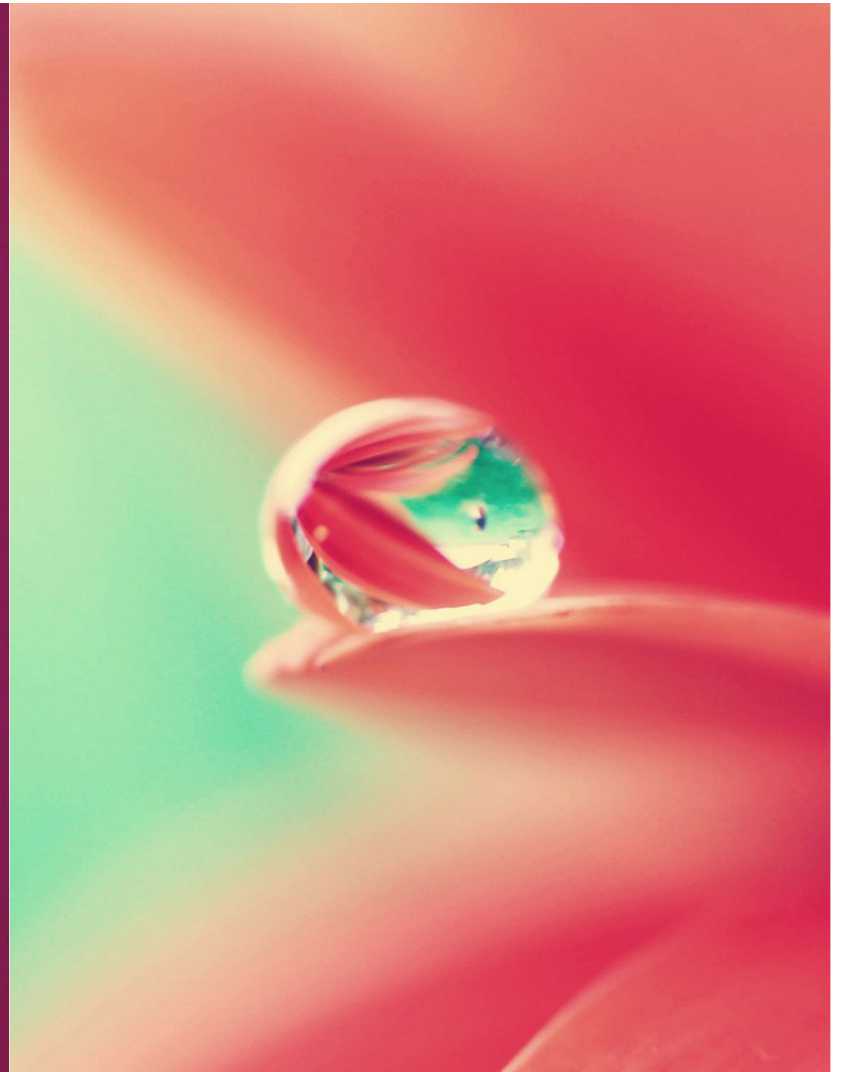


*Think not lightly of good,  
saying, “It will not come to me.”*

*Drop by drop is  
the water pot filled.*

*Likewise, the wise one,  
Gathering it little by little,  
Fills oneself with good.*

**Dhammapada 9.122**



---

# References

---



# Suggested Books

See **[RickHanson.net](http://RickHanson.net)** for other good 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.
- Johnson, S. 2005. *Mind Wide Open*. Scribner.
- Keltner, D. 2009. *Born to Be Good*. Norton.
- Kornfield, J. 2009. *The Wise Heart*. Bantam.
- 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.



# Suggested References - 1

See [www.RickHanson.net/key-papers/](http://www.RickHanson.net/key-papers/) for other suggested readings.

- Atmanspacher, H. & Graben, P. (2007). Contextual emergence of mental states from neurodynamics. *Chaos & Complexity Letters*, 2, 151-168.
- Bailey, C. H., Bartsch, D., & Kandel, E. R. (1996). Toward a molecular definition of long-term memory storage. *PNAS*, 93(24), 13445-13452.
- Baumeister, R., Bratlavsky, E., Finkenauer, C. & Vohs, K. (2001). Bad is stronger than good. *Review of General Psychology*, 5, 323-370.
- Bryant, F. B., & Veroff, J. (2007). *Savoring: A new model of positive experience*. Mahwah, NJ: Erlbaum.
- Casasanto, D., & Dijkstra, K. (2010). Motor action and emotional memory. *Cognition*, 115, 179-185.
- Claxton, G. (2002). Education for the learning age: A sociocultural approach to learning to learn. *Learning for life in the 21st century*, 21-33.
- Clopath, C. (2012). Synaptic consolidation: an approach to long-term learning. *Cognitive Neurodynamics*, 6(3), 251-257.



# Suggested References - 2

- Craik F.I.M. 2007. Encoding: A cognitive perspective. In (Eds. Roediger HL I.I.I., Dudai Y. & Fitzpatrick S.M.), *Science of Memory: Concepts* (pp. 129-135). New York, NY: Oxford University Press.
- Davidson, R.J. (2004). Well-being and affective style: neural substrates and biobehavioural correlates. *Philosophical Transactions of the Royal Society*, 359, 1395-1411.
- Dudai, Y. (2004). The neurobiology of consolidations, or, how stable is the engram?. *Annu. Rev. Psychol.*, 55, 51-86.
- Dweck, C. (2006). *Mindset: The new psychology of success*. Random House.
- Fredrickson, B. L. (2013). Positive emotions broaden and build. *Advances in experimental social psychology*, 47(1), 53.
- Garland, E. L., Fredrickson, B., Kring, A. M., Johnson, D. P., Meyer, P. S., & Penn, D. L. (2010). Upward spirals of positive emotions counter downward spirals of negativity: Insights from the broaden-and-build theory and affective neuroscience on the treatment of emotion dysfunctions and deficits in psychopathology. *Clinical psychology review*, 30(7), 849-864.



# Suggested References - 3

- Hamann, S. B., Ely, T. D., Grafton, S. T., & Kilts, C. D. (1999). Amygdala activity related to enhanced memory for pleasant and aversive stimuli. *Nature neuroscience*, 2(3), 289-293.
- Hanson, R. 2011. *Hardwiring happiness: The new brain science of contentment, calm, and confidence*. New York: Harmony.
- Hölzel, B. K., Ott, U., Gard, T., Hempel, H., Weygandt, M., Morgen, K., & Vaitl, D. (2008). Investigation of mindfulness meditation practitioners with voxel-based morphometry. *Social cognitive and affective neuroscience*, 3(1), 55-61.
- Hölzel, B. K., Carmody, J., Evans, K. C., Hoge, E. A., Dusek, J. A., Morgan, L., ... & Lazar, S. W. (2009). Stress reduction correlates with structural changes in the amygdala. *Social cognitive and affective neuroscience*, nsp034.
- Jamrozik, A., McQuire, M., Cardillo, E. R., & Chatterjee, A. (2016). Metaphor: Bridging embodiment to abstraction. *Psychonomic bulletin & review*, 1-10.
- Kensinger, E. A., & Corkin, S. (2004). Two routes to emotional memory: Distinct neural processes for valence and arousal. *Proceedings of the National Academy of Sciences of the United States of America*, 101(9), 3310-3315.



# Suggested References - 4

- Koch, J. M., Hinze-Selch, D., Stingele, K., Huchzermeier, C., Goder, R., Seeck-Hirschner, M., et al. (2009). Changes in CREB phosphorylation and BDNF plasma levels during psychotherapy of depression. *Psychotherapy and Psychosomatics*, 78(3), 187–192.
- 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.
- Lee, T.-H., Greening, S. G., & Mather, M. (2015). Encoding of goal-relevant stimuli is strengthened by emotional arousal in memory. *Frontiers in Psychology*, 6, 1173.
- Lutz, A., Brefczynski-Lewis, J., Johnstone, T., & Davidson, R. J. (2008). Regulation of the neural circuitry of emotion by compassion meditation: Effects of meditative expertise. *PLoS One*, 3(3), e1897.
- Madan, C. R. (2013). Toward a common theory for learning from reward, affect, and motivation: the SIMON framework. *Frontiers in systems neuroscience*, 7.
- Madan, C. R., & Singhal, A. (2012). Motor imagery and higher-level cognition: four hurdles before research can sprint forward. *Cognitive Processing*, 13(3), 211-229.



# Suggested References - 5

- McEwen, B. S. (2016). In pursuit of resilience: stress, epigenetics, and brain plasticity. *Annals of the New York Academy of Sciences*, 1373(1), 56-64.
- McGaugh, J.L. 2000. Memory: A century of consolidation. *Science*, 287, 248-251.
- Nadel, L., Hupbach, A., Gomez, R., & Newman-Smith, K. (2012). Memory formation, consolidation and transformation. *Neuroscience & Biobehavioral Reviews*, 36(7), 1640-1645.
- Pais-Vieira, C., Wing, E. A., & Cabeza, R. (2016). The influence of self-awareness on emotional memory formation: An fMRI study. *Social cognitive and affective neuroscience*, 11(4), 580-592.
- Palombo, D. J., & Madan, C. R. (2015). Making Memories That Last. *The Journal of Neuroscience*, 35(30), 10643-10644.
- Paquette, V., Levesque, J., Mensour, B., Leroux, J. M., Beaudoin, G., Bourgouin, P. & Bearegard, M. 2003 Change the mind and you change the brain: effects of cognitive-behavioral therapy on the neural correlates of spider phobia. *NeuroImage* 18, 401-409.
- Rozin, P. & Royzman, E.B. (2001). Negativity bias, negativity dominance, and contagion. *Personality and Social Psychology Review*, 5, 296-320.



# Suggested References - 6

- Sneve, M. H., Grydeland, H., Nyberg, L., Bowles, B., Amlien, I. K., Langnes, E., ... & Fjell, A. M. (2015). Mechanisms underlying encoding of short-lived versus durable episodic memories. *The Journal of Neuroscience*, 35(13), 5202-5212.
- Talmi, D. (2013). Enhanced Emotional Memory Cognitive and Neural Mechanisms. *Current Directions in Psychological Science*, 22(6), 430-436.
- Thompson, E. (2007). *Mind in life: Biology, phenomenology, and the sciences of mind*. Harvard University Press.
- Wittmann, B. C., Schott, B. H., Guderian, S., Frey, J. U., Heinze, H. J., & Düzel, E. (2005). Reward-related FMRI activation of dopaminergic midbrain is associated with enhanced hippocampus-dependent long-term memory formation. *Neuron*, 45(3), 459-467.
- Yonelinas, A. P., & Ritchey, M. (2015). The slow forgetting of emotional episodic memories: an emotional binding account. *Trends in cognitive sciences*, 19(5), 259-267.

---

# Supplemental Materials

---



# Shaping the Course of a Life

Challenges

Vulnerabilities

Resources

# Location of Resources

World

Body

Mind



Researchers have focused on identifying and using resources – such as workplace mindfulness – but what about developing them in the first place?

# An Overview of Current Research

Much research on people that psychological practices lead to psychological benefits (with presumed neural correlates)

Much research on animals that various stimuli lead to changes in their brains (with presumed experiential correlates)

Some research on people that experiences change their brains

A little research on people about mental factors that increase social-emotional learning (SEL) (with presumed neural correlates)

One study on systematic training in mental factors of SEL

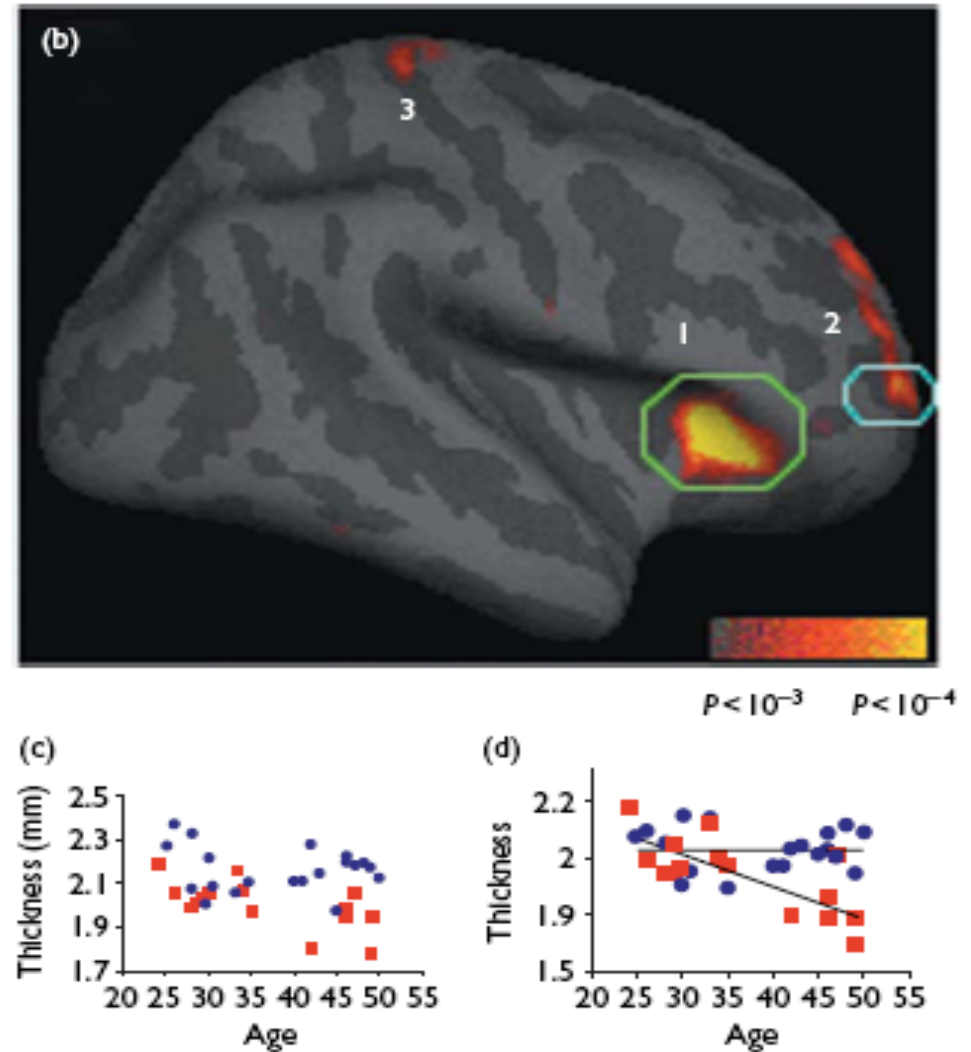


# Key Mechanisms of Neuroplasticity

- (De)Sensitizing existing synapses
- Building new synapses between neurons
- Altered gene expression inside neurons
- Building and integrating new neurons
- Altered activity in a region
- Altered connectivity among regions
- Changes in neurochemical activity (e.g., dopamine)
- Changes in neurotrophic factors
- Modulation by stress hormones, cytokines
- Slow wave and REM sleep
- Information transfer from hippocampus to cortex

Meditation experience is associated with increased cortical thickness.

Lazar, et al. 2005.  
*Neuroreport*, 16, 1893-1897.





# In the Garden of the Mind

**1**

**Be with what  
is there**

**2**

**Decrease  
the negative**

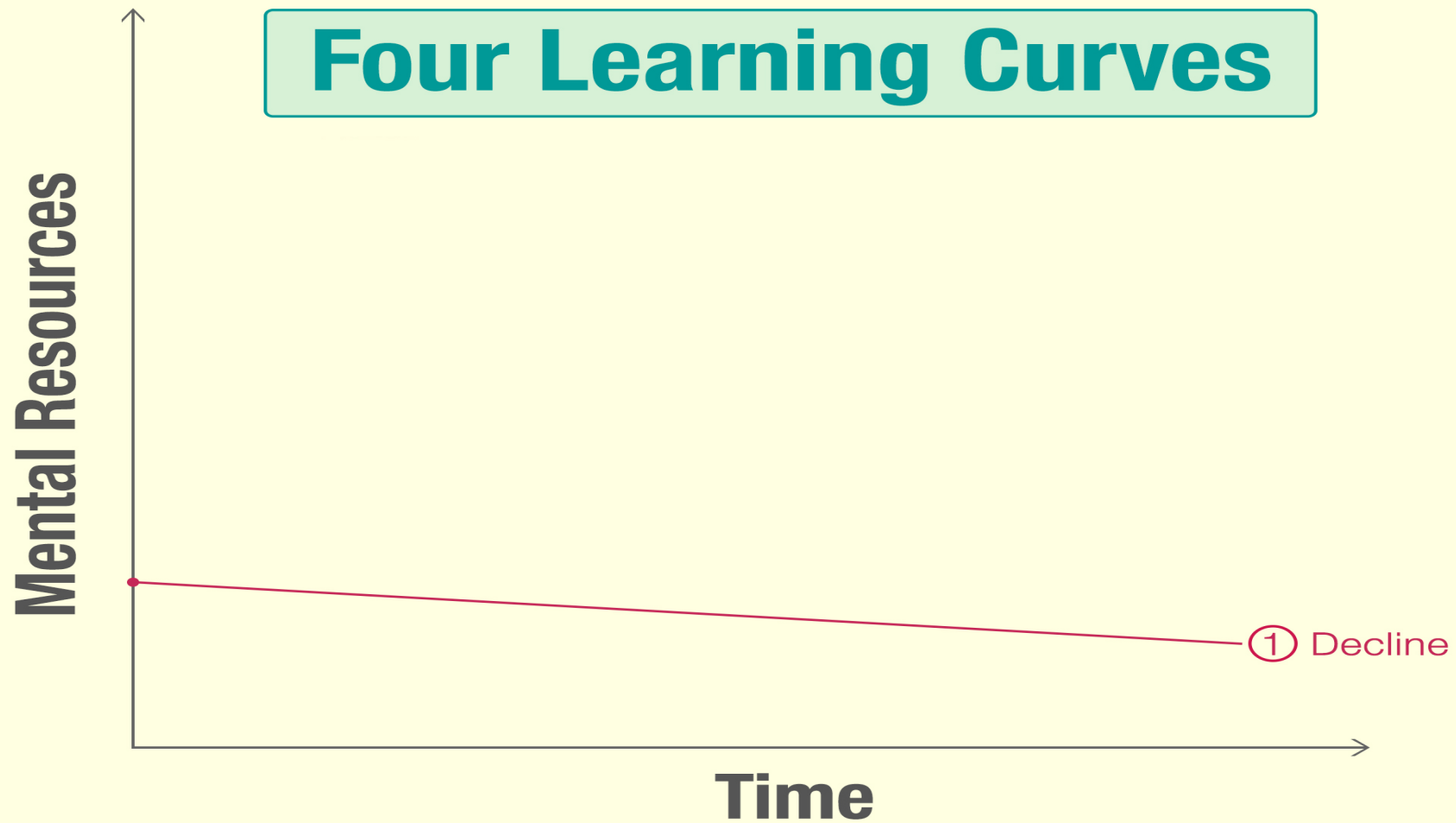
**3**

**Increase  
the positive**

Witness. Pull weeds. Plant flowers.  
Let be. Let go. Let in.  
Mindfulness is present in all three.

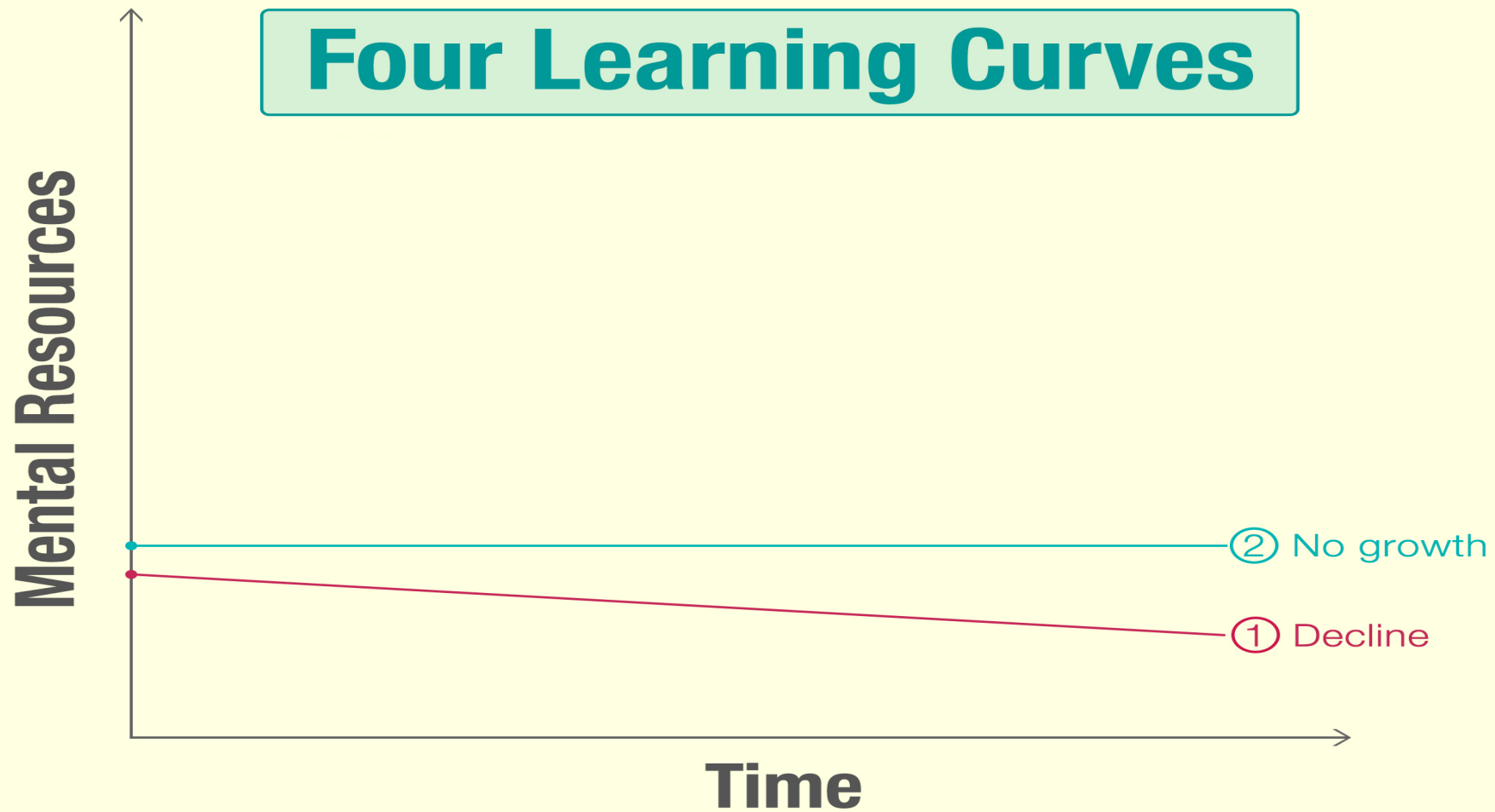
“Being with” is primary – but not enough.  
We also need “wise effort.”

# Four Learning Curves

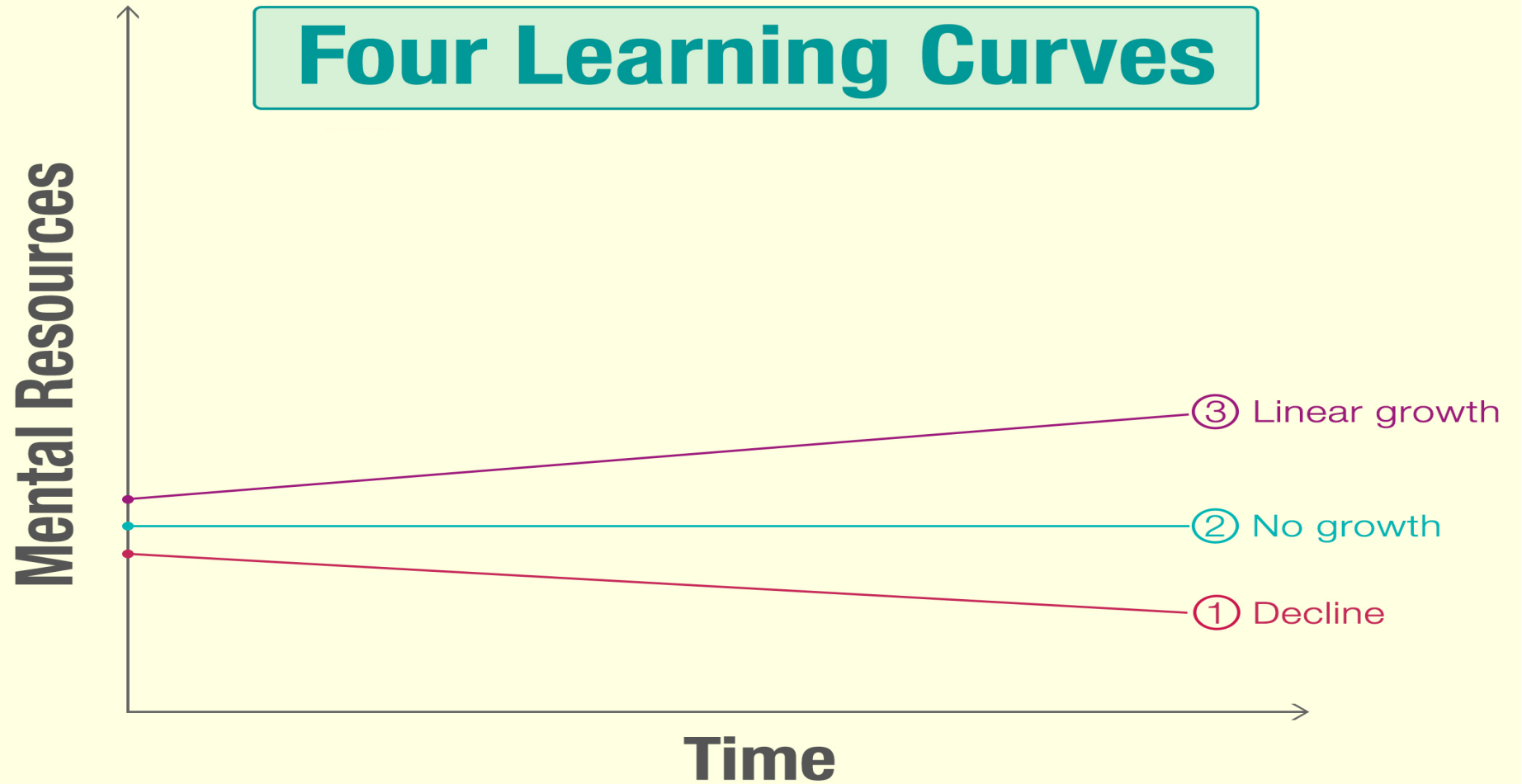




# Four Learning Curves

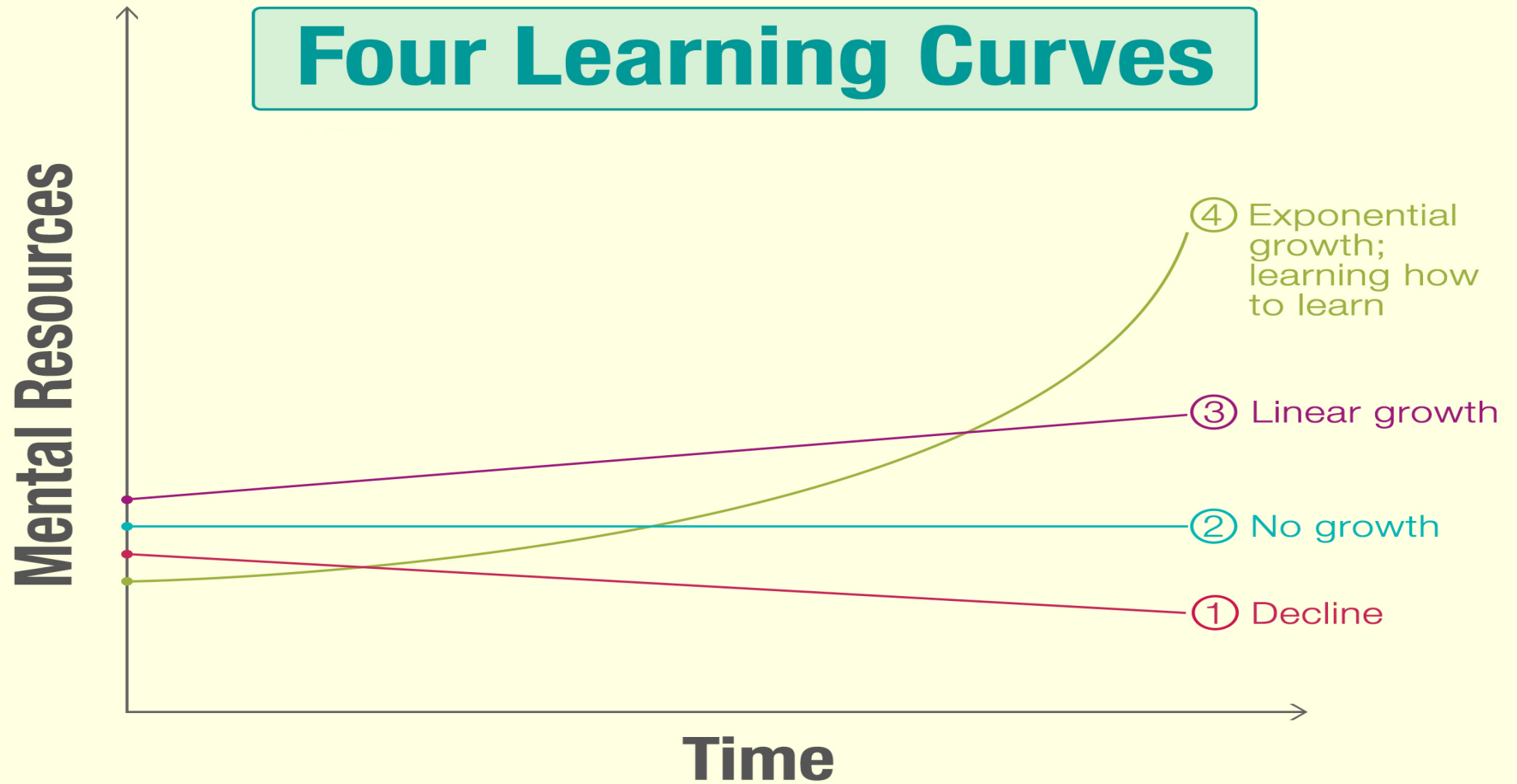


# Four Learning Curves





# Four Learning Curves



# The Two Ways To Have a Beneficial Experience

**1** Notice one you are already having.

- In the foreground of awareness
- In the background

**2** Create one.



# 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

# Enriching 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



# Absorbing an Experience

- Intend to receive the experience into yourself.
- Sense the experience 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
  - Give over to it; let it change you.
- Be aware of ways the experience is rewarding.

# Four Ways to Use HEAL with Others

- 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)