

# From the Buddhist Lovingkindness Sutra

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*Wishing: In gladness and in safety, may all beings be at ease.*

*Omitting none, whether they are weak or strong, the great or the mighty, medium, short, or small, the seen and the unseen, those living near and far away, those born and to-be-born: May all beings be at ease.*

*Let none through anger or ill-will wish harm upon another. Even as a mother protects with her life her child, her only child, so with a boundless heart should one cherish all living beings; radiating kindness over the entire world: spreading upwards to the skies, and downwards to the depths, outwards and unbounded, freed from hatred and ill-will.*

*One should sustain this recollection.*

*This is said to be the sublime abiding.*

# ***Hardwiring Compassion:***

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## ***Strengthening The Neural Substrates Of Love***

***FACES***

***San Diego, February 26, 2015***

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

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

# Topics

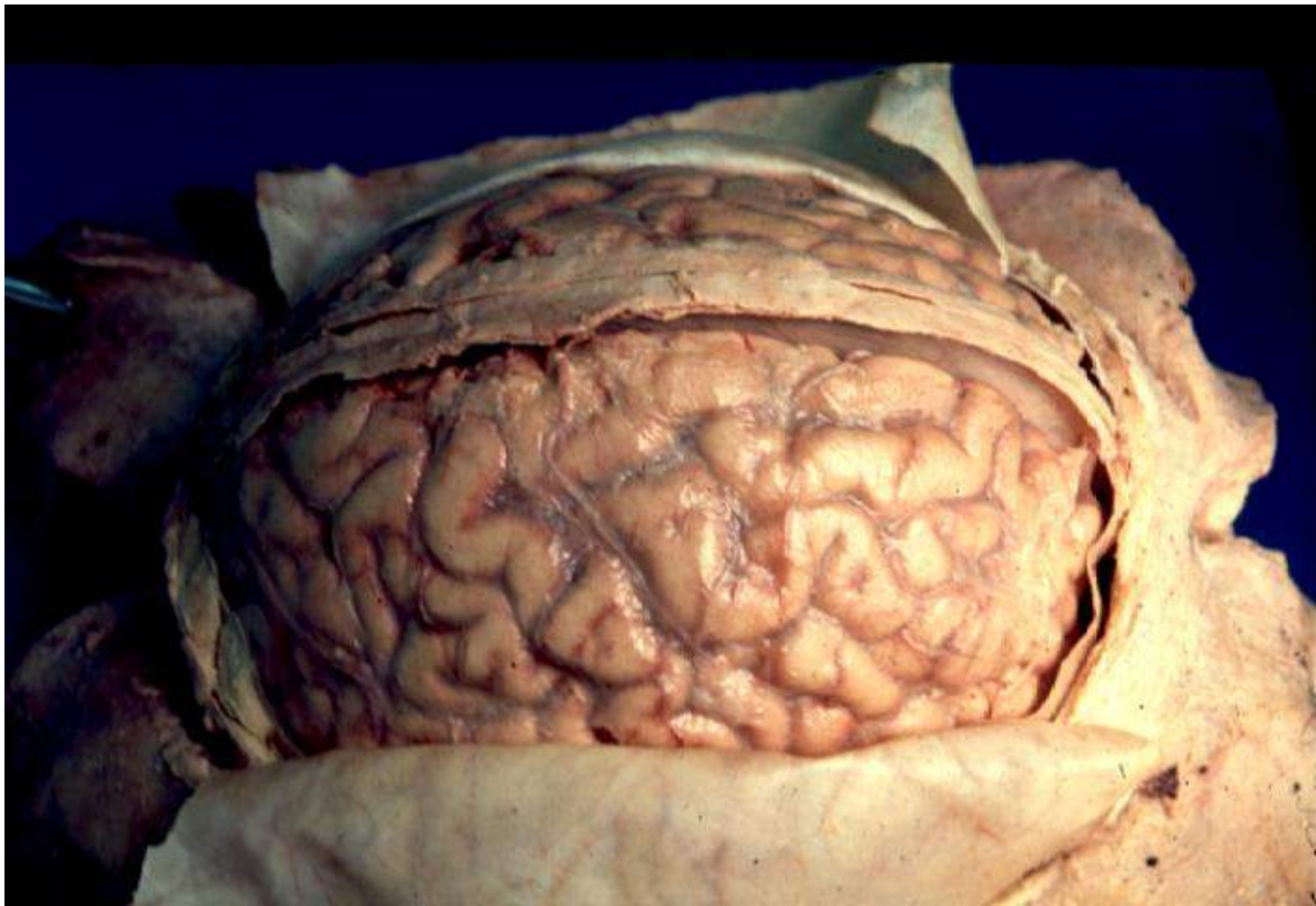
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- **Self-directed neuroplasticity**
- **Our loving nature**
- **Two wolves in the heart**
- **Being on your own side**
- **Feeding the wolf of love**



# **Self-Directed Neuroplasticity**







A microscopic image of neurons, showing a central neuron with a glowing green nucleus and numerous yellow, branching axons extending across the field of view. The background is dark, and the overall color palette is dominated by yellow and green.

Neurons that fire together,

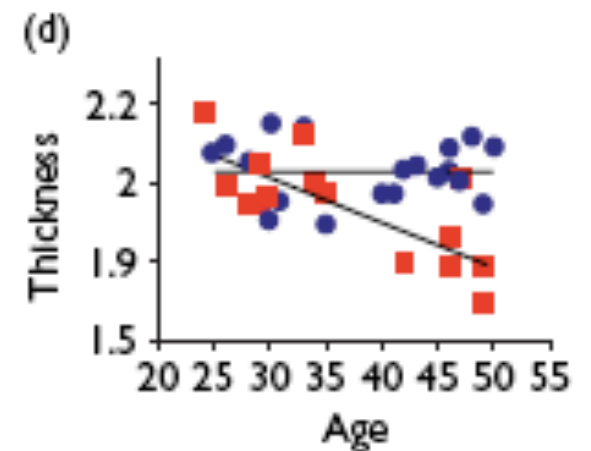
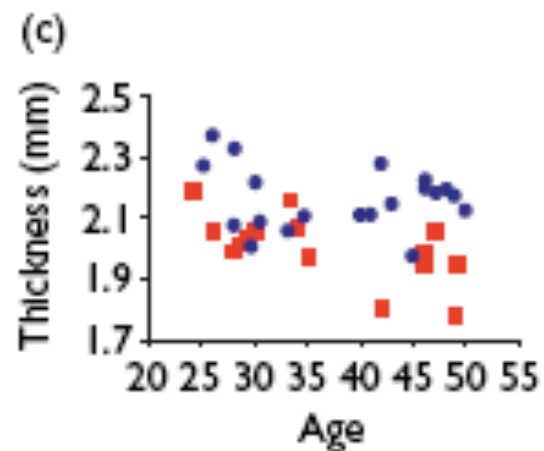
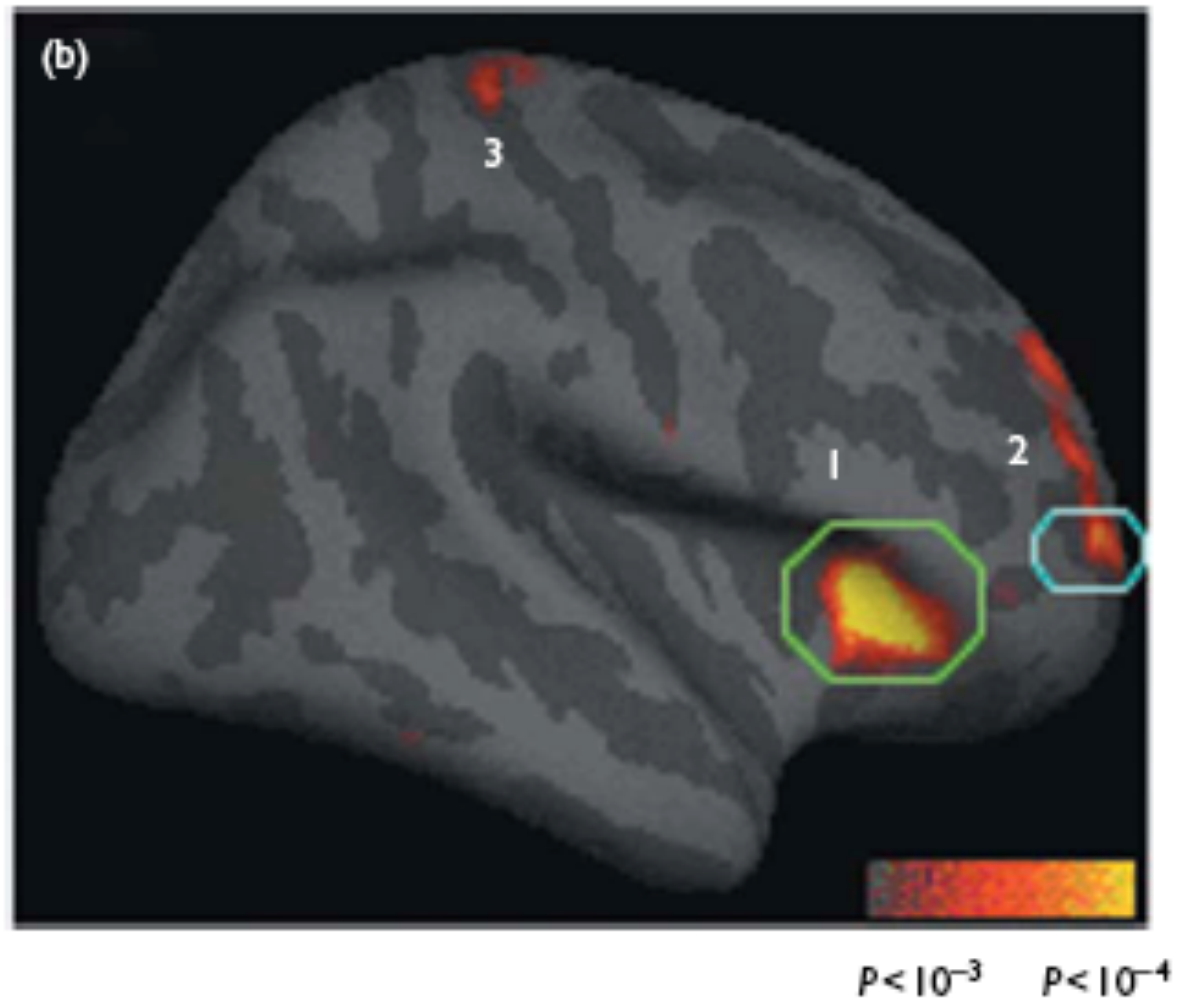
wire together.

# Three Facts about Brain and Mind

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- As the brain changes, the mind changes.
  - Mental activity depends upon neural activity.
  
- As the mind changes, the brain changes.
  - Transient: brainwaves, local activation
  - Lasting: epigenetics, neural pruning, “neurons that fire together, wire together”
  - Experience-dependent neuroplasticity
  
- You can use the mind to change the brain to change the mind for the better: self-directed neuroplasticity.

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






# **Our Loving Nature**

# The Evolution of Relationships

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- Social capabilities have been a primary driver of brain evolution.
- Mammals and birds have bigger brains than reptiles and fish.
- The more social the primate species, the bigger the cortex.
- Since the first hominids began making tools ~ 2.5 million years ago, the brain has roughly tripled in size, much of its build-out devoted to social functions (e.g., cooperative planning, empathy, language).
- The growing brain needed a longer childhood, which required greater pair bonding and band cohesion.



*All sentient beings developed through natural selection in such a way that pleasant sensations serve as their guide, and especially the pleasure derived from sociability and from loving our families.*

Charles Darwin

























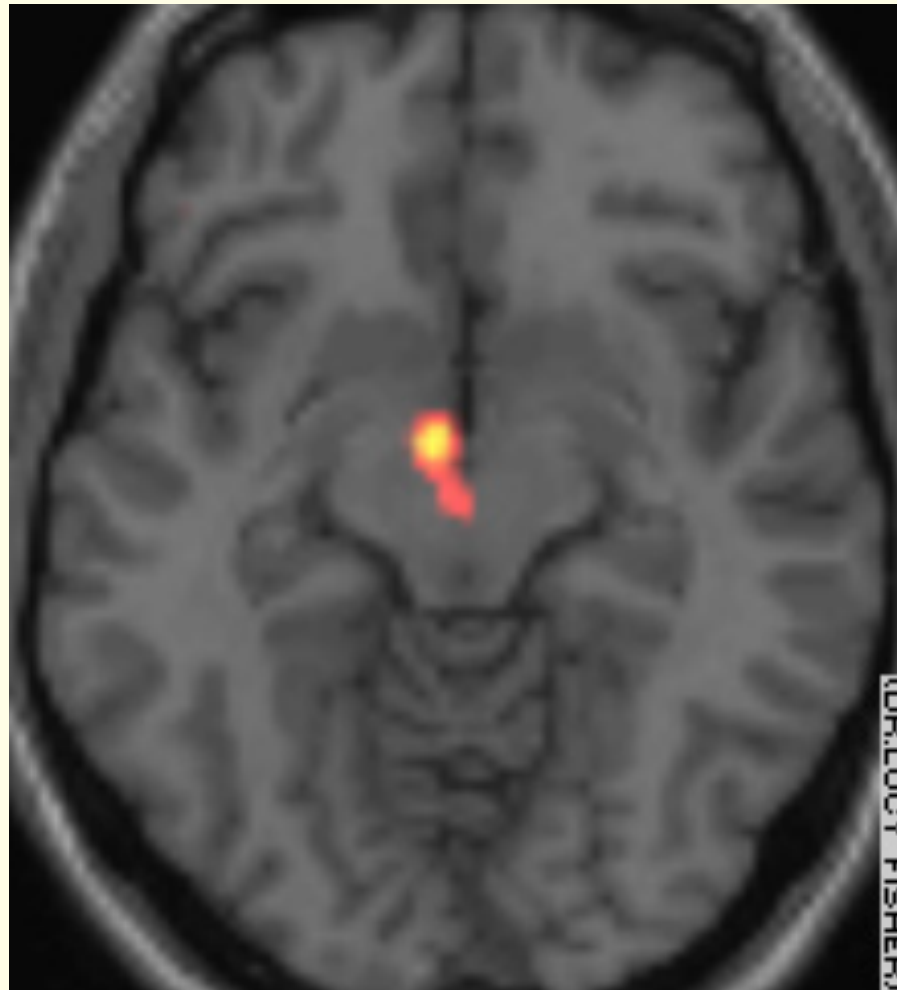






# Rewards of Love

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# Oxytocin

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- It promotes bonding between parents and children - and between mates and friends, keeping kids alive
- In women, it triggers the let-down reflex in nursing, and tend-and-befriend behaviors during stress.
- In both sexes, it dampens the stress response; it feels pleasurable, relaxed, a “rightness.”
- It is stimulated by:
  - Breastfeeding, nipple stimulation, orgasm
  - Physical contact (especially skin to skin)
  - Moving together harmoniously (e.g., dancing)
  - Warm feelings of rapport or love; devotion
  - Imagination of these

# Neural Substrates of Empathy

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- Three *simulating* systems:
  - Actions: “mirror” systems; temporal-parietal
  - Feelings: resonating emotionally; insula
  - Thoughts: “theory of mind”; prefrontal cortex
- These systems interact with each other through association and active inquiry.
- They produce an automatic, continual re-creation of aspects of others’ experience.











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*If there is anything I have learned about [people], it is that there is a deeper spirit of altruism than is ever evident.*

*Just as the rivers we see are minor compared to the underground streams, so, too, the idealism that is visible is minor compared to what people carry in their hearts unreleased or scarcely released.*

*(Hu)mankind is waiting and longing for those who can accomplish the task of untying what is knotted, and bringing these underground waters to the surface.*

Albert Schweitzer













# **Two Wolves in the Heart**

Two wolves in the heart



# Us and Them

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- Core evolutionary strategy: within-group cooperation, and between-group aggression.
- Both capacities and tendencies are hard-wired into our brains, ready for activation. And there is individual variation.
- Our biological nature is much more inclined toward cooperative sociability than toward aggression and indifference or cruelty. We are just very reactive to social distinctions and threats.
- That reactivity is intensified and often exploited by economic, cultural, and religious factors.
- Two wolves in your heart:
  - Love sees a vast circle in which all beings are “us.”
  - Hate sees a small circle of “us,” even only the self.


*Which one will you feed?*

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*In between-family fights, the baboon's 'I'  
expands to include all of her close kin;  
in within-family fights,  
it contracts to include only herself.*

*This explanation serves for baboons  
as much as for the Montagues and Capulets.*

Dorothy Cheney and Robert Seyfarth



# **Being on Your Own Side**



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*The good life, as I conceive it, is a happy life.  
I do not mean that if you are good you will be happy;  
I mean that if you are happy you will be good.*

Bertrand Russell

# Feeling Strong

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- Recalling times you felt strong . . . Determined . . .  
Standing up for others or yourself . . . Enduring . . .
- Opening to these experiences of strength . . . Feeling  
them in your body.
- Strength sinking into you, you becoming strength
- A spacious strength that lets others flow through
- In relationship and at peace



# “Anthem”

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*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



# **Feeding the Wolf of Love**

# The Wisdom of Connection

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*A human being is a part of a whole, called by us “universe,” a part limited in time and space. He experiences himself, his thoughts and feelings as something separated from the rest... a kind of optical delusion of his consciousness.*

*This delusion is a kind of prison for us, restricting us to our personal desires and to affection for a few persons nearest to us.*

*Our task must be to free ourselves from this prison by widening our circle of compassion to embrace all living creatures and the whole of nature in its beauty.*


Albert Einstein





*If we could read the secret history  
of our enemies,  
we should find in each [person's] life  
sorrow and suffering enough  
to disarm any hostility.*

Henry Wadsworth Longfellow



*There are those who do not realize that  
one day we all must die.  
But those who do realize this  
settle their quarrels.*



The Buddha

# Three Kinds of Relationships

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## ■ I – Thou

- Recognizing others as beings, as persons
- Independent of liking, approval, agreement

## ■ I – It


- Little or no sense of the other as a being
- Using others as a means to one's ends

## ■ It – It

- Bodies in space, moving past each other







**Can you treat yourself as a Thou?**

# Growing Compassion

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- Compassion is the wish that a being not suffer, usually with feelings of warmth and concern.
- Beings: benefactor, friend, neutral, self, difficult
- Factors:
  - Distress tolerance, can allow “suffering with”
  - Not caught up in feeling threatened
  - Seeing commonalities with the other being
  - Separating compassion from moral judgment
  - Seeing the child in the other person





# 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.
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# 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.
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- 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.

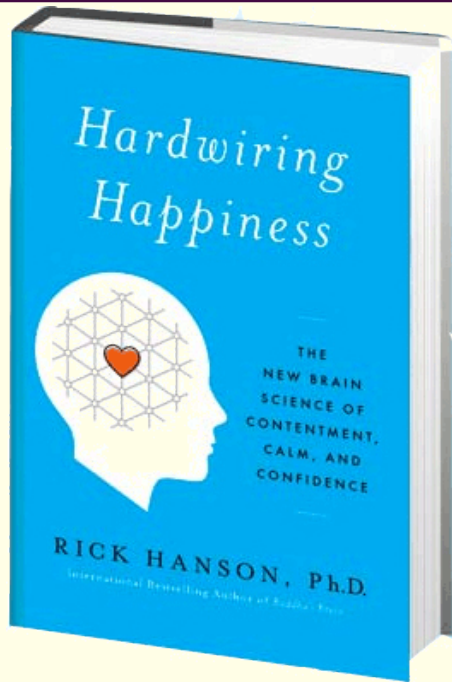
# Key Papers - 4

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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)



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