AGEWORKS
THE ART OF AGEING FORUM

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The Positive Effects of Mindfulness

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The Positive Effects of Mindfulness

How Mindfulness Supports Healthy Aging

This afternoon we'll . . .

- Take a spin through the science of the healthy aging mind
- What mindfulness is and how it supports healthy aging.
- Learn five mindful habits that support a healthy aging mind, including some hands-on practice.


Let's bust some myths

What do we mean by the mind?

- Surprisingly little agreement about what a mind really is.
- The element of a person that enables them to be aware of the world and their experiences, to think, and to feel; the faculty of consciousness and thought.
- Healthy means the absence of mental illness and includes a brain without degenerative disease.
- Dan Siegel (UCLA) has done interesting investigative work into this question.
- He calls it an emergent, self-organizing process that arises from, and also regulates energy and information flow within the brain and within relationships with others.

Siegel, DJ. (2010). *Mindsight: The new science of personal transformation*.

Myth #1
You're not as smart as you once were

Cognitive abilities stay stable

- 6,000 adults in Washington State from age 22 to 100+ (Seattle Longitudinal Study).
- Brain volume does decline with age, affecting memory, reasoning, abstract thinking and processing speed.
- Without serious illness, the first declines occurs for speed and numbers at around age 60. Logical and 3-D problem-solving and memorization don't show decline until age 67. Verbal ability stays level until age 81.
- Declines appear to be lessening with each new generation.

Schaie, K. Warner, and Sherry L. Willis, "The Seattle longitudinal study of adult cognitive development."

Myth #2
You're getting cranky

Emotional well-being improves

- People's satisfaction with their life increases, on average, from their early 50s on through their 60s and 70s.
- . . . until age 70, when it levels off.
- Laura Carstensen (Stanford) gave older adults pagers the prompted them to record their emotional state periodically for one week. Participants were tested 10 years apart.
- The experiences of life lead to new cognitive functioning.
  - Better understand and function with complexity
  - More likely to adopt favourable lifestyles
  - More flexible response to and management of stress
  - Greater capability for dealing with emotional problems

Carstensen, LL., Turan, B., et al. Emotional Experience Improves With Age

Personality stays stable

- Paul Costa Jr. and Robert McCrea analyzed long-term personality data with the NEO personality inventory in the Baltimore Longitudinal Study of Aging.
- An adult's personality generally doesn't change much after age 30. People who are cheerful and assertive when they are 30 will likely be the same when they are 80.
- According to research on, about 10% of the adult population is stable with the cranky, negative combination of personality traits.
- Suggests that marked changes in personality may be related to disease or dementia.

Costa PT Jr. and McRea, RR. Lessons from the Baltimore Longitudinal Study on Aging.


Myth #3
You get stuck in a rut

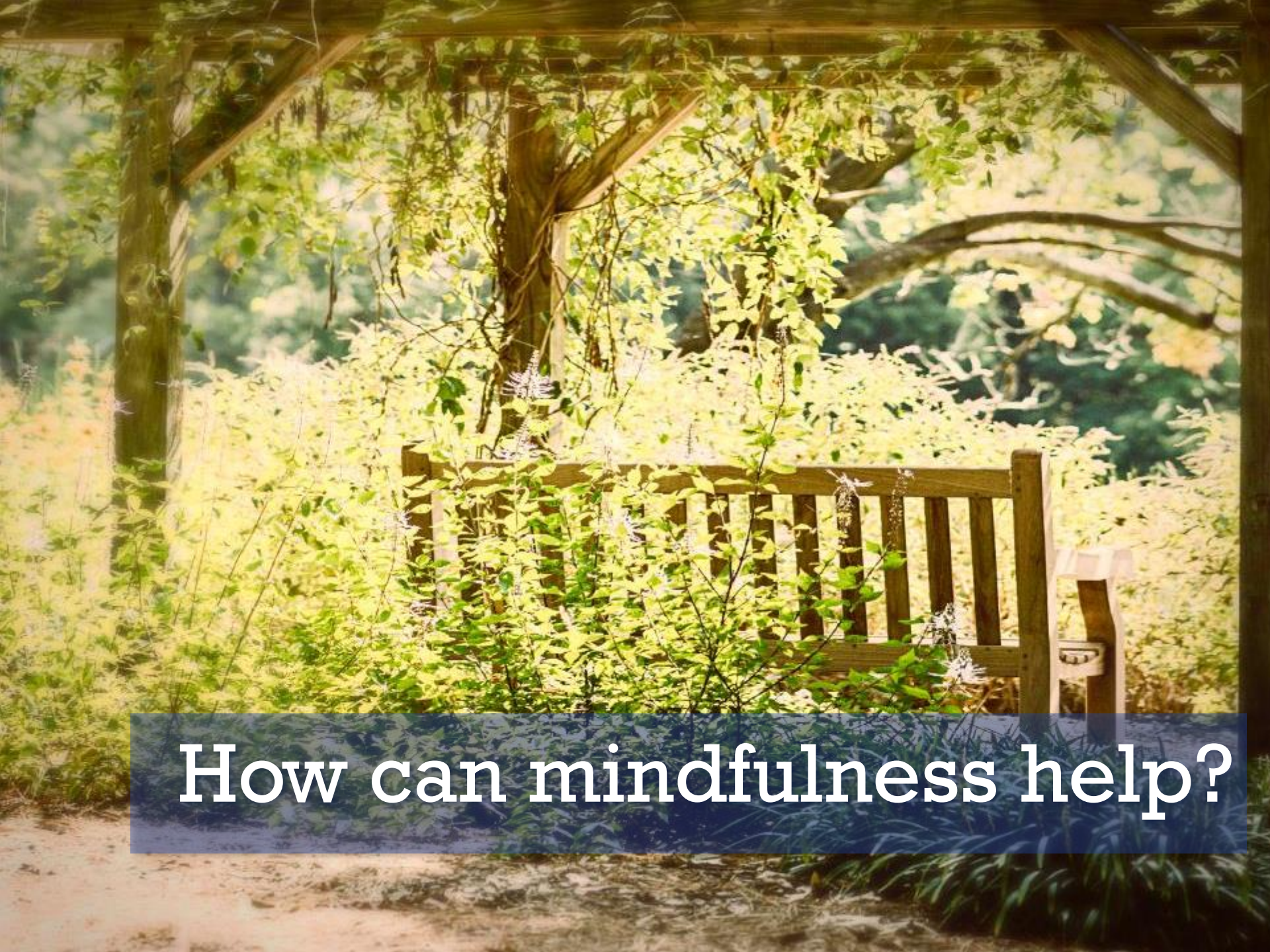
Creative connections increase

- Dr. Shelly Carson (Harvard) - the aging mind begins to resemble the creative mind in several ways.
- Aging mind is more distractible and more disinhibited than the younger mind. Better scoring on tests of crystallized intelligence (ability to use skills, knowledge and experience)
- Research done at Ryerson and at UofT finds that older participants were more distractible, particularly if distractions are negative.
- In one study, older members retained and used the distracting information to solve problems presented later. This suggests that the aging mind broadens it's focus of attention to problem-solve.

Kim, S., Hasher, L. et al. Aging and a benefit of distractibility.

Horn, J.L. & Cattell, R.B. Age differences in fluid and crystallized intelligence.

Lehman, H.C. Some examples of creative achievement during later maturity and old age.


How can mindfulness help?

What is mindfulness?

- Mindfulness invites us to pause and be present to our lives. It's part daily routine and part philosophy of life.
- Trait (enduring) – state (passing through) - practice
- Contemplative practices are all mindful practices – meditation, yoga, qi gong, tai chi, photography, walking, eating, music - anything where you can notice your experience and regulate your breath while you're doing it.
- Improves our ability notice new things, the depth we experience our senses, to be more emotionally even-keeled, to investigate and challenge our assumptions, and become more compassionate to others and ourselves.


Go ahead.
Get caught up
In the moment.


What about meditation?

Meditation may preserve the brain

- Sara Lazar (Harvard/Mass General) did ground-breaking neuroimaging research on meditation and the brain.
- Research found long-term meditators have enhanced senses, with increases in the amount of gray matter in the insula and the auditory and sensory cortex.
- They also found meditators had more gray matter in the frontal cortex, which is associated with working memory and executive decision making.
- This study didn't have age as a specific criteria.

Lazar SW, et al. (2005) Meditation experience is associated with increased cortical thickness.

Meditation may preserve the brain

- Further studies with non-meditators taking an 8-week mindfulness-based stress reduction program found thickening in four regions of the brain that influence:
  - mind wandering (posterior cingulate cortex)
  - learning, thinking, memory and emotional regulation (left hippocampus)
  - perspective taking (bigger picture), empathy and compassion (temporal parietal junction)
  - production of regulatory neurotransmitters (pons)
- The size of the amygdala reduced and was also correlated to a reduction in stress levels.

- Hölzel BK, et al. (2011) Mindfulness practice leads to increases in regional brain gray matter density.

Meditation may preserve the brain

- Eileen Luders (UCLA) and her group looked specifically at the association between age and gray matter. They compared 50 older adults who had mediated for an average of 20 years and 50 who hadn't.
- Older adults in both groups showed a loss of gray matter. But among those who meditated, the volume of gray matter didn’t decline as much.
- They concluded that it’s unknown yet whether meditation preserves or rebuilds brain matter. Possibly works by mitigating damage in the brain from stress.

Luders E et al. (2015) Forever Young(er): potential age-defying effects of long-term meditation on gray matter atrophy.

Review studies show possibilities

- A review of three clinical studies on meditation and brain function and structure by Luders in 2014 suggests that meditation may slow, stall, or even reverse age-related brain degeneration.

- A review of twelve clinical studies on meditation and cognitive decline by Lazar and group in 2014 conclude that the field is young and small.

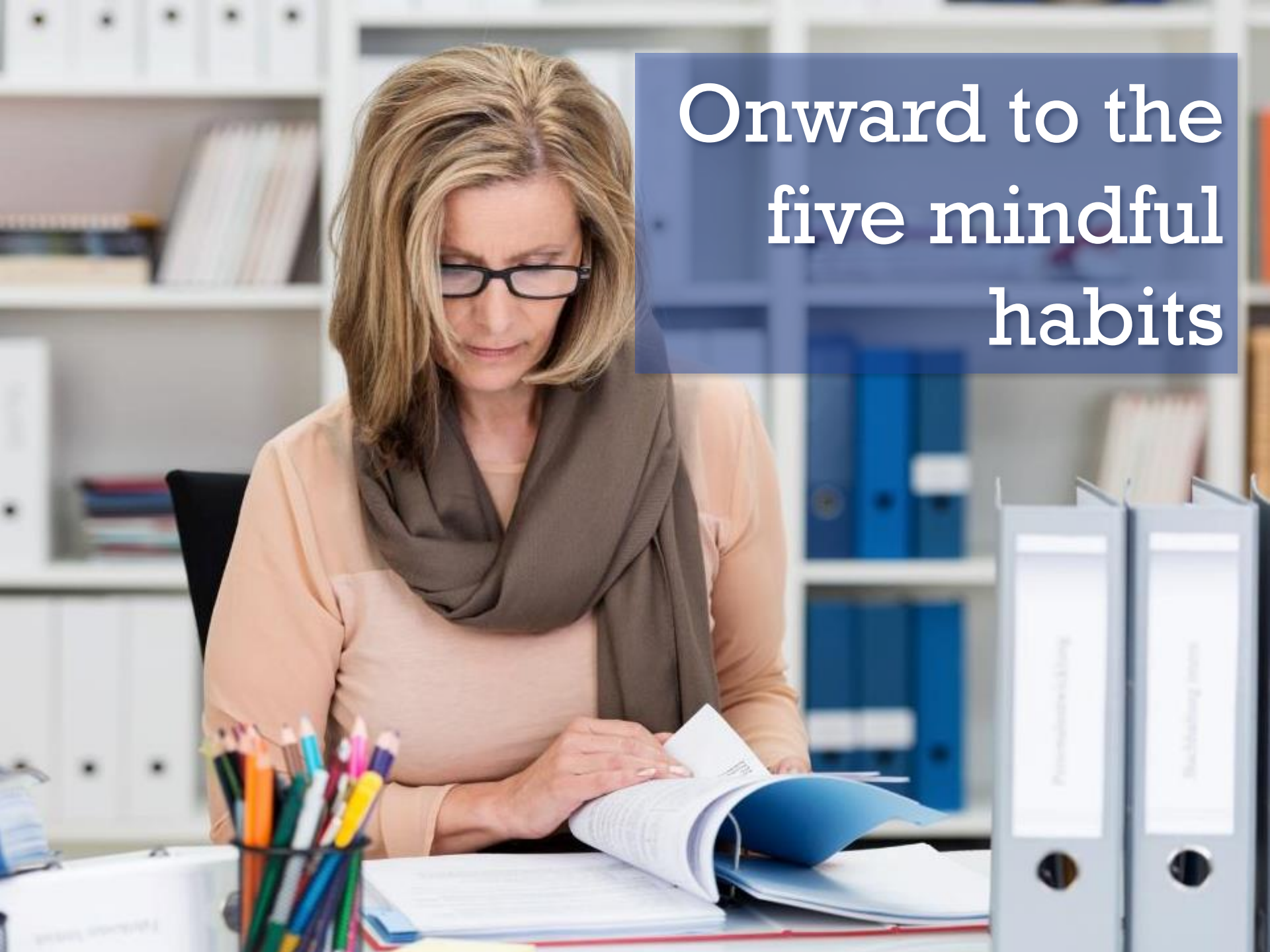
  They had two conclusions:

  - There is preliminary evidence that a variety of meditation techniques may be able to offset age-related cognitive decline and perhaps even increase cognitive capabilities in older adults.

  - They show that it is feasible to effectively teach these techniques to the elderly.

Luders E. (2014) Exploring age-related brain degeneration in meditation practitioners.

Gard T, et al. The potential effects of meditation on age-related cognitive decline: a systematic review.


Onward to the five mindful habits

Mindful Habit One – Feed your Brain

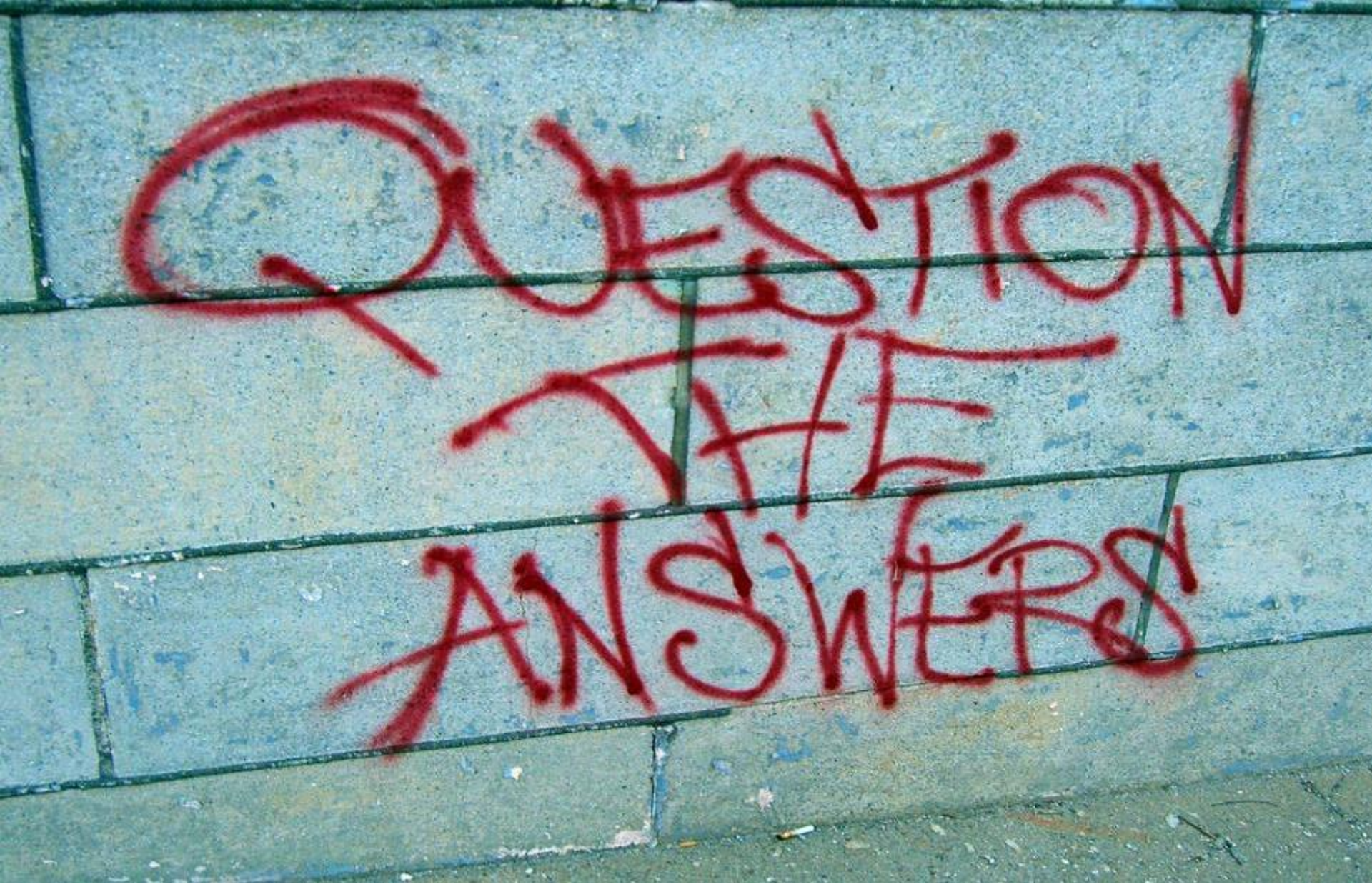
Feed your brain

- Why is this a habit? Because a healthy brain supports a healthy mind.
- Environment and actions influence our health in ways that scientists are just beginning to understand.
- Our habits with sleep, diet, exercise and meditation influence how our cells cope with the damage of stress and inflammation.
- Positive stress coping strategies seem to increase telomerase activity, and modulate the gene expression of inflammatory pathways and limit the production of reactive oxidative molecules.
- What's good for your body is good for your brain.

Diet data is inconclusive so far

- Brenda Plassman (Duke) examined the clinical literature for evidence of factors that may influence cognitive decline.
- 127 observational studies, 22 randomized controlled studies and 16 systematic reviews in the area of nutritional factors; medical factors and medications; social, economic or behavioral factors; toxic environmental exposures; and genetics.
- Found to decrease or possibly decrease risk (even slightly) – Mediterranean diet, vegetables, omega-3 fatty acids, physical activity, leisure activities and cognitive engagement.

Plassman B. et al. (2010) Systematic Review: Factors Associated with Risk for and Possible Prevention of Cognitive Decline in Later Life.



Mindful Habit Two – Practice Curiosity

Be curious about your beliefs

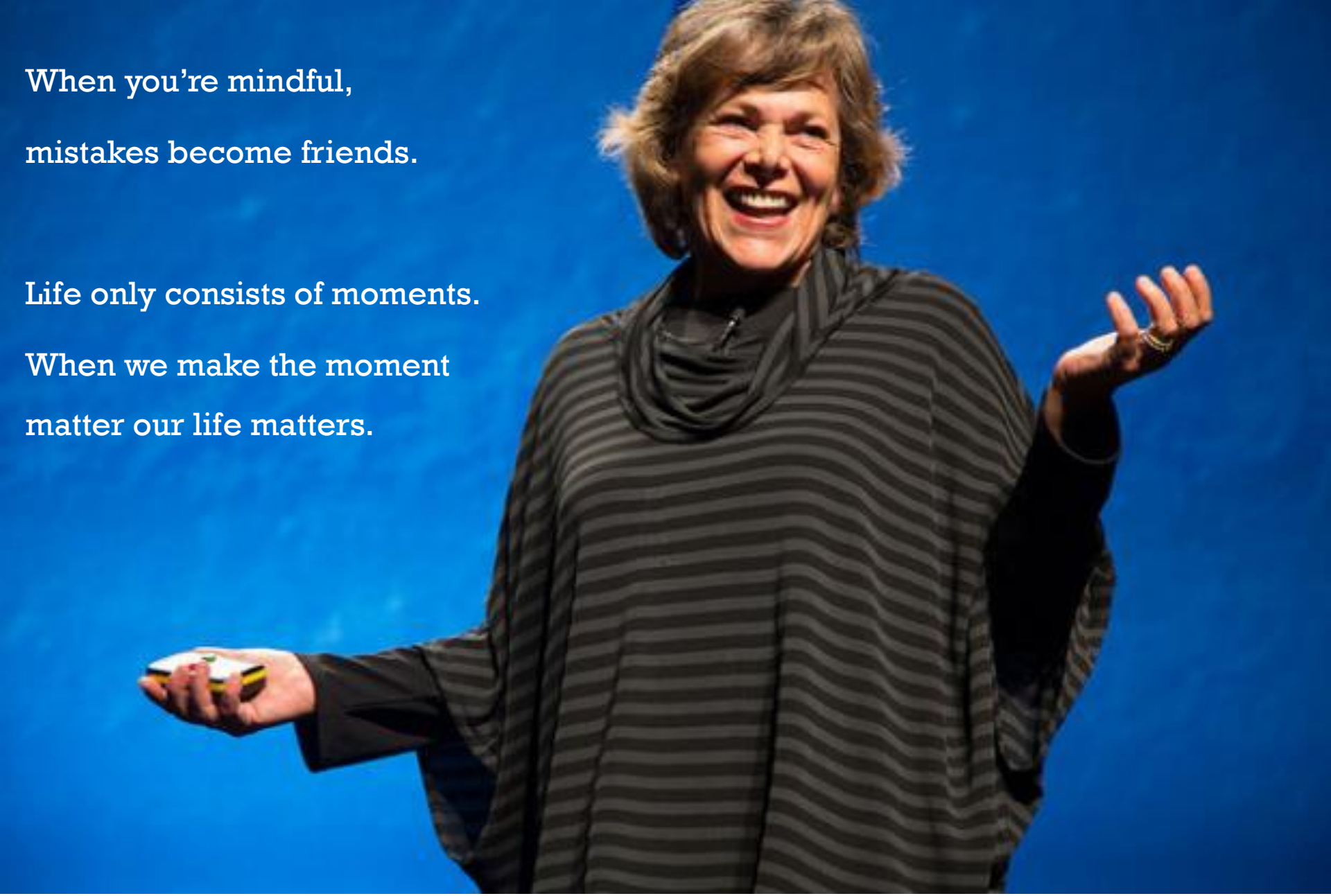
- Becca Levy (Yale School of Public Health) worked with data from the Baltimore Longitudinal Study of Aging.
- 395 participants filled out questionnaires at the beginning of the study (1950s), including their beliefs about aging – when you get old.
- They went back to the participants 38 years later to assess memory performance.
- For those over 60 years old, memory performance declined 30% for those with more negative stereotypes about aging.
- The decline was greater if the participant had already passed the age they believed was "old".
- This decline was not correlated to health status.

Levy BR et al. (2012) Memory Shaped by Age Stereotypes over Time

Be curious about your abilities

- Ellen Langer (Harvard) studies the state of mindfulness.
- Elderly residents in nursing homes who were given control over their decisions — even as simple as when to water their plants — lived longer than their decision-free peers.
- Another famous experiment is called the "Counter Clockwise" study. Her group housed two sets of 16 elderly men for a week at a retreat in New Hampshire. The control group spent the week reminiscing about a week in September, 1959. The experimental group re-created spent the week acting as if they had been transported back in time.
- There were improvements in blood pressure, hearing, eyesight, strength, gait and posture, intelligence, arthritis and manual dexterity at the end of the intervention.

Rodin, J. and Langer, EJ. (1977) Long-term effects of a control-relevant intervention with the institutionalized aged.
Langer EJ. (2009) Counter Clockwise: Mindful Health and the Power of Possibility.



Dr. Ellen Langer, Professor of Psychology (Harvard)

Awareness Exercise

- Start with inquiry at the tip of the nose
- What if I could deepen what I feel? What if I could relax more?
- Qualities of mindfulness are:
  - Awareness
  - Staying in the present moment
  - Acceptance
  - Non-judgment
  - Compassion
  - Patience

Mindful Habit Three – Stay Connected

Stay connected with others

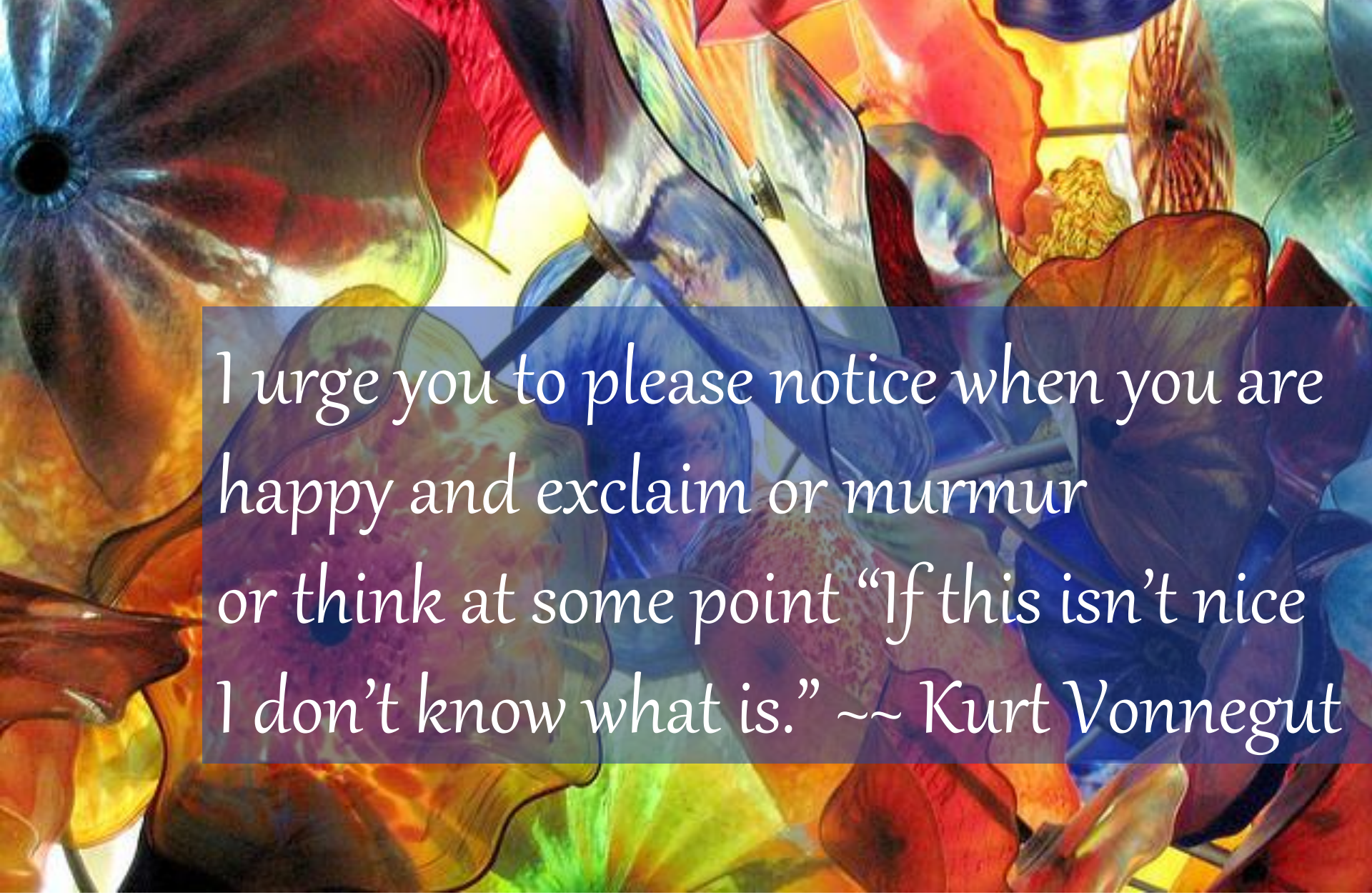
- Bryan James (Drexel) studied a large, community-based group of older adults who were free of dementia at the beginning of observation.
- More frequent social activity was associated with less cognitive decline over an average of 5 years.
- On average, the most socially active individuals experienced only one-quarter the rate of cognitive decline experienced by the least socially active.
- The association was found broadly across a range cognitive abilities. The findings were not influenced socioeconomic status, social network size, health, disability, mood, and personality.
- Another study by James found that social engagement was associated with larger brain volumes in midlife men.

James BD et al. (2011) Late-life social activity and cognitive decline in old age.
James, BD et al. (2012). Association of social engagement with brain volumes assessed by structural MRI.

Cultivate close connections

- Research by Linda Carstensen (Stanford) found that older adults identify fewer social partners in their networks than younger adults
- The pattern was observed in European-Americans, African-Americans, Germans, and Hong Kong Chinese.
- Researchers originally assumed this was due to loss and circumstances. However, an apparent pruning process appears to begin in peoples' thirties and forties. People play an active role in reducing social networks into smaller, more intimate forms.
- People start connecting less with casual acquaintances. The number of emotionally close social contacts and family remains high or slightly increases with age.
- Smaller networks that have high concentrations of emotionally close partners appear to benefit mental health.

Charles S and Carstensen, LL. Social and Emotional Aging



Mindful Habit Four - See the Positive

See the positive

- Barbara Frederickson (UNC) has developed the broaden and build theory – experiencing positive emotions allows people to draw on a higher level connections and a wider range of information.
- Over time cultivating positive emotions builds closer relationships, resilience, physical health and cognitive flexibility.
- Cultivating positive emotions broadens the scope of visual attention (through testing, eye-tracking and brain imaging), the number of options available, creativity, openness to experiences, and trust.
- Rick Hanson's book, Hardwiring Happiness, is very helpful for building the habit of noticing pleasurable moments and integrating the experience into your brain.

Garland EL, Frederickson B, et al. (2010) Upward Spirals of Positive Emotions Counter Downward Spirals of Negativity.
Hanson, R. Hardwiring Happiness: The New Brain Science of Contentment, Calm, and Confidence. Harmony Books; 2013.

Gratitude practice

- Breathing Exercise from Marcia Lucas – Rewire Your Brain For Love
- Heart based exercise for positive emotions
- Feeling warm, safe and grateful
- Savour the positive feelings

Mindful Habit Five – Live with purpose

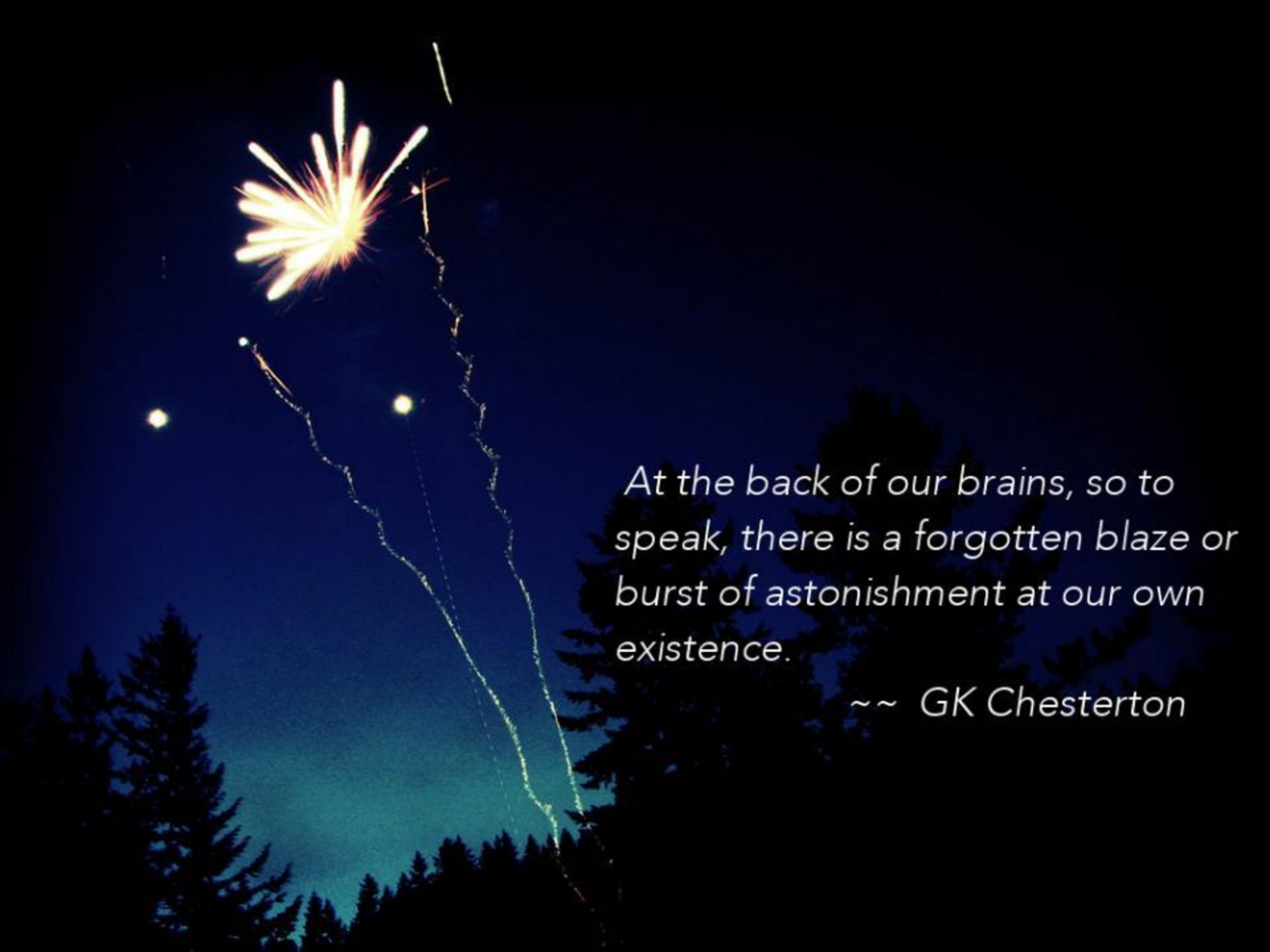
Live with purpose

- Patricia Boyle (Rush) studied 700+ community level older adults to determine whether a sense of purpose in their lives would lessen the risk of cognitive decline.
- Greater purpose in life was associated with a substantially reduced risk of Alzheimer's disease. A person in the top 10% on the *purpose in life* measure was approximately 2.4 times more likely to remain free of AD than was a person in the lowest 10%.
- The association of *purpose in life* with AD persisted after adjustment for depressive symptoms, neuroticism, social network size, and number of chronic medical conditions.

Boyle PA et al. (2010) Effect of a Purpose in Life on Risk of Incident Alzheimer Disease and Mild Cognitive Impairment in Community-Dwelling Older Persons.

Five Mindful Habits

- Feed your brain
- Practice curiosity
- Stay connected
- See the positive
- Live with purpose


At the back of our brains, so to speak, there is a forgotten blaze or burst of astonishment at our own existence.
~~ GK Chesterton