The Secrets of Meditation's Benefits

Mindfulness in Biz 2025

Learning goals

- What is meditation and mindfulness, and how does it improve health?
- Scientific findings:
  - Behavioral outcomes
  - Brain functioning
- Direct experience: Learn meditation
  - Attention – focused attention to the breath
  - Emotions – mindful awareness of emotions
  - Social functioning – compassion / loving kindness

Background

- In recent decades, meditation and mindfulness have become more conventional. People are spending time working with their minds, following their breath and learning to appreciate the power of the present moment;
- Recent scientific evidence confirms that meditation and mindfulness nurtures the parts of brain that contribute to well-being. Furthermore, it seems that a regular practice deprives the stress and anxiety-related parts of the brain of their nourishment.

What is meditation

Meditation has roots in the contemplative practices of nearly every major religion. The prevalence of meditation in the media has given the word various meanings. We will refer to meditation as the **cultivation of basic human qualities**, such as a more stable and clear mind, emotional balance, a sense of caring mindfulness, even love and compassion—qualities that remain latent as long as one does not make an effort to develop them. It is also a process of familiarization with a more serene and flexible way of being.

What is mindfulness

- An **awareness** arising by purposefully paying attention in the present moment with an attitude of non-reactivity, non-judgment and openness (Kabat-Zinn)
- The **attention** component describes the ability to notice thoughts, emotions and sensations, sustain attention on them and shift attention away from distractions;
- The **attitude** component relates to the quality of attention in mindfulness which can be characterized by non-reactivity, non-judgment and openness.
- Awareness of the present moment and calm acknowledgement of one's thought and feelings

Mindfulness attitudes

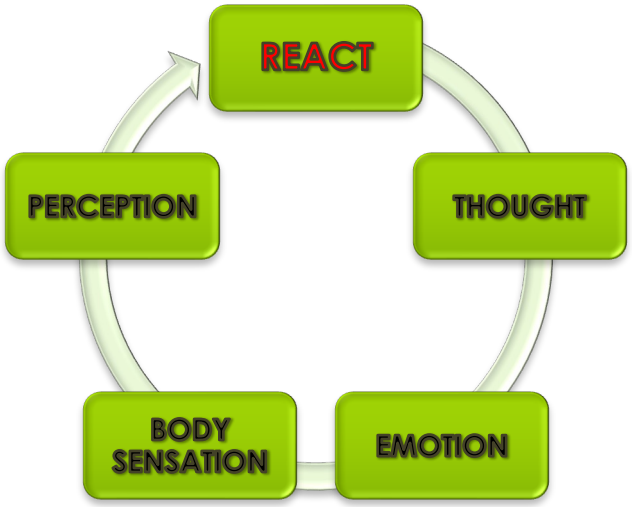
The Seven attitudinal factors (Kabat-Zinn) constitute the major pillars of mindfulness practice are:

- non-judging,
- patience,
- a beginner's mind,
- trust,
- non-striving,
- acceptance, and
- letting go.

How MEDITATION changes the brain, boosting focus and easing stress

Meditation and emotional health

"automatic pilot", habits of suffering



- Clinical studies: Mindfulness-based interventions improve symptoms of depression, anxiety, chronic pain, stress, medical symptoms, general psychological symptoms
- Meditation can
  - Lessen additional layers of suffering in response to emotions/pain
  - Improve emotional understanding to recognize needs
  - Inform adaptive "wise" action

How does meditation and mindfulness improve health?

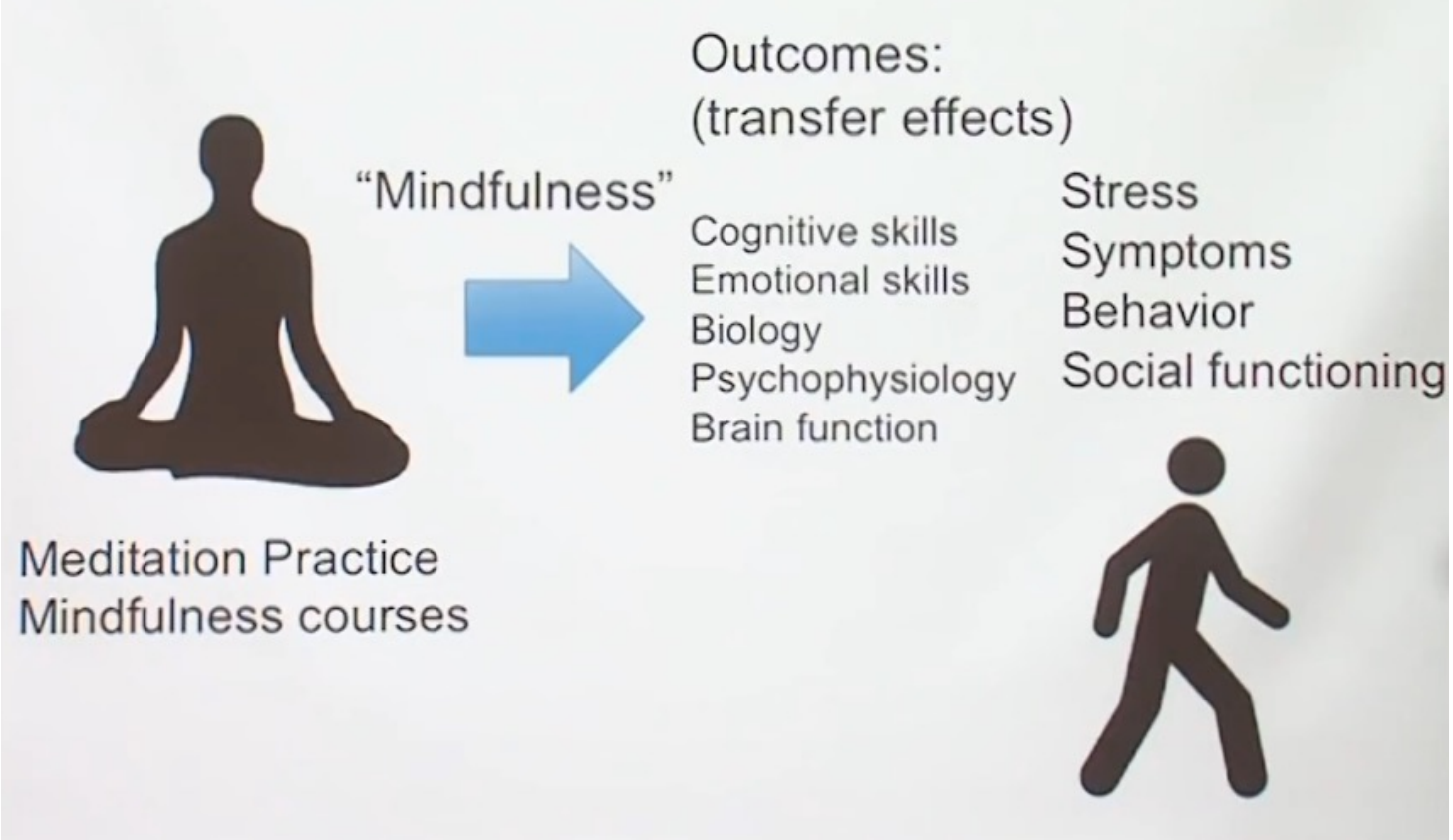
- Attentional skills to recognize internal patterns (habits, "automatic pilot")
- Increasing awareness of internal events to slow down the habits (increasing resolution) and choose new ways of responding ("cycle breakers")
- Can decrease stress (thereby improving the immune system), help people choose healthier behaviors, improve relationships

Focused Attention
This practice typically directs the meditator to concentrate on the in-and-out cycle of breathing. Even for the expert, the mind wanders, and the object of focus must be restored. A brain-scanning study at Emory University has pinpointed distinct brain areas that become involved as attention shifts.

Mindfulness
Also called open-monitoring meditation, mindfulness entails observing sights, sounds and other sensations, including internal bodily sensations and thoughts, without being carried away by them. Expert meditators have diminished activity in anxiety-related areas, such as the insular cortex and the amygdala.

Compassion and Loving Kindness
In this practice, the meditator cultivates a feeling of benevolence directed toward other people, whether friend or enemy. Brain regions that fire up when putting oneself in the place of another—the temporoparietal junction, for instance—show an increase in activity.

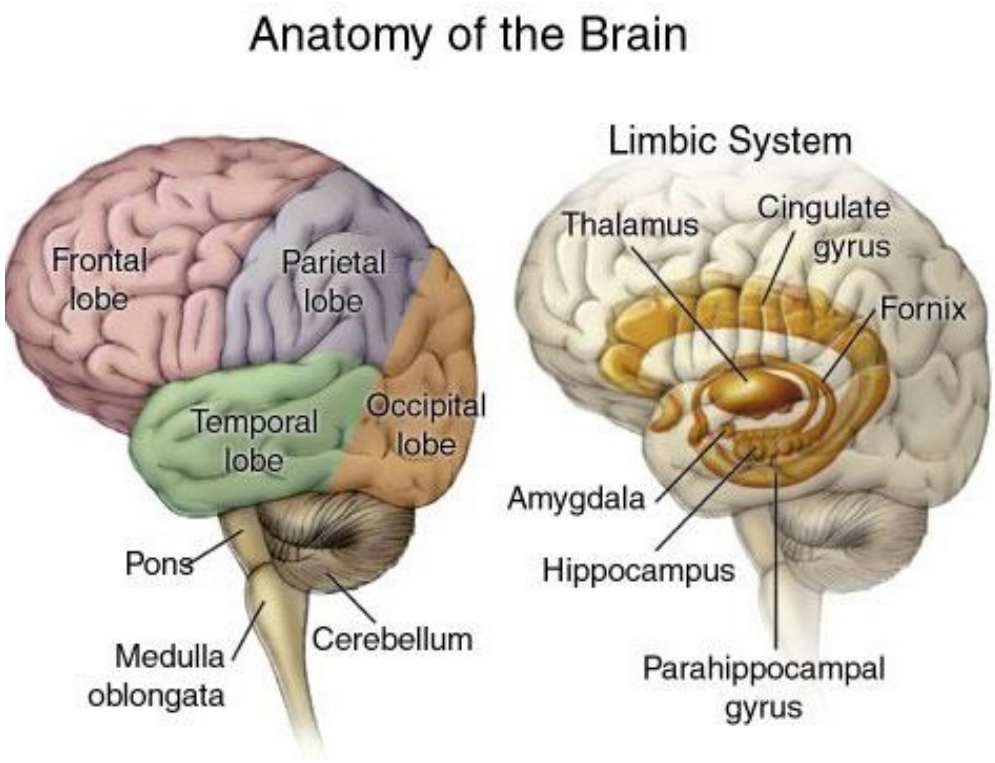
Model: from internal change to external change



Behavioral and neuroplasticity

- Inherent to the philosophy of meditation
  - We have the ability to change the way our minds work and how we act
- Neuroplasticity
  - Our brains are one of the most responsive organs to the environment
  - Our brains (and biology) are not fixed
  - Adults are able to generate new neurons in the hippocampus (Erikkson et al., 1998)
  - Brain changes seen due to motor training (juggling), musical training, cognitive training, now we are seeing with meditation training
- Principles of **neural plasticity of the brain**
  - changes in brain structure and function resulting from repeated practice, and their modulation by meditation resulting beneficial outcomes in health and well-being

What is where in the brain?



Neocortex - Thought (including planning, language, logic and will, awareness)

- Temporo Parietal Junction
  - Empathetic, humane and just

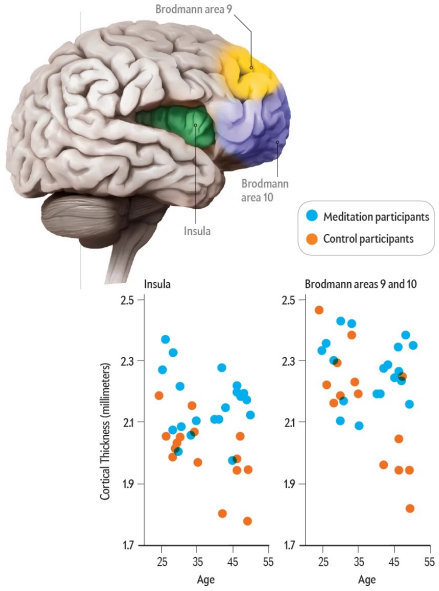
Limbic System – Emotion (feelings, relationship/nurturing, images and dreams, play)

- Left Hippocampus
  - Cognitive ability, memory, emotional regulators
- Posterior Cingulate Cortex (PCC)
  - Wandering thoughts and self-relevance – the degree of subjectivity and referral to oneself when processing info
- Amygdala
  - Feelings of anxiety, fear and general stress

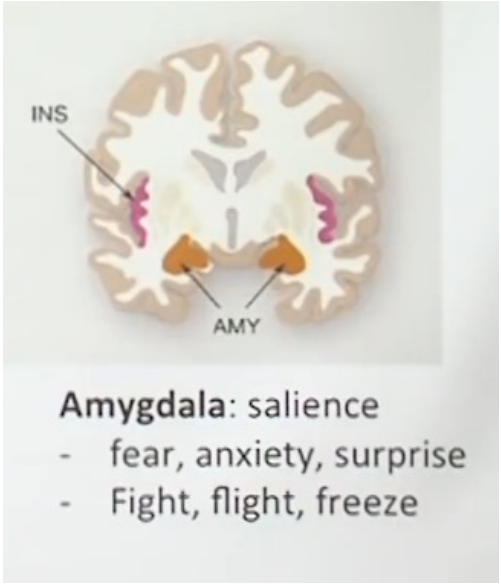
Reptilian Brain – Instinct (survival, breathing/swallowing/heartbeat, startle response)

- Pons
  - Neurotransmitters, sleeping, facial expressions, processing sensory input and basic physical functioning

Effects of meditation on the brain gray matter



- Meditation training may increase insula, Brodmann areas 9 and 10, and amygdala gray matter and decrease stress
- Meditation training may increase amygdala recover to negative events
- This may represents changes in the way the brain responds to threatening stimuli (Schuyler, Weng, Davidson et al., under review)



The main mechanisms underlying changes in the mind and brain resulting from long-term meditation and associated factors

- Temporary (state changes) and lasting effects (trait changes)
- Quantity (more hours of meditation) and quality (relaxation – release of tension in the body and mind, stability – maintaining attention on an object continuously, and clarity – vividness or attention to detail as the opposite of dullness)
- Formal (eg. MBSR courses) and informal practice (embedding meditation in everyday life, such as taking a shower, brushing teeth, washing dishes, walking the dog, engaging in a conversation or answering emails)
- Possible adverse effects on long-term meditation practice, such as sensory hallucinations, paranoid thoughts, anxiety, dissociative experience, visions etc. Physical experience of pain in different parts of the body and respiratory problems, somatic discomfort and pain

Meditation in Practice

- FOCUSED ATTENTION
  - Focused attention to the breath
  - Stabilize attention
  - Aims to tame and center the mind in the present moment while developing the capacity of remain vigilant to distractions
- MINDFULNESS
  - Open-monitoring meditation
  - Awareness and understanding of emotions
  - Aims to cultivate a less emotionally reactive awareness to emotions, thoughts and sensations occurring in the present moment to prevent them from spiraling out of control and creating mental distress
- COMPASSION AND LOVING KINDNESS
  - Cultivating positive relationship with self and others
  - Fosters an altruistic perspective toward others

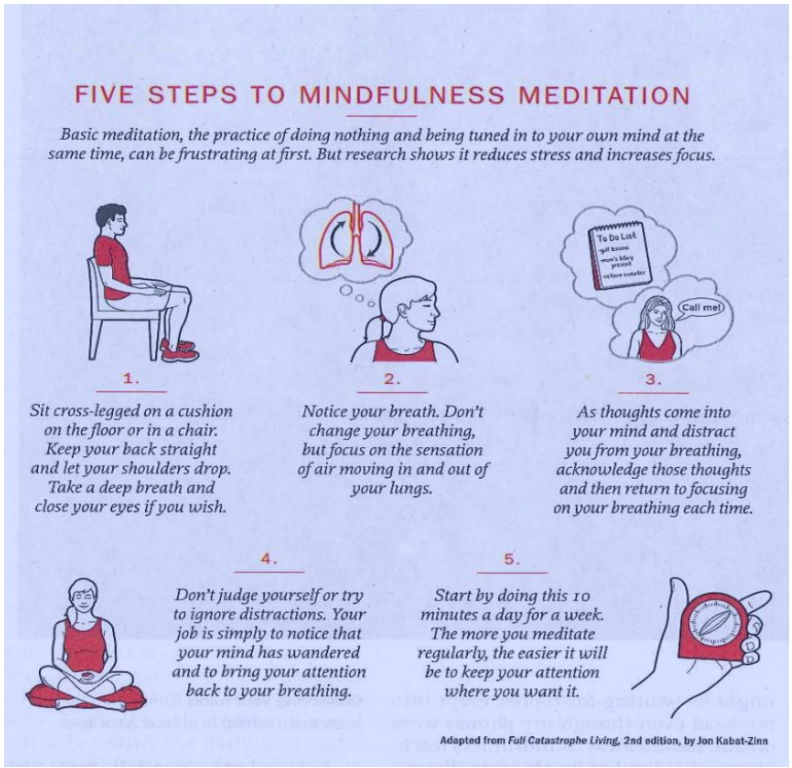
Meditation: Attention

Focused attention to the breath

Stabilize attention

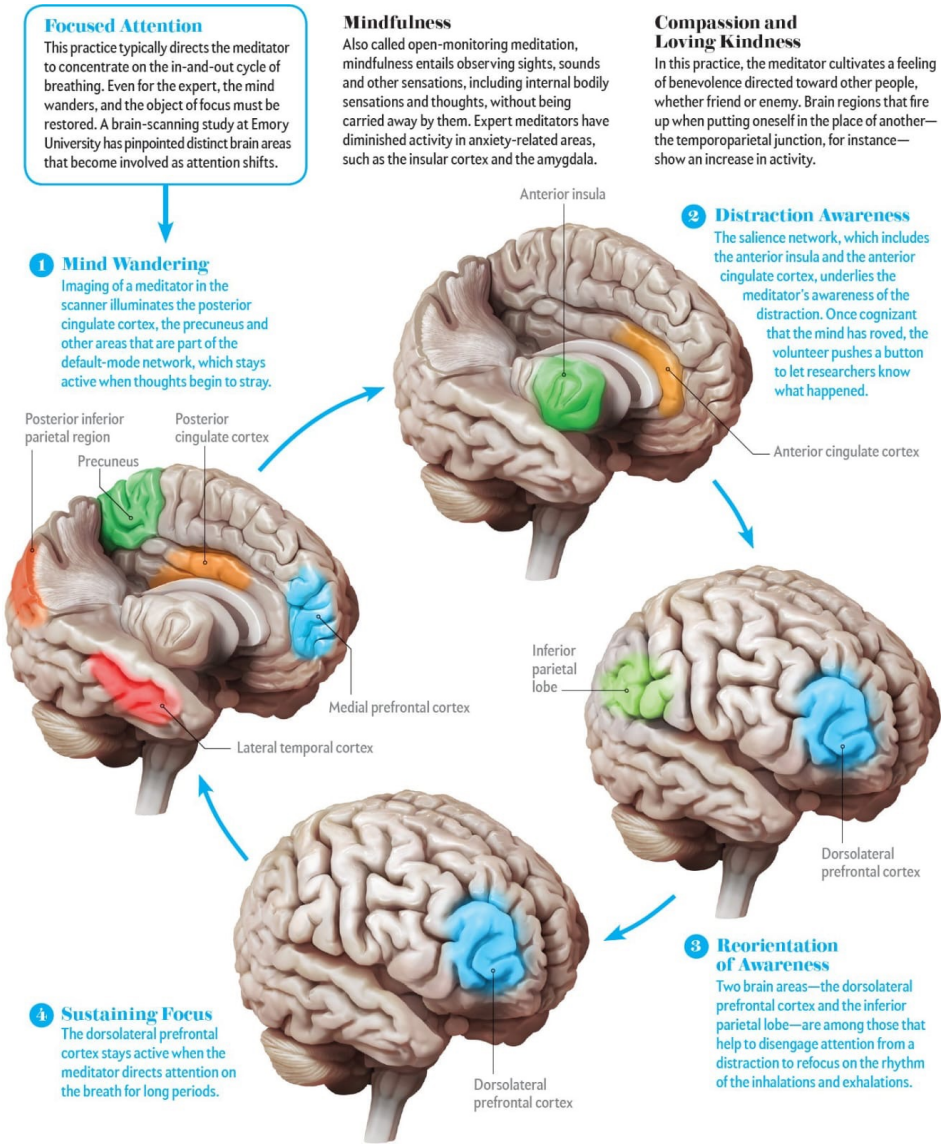
Open awareness

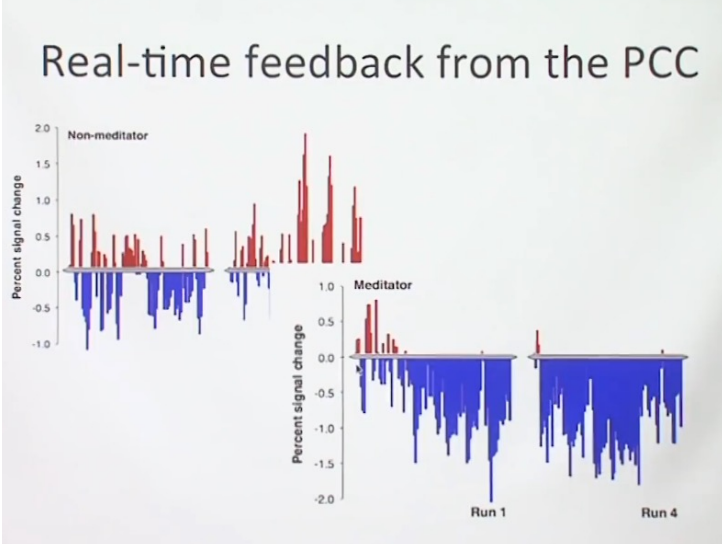
Practice of breath-focus (practiced with an attitude of non-reactivity)



The attention mechanisms involved in mindfulness and meta-awareness training, this model described a cycle of attention processes including sustaining attention on a meditation object, distraction, noticing of distraction and shifting attention back to the meditation object
(Hasenkamp et al., 2012)

Sustained attention to the breath: Training 4 mind states





Sustained attention to the breath: Training 4 mind states

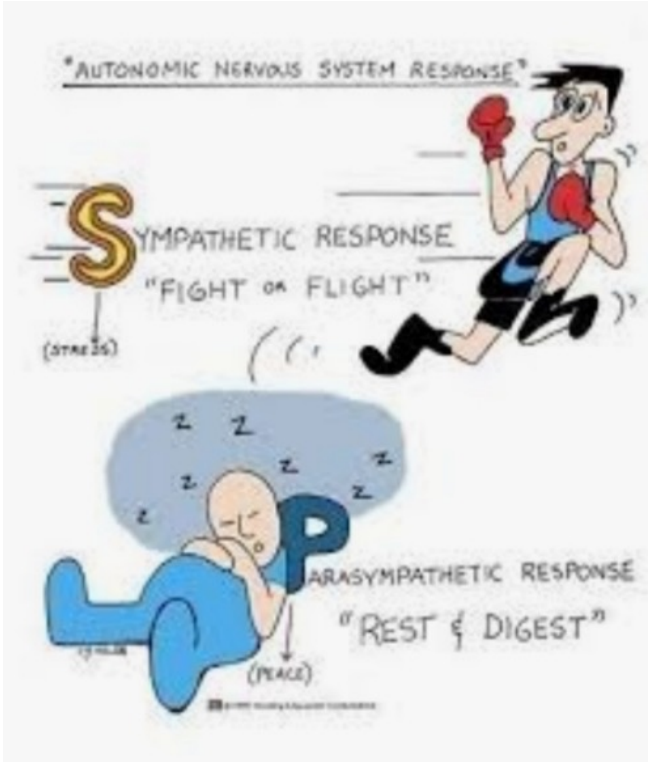
- Focused attention to the breath
  - Enhances activation in networks
    - Attention
    - Body Awareness
  - Decreases activation in networks
    - Mind wandering / Default Mode Network (DMN)*

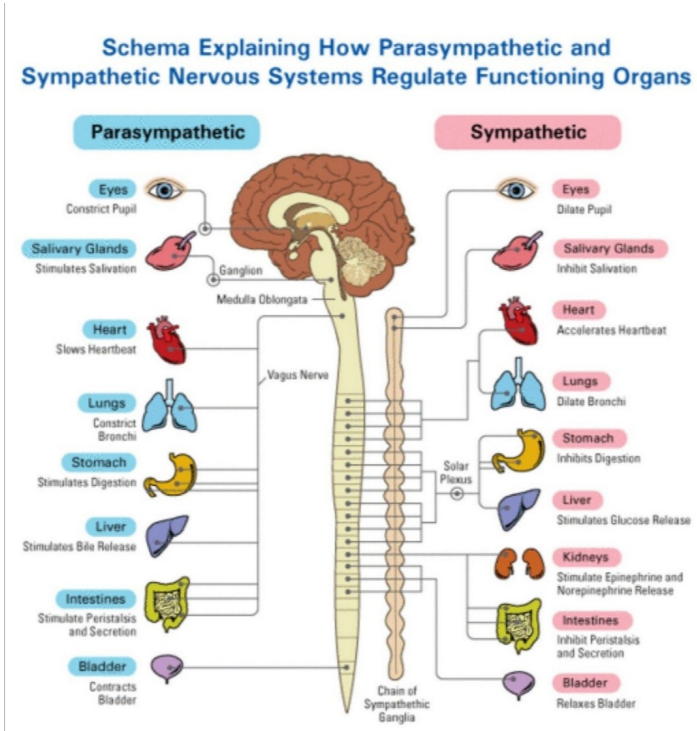
* DMN– a network of brain regions that are active when a person is not focused on a specific task and is engaged in internal thought processes like daydreaming, remembering the past, or planning for the future.

Meditation: Emotions

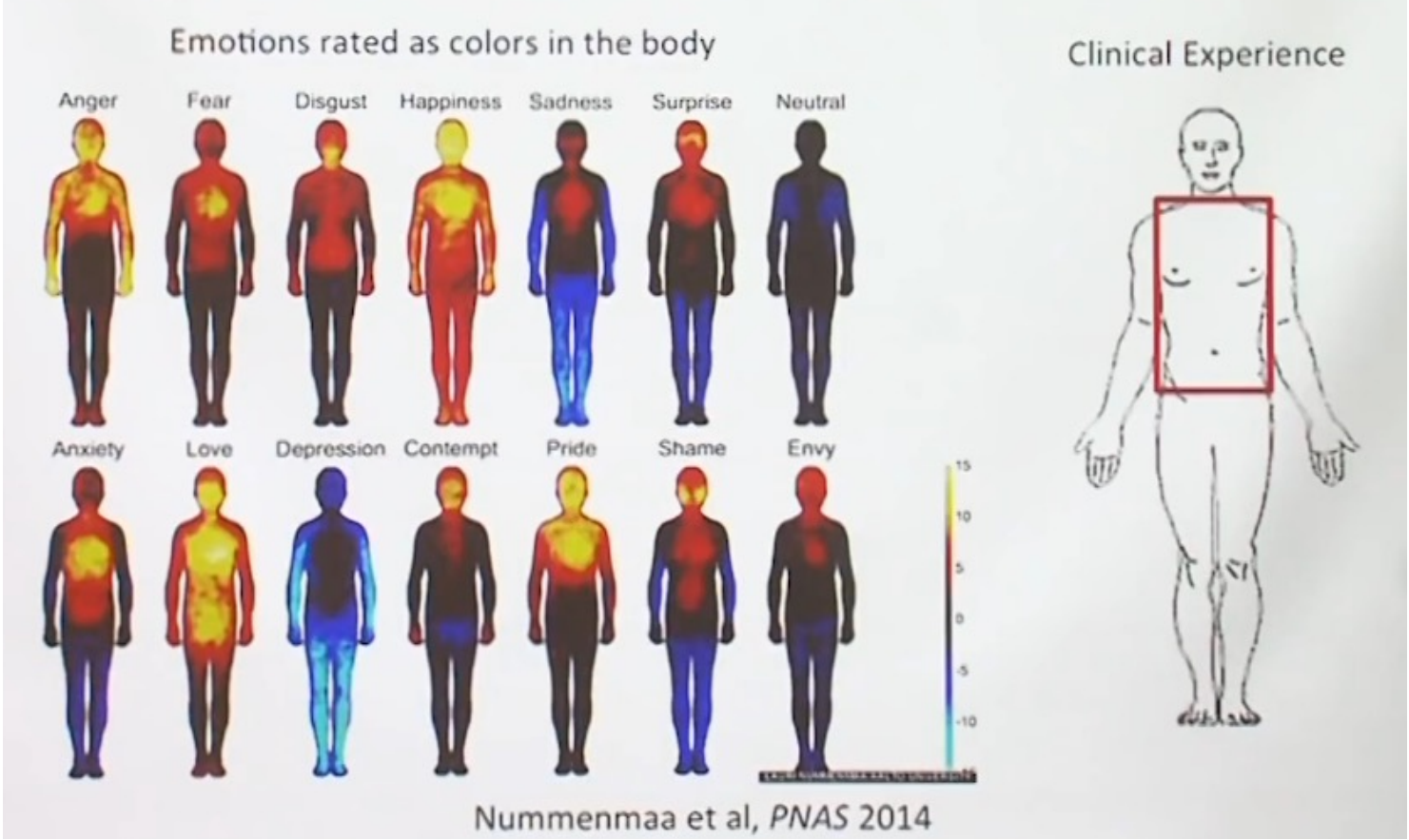
balanced responses to all experiences
accessing emotional knowledge

Emotions are signals about responses to the environment and are instantiated in the body





Emotional awareness through body awareness



Practice of Mindfulness
open-monitoring meditation
awareness and understanding of emotions

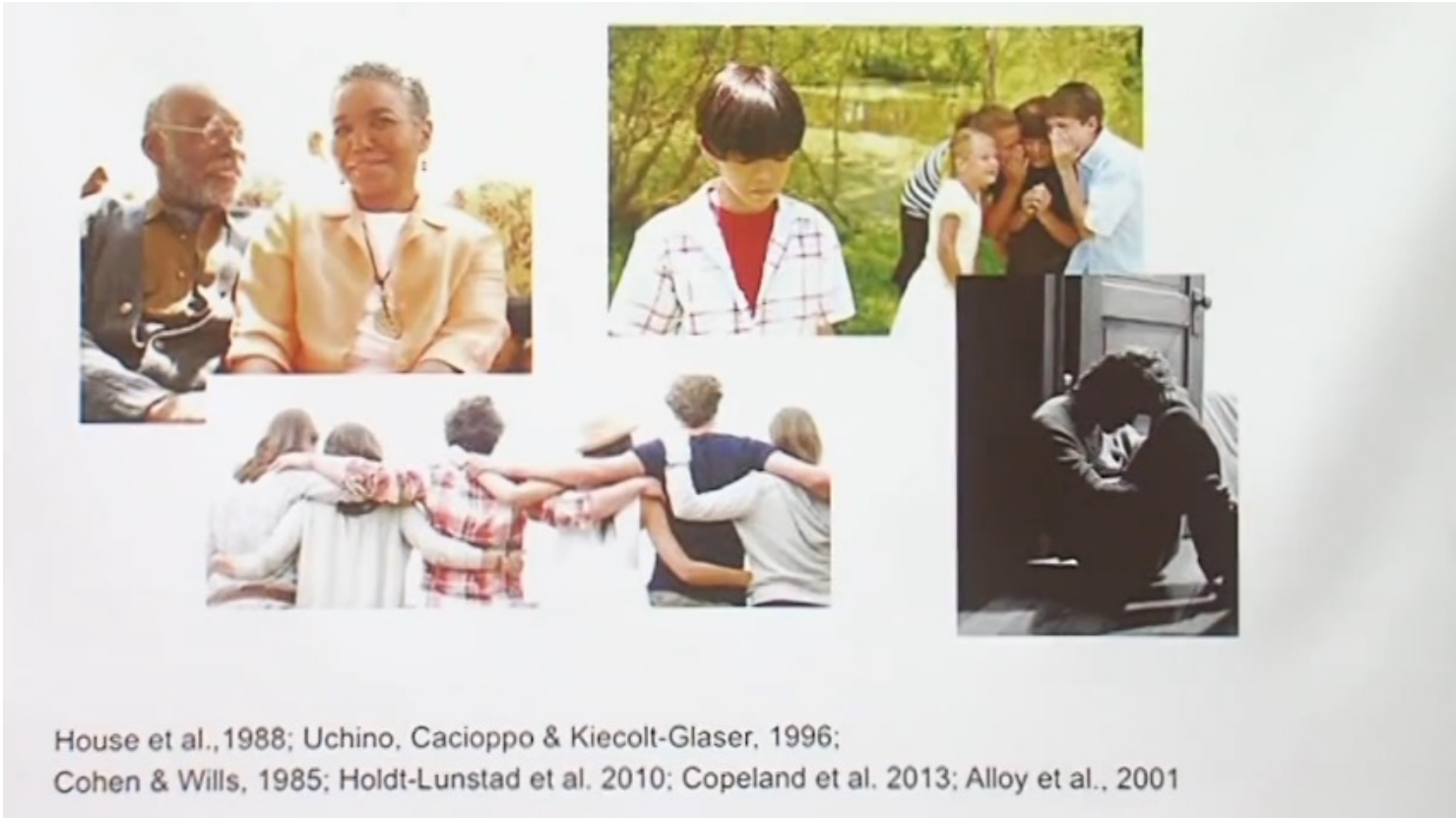
Practice of Mindfulness
awareness of the present moment & calm acknowledgement of one's thoughts & feelings

- Mindfulness, or open-monitoring meditation, requires the meditator to take note of every sight or sound and track internal bodily sensations and inner self-talk.
- The person stays aware of what is happening without becoming overly preoccupied with any single perception or thought, returning to this detached focus each time the mind strays.
- As awareness of what is happening in one's surroundings grows, normal daily irritants become less disruptive, and a sense of psychological well-being develops.

Meditation: Social Functioning

Improve relationship to self and others
Loving kindness – wishing well-being
Compassion – caring for and wishing relief from suffering

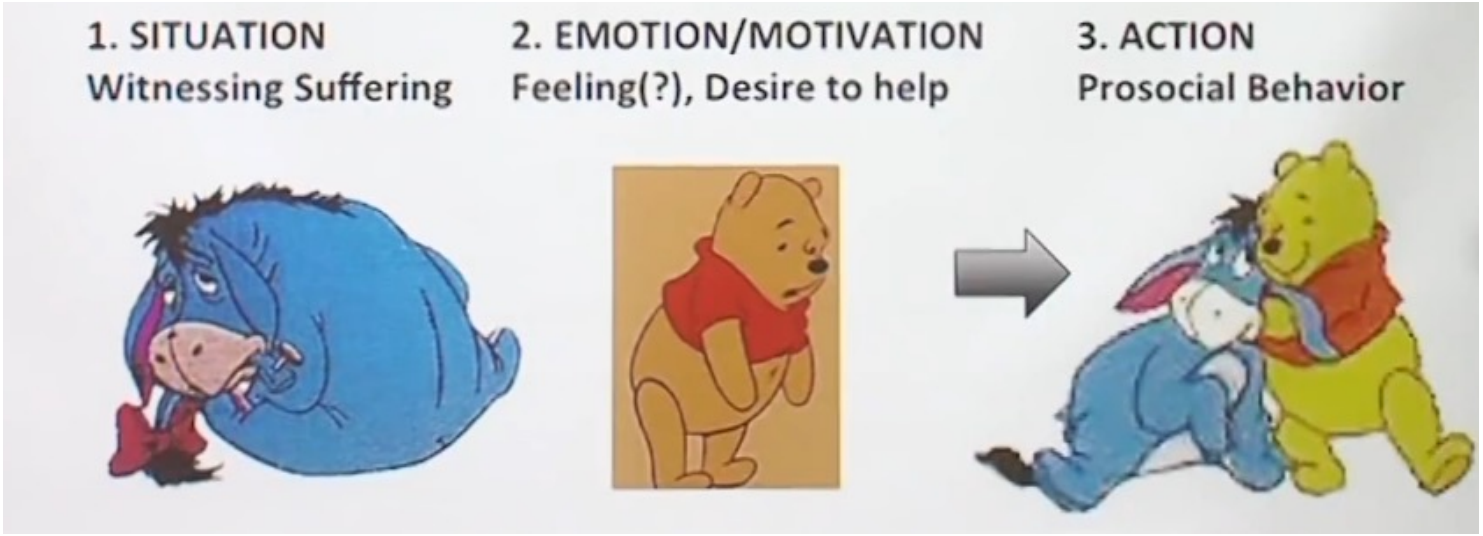
Relationships and Health



House et al.,1988; Uchino, Cacioppo & Kiecolt-Glaser, 1996;
Cohen & Wills, 1985; Holdt-Lunstad et al. 2010; Copeland et al. 2013; Alloy et al., 2001

Compassion: A route to healthier relationships

Compassion is described as "the feeling that arises in witnessing another's suffering and that motivates a subsequent desire to help" (Goetz et al., 2010)



How does compassion meditation impact the brain and helping behavior?

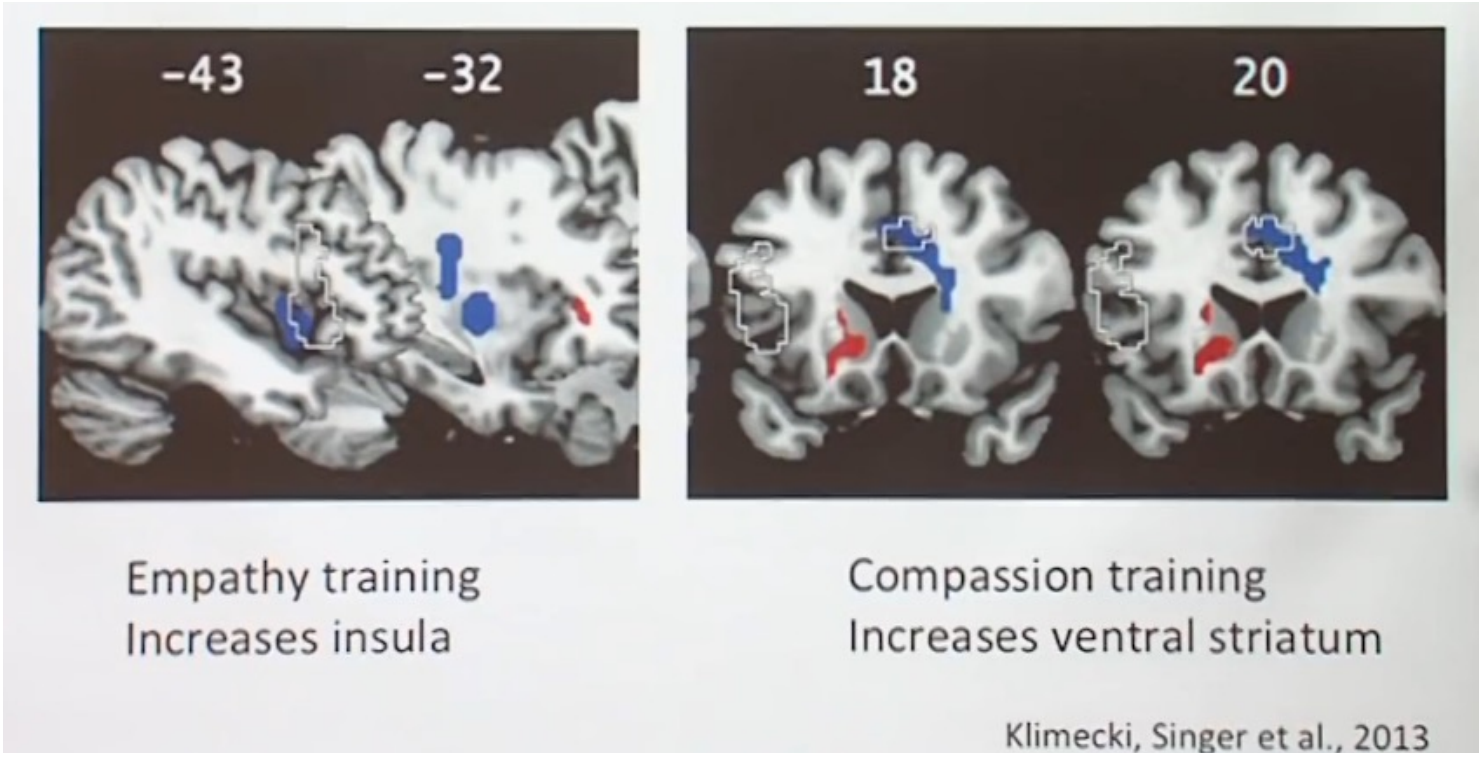
Compassion training will increase

- Empathy – awareness and shared experience of suffering (Singer; Klimecki; Zaki)
- Emotion regulation – ability to regulate both positive and negative emotions to increase pro-social responses (Batson; Eisenberg, Decety)
  - Increase empathic concern
  - Decrease personal distress

Practice of compassion, cultivating positive relationship with self and others

Empathy and Compassion training

Empathy training – resonating with suffering, increases negative emotions
Compassion training – friendliness and caring, increases positive emotions



Take home message

Training our internal mental lives can have positive effects on our minds, health, relationships, and well-being.

Thank you!