

Stress Management

Exploring strategies and the research behind them...

Mini Med School

6 February, 2022

Nicole Cameron



a place of mind
THE UNIVERSITY OF BRITISH COLUMBIA

Faculty of Medicine



University
of Victoria

let's talk  science

Territorial Acknowledgement

We acknowledge with respect the Lekwungen peoples on whose traditional territory the university stands and the Songhees, Esquimalt and WSÁNEĆ peoples whose historical relationships with the land continue to this day.

Introductions and Disclosures

- This talk will be recorded

Introductions and Disclosures

- I am a second year medical student
- This talk is intended for your entertainment and education, and is not meant to replace advice from your family physician or another health care professional
- All pictures used are free stock photos or photos available under a Creative Commons license unless otherwise noted
- Thank you for joining us!

Agenda



- Recap:
 - What is stress?
 - Why is it important to manage stress?
- Physical stress management strategies:
 - Aerobic exercise
 - Nature
 - Pet therapy
 - Sleep
 - Yoga
 - Progressive Muscle Relaxation
 - Healthy diet
 - Aromatherapy
- Psychological stress management strategies:
 - Writing/journaling
 - Reappraisal/reframing
 - Social connection
 - Meditation/mindfulness
 - Cognitive Behavioural Therapy
- Suggested resources
- Q&A

Intermission

Poll



Which stress management strategies have you tried? (select all that apply)

- exercise
- going outside
- pet therapy
- yoga
- changing how you eat
- aromatherapy
- writing/journaling
- seeking social connection
- meditation/mindfulness
- cognitive behavioural therapy

What is stress?

- A feeling of emotional or physical tension
 - Physiologic stressors
 - Put a strain on our body (e.g., injury, extreme temperatures, etc.)
 - Psychological stressors
 - Anything we interpret as negative or threatening (e.g., events, situations, people, comments, etc.)



What is stress?

- Common elements to all stressful situations...NUTS
 - Novelty
 - Unpredictability
 - Threat to the ego
 - Sense of control



Sources of stress

- Statistics Canada survey 2020: Main source of stress in day-to-day life
 1. Work
 2. Financial concerns
 3. Family
 4. Time pressures / not enough time



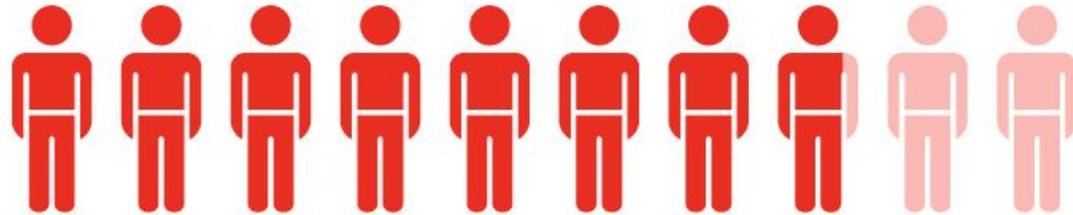
Sources of stress

STRESS IN AMERICA 2020: A NATIONAL MENTAL HEALTH CRISIS

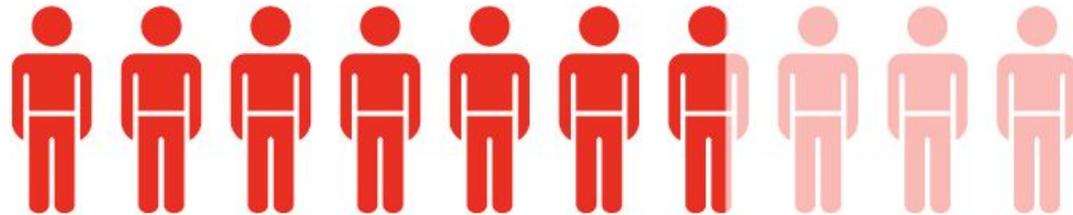
COVID-19 Is a Significant Stressor for Most Americans



Stress in America
2020 study: COVID-19



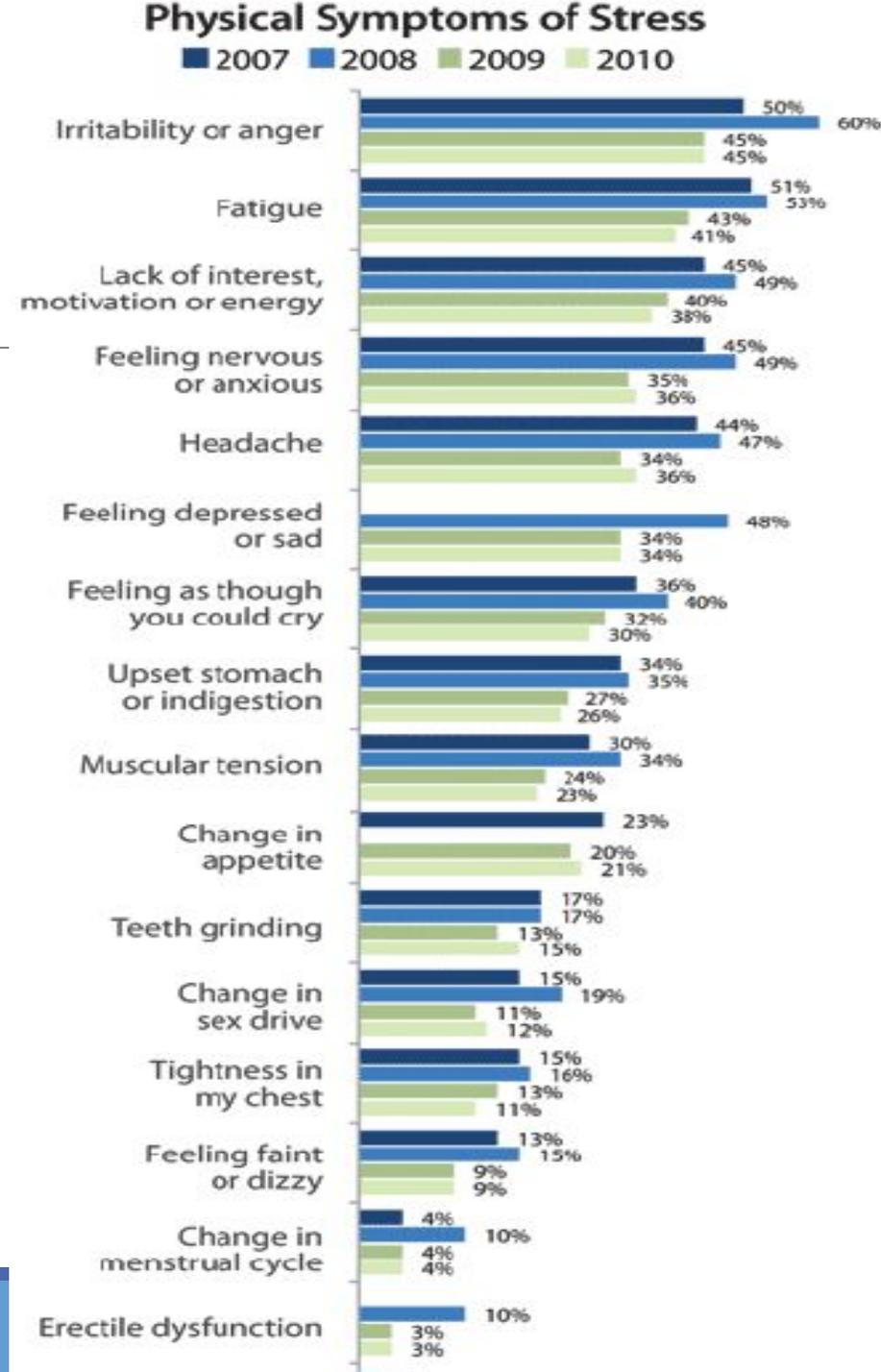
Nearly 8 in 10 (**78%**) say the coronavirus pandemic is a significant source of stress in their life



Nearly 7 in 10 (**67%**) say they have experienced increased stress over the course of the pandemic

Feelings of stress

- What are the experienced effects of stress?
 - Irritability or anger
 - Fatigue/lack of motivation
 - Feeling anxious
 - Headache
 - Feeling depressed or sad
 - Upset stomach/indigestion



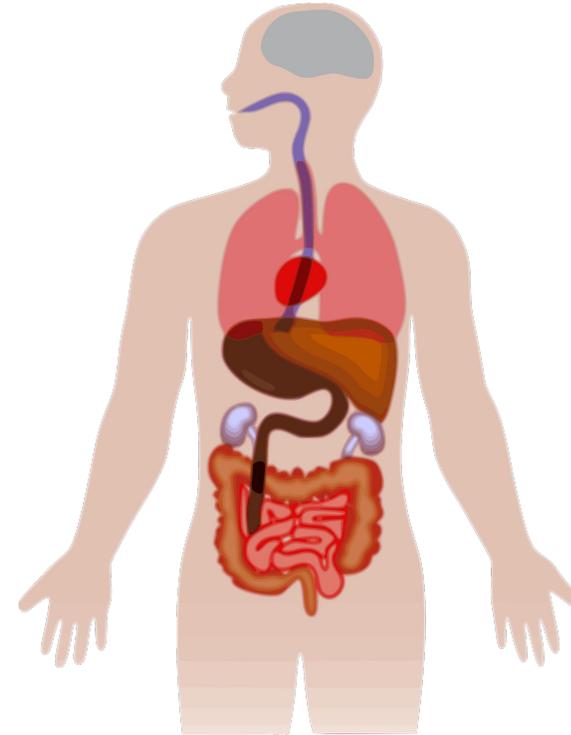
Effects of stress – acute



- The stress response evolved to be adaptive/beneficial in times of stress
 - In the short-term, it is!
- Short-term stress can have positive impacts on functioning
 - Upregulation of part of the immune system
 - Improved performance and memory

Effects of stress - chronic

- Chronic stress can lead to negative effects on multiple parts of the body, including:
 - Immune system
 - Memory/cognition
 - Cardiovascular system
 - Diabetes
 - Obesity
 - Gastrointestinal system
 - Mental health



Stress management - physical

- Aerobic exercise
- Nature
- Pet therapy
- Sleep
- Yoga
- Progressive Muscle Relaxation
- Healthy Diet
- Aromatherapy



Stress management - physical

Aerobic exercise

- AKA “cardio”, endurance exercise
- A type of exercise that improves cardiovascular function
- Examples: walking, swimming, cycling, running, etc.



Stress management - physical

- Aerobic exercise has been hypothesized to protect against stress by:
 - Improving psychological coping with stress
 - Reducing physiological reactivity to stress
 - Counteracting effects of stress on disease risk

Stress management - physical

- **Can aerobic exercise improve psychological coping with stress?**
 - Yes, but in certain populations
 - Several studies have reported improved mood, coping, and reduced depression and anxiety after an aerobic exercise program
 - However, many other studies have not been able to replicate this result
 - The most promising evidence has been demonstrated in people who have a diagnosis of depression
 - Found beneficial psychological effects similar to or exceeding those of medication

Stress management - physical

- Can aerobic exercise reduce physiological reactivity to stress?

 = body's physical response to stress (heart rate, blood pressure, level of stress hormones, etc.)

- No conclusive evidence

- In a set of studies comparing “well-trained exercisers” with “untrained non-exercisers”, only half of the studies found reduced stress reactivity and/or enhanced recovery after stress

- Another study trained a group of people in aerobic exercises for 4 months and while their fitness improved, their physiological reactivity to stress did not

Stress management - physical

- **Can aerobic exercise counteract effects of stress on disease risk?**
 - Yes, particularly cardiovascular disease risk
 - Almost all studies on aerobic training found a decrease in the absolute levels of heart rate and blood pressure, which reversed after de-training
 - Strongly suggests causal effect of exercise
 - Regular exercise has been shown to reduce cholesterol, triglycerides, and blood sugar/diabetes risk

Stress management - physical

Aerobic exercise:

- Tips:
 - Canada guidelines recommend 150 minutes per week, in bouts of at least 10 minutes (but any exercise is better than none)
 - Take a 10 minutes walk at lunch
 - Play with (grand)children or pets for 10 minutes when you get home
 - Go for a family bike ride or play a game of tennis
 - Take your coffee date on a walk



Stress management - physical

Nature

- A systematic review of nature and stress found:
 - Nature exposure reduced perceived stress in 5/6 studies
 - Nature exposure reduced physiologic stress in 7/7 studies



Stress management - physical

Nature

- A systematic review of nature and stress found:
 - Nature exposure reduced perceived stress in 5/6 studies
 - Nature exposure reduced physiologic stress in 7/7 studies
- When compared with an urban walk, a 90-minute walk through nature was associated with decreased activity in brain areas associated with stress



Stress management - physical

Nature

- A systematic review of nature and stress found:
 - Nature exposure reduced perceived stress in 5/6 studies
 - Nature exposure reduced physiologic stress in 7/7 studies
- When compared with an urban walk, a 90-minute walk through nature was associated with decreased activity in brain areas associated with stress
- Nature exposure of 30+ minutes per week could prevent up to 9% of new cases of hypertension and 7% of new cases of depression



Stress management - physical

Nature

- Nature can reduce stress during COVID-19 lockdowns
 - Use of public natural spaces (e.g. parks)
 - Viewing nature from home
 - Contact with private green spaces/greenery (e.g. house plants)



Stress management - physical

Nature

- Tips:
 - Try to spend at least 30 minutes per week in nature
 - Combine your exercise with nature exposure by exercising outside rather than in a gym
 - Make use of local green space: parks, woodlands, beaches, etc.
 - Increase your private green space by adding plants to your balcony or inside your home



Stress management - physical

Pet therapy:

- Animal-assisted therapy: animals support people with recovery from and coping with medical concerns
- Animal-assisted activities: animals provide general comfort and enjoyment in places like nursing homes, schools, etc.



Stress management - physical

Pet therapy:

- Meta-analysis found exposure to pet therapy can reduce perceived stress and physiological reactivity to stress
 - Significant reduction in self-reported anxiety and stress levels
 - Significant reduction in heart rate
 - No effects on blood pressure



Poll



- Can brief exposure to dogs reduce stress?

Stress management - physical

Pet therapy:

- Can brief exposure to dogs reduce stress? **Yes!**
 - A study on University students found a reduction in perceived stress and physiological stress after spending just 15 minutes with a dog
 - Significantly reduced anxiety scores
 - Significantly reduced blood pressure



Stress management - physical

Pet therapy:

- Tips:
 - Spend time with your friends'/family's pets or consider getting your own
 - Volunteer at your local animal shelter
 - Sign up for pet therapy



Stress management - physical

Sleep

- We know that stress can negatively impact sleep quality...but can improving sleep quality improve mental health?



Stress management - physical

Sleep

- We know that stress can negatively impact sleep quality...but can improving sleep quality improve mental health? **YES**



Stress management - physical



Sleep

- A meta-analysis of randomized controlled trials (highest quality research) found improving sleep leads to significant improvement in general mental health and a significant reduction in depression, anxiety, rumination, and stress
 - Found a dose-response relationship: greater improvements in sleep greater improvements in mental health
 - Suggests sleep is causally related to experience of mental health issues

Stress management - physical

Sleep

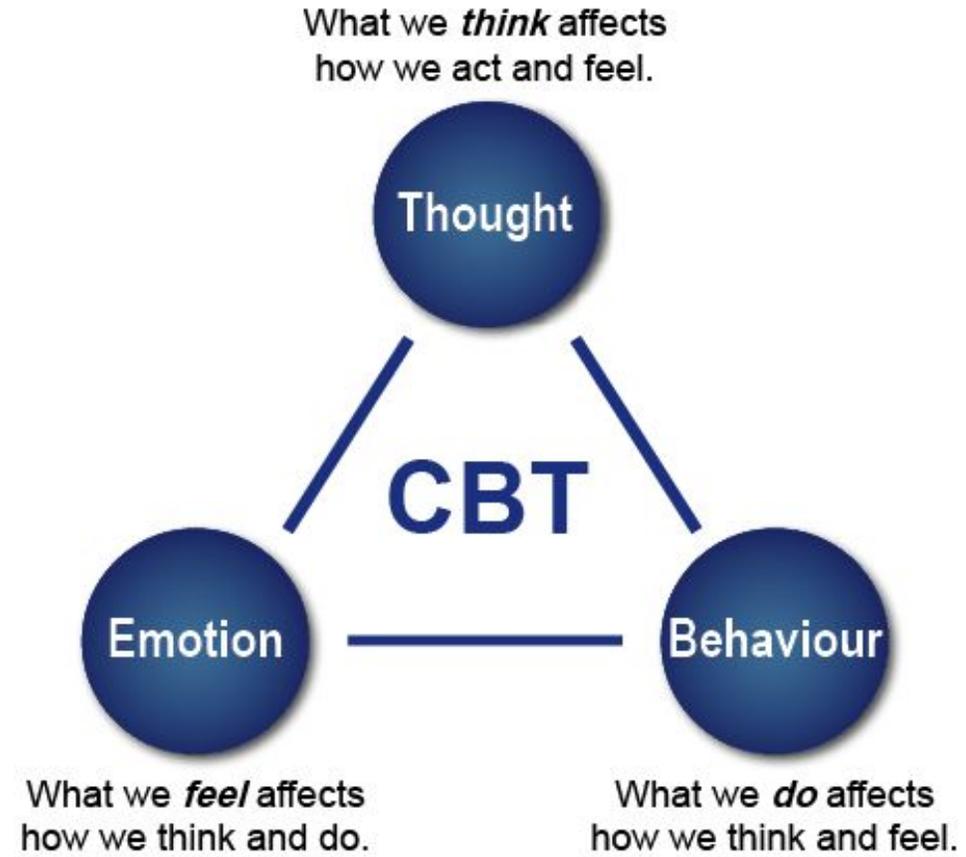
- Strategies that were shown to significantly improve sleep quality:
 - Cognitive Behavioural Therapy for Insomnia (CBTi)
 - Acupuncture
 - Sleep hygiene



Stress management - physical

Sleep

- Cognitive Behavioural Therapy for Insomnia (CBTi)
 - Helps you address thoughts and behaviours that prevent good quality sleep
 - Includes techniques for stress reduction, relaxation, sleep schedule management



Stress management - physical

Sleep

- Cognitive Behavioural Therapy for Insomnia (CBTi)
 - Randomized controlled trials have shown:
 - CBTi is at least as effective as sleep medications
 - CBTi has greater effectiveness than medications 6+ months after treatment and may reduce or eliminate the need for long-term medication
 - People are significantly more satisfied with their sleep when using CBTi than when using medications
 - Effects found after 6-8 weeks of biweekly sessions

Stress management - physical

Sleep

- Acupuncture
 - Randomized controlled trial has shown acupuncture can significantly improve insomnia
 - 10 x 30-minute sessions over 2 weeks
 - Results lasted for 6+ weeks



Stress management - physical

Sleep

- Sleep hygiene:
 - A set of general practices to help promote sleep



Stress management - physical

Sleep

- Sleep hygiene
 - Follow a consistent sleep schedule – go to sleep and wake up at the same time, even on weekends
 - Make bedroom dark and cool (15-19 °C)
 - Take a warm bath or shower before bed
 - Avoid large meals, especially those high in fat, before bed
 - Avoid caffeine and alcohol before bed
 - Engage in regular physical activity
 - Avoid screens 1 hour before bed



Stress management - physical

Sleep



- Tips:
 - Work on improving sleep hygiene and create a routine
 - If insomnia is a concern for you, consider trying alternative therapy like CBTi or acupuncture (talk to health care provider to determine if right for you)

Stress management - physical

Yoga

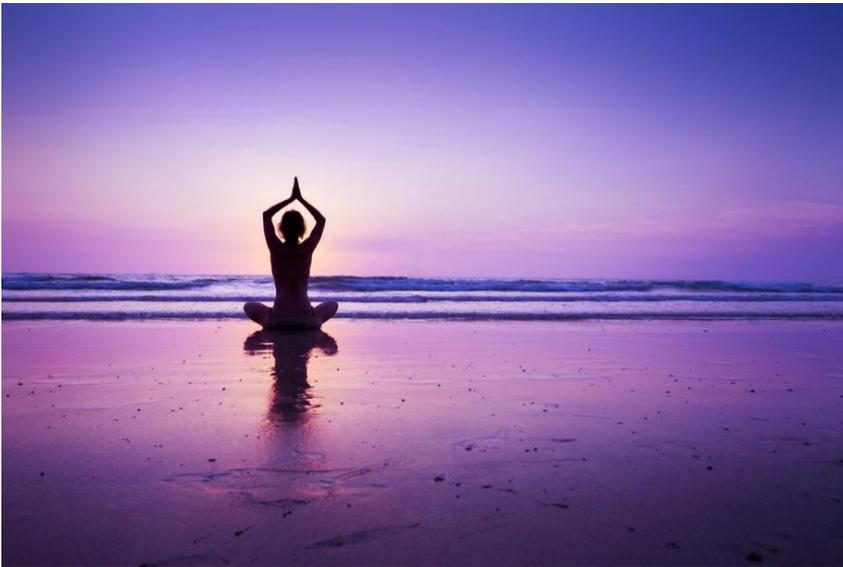
- A group of physical, mental, and spiritual practices, originating in India, with the goal of bringing harmony between mind and body



Stress management - physical

Yoga

- Over 85% of yoga users reported reduced stress



Stress management - physical

Yoga

- Over 85% of yoga users reported reduced stress
 - 60% said they were motivated to exercise more regularly
 - 40% motivated to eat healthier
 - 55% reported improved sleep

Stress management - physical

Yoga

- Meta-analysis of randomized controlled trials on yoga and cancer patients
 - Yoga may have positive psychological effects on cancer patients
 - One study found that an 8-week program improved stress in cancer patients, with effects lasting at 1 year follow up
 - Not able to tell if related to yoga as a whole or specific aspects like meditation

Stress management - physical

Yoga

- Randomized controlled trial on yoga and older adults:
 - Assigned to chair yoga, chair exercise, or control
 - Yoga group improved more than exercise and control groups in anger, anxiety, depression, well-being, and self-efficacy scores



Stress management - physical

Yoga

- Tips:
 - Try attending a yoga class at your local community centre
 - Try following along to instructional online yoga videos or flowcharts



Stress management - physical

Progressive Muscle Relaxation (PMR):

- A process of relaxing your muscles through a 2-step process
 - First, systematically tense muscle groups
 - Then release tension, taking note of how muscles feel when relaxed



Stress management - physical

Progressive Muscle Relaxation (PMR):

- A 20-minute PMR session was found to significantly reduce in stress nursing students
- 2 PMR sessions per day for 5 days significantly reduced depression and anxiety in patients with coronary artery disease (heart disease)
- 15 days of PMR therapy led to significant reductions in anxiety of hospitalized cancer patients

Stress management - physical

Progressive Muscle Relaxation (PMR):

- Tips: How to perform PMR:
 - Lay down or sit comfortably, plan to spend about 15 minutes
 - Breath in, tense first muscle group (hold 4-10 seconds)
 - Breath out, suddenly and completely relax muscle group
 - Relax for 10-20 seconds, notice how your muscles feel when relaxed
 - Repeat with next muscle group

Intermission

- 10-minute break





Poll

- Can what we eat and how we eat impact our mental health?

Stress management - physical

Healthy diet:

- Can what we eat and how we eat impact our mental health? **YES**



Stress management - physical

Healthy diet:

- A study followed 12,400 people over 7 years and found that those who increased consumption of fruits and vegetables during the study period reported higher levels of happiness, life satisfaction, and well-being



Stress management - physical

Healthy diet:

- Randomized controlled trial on people with depression and diet
 - Changed from a Western diet (high in processed foods) to a Mediterranean diet (high in fruits and vegetables, whole grains, legumes, lean meats)
 - After 12 weeks, depression scores significantly decreased in the Mediterranean diet group and 1/3 of those were no longer depressed



Stress management - physical

Healthy diet: Social eating

- Those who eat socially more often report feeling happier, more satisfied with life, and more engaged in their communities
 - Suggests social eating improves social bonding and well-being



Stress management - physical

Healthy diet: Social eating

- Children/adolescents who have regular family meals shown to have reduced risk of mood, anxiety, and substance-use disorders than those without family meals
 - Protective effect increases with increased number of shared meals per day



Stress management - physical

Healthy diet:

- Tips:
 - Try increasing the number of fruits and vegetables in your diet
 - Add leafy greens to soups and stews, add a fruit to your breakfast, try smoothies with both fruits and vegetables
 - Follow a Mediterranean diet as much as possible:
 - Lots of fruits and vegetables, whole grains, legumes, fish, lean meats, nuts/seeds
 - If possible, share a meal with a friend or family member



Stress management - physical

Aromatherapy

- Using natural scents like essential oils to promote well-being



Stress management - physical

Aromatherapy



- Inhaling peppermint aroma led to:
 - Significantly reduced salivary cortisol (stress hormone) levels
 - Suggests ability to reduce stress levels
 - Significantly increased salivary CgA (marker of acute stress) levels
 - Associated with feeling uplifted
 - Suggests ability to increase positive eustress (good stress)

Stress management - physical

Aromatherapy

- Inhaling lavender aroma led to:
 - Mixed results
 - One study showed no significant changes and slightly increased cortisol levels, suggesting slightly increased stress
 - Other studies have shown decreased cortisol after deep breathing exercises using lavender aroma
 - Unsure whether positive results from breathing exercises or aroma



Stress management - physical

Aromatherapy

- Tips:
 - Evidence shows limited effectiveness of aromatherapy, but if interested in trying, more evidence for peppermint
 - Talk to your physician if history of allergies or respiratory conditions
 - Avoid applying essential oils to skin as they are known irritants
 - Try inhaling the aroma or using a diffuser
 - Keep essential oils away from pets, can be toxic



Stress management - psychological

- Writing/journaling
- Reappraisal/reframing
- Social connection
- Meditation/mindfulness
- Cognitive Behavioural Therapy



Stress management - psychological

Writing/journaling:

- Consists of writing about your thoughts or about a specific topic/prompt



Stress management - psychological

Writing/journaling:

- **Expressive writing** has shown benefit for many physical and mental disorders
 - Writing about deepest thoughts and feelings related to emotional events
 - Involves writing about past traumas/stressors
 - Has been shown to increase anxiety in those who are less emotionally expressive



Stress management - psychological

Writing/journaling:



- Writing about **life goals** has been shown to have the same benefits as writing about trauma (expressive writing)
 - Participants wrote for 20 minutes per day for 4 days
 - 5 months after writing, both groups had decreased illness compared to controls
 - Writing about life goals was significantly less stressful than trauma
 - Those who wrote about life goals had significant increase in well-being scores

Stress management - psychological

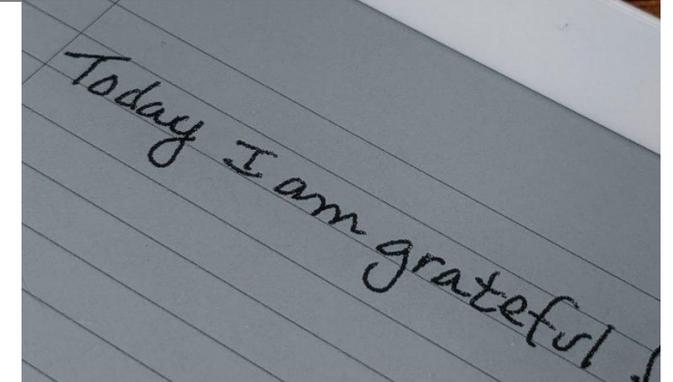
Writing/journaling:



- **Positive affect journaling (PAJ)** and mild-moderate anxiety:
 - Wrote for 15 minutes per day, 3 days per week x 12 weeks
 - “What are you thankful for?” “What did someone else do for you?”
 - Led to decreased mental distress, anxiety, and perceived stress
 - Led to greater perceived personal resilience, social integration, and fewer days of pain inhibiting activities

Stress management - psychological

Writing/journaling:



- Tips:
 - Try regular gratitude journaling – has become very popular and there are many resources online with prompts/ideas
 - Bonus: you will have a record of lots of positive experiences/things in your that you can refer to whenever you need a reminder
 - If you are someone who uses emotional expressivity regularly, consider writing more in depth about difficult situations/stressors and your emotions involved

Stress management - psychological

Reappraisal/reframing

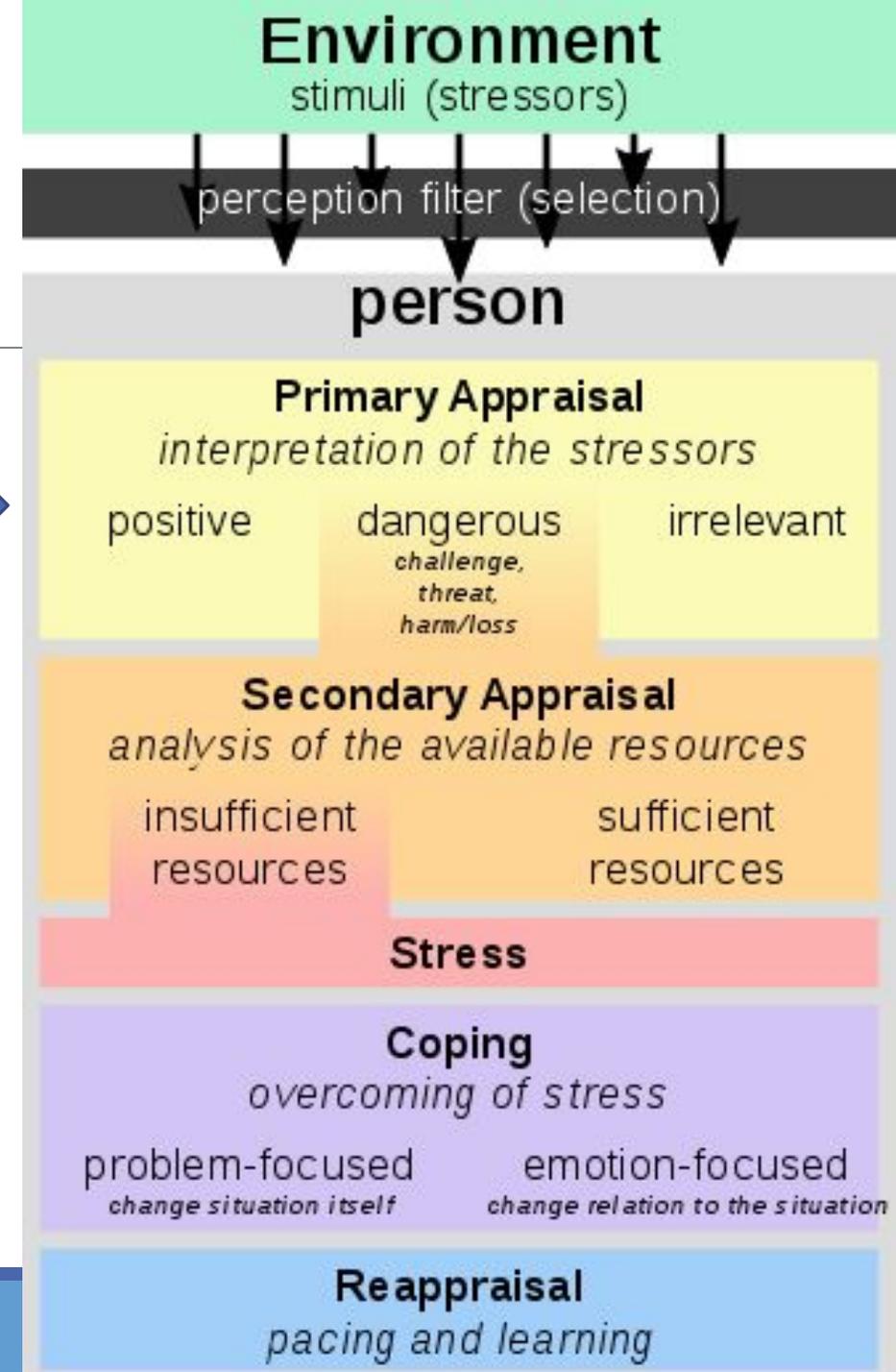
- Appraisal Theory: our evaluation (appraisal) of events causes an emotional response based on that appraisal
 - Reappraisal is a form of cognitive change that involves reinterpreting an emotion-causing situation in order to modify its emotional impact



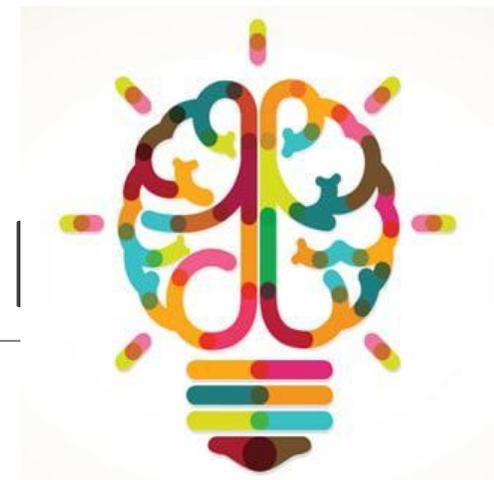
Stress management

Reappraisal/reframing

- Reappraise the situation by trying to see it in a positive light
 - Imagine what advice you would give a friend in this situation to make them feel better – what unexpected positive impact could this have on their life down the road?
 - What good things might you learn from this experience?



Stress management - psychological



Reappraisal/reframing

- A study examined whether cognitive reappraisal ability (CRA) could moderate the relationship between cumulative stress and depressive symptoms
 - Found that the ability to use cognitive reappraisal to down-regulate feelings of sadness was the best predictor of depressive symptoms
 - At higher levels of cumulative stress, people with high CRA had fewer depressive symptoms than those with low CRA
 - At lower levels of cumulative stress, there was no association between CRA and depressive symptoms

Stress management - psychological



Reappraisal/reframing

- Physiological responses to stress can also be affected by appraisal
 - Optimism and positive coping has been shown to moderate immune responses to stress
 - Cardiovascular and neuroendocrine responses to stressful experiences are depending on someone's appraisal of the situation
 - Measured via blood pressure, heart rate, and stress hormone levels



Poll

- We often turn to others in times of need, but does social support protect against the effects of stress?

Stress management - psychological

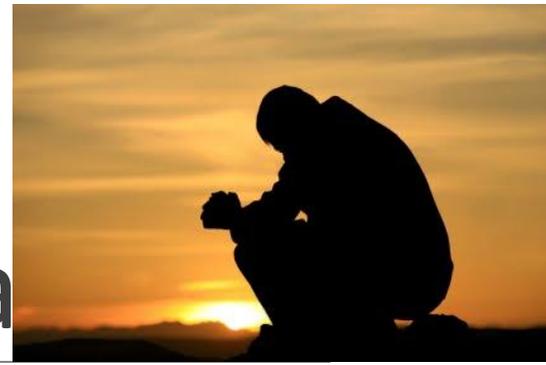
Social connection

- We often turn to others in times of need, but does social support protect against the effects of stress?

YES



Stress management - psychological



Social connection

- Low social support is associated with increased morbidity and mortality from multiple health conditions
 - One study found people without social ties were 1.9-3x more likely to die from heart disease, stroke, and cancer over a 9-year study period
 - Associated with increased physiological reactivity to stress (heart rate, blood pressures, etc.)
 - Lonely people have been shown to have overall increased HPA axis (stress response system) activity

Stress management - psychological



Social connection

- High levels of social support have been shown to protect against mental and physical illness
 - Predicts less depression in people with heart disease
 - Led to decreased functional impairment and improved recovery in people with depression
 - Associated with higher adherence to medical treatments
 - Enhances resilience to stress

Stress management - psychological



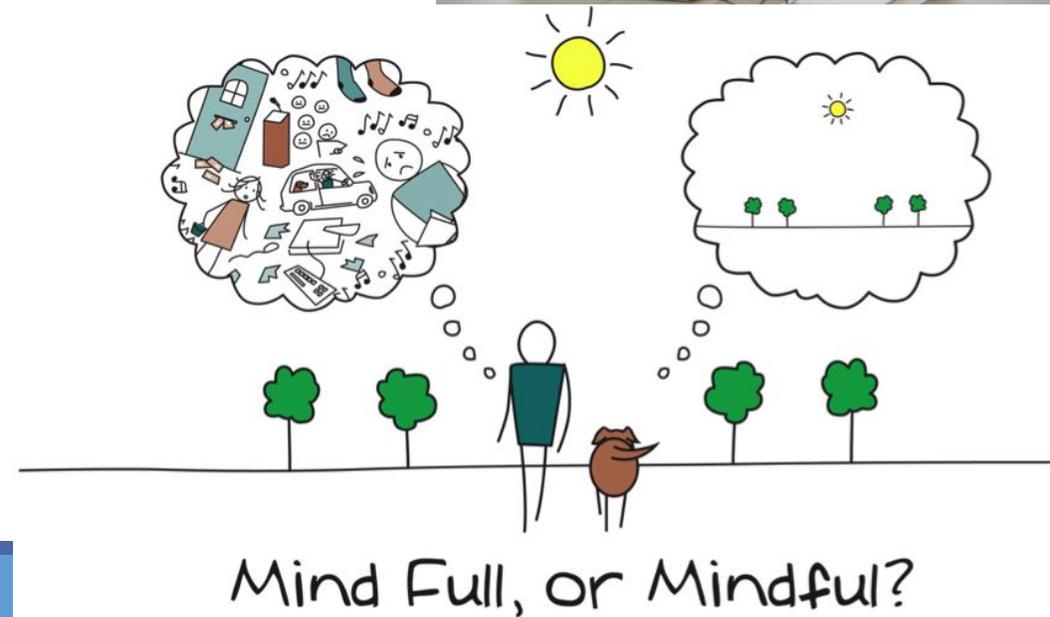
Social connection

- Tips:
 - Remember, your social support network is there to help you – reach out!
 - Stay in touch, take time to express how important your friends/family are to you
 - Looking to grow your social network? Try volunteering or joining a class or fitness group to meet new people
 - However, the goal of building a network is to reduce stress, not add to it – watch out for situations/people that drain your energy

Stress management - psychological

Mindfulness/meditation

- Mental training practices that train you to slow down thoughts, let go of negativity, and calm the mind and body



Stress management - psychological



Mindfulness/meditation

- Meta-analysis of randomized controlled trials found that mindfulness meditation programs can reduce symptoms of anxiety, depression, pain, and stress
 - However, found no evidence that meditation is better than active treatments like exercise, medications, and behavioural therapies

Stress management - psychological



Mindfulness/meditation

- Mindfulness-based stress reduction (MBSR) programs shown to significantly improve symptoms of stress in cancer patients
 - 8-week program; involved relaxation, meditation, and gentle yoga
 - Led to enhanced quality of life, decreased stress symptoms, cortisol and immune changes corresponding to decreased stress, and decreased blood pressure
 - Improvements maintained over a year of follow-up

Stress management - psychological



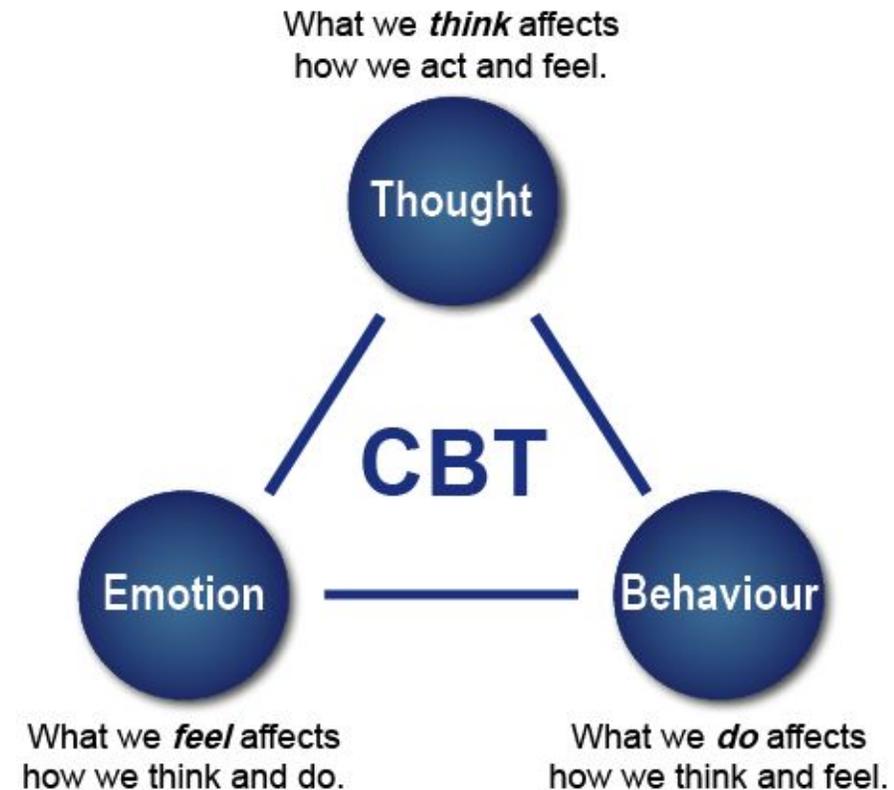
Mindfulness/meditation

- Tips: try out a self-led mindfulness meditation practice
 - Set aside 5 minutes and find a quiet, comfortable place; set a timer
 - **Focus on your breathing:** become aware of your breath and how your body moves as you breath in and out
 - **Simply notice your thoughts:** when thoughts pop up, don't try to ignore or suppress them, just be a "witness" to them. Observe your thoughts as clouds passing by.
 - **Be patient with yourself:** if you feel you're getting carried away in your thoughts, observe where your mind went, without judgement, and focus on your breathing

Stress management - psychological

Cognitive Behavioural Therapy

- A type of psychotherapy that focuses on how a person's thoughts can impact their behaviours and emotions with the goal of modifying maladaptive patterns.



Stress management - psychological

Cognitive Behavioural Therapy

- A review of meta-analyses found that CBT is beneficial for many physical and mental disorders
 - Found that some of the strongest support exists for CBT for general stress

Stress management - psychological

Cognitive Behavioural Therapy

- A meta-analysis on work-based stress found CBT to be more effective than meditation/relaxation, journaling, exercise, and goal-setting
 - One theory to explain this is that CBT is an active process that encourages individuals to take charge of their negative thoughts, feelings, and behaviours, rather than focusing attention away from the source of stress

Stress management - psychological

Cognitive Behavioural Therapy

- Can self-led CBT improve mental health?

Stress management - psychological

Cognitive Behavioural Therapy

- Can self-led CBT improve mental health? **YES, to an extent**

Stress management - psychological

Cognitive Behavioural Therapy

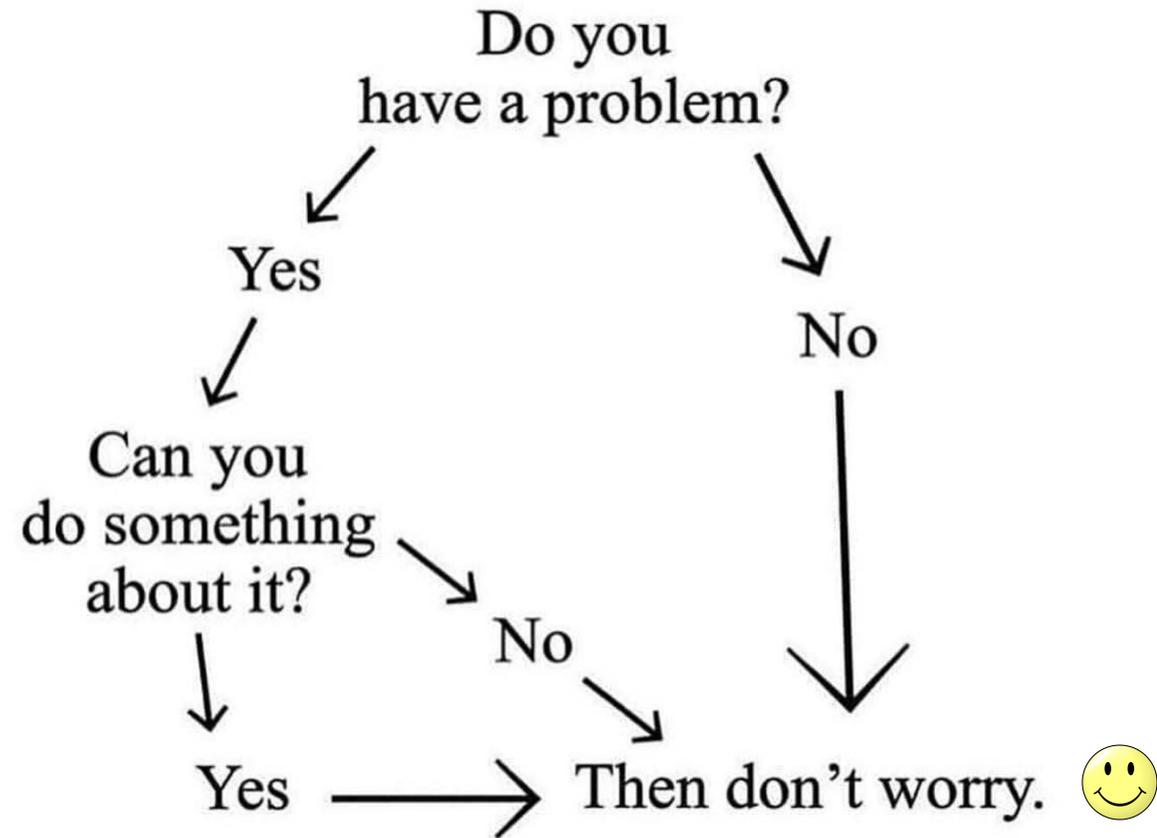
- Can self-led CBT improve mental health? **YES, to an extent**
 - Review studies of self-led CBT on anxiety and depression have showed a moderate benefit on mental health
 - However, self-led therapies are not as effective as in-person or group-based interventions

Stress management - psychological

Cognitive Behavioural Therapy

- Tips:
 - Try basic CBT on your own by becoming aware of negative thoughts when you have them, taking a minute to ask yourself if that thought is accurate or helpful, then rethink
 - Try finding a website, book, or app you like that can lead you through CBT practices
 - Consider seeing a professional in CBT or signing up for a course
 - <https://www.bcalm.ca/what-we-offer/art-of-living-mindfully/>

Stress management - psychological



Suggested Resources

- **Crisis Line Association of BC:** <https://www.crisislines.bc.ca/>
 - 310Mental Health Support: **310-6789** (24/7; no area code needed)
- **HealthLinkBC:** Stress Management <https://www.healthlinkbc.ca/health-topics/stress-management>
- **Stress Strategies** (Psychology Foundation of Canada): <https://www.stressstrategies.ca/>
 - Interactive stress management tool: <https://www.stressstrategies.ca/stress-tool>
- **Pacific Animal Therapy Society:** <https://patspets.ca/>
- **Progressive Muscle Relaxation:**
<https://www.uofmhealth.org/health-library/uz2225#:~:text=When%20you%20have%20anxiety%20or,them%20as%20you%20breathe%20out>
- **BCALM:** <https://www.bcalm.ca/what-we-offer/art-of-living-mindfully/>
- **Telephone 8-1-1** (7-1-1 for the hearing impaired)
 - Speak to a Registered Nurse, Registered Dietician, exercise professional, or Pharmacist

Q&A

- Questions or comments about the talk?

Talk Schedule

- Sunday, Feb 13: How to avoid a drug interaction
- Sunday, Feb 20: Supplements

We hope to see you there!

Closing Remarks

- Thank you to Dr. Jane Gair, our supervisor for this activity, and to my classmates, Julia De Pieri and Drew Smith, who will be delivering several of the talks in this series

Closing Remarks

- Thank you to Dr. Jane Gair, our supervisor for this activity, and to my classmates, Julia De Pieri and Drew Smith, who will be delivering several of the talks in this series
- Thank you for attending today!