

# ***Positive Neuroplasticity:***

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## **Mindfulness, Cultivation, and the End of Craving**

**3<sup>rd</sup> Annual Congress:**

**Spaces of Thought and Action in Psychology**

**May 30, 2015**

**Rick Hanson, Ph.D.**

**The Wellspring Institute for Neuroscience and Contemplative Wisdom**

**[WiseBrain.org](http://WiseBrain.org)**

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



# **The Fruit and the Path**

# What Is Well-Being?

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**Hedonia**

**Eudaimonia**

# Benefits of Well-Being

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- **Feels good (duh)**
- **Better health and longer life**
- **Greater resilience**
- **More productive and successful**
- **More fulfilling and stronger relationships**
- **More cooperative, giving, and loving toward others**
- **More inner resources for healing**
- **Less basis inside for craving and suffering**



# **What Develops Well-Being?**

# Shaping the Course of a Life

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**Challenges**

**Vulnerabilities**

**Resources**

# Finding Resources

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**World**

**Body**

**Mind**

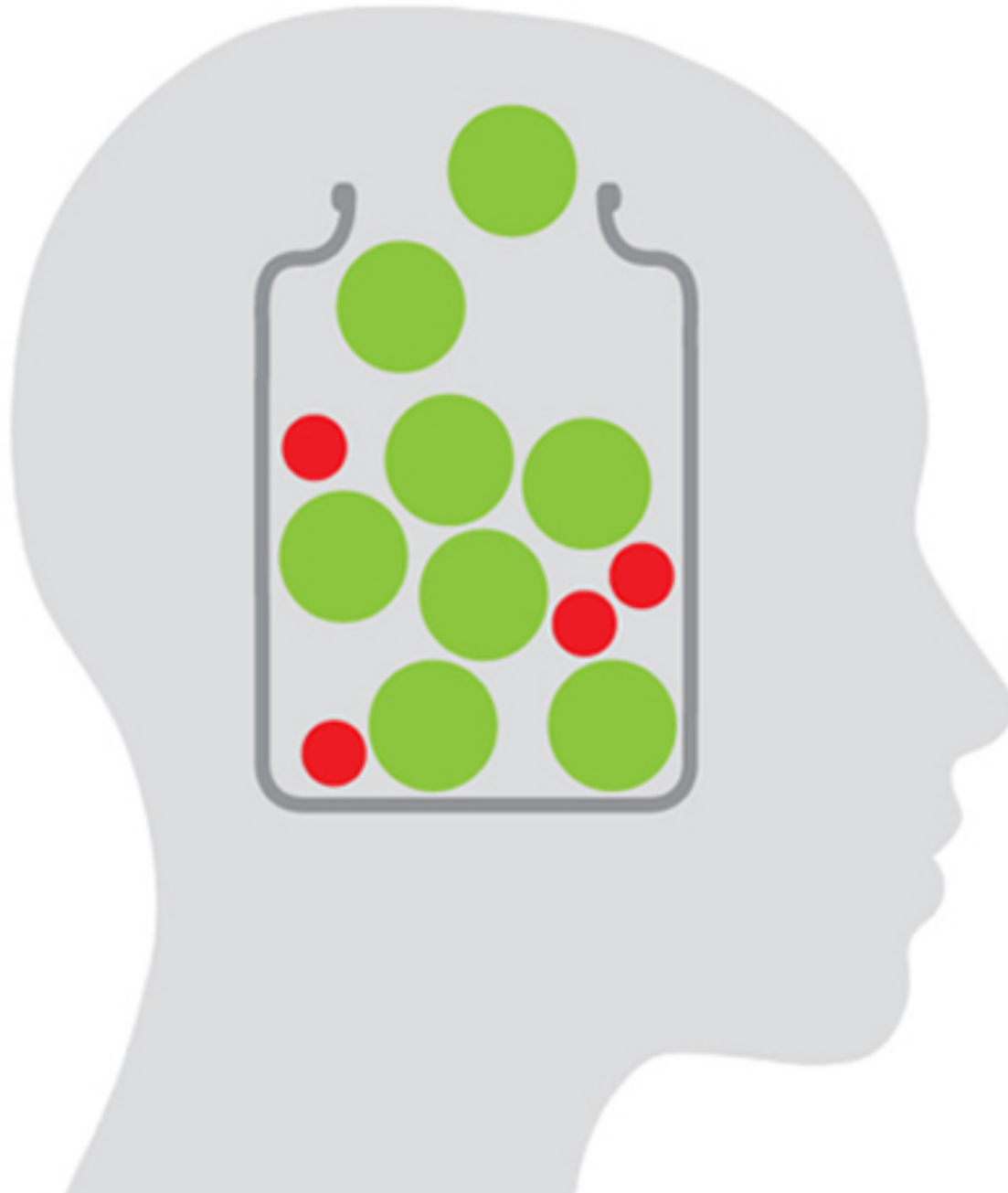
# Resources in Your Mind


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- **Understandings**
- **Capabilities**
- **Positive emotions**
- **Attitudes**
- **Motivations**
- **Virtues**



# INNER STRENGTHS ARE BUILT FROM BRAIN STRUCTURE





**How do you get these inner strengths  
into your brain?**


Two wolves in the heart



# **Self-Directed Neuroplasticity**



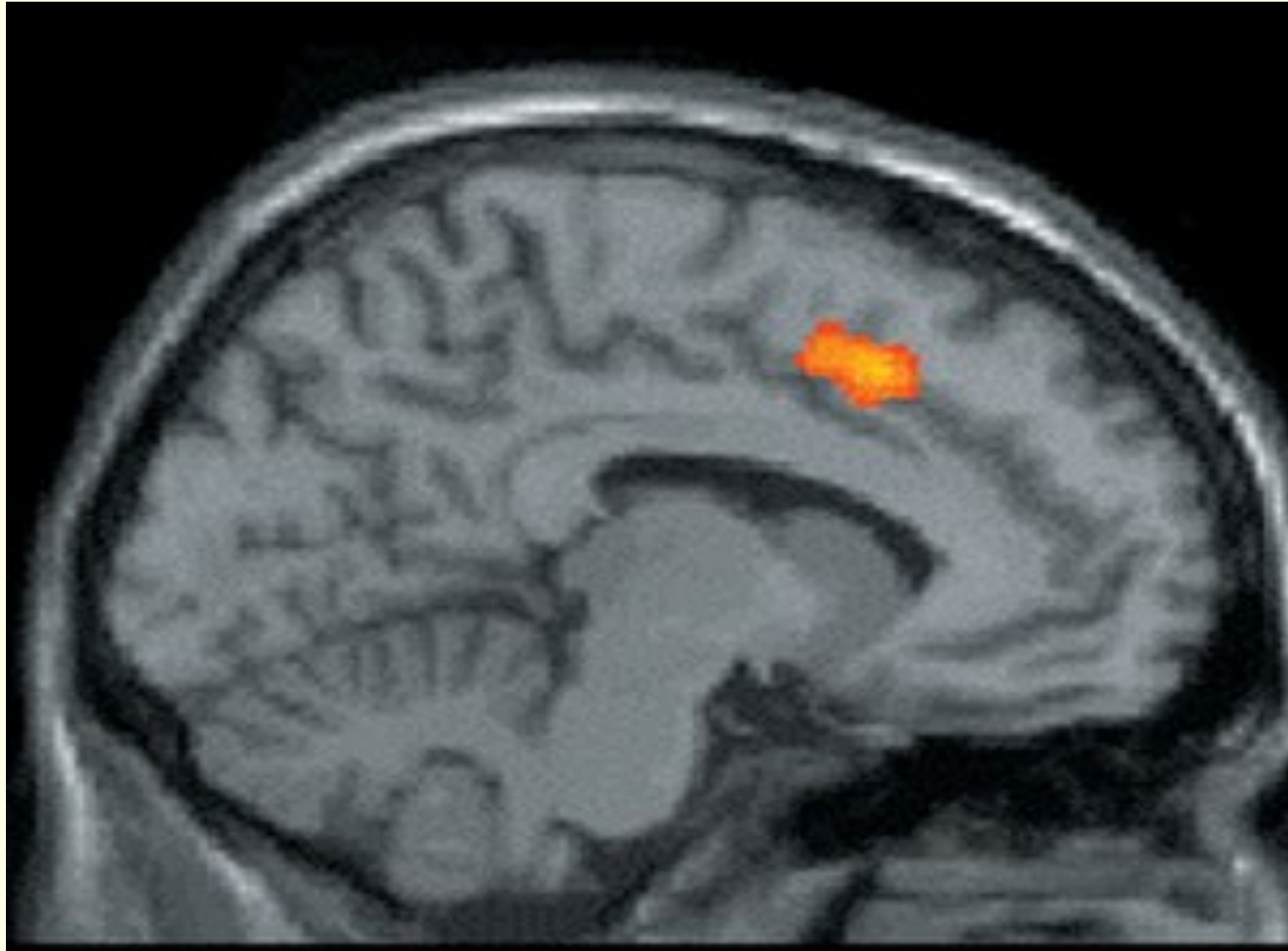





**Mental activity entails  
underlying neural activity.**

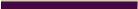
# Ardent, Diligent, Resolute, and Mindful

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



**Repeated neural activity  
builds neural structure.**

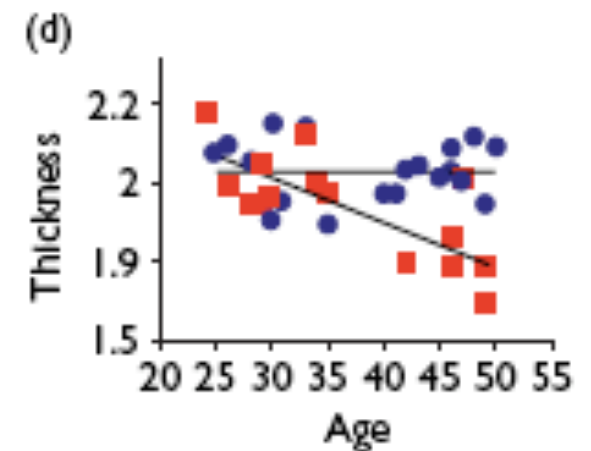
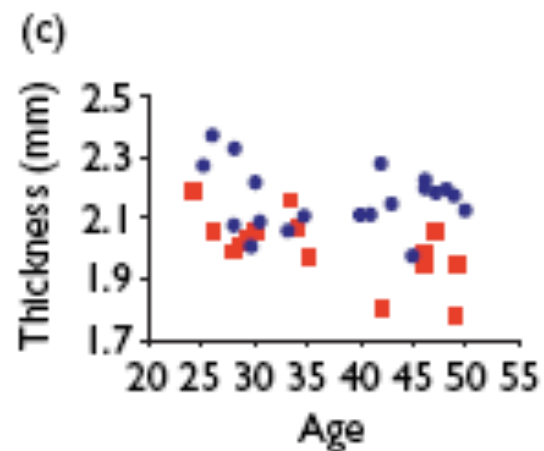
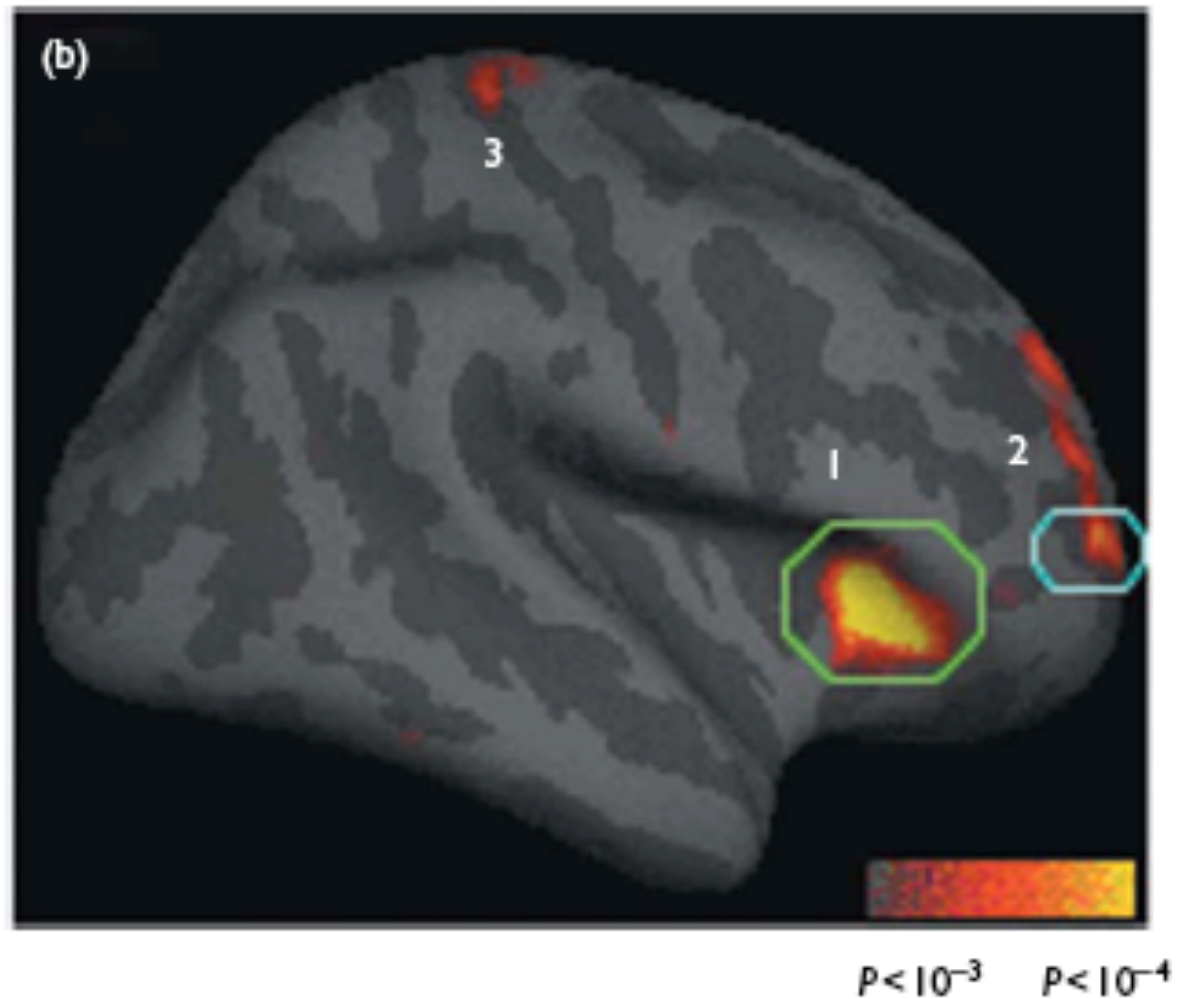


A detailed illustration of a neural network. Numerous yellow, thread-like axons crisscross the frame against a dark background. Several neuron cell bodies (soma) are visible, some with prominent green nuclei. The central neuron is the most prominent, with a bright green nucleus and a yellow soma. The text is overlaid on this image.

Neurons that fire together,

wire together.

Lazar, et al. 2005.  
Meditation  
experience is  
associated  
with increased  
cortical thickness.  
*Neuroreport*, 16,  
1893-1897.





**We can use the mind**

**To change the brain**

**To change the mind for the better**

**To benefit ourselves and other beings.**



# **Positive Neuroplasticity**

# The Neuropsychology of Learning


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**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.**



**Inner strengths are grown from  
experiences of them – activated  
states – that are installed as traits.**

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**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.**



**Most experiences of inner strengths  
are enjoyable.**

**They feel good because they are good  
for us and others.**






# **Mindfulness Is Not Enough**


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


**William James**




**Without installation,  
there is no learning,  
no change in the brain.**



**We're good at activation  
but bad at installation.**




**This is the fundamental weakness in  
most patient education, human  
resources training, psychotherapy,  
coaching, and mindfulness training.**



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

**Scott Miller**



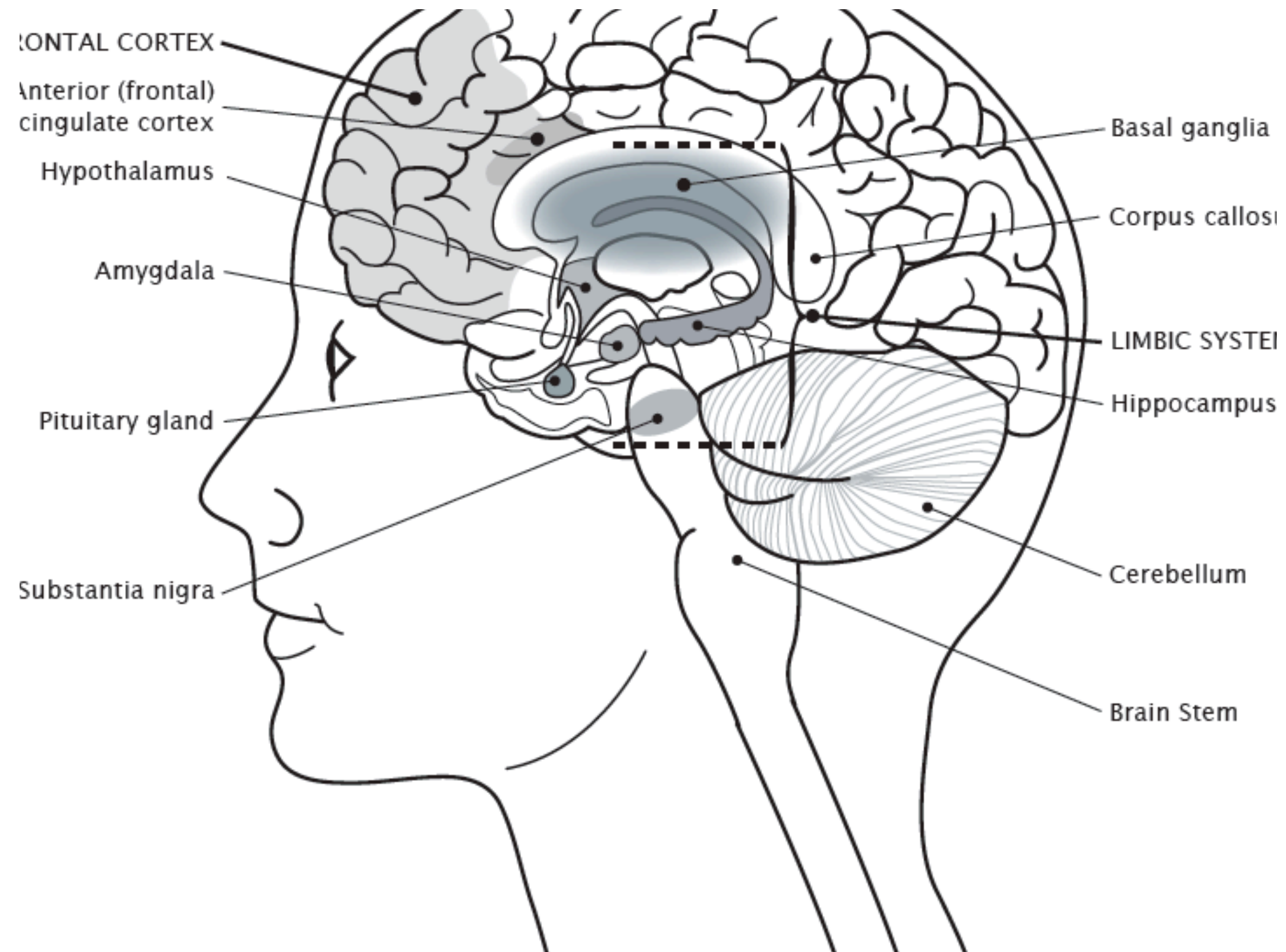
**Meanwhile,  
painful, harmful experiences  
are being rapidly converted  
into neural structure.**

# The Brain's Negativity Bias

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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 fast in implicit memory,
5. Sensitize the brain to the negative, and
6. Create vicious cycles with others.






# The Brain's Negativity Bias

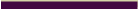
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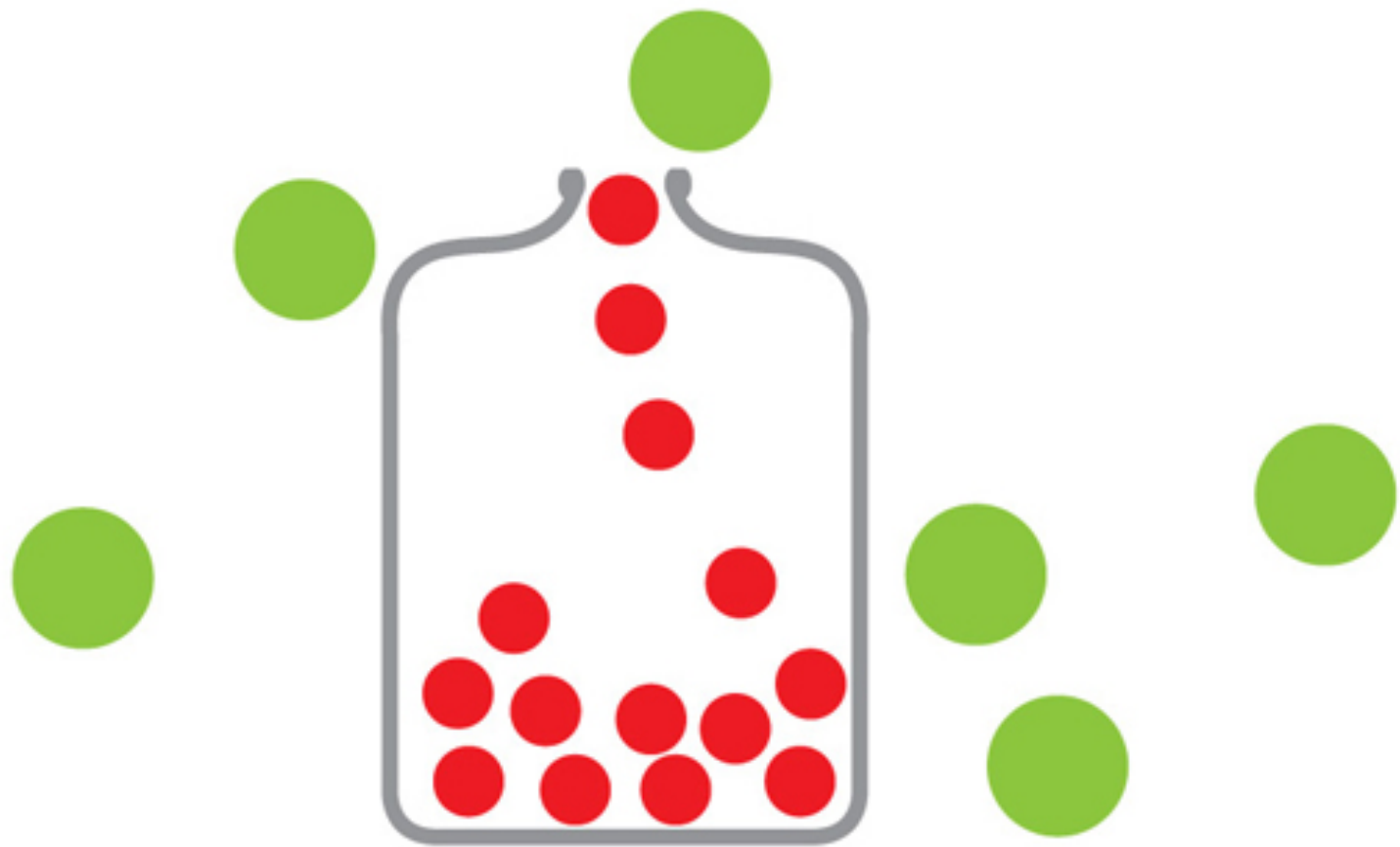
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**The brain is good  
at learning from  
bad experiences  
but bad at learning from good ones.**



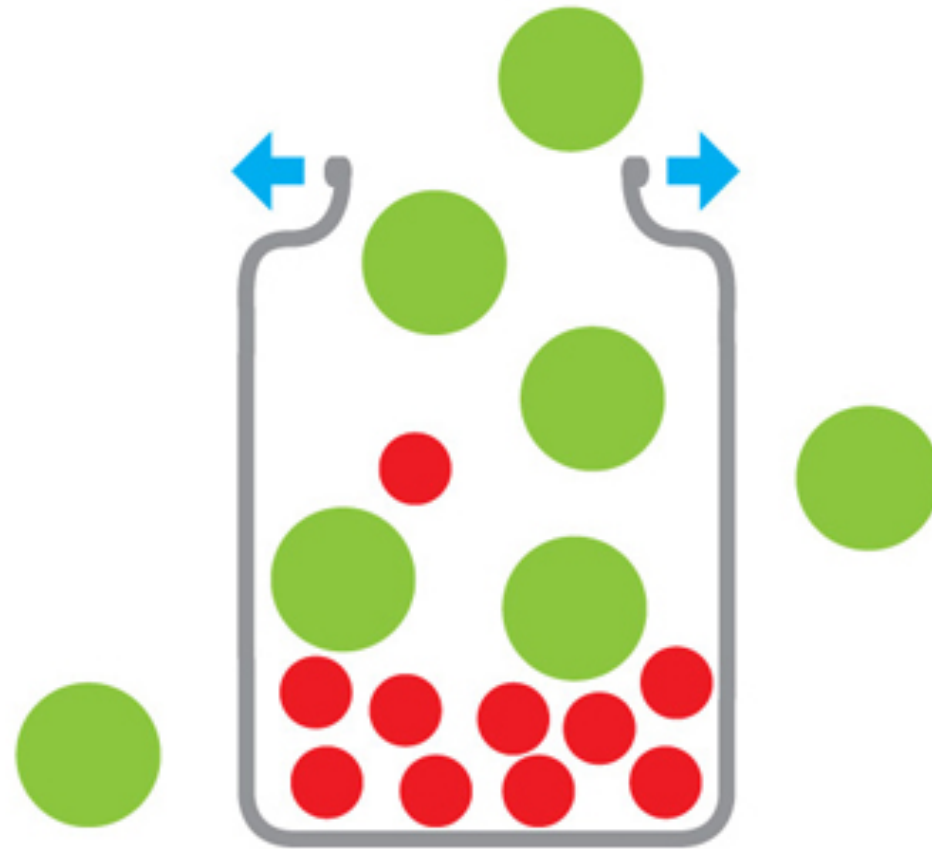
**Even though learning from  
good experiences  
is the primary way  
to grow resources for well-being.**



**The Negativity Bias**



# **Developing Your Brain**



**Learning to Take in the Good**

# HEAL Yourself

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**H**ave a positive experience.

**E**nrich it.

**A**bsorb it.

**L**ink positive and negative material.



**Have It, Enjoy It**

# In the Garden of the Mind

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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.”





# SPIRIT ROCK MEDITATION CENTER



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)

# Let's Try It

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- **Notice** the experience present in awareness that you are basically alright right now.
  - Have the experience.
  - Enrich it.
  - Absorb it.
  
- **Create** the experience of gratitude.
  - Have the experience.
  - Enrich it.
  - Absorb it.



# **The Buddha's Drive Theory of Suffering**

# A Telling of the Four Noble Truths

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**There is suffering.**

**When craving arises, so does suffering.**

**When craving passes away, so does suffering.**

**There is a path that embodies and leads to the passing away of this craving and suffering.**

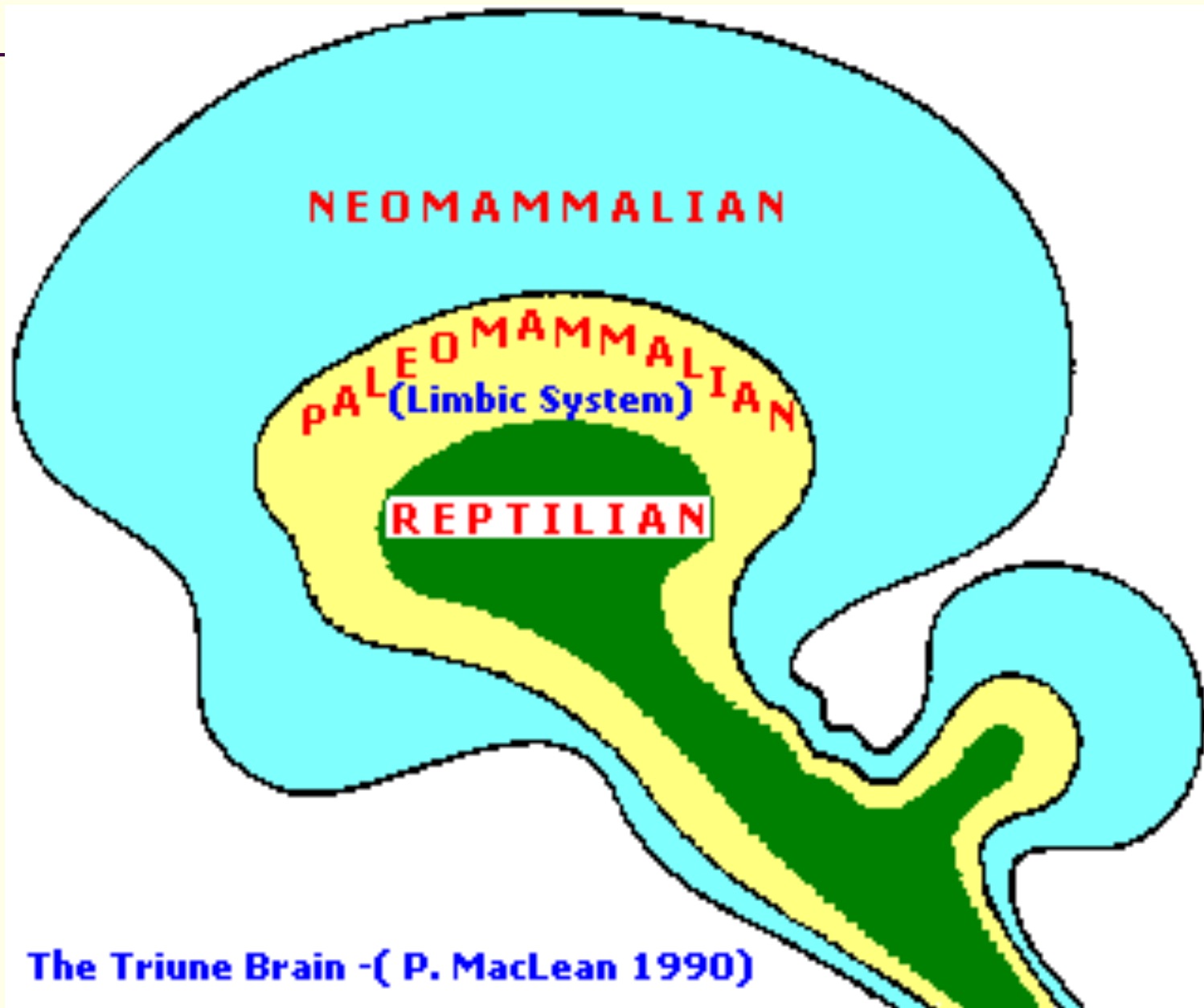


**What causes craving?**



**What ends these causes?**

# The Evolving Brain



# Meeting Three Core Needs

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## Need

## Signal

## Strategy

**Safety**

**Unpleasant**

**Avoiding**

**Satisfaction**

**Pleasant**

**Approaching**

**Connection**

**Heartfelt**

**Attaching**

# Craving Arising . . .

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*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<sup>28</sup>



# Craving Passing Away . . .

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*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.

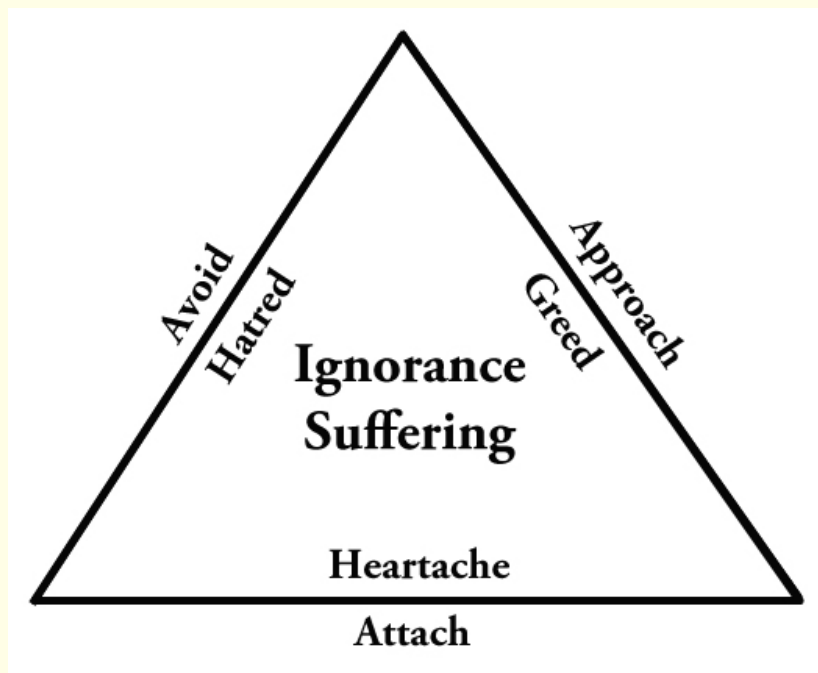
The mind defaults to a sustainable equilibrium of:

- **Peace** (Avoiding)
- **Contentment** (Approaching)
- **Love** (Attaching)

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

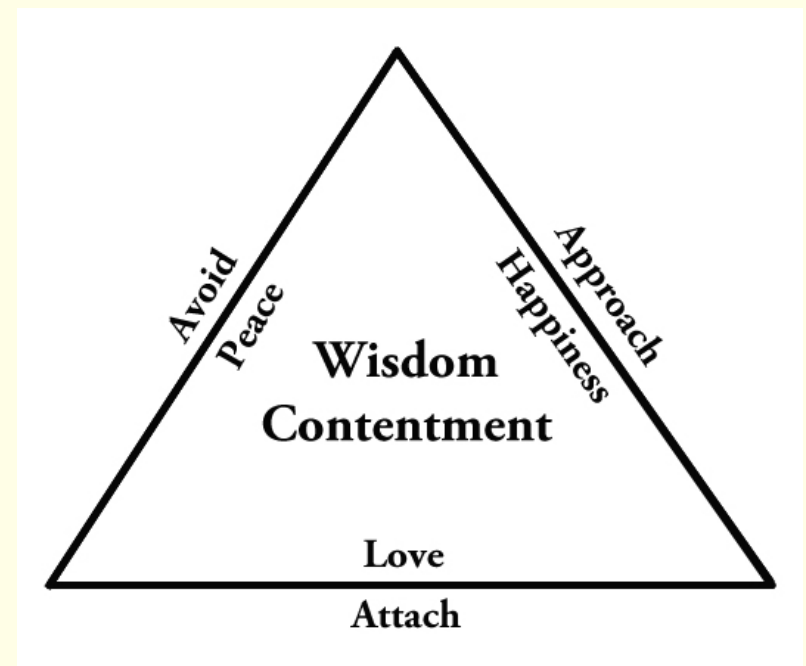
# Choices . . .

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**Reactive Mode**

Or?



**Responsive Mode**

# **Can You Stay in the Green Zone When:**

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**Things are unpleasant?**

**Things are pleasant?**

**Things are heartfelt?**

# Coming Home, Staying Home

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**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.**

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*In the deepest forms of insight,  
we see that things change so quickly  
that we can't hold onto anything,  
and eventually the mind lets go of clinging.*

*Letting go brings equanimity.  
The greater the letting go, the deeper the equanimity.*

*[W]e work to expand the range of life experiences  
in which we are free.*



*Know the mind.*

*Shape the mind.*

*Free the mind.*



# **From the 2<sup>nd</sup> to the 3<sup>rd</sup> Noble Truth**

# Mental Resources for Challenges

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

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

**Connection** – Belonging, appreciation,  
friendship, compassion, love



# Pet the Lizard



# Feed the Mouse

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# Hug the Monkey





**Peace**

**Contentment**

**Love**

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*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

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

# Key Papers - 1

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See [www.RickHanson.net](http://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.
- Braver, T. & Cohen, J. 2000. On the control of control: The role of dopamine in regulating prefrontal function and working memory; in *Control of Cognitive Processes: Attention and Performance XVIII*. Monsel, S. & Driver, J. (eds.). MIT Press.
- Carter, O.L., Callistemon, C., Ungerer, Y., Liu, G.B., & Pettigrew, J.D. 2005. Meditation skills of Buddhist monks yield clues to brain's regulation of attention. *Current Biology*, 15:412-413.

# Key Papers - 2

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- 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.
- Gillihan, S.J. & Farah, M.J. 2005. Is self special? A critical review of evidence from experimental psychology and cognitive neuroscience. *Psychological Bulletin*, 131:76-97.
- Hagmann, P., Cammoun, L., Gigandet, X., Meuli, R., Honey, C.J., Wedeen, V.J., & Sporns, O. 2008. Mapping the structural core of human cerebral cortex. *PLoS Biology*, 6:1479-1493.
- 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

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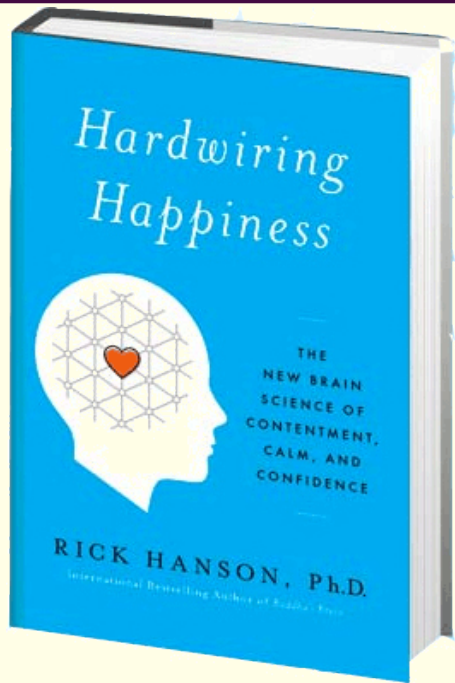
- Lazar, S., Kerr, C., Wasserman, R., Gray, J., Greve, D., Treadway, M., McGarvey, M., Quinn, B., Dusek, J., Benson, H., Rauch, S., Moore, C., & Fischl, B. 2005. Meditation experience is associated with increased cortical thickness. *Neuroreport*, 16:1893-1897.
- Lewis, M.D. & Todd, R.M. 2007. The self-regulating brain: Cortical-subcortical feedback and the development of intelligent action. *Cognitive Development*, 22:406-430.
- Lieberman, M.D. & Eisenberger, N.I. 2009. Pains and pleasures of social life. *Science*, 323:890-891.
- Lutz, A., Greischar, L., Rawlings, N., Ricard, M. and Davidson, R. 2004. Long-term meditators self-induce high-amplitude gamma synchrony during mental practice. *PNAS*, 101:16369-16373.
- Lutz, A., Slager, H.A., Dunne, J.D., & Davidson, R. J. 2008. Attention regulation and monitoring in meditation. *Trends in Cognitive Sciences*, 12:163-169.

# Key Papers - 4

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- Rozin, P. & Royzman, E.B. 2001. Negativity bias, negativity dominance, and contagion. *Personality and Social Psychology Review*, 5:296-320.
- Takahashi, H., Kato, M., Matsuura, M., Mobbs, D., Suhara, T., & Okubo, Y. 2009. When your gain is my pain and your pain is my gain: Neural correlates of envy and schadenfreude. *Science*, 323:937-939.
- Tang, Y.-Y., Ma, Y., Wang, J., Fan, Y., Feng, S., Lu, Q., Yu, Q., Sui, D., Rothbart, M.K., Fan, M., & Posner, M. 2007. Short-term meditation training improves attention and self-regulation. *PNAS*, 104:17152-17156.
- Thompson, E. & Varela F.J. 2001. Radical embodiment: Neural dynamics and consciousness. *Trends in Cognitive Sciences*, 5:418-425.
- Walsh, R. & Shapiro, S. L. 2006. The meeting of meditative disciplines and Western psychology: A mutually enriching dialogue. *American Psychologist*, 61:227-239.

# Where to Find Rick Hanson Online



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

[www.rickhanson.net/hardwiringhappiness](http://www.rickhanson.net/hardwiringhappiness)

Personal website: [www.rickhanson.net](http://www.rickhanson.net)

Wellspring Institute: [www.wisebrain.org](http://www.wisebrain.org)



[youtube.com/drrhanson](https://youtube.com/drrhanson)



[facebook.com/rickhansonphd](https://facebook.com/rickhansonphd)

**Stärken Sie Ihr Selbstvertrauen  
und finden Sie inneren Frieden.**

Unser Gehirn hat wirkungsvolle Mechanismen entwickelt, um mit Bedrohungen und Gefahren umzugehen. Doch im Angesicht von Stress schaden uns unsere Überlebensreflexe teils mehr, als dass sie uns nützen. Um Ihnen zu helfen, mit den Herausforderungen der heutigen Welt besser klarzukommen, hat der Neuropsychologe Rick Hanson das Programm *Das gelassene Gehirn eines Buddha* entwickelt.



**Rick Hanson** Das gelassene Gehirn eines Buddha

**Rick Hanson**

# Das gelassene Gehirn eines Buddha

**Schritt für Schritt zu mehr  
Resilienz und Wohlbefinden**

**Buch & 2 CDs**



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*Selbstgesteuerte Neuroplastizität* ist das praktische Trainingsprogramm für die gezielte Kultivierung positiver Geisteszustände. Gelassenheit und Zufriedenheit sind erlernbar. Wir können sie einladen, „bei uns zu verweilen,“ und sie so zu einer inneren Eigenschaft werden lassen.

Um unseren Vorfahren das Überleben zu sichern, hat sich unser Gehirn so entwickelt, dass es negative Erfahrungen anzieht und positive Erfahrungen weitaus weniger berücksichtigt. Die gute Nachricht ist jedoch, dass wir diese angeborene neuronale Struktur verändern können: Wir können den „Überlebensmodus“ verlassen und uns in einen Modus begeben, in dem wir tieferes Wohlbefinden, mentale Klarheit und die Wertschätzung eines jeden Moments erfahren.

In *Selbstgesteuerte Neuroplastizität* stellt uns der bekannte Neuropsychologe Rick Hanson die praktischen Übungen und Meditationen vor, die es uns ermöglichen, das Glückspotential unseres Gehirns voll und ganz zu entfalten.



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Selbstgesteuerte  
Neuroplastizität

Rick Hanson



Rick Hanson

## Selbstgesteuerte Neuroplastizität



*Der achtsame Weg,  
das Gehirn zu verändern*

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