

---

*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:***

---

## ***Turning Passing Experiences Into Lasting Inner Strength and Peace***

**New Zealand**

**January, 2015**

**Rick Hanson, Ph.D.**

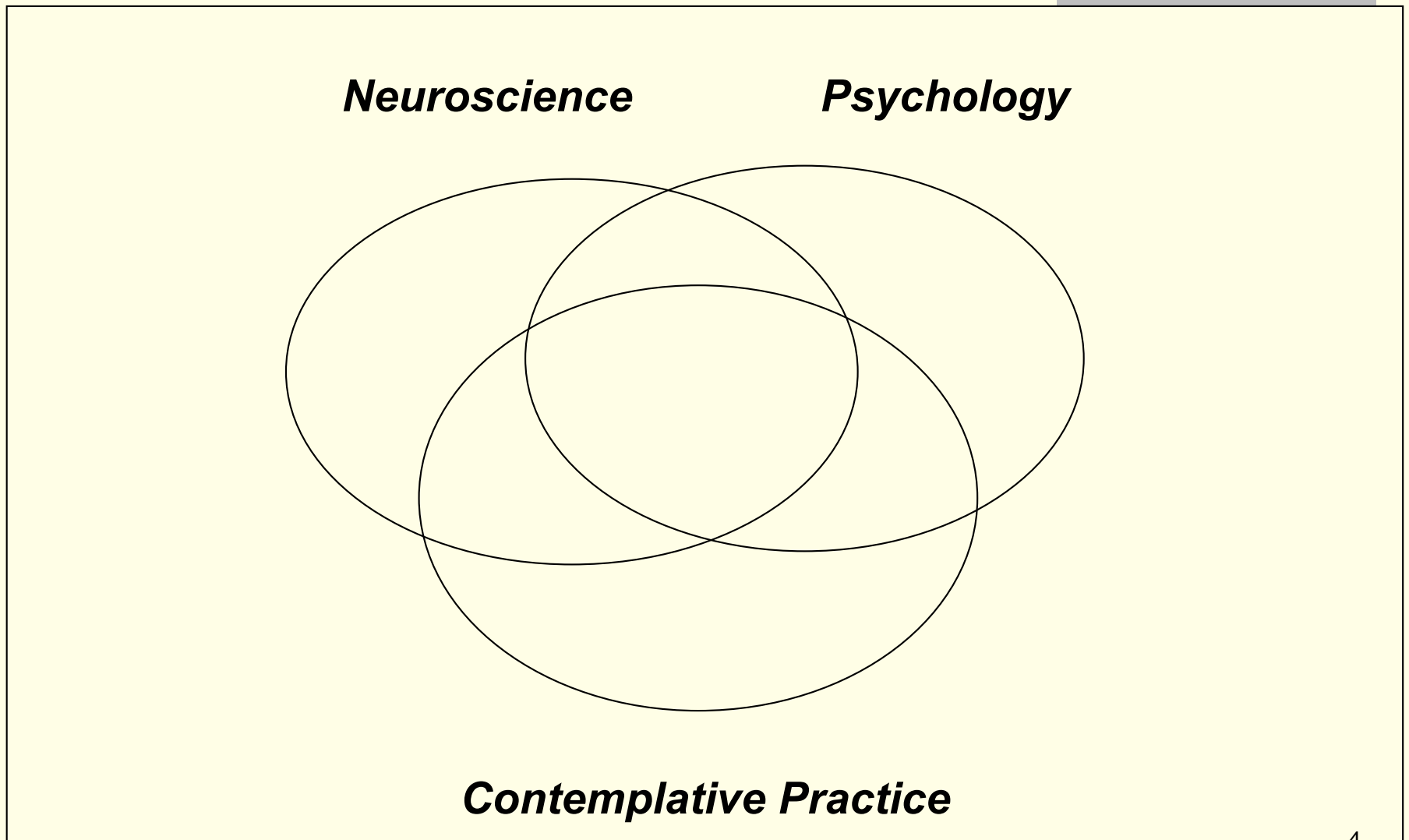
**The Wellspring Institute for Neuroscience and Contemplative Wisdom**

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



# **Grounding the Mind in Life**

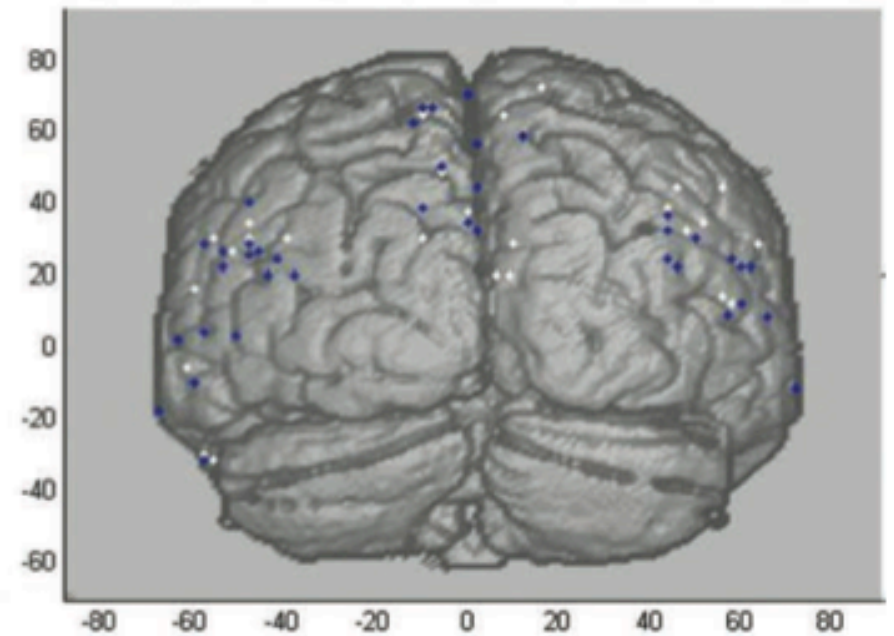
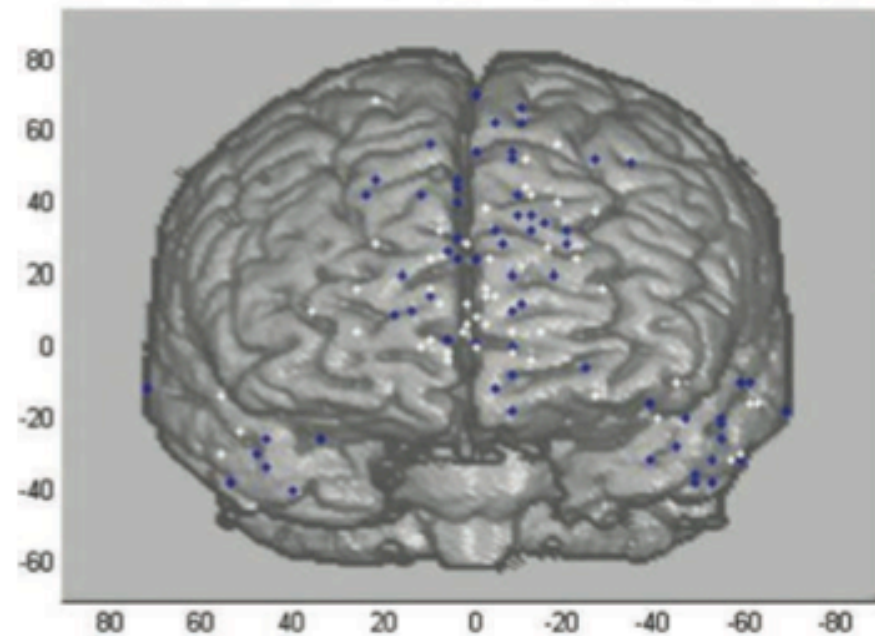
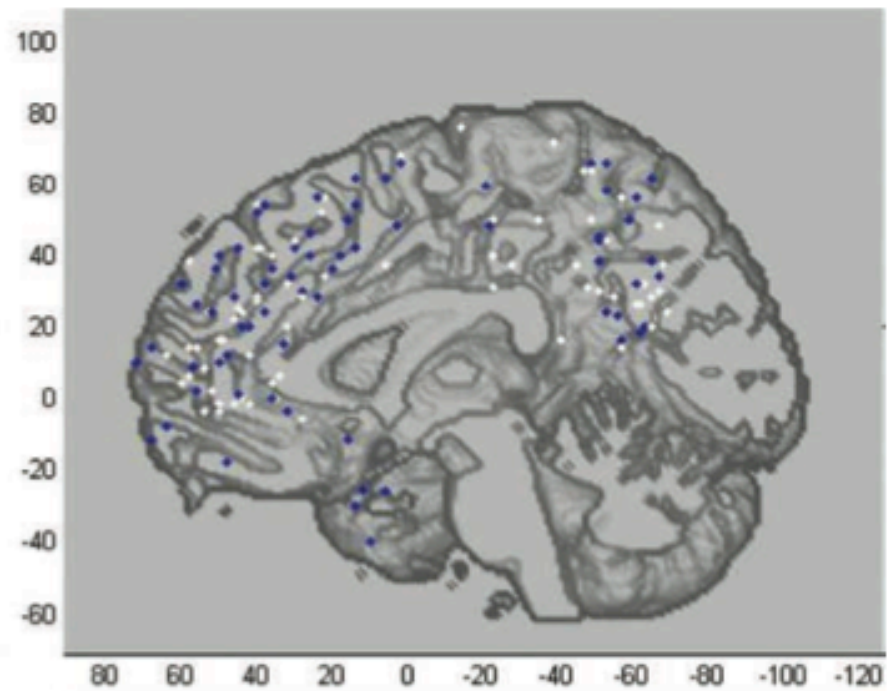
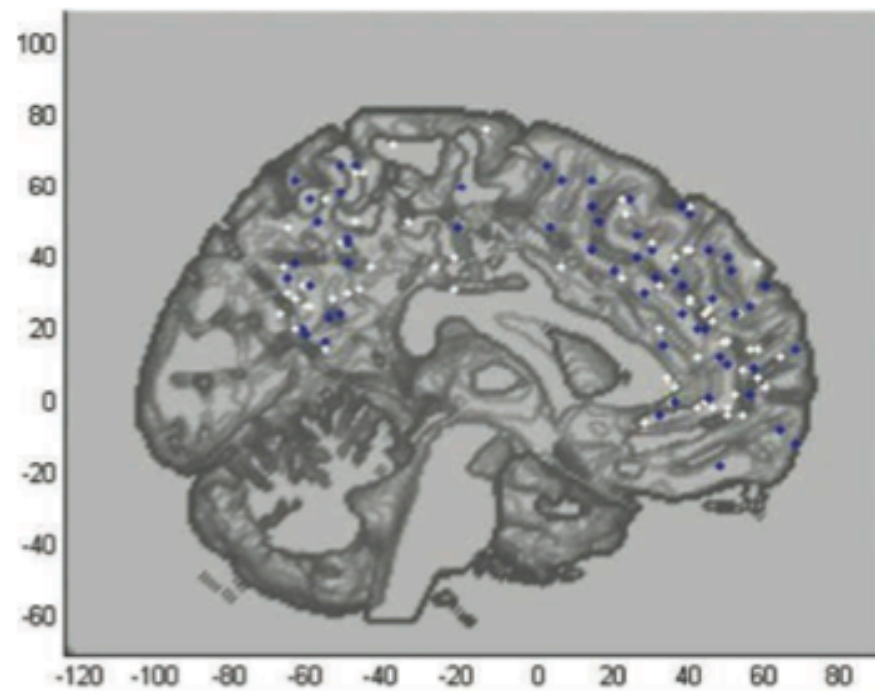
# Common - and Fertile - Ground









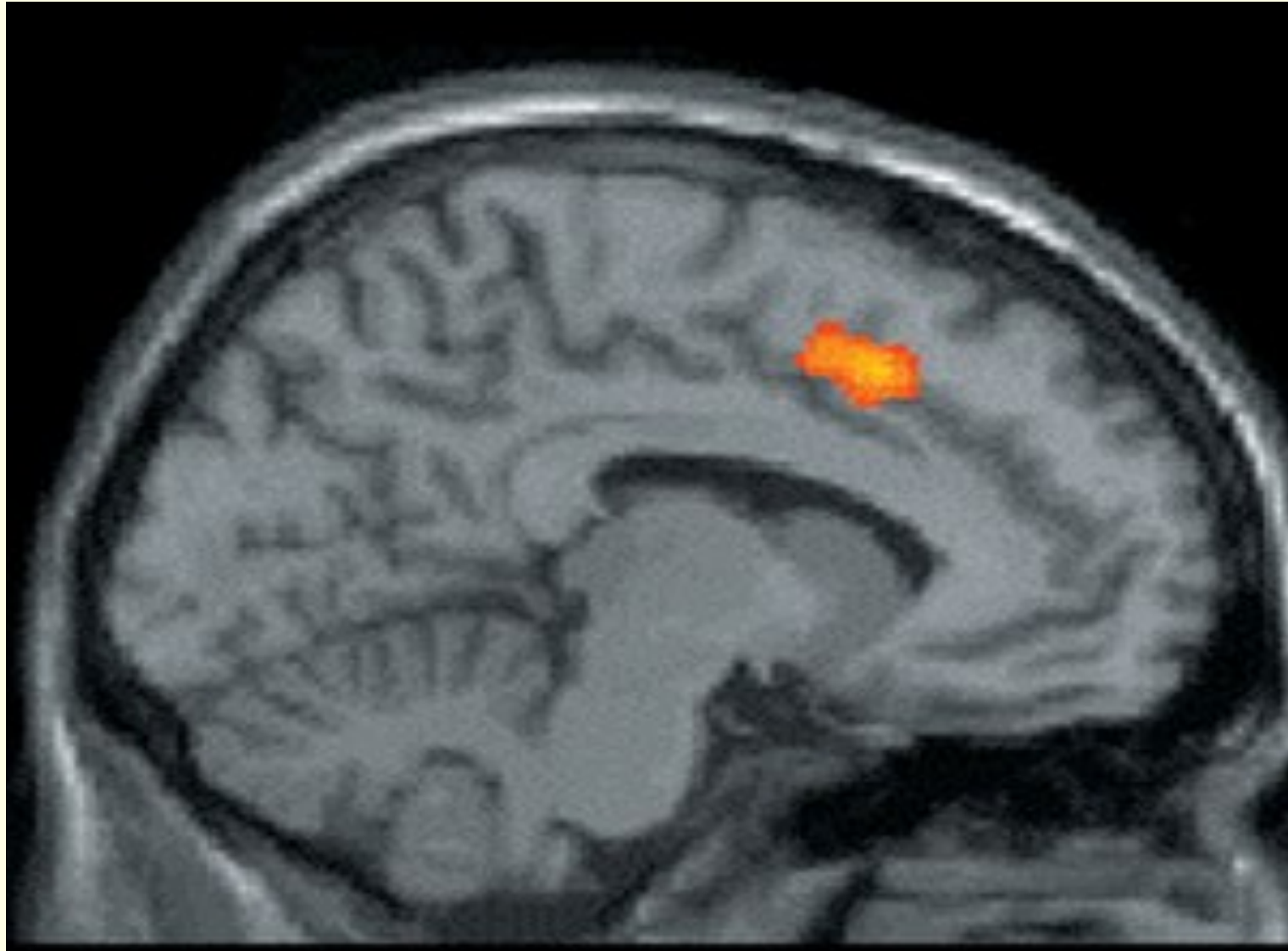


what is self-specific? Legrand and Ruby, *Psychological Review*, 2009.  
 [White = self; blue = other]



# Ardent, Diligent, Resolute, and Mindful

---



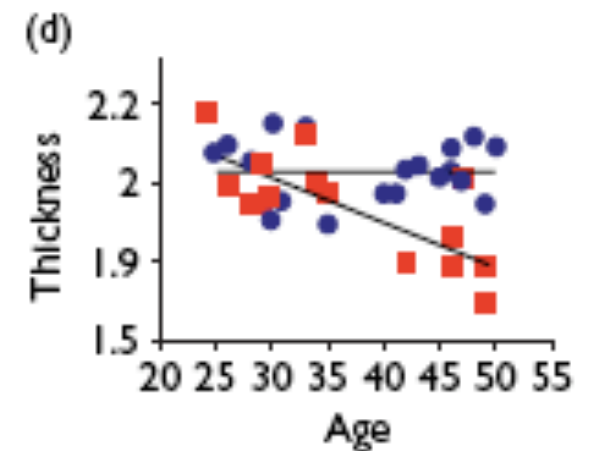
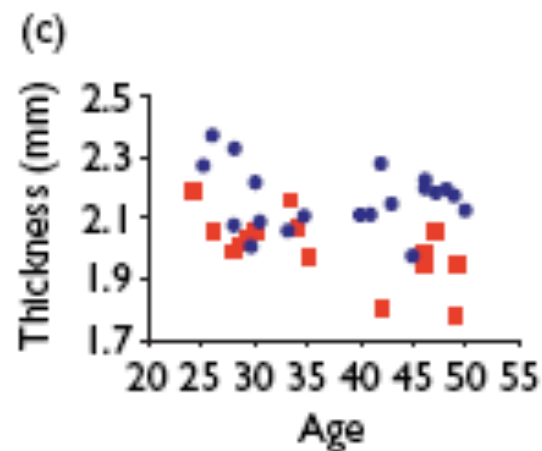
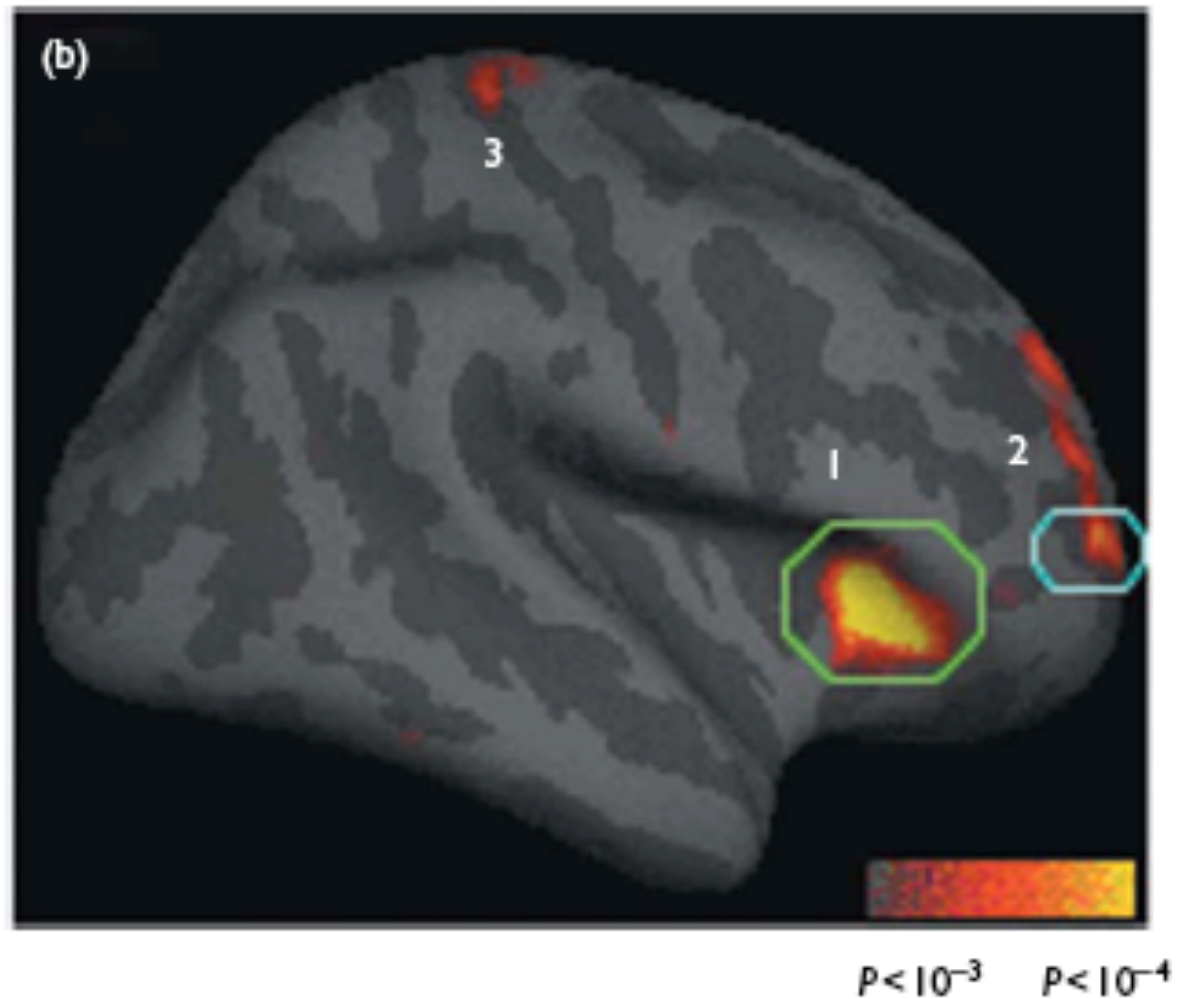


The background of the slide is a complex network of glowing yellow neurons. A single neuron in the center is highlighted with a bright green nucleus. The text is overlaid on this image.

Neurons that fire together,

wire together.

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



# The Natural, Immaterial 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.

---

*"We ask, 'What is a thought?'  
We don't know,  
yet we are thinking continually."*

**Venerable Ani Tenzin Palmo**



# The Opportunity

---

**We can use the mind**

**To change the brain**

**To change the mind for the better**

**To benefit ourselves and other beings.**



# Neurobhavana

Two wolves in the heart

# Major Buddhist Inner Strengths

---

**Mindfulness**

**Investigation**

**Energy**

**Bliss**

**Tranquility**

**Concentration**

**Equanimity**

**Compassion**

**Kindness**

**Altruistic joy**

**Virtue**

**Wisdom**

**View**

**Intention**


**Effort**

**Conviction**

**Generosity**

**Patience**





**Most experiences of inner strengths –  
resilience, kindness, insight,  
mindfulness, self-worth, love, etc. –  
are enjoyable.**

# 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.”



*Know the mind.*

*Shape the mind.*

*Free the mind.*

**Christina Feldman**

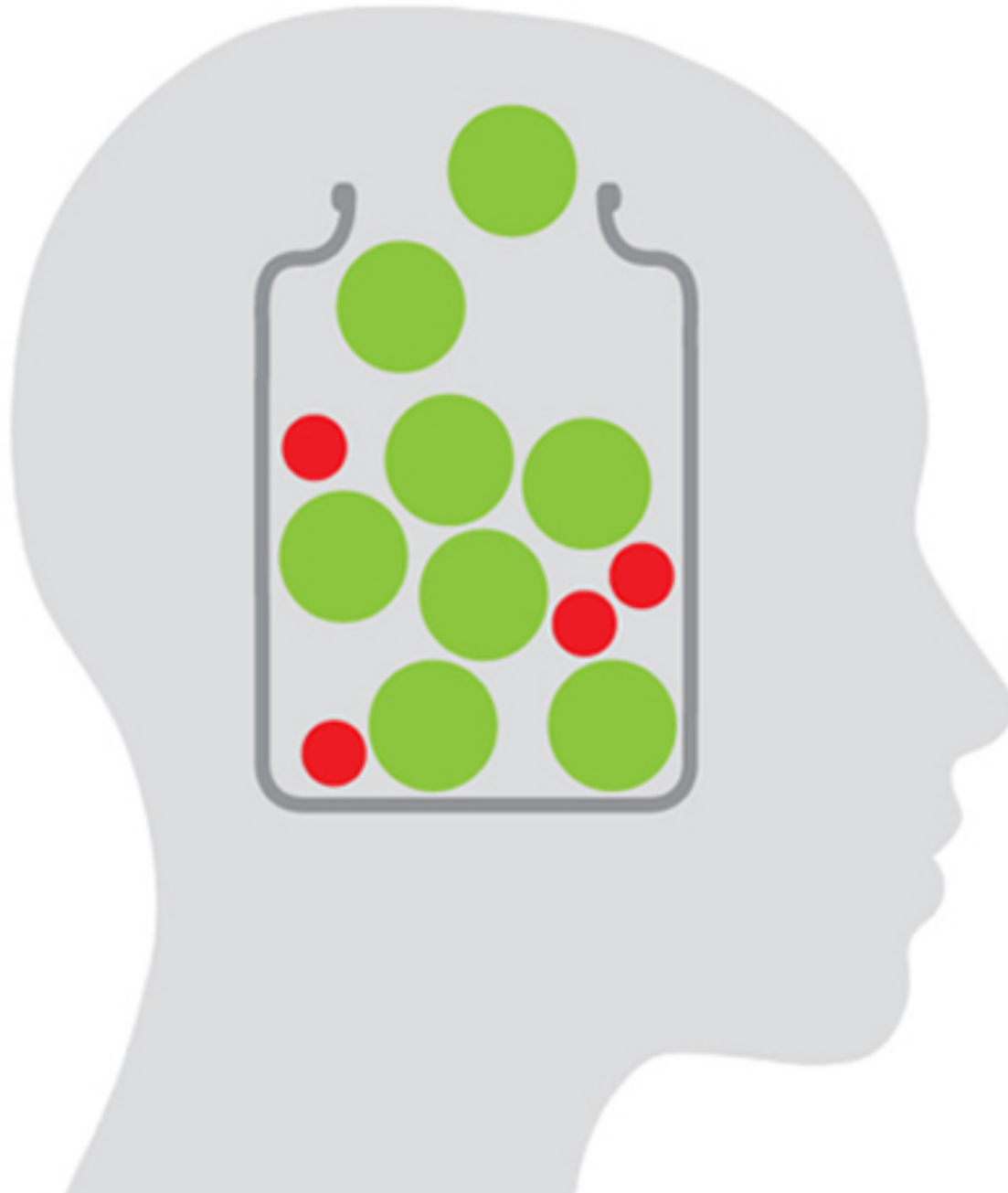
---

**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:**

**What psychological resources – inner strengths – would you like to grow or develop in yourself?**



# INNER STRENGTHS ARE BUILT FROM BRAIN STRUCTURE



# The Neuropsychology of Cultivation


---

**Learning – changing neural structure and function – proceeds in two stages:**

**From state to trait**

**From activation to installation**

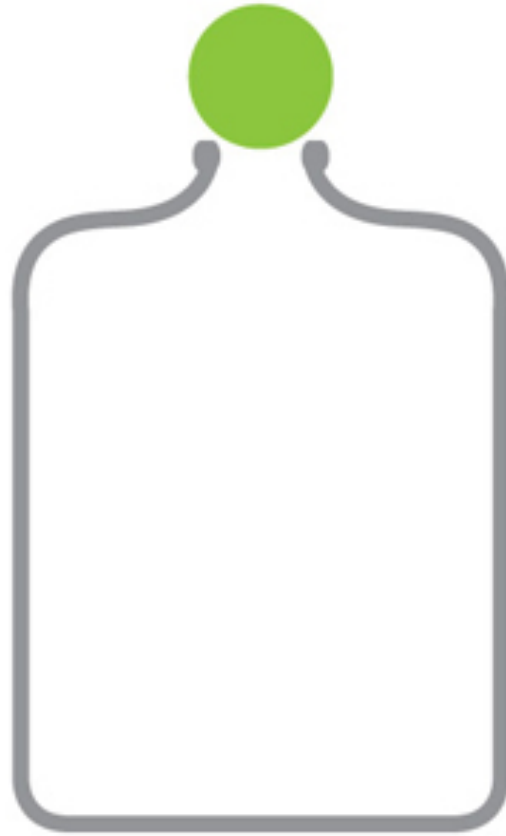
**From short-term memory buffers to long-term storage**



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

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

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



Have a Good Experience



# **The Two Ways To Have a Beneficial Experience**

---

**Notice one you are already having.**

- **In the foreground of awareness**
- **In the background**

**Create one.**

# How to Create A Beneficial Experience

---

**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**

# Elements of Experience

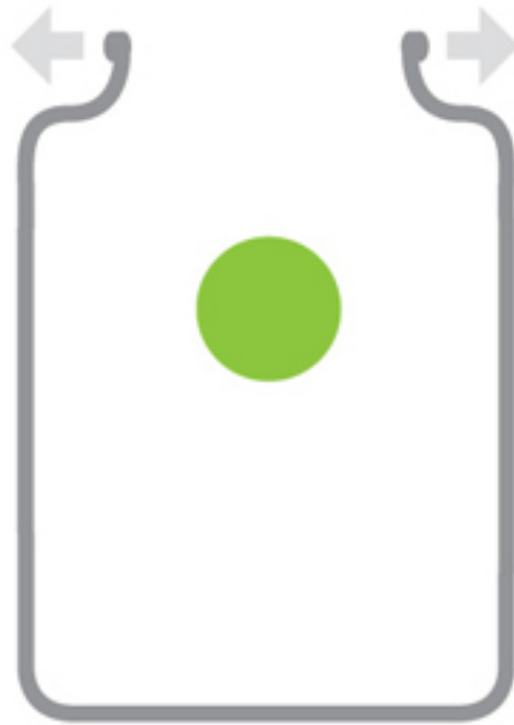
---

- **Thought** – belief; perspective; expectation; image; memory; idea
- **Perception** – sensation (e.g., relaxation, vitality); sight; sound; taste; smell
- **Emotion** – feeling; mood
- **Desire** – want; wish; hope; value; drive; motivation; purpose; dream; passion; determination
- **Action** – behavior; posture; knowing how to

# Turning a Good Fact Into a Good Experience

---

- 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

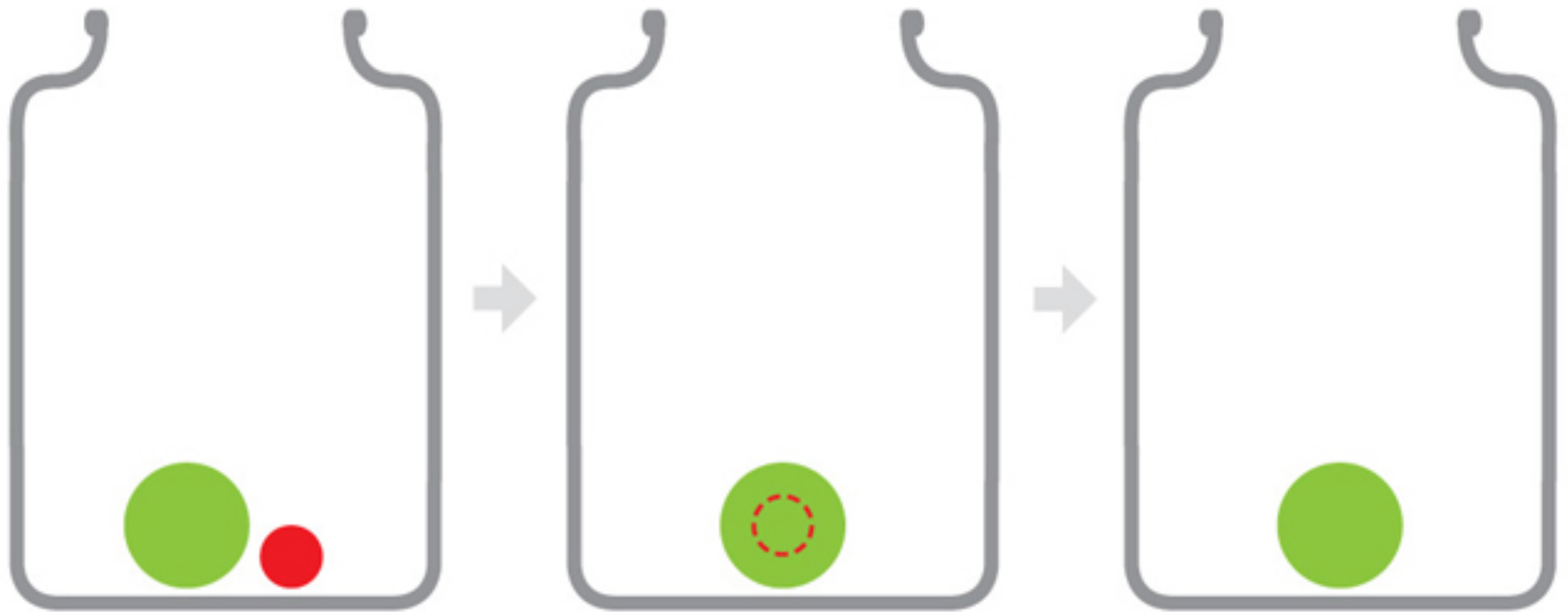
---

- **Duration** – 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





Absorb It



**L**ink Positive and Negative Material

# Positive Neuroplasticity – How to Take in the Good: HEAL

---

## Activation

1. Have a beneficial experience.

## Installation

2. Enrich the experience.
3. Absorb the experience.
4. Link positive and negative material. [optional]



Have It, Enjoy It

# Let's Try It

---

- **Notice** something beneficial in awareness.
  - Have the experience – more in the foreground.
  - Enrich it – sustain it, feel it in your body.
  - Absorb it – receive it, imagine or sense it's sinking in.
  
- **Create** the experience of gladness or gratitude.
  - Have the experience.
  - Enrich it.
  - Absorb it.
  
- **Create** the experience of feeling cared about.
  - Have the experience.
  - Enrich it.
  - Absorb it.



---

**Without installation – without turning  
passing mental states into enduring neural  
structure – there is no learning, no change  
in the brain.**

**Activation without installation is pleasant,  
but has no lasting value.**

**What fraction of your beneficial mental  
states ever become neural structure?**



# **The Negativity Bias**

# Unpleasant Experiences In Context

---

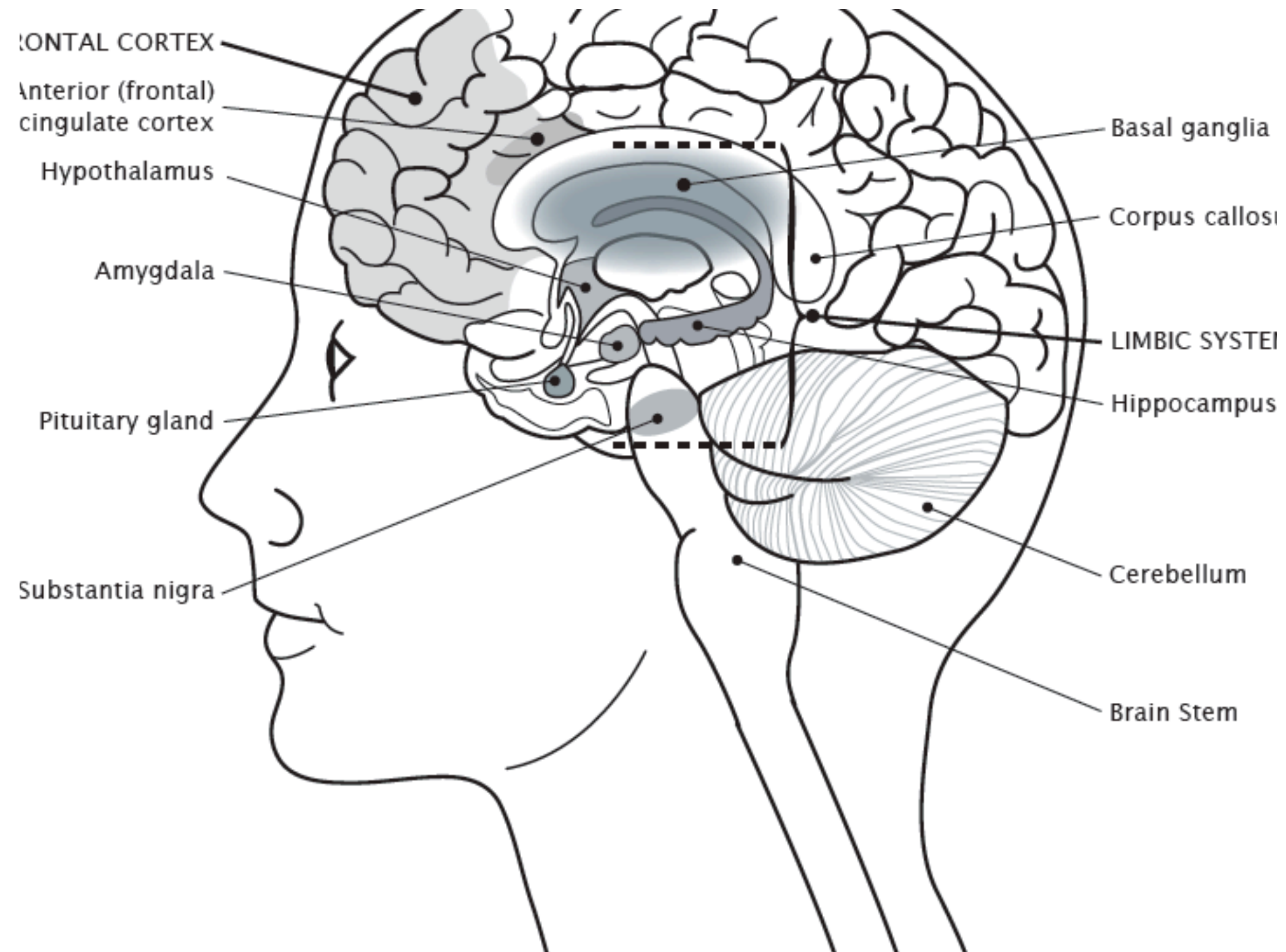
- Life contains unavoidable unpleasant experiences. Resisting them just adds to the stress, upset, etc.
- Some inner strengths come only from unpleasant experiences, e.g., knowing you'll do the hard thing.
- But unpleasant experiences have inherent costs, in their discomfort and stress.
- Many inner 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, losing sight of the whole
3. Over-react to it (e.g., brain, loss aversion)
4. Install it rapidly in implicit memory (e.g., negative interactions, learned helplessness)
5. Sensitize the brain to the negative
6. Create vicious cycles



# 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, losing sight of the whole
3. Over-react to it (e.g., brain, loss aversion)
4. Install it rapidly in implicit memory (e.g., negative interactions, learned helplessness)
5. Sensitize the brain to the negative
6. Create vicious cycles




# Velcro for Bad, Teflon for Good

---

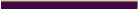
The negativity bias

*bad experiences*

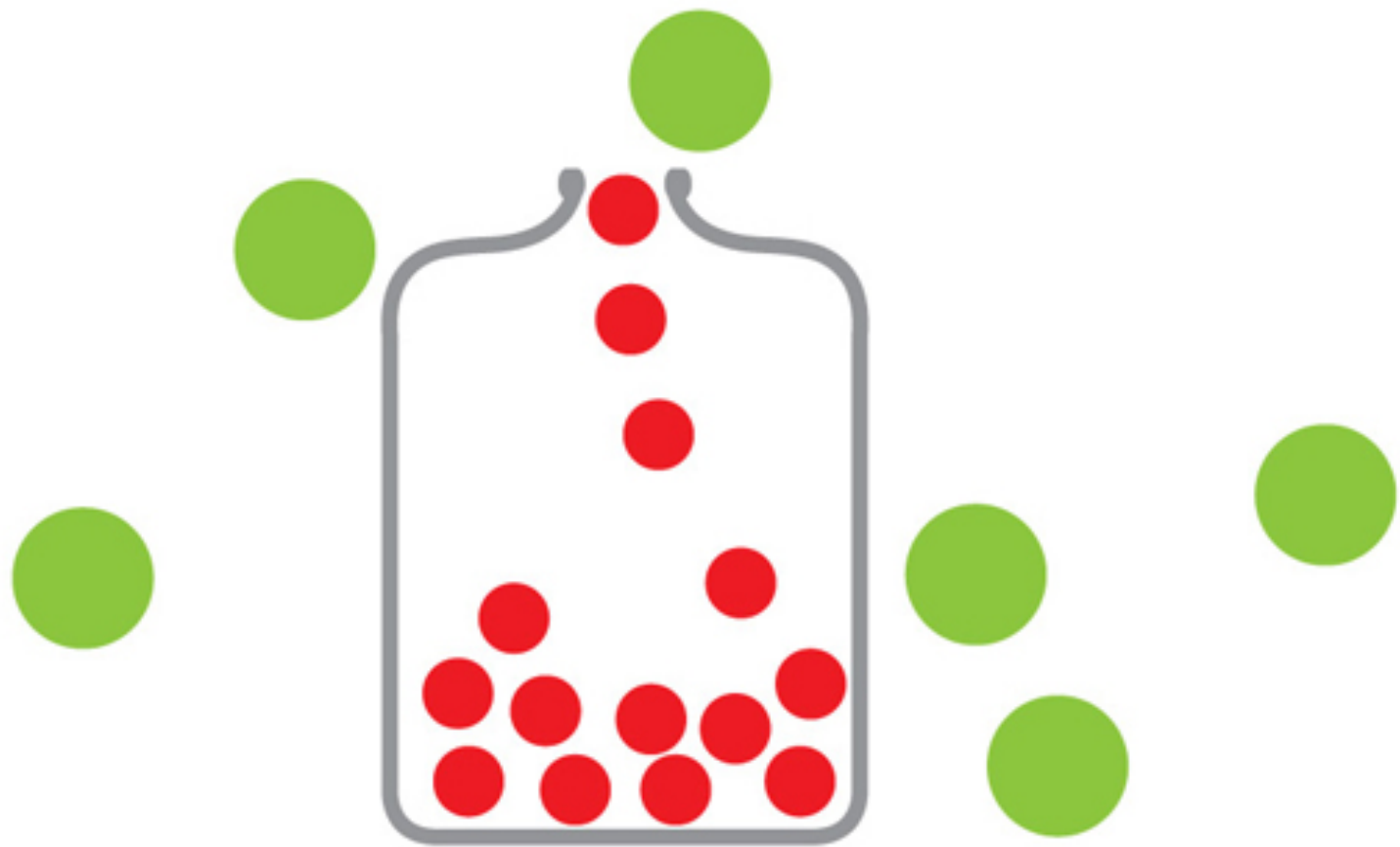
*good experiences*



**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 psychological resources.**



The Negativity Bias



A composite image showing three Stone Age people in a modern city park. In the foreground, a man with long hair and a beard is crouching in a grassy field. Behind him, two other people are sitting on the grass. In the background, there are large green bushes and a dense forest of trees. Behind the trees, several tall, modern city buildings are visible under a clear blue sky. The text "Stone age brains in the 21st century" is overlaid in white serif font on a dark green horizontal band across the middle of the image.

# Stone age brains in the 21st century



**The installation of beneficial experiences is worth doing in its own right.**

**And – the negativity bias adds another reason for positive installation: to compensate for our over-learning from the negative.**





# 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)






# **Self-Compassion**

---

*If one going down into a river,  
swollen and swiftly flowing,  
is carried away by the current --  
how can one help others across?*

**The Buddha**



*The root of Buddhism is compassion,  
and the root of compassion  
is compassion for oneself.*

Pema Chodron

# Self-Compassion

---

- Compassion is the wish 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:
  - Get the sense of being cared about.
  - Bring to mind beings you care about. Find compassion for them.
  - Shift the compassion to yourself.

# “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



# **Craving and Its Causes**

---

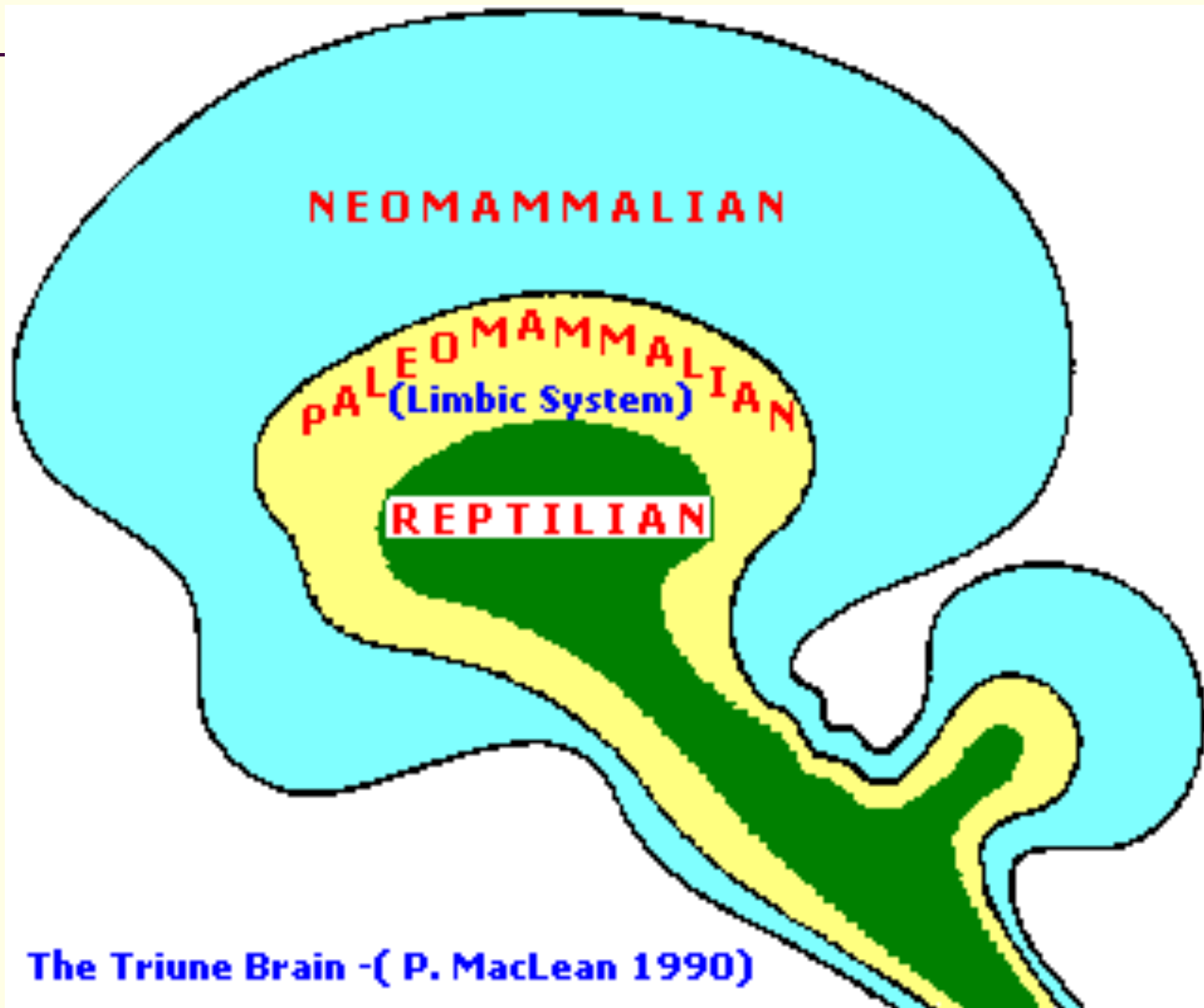
**Buddhism is about processes and causes.**

**The Buddha taught the mental causes of suffering and its end: *tanha* and *nirodha*: “thirst, craving” and “cessation, release.”**

**2500 years later, we can explore the underlying, neurobiological causes of craving . . . and its release.**



# Evolutionary History



The Triune Brain -( P. MacLean 1990)

# Needs

---

**Need**

**Safety**

**Satisfaction**

**Connection**

# Needs, Activation

---

**Need**

**Activation**

**Safety**

**Unpleasant**

**Satisfaction**

**Pleasant**

**Connection**

**Heartfelt**

# Needs, Activation, Coping

---

## Need

## Activation

## Coping

**Safety**

**Unpleasant**

**Avoiding harms**

**Satisfaction**

**Pleasant**

**Approaching rewards**

**Connection**

**Heartfelt**

**Attaching to others**

# Neurobiological Basis of Craving

---

*When invaded by threat, loss, or rejection [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** (the Avoiding system)
- **Frustration** (the Approaching system)
- **Heartache** (the Attaching system)

This is the brain in allostatic, **Reactive**, *craving* mode. <sup>59</sup>

---

*Indeed, the sage who's fully quenched  
Rests at ease in every way;  
No sense desire adheres to him or her  
Whose fires have cooled, deprived of fuel.*

*All attachments have been severed,  
The heart's been led away from pain;  
Tranquil, he or she rests with utmost ease.  
The mind has found its way to peace.*

The Buddha

# Neurobiological Basis of Not Craving

---

*When not invaded by threat, loss, or rejection [no 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** (the Avoiding system)
- **Contentment** (the Approaching system)
- **Love** (the Attaching system)

This is the brain in its homeostatic ***Responsive, minimal craving*** mode.

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

---

**Things are unpleasant?**

**Things are pleasant?**

**Things are heartfelt?**



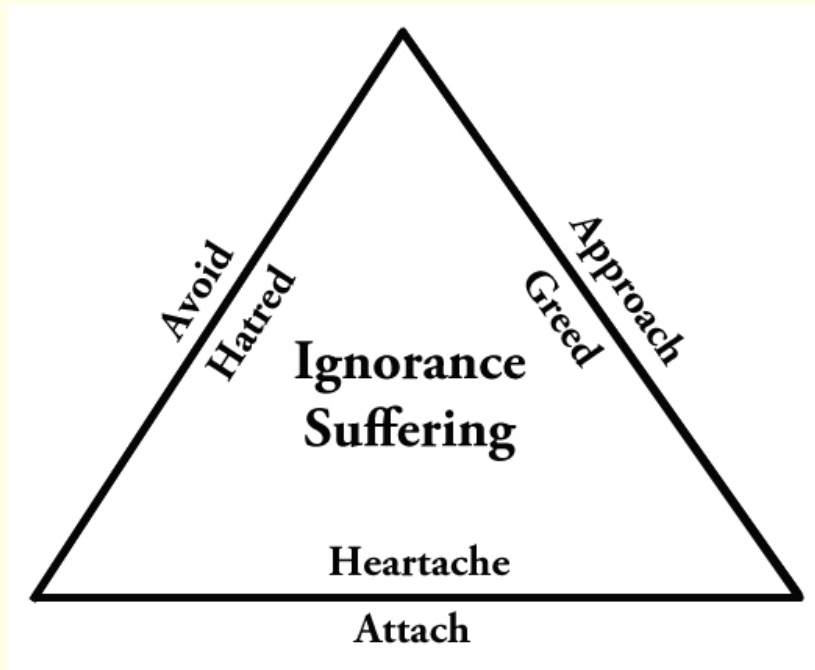
---

*In Buddhist practice,  
we work to expand  
the range of life experiences  
in which we are free.*

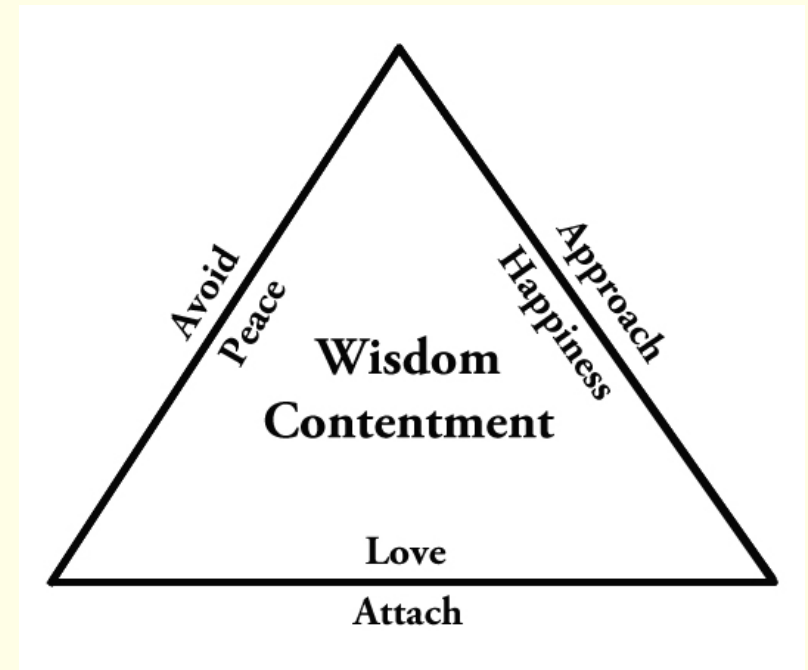
**U Pandita**

# Choices . . .

Or?



**Reactive Mode**



**Responsive Mode**

# Coming Home, Staying Home

---

**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.**

# Pet the Lizard



# Feed the Mouse

---





# Hug the Monkey

---



# The Fruit as the Path

---

**Peace**

**Contentment**

**Love**



Have It, Enjoy It



# Some Key Responsive Experiences

---

## **Avoiding Harms - Peace**

- Feeling basically alright right now
- Feeling protected, strong, safe, tranquil
- The sense that awareness itself is untroubled

## **Approaching Rewards - Contentment**

- Sense of enoughness, fullness in emptiness
- Feeling pleased, glad, grateful, generous
- Therapeutic, spiritual, or existential realizations

## **Attaching to Others - Love**

- Feeling basically connected
- Feeling included, seen, liked, appreciated
- Feeling compassionate, kind, happy at the happiness of others



# **Linking Positive and Negative Material**

# “Negative” Material

---

- “Negative” material includes pain, discomfort, worry, helplessness, anger, frustration, disappointment, drivenness, addiction, loneliness, insecure attachment, hurt, jealousy, resentment, inadequacy, shame
- Comes from the presence of the “bad” and the absence of the “good”
- Activated explicitly and implicitly

# How Linking Works

---

- Activated negative material associates to whatever is also present in awareness.
- When negative material leaves awareness, these associations are reconsolidated in memory.
- This means that positive material can soothe, ease, put in perspective, and even replace negative material.
- Examples: pain held in spacious awareness; telling a friend about a problem; self-compassion for an upset; feeling cared about alongside feeling hurt

# HEAL by Taking in the Good

---

1. **Have** a beneficial experience.
2. **Enrich** it.
3. **Absorb** it.
4. **Link** it with negative material. [optional]

# Conditions for the Link Step

---

- Divided awareness; holding two things at once
- Not hijacked by negative; if so, drop negative
- Positive material is more prominent in awareness.

# 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 (e.g., soothing balm, filling up hollow places, connecting with younger layers of the psyche).

→ Throughout, the positive material remains more prominent in awareness.

# Skills with the 4<sup>th</sup> Step

---

- Be on your own side; you want the positive to win. Perhaps imagine inner allies with you.
- Be resourceful. It's OK to be creative, even playful.
- If the negative gets too strong, drop it; return to positive.
- Get a sense of receiving the positive into the negative.
- End with just the positive.
- Start with positive or negative material.



# Some Key Responsive Experiences

---

## **Avoiding Harms - Peace**

- Feeling basically alright right now
- Feeling protected, strong, safe, tranquil
- The sense that awareness itself is untroubled

## **Approaching Rewards - Contentment**

- Sense of enoughness, fullness in emptiness
- Feeling pleased, glad, grateful, generous
- Therapeutic, spiritual, or existential realizations

## **Attaching to Others - Love**

- Feeling basically connected
- Feeling included, seen, liked, appreciated
- Feeling compassionate, kind, happy at the happiness of others




# **Benefits of the HEAL Process**

# 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.*

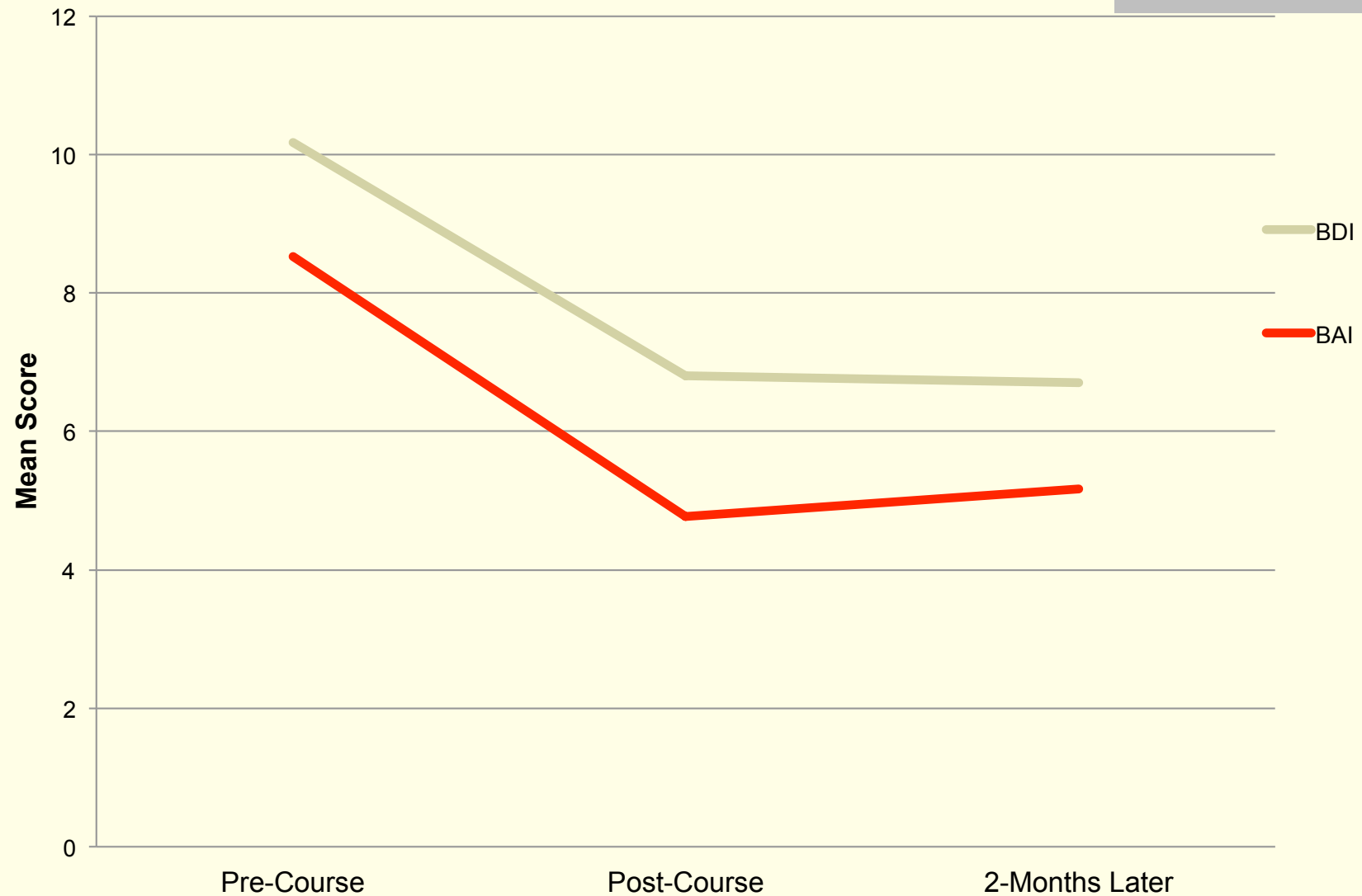
Lao Tsu

# Research 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.

# Combined Sample: Depression (BDI) & Anxiety (BAI)





# **Taking in and Mindfulness**

# Synergies of TG and Mindfulness

---


- Improved mindfulness enhances TG.
- TG increases factors of mindfulness (e.g., self-compassion, determination, distress tolerance).
- TG heightens learning from mindfulness:
  - The sense of stable presence itself
  - Disidentifying from reactions
  - Deepening centeredness
  - Peace of realizing that experiences come and go



# 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).



**What do you think?**



# Reflections

# Cultivation Undoes Craving

---

- All life has goals. The brain continually seeks to avoid harms, approach rewards, and attach to others - even that of a Buddha.
- It is wholesome to wish for the happiness, welfare, and awakening of all beings - including the one with your nametag.
- We rest the mind upon positive states so that the brain may gradually take their shape. This disentangles us from craving as we increasingly rest 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.

# A Fifth Yana?

---

The “Buddhastream” has developed through four major vehicles (*yanas*): Theravadan, Tibetan, Chan/Zen, and Pure Land.

Could we be helping develop an emergent Fifth Yana, with:

- Many householders engaging deep contemplative practice
- Multiculturalism as both a reality and a value
- Access to and eclectic use of the full array of Buddhist teachings
- Flattening hierarchies
- Naturalizing dharma practice; using science and psychology
- Skillful use of positive experiences; “Western tantra”
- Deconstructing and applying Buddhist practices in non-Buddhist settings (e.g., pain-control clinics, schools, psychotherapy)

# Heartwood

---

*This spiritual life does not have gain, honor, and renown for its benefit, or the attainment of moral discipline for its benefit, or the attainment of concentration for its benefit, or knowledge and vision for its benefit.*

*But it is this unshakable liberation of mind that is the goal of this spiritual life, its heartwood, and its end.*

The Buddha

---

*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

---

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

---

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

---

- 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

---

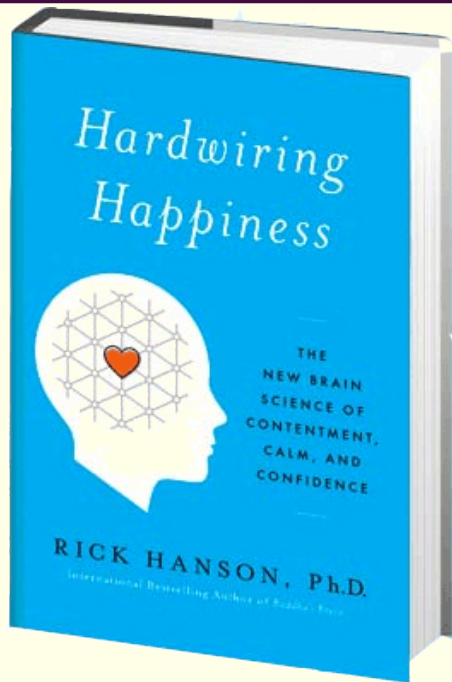
- Lazar, S., Kerr, C., Wasserman, R., Gray, J., Greve, D., Treadway, M., McGarvey, M., Quinn, B., Dusek, J., Benson, H., Rauch, S., Moore, C., & Fischl, B. 2005. Meditation experience is associated with increased cortical thickness. *Neuroreport*, 16:1893-1897.
- Lewis, M.D. & Todd, R.M. 2007. The self-regulating 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

---

- 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)