LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

EMORY UNIVERSITY

Mindfulness as Medicine:

Clinical Applications of Meditation

Alana Darcher

Data science perspective on interest in meditation.

….even more so for mindfulness!

Google's N-gram viewer: Instances of a word in Google's english text corpus out of all words, for a given year

20 Scientific Reasons to Start Meditating Today

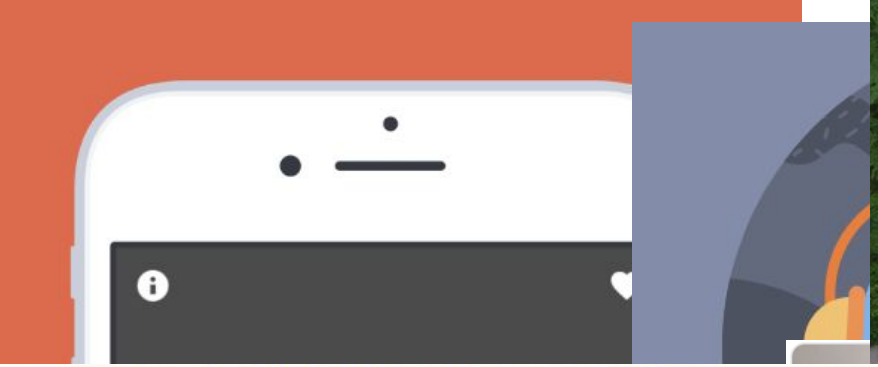
New research shows meditation boosts your health, happiness, and success!

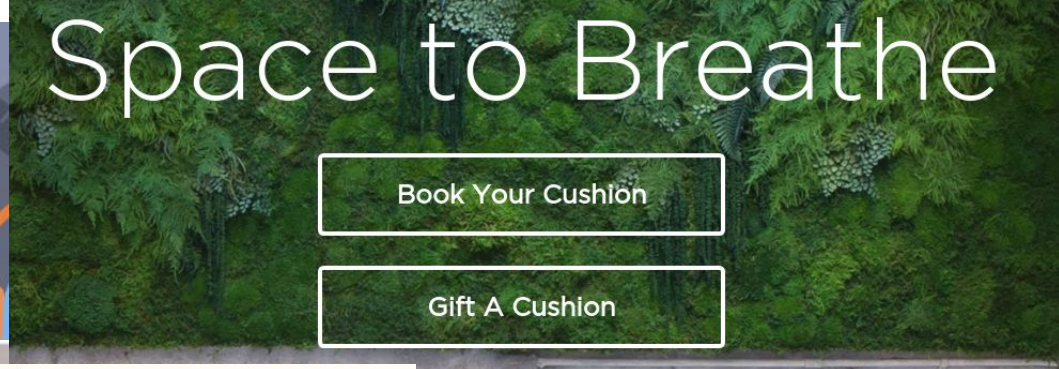
Posted Sep 11, 2013

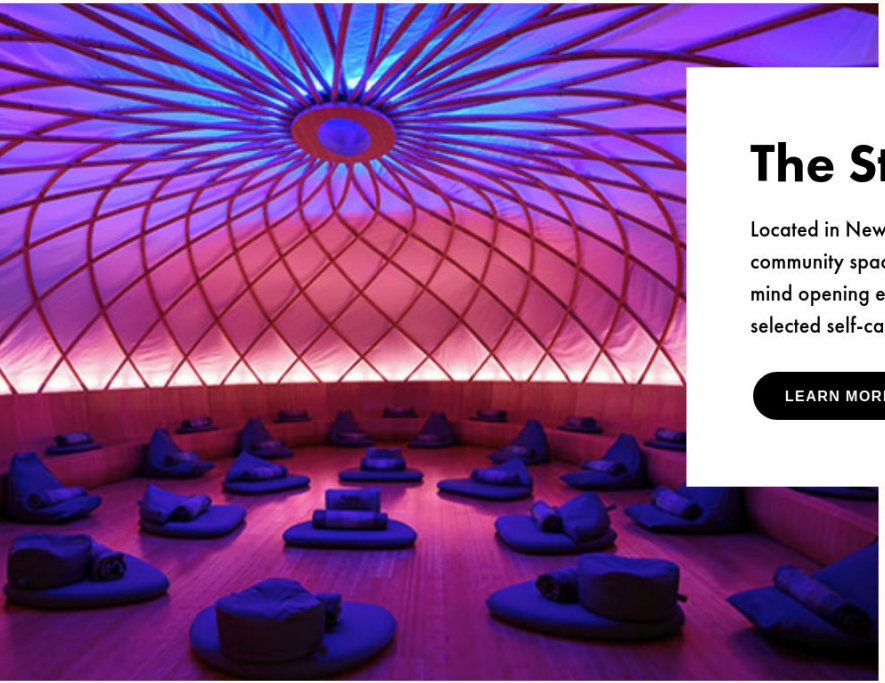
14 Benefits of Meditation that Rewire Your Brain for Happiness & Success

Meditation: A simple, fast way to reduce stress

Benefits of Meditation for Depression: Why It Works So Well



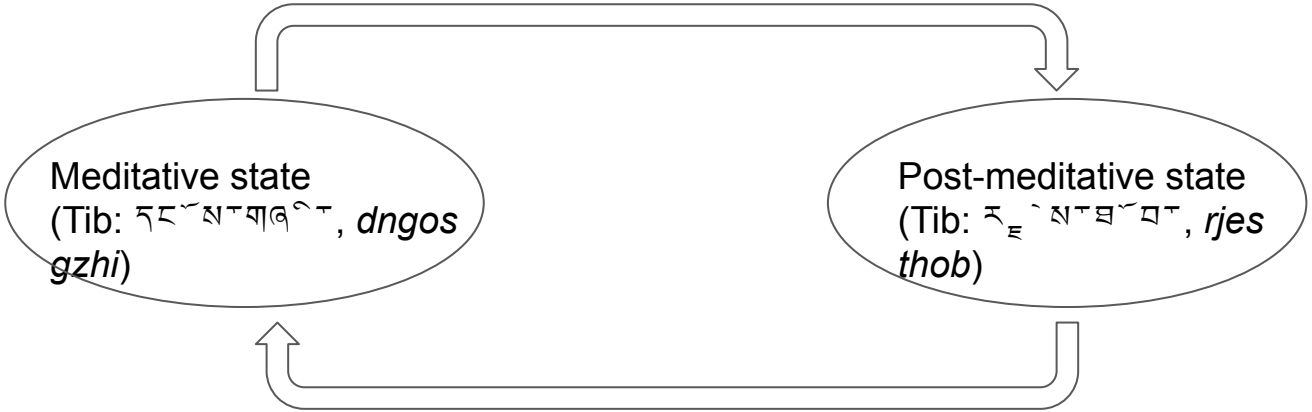




The Studio.

Located in New York City, our flagship studio is a community space offering meditation, relaxation, mind opening events, and a shop with intentionally selected self-care products.

LEARN MORE



Śamatha
“Quiescence”
- **Both state and style of practice**

Vipaśyanā
“Insight”
- **With or without object of focus**

“...just as a cart cannot move without two wheels.”
- Lutz, Dunne, and Davidson (2007)

From the perspective of human neuroscience:

“Mindfulness is described through systematic mental training that develops meta-awareness (self-awareness), an ability to effectively modulate one’s behavior (self-regulation), and a positive relationship between self and other that transcends self-focused needs and increases prosocial characteristics (self-transcendence).”

-Vago and Silbersweig (2012)

Focus Attention Meditation	- directing and sustaining attention on a selected object (e.g., breath sensation) - detecting mind wandering and distractors (e.g., thoughts) - disengagement of attention from distractors and shifting of attention back to the selected object - cognitive reappraisal of distractor (e.g. “just a thought”, “it is okay to be distracted”)
Open Monitoring Meditation	- no explicit focus on objects - non-reactive meta-cognitive monitoring (e.g. for novices, labeling of experience) - non-reactive awareness of automatic cognitive and emotional interpretations of sensory, perceptual and endogenous stimuli.

Lutz, Slagter, Dunne, Davidson (2008)

What do we want to know about meditation?

Davidson, 2008

Emory U., Lab for Lifestyle Sciences

Davidson, 2008

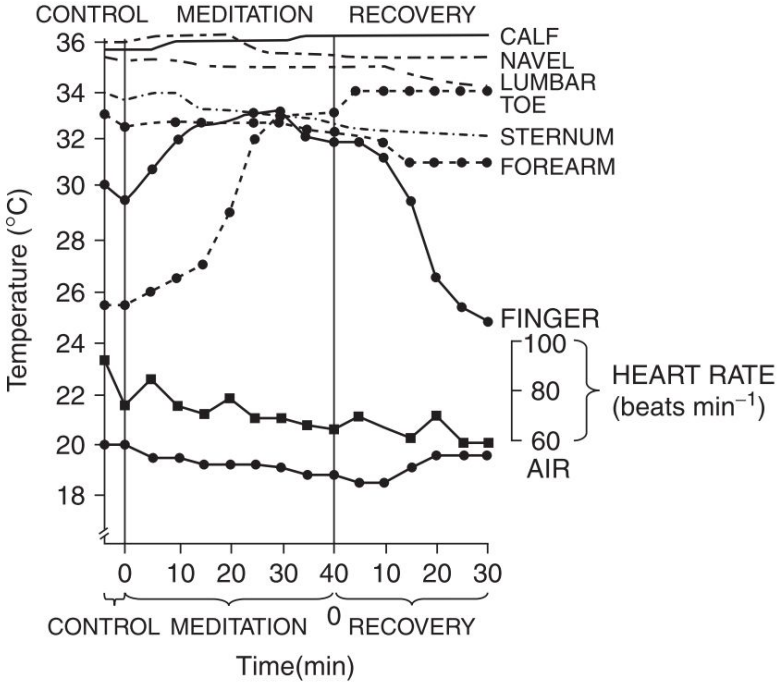


Figure 19.3. Effect of Tummo meditation of the regulation of body temperature. Skin and air temperature and heart rate changes before, during, and after the meditation of long-term practitioner L.T. (adapted from Benson et al., 1982).

Lutz, Dunne, and Davidson (2008)

What's happening during engagement with a practice?

What does and does not change with practice?

Emory U., Lab for Lifestyle Sciences

Mindfulness-Based Stress Reduction (MBSR)

2 -2.5 hr per week, all-day retreat b/w Weeks 6 & 7

"moment-by-moment awareness in a non-judgemental and accepting way"
- Will et al. (2019)

Week 1:
Theory/evidence of mind-body medicine

Week 2:
Examination of perceptions, assumptions, views; body-scan practice

Week 3:
Sharing and integrating the practice into daily life; mindful hatha yoga, sitting and walking meditation

Week 4:
Concentration and stability of focus on body; physiological/psychological basis of stress

Week 5:
Addressing "stuck" points in practice

Week 6:
Focus on resilience to stress; coping strategies and applying awareness

Week 7:
Exploration of mindfulness in lived life; Applying and maintaining mindfulness within life as a regular practice

Week 8:
Review, resources available, support system; Honoring the end of the program

Typically, pre- & post-intervention measurements

Biometrics:

- structural/functional imaging
- Endocrinology (cortisol tests)
- Heart rate/skin conductivity

Psychometrics:

- UCLA Loneliness Scale (R-UCLA)
- Depression Anxiety and Stress Scale (DASS)
- Pittsburgh Sleep Scale
- Substance Use Inventory
- Compassionate Love for Humanity Scale (CLHS)
- Exercise, eating habits, social visits….

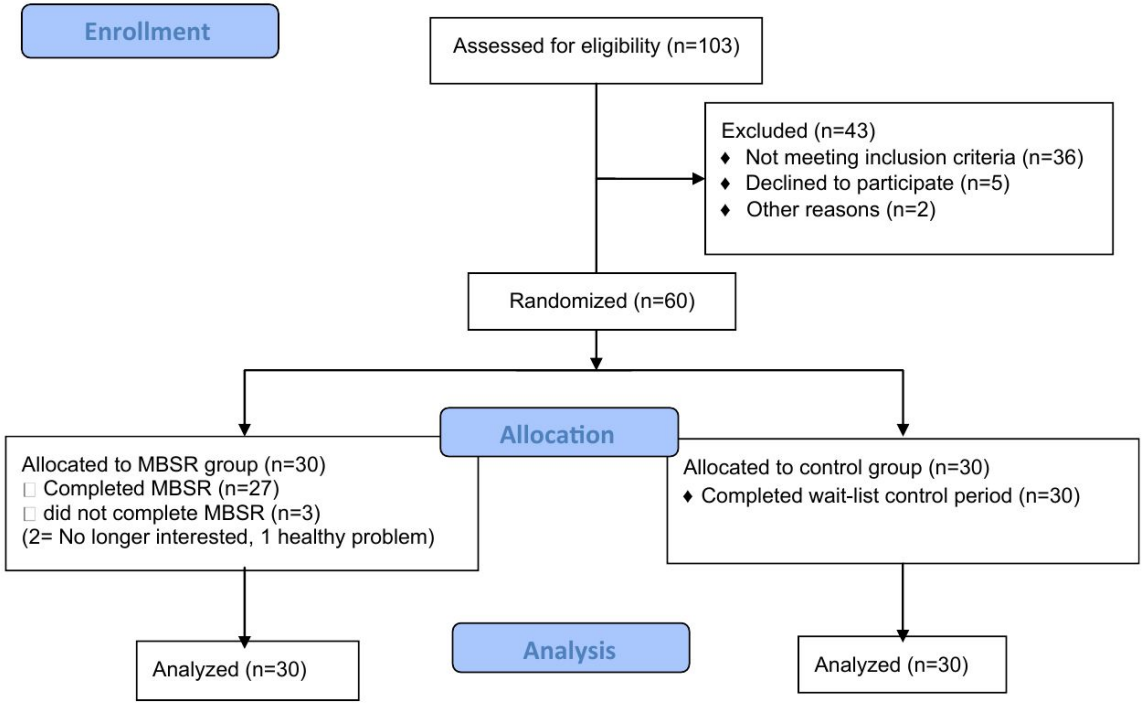


Figure 1. Flow diagram of the study. Abbreviation: MBSR, Mindfulness Based Stress Reduction.

Momeni, Javad & Omidi, Abdollah & Raygan, Fariba & Akbari, Hossein. (2016)

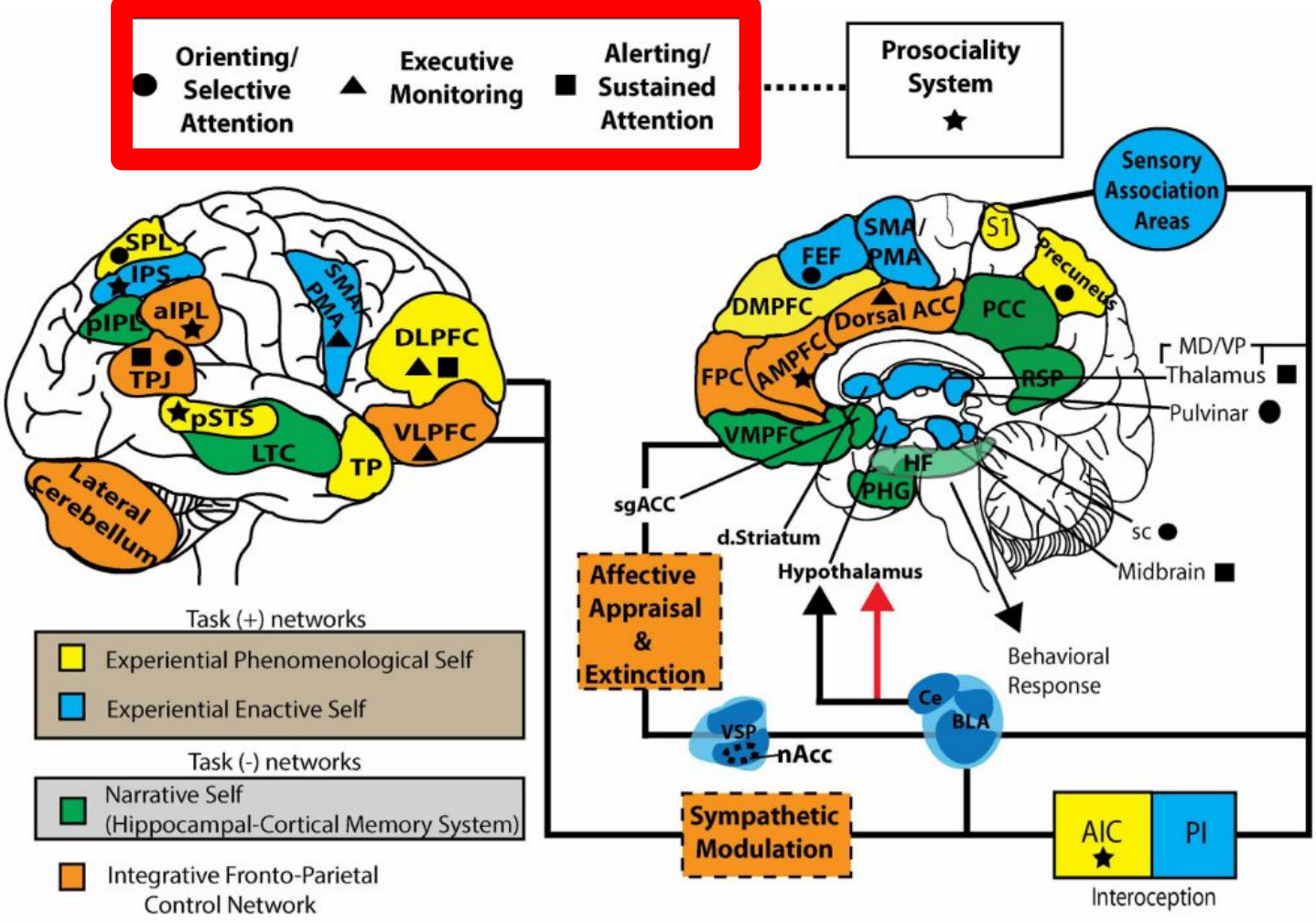
Neural basis of meditation & mindfulness

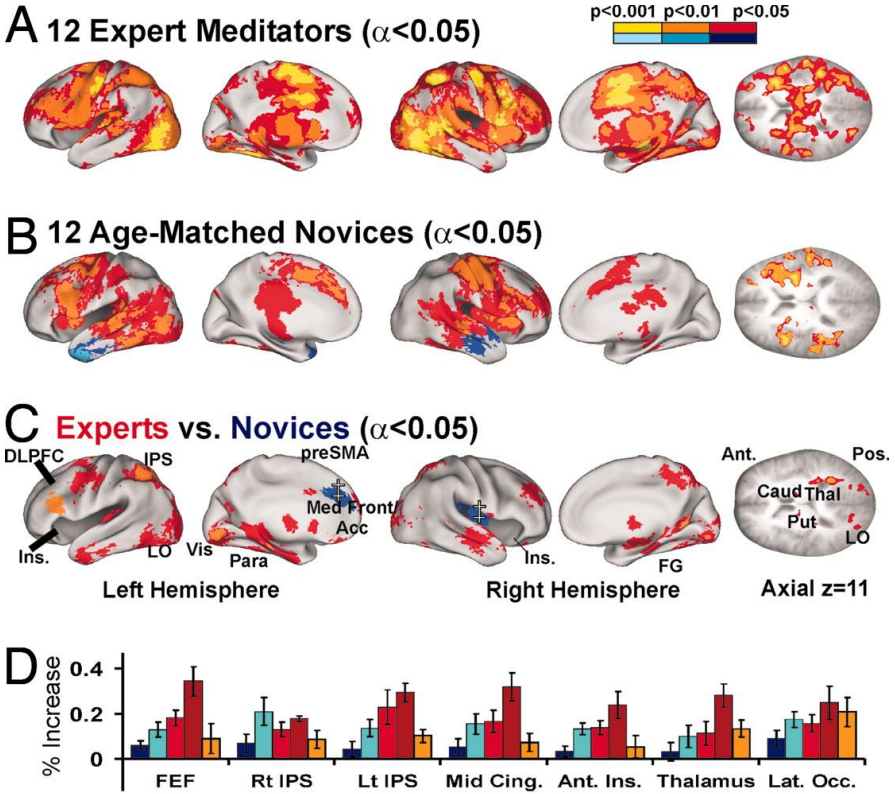
Alterations in:

Circuits underlying attention

Circuits underlying emotion

Circuits underlying self-relevant processing (sub/conscious)





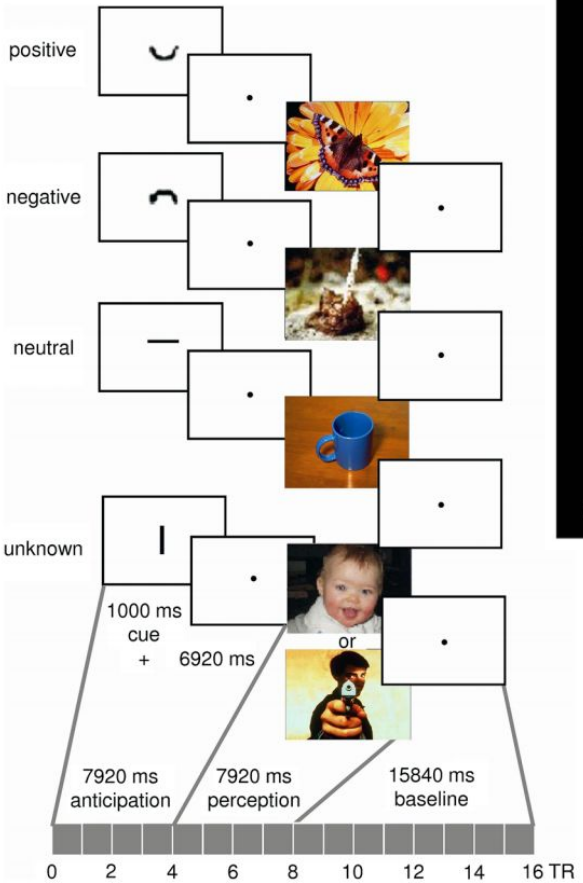
Brefczynski-Lewis, Lutz, Schaefer, Levinson, & Davidson, R. J. (2007).

FA (focused attention) task:

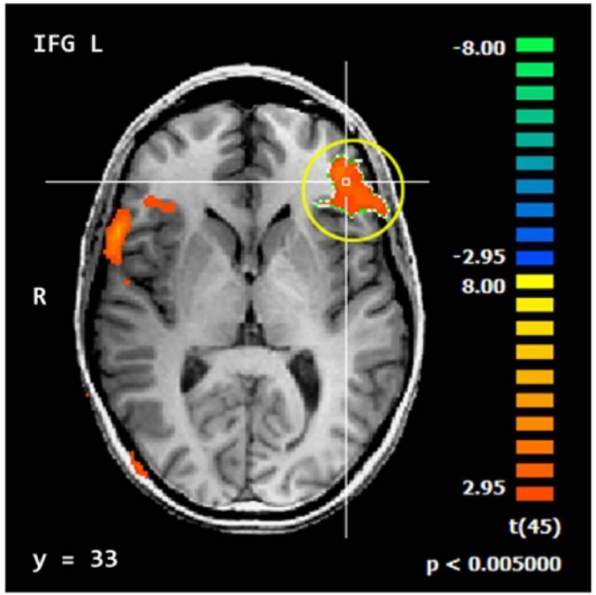
- Focus on a specific object
- Then, specific resting state

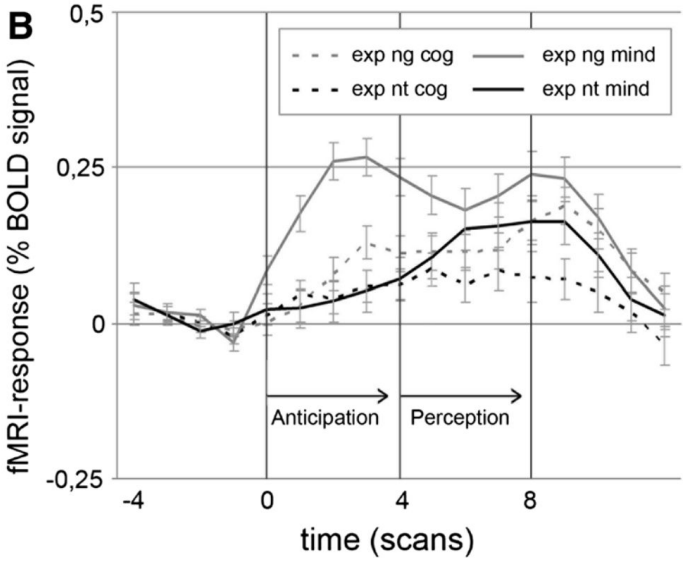
Shown:
Activational differences between meditation (FA) block and resting state block

FEF:	frontal eye field
Rt IPS:	right interparietal sulcus
Lt IPS:	left interparietal sulcus
Mid Cing.:	midcingulate cortex
Ant. Ins:	anterior insula
Lat. Occ.:	lateral occipital



Opialla et al. (2014)





Between mindfulness training and control cog. Training:

- DLPFC activation: mind > cog
- VLPFC activation: mind > cog
- SMG activation: mind > cog

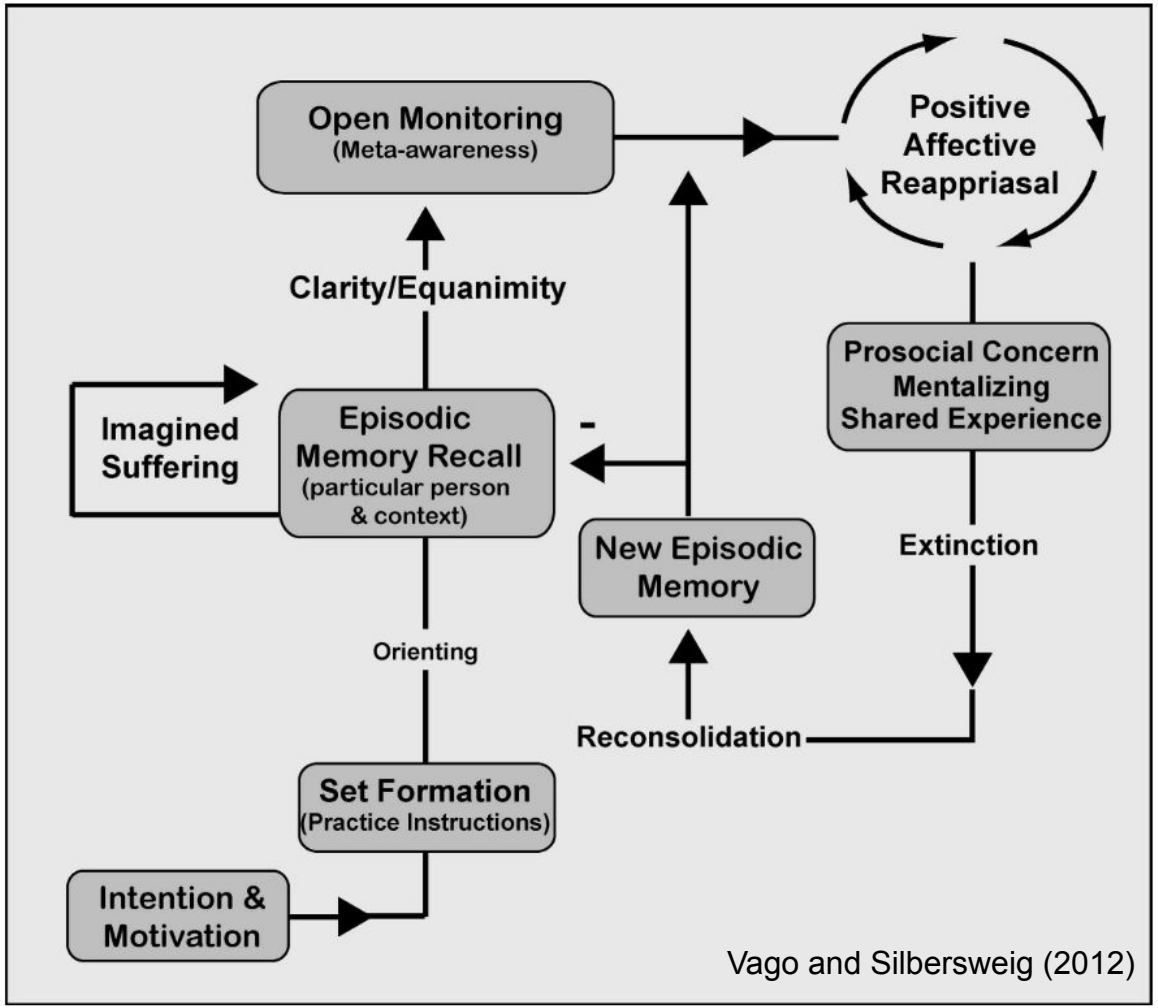
Interpretation:
Increased neural resources are required for beginning mindful regulation of emotional information.

Self-regulatory processing
Main behavior of focus:
Fear conditioning & extinction

Basic theory:

Mindful awareness of strong, negative emotions.
↓↓↓
Reappraise the memory.
↓↓↓
Regard the memory with **prosocial/empathetic** attitude;

Extinguish and re-consolidate negative emotions into adaptive or positive memories



If there’s an effect on healthy persons, what is the effect on persons suffering from mental illness?

What do we need to know about meditation as a treatment?

Using language of psychiatry/psychology:

- Dose dependent curves
- Target populations, specific outcomes
- Course of treatment
- Predictors of “success”

Cognitively- Based Compassion Training

CBCT Compassion Training
EMORY UNIVERSITY

Compassion meditation protocol, designed by Geshe Lobsang Tenzin Negi, PhD

Secular in presentation, but derived from Tibetan Buddhist mind-training (*lojong,* Tib: བློ་སྦྱོང་) and 'giving and taking' meditations (*tonglen,* Tib: གཏོང་ལེན་)

Underlying assumption:

Compassion and empathy are traits that can be developed and expanded.

CBCT vs. Mindfulness training

Emphasis:

- not on development and maintenance of a non-judgmental stance towards thought processes and emotional reactions

Focus:

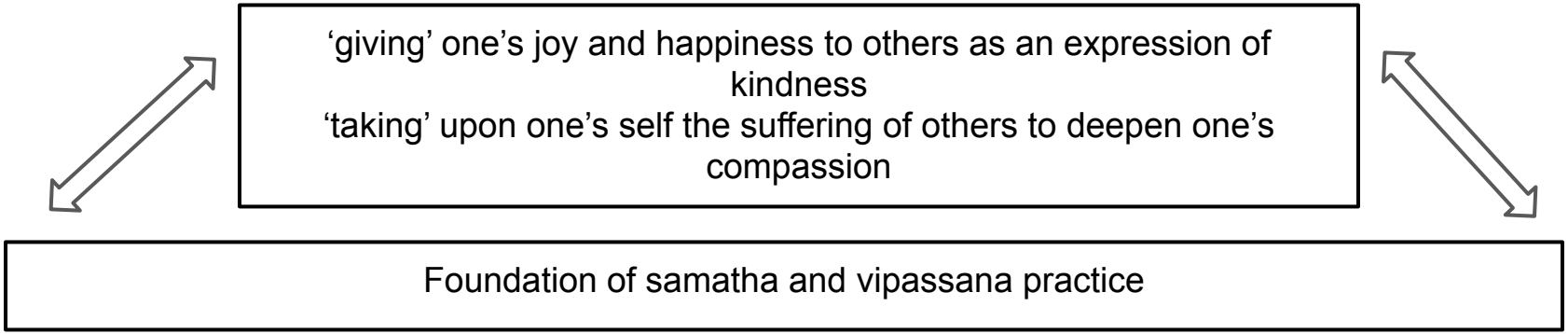
- applying a cognitive, analytic approach to challenge one's unexamined thoughts and emotions towards other people, with the long-term goal of developing altruistic emotions and behavior toward all people

Mascaro, Darcher, Negi, & Raison (2015)

CBCT as a practice

Main elements and goals:

1. Examination of one's commonsense notions of how to categorize other people -- friend, enemy, stranger, ect.
2. Development of spontaneous feelings of empathy and love toward an ever-expanding circle of people, beginning with oneself



1: Developing attention and stability of mind

2: Cultivating insight into the nature of mental experience

3: Cultivating self-compassion

4: Developing equanimity

5: Developing appreciation and gratitude for others

6: Developing affection and empathy

7: Realizing wishing and aspirational compassion

8: Realizing active compassion for others

CBCT®
Compassion Training

EMORY UNIVERSITY

CBCT training:
Sequence of 10 classes:
1.5 hr per week, for 10 weeks
Didactic teaching + meditations

+ guided audio recordings for at-home practice

Post-traumatic stress disorder (PTSD) in veterans: pilot and refined secondary study

CBCT Compassion Training

EMORY UNIVERSITY

PTSD: mental health disorder triggered by a major and terrifying event

- Returning veterans frequently report between 5 - 20 lifetime traumatic events (combat experiences, assault, sexual trauma)
- Despite existing treatments, veterans have a higher prevalence of certain negative symptoms from PTSD
  - Emotional numbing
  - Isolation and social disconnection
  - Difficulty reintegrating into civilian life

Lang, Malaktaris, Casmar, Baca, Golshan, Harrison, & Negi (2012)

Evans, Mascaro, Kohn, Dobrusin, Darcher et al. (2019)

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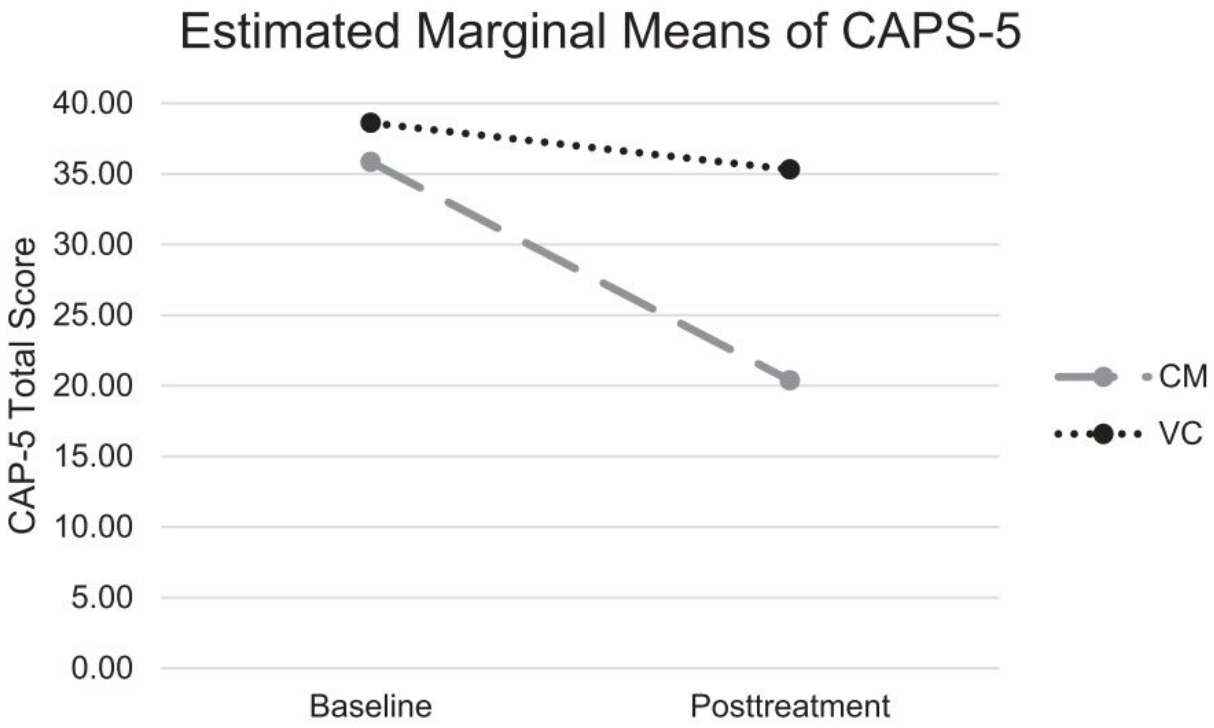

Figure 2. Mean total scores on the Clinician-Administered PTSD Scale for *DSM-5* (CAPS-5) at baseline and posttreatment in the two treatment conditions. CM = compassion mediation; VC = Veteran.calm (relaxation control).

CM: CBCT

Veteran.calm (VC):

- Psychoeducation on PTSD
- Analytic reasons for relaxation
- Relaxation training
- Sleep hygiene

Lang, Malaktaris, Casmar, Baca, Golshan, Harrison, & Negi (2012)

Evans, Mascaro, Kohn, Dobrusin, Darcher et al. (2019)

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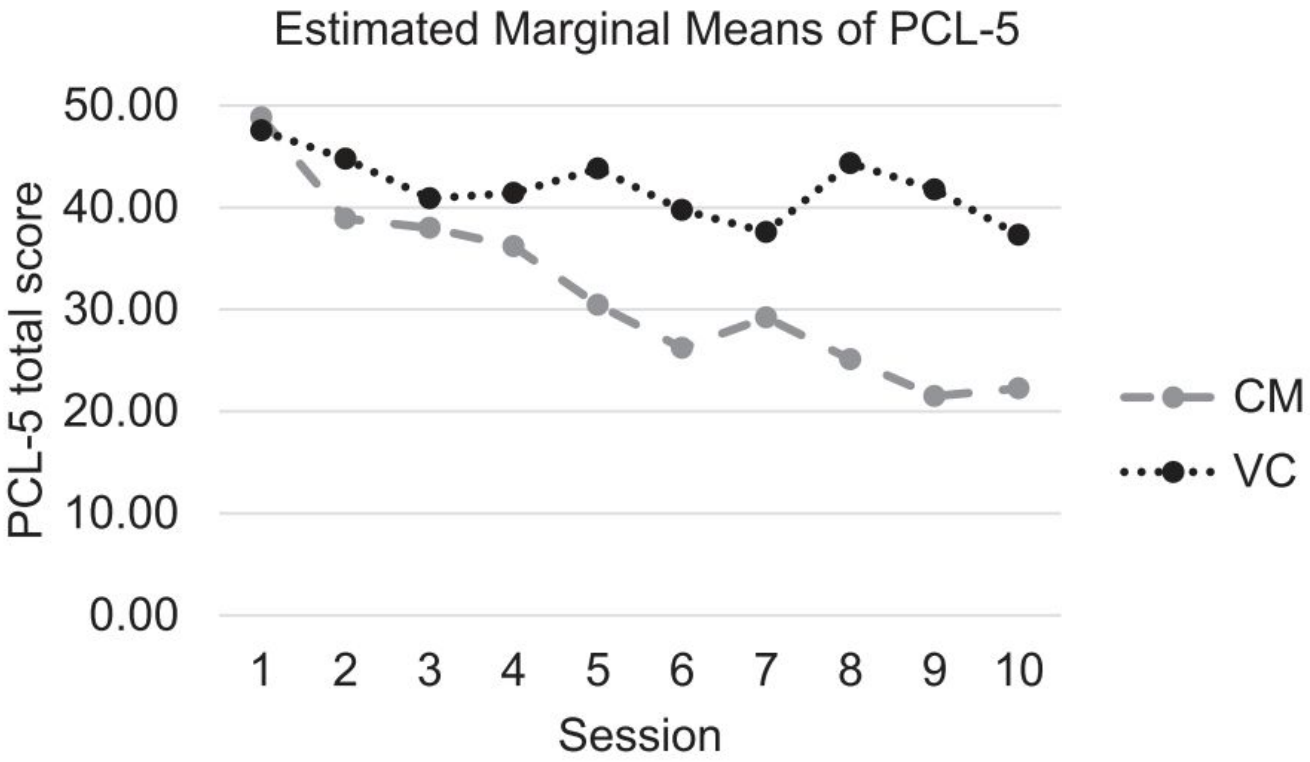
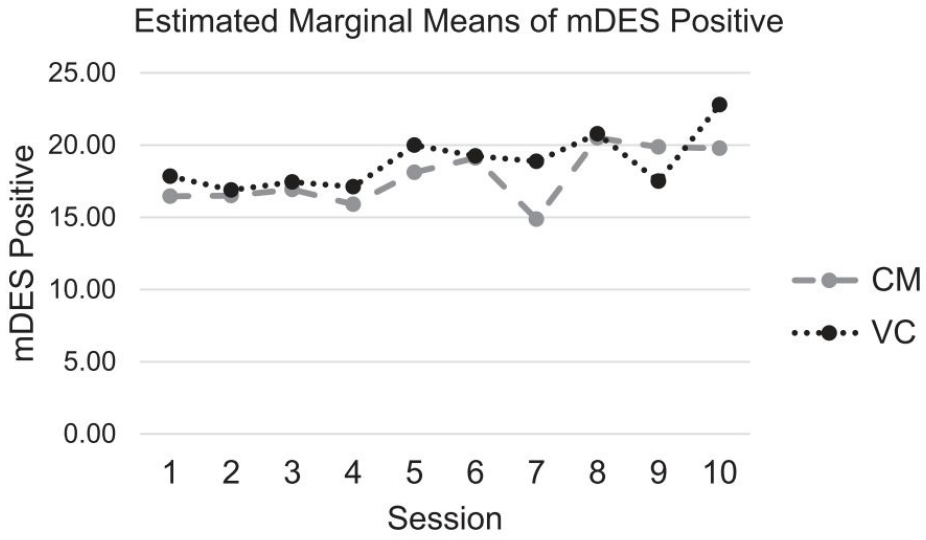


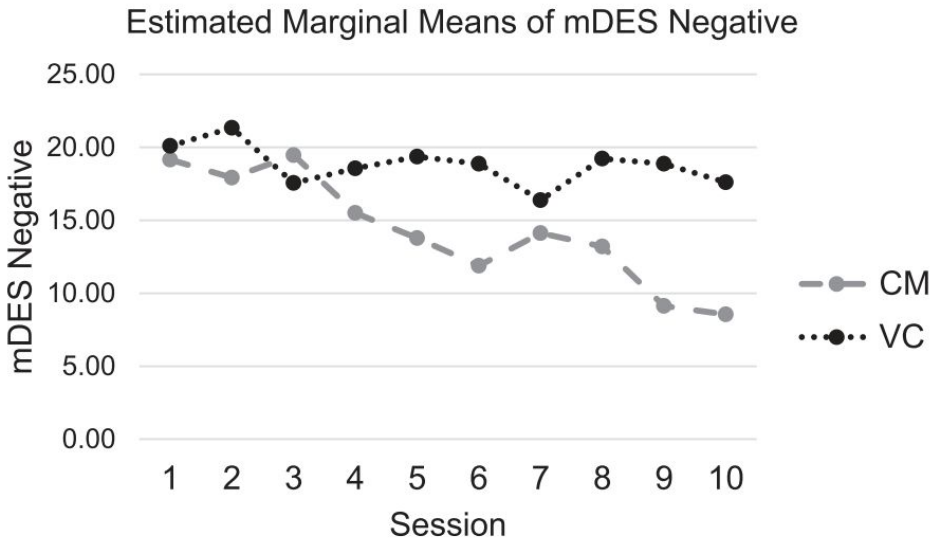
PCL-5: Posttraumatic Stress Checklist for DSM-5

Sample item:
In the past month, how much were you been bothered by: "Repeated, disturbing, and unwanted memories of the stressful experience?"

Response: 5-point Likert (0 = "Not at all" to 4 = "Extremely")

Lang, Malaktaris, Casmar, Baca, Golshan, Harrison, & Negi (2012)





Average weekly scores on Differential Emotion Scale (DES)

DES:

- Divides individual's emotion experience into discrete categories
- Designed to reflect emotional state at the specific time point the instrument is given

Lang, Malaktaris, Casmar, Baca, Golshan, Harrison, & Negi (2012)

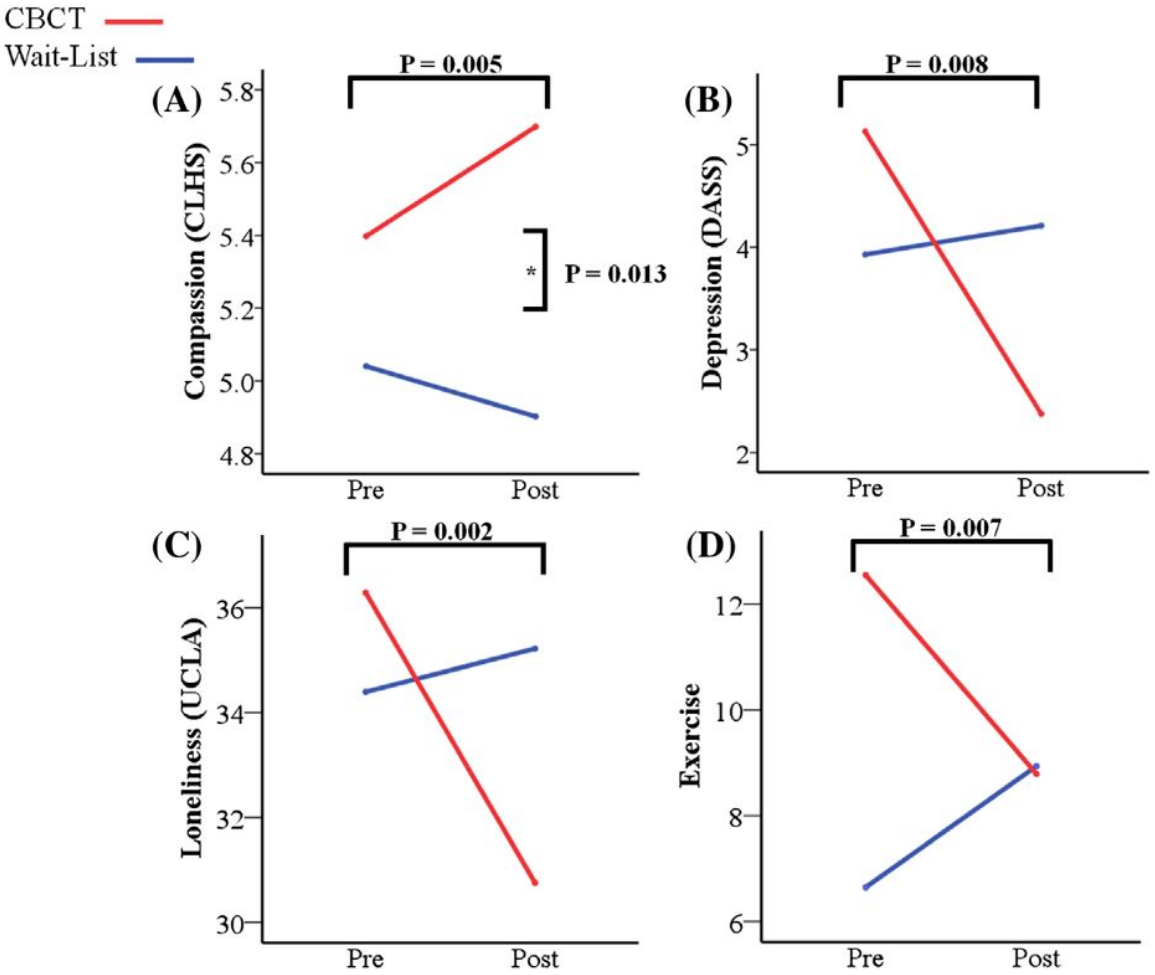
Medical students: pilot study

Medical students experience higher rates of mental health distress (Dyrbye, Thomas, & Shanafelt, 2006)

- Depression, anxiety, burn-out, suicide (Dyrbye et al., 2010)

Major depression is associated with empathy impairment (Cusi, MacQueen, Spreng, & McKinnon, 2011; Derntl, Seidel, Schneider, & Habel, 2012; Schreiter, Pijnenborg, & Aan Het Rot, 2013)

Part of potential curriculum, with the goal of intervening in the second year (when studies start getting esp. stressful) to prevent the dissolution and encourage the development of empathic treatment of patients



CBCT Compassion Training

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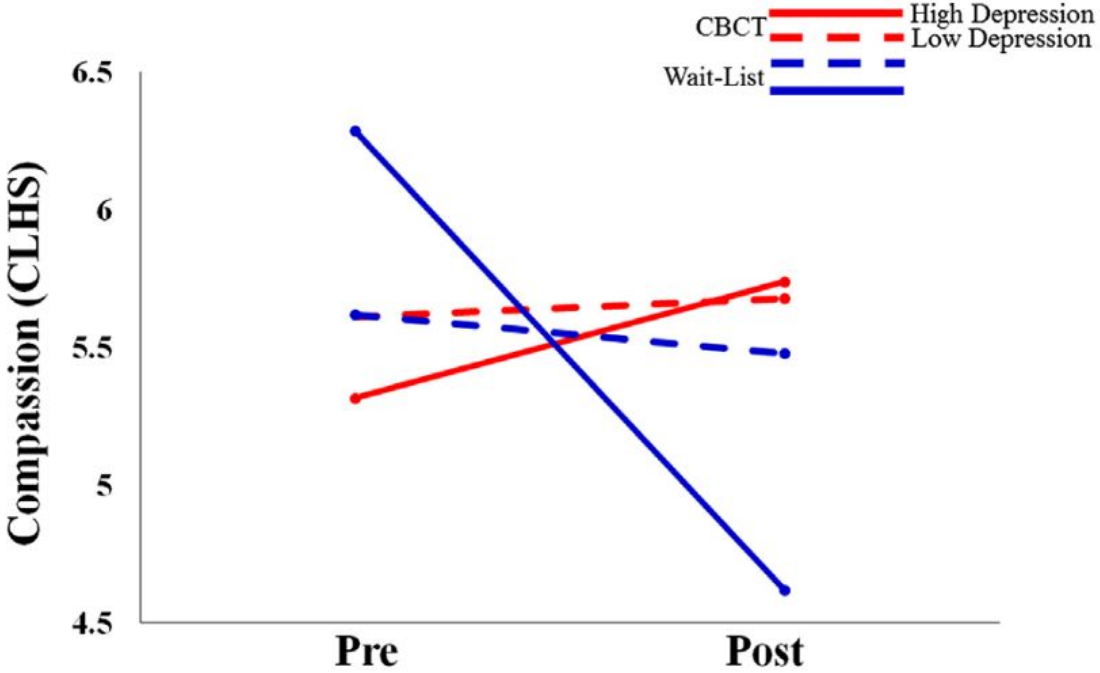
Major points:

CBCT vs. wait-list overall reported decreases in negative affect

Mascaro, J. S., Kelley, S., Darcher, A., Negi, L. T., Worthman, C., Miller, A., & Raison, C. (2018).



Major points:

CBCT vs. wait-list overall reported decreases in negative affect

CBCT most effective for those self-reporting high levels of depression at enrollment

Mascaro, J. S., Kelley, S., Darcher, A., Negi, L. T., Worthman, C., Miller, A., & Raison, C. (2018).

Current work:
Workplace stress and anxiety

EMORY UNIVERSITY

HEADSPACE®

Participants: Call-center employees for Emory U. Hospital

- Very high stress environment
- Currently, no at-work stress intervention

Idea:

- Headspace app as means of self-administering meditation
  - How do people interact with the application?
  - What are the effects on daily well-being and long-term biomarkers of stress?

Measures:

- Time per week and impact of mediation style
- Saliva cortisol measurements & psychometric assays (DASS, UCLA, ect.)

Take-aways

Meditation and mindfulness are not a panacea

- Not a cure-all, but possibly a “cure”

Benefits of meditation and mindfulness depend on interaction with the practice

- Interest in meditation and integration into daily life
- “Starting” mental health

Contemplative studies and science of meditation is still in its infancy

- Theoretical framework for guiding research is novel (2012 onwards)
- Still establishing basic neurobiological correlates of practice

Additional resources

https://www.mindandlife.org/

https://centerhealthyminds.org/

https://tibet.emory.edu/emory-tibet-science-initiative/

བཀྲ་ཤིས་བདེ་ལེགས།
(tujay-chay)

Thanks!