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Cultivating mindfulness and compassion following ABI

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Introduction

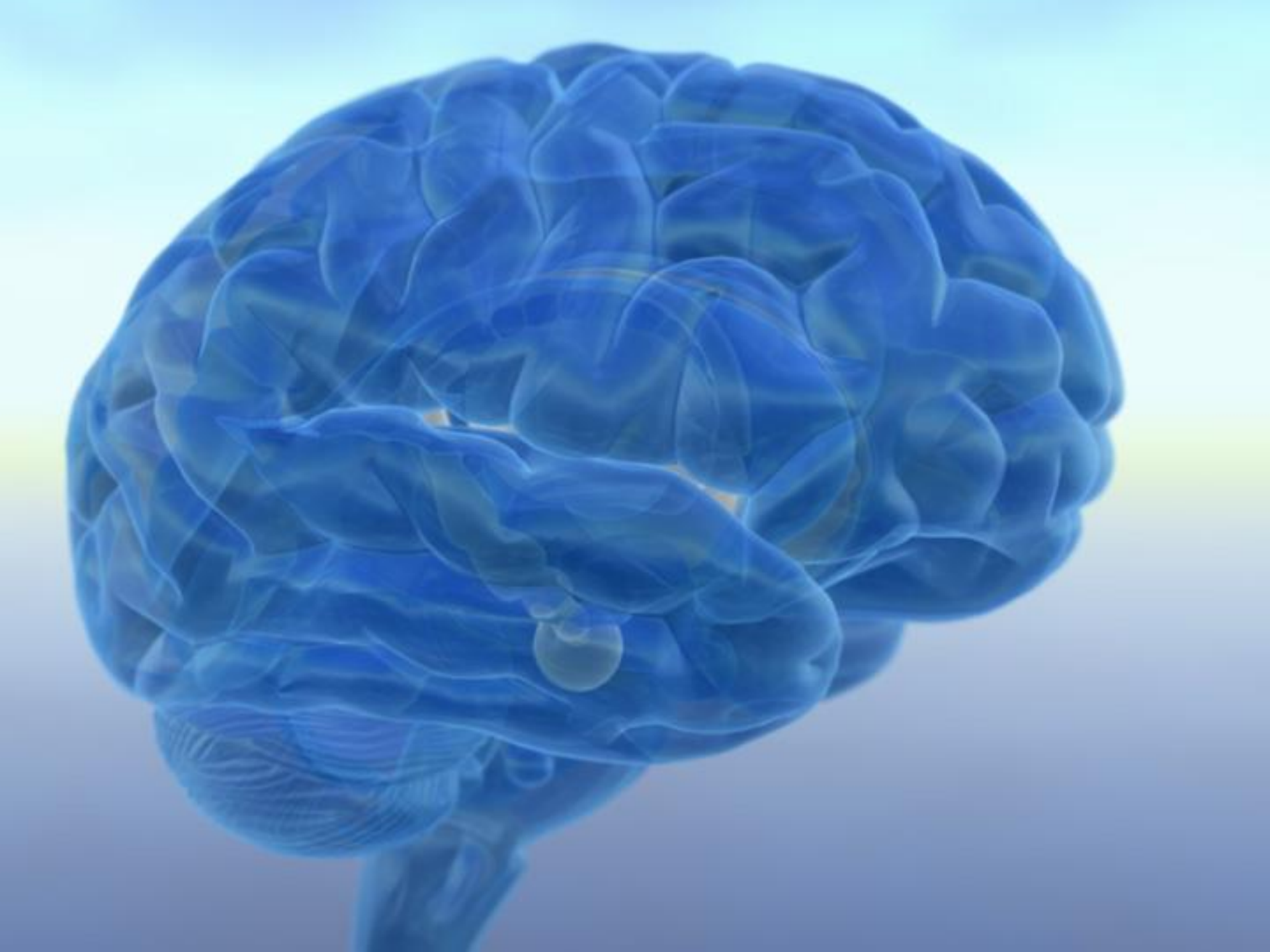
- Clinical Psychologist
- Reader Cognitive Neuroscience at City St. George's University of London

- Neuropsychologist at Addenbrooke's hospital Traumatic Brain Injury clinic
- Neuropsychologist at Chelsea and Westminster memory clinic and hydrocephalus and spina bifida clinic

- Mindfulness meditation teacher
- CBT and EMDR therapist

Overview

- Impact of brain injury
- Coping with cognitive and emotional difficulties
- What is mindfulness?



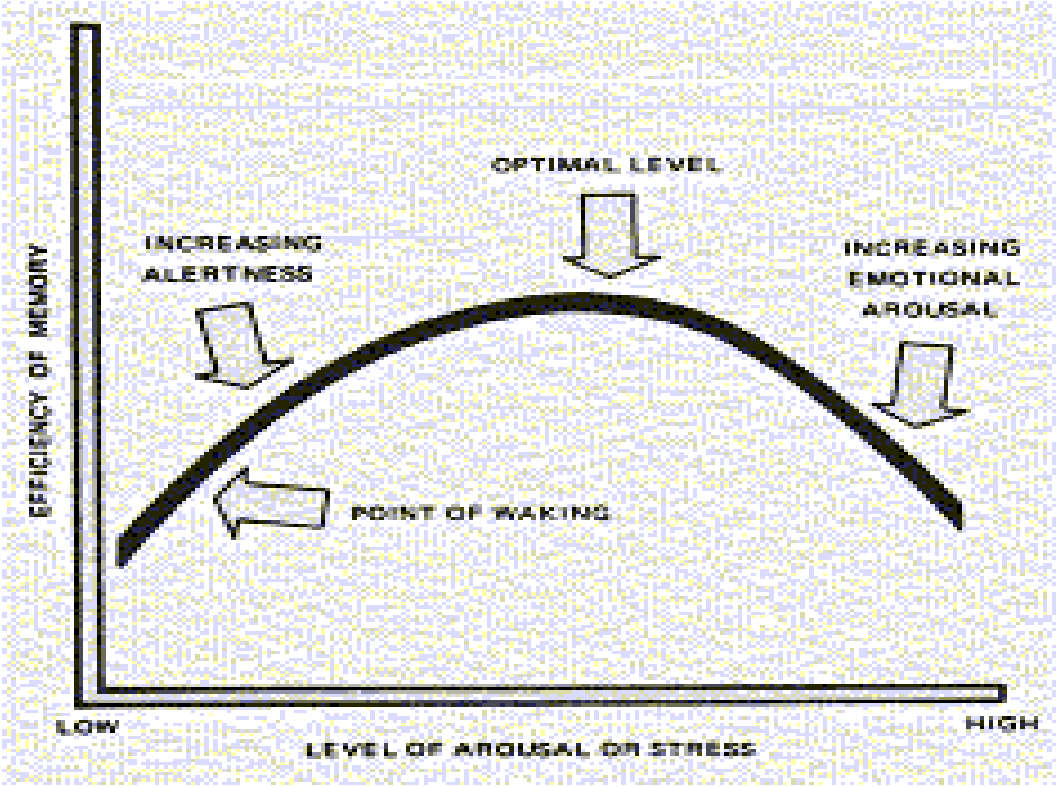
Impact of brain injuries

- Depends on type of injury, location of injury and severity
- Varies from person to person
- Can lead to a range of cognitive and emotional difficulties that can impact on everyday functioning
- Hidden difficulties that are poorly understood: including fatigue, difficulty concentrating, changes in mood, emotion dysregulation, changes in personality, word-finding difficulties, memory and attentional difficulties
- Recovery can be gradual and frustrating

Managing emotional difficulties

- Impact of stress, anxiety, irritability, rumination and low mood
- Impact of fatigue, insomnia, pain and/or discomfort
- Increased cognitive load
- Can impact on concentration, attention, memory and executive function
- Can impact on relationships and social interaction

Optimum levels of stress



Stress is needed to motivate us into action

However, long-term stress can lead to cognitive overload and physical problems

Cognitive load

Stress response

Acute and chronic response to stress / threat

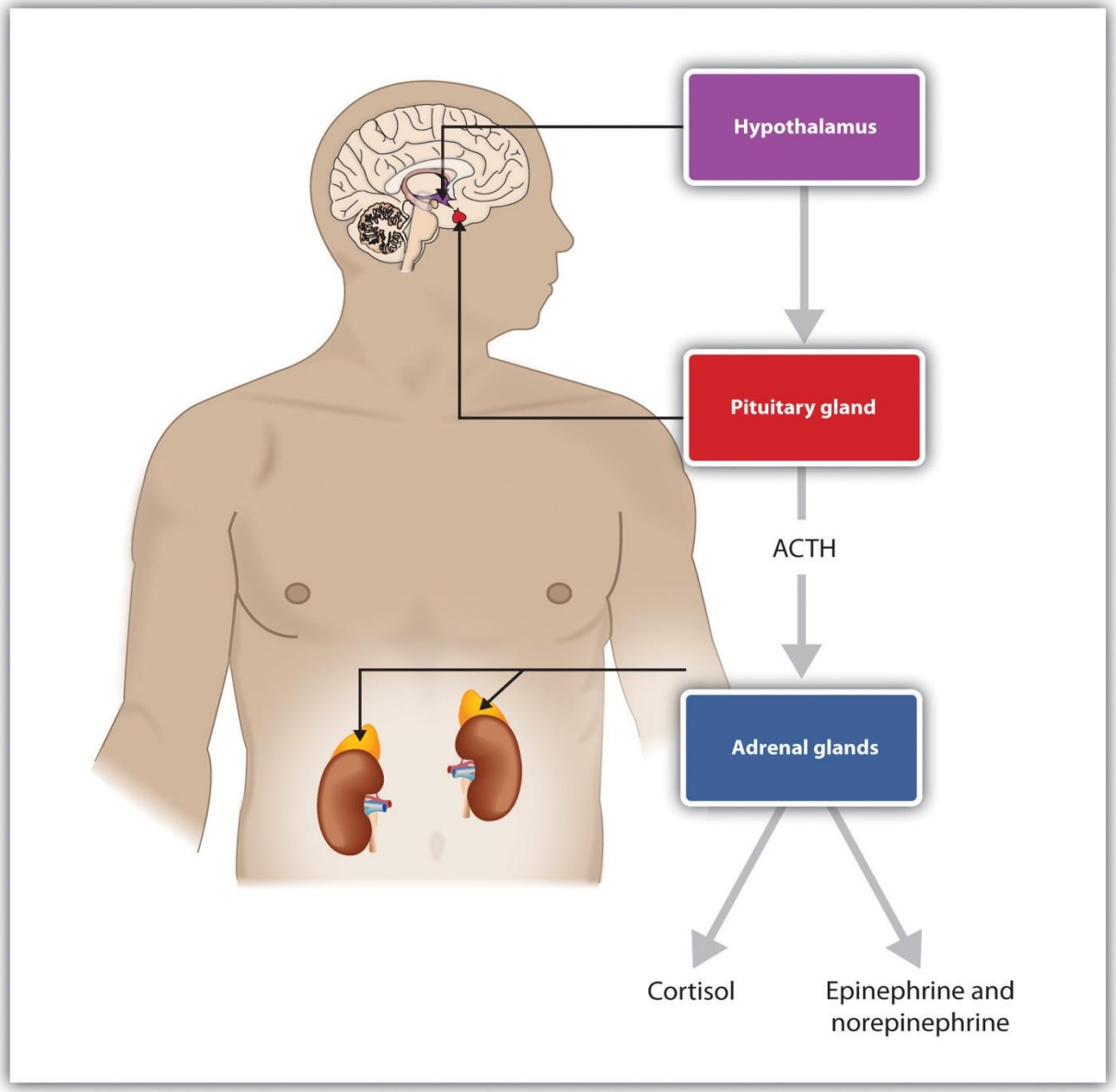
Sympathetic nervous system

- Adrenalin (physiological responses)

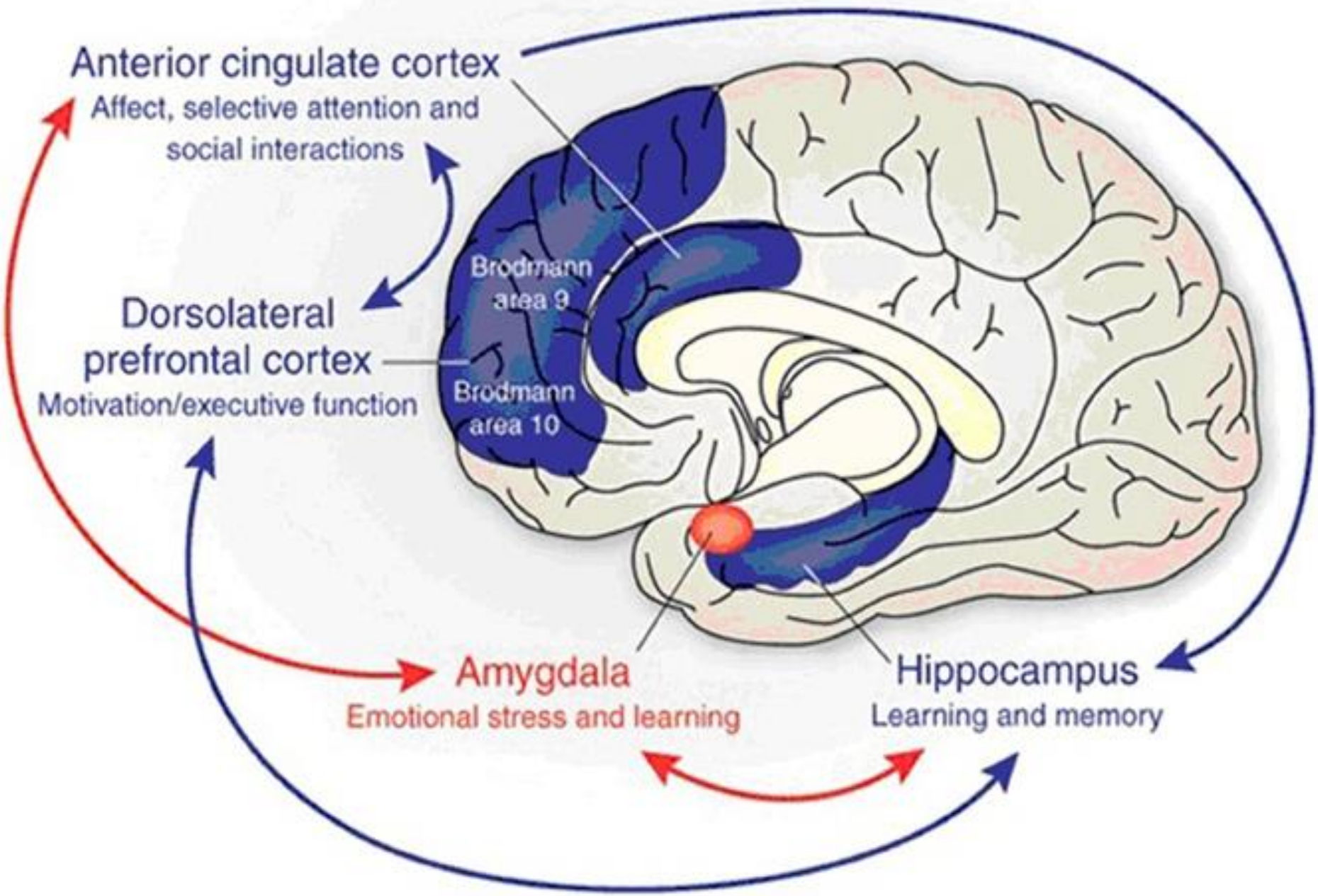
HPA axis (Hypothalamic pituitary adrenal axis)

- Corticotrophin releasing hormone (CRH)
- Adrenocorticotropic hormone (ACTH)
- Cortisol

HPA AXIS


Hypothalamus
Pituitary gland
ACTH
Adrenal glands
Cortisol
Epinephrine and norepinephrine

The corticolimbic system



Cortisol dysregulation

- Increased when stress uncontrollable and associated with social judgment and evaluation (Kirschbaum et al, 1993; Leary & Baumester 2000)
- Reduced hippocampal volume reduced synaptogenesis and neurogenesis
- Changes in amygdala reactivity
- Link between environment, mind and body

Cultivating mindfulness and compassion

- Focus on present moment awareness of internal and external sensations
- Equanimity and non-judgmental approach to experience
- Not striving or trying to change anything (Kabat-Zinn, 1994)
- "Development of…a *sensitivity* to the suffering of self and others , with a deep commitment to try to relieve it." The Dalai Lama (1995)
- Can be directed from self to others and directed from self to self

Compassionate mind

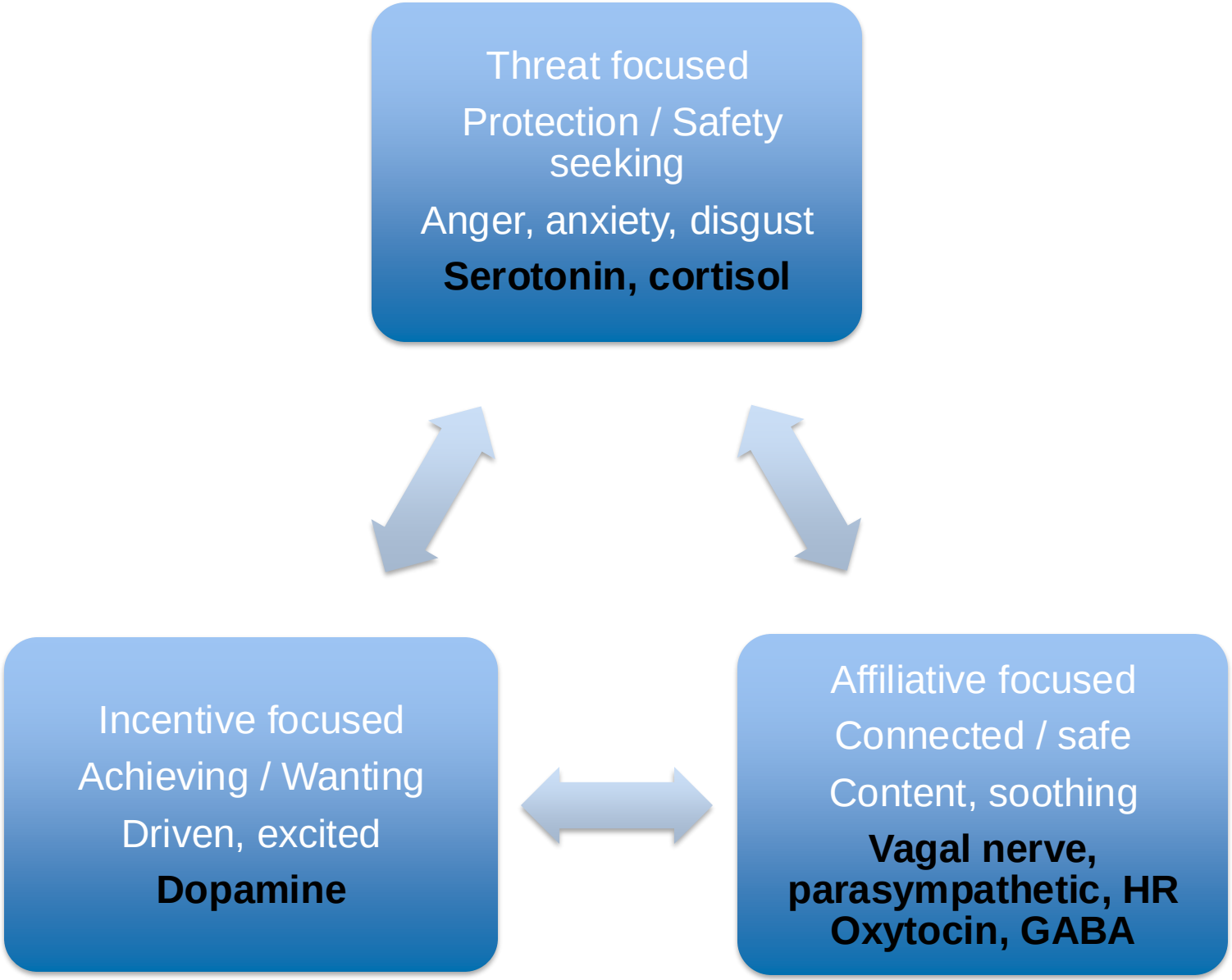
- Our system is flawed
- Evolutionary development has not 'caught up'
- Disparity between 'new' frontal vs 'older' regions
- Threat and reward/drive systems
- Magnet for negativity / teflon for positivity
- It's not our fault but it is our responsibility to make change

Paul Gilbert, The Compassionate Mind (2009)

Compassion and mindfulness

- Compassion literally means 'to suffer with' (Neff, 2012) and according to Sprechter and Fehr (2005) compassion entails being moved by the suffering of others, having awareness of the pain of others and not avoiding or disconnecting from this, while desiring to lessen the suffering.

- Neff (2003b) argues that self-compassion consists of three components: self-kindness, common humanity, and mindfulness.

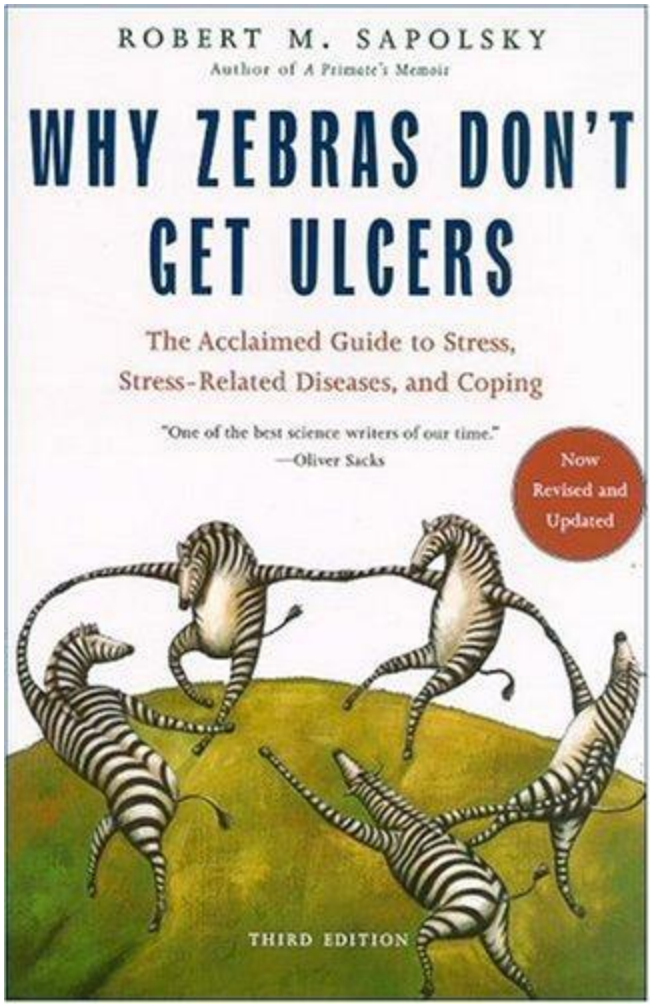

Threat focused
Protection / Safety seeking
Anger, anxiety, disgust
Serotonin, cortisol
Incentive focused
Achieving / Wanting
Driven, excited
Dopamine
Affiliative focused
Connected / safe
Content, soothing
Vagal nerve, parasympathetic, HR
Oxytocin, GABA

Mental time travel

- We are differentiated from other species by our mental time travel abilities (Addis and Schacter, 2008)
  - Incredible opportunities
  - Childhood memories
  - Contemplate, select and plan
  - **Anxiety, stress and fear**
  - **Rumination**
  - **Depression**
  - **Impact on everyday function**

Physical manifestations of stress

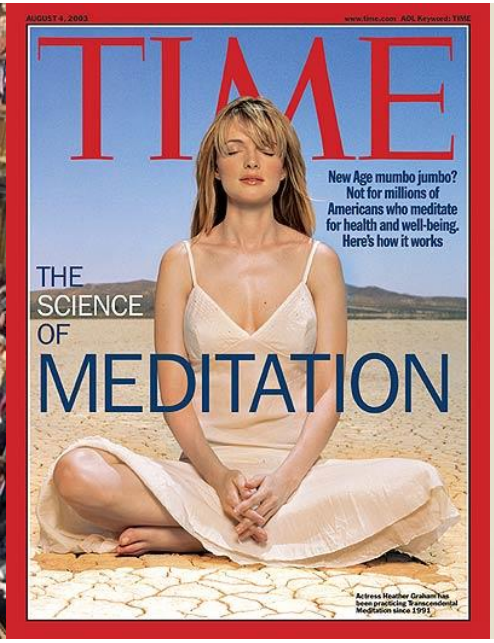
- Tension in neck
- Back ache
- Stomach problems…
- Low immunity
- Insomnia

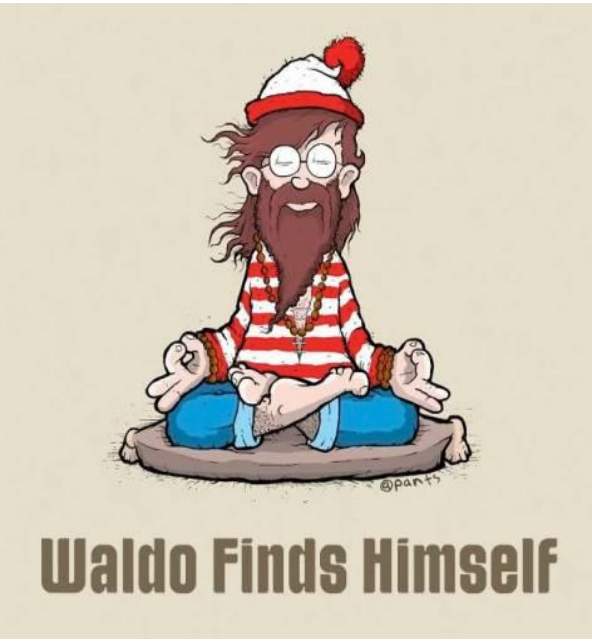


Cultivating mindfulness

- Focus on present moment
- Non-judgmental
- Not striving or trying to change anything

Mindfulness is everywhere…



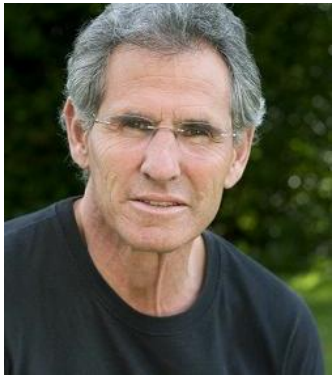


Dispelling the myths

Mindfulness meditation is NOT:

- Relaxation
- Positive thinking
- Achieving enlightenment
- Based on religious belief
- Emptying the mind
- Going in to a trance
- A panacea
- Easy to deliver
- For everyone*

Mindfulness Meditation Stress Reduction



Jon Kabat-Zinn

Focused attention

On the….

- present moment
- the breath
- the body
- thoughts
- changing emotions
- curiosity

- Non-judgmental
- Non-striving
- Non-competitive
- Not relaxing

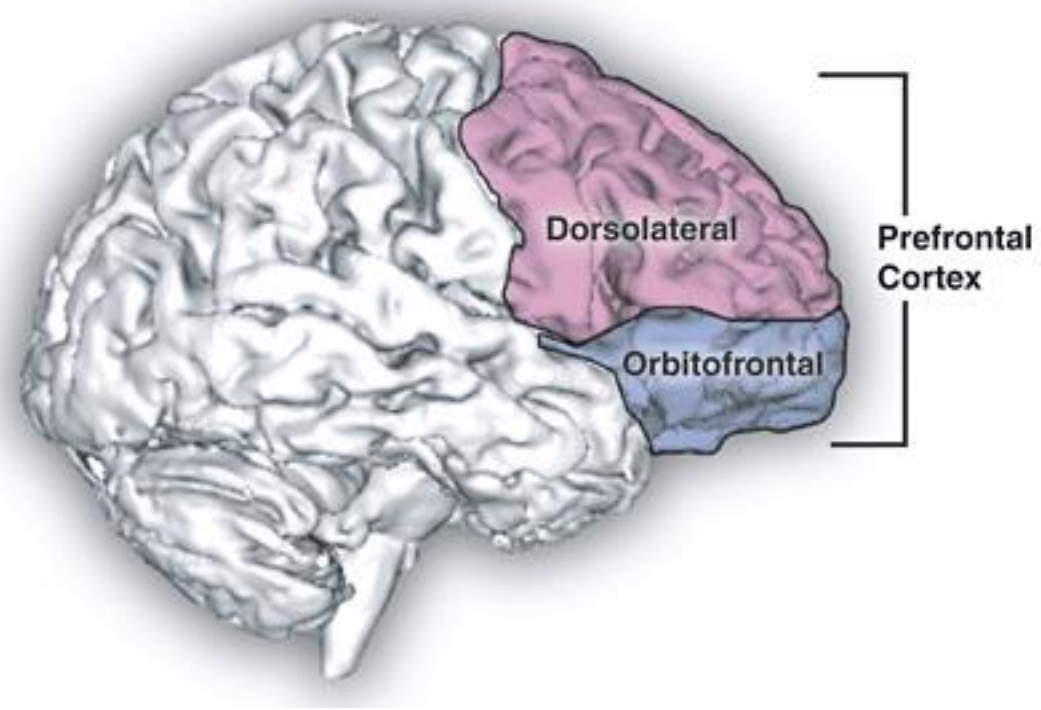
Clinical applications

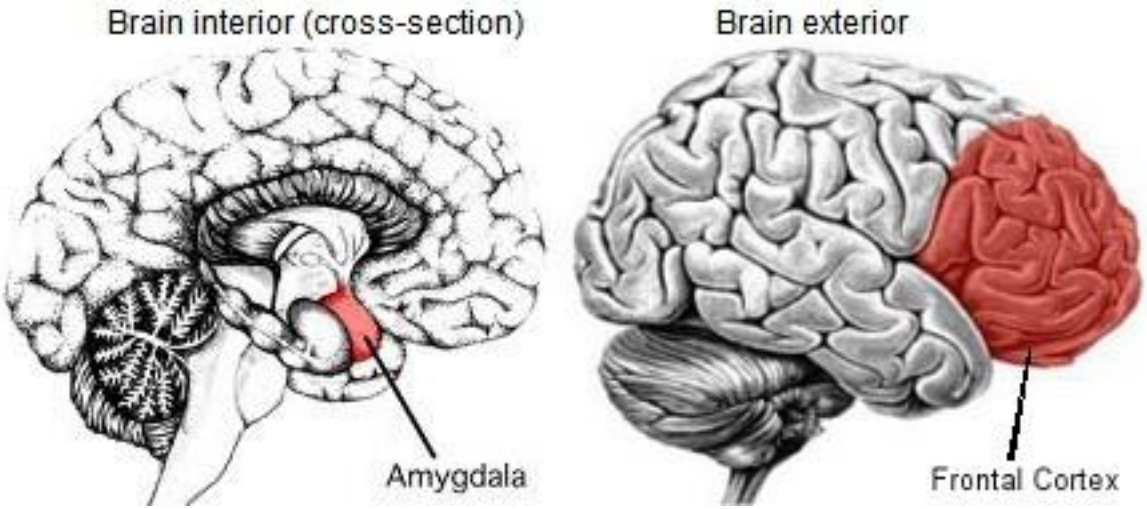
Now recommended within the NICE guidelines

- Depression (Piet and Hougaard, 2011)
- Anxiety (Khoury et al, 2013)
- HIV (Duncan et al, 2012)
- Cancer patients (Ott et al, 2006)
- Chronic pain RCT (la Cour and Peterson, 2014)
- Tinnitus (Roland et al, 2015)

Effects on the brain

- Increased cortical thickness in left frontal lobe (Lutz et al, 2004; Lazar et al, 2005)
- EEG synchrony and somatic changes Kerr et al, 2013)
- Increased hippocampal activation and grey matter (Holzel et al, 2011)
- Increased brain connectivity (Kilpatrick et al, 2011)
- Decreased activation of the amygdala (Lazar et al, 2005)


Dorsolateral
Orbitofrontal
Prefrontal
Cortex

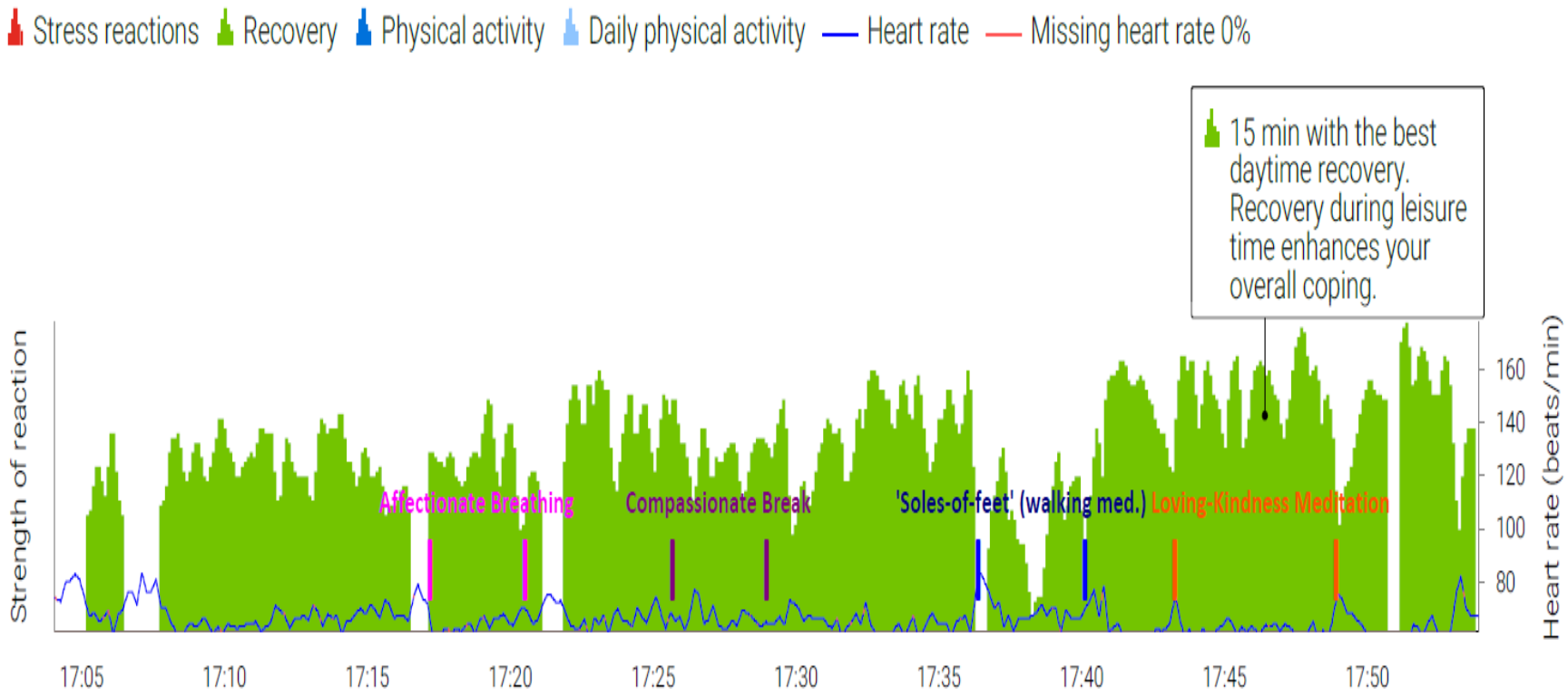

Brain interior (cross-section)
Amygdala
Brain exterior
Frontal Cortex

Neuropsychological mechanisms

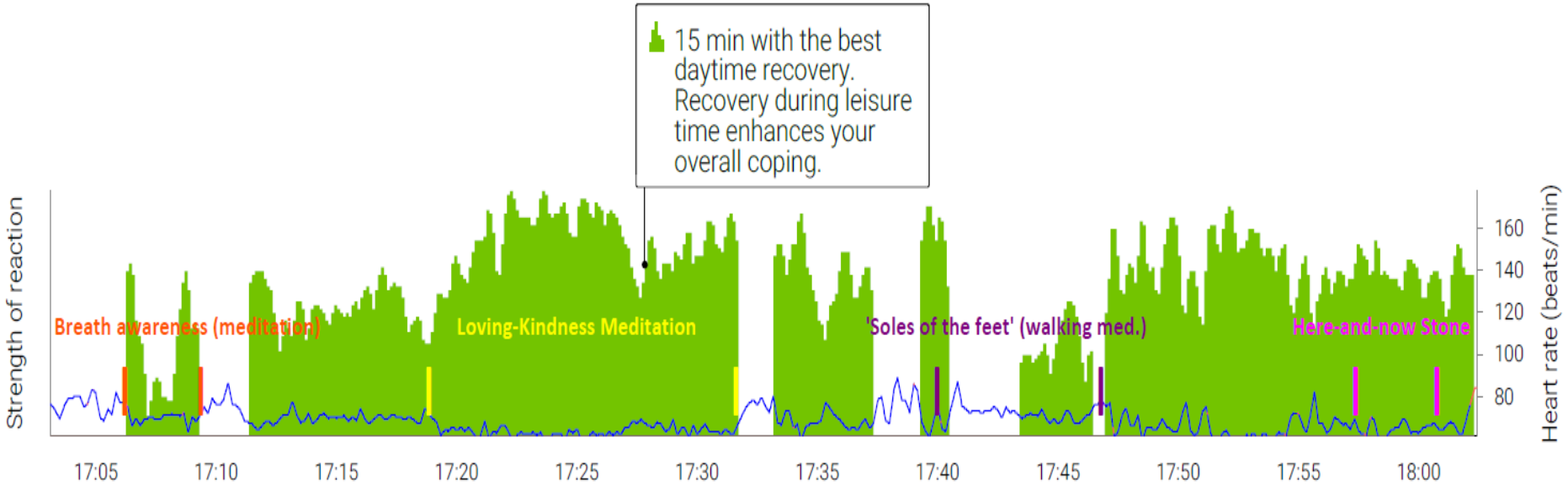
- Insula and PTJ - **body awareness**
- Anterior cingulate cortex - **attention regulation, rumination**
- DLPFC, VMPFC, HPA axis, hippocampus and the amygdala - **Emotion regulation**
- Medial PFC, posterior cingulate cortex, insula and TPJ – **Perspective taking, empathy, self-referential processing**

Holzel et al, 2011

Heart rate variability (HRV) and Heart Rate (HR)



HRV synchrony within group and with instructor



Modified mindfulness

- Designed to be appropriate for different groups of people
- Suitable for people across the lifespan
- Sensitive to physical, cognitive, sensory and emotional difficulties
- Designed for neurodiverse individuals
- Shorter practices
- Engaging and accessible materials and instructions
- No right or wrong way to engage with mindfulness

Summary

- Mindfulness is a collection of practices designed to improve awareness of the present moment
- Mindfulness and compassion can reduce stress, pain, anxiety and depression
- Mindfulness is now in schools, the workplace and in the NHS
- Measurable effects on the brain
- Improves well-being, emotion regulation and resilience
- Modifications required for individuals with cognitive, emotional and sensory difficulties