

# Mindfulness Meditation

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# Definition # 1

"Mindfulness is **to be aware** . To be aware when you are breathing in and to be aware when you are breathing out...it is the capacity to be aware of what is **here**. Anything can be the object of mindfulness. Your breath. The sky. It is to be in touch with our felt **experience in each moment**"

*Thich Nhat Hanh*

Book recommendation: Peace is Every Step

# Definition # 2

"Mindfulness is paying attention,  
on purpose,  
in the present, and  
non-judgmentally ,  
to the unfolding of experience moment by moment"

*Jon Kabat-Zinn*

*Book Recommendation: Full Catastrophe Living*

# Definition #3

“ Mindfulness is to distinguish  
**awareness** from **mental activity**  
it is to learn to be aware of our own mental  
states without being caught in them “

*Jack Kornfield*

*Book Recommendation: Wise Heart*

# Some Facts About Mindfulness

- Mindfulness does not require any particular religious or cultural belief system.
- It is not something we acquire.
- It is simple but not easy!

# Mindfulness is historically tied to Buddhism

- The Buddha taught that suffering is universal.
- We suffer because of the way in which we relate to our human condition (not the human condition itself).
- There is hope of liberation from suffering

Suggestion: Replace the word “suffering” with “stress”

- *We all experience stress. It's part of being human. We cannot change sources of stress, but we can change the way we handle the stress.*

# Pain vs. Suffering

## Pain

- Inevitable
- Sensation
- Impermanence  
(Sickness, old age, death) is inherent in human condition

## Suffering / Stress

- Optional?
- Pain + resistance to the experience pain  
(This is unfair; I don't deserve this; this should not be happening)

Mindfulness is a potential solution  
to handling stress, not pain.

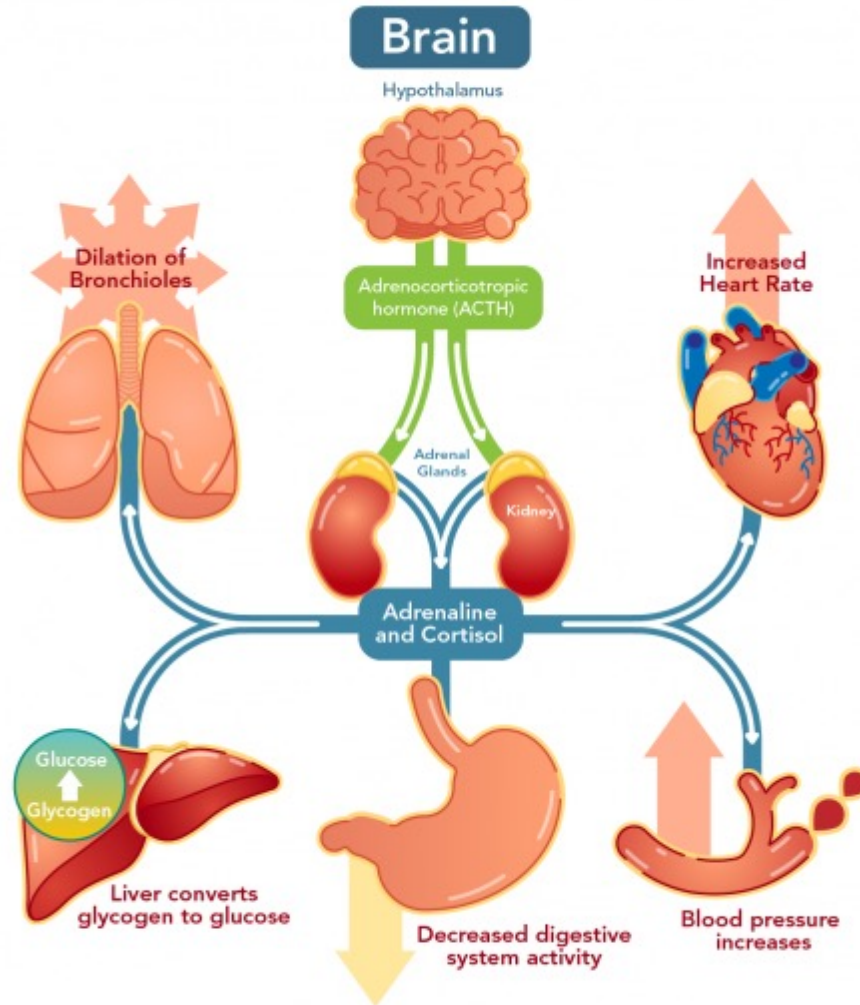
Pain is inevitable. Stress is not.



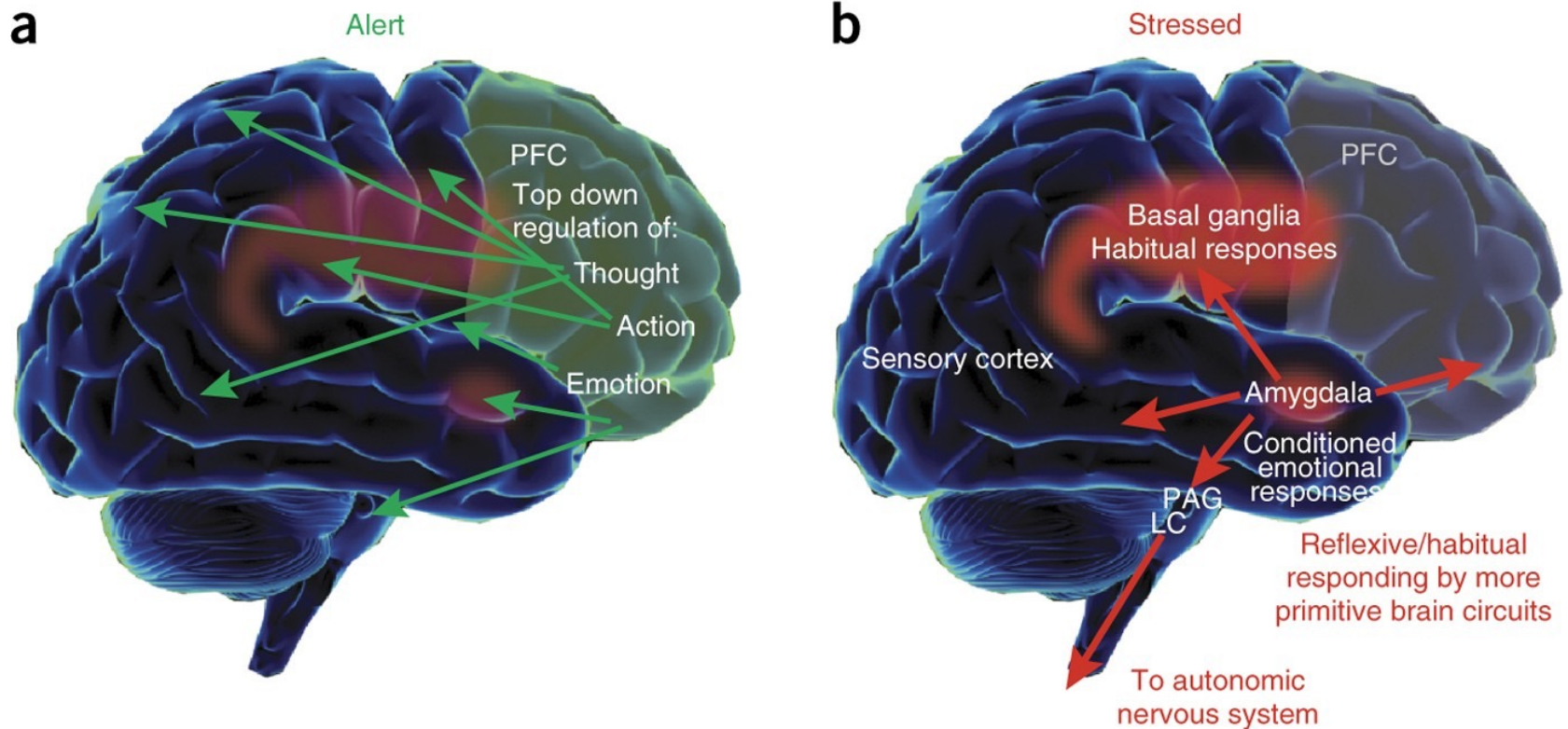
# Adverse impact of stress

- Immune system
- Cardiovascular system
- Nervous system
- Increases inflammation
- Increases negative mood states
- Increases adrenaline and cortisol levels

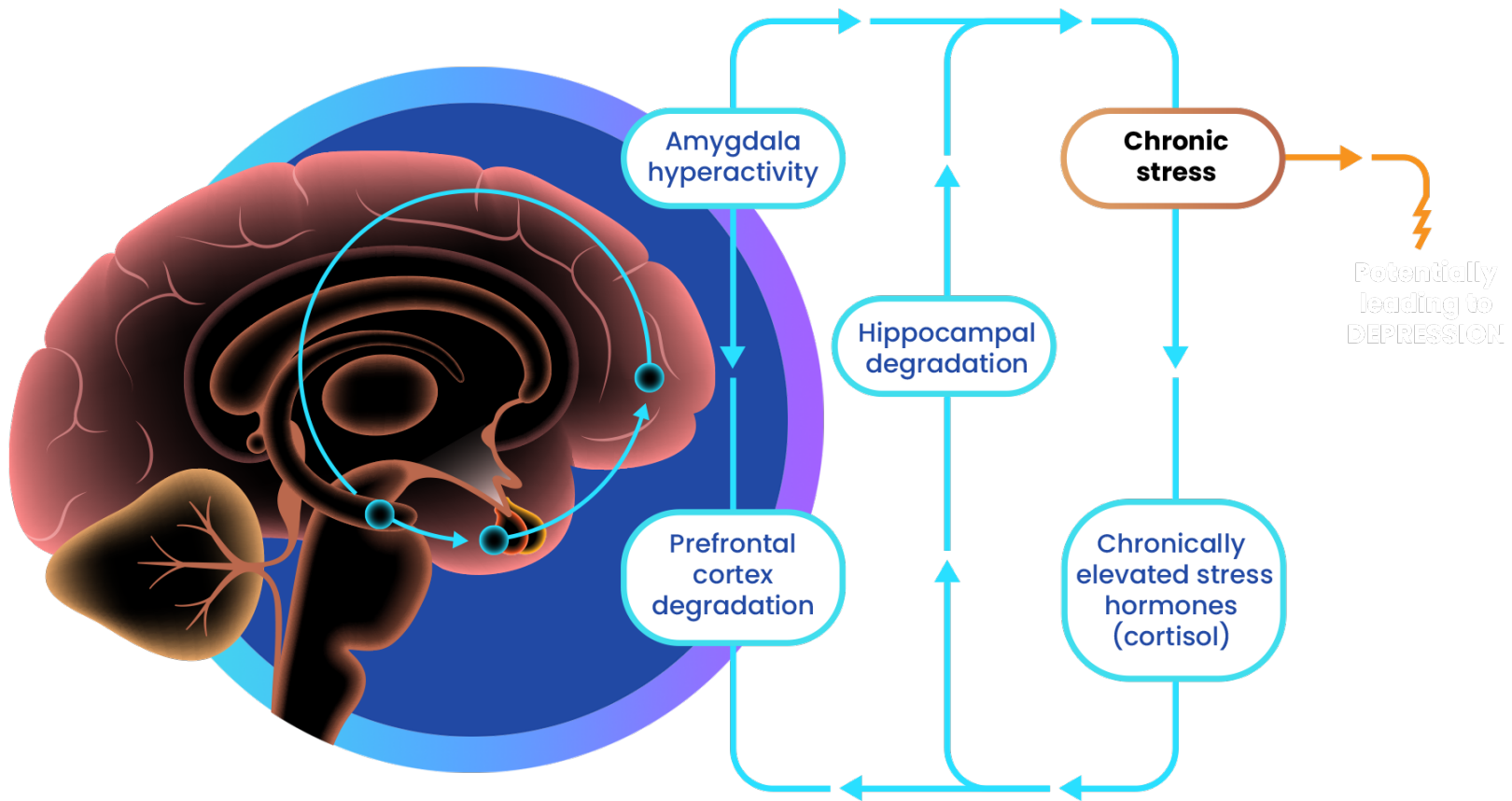
# STRESS RESPONSE SYSTEM



# Changes to the Brain During Acute Stress



# Changes to the Brain As A Result of Chronic Stress



# Stress Reaction Vs. Response

- **Stress reaction:** External event → internal event → alarm reactivity → stress reaction → acute hyper arousal → increases chance of survival in a dangerous and hostile situations
- **Stress Response:** introducing conscious process that influences the flow of events that are likely to bring about automatic reactivity.

# We can make a choice: React or Respond

*“Between the stimulus and response, there is a space and in that space lies our freedom and power to choose our response.”*

*Victor Frankl*

# How do we do it? simplified

## RAIN of Compassion

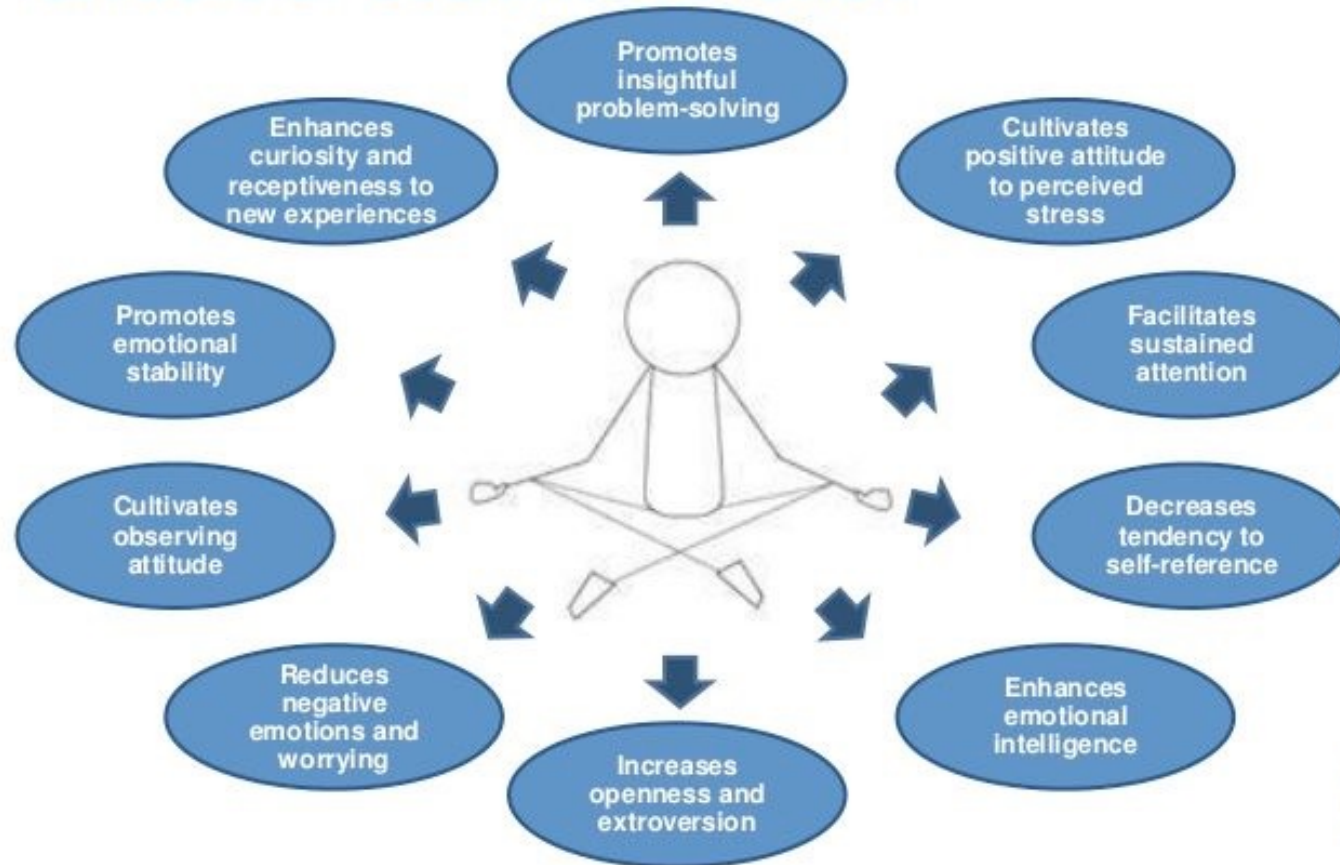
- Recognition- NOTICE what is happening
- Acceptance – Make room for the experience.
- Investigate –be curious, even familiar experiences do not repeat.
- Non-identification –become a witness to the experience. Do not get caught in it.
- + Compassion: maintaining an attitude of kindness, friendliness, and gentleness towards self and others.

# Where does meditation come in?

- Meditation helps increase the space between stimulus and response; i.e., it increases the likelihood we will *respond* rather than *react*.



# MINDFULNESS PRACTICE HAS MULTITUDE OF EFFECTS OF COGNITIVE FUNCTION



Copyright 2012 Dr Shanida Nataraja, Author of *The Blissful Brain: Neuroscience and Proof of the Power of Meditation*

# How?

Adopt helpful attitudes (in our mindfulness practice)

## Adopt certain attitudes

- Non-judging (of ourselves and others)
- Patience
- Non-striving
- Acceptance
- Letting go

# Familiar?

God grant me the serenity  
to accept the things I cannot change;  
courage to change the things I can;  
and wisdom to know the difference.

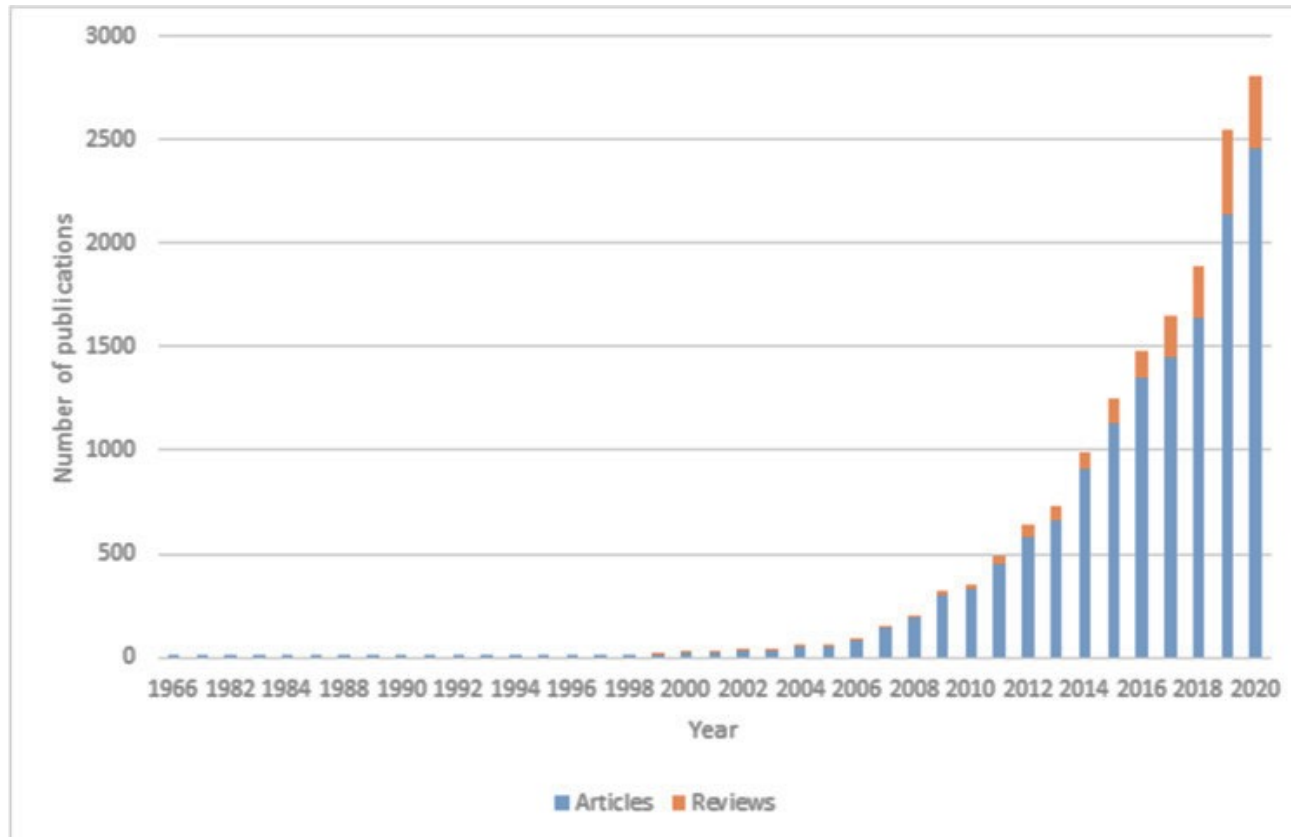
*Reinhold Niebuhr (1892-1971)*

# This all sounds nice but...really?



# What the science says

# There has been an explosion of scientific interest in mindfulness.



**2808**  
papers  
in 2020

# The effects of a mindfulness-based lifestyle program for adults with Parkinson's disease: a mixed methods, wait list controlled randomised control study

Jenny Advocat<sup>1\*</sup>, Joanne Enticott<sup>2</sup>, Brooke Vandenberg<sup>3</sup>, Craig Hassed<sup>4</sup>, Jennifer Hester<sup>1,6</sup> and Grant F

## **A qualitative analysis of mindfulness-based cognitive therapy (MBCT) in Parkinson's disease**

Lee Fitzpatrick<sup>1\*</sup>, Jane Simpson<sup>1</sup> and Alistair Smith<sup>2</sup>

<sup>1</sup>Institute for Health Research, Lancaster University, UK

<sup>2</sup>Older People's Mental Health Services, Lancashire Care Foundation NHS Trust, Chorley, Lancashire, UK


## Mindfulness-based stress reduction in Parkinson's disease: a systematic review

G. McLean<sup>1</sup>, M. Lawrence<sup>2</sup>, R. Simpson<sup>1</sup> and S. W. Mercer<sup>1\*</sup>

## **Pilot Study of a Mindfulness-Based Group Intervention for Individuals with Parkinson's Disease and Their Caregivers**

Therese Verkerke Cash<sup>1</sup> • Vanessa Sepopo Ekouevi<sup>1</sup> • Christopher Kilbourn<sup>2</sup> • Sarah K. Lageman<sup>3</sup>

# Stress and Mindfulness in Parkinson's Disease: Clinical Effects and Potential Underlying Mechanisms

Anouk van der Heide, MSc,<sup>1,2\*</sup> Marjan J. Meinders, PhD,<sup>3</sup> Anne E.M. Speckens, MD, PhD,<sup>4</sup> Tessa F. Peerbolte, BSc,<sup>2</sup> Bastiaan R. Bloem, MD, PhD,<sup>1</sup> and Rick C. Helmich, MD, PhD<sup>1,2</sup> 

**TABLE 1.** Reported change in reviewed articles after mindfulness-based intervention

Study	Sample Size		Motor Symptoms Instrument (Maximum Score) Absolute Change (SD)		Depression Instrument (Maximum Score) Absolute Change (SD)		Anxiety Instrument (Maximum Score) Absolute Change (SD)		Quality-of-Life Instrument (Maximum Score) Absolute Change (SD)	
	Intervention	Control	Intervention	Control	Intervention	Control	Intervention	Control	Intervention	Control
Advocat (2016) [22]	n = 24	n = 33			DASS-D (42) +1.9 <sup>a</sup>	+1.1	DASS-A (42) +0.3	−0.6	PDQ-39 (156) −0.5	−1.5
Birtwell (2017) [23]	n = 6 (uncontrolled)				DASS-D (42) −9.0 <sup>a</sup>		DASS-A (42) −7.5 <sup>a</sup>		PDQ-39 (156) N.I.	
Cash (2016) [24]	n = 39 (combined: 29 patients with PD with 10 caregivers)				PHQ-9 (27) −1.6 <sup>a</sup>		GAD-7 (21) −0.9		PDQ-39 (156) −2.4	
Dissanayaka (2016) [12]	n = 14 (uncontrolled)		MDS UPDRS-III (76) −0.8		HAM-D (52) −0.8 <sup>a</sup>		GAI (20) −1.9 <sup>a</sup>		PDQ-39 (156) −2.8	
Kwok (2019) [23]	n = 71	n = 67	MDS UPDRS-III (76) <sup>c</sup> −13.8 <sup>a</sup>	−9.1 <sup>a</sup>	HADS-D (21) <sup>c</sup> −2.6	−0.3	HADS-A (21) <sup>c</sup> −2.4	−0.4	PDQ-8 (32) <sup>c</sup> −2.2	+0.5
Pickut (2015) [25]	n = 14	n = 13	MDS UPDRS-III (76) <sup>c</sup> −5.5 <sup>a</sup>	+1.1	BDI N.I.	N.I.			PDQ-pain (12) +0.8 <sup>a</sup>	−0.7
Rodgers (2019) [26]	n = 15	n = 12			DASS-D (42) <sup>c</sup> −0.8 <sup>a</sup>	+0.4	DASS-A (42) <sup>a</sup> −0.7	−1.3	PDQ-39 (156) <sup>a</sup> −1.8	−3.0
Son (2018) [24]	n = 33	n = 30			GDS (30) <sup>b</sup> −3.4	−1.0	STAI (160) <sup>b</sup> −6.5	+9.4	PDQL (185) <sup>b</sup> +17.4	−8.6

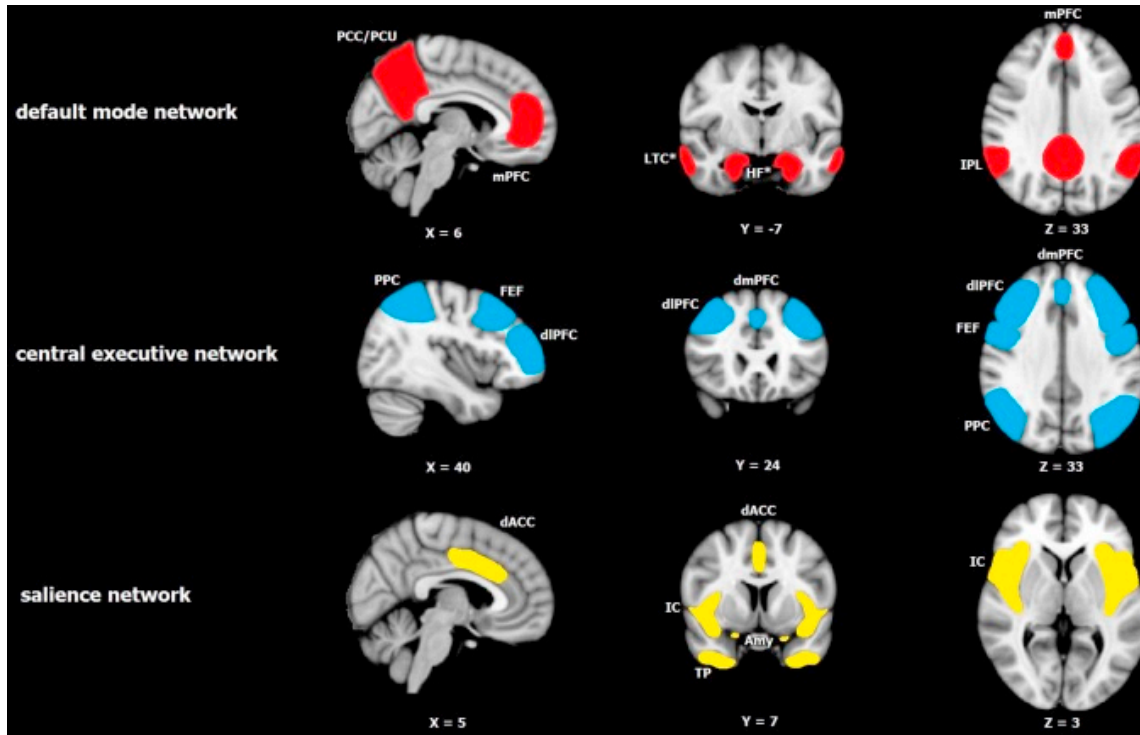


# What's happening in the brain?

# Background: Major Neural Networks

## Three Major Neural Networks

Symptoms Associated with  
Network Dysfunction



Negative Affect / Rumination  
Critical Self-Talk

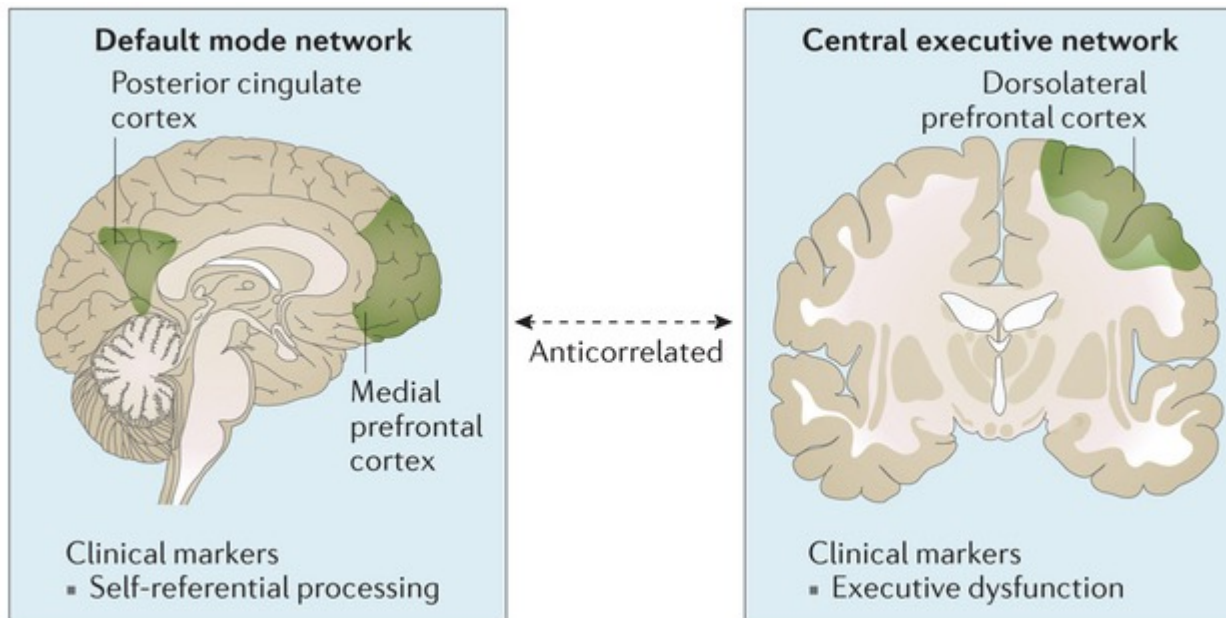
Focused Attention

Motivation / Effort /  
Sense of Reward

Mulders et al. 2015 *Neuroscience and Biobehavioral Reviews*

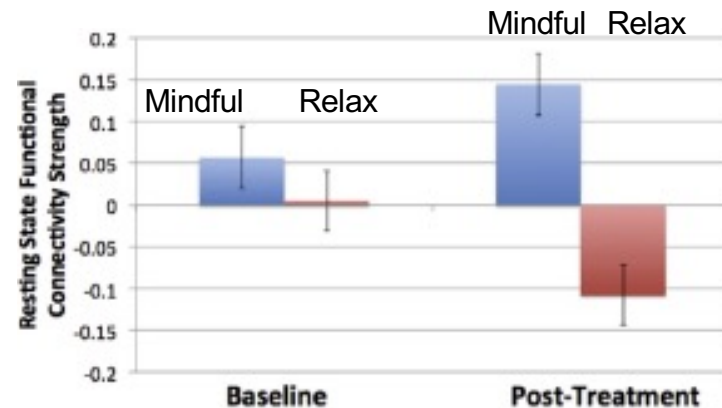
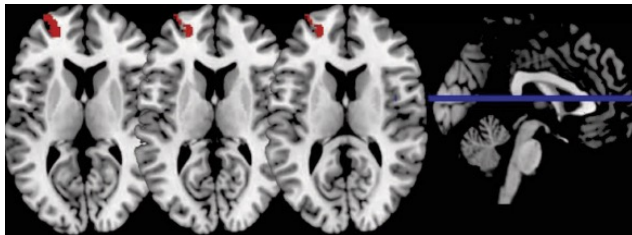
# Background:

## Focus on Default Mode and Cognitive Control Networks



Yehuda et al. 2015 *Nature Reviews Disease Primers*

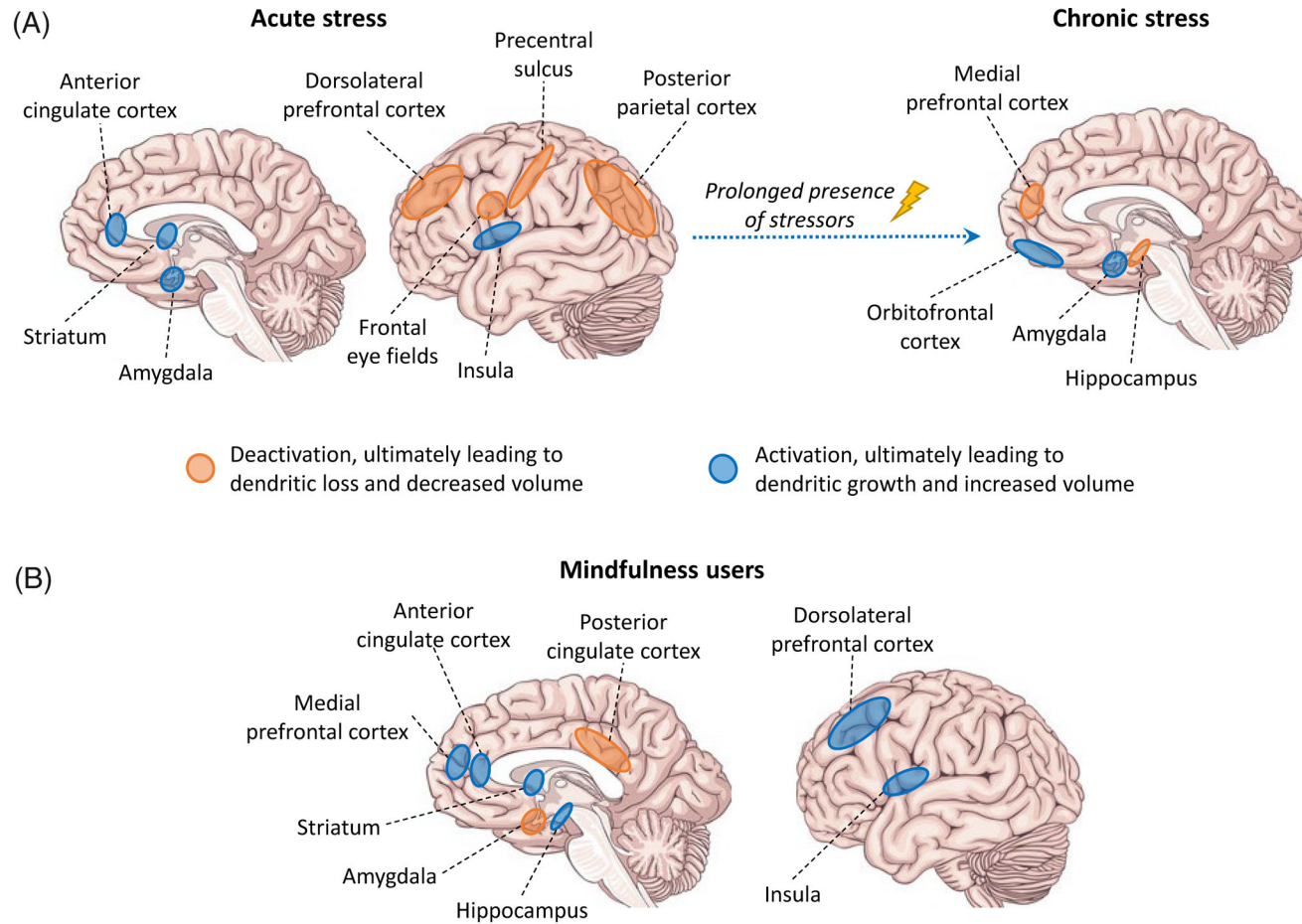
# Mindfulness Meditation Improves Functional Connectivity Between Brain Regions Involved in Focused Attention and Rumination



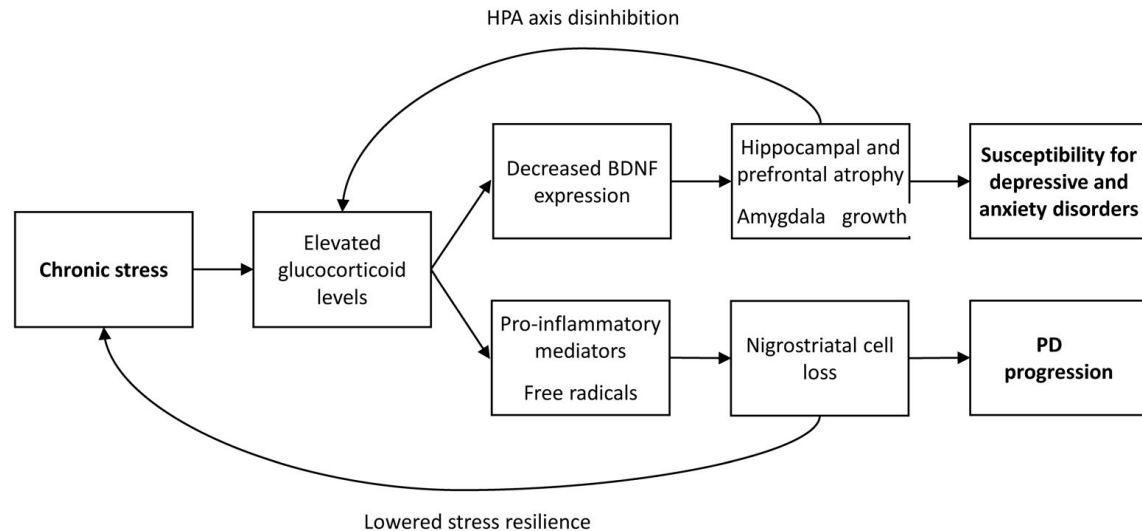
Intensive 3 day mindfulness program increased functional connectivity between left dorsolateral prefrontal cortex (CCN) and posterior cingulate (DMN).

Relaxation training did not result in similar enhancement of connectivity.

# What's happening in the brain as a result of stress and mindfulness?

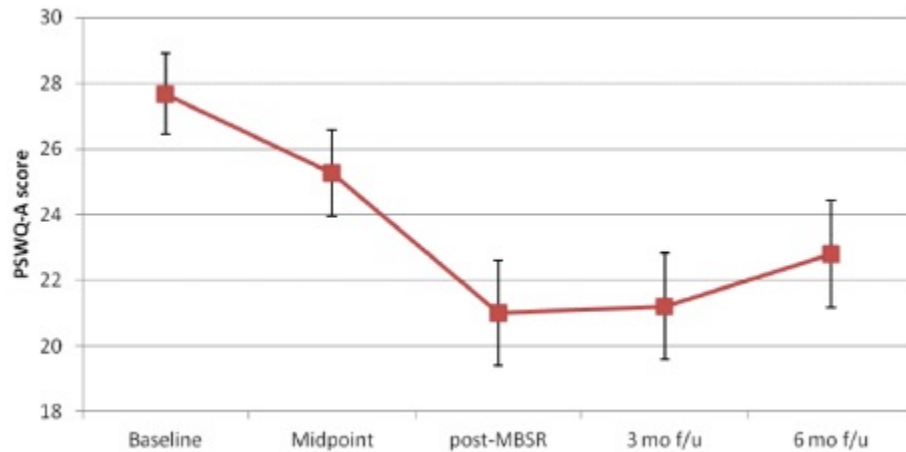


# Model Theorizing Effect of Mindfulness in persons with PD



**FIG. 2.** A pathophysiological model of chronic stress in Parkinson's disease (PD). This figure provides a hypothetical (and simplified) framework of how chronic stress in patients with PD may lead to higher susceptibility for depressive and anxiety disorders on the one hand, and to a more rapid progression of the disease on the other hand. Upper part: the high levels of glucocorticoids that result from chronic stress decrease the expression of brain-derived neurotrophic factor (BDNF), which induces atrophy in the hippocampus and prefrontal cortex and growth in the amygdala.<sup>33</sup> This increases the risk for development of depressive and anxiety disorders.<sup>34</sup> Hippocampal atrophy also disinhibits the hypothalamic–pituitary–adrenal (HPA) axis, further increasing glucocorticoid levels.<sup>35</sup> Lower part: elevated glucocorticoid levels also increase neuroinflammation<sup>36</sup> and production of reactive oxygen species (ROS).<sup>37</sup> These molecular changes may contribute to degeneration of nigrostriatal dopaminergic neurons.<sup>38</sup>

# Mindfulness Meditation Decreases Anxiety/Worry and Improves Cognition in Older Adults



Measure	Baseline mean or z-score (SE)	Post-MBSR mean or z-score (SE)	Cohen's d (95% CI)	Analysis	
				F (df)	p
List learning, number of words recalled	-0.03 (.2)	0.16 (0.17)	0.19 (-0.33 to 0.70)	2.9 (1,28)	0.10
List delayed recall, number of words recalled	-0.09 (.2)	0.17 (0.18)	0.26 (-0.26 to 0.77)	6.17 (1,28)	0.019
Paragraph immediate recall, number of words recalled	-0.26 (0.17)	0.47 (0.15)	0.83 (.28 to 1.35)	27.2 (1, 28)	<0.001
Paragraph delayed recall, number of words recalled	-0.06 (0.2)	0.65 (0.16)	0.75 (0.21 to 1.27)	25.0 (1,28)	<0.001
Verbal fluency, number of correct words named	35.1 (2.1)	37.3 (2.0)	0.20 (-0.32 to 0.71)	3.9 (1,28)	0.04
Color-word interference, time (seconds)	84.3 (9.9)	71.7 (6.2)	0.39 (-0.31 to 1.08)	9.1 (1,15)	0.009
Digit span test, score (higher score = more digits forward correctly repeated)	9.1 (2.7)	10.3 (2.2)	0.46 (-0.24 to 1.16)	4.4 (1,15)	0.053

# What do people report after a course in mindfulness training?

- Lasting decrease in physical and psychological symptoms
- An increase in ability to relax
- Reduction in pain/or enhanced coping with pain
- Greater energy and enthusiasm for life
- Improved self-esteem

*Center for Mindfulness in Medicine, Health Care, and Society, UMASS School of Medicine*



# Different methods – let's practice!

## Focusing on breath

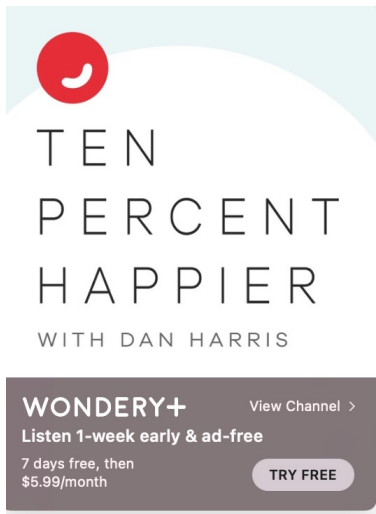
- Count 10 in and out breaths
  - Notice when your mind goes somewhere else and bring it back to the breath.

## Open monitoring

- Senses
- Body scan

# Practice, practice, practice

- Developing and cultivating a mindfulness practice is simple but not easy. Most likely you will need teachers and fellow travelers along the way.
- Formal practice
- Informal practice



## Ten Percent Happier with Dan Harris

Wondery

★ 4.6 (11K) · MENTAL HEALTH · UPDATED SEMIWEEKLY

Dan Harris is a fidgety, skeptical journalist who had a panic attack on live national television, which led him to try something he otherwise never would have considered: meditation. He went on to write the bestselling book, 10% Happier. On this show, Dan talks with eminent meditators. MORE

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headspace

Articles Meditation Sleep Stress Mindfulness

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\$2.92 USD/mo, billed annually



# Use Apple Watch to practice mindfulness

The Mindfulness app 🧘 on your Apple Watch encourages you to set aside a few minutes a day to focus, center, and connect as you breathe. You can also use State of Mind to reflect on how you're feeling. With an Apple Fitness+ subscription, you can listen to guided meditations on Apple Watch.

Revenue in the Meditation Apps market is projected to reach 4.43 billion dollars in 2023.

# Still a free resource... Youtube



## Jon Kabat Zinn Body Scan Meditation GUIDED MEDITATION

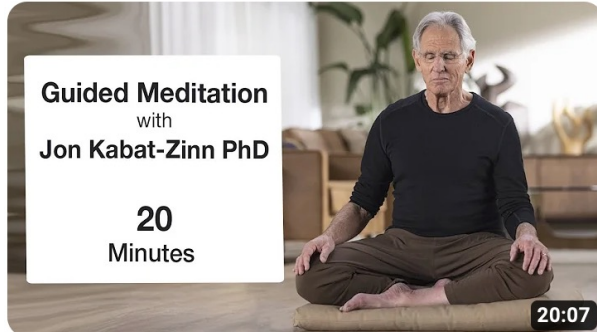
3.3M views • 7 years ago

 People in Pain Network

The spiritual teacher Jon Kabat-Zinn teaches us about body scan meditation.



dwell in a state of very deep physical and mental relaxation | lie alongside your body palms open... 4



## 20 Minute Guided Meditation with Jon Kabat-Zinn PhD

790K views • 2 years ago

 No Nonsense Meditation

Jon Kabat-Zinn, Ph.D. is internationally known for his work as a scientist, writer, and meditation teacher engaged in

Thank you for your attention.

Let's try it!