



THE LONDON SCHOOL
OF ECONOMICS AND
POLITICAL SCIENCE ■

Sleeping with Anxiety:

How sleep and mental health are linked, and how to improve both

LSE, 25th May 2023



@DrSophieBostock
Sleep Evangelist & Founder

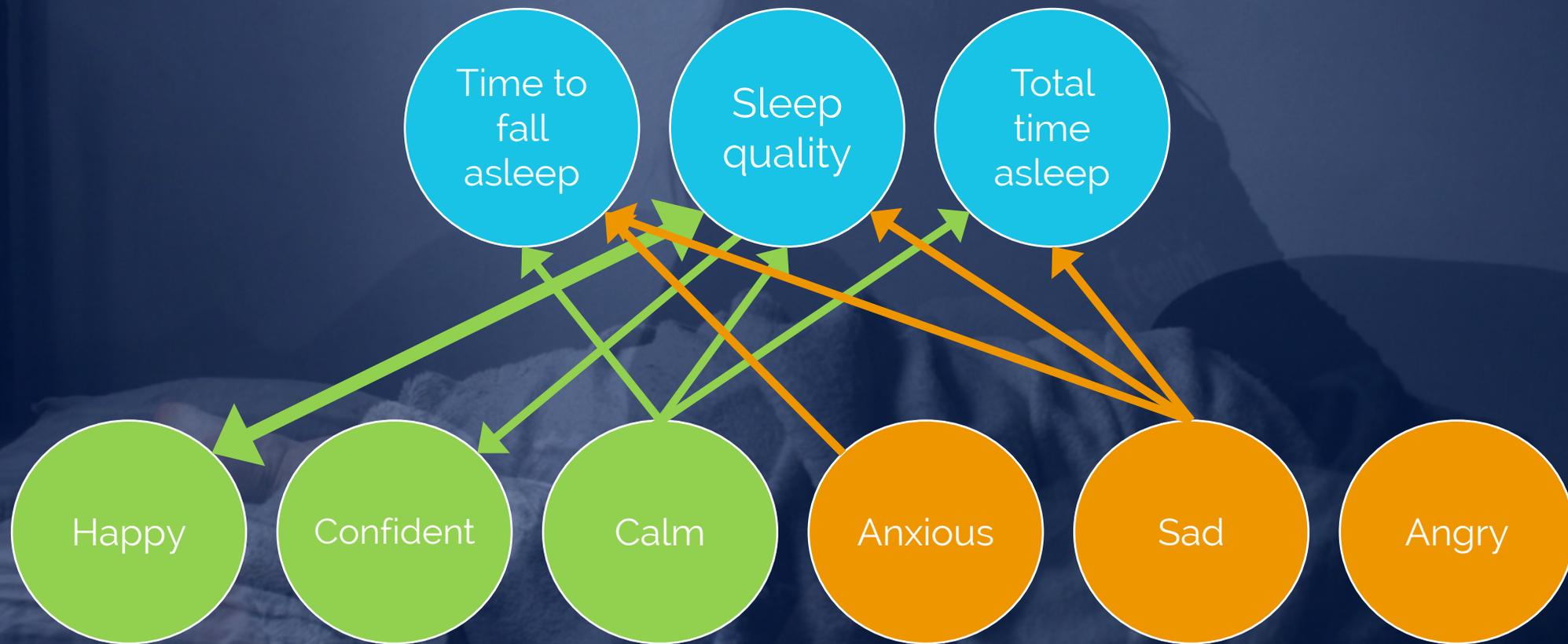


THE SLEEP SCIENTIST

Sleep and performance science unlocked

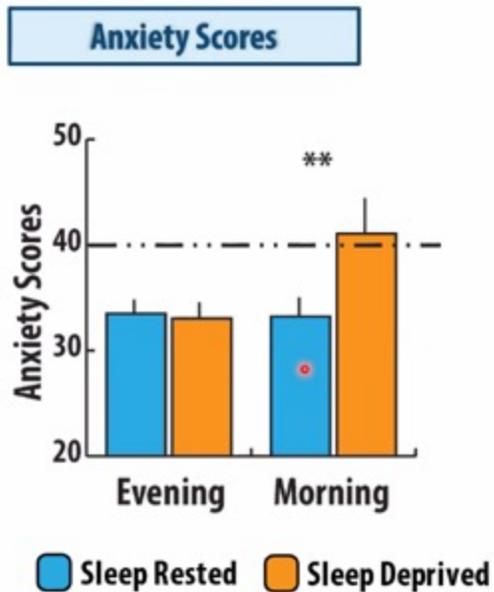
Sleep and our daytime moods interact on a day-to-day basis

for example, for healthy young women...



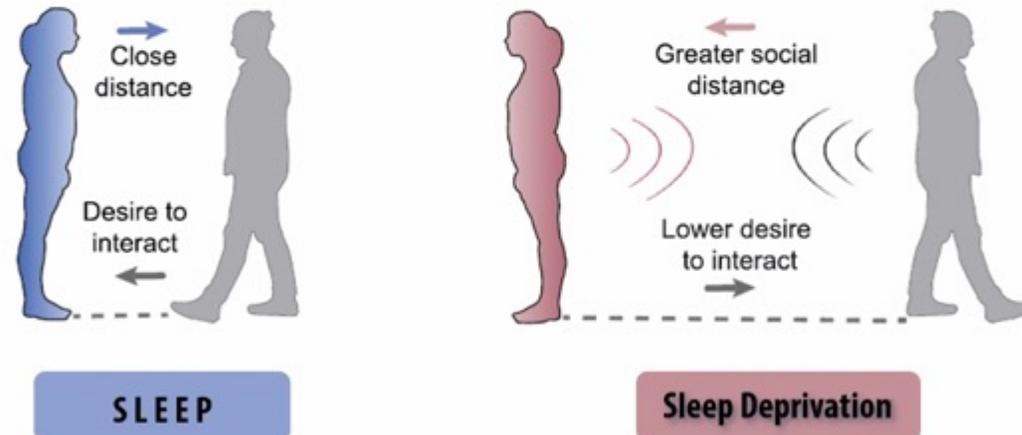
Sleep and our daytime moods interact on a day-to-day basis

Sleep loss triggers anxiety



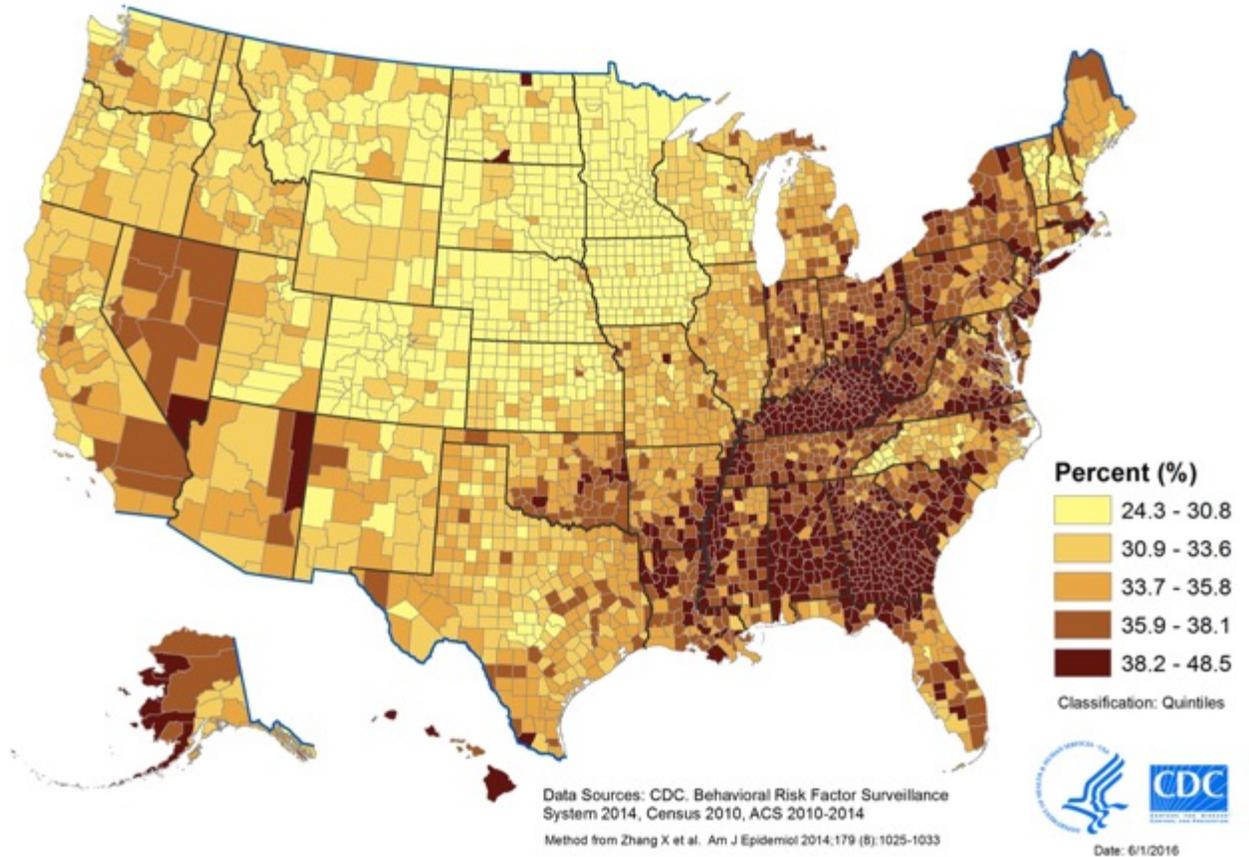
Ben Simon and Walker, Nature Human Behaviour 2019

Sleep loss impairs social behavior

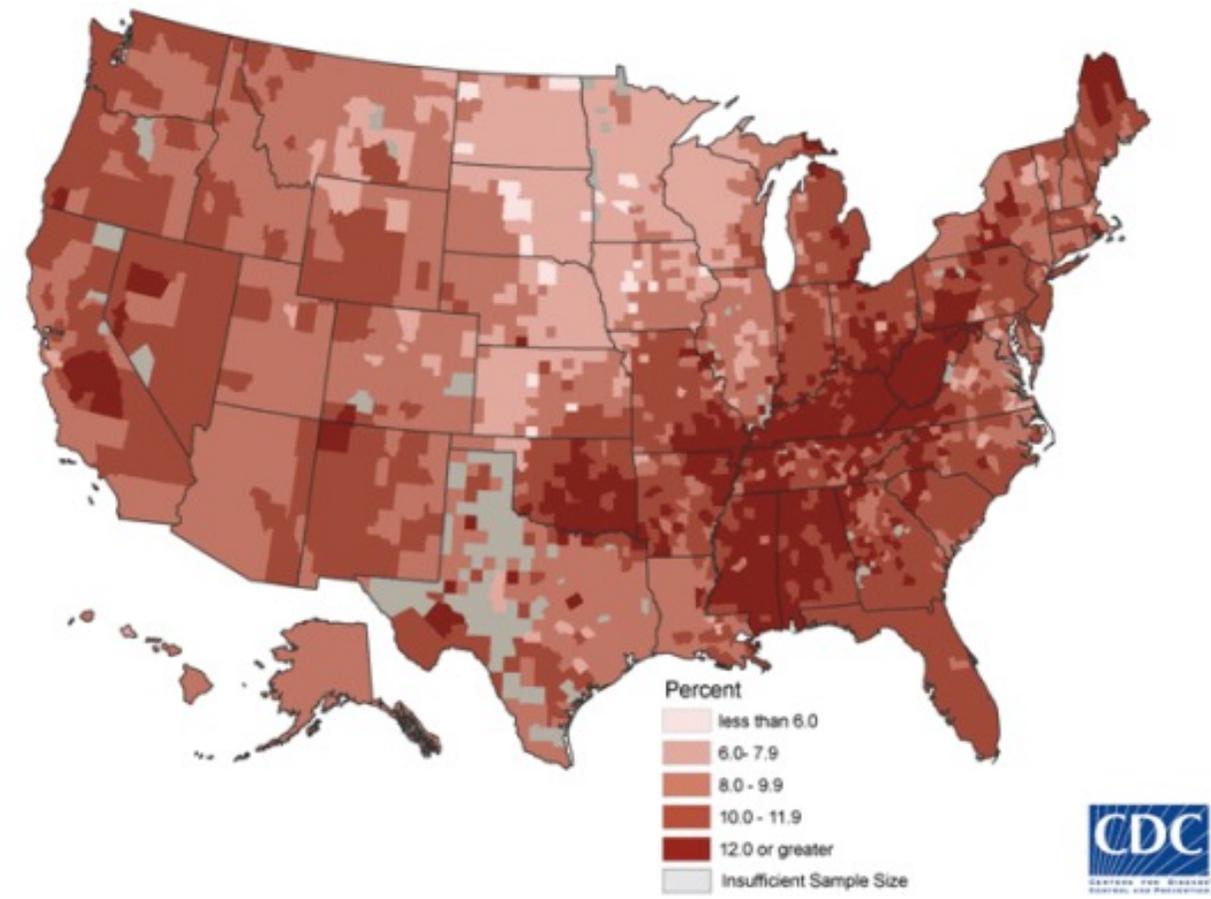


Ben Simon et al. TICS 2020

<7 Hours Sleep



Mental distress



Dissatisfaction with sleep at least 3 nights a week, for 3 months or more
with a negative impact on daytime function

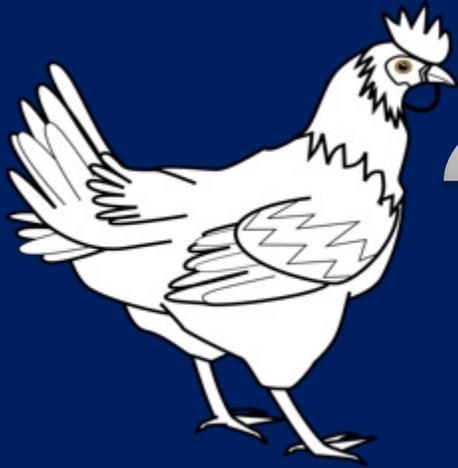
Insomnia

Anxiety

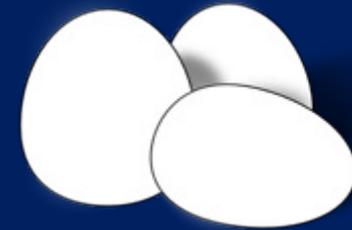
Depression

- Persistent worry or anxiety disproportionate to event
- Restlessness, on edge
- Difficulty concentrating
- **Easily fatigued**
- **Sleep disturbance**
- Irritability
- Muscle tension and other physical symptoms such as palpitations

- Persistent depressed mood
- Loss of interest or pleasure in normal activities
- Changes in appetite
- Unusually slow or agitated movement
- **Decreased energy or fatigue**
- **Difficulty sleeping or oversleeping**
- Excessive guilt or worthlessness
- Difficulty concentrating or making decisions
- Thoughts of death or suicide



Depression,
Anxiety



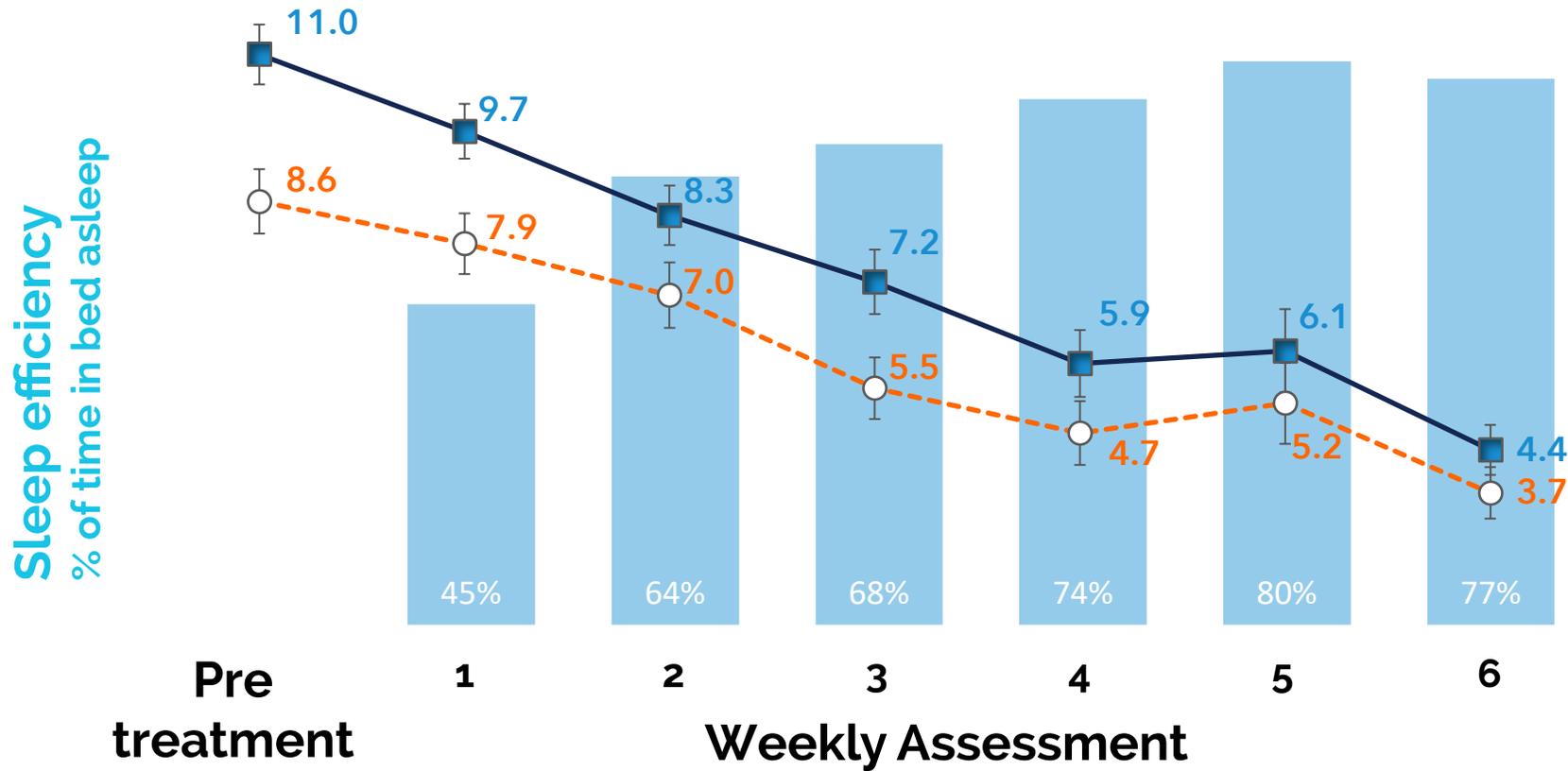
Insomnia

2x

Can improving sleep alleviate
anxiety and depression?

Improving sleep patterns leads to improvements in depression and anxiety symptoms

Depression (PHQ9)
Anxiety (GAD 7)



CLINICAL REVIEW

Improving sleep quality leads to better mental health: A meta-analysis of randomised controlled trials

Alexander J. Scott^{a, *}, Thomas L. Webb^b, Margiea Martin-St James^c, Georgina Rose^d, Scott Weich^e

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^d Clinical Psychology Unit, Department of Psychology, The University of York, UK

Improving sleep led to a significant medium-sized effect on composite **mental health, depression, anxiety** and **rumination** as well as significant small-to-medium sized effects on **stress** and finally small significant effects on **psychosis** symptoms.

Greater improvements in sleep quality led to greater improvements in mental health.

The Components of Anxiety

Anxiety

Emotion, Feelings



Worry

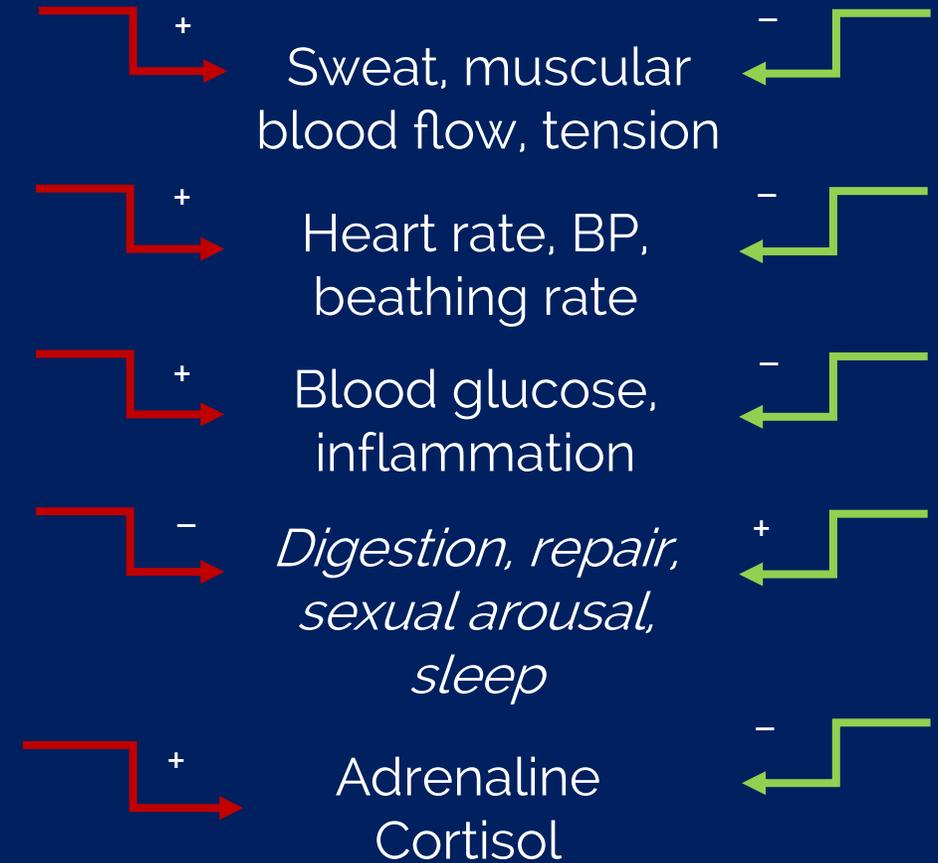
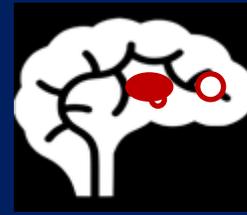
Cognitive, Thoughts



**Fear &
Stress
Response**

Physiological, Sensations





Everyday anxiety

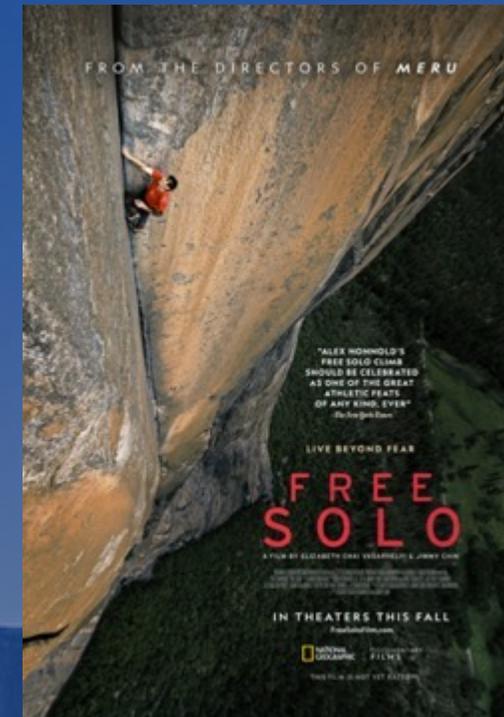
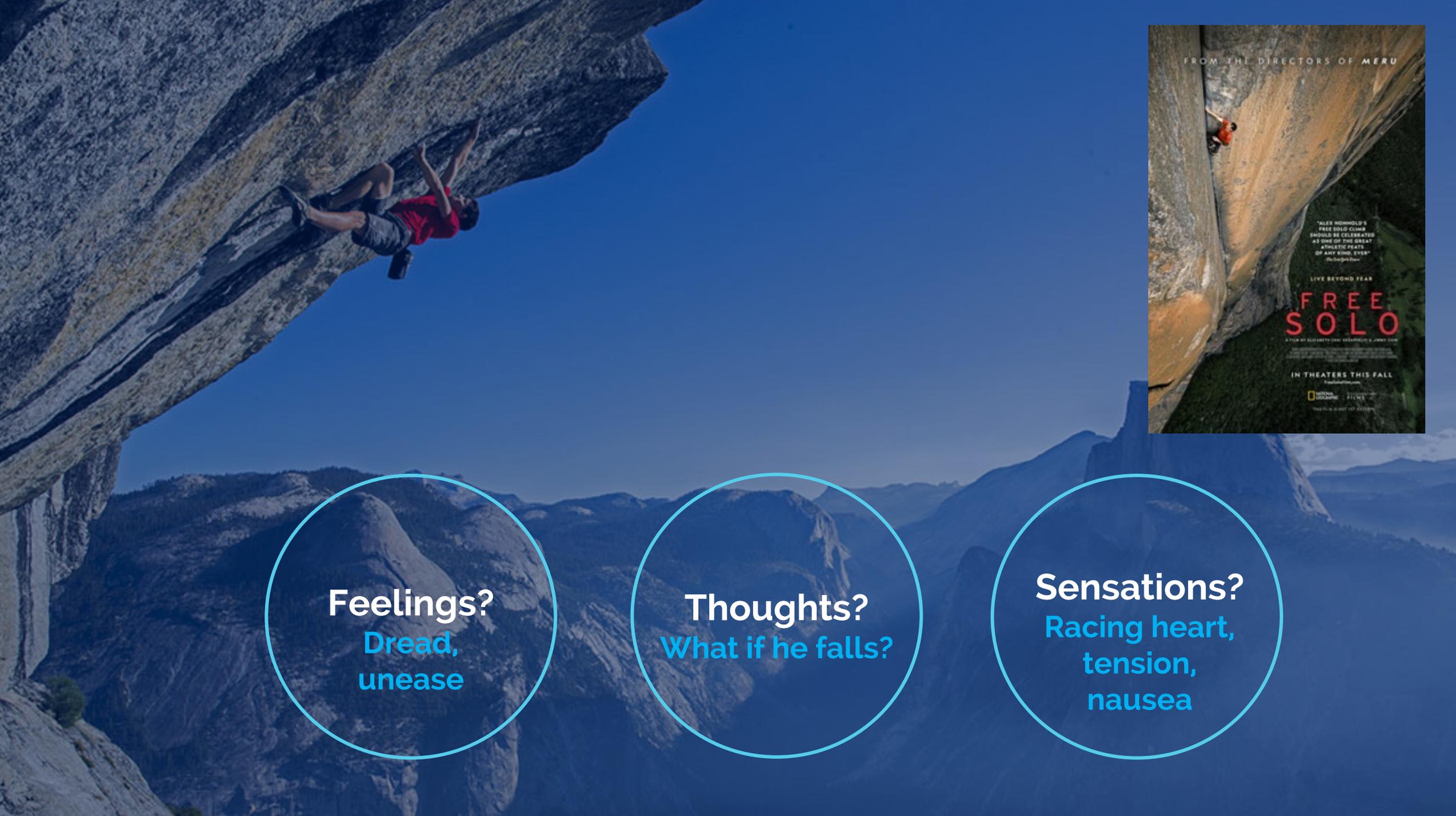
- Triggered by worry about future events
- Narrows attention towards the threat
- Potential to improve performance by improved physical effort or problem-solving
- Fleeting, or eases when the stressor ceases

Acute
panic

Excessive
Anxiety

Everyday
anxiety





Feelings?

Dread,
unease

Thoughts?

What if he falls?

Sensations?

Racing heart,
tension,
nausea

Disordered anxiety.. persistent and disproportionate

- Disrupts our lives, normal behaviours or routines
- Constant and chronic; may also appear unexpectedly
- Focus on our internal world, at the expense of the 'here and now'

Feelings?

Dread, unease,
doom, on edge,
helplessness,
fear, terror,
frustration, anger,
irritability,
sadness

Thoughts?

What if I never
get better?
What if I have another
panic attack?
What if I am broken?
What if it's a
heart attack?

Sensations?

Derealisation,
pounding heart,
tension, headaches,
nausea, bloating,
sensitivity to light,
muscle twitching

Types of anxiety disorder

Panic disorder

Fear of anxiety, and panic attacks

Health anxiety

Misinterpreting symptoms of anxiety as something catastrophic

Social anxiety

Fear of social gatherings, prone to misinterpreting other's facial expressions, worry about giving offence

Phobias e.g. agoraphobia

Fear of being overwhelmed outside of a perceived safe space

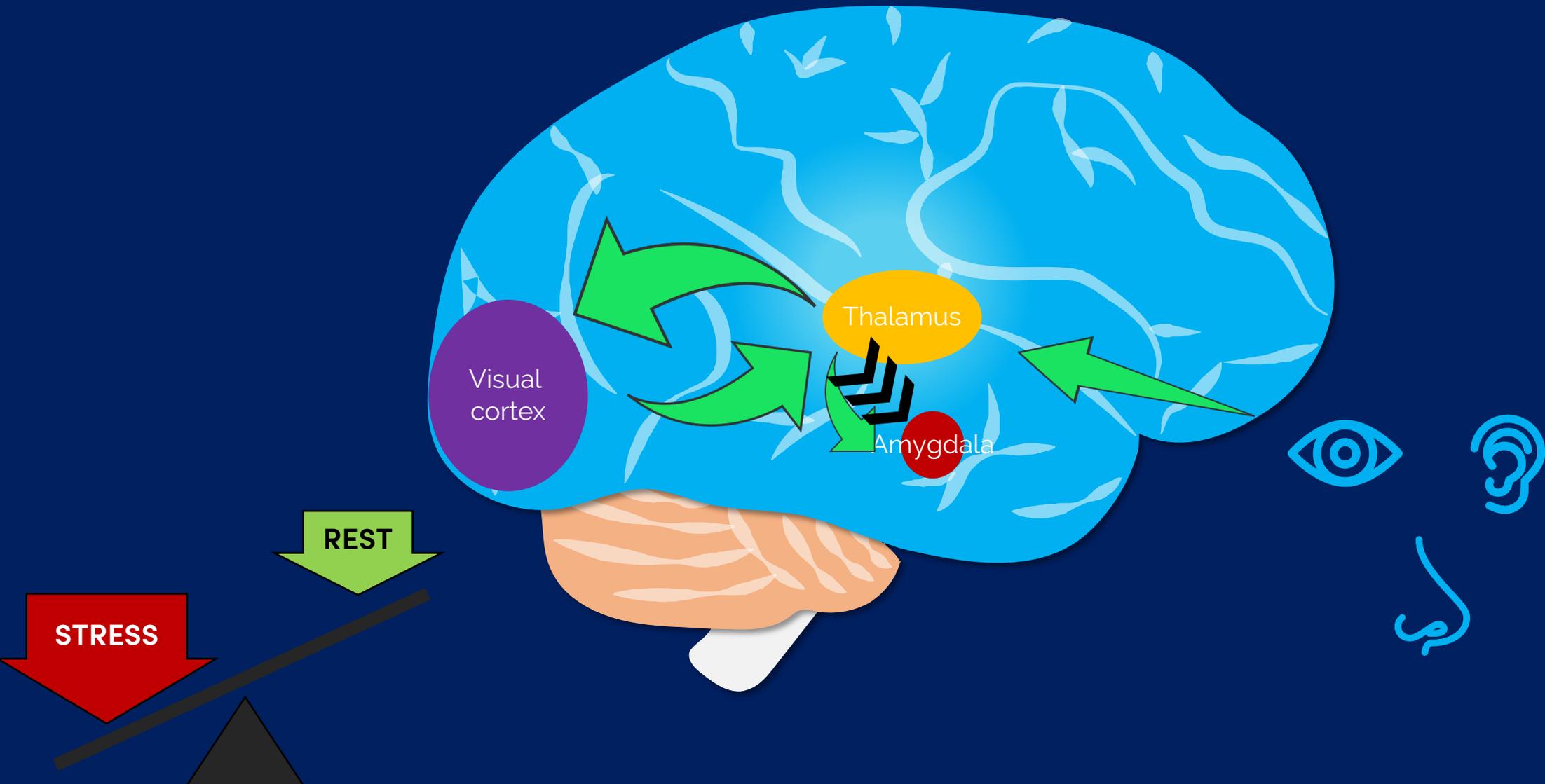
Obsessive Compulsive Disorder (OCD)

Rituals to prevent imagined disaster.. 'If I don't do X, Y will happen'

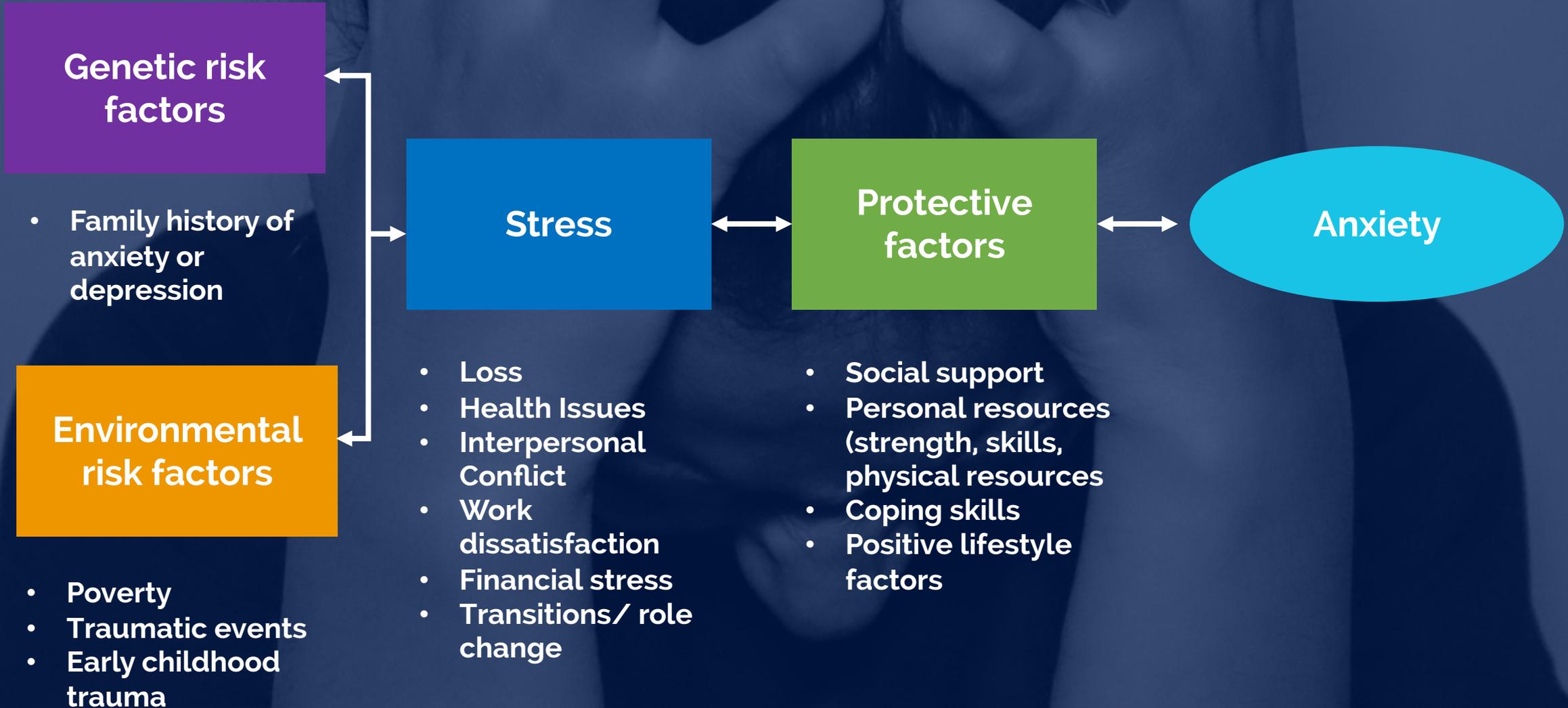
Post-Traumatic Stress (PTSD)

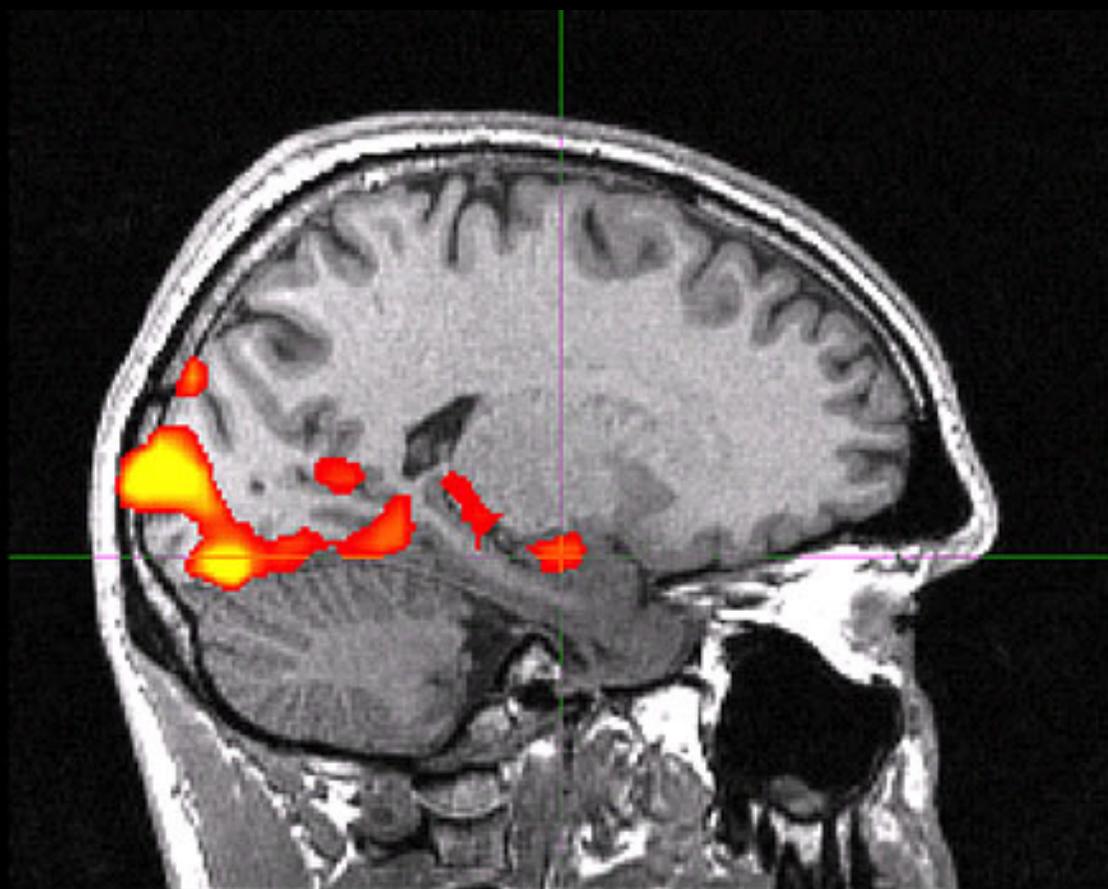
Anxiety surfacing due to unprocessed trauma. Hyper-arousal, re-experiencing, avoidance

Anxiety 'disorder'? A more 'efficient' threat response

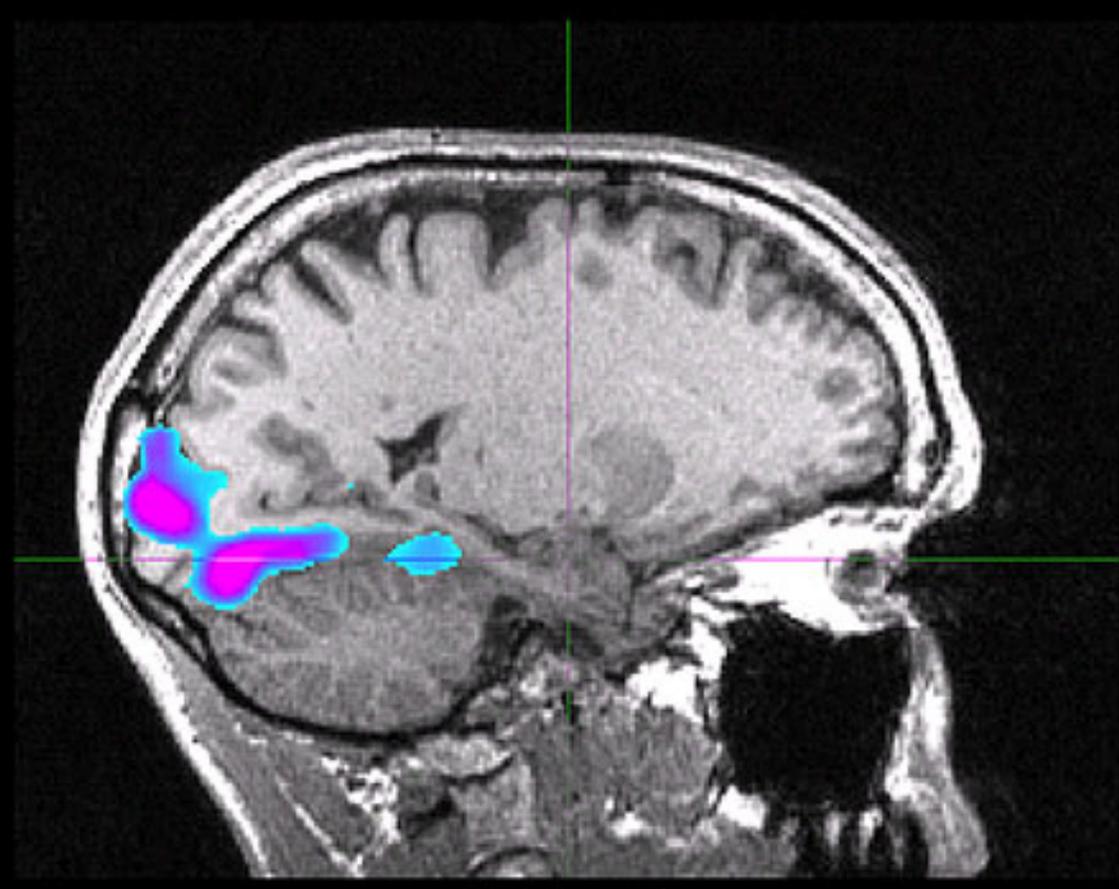


What causes anxiety?



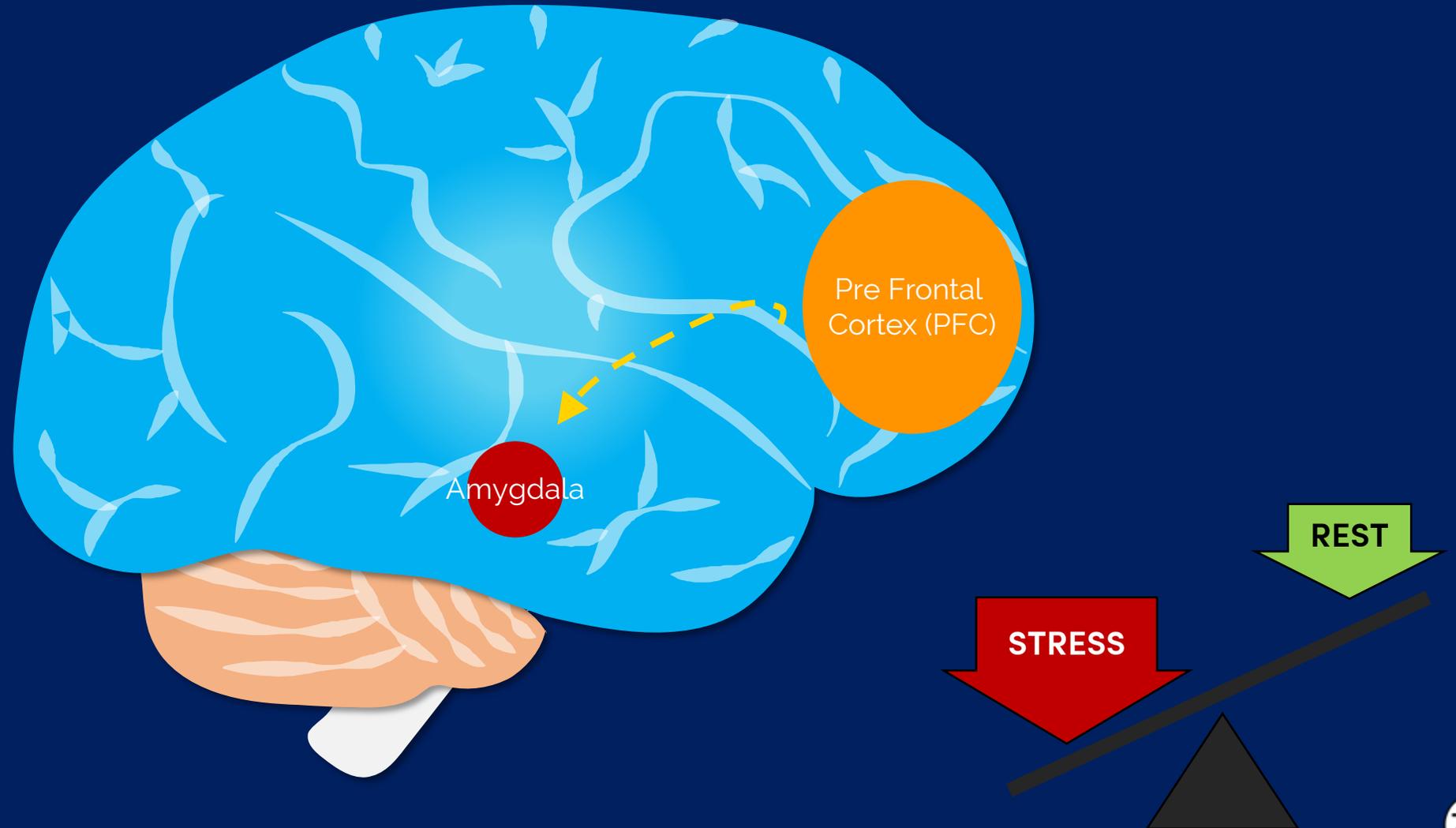


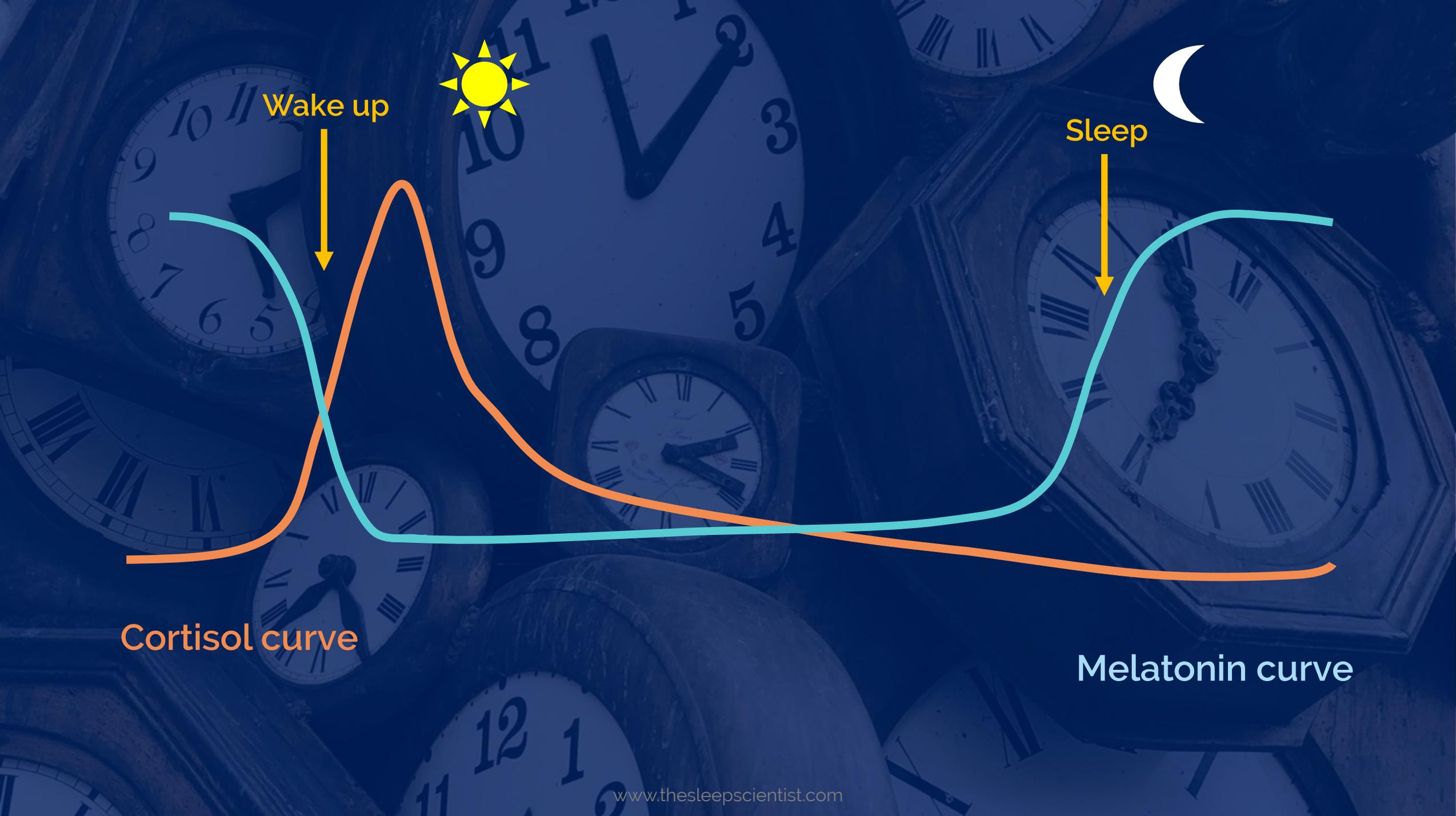
Control subject



Alex Honnold

How is sleep loss linked? Insomnia promotes hyperarousal





Wake up



Sleep



Cortisol curve

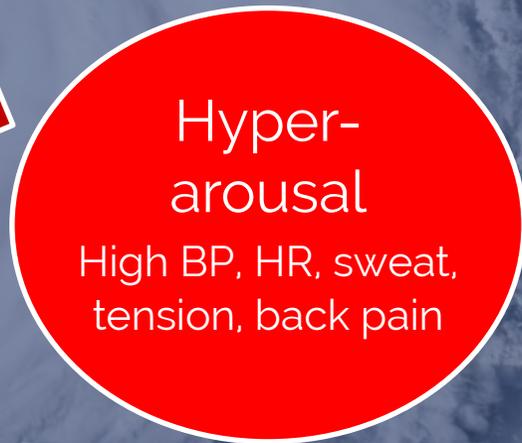
Melatonin curve

Why don't we sleep? Tired, but Wired

Anxiety,
stress,
depression,
burnout



Fast food,
phone addiction,
alcohol, caffeine,
work late



Strained
relationships, poor
decision making,
low productivity

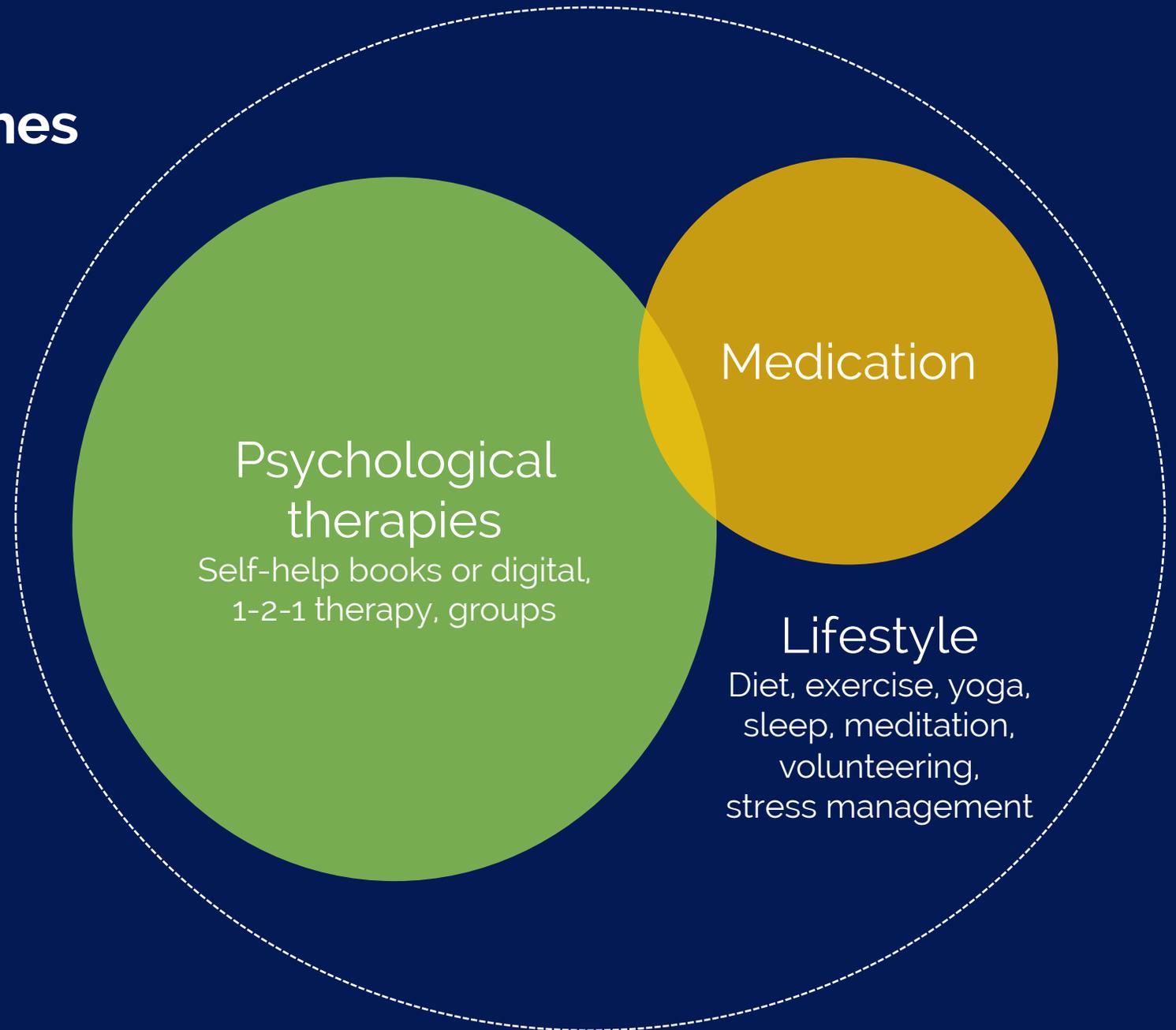


"Tomorrow is going
to be a disaster"
"I'll never sleep
again"



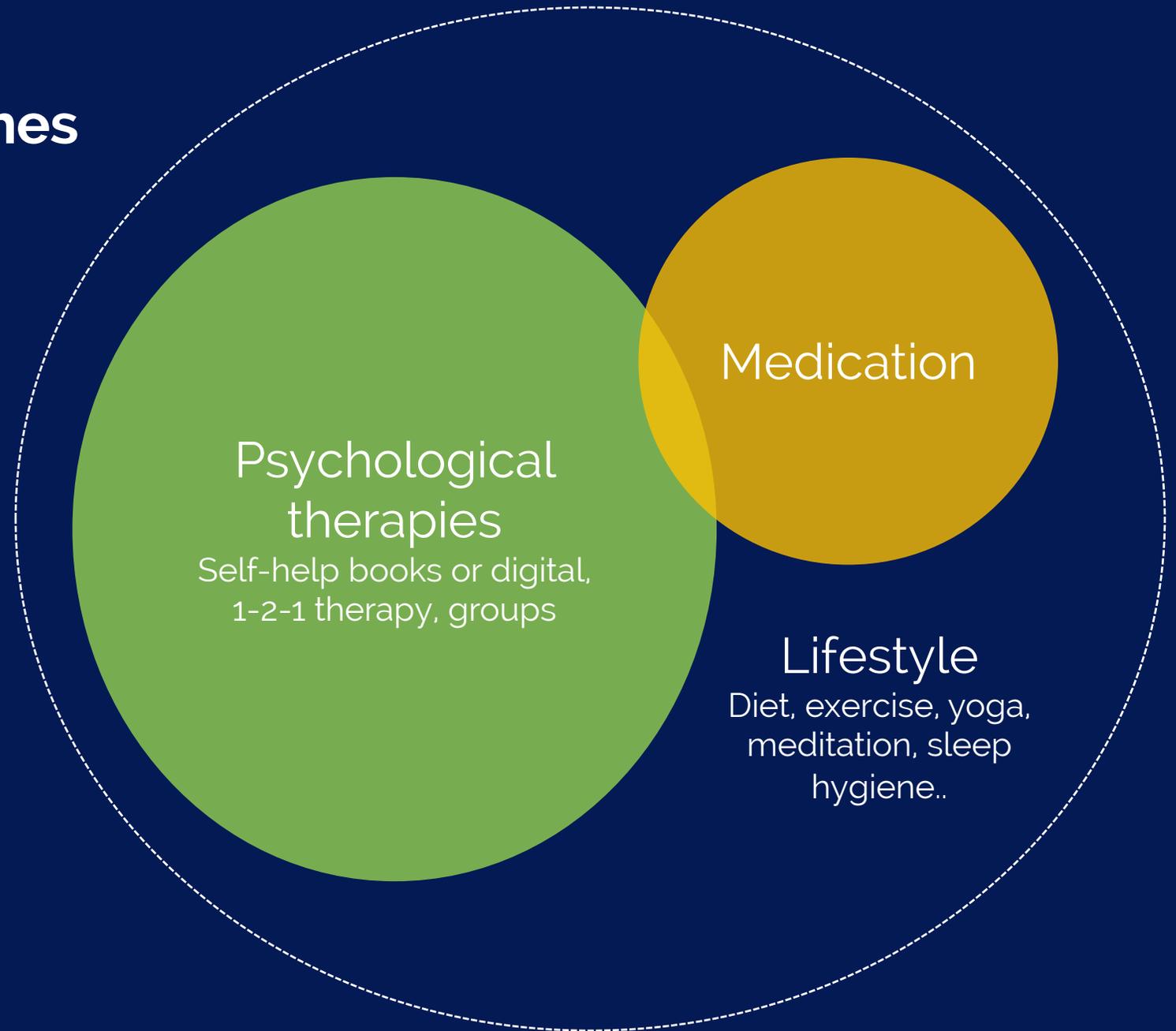
Treatment approaches for Anxiety

Speak to a doctor if you would like to rule out other explanations, or having difficulty coping



Treatment approaches for Insomnia

Speak to a doctor if you would like to rule out other explanations, or having difficulty coping



2. SLEEP PRESSURE

1. ALERTING SIGNAL FROM
BODY CLOCKS,
or CIRCADIAN RHYTHMS

3. STRESS SYSTEM

STRESS

REST

Start with 'Sleep Hygiene'

Only go to bed when you're sleepy

Minimise stimulants (caffeine, nicotine) at least 6hr before bed

Exercise regularly

Avoid late or long naps



Wake up at the same time each day

Get plenty of natural light in the am

Avoid eating 2 hr before bed

Dim the lights in the evening

Switch off technology before bed

Avoid routinely drinking alcohol

Make your bedroom a calm haven

Repeat wind down rituals 30 min

before bed

Find time every day to practice

switching off - relaxation

Protect the bed for sleep & intimacy

*Ask yourself.. have you *really* tried all of these things, at once?

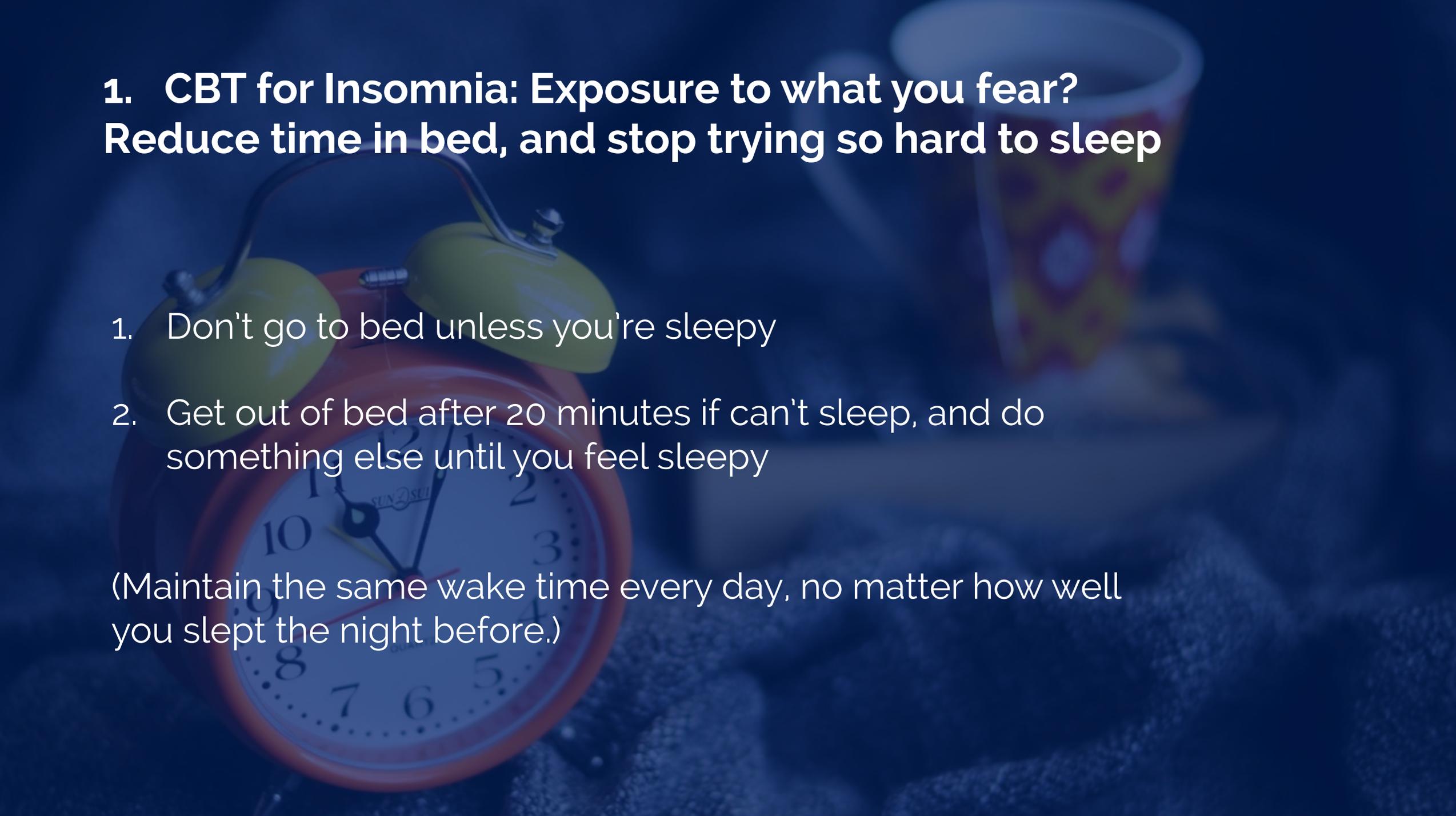
Why is anxiety so sticky? Avoidance and Worry



1. CBT for Anxiety: Exposure with education

- Systematic desensitization: to anxiety, and fear of anxiety
- Avoiding 'white knuckling' and safety behaviours
- Wilful tolerance
- In vivo real world exposure vs. imaginal
- Writing exposure: write out irrational thoughts and fears and how likely they are to come true



A red alarm clock with yellow bells is the central focus, resting on a bed with a patterned blanket. In the background, a mug with a colorful pattern is visible. The entire scene is dimly lit with a blue tint.

1. CBT for Insomnia: Exposure to what you fear? Reduce time in bed, and stop trying so hard to sleep

1. Don't go to bed unless you're sleepy
2. Get out of bed after 20 minutes if can't sleep, and do something else until you feel sleepy

(Maintain the same wake time every day, no matter how well you slept the night before.)

THOUGHTS

- What if I don't sleep again?
- How will I cope tomorrow? It's going to be a disaster.
- What if I can't do x? What if I lose my job? What if I get dumped?

BEHAVIOURS

- Roll over, and over, and over
- Stare at the clock in despair
- Reach for phone as distraction

EMOTIONS

- Helpless
- Frustrated, angry
- Anxious, afraid
- Hopeless, depressed

PHYSICAL SENSATIONS

- Tension
- Heart pounding, sweating,
- Sick in the pit of your stomach

Unable to fall asleep

2. CBT for insomnia: Reframing unhelpful thoughts

Thoughts

- It's normal to wake up at night
- Sleep is a biological necessity. I will sleep if I need it.
- I've coped with little sleep before. I know I'll be OK.

Emotions

- Calm, content
- Confident
- In control

Behaviours

- Count slow breaths, e.g .1,2 breathing
- Paradoxical intention
- If not sleepy after 20 minutes, get out of bed and do something dull until sleepy

Physical sensations

- Tension leaving the body
- Long, slow breaths
- Relaxed
- Comfortable

Unable to fall asleep



2. CBT for Anxiety: Cognitive reframing

What would you tell your best friend?

Automatic thought

I'm losing my mind
and losing control!

I'm a burden on
people

Cognitive reframe

I feel vulnerable and can notice that I'm
having the thoughts 'what if I lose control'.
These thoughts are just thoughts.
They will pass.

Everyone goes through tough times in their
life. This is mine. In the future I'll be able to
help others going through this.

3. CBT for Anxiety & Insomnia: Checking in – seeing improvements over time

Sleep diary & habit tracker

Print me out and stick on the fridge for a daily nudge. Fill in your planned **wake up** and **ready-for-bed** times at the start of the week. Choose up to 3 pro recovery habits to keep track of. At breakfast each morning, tick successes, and feel good about any successes!

Start date: _____	Example	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Target wake up time? (Get out of bed within 10 minutes for a tick)	6:30am							
What's your target bed time? (Only sleep when sleepy)	10:30pm							
How many hours were you in bed for last night?	8 hours							
How many times did you wake up? How long for in total?	2 (0.5hr)							
How many hours were you actually asleep for?	7 hours							
What was your Sleep Efficiency? - hrs sleep/in bed*100	88%							
1. _____ e.g. get outside for 20 min	Y							
2. _____ e.g. no eating 2hr before bed	Y							
3. _____ e.g. phone out of bedroom	Y							
Rate your energy yesterday: 10=best ever, 0 = none	8, good day!							

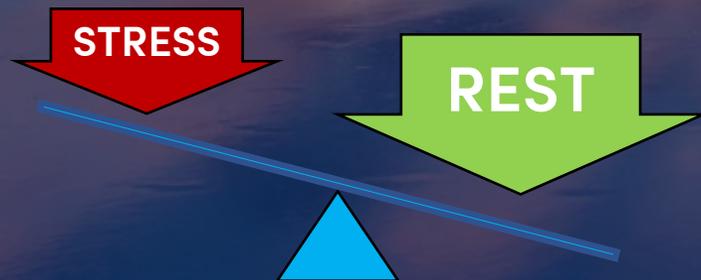
Anxiety attack tracker

If you experience acute anxiety symptoms, or panic attacks, keep a track of the triggers, symptoms and any helpful strategies which helped you to overcome them

Date & time	Trigger(s)	Physical symptoms	Thoughts & emotions	Intensity 0-10	Duration (min)	Strategies
Example, Wed 19/1, 10am	Walking to shops, stressed	High HR, sweating, short of breath, dizzy, nausea, chest pain	Fear of heart attack	9	20	Tried to keep walking, Grounding - identified 5 things to see, hear & feel

4. CBT-I & A: Practice switching off the stress response

What helps you to switch off your stress response?



Having fun, laughter

Meditation

Deep breathing practice

Warm bath or shower

Having a massage

Gentle exercise

Being in nature

Cooking wholesome food

Yoga or Tai Chi

Crafts, colouring, so doku

Cold immersion

How can you improve your cold tolerance?



Wim Hof method combines hypoxic breathing techniques, meditation and cold showers

Start with 10 seconds cold shower, increase gradually to 3 minutes

Kox et al 2014 Voluntary activation of the sympathetic nervous system and attenuation of the innate immune response in humans
Mercer (2022): "Health effects of voluntary exposure to cold water — a continuing subject of debate."

5. Get physical

The most powerful antidepressant, with positive side effects?

Lowers inflammation, boosts serotonin, releases endorphins, boosts brain cell repair, improves sleep quality

- Builds sleep pressure
- Sends an alerting signal to the master clock

Short of time?

HIIT, but not before bed

- 7 minutes, 2-3 times a week
- 30 sec on, 10 sec rest

**Exercise.. as effective as sleeping pills,
without the side effects**

Aerobic exercise vs. Tai Chi?



6. Mindful approaches for addressing thoughts...

Adopt an attitude of curiosity and non-judgmental acceptance – notice thoughts, and let them go

Training the brain to improve awareness and attention



HHS Public Access

Author manuscript

J Occup Health Psychol. Author manuscript; available in PMC 2020 February 01.

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J Occup Health Psychol. 2019 February ; 24(1): 127–138. doi:10.1037/ocp0000118.

Mindfulness on-the-go: Effects of a mindfulness meditation app on work stress and well-being

Sophie Bostock^{a,1}, Alexandra D. Crosswell^{a,b}, Aric A. Prather^b, and Andrew Steptoe^c

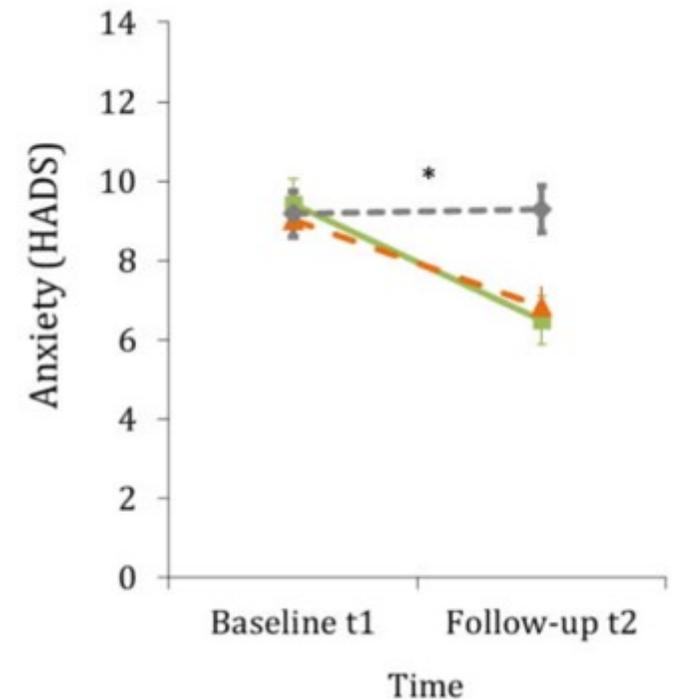
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Abstract

We investigated whether a mindfulness meditation program delivered via a smartphone application (app) could improve psychological well-being and reduce workday stress and pressure during the workday. Participants from 10 companies that were randomized to a control condition. The app offered 45 pre-recorded audio meditations throughout one working day, were made available to participants throughout the 8-week intervention period, participants also emailed to participants 16 weeks after the end of the 8-week intervention period, participants completed 17 meditation sessions (range 0 to 4) during the 8-week intervention period. Participants in the intervention group showed a significant improvement in well-being, distress, job satisfaction, and workday stress compared to the control group. In addition, there was a significant decrease in self-measured workday stress and workday pressure. Sustained positive effects in the intervention group were observed at the 16-week follow-up assessment. This intervention delivered via smartphone and practice of mindfulness meditation improved work stress and well-being, with potential implications for workplace health and productivity.



7. A Mediterranean style diet has been causally linked to better mood, and sleep

Wholegrains, vegetables (6/day), fruit (3/day), dairy (2/day), raw unsalted nuts (1/day), lean red meat, chicken, eggs, olive oil (daily), wine (up to 2 glasses), max 3 servings per week 'extras'



8. Social support, helping behaviours, and the absence of loneliness

Decrease in social behaviours after a sleepless night.. social withdrawal, reduced helping, and a fall in charitable donations.

Sleeping badly? Be more sociable, not less.
Be proactive about helping others!



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Thank you! Any questions?

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