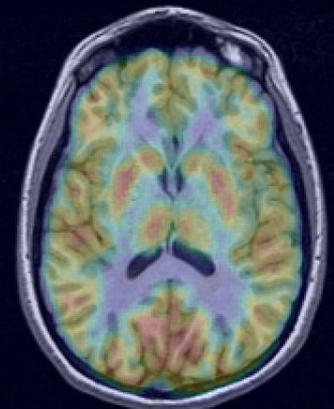
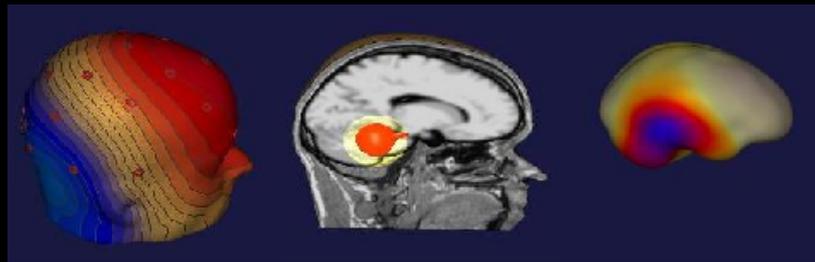
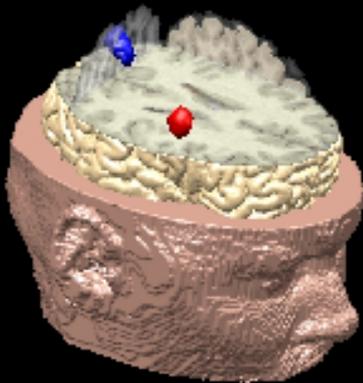


# Well-being as a Skill: Perspectives from affective and contemplative neuroscience

Richard J. Davidson

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Center for Investigating Healthy Minds  
Departments of Psychology and Psychiatry  
University of Wisconsin-Madison





# Confluence of four themes

- Neuroplasticity
- Epigenetics
- Bidirectional communication between mind/  
brain and body
- Innate basic goodness

# Helper



Hamlin et al.,  
2007, *Nature*

# Hinderer



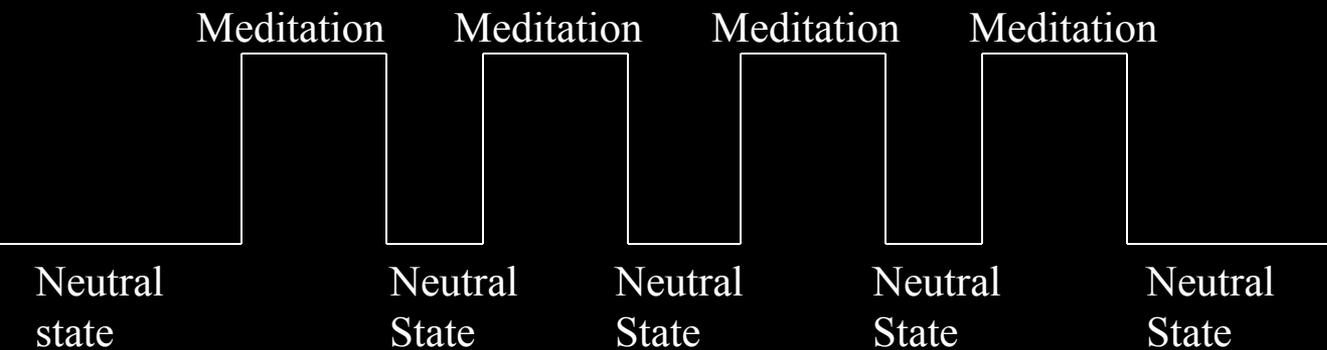
Hamlin et al.,  
2007, *Nature*

# Four neuroscientifically investigated constituents of wellbeing

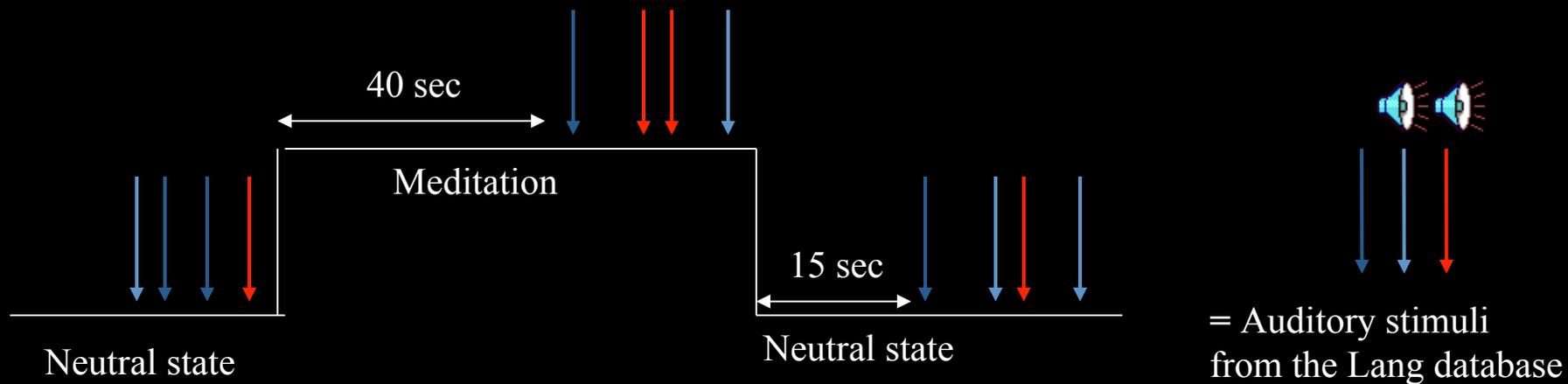
- Outlook
- Generosity
- Resilience
- Attention

The voluntary cultivation of  
compassion

## Block design



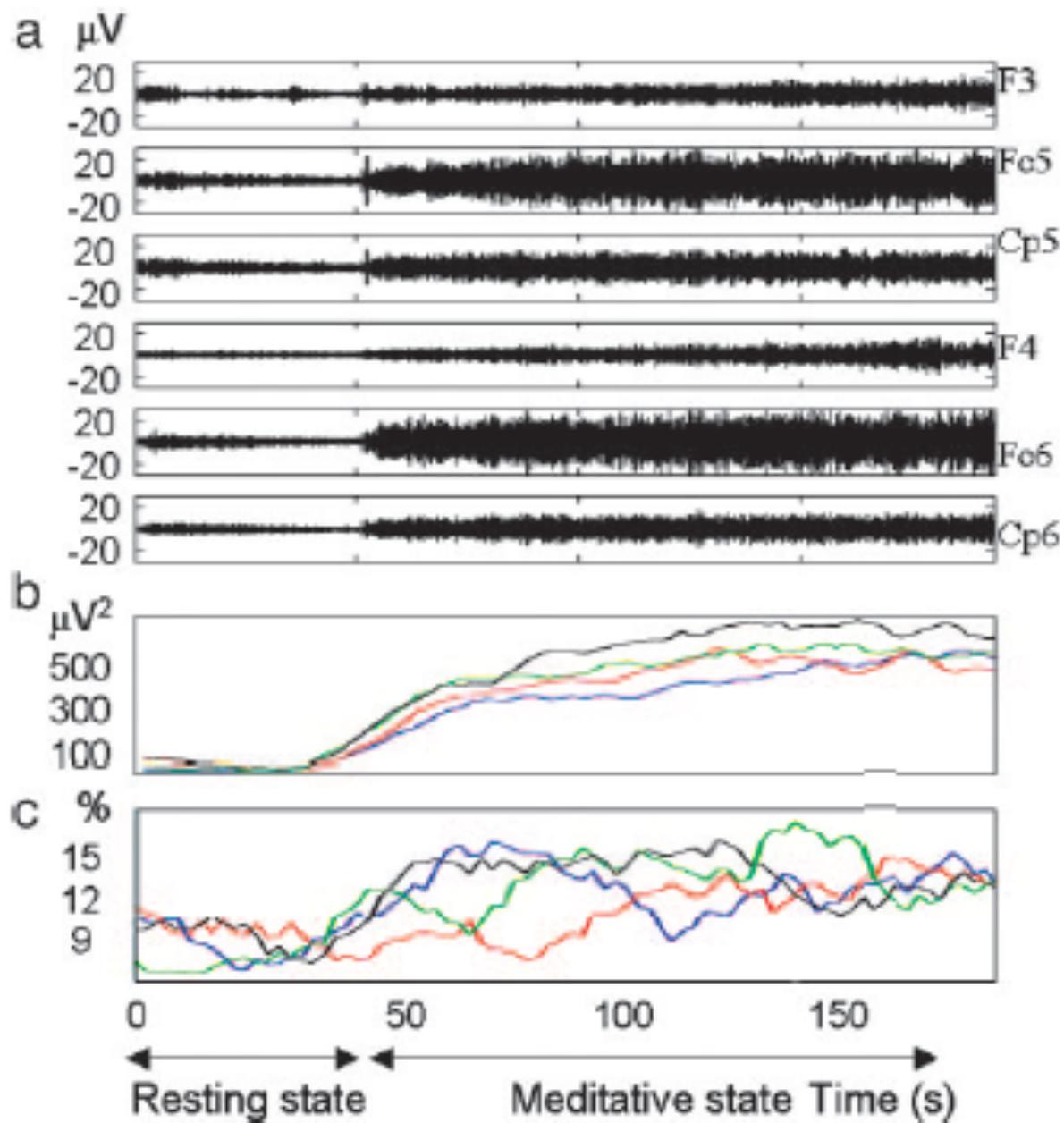
## Event-related design



“Here, what we have tried to do, for the sake of the experiment, is to generate a state in which love and compassion permeate the whole mind, with no other consideration, reasoning or discursive thoughts. This is sometimes called ‘*pure compassion*’, or ‘non-referential compassion’ (in the sense that it does not focus on particular objects to arouse love or compassion), or ‘all-pervading compassion’.”

Matthieu Ricard

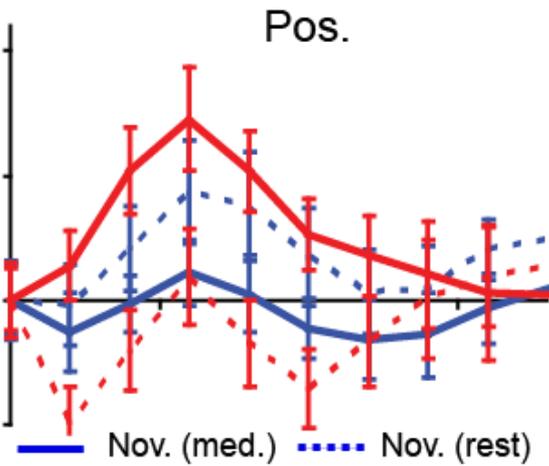
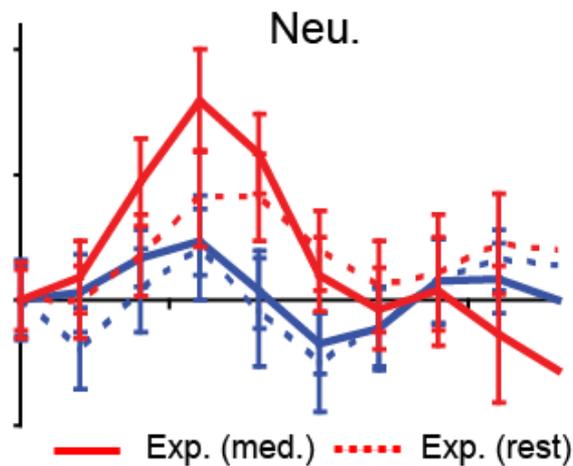
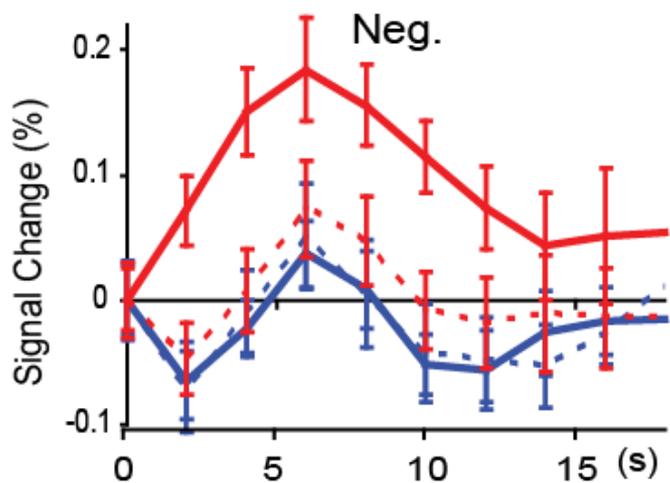
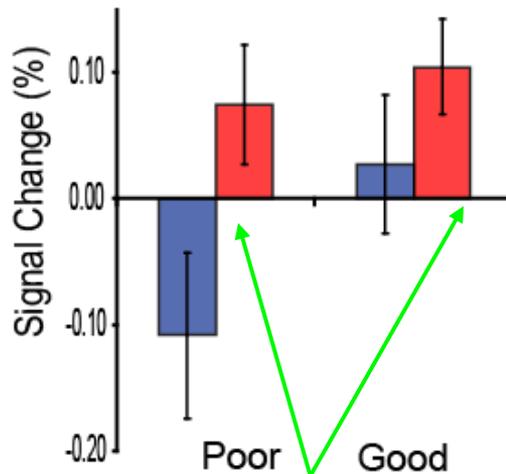
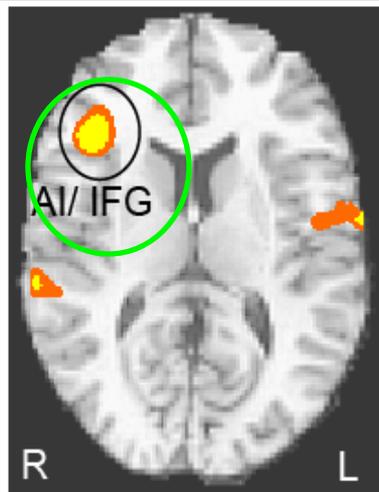




Lutz et al.,  
2004, *PNAS*



# Voxel-wise 3-way Interaction: Group by State by Emotional Valence (corrected, $p < 0.05$ )



15 expert meditators, 15 aged-matched controls

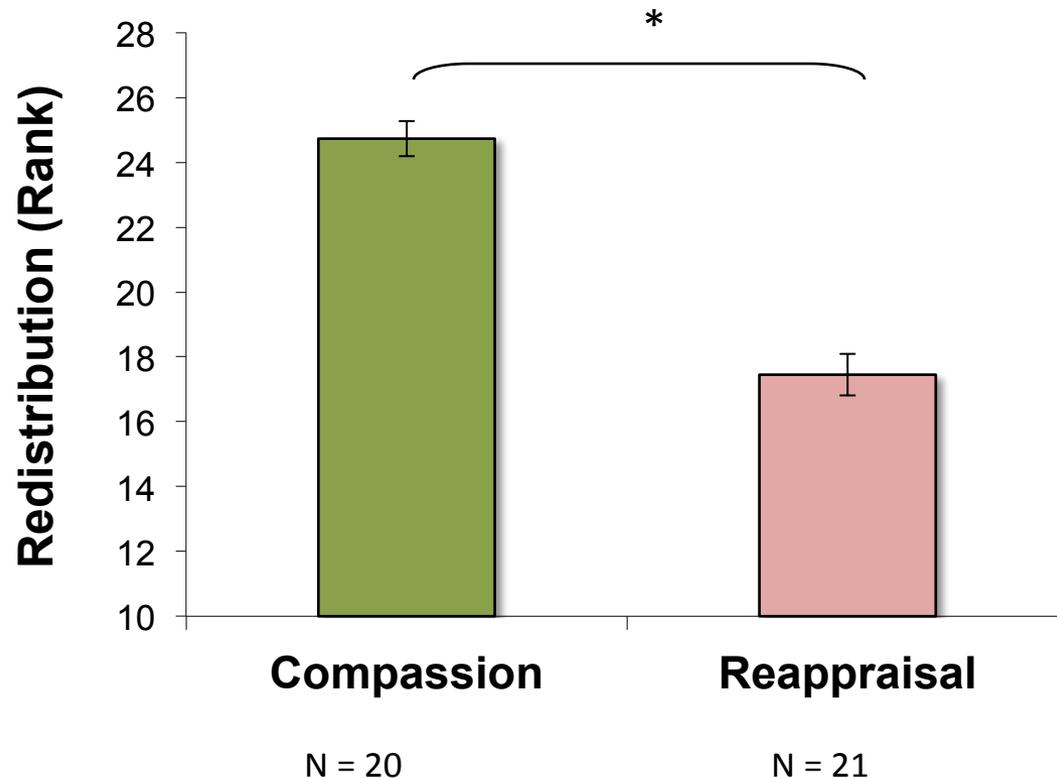
# Can short-term compassion training affect the brain

- Two week compassion intervention
  - Daily practice via the internet for 30 min/day for 2 weeks
- Comparison group was taught cognitive reappraisal

# Elements of Compassion Training

- Contemplate and visualize the suffering and then wishing the freedom from that suffering for:
  - A loved one
  - Themselves
  - A stranger
  - A difficult person
  - All beings
- Phrase most used: "May you be free from suffering. May you experience joy and ease."
- Instructed to notice visceral sensations (especially in the area of the heart)
- Instructed to feel the compassion emotionally; not simply repeat phrases cognitively

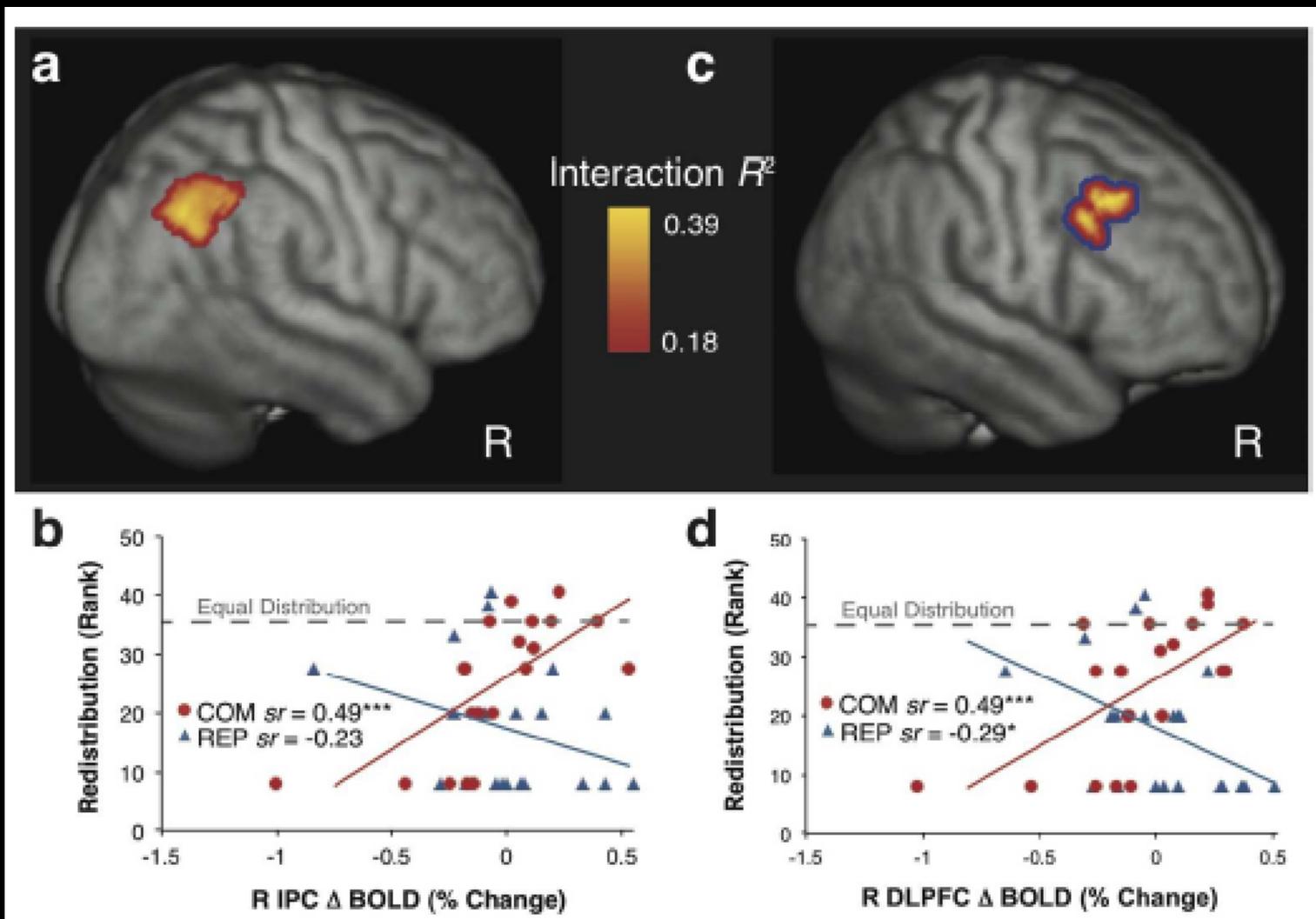
The Compassion group is more prosocial after 2 weeks of training.



Mann-Whitney  
U = 135.5  
\*p < 0.05

Weng et al.,  
*Psychological  
Science*,  
2013

# Training-induced increases in IPC and DLPFC are associated with increases in altruistic behavior in COM

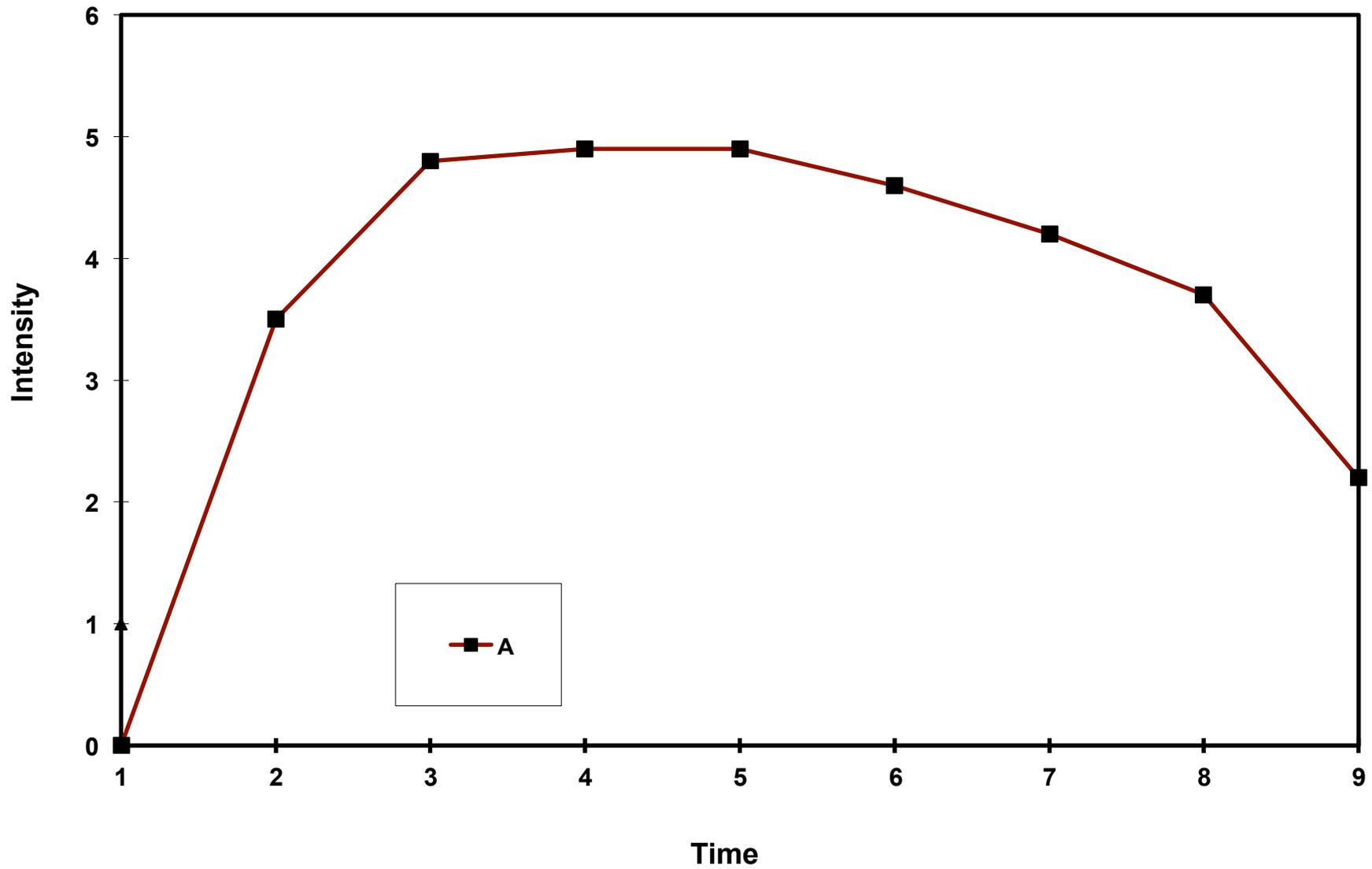


Weng et al.,  
*Psychological Science*,  
2013

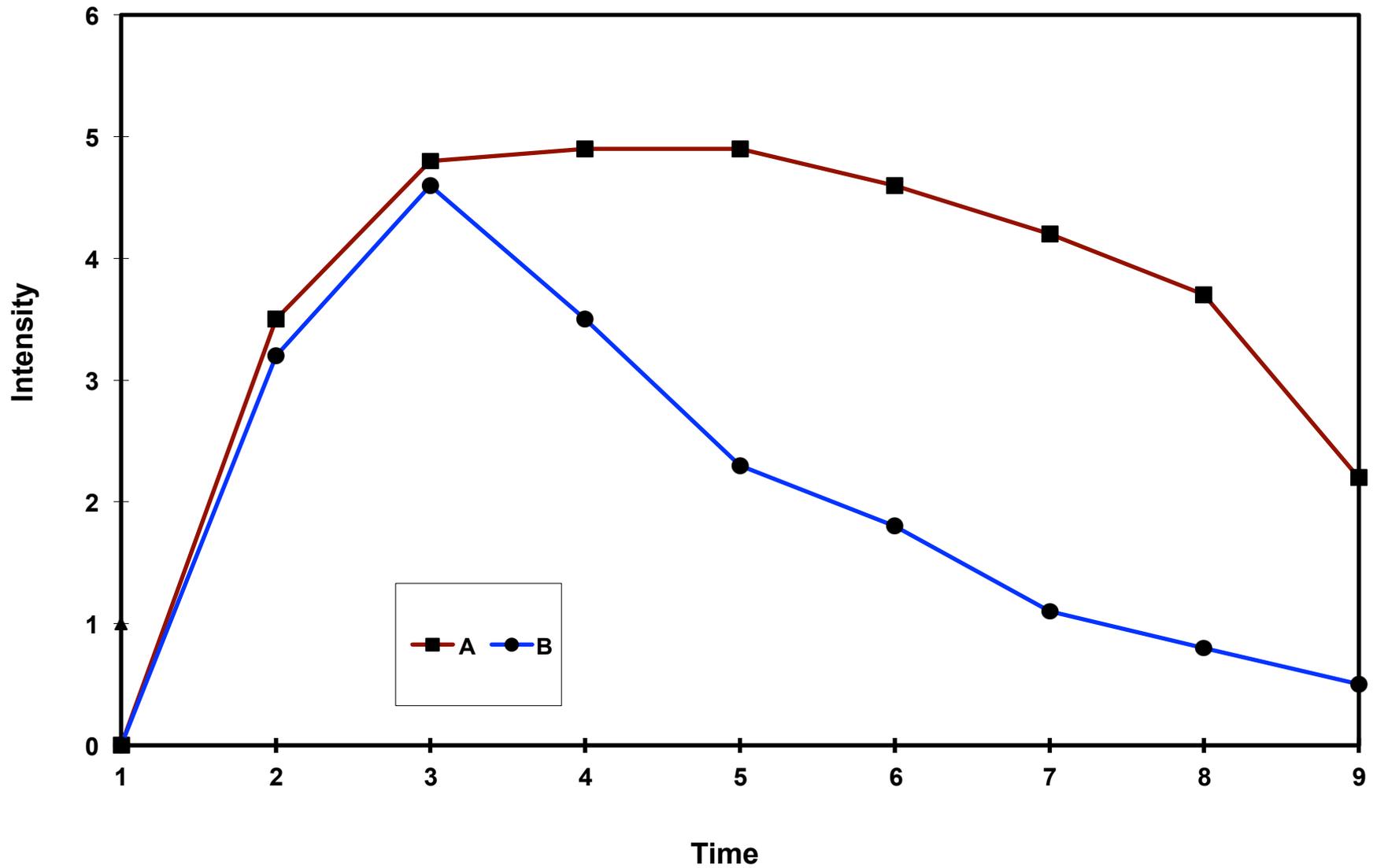
# Resilience style

- Rapidity of recovery following negative events
- Does mindfulness or compassion meditation promote increased resilience?

# Variations in recovery



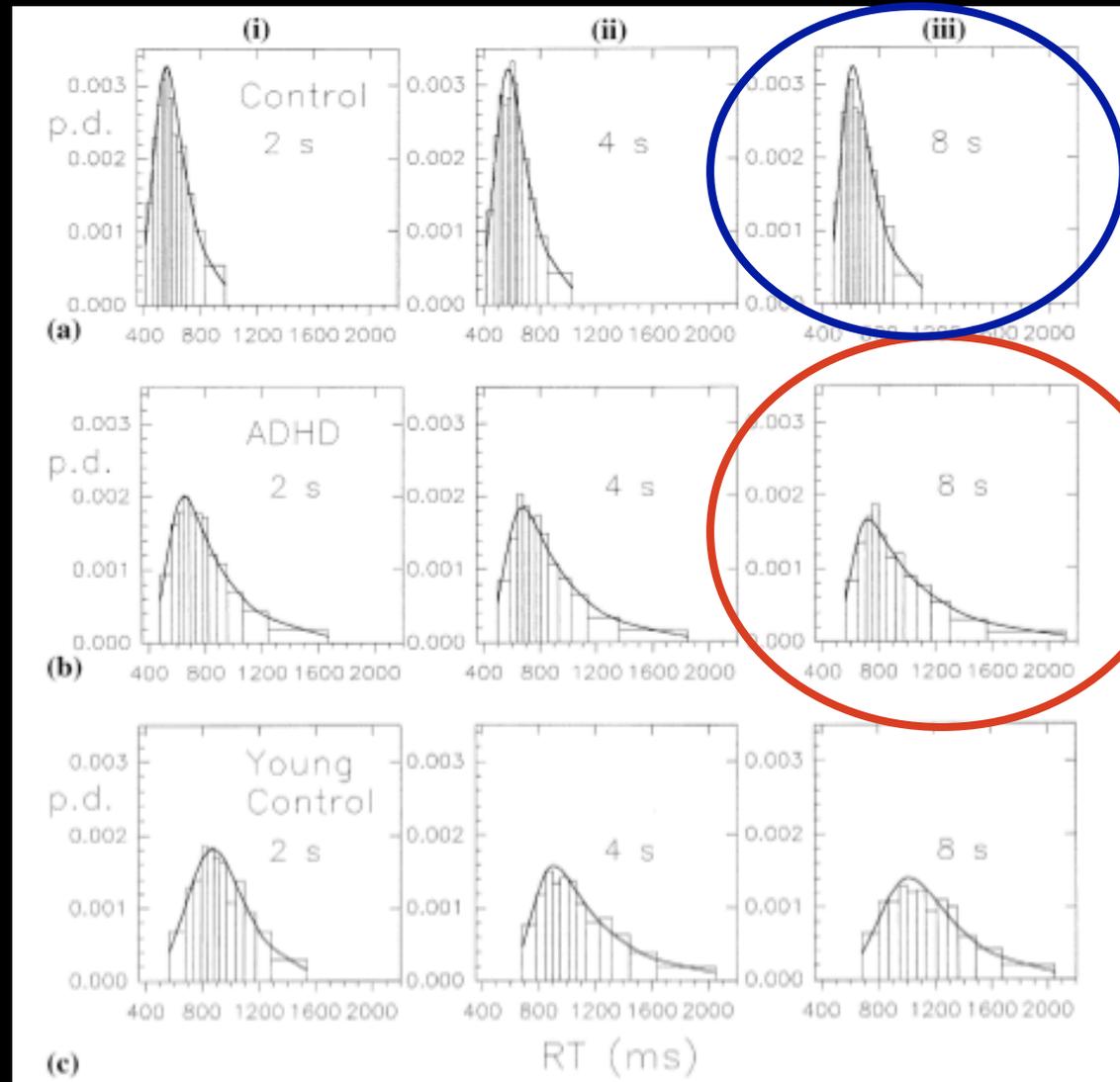
# Variations in recovery



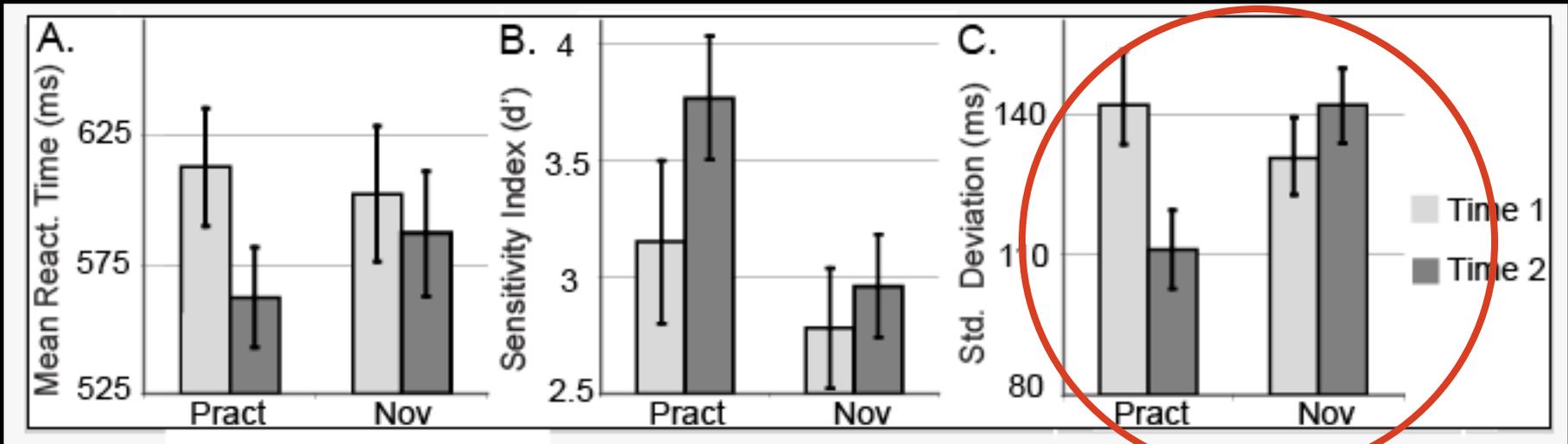
# Effects on attention

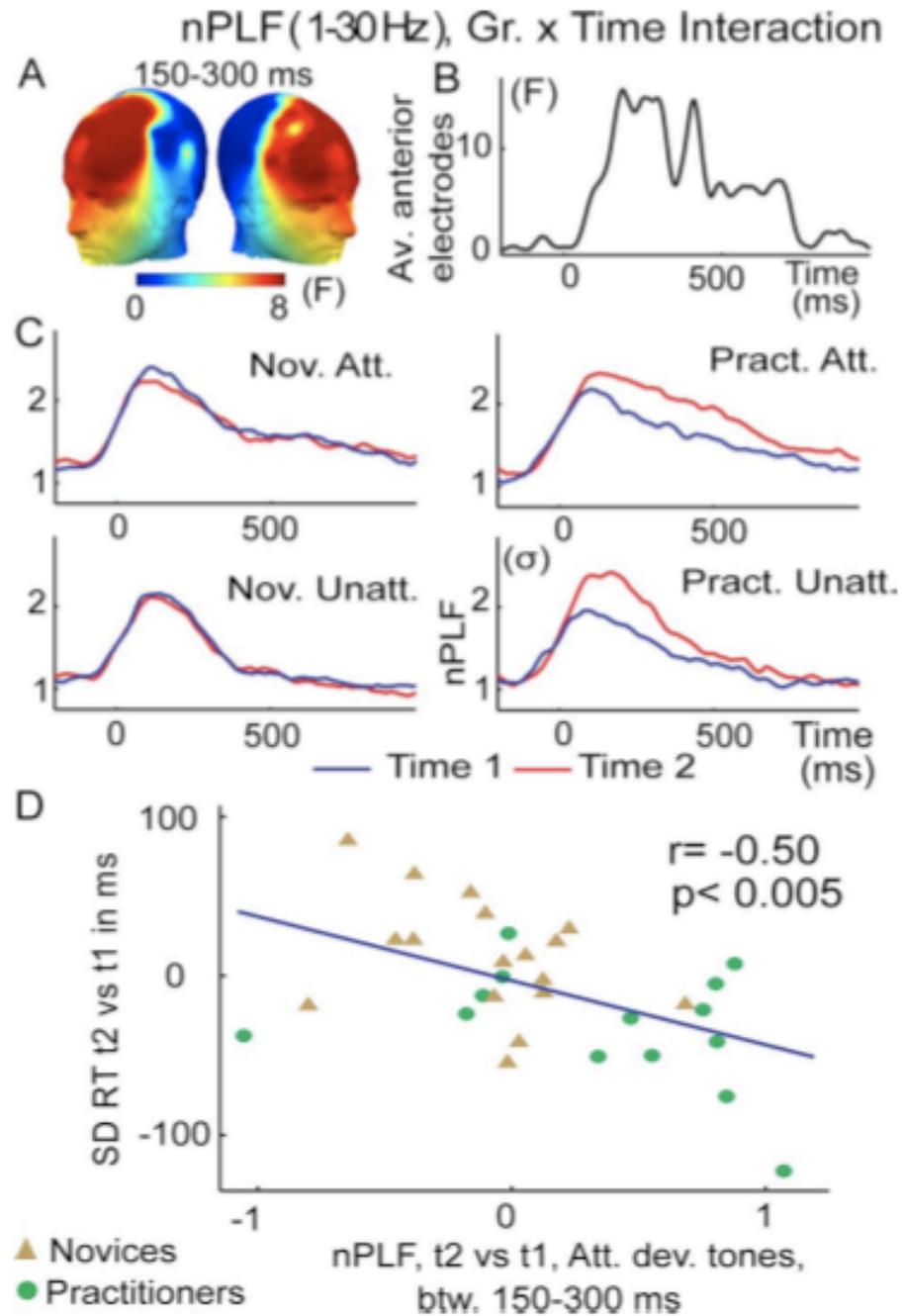
“And the faculty of voluntarily bringing back a wandering attention, over and over again, is the very root of judgment, character, and will. No one is *compos sui* if he have it not. An education which should improve this faculty would be *the education par excellence*. But it is easier to define this ideal than to give practical directions for bringing it about.” William James, *The Principles of Psychology*, 1890.

# Children with ADHD have more variable response times



# Meditation reduces response time variability

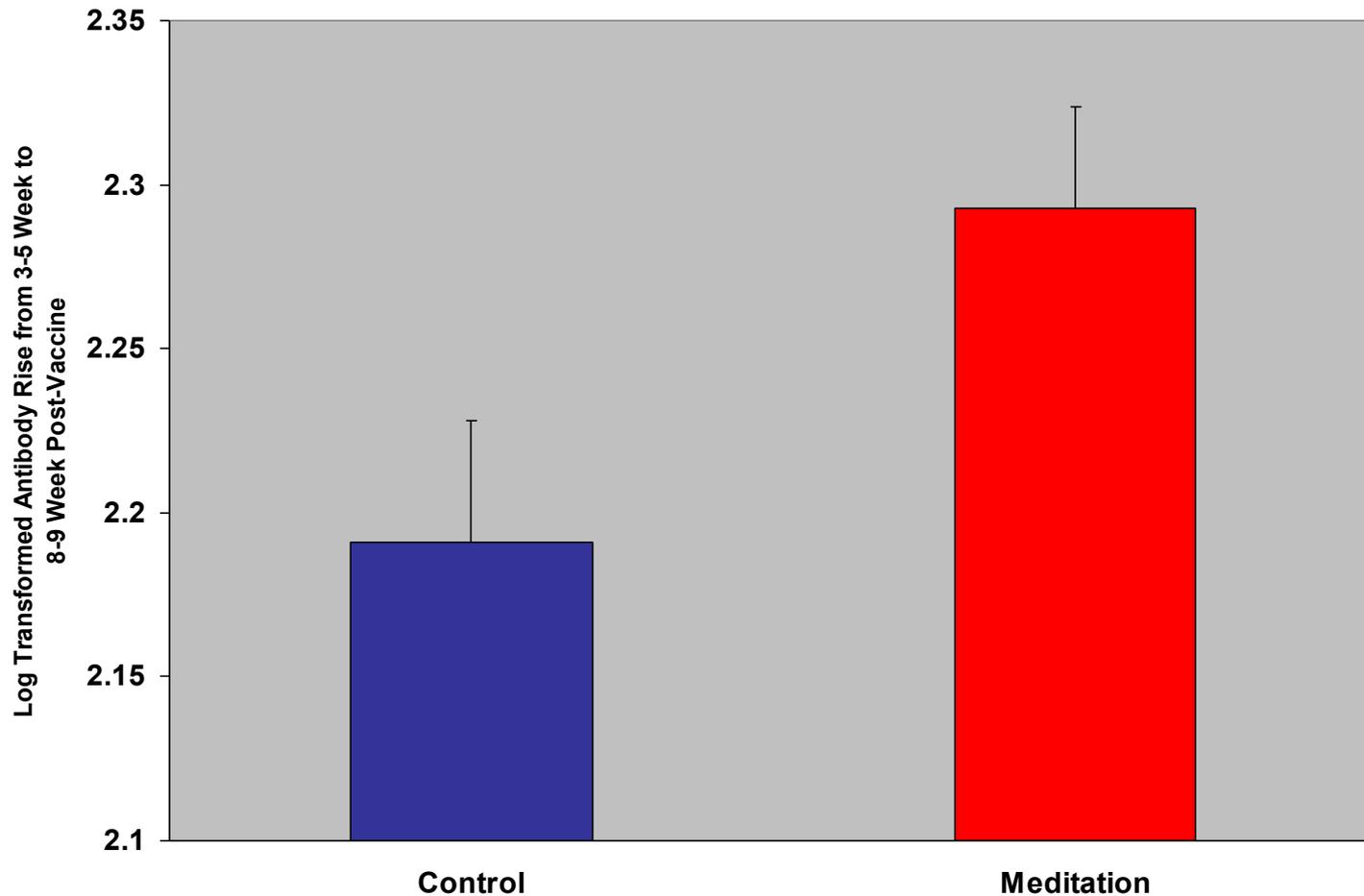




Lutz et al., (2009),  
*J. Neuroscience*

# Peripheral biology

# Meditation effects on antibody titers to influenza vaccine



# Inflammation and epigenetics

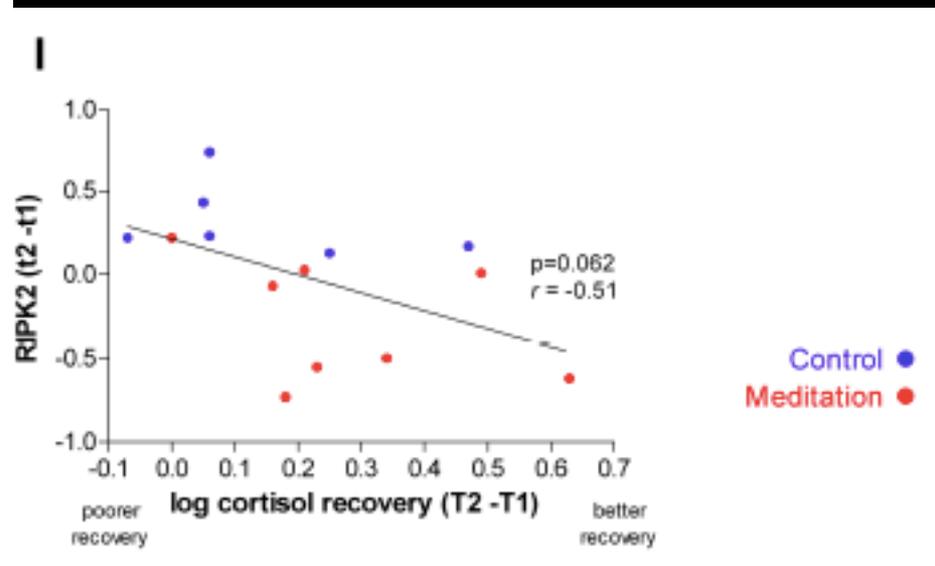
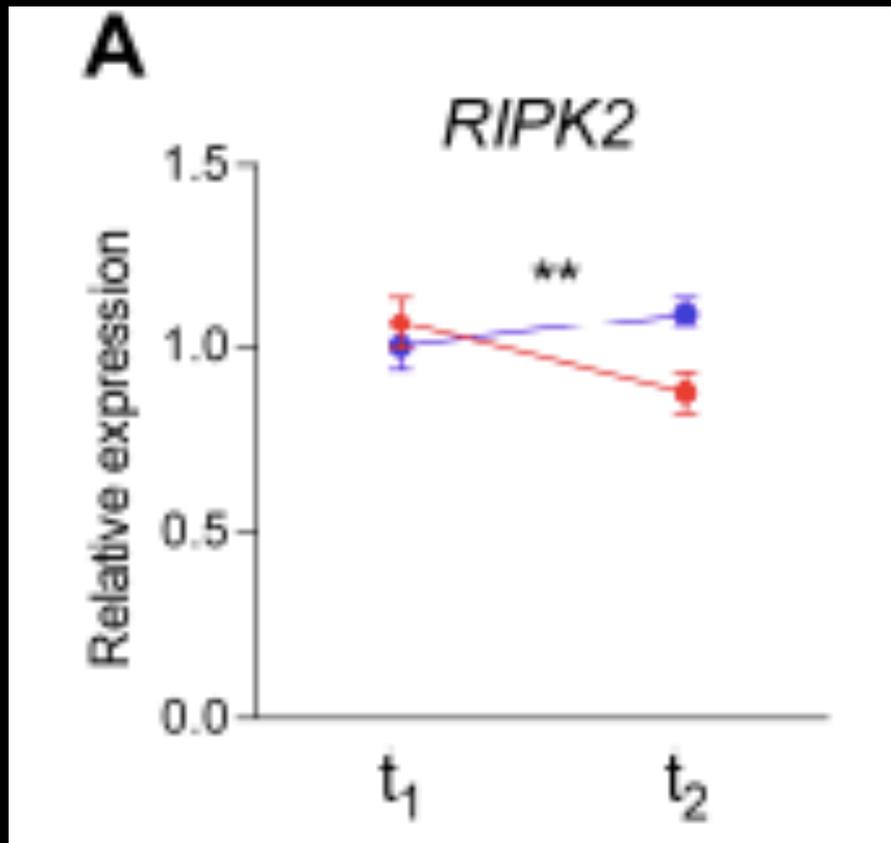
# Tumor Necrosis Factor-alpha (TNF- $\alpha$ ) and Interleukin-8 (IL-8) levels in suction blister fluid



# Flare size



# Alterations in gene expression with 8 hours of mindfulness practice in LTMs



Preschool children

# Preschool kindness curriculum

- Week One- Mindful bodies and planting seeds of peace
- Week Two- How I feel on the Inside shows by what I do on the outside
- Week Three- We can work with problems on the inside and outside
- Week Four- Kindness place: A place to go to be mindful of what is happening on the inside

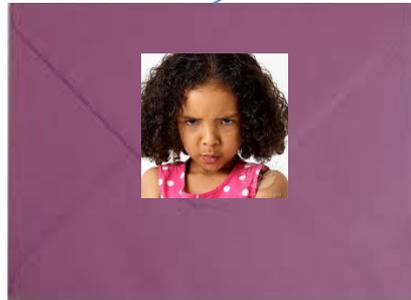
# Preschool kindness curriculum

- Week Five- Working out problems when we have calmed down
- Week Six- Gratitude: Practicing positive emotions
- Week Seven- Interconnectedness with all people and the planet
- Week Eight- Gratitude and caring for our world and wrap up

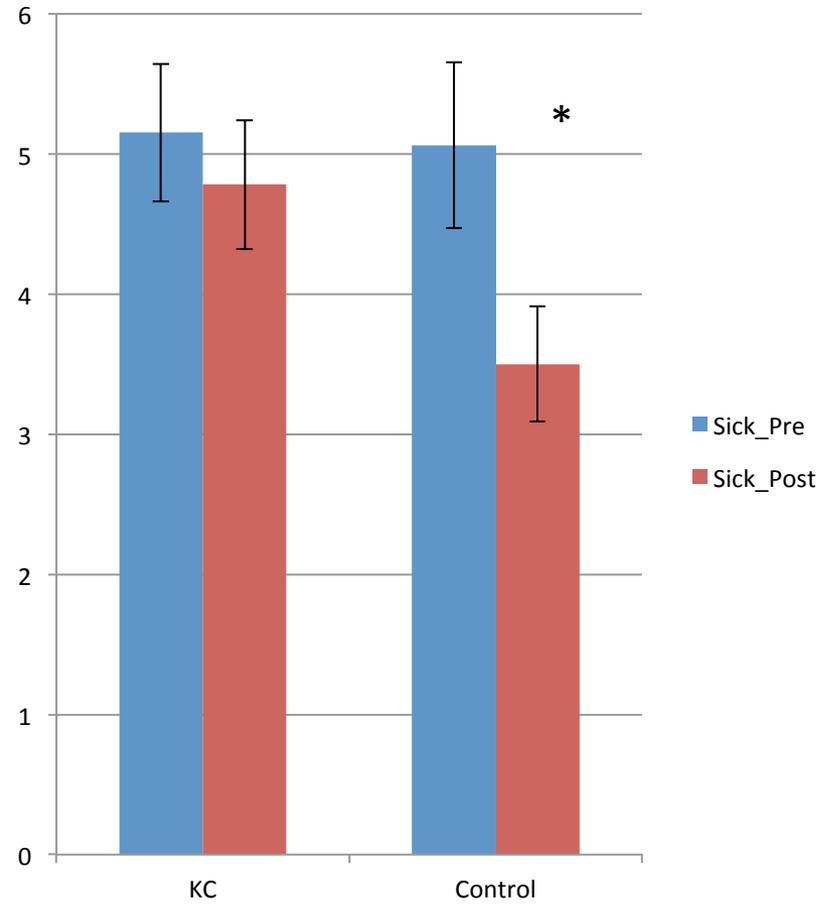
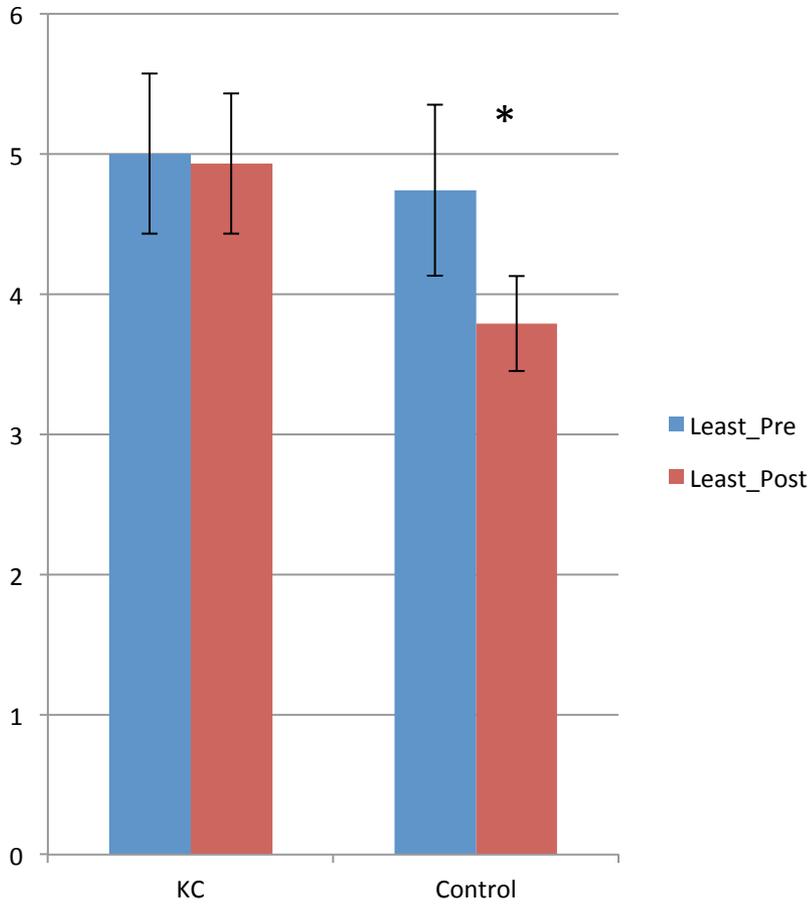
# Self-Other Sharing



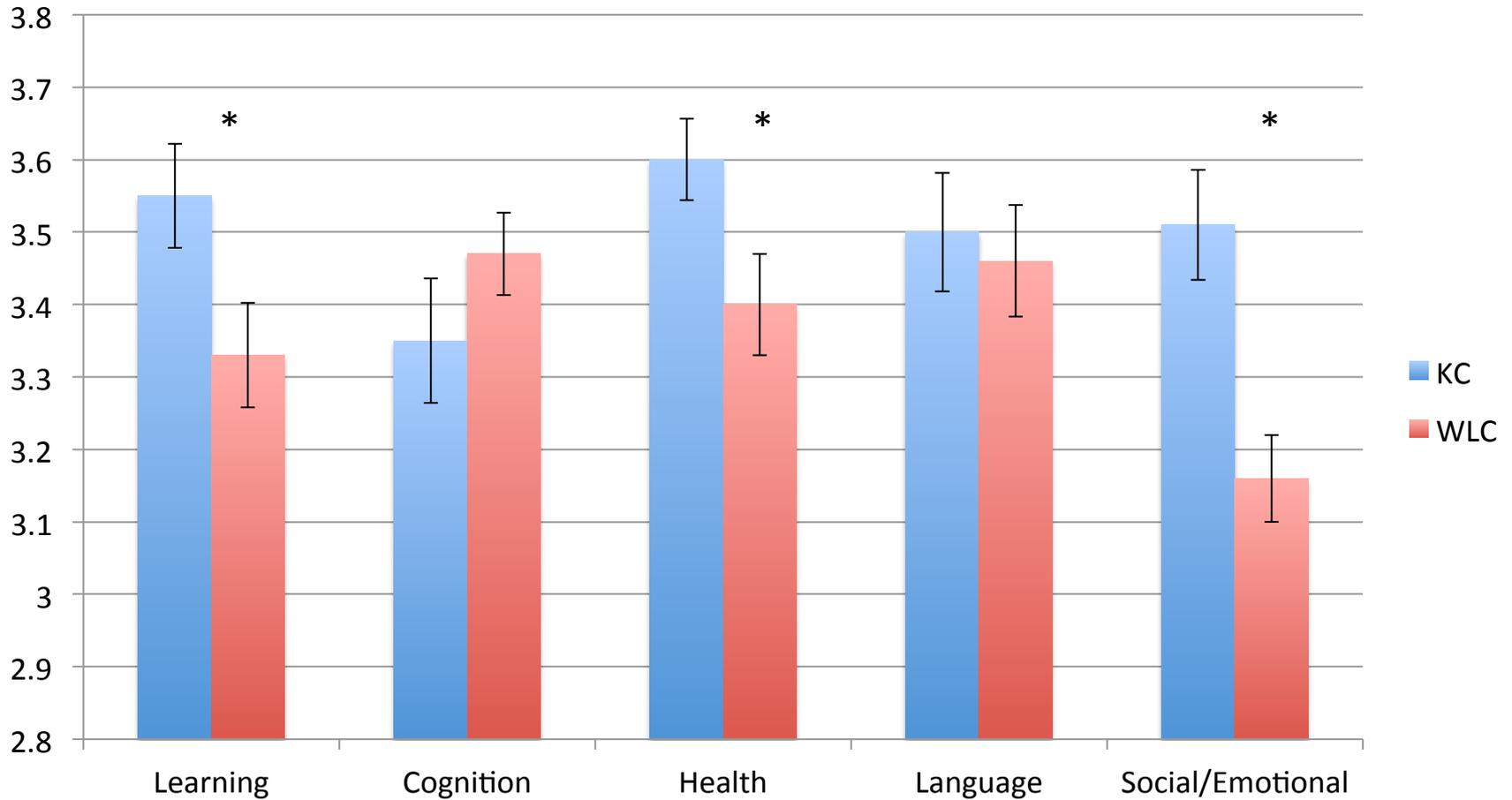
# Self-Other Sharing



# Sharing

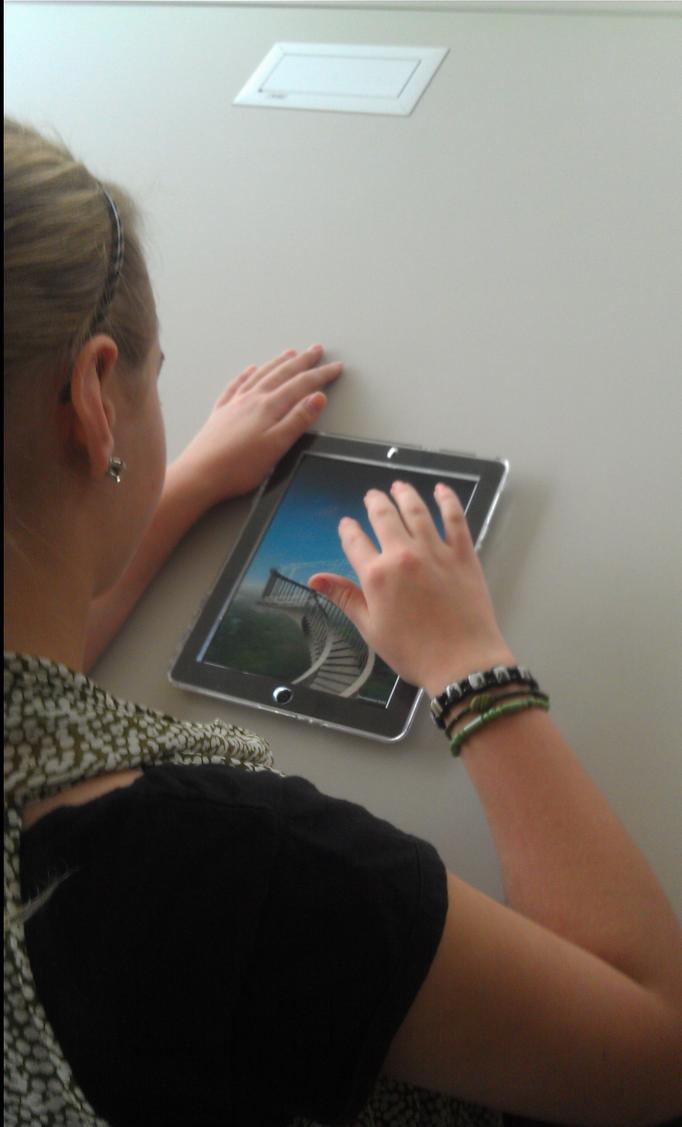


# End of Year School Grades



# Games for well-being and prosocial behavior

# Extensive play testing with adolescents



...and monks!





Center for  
**Investigating  
Healthy Minds**

**Waisman Center  
University of Wisconsin-Madison**

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

# With a very deep bow of gratitude!

- Antoine Lutz
- Helen Weng
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- Julie Brefczynski
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- Matthieu Ricard
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- Nagesh Adluru
- Laura Pinger
- Daniel Levinson
- Melissa Rosenkranz
- Tammi Kral
- Reza Farajian
- Constance Steinkuehler
- Kurt Squire
- Katherine Bonus
- Larry Greischar
- Andy Alexander
- Isa Dolski
- Susan Jensen
- Barb Mathison

**"A human being is part of a whole, called by us the 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 us. Our task must be to free ourselves from this prison by widening our circles of compassion to embrace all living creatures and the whole of nature in its beauty."**

Albert Einstein, 1921