

The Science of Mindfulness in Education and Human Development



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April 16, 2013

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<https://www.facebook.com/robertwroeser>

<http://www.youtube.com/user/robertwroeser>



Martin, age 8

PROMISE OF CHILDREN & YOUTH

CALIFORNIA SEEKIN' • ARE THE BOOMERS A BUST? • A MOTHER TRANSFORMS HER GRIEF

SHAMBHALA SUN

BUDDHISM CULTURE MEDITATION LIFE JANUARY 2007

Educating the Heart

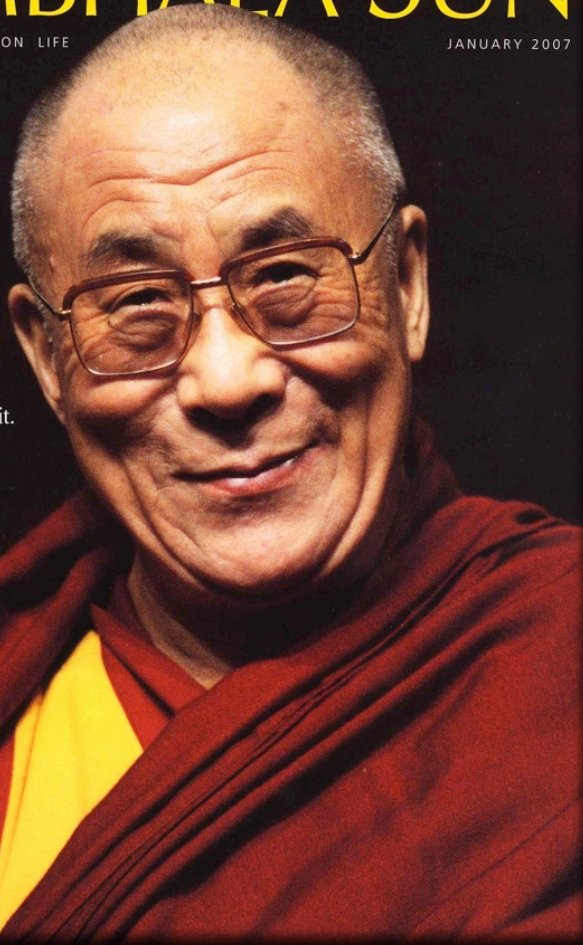
The **DALAI LAMA** leads a movement to teach children about compassion & empathy. He says our future depends on it.

The Zen of
Joan Didion

Pico Iyer on
Leonard Cohen

Stumbling on
Happiness

What Makes You a
Buddhist?



Executive Function

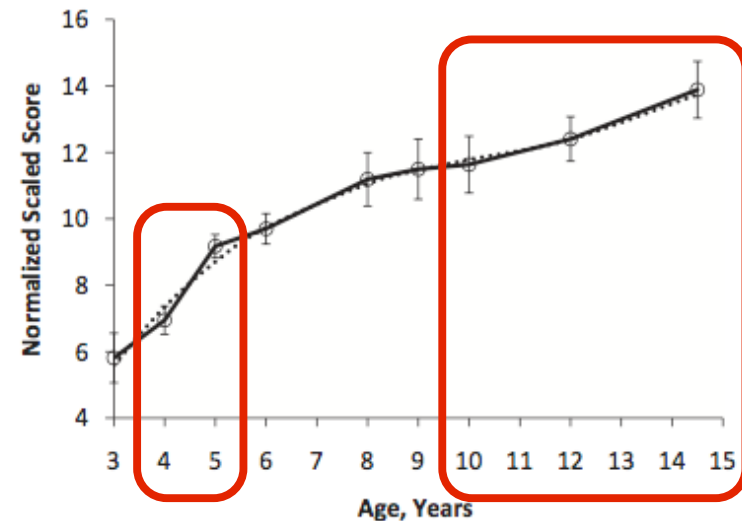


Figure 1. Performance on the NIH Toolbox DCCS Test across age groups.

Note. Pediatric data are from a cross-sectional validation study of 476 individuals aged 3–85 years. Error bars are ± 2 SE. Also shown is the best fitting polynomial model (cubic, $R^2 = .76$), which indicates two periods of relatively rapid growth (preschool and early adolescence). Source: Zelazo et al. (in press).

Zelazo & Carlson (2013)

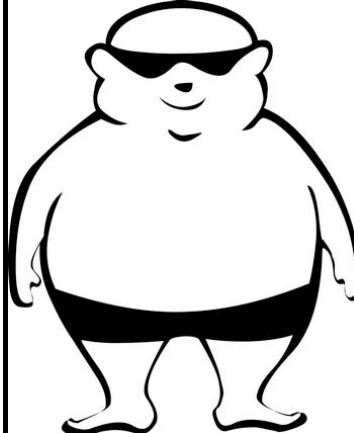
CALM CLEAR KIND

PROBLEMS OF CHILDREN & YOUTH

BODY



BREATHING



EATING

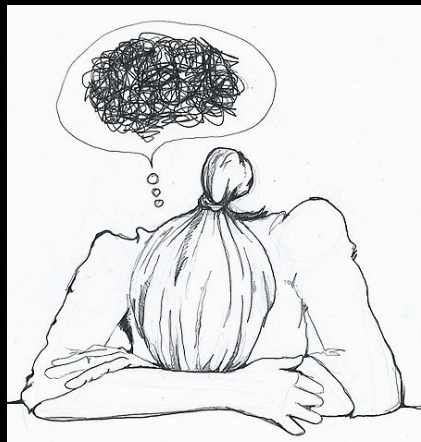


SLEEPING

EMOTION



ANXIETY



DEPRESSION



ANGER/BULLYING

OUTLINE

- **Defining Mindfulness**
- **Introducing the Contemplative Science Project**
- **Developmental Outcomes, Programs, Practices, and Measures**
- **Mindfulness with Parents and Teachers**
- **Mindfulness with Children and Youth**
- **Summary and Discussion**

- / -

***defining
mindfulness***

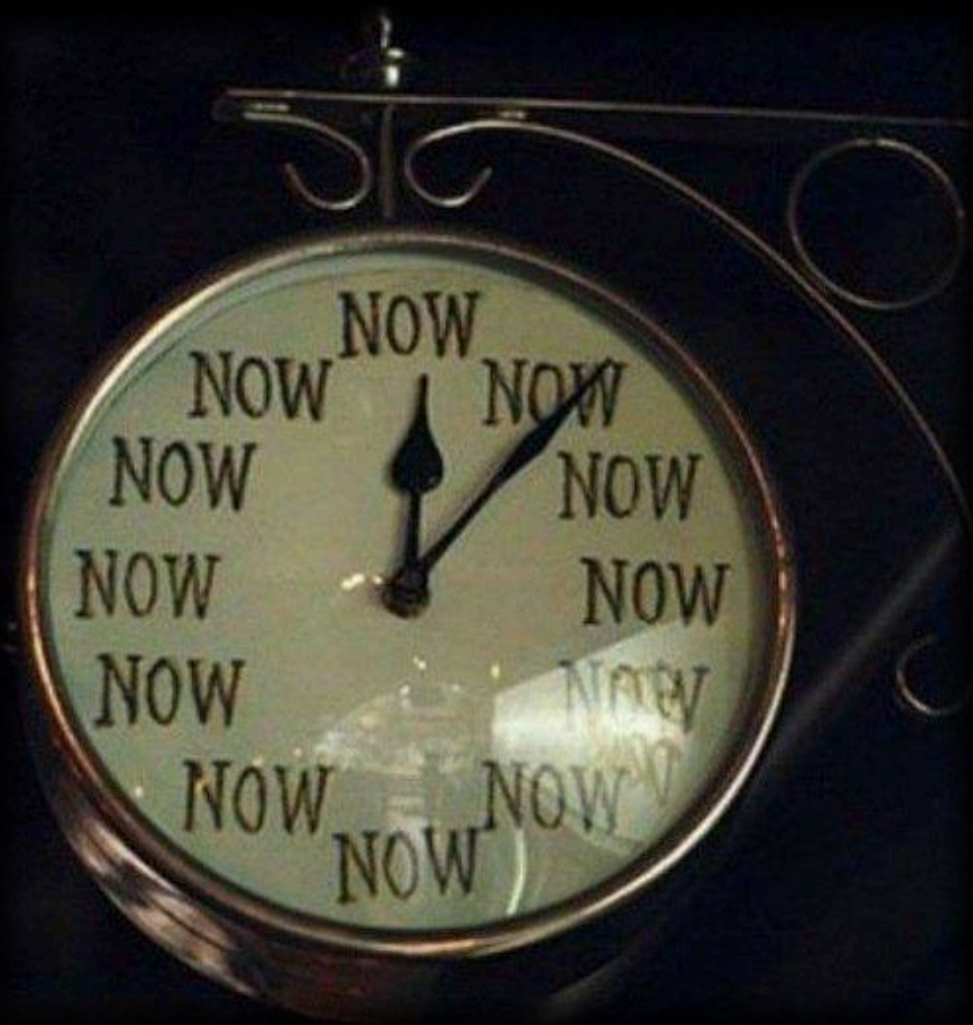
Defining Mindfulness

Jon Kabat-Zinn



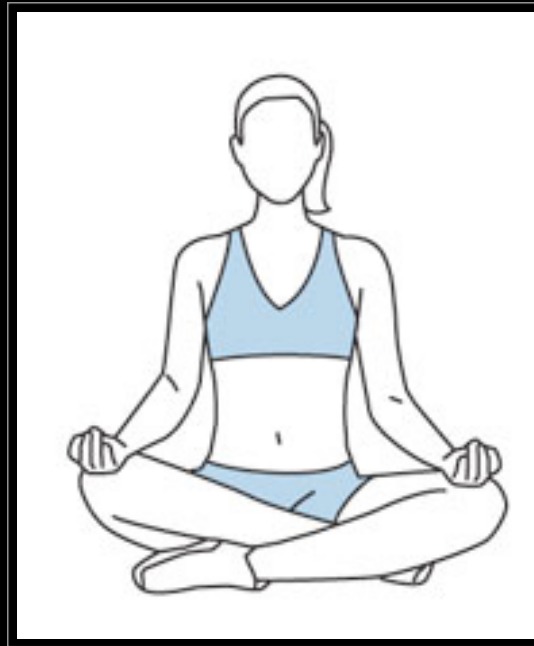
***The awareness that emerges when one
(remembers to) pay attention,
in the present moment,
without emotional reaction
or conceptual elaboration.***

*****Warm-heartedness*****



YOU ARE HERE

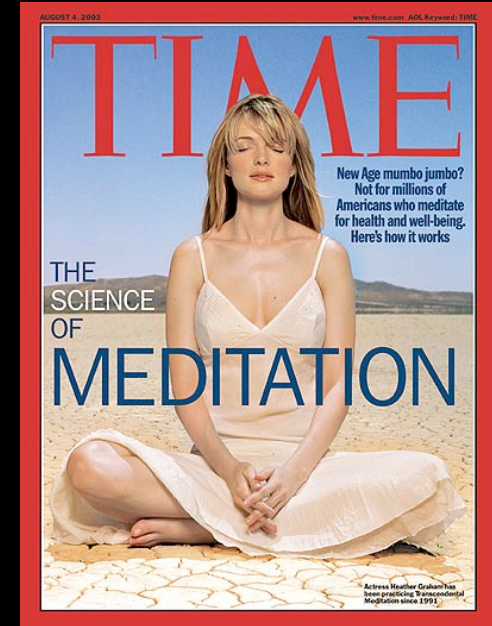
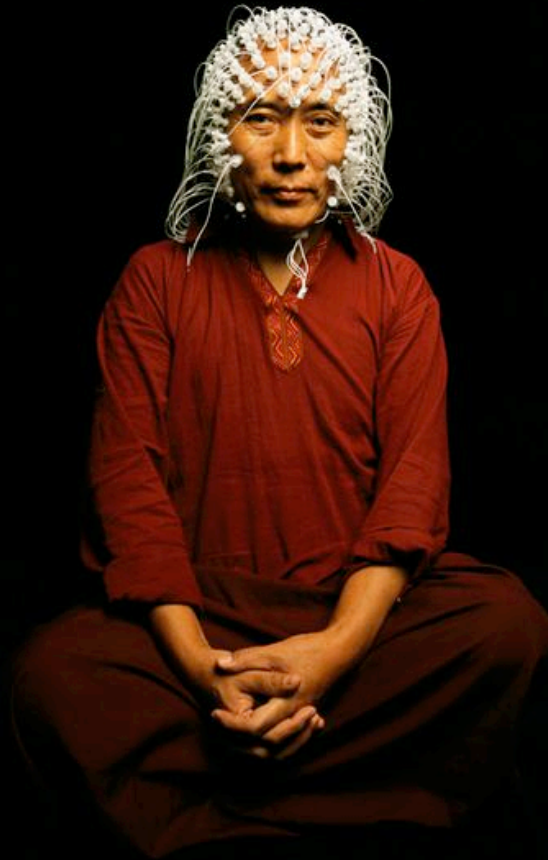
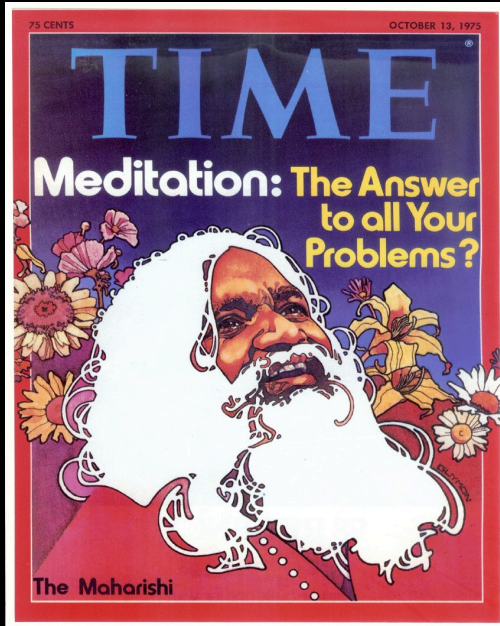
BRIEF MINDFULNESS PRACTICE



-2-

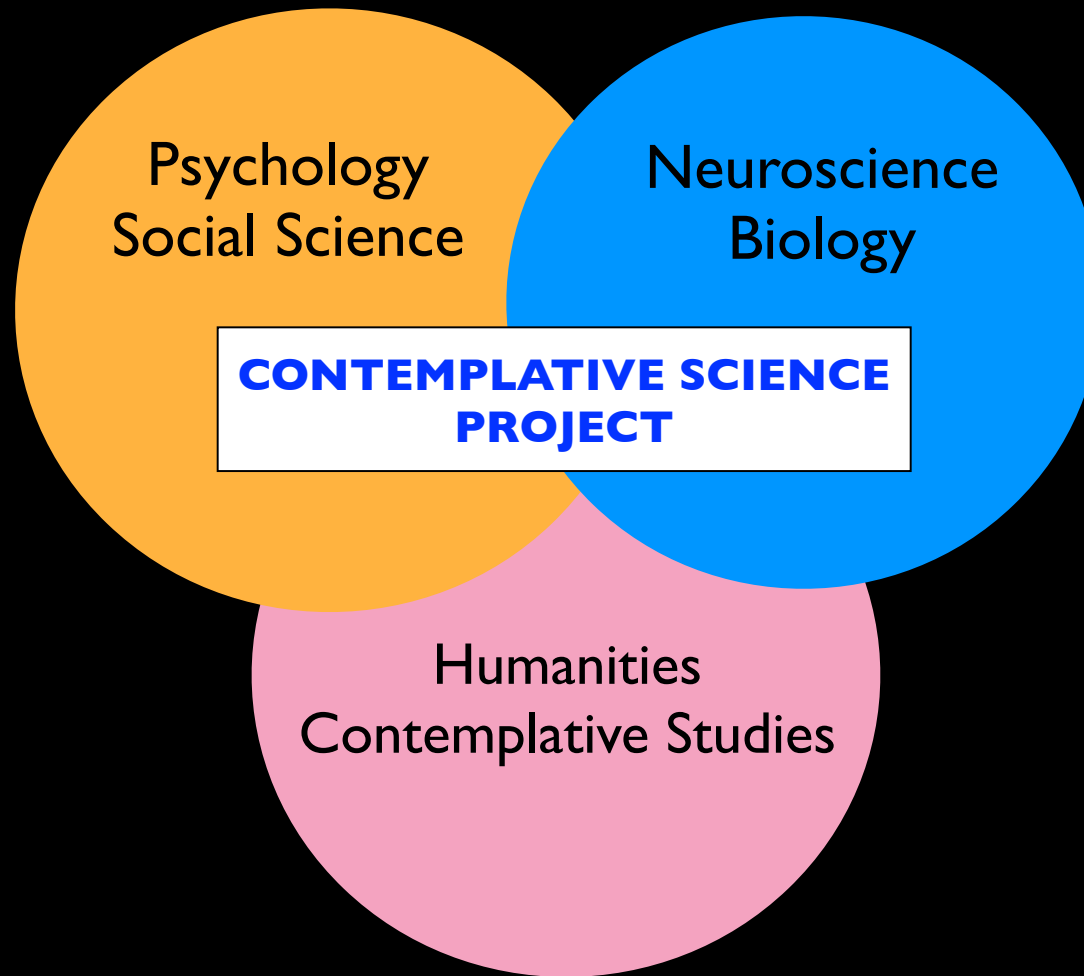
***introducing the
contemplative
science
project***

Contemplative Science Project



**Effects of Contemplative Practice
on Body, Brain, Mind and
Relationships with Others and Nature**

Contemplative Science Project



Experiment

Experience

Dialogue

Possibility of Transformation

Hypothesis from India

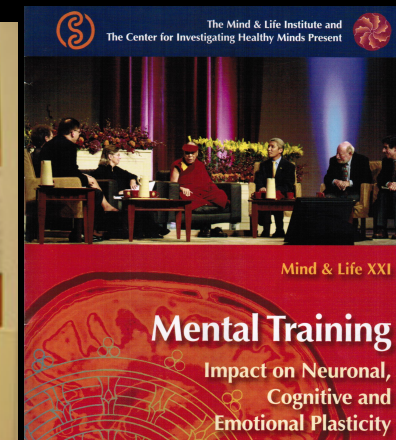
**Human transformation in the directions
of health, wellbeing and compassion
is possible for everyone, at every point of the lifespan,
through training, sustained effort,
and commitment to an ethical ideal.**



Plasticity of the Brain

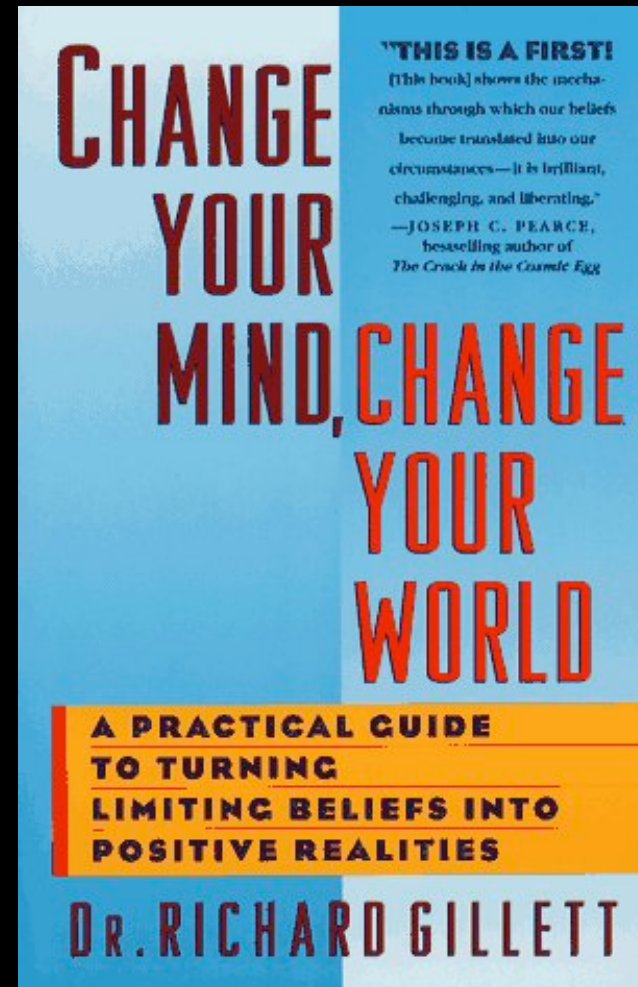
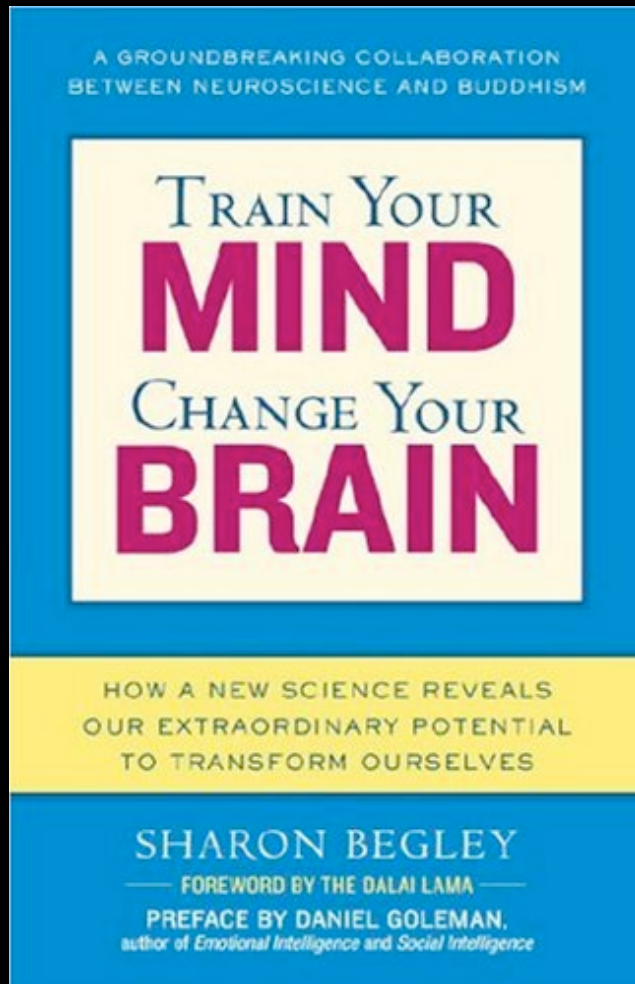
Hypothesis from Science

**The organ designed to change
most in response to experience and training
through neuroplasticity / learning**



Dr. Richard J. Davidson

Shared Hypothesis



Learning = Neuroplasticity

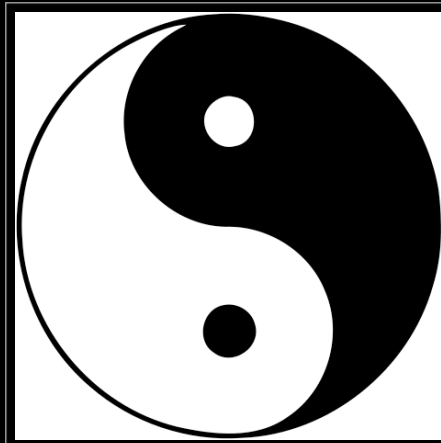


<http://www.youtube.com/user/robertwroeser>

Aims of Contemplative Science Project

circa 2013

**Contemplative
Philosophy
and
Practices**



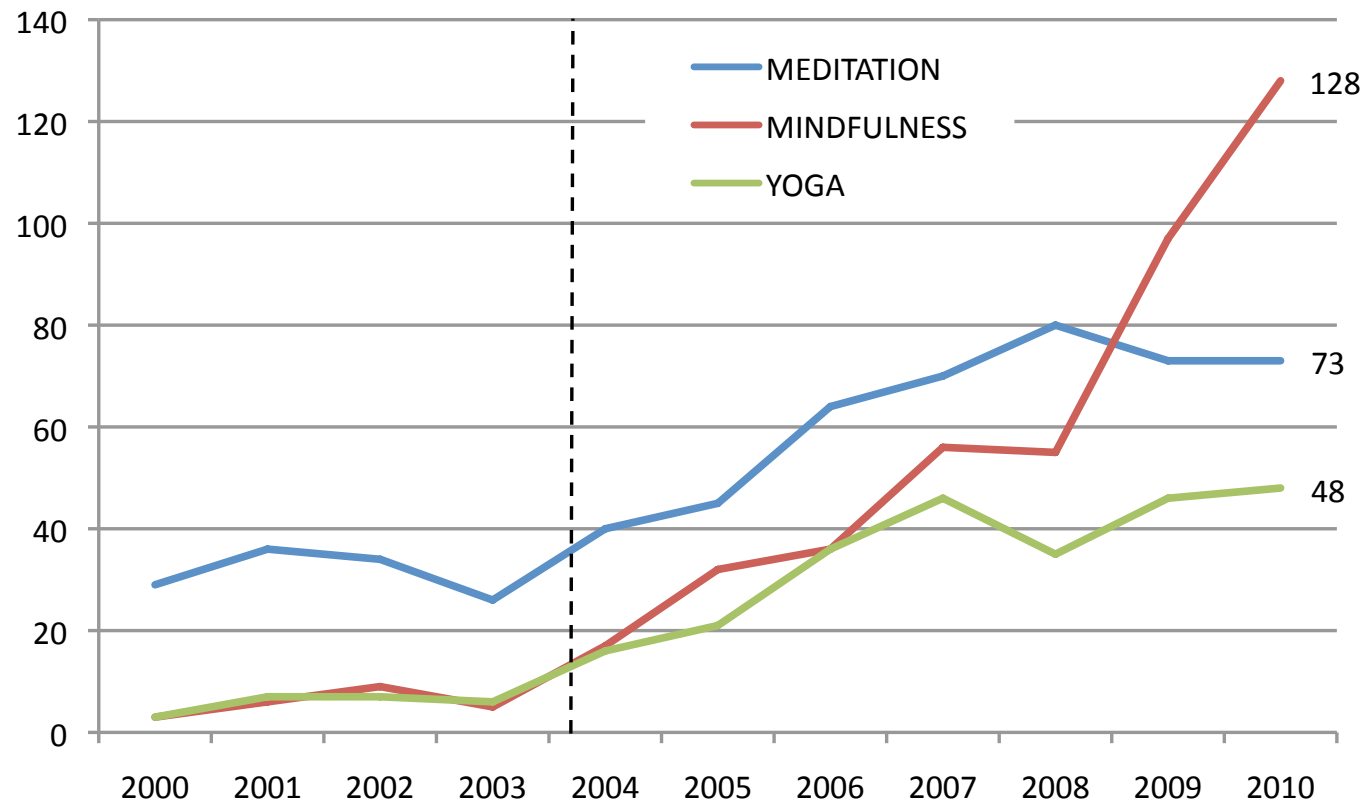
**Scientific
Philosophy
and
Research**

**Description and Explanation of
Possibility for Transformation
Through Training
Across the Lifespan**

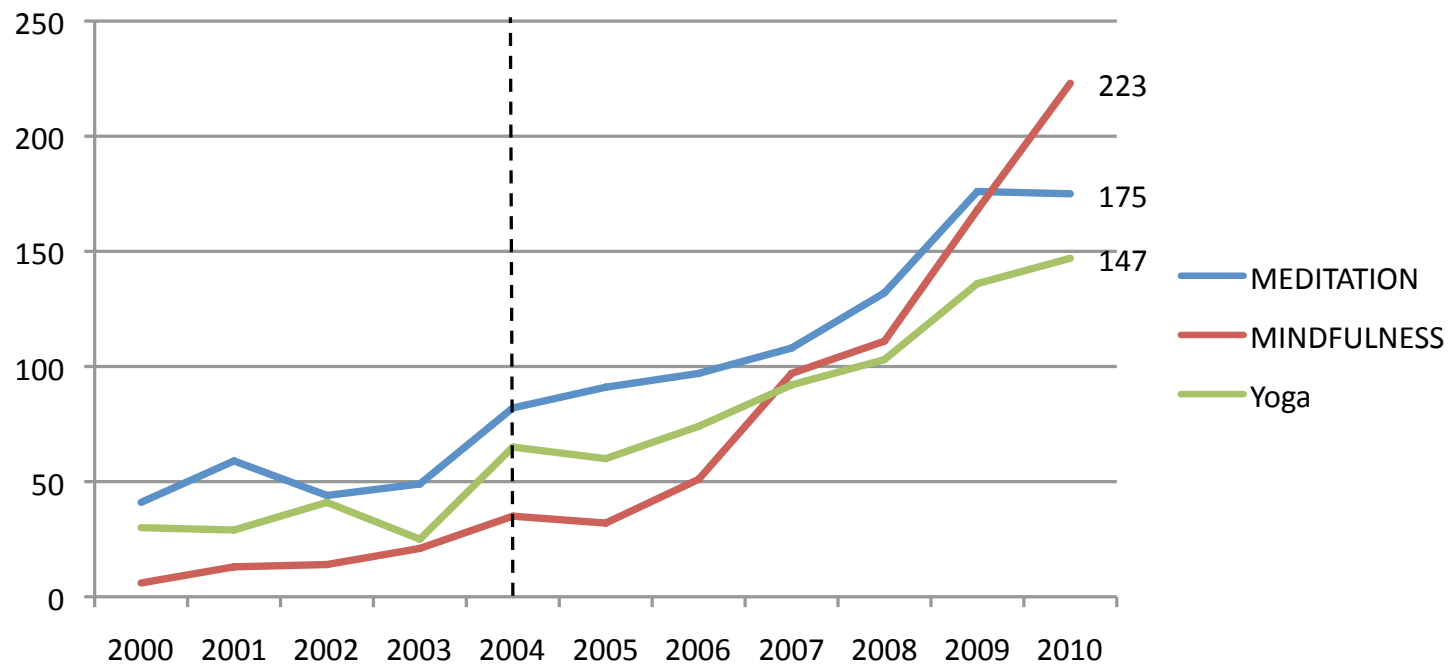
**Use of knowledge to
optimize human development
and alleviate suffering**

after Baltes, Reese & Nesselroade (1977)

NIH-funded Studies



Peer-reviewed Research





WE MUST BE THE CHANGE
WE WISH TO SEE IN THE WORLD

From Novice to Expert

Long-term meditators self-induce high-amplitude gamma synchrony during mental practice

Antoine Lutz^{*†}, Lawrence L. Greischar^{*}, Nancy B. Rawlings^{*}, Matthieu Ricard[‡], and Richard J. Davidson^{*†}

^{*}W. M. Keck Laboratory for Functional Brain Imaging and Behavior, Waisman Center, and Laboratory for Affective Neuroscience, Department of Psychology, University of Wisconsin, 1500 Highland Avenue, Madison, WI 53705; and [‡]Shechen Monastery, P.O. Box 136, Kathmandu, Nepal

Communicated by Burton H. Singer, Princeton University, Princeton, NJ, October 6, 2004 (received for review August 26, 2004)

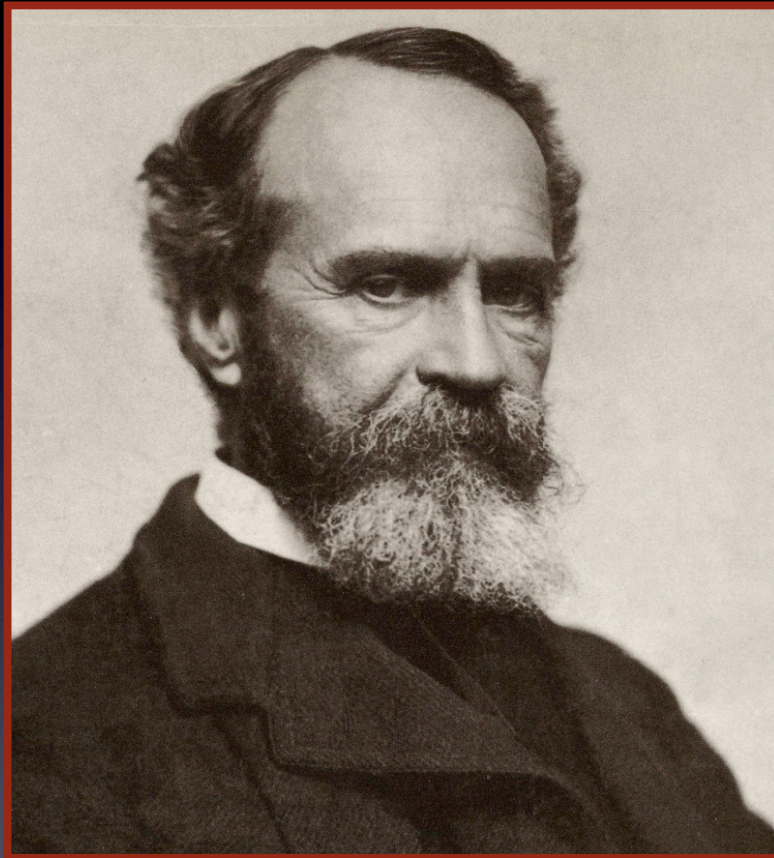


- **Enhanced Attention**
- **Enhanced Clarity of Perception**
- **Enhanced Emotion Regulation**
- **Enhanced Wellbeing**
- **Enhanced Ethics and Compassion**

-3-

***developmental
outcomes,
programs,
practices, measures***

An Education 'Par Excellence'



William James
1890

the faculty of **voluntarily bringing back a wandering attention, over and over again**, is the very root of judgment, character, and will....

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. (p. 424)

Contemplative Developmental Science

**Study of Possibilities for Human Transformation
Across the Lifespan through Training**



**Training of
Attention
and
Emotion**



- **Enhanced Attention**
- **Enhanced Clarity of Perception**
- **Enhanced Emotion Regulation**
- **Enhanced Wellbeing**
- **Enhanced Ethics & Compassion**

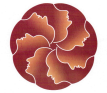
Developmental Contemplative Science

Key Research Questions

Can we design culture- and age-appropriate forms of mindfulness training that scaffold and support the development of executive function, emotion regulation, psychological wellbeing, and kindness and altruism among children and adolescents?

How might mindfulness training scaffold and support the development of these same outcomes and improved caregiving in key adult figures in young people's lives such as parents, teachers, child care workers, etc.?

HERE, NOW 2013



MIND & LIFE
INSTITUTE

Secular Ethics & Character Development

2012

Bridging the Hearts & Minds
Mindfulness in Clinical Practice, Education and Research

Developmental Contemplative Science
Preconference for the 42nd Annual Meeting
of the Jean Piaget Society

**INTERNATIONAL SYMPOSIA
for Contemplative Studies**

The 2010 Mind & Life Summer Research Institute
Garrison Institute, Garrison, New York, June 14-20, 2010

**Education, Developmental Neuroscience and Contemplative
Practices: Questions, Challenges, and Opportunities**

2011



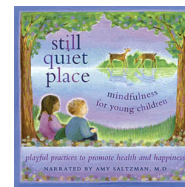
**The
Mindful
Child**
Shanti Kaiser Greenland

*SEEDS OF
COMPASSION*

2010

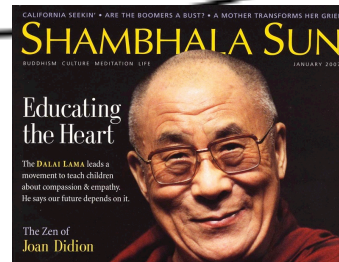
**Mind and Life XIX
Educating World Citizens
for the 21st Century**
Educators, Scientists and Contemplatives Dialogue on
Cultivating a Healthy Mind, Brain and Heart

2009



2008

**Center for
Investigating
Healthy Minds**



2007



**MLERN
Mind & Life Education
Research Network**

2006



GARRISON MAPPING REPORT



2005

**MINDFULNESS
IN EDUCATION
NETWORK**
Cultivating Mindfulness in Educational Settings

2004



2003



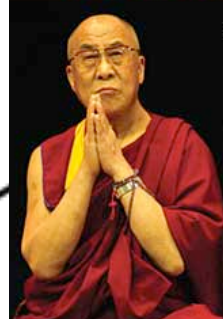
2002



2001



Schools with Spirit
Nurturing the Inner Lives
of Children and Teachers
Angela Acker
Edited by Linda LANTIERI
Foreword by Daniel GOLEMAN



**Destructive
EMOTIONS**
How Can We Overcome Them?
A Scientific Dialogue with the
Dalai Lama
Narrated by
Daniel Goleman
New York Times Bestselling Author of
Emotional Intelligence

the center for
Contemplative Mind in Society

Core Mindfulness Practices

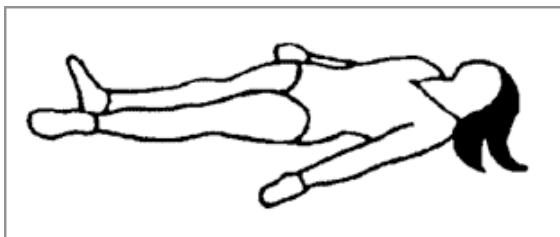


Focused Attention
Meditation

Open Monitoring
Meditation



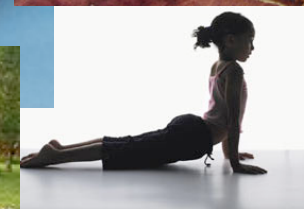
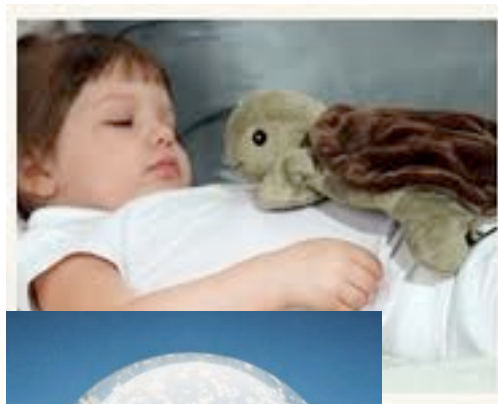
Loving-Kindness
Meditation



Body Scan
Meditation



Mindful Yoga



How Does Mindfulness Meditation Work? Proposing Mechanisms of Action From a Conceptual and Neural Perspective

Britta K. Hölzel^{1,2}, Sara W. Lazar², Tim Gard^{1,2},
Zev Schuman-Olivier², David R. Vago³, and Ulrich Ott¹

¹Bender Institute of Neuroimaging, Justus Liebig-University, Giessen, Germany; ²Massachusetts General Hospital, Harvard Medical School, Boston, MA; and ³Brigham and Women's Hospital, Harvard Medical School, Boston, MA

Perspectives on Psychological Science
6(6) 537–559
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DOI: 10.1177/1745691611419671
http://pps.sagepub.com
SAGE

How Does Mindfulness Meditation Work?

539

Table 2. Components Proposed to Describe the Mechanisms Through Which Mindfulness Works

Mechanism	Exemplary instructions	Self-reported and experimental behavioral findings	Associated brain areas
1. Attention regulation	Sustaining attention on the chosen object; whenever distracted, returning attention to the object	Enhanced performance: executive attention (Attention Network Test and Stroop interference), orienting, alerting, diminished attentional blink effect	Anterior cingulate cortex
2. Body awareness	Focus is usually an object of internal experience: sensory experiences of breathing, emotions, or other body sensations	Increased scores on the Observe subscale of the Five Facet Mindfulness Questionnaire; narrative self-reports of enhanced body awareness	Insula, temporo-parietal junction
3.1 Emotion regulation: reappraisal	Approaching ongoing emotional reactions in a different way (nonjudgmentally, with acceptance)	Increases in positive reappraisal (Cognitive Emotion Regulation Questionnaire)	(Dorsal) prefrontal cortex (PFC)
3.2 Emotion regulation: exposure, extinction, and reconsolidation	Exposing oneself to whatever is present in the field of awareness; letting oneself be affected by it; refraining from internal reactivity	Increases in nonreactivity to inner experiences (Five Facet Mindfulness Questionnaire)	Ventro-medial PFC, hippocampus, amygdala
4. Change in perspective on the self	Detachment from identification with a static sense of self	Self-reported changes in self-concept (Tennessee Self-Concept Scale, Temperament and Character Inventory)	Medial PFC, posterior cingulate cortex, insula, temporo-parietal junction

TRAINING OF ATTENTION

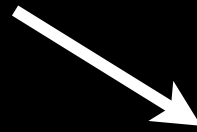
Mindwandering



Concentration



*Aware,
Focused,
Calm*



Mindlessness



Mindfulness

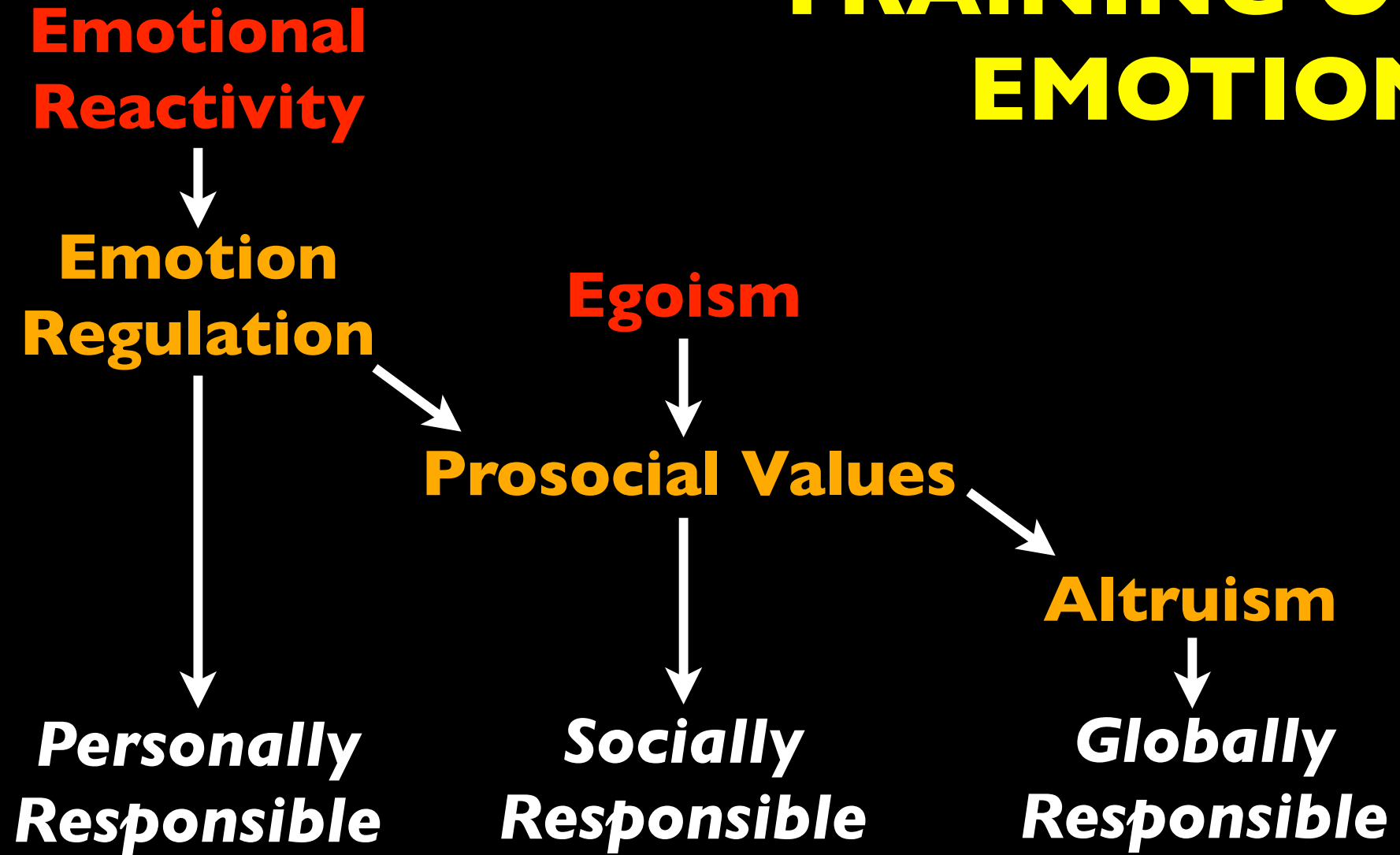


*Aware,
Clear,
Equanimous*

Cultivating Focused Attention Through Breath Meditation



TRAINING OF EMOTION



Cultivating Altruism Through Acts of Kindness



Unit IV: Mindful of Ourselves in the World

Lesson 14: Acts of Kindness

- Perform five acts of kindness and report on their experiences in a class discussion

Lesson 15: Mindful Actions in Our Community

- Describe how they can “make a positive difference” through mindful choices and actions



Mindfulness Measures

Child and Adolescent Mindfulness Measure (CAMM)

[Greco, Baer & Smith, 2011]

Mindful Attention and Awareness Scale - Adolescents (MAAS-A)

[Warren-Brown, West, Loverich & Biegel, 2011]

Interpersonal Mindfulness in Parenting Scale

[Duncan, 2007]

Five Facets of Mindfulness Questionnaire (FFMQ)

[Baer et al., 2008]



Cognitive Control and Flexibility

Flanker Inhibitory Control / Dimensional Change Card Sort (DCCS)

[NIH Toolbox, 2013 - <http://www.nihtoolbox.org>]

Working Memory Capacity

List Sorting Working Memory Task / Operation Span Task

[NIH Toolbox, 2013 - <http://www.nihtoolbox.org> / Turner & Engle, 1989]

Measures References

- Greco, L. A., Baer, R. A., & Smith, G. T. (2011). Assessing mindfulness in children and adolescents: Development and validation of the Child and Adolescent Mindfulness Measure (CAMM). *Psychological Assessment*, 23, 606-614.
- Brown, K. W., West, A. M., Loverich, T. M., & Biegel, G. M. (2011). Assessing adolescent mindfulness: Validation of an adapted mindful attention awareness scale in adolescent normative and psychiatric populations. *Psychological assessment*, 23, 1023-1034.
- Duncan, L. G. (2007). *Assessment of mindful parenting among parents of early adolescents: Development and validation of the Interpersonal Mindfulness in Parenting scale* (Doctoral dissertation, The Pennsylvania State University).
- Baer, R.A., Smith, G.T., Lykins, E., Button, D., Krietemeyer, J., Sauer, S., Walsh, E., Duggan, D., & Williams, J.M. (2008). Construct validity of the five-facet mindfulness questionnaire in meditating and nonmeditating samples. *Assessment*, 15, 329–342.
- <http://www.nihtoolbox.org>

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***research with
care-givers***

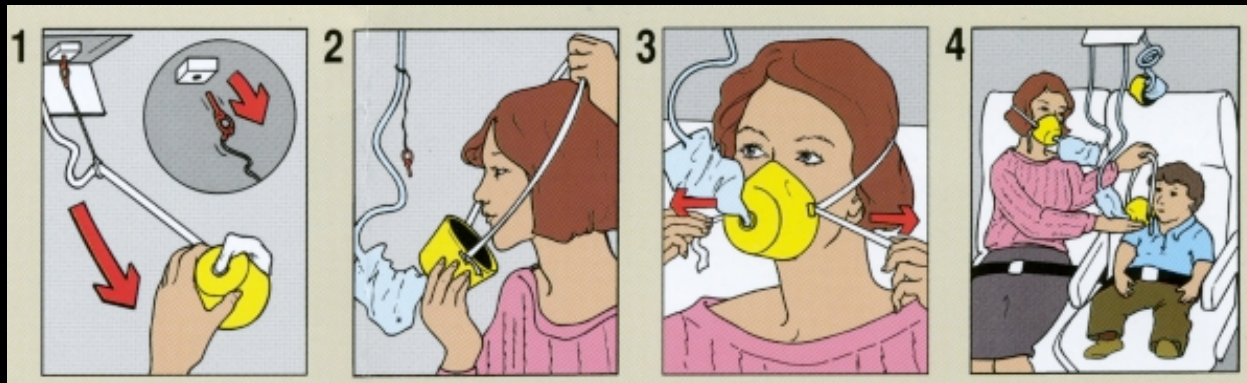
Why mindfulness training for care-givers?

Its a secret hidden in plain sight...
we teach who we are.



Parker Palmer

First,



Then...

Science of Mindfulness

Parents and Teachers

- Numerous Parent & Teacher Programs
- Only a few RCTs / Rigorous Designs
- Suggestions of Feasibility
- Suggestions of Efficacy- CALM & CLEAR
 - Improved Executive Function
 - Reduced Occupational Stress and Burnout
 - Reduced Anxiety and Depression
- Changes in Behavior - KIND? QUALITY OF CARE/TEACHING?

Mindfulness Training for Teachers

(SMART/MBEB)

Manualized Program

(Created by Margaret Cullen)

8-week, after-work program

Sessions are 2.5 hours; total of 35 contact hours

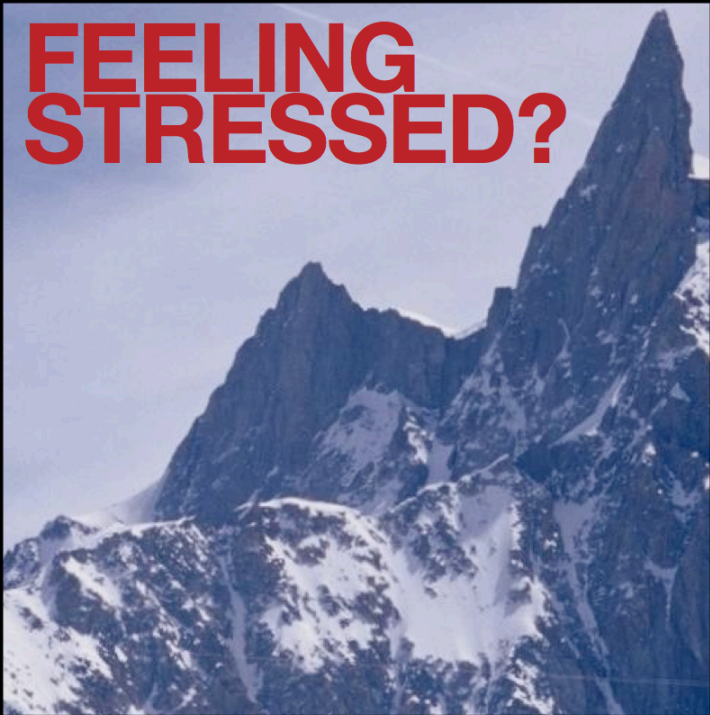
2 full day Saturday retreats

Program content:

60% Mindfulness-based Stress Reduction

30% Mindfulness and Emotion Theory

10% Mindfulness and Forgiveness



FEELING STRESSED?

Enroll in a free Stress Management and Relaxation Techniques Course designed especially for teachers!!

Learn new techniques to better understand and manage your stress and emotions.

Enroll in the **SMART-in-Education** Program that, for a limited time, is being offered **FREE** of charge for all VSB elementary and secondary school teachers as part of a research study! (Value of the course is \$400).

Research on the program is being conducted by Dr. Kimberly Schonert-Reichl (UBC) and Dr. Robert Roeser (Portland State University) and is supported by a UBC-VSB collaboration. As a research participant, you will have the opportunity to earn \$375 as well.

To learn more and/or register by phone, please call Eva Oberle at 604-221-1722

SMART
EDUCATION

**ENROLL BY THIS
FRIDAY - MARCH 27!!**

TO LEARN MORE OR TO REGISTER, PLEASE
CALL EVA OBERLE AT 604-221-1722

Mindfulness Training Associated with Increased Mindfulness

BC Canada

N = 57

Elementary &
Secondary
Teachers

Study 1
2009

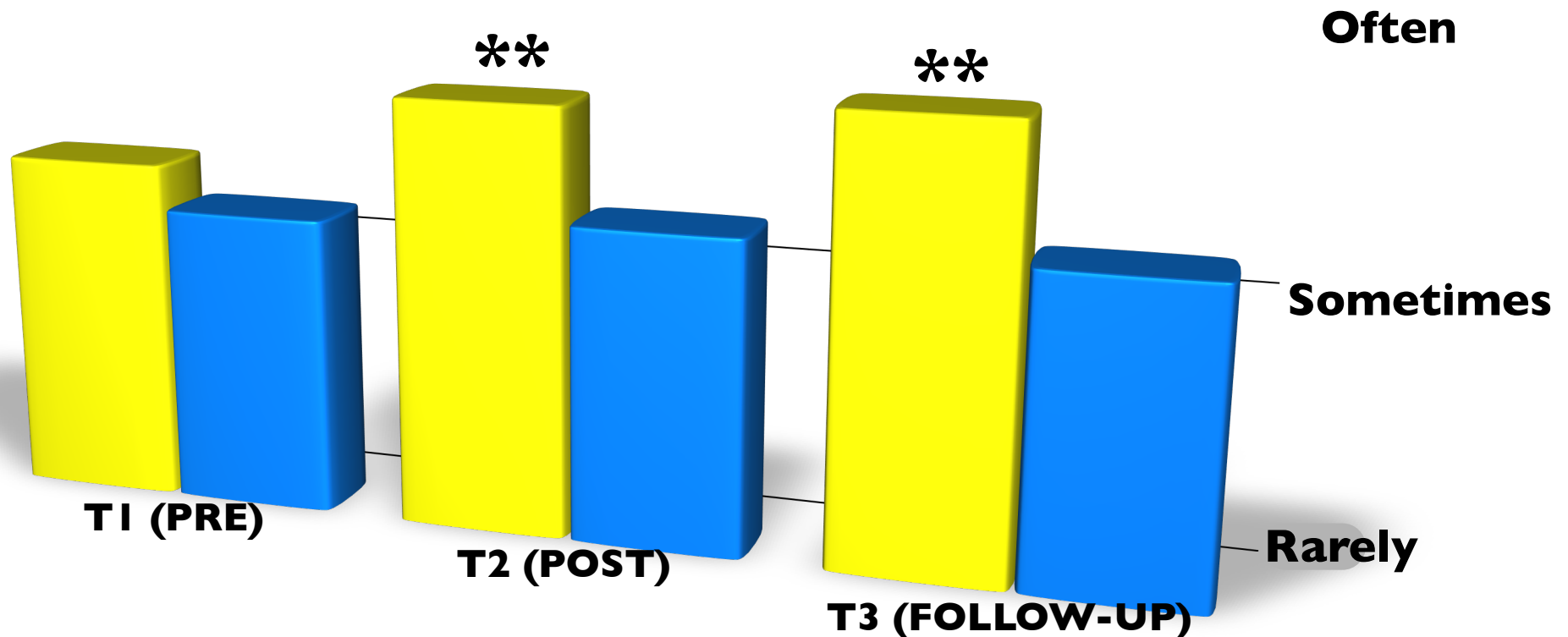
Colorado

N = 56

Elementary &
Secondary
Teachers

Study 2
2010

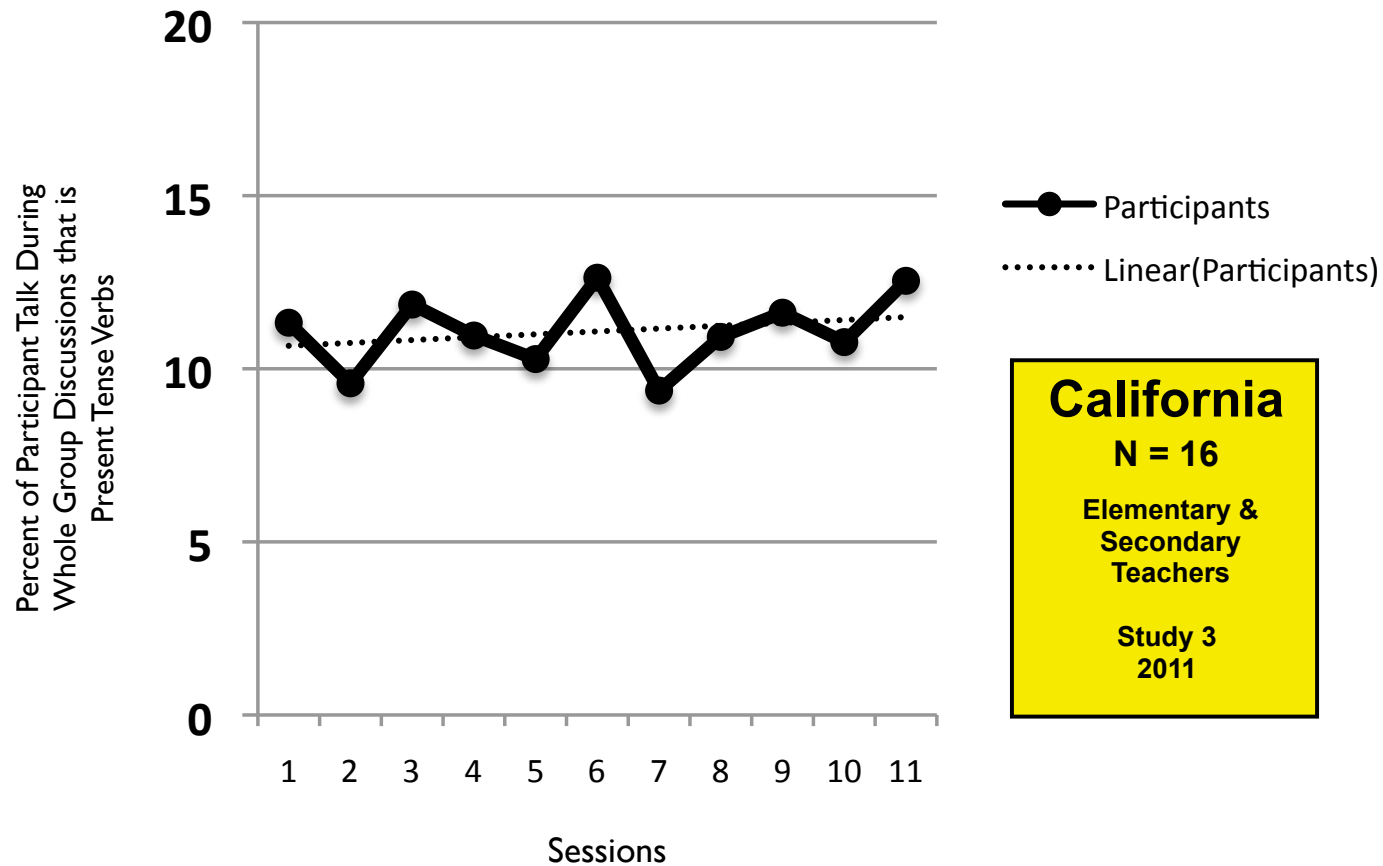
 **Mindfulness Group**
 **Control Group**



Five Facets of Mindfulness (Baer)

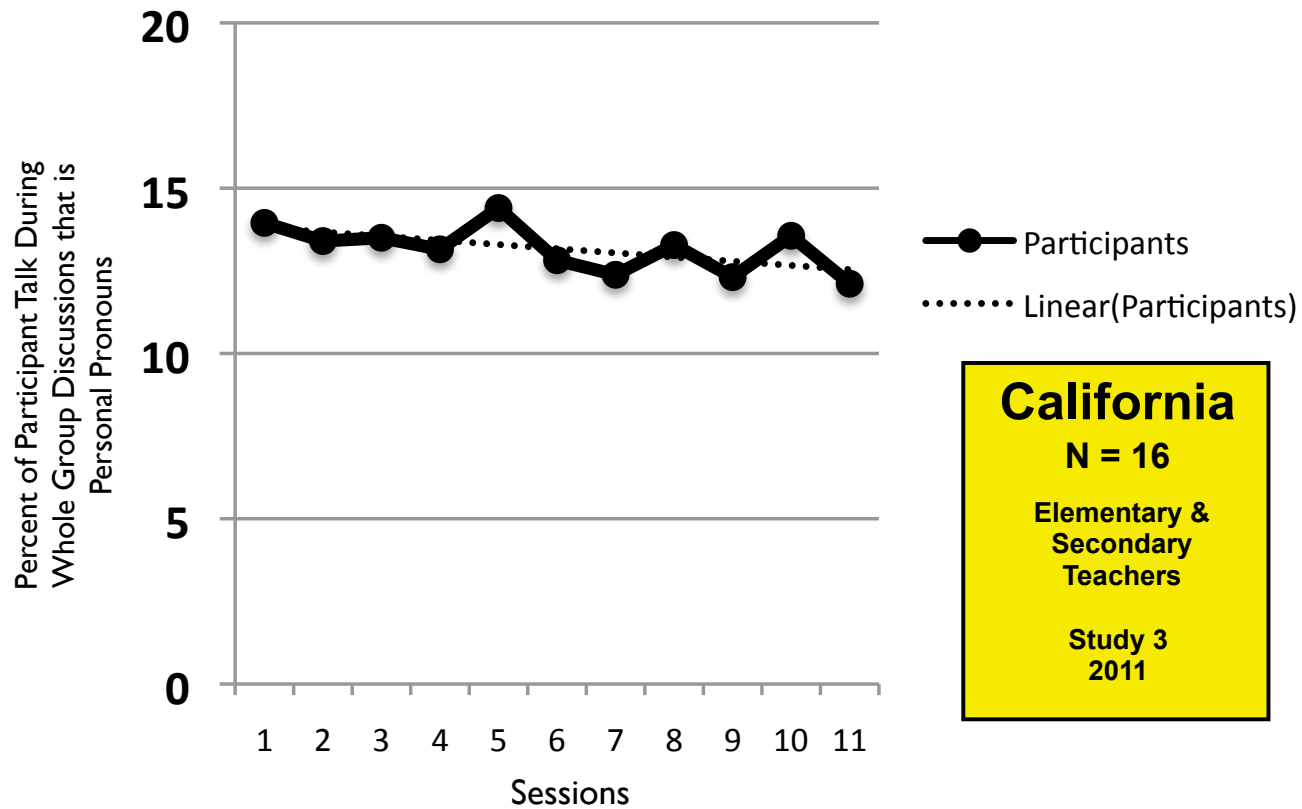
Change in Participants' Use of Present Tense Verbs During Whole Group Discussion

(Linear R-Squared = .07)



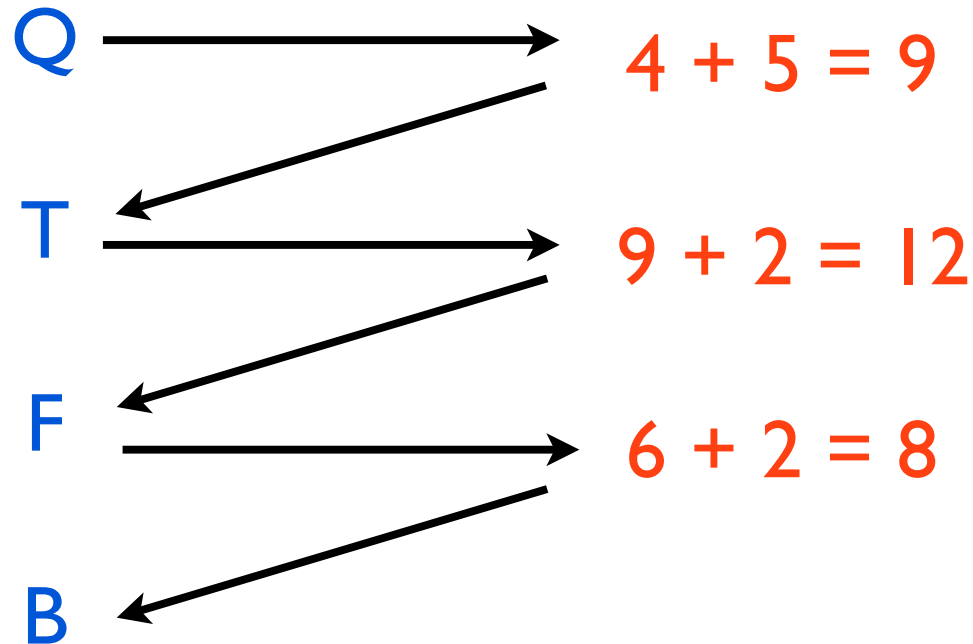
Change in Participants' Use of Personal Pronouns During Whole Group Discussion

(Linear Trend R-Squared = .35)



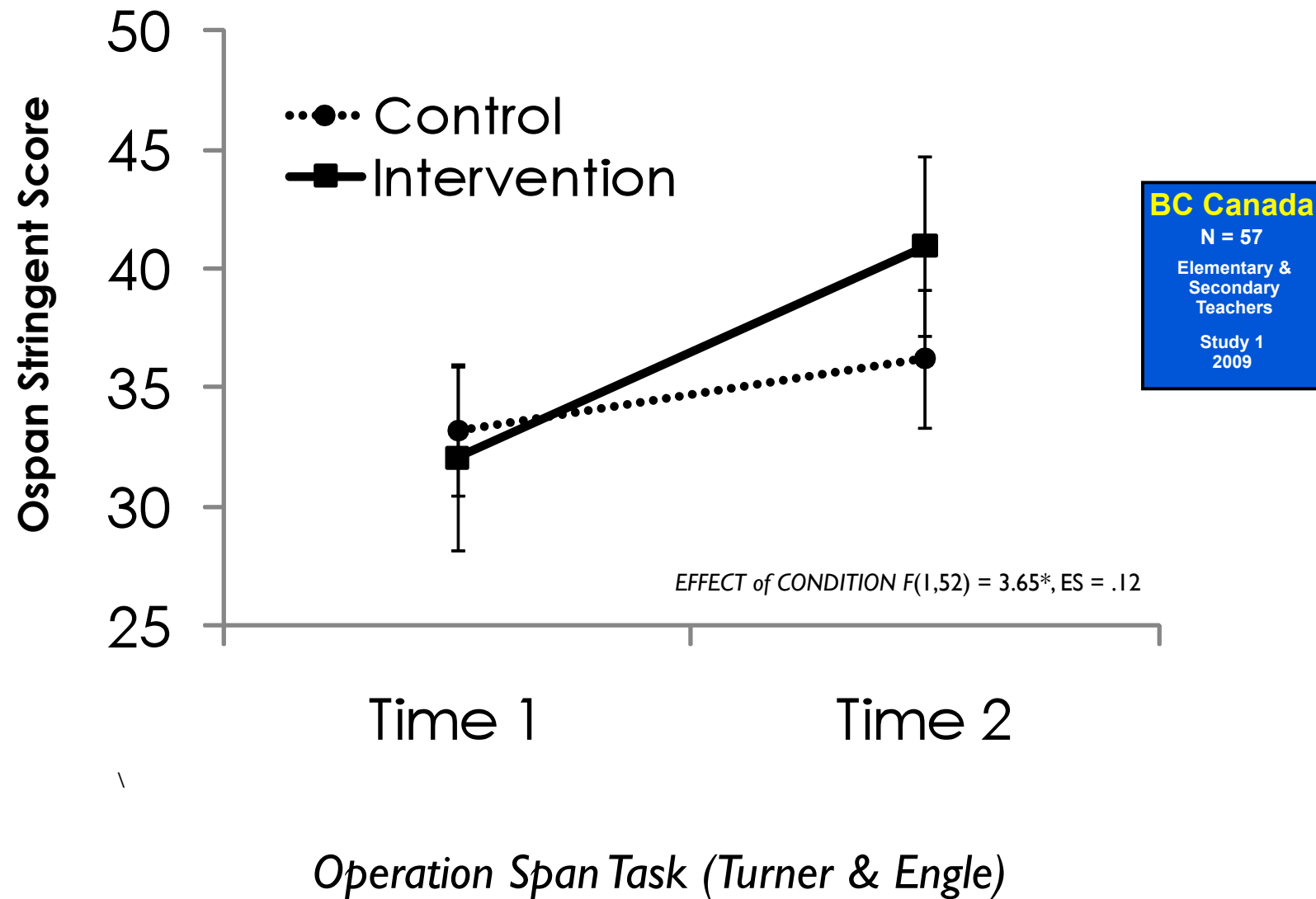
Focused Attention & Working Memory

The Operation Span Behavioral Task
(Turner & Engle, 1989)



BC Canada
N = 57
Elementary &
Secondary
Teachers
Study 1
2009

Mindfulness Training Associated with Increased Focused Attention and Working Memory



Mindfulness Training Associated with Decreased Occupational Stress

BC Canada

N = 57

Elementary &
Secondary
Teachers

Study 1
2009

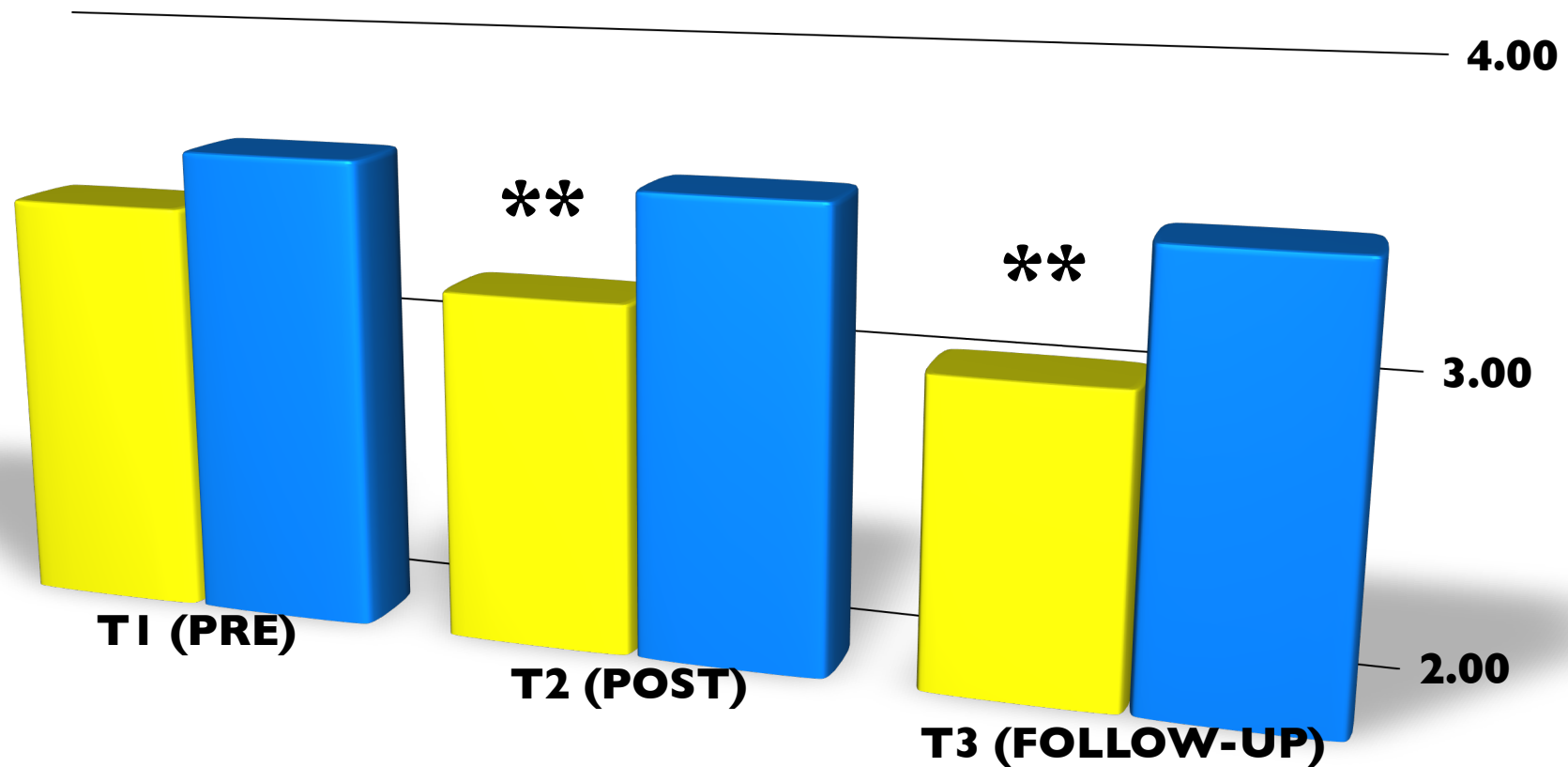
Colorado

N = 56

Elementary &
Secondary
Teachers

Study 2
2010

 **Mindfulness Group**
 **Control Group**



Mindfulness Training Associated with Decreased Burnout: Emotional Exhaustion

BC Canada

N = 57

Elementary &
Secondary
Teachers

Study 1
2009

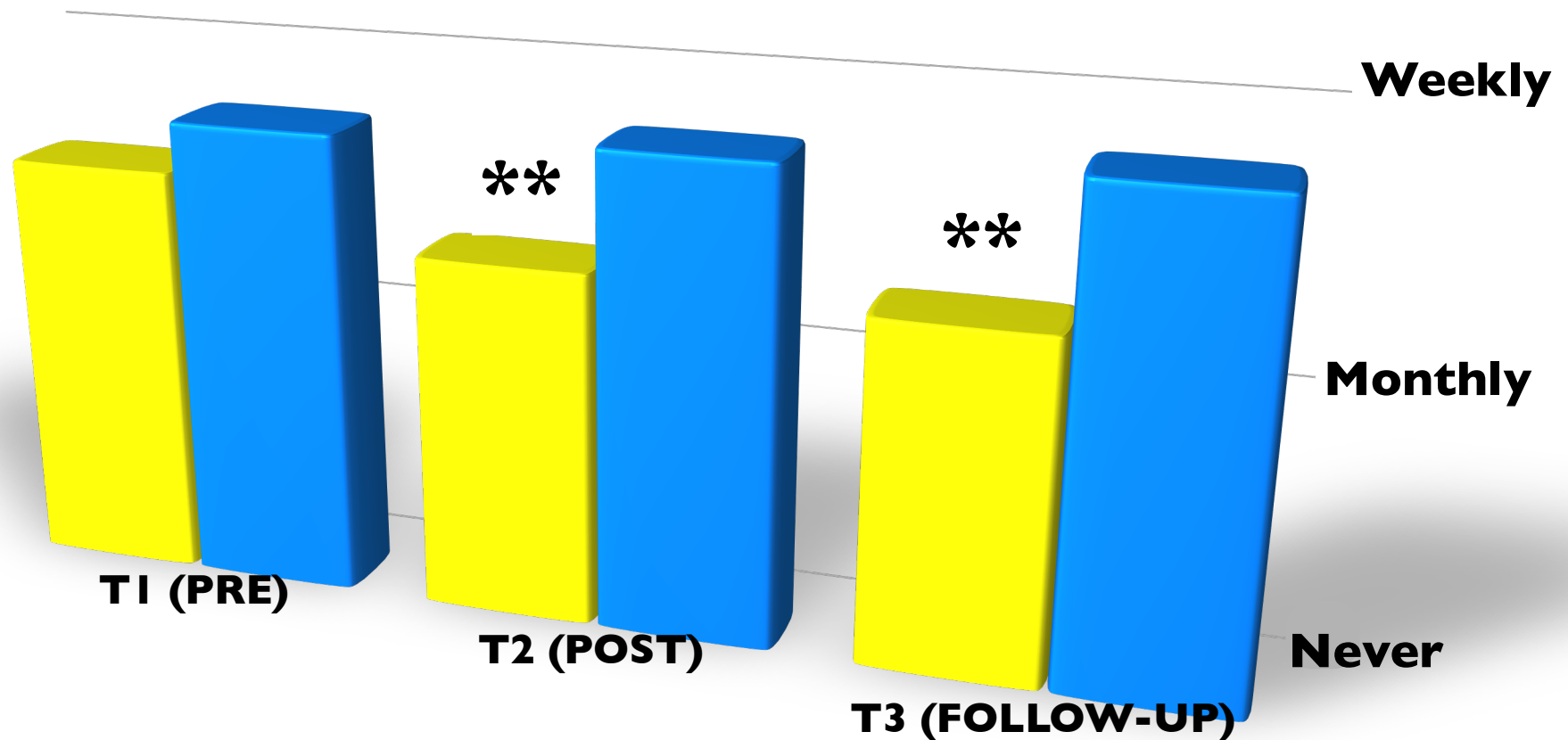
Colorado

N = 56

Elementary &
Secondary
Teachers

Study 2
2010

 **Mindfulness Group**
 **Control Group**



Maslach Burnout Inventory (Maslach)

Transfer?

Transfer of learning has been defined as:

*the influence of prior learning (retained until the present)
upon the learning of, or response to, new material*

(McGeoch, 1942, p. 394)





<http://www.youtube.com/user/robertwroeser>

-5-

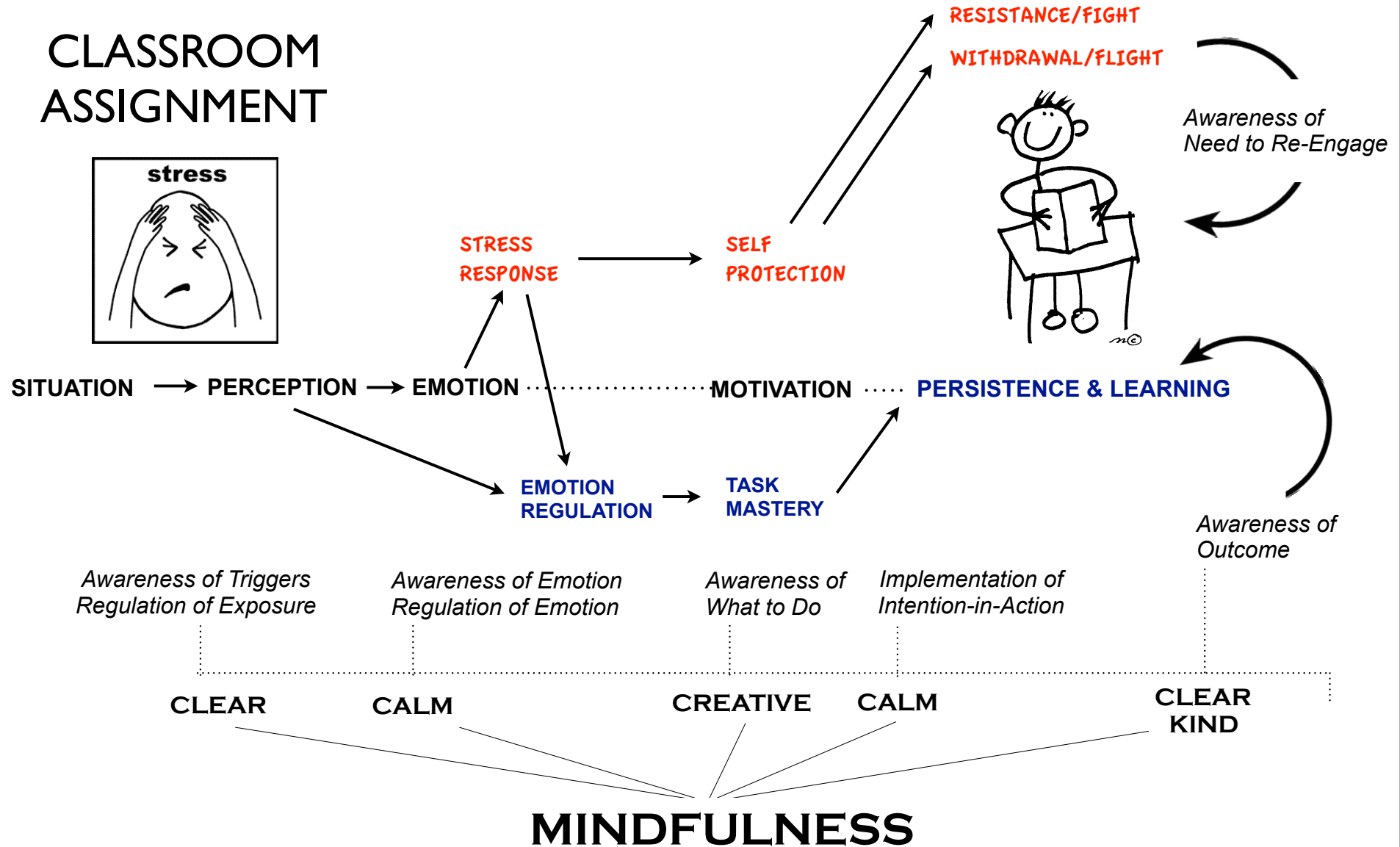
***research with
children and youth***

Science of Mindfulness

Children and Adolescents

- Programs from Early Childhood to College
- Only a few RCTs / Rigorous Designs
- Suggestions of Feasibility
- Suggestions of Efficacy- CALM & CLEAR
 - Improved Executive Function
 - Reduced Anxiety and Depression
- Changes in Behavior - KIND?

Mindfulness and Academic Functioning



Research Article

Self-Discipline Outdoes IQ in Predicting Academic Performance of Adolescents

Angela L. Duckworth and Martin E.P. Seligman

Positive Psychology Center, University of Pennsylvania

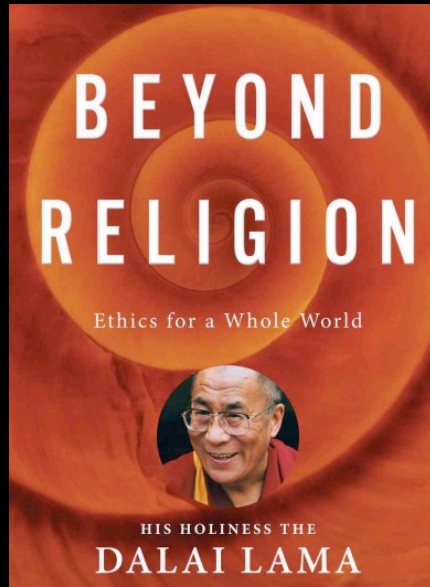
ABSTRACT—In a longitudinal study of 140 eighth-grade students, self-discipline measured by self-report, parent report, teacher report, and monetary choice questionnaires in the fall predicted final grades, school attendance, standardized achievement-test scores, and selection into a competitive high school program the following spring. In a replication with 164 eighth graders, a behavioral delay-of-gratification task, a questionnaire on study habits, and a group-administered IQ test were added. Self-discipline measured in the fall accounted for more than twice as much variance as IQ in final grades, high school selection, school attendance, hours spent doing homework, hours spent watching television (inversely), and the time of day students began their homework. The effect of self-discipline on final grades held even when controlling for first-marking-period grades, achievement-test scores, and measured IQ. These findings suggest a major reason for students falling short of their intellectual potential: their failure to exercise self-discipline.

“Ethical Mindfulness”



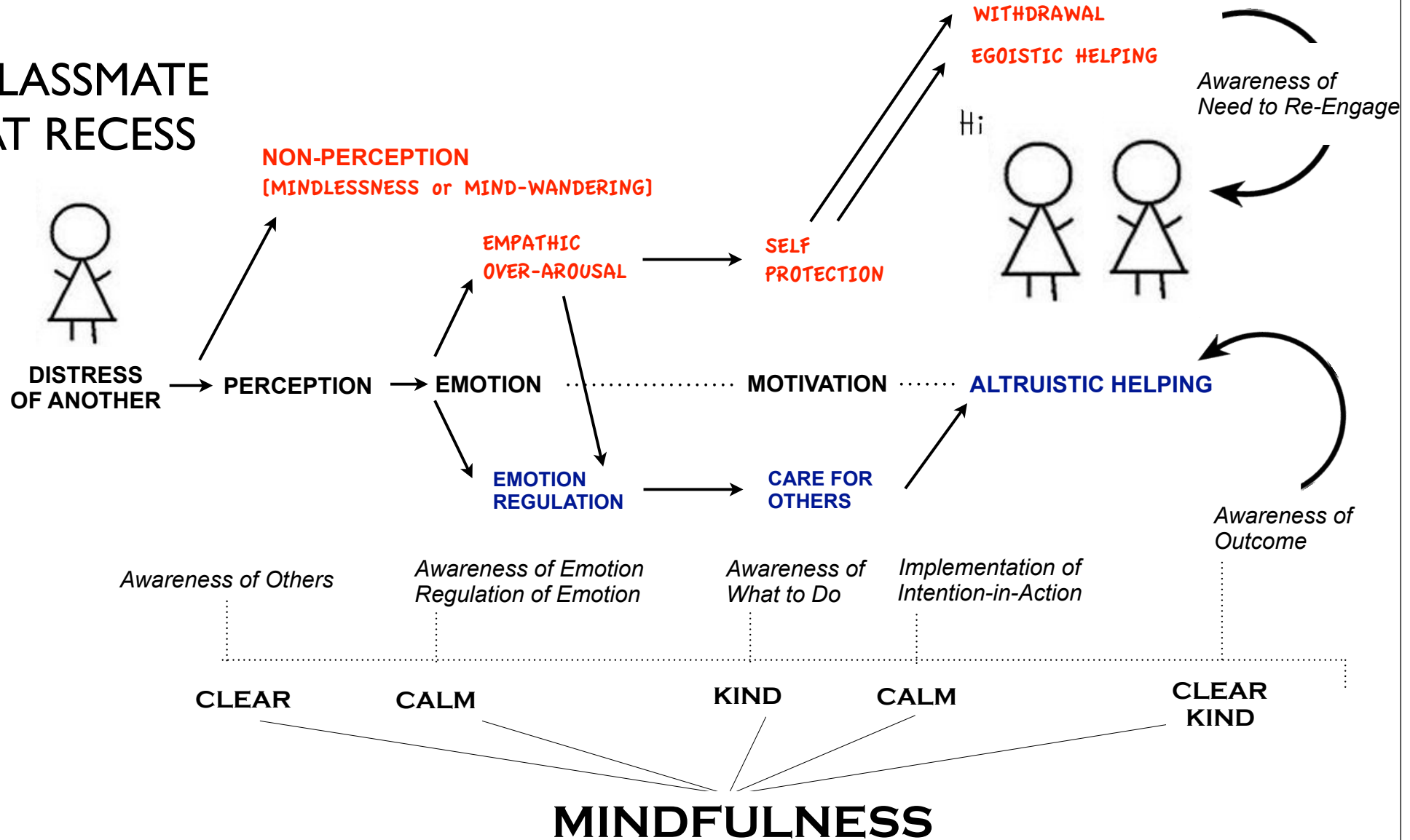
The Chinese symbol for “intention” is composed of two distinct characters.

The upper character means “present” and the lower character means “heart.”



Mindfulness and Social Functioning

CLASSMATE
AT RECESS

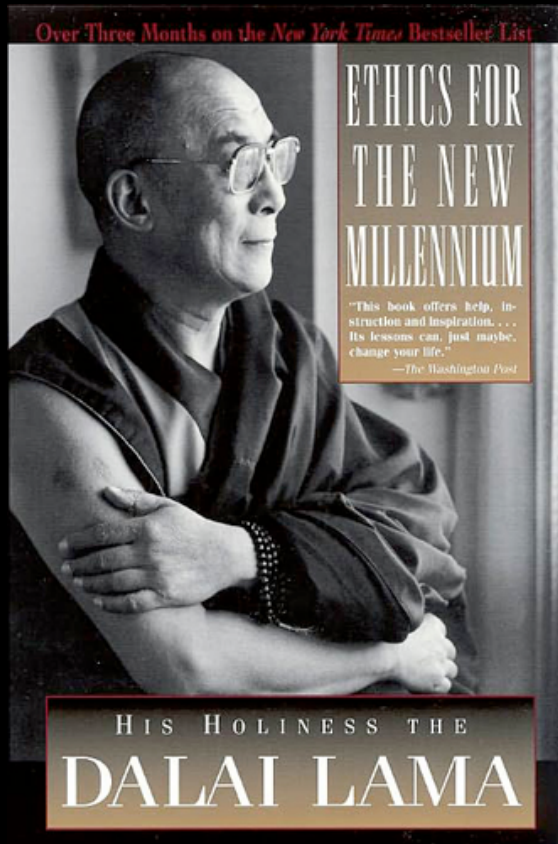


Future Directions

- More Rigorous Research Designs
- Observational Measures of Behavior
- Cultural Diversity
- Scaling and Sustaining Program Implementation
- Figuring out “Demand Side”

-6-

Conclusion



Our own heart, our own mind is the temple.

The doctrine is compassion.

Love for others and respect for their rights and dignity, no matter who or what they are: ultimately these are all we need.

So long as we practice these in our daily lives, then no matter if we are learned or unlearned, whether we believe in Buddha or God, or follow some other religion or none at all, as long as we have compassion for others and conduct ourselves with restraint out of a sense of responsibility, there is no doubt we will be happy.

**Thank You for
Your Attention**



