mindgen, llc

forensic consulting & mindfulness development

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Improving forensic quality through forming a constructive relationship with stress

FORENSIC SCIENCE ERROR MANAGEMENT
INTERNATIONAL FORENSICS SYMPOSIUM
July 24-27, 2017 @NIST, Gaithersburg, MD

Have you ever?

Driven to work and don’t remember how you got there?

Have you ever?

Repetitively misplace the same items (car keys, wallet, glasses)?

Have you ever?

Selected an incorrect program on an instrument at work?

Have you ever?

Mislabeled sample analyses?

Have you ever?

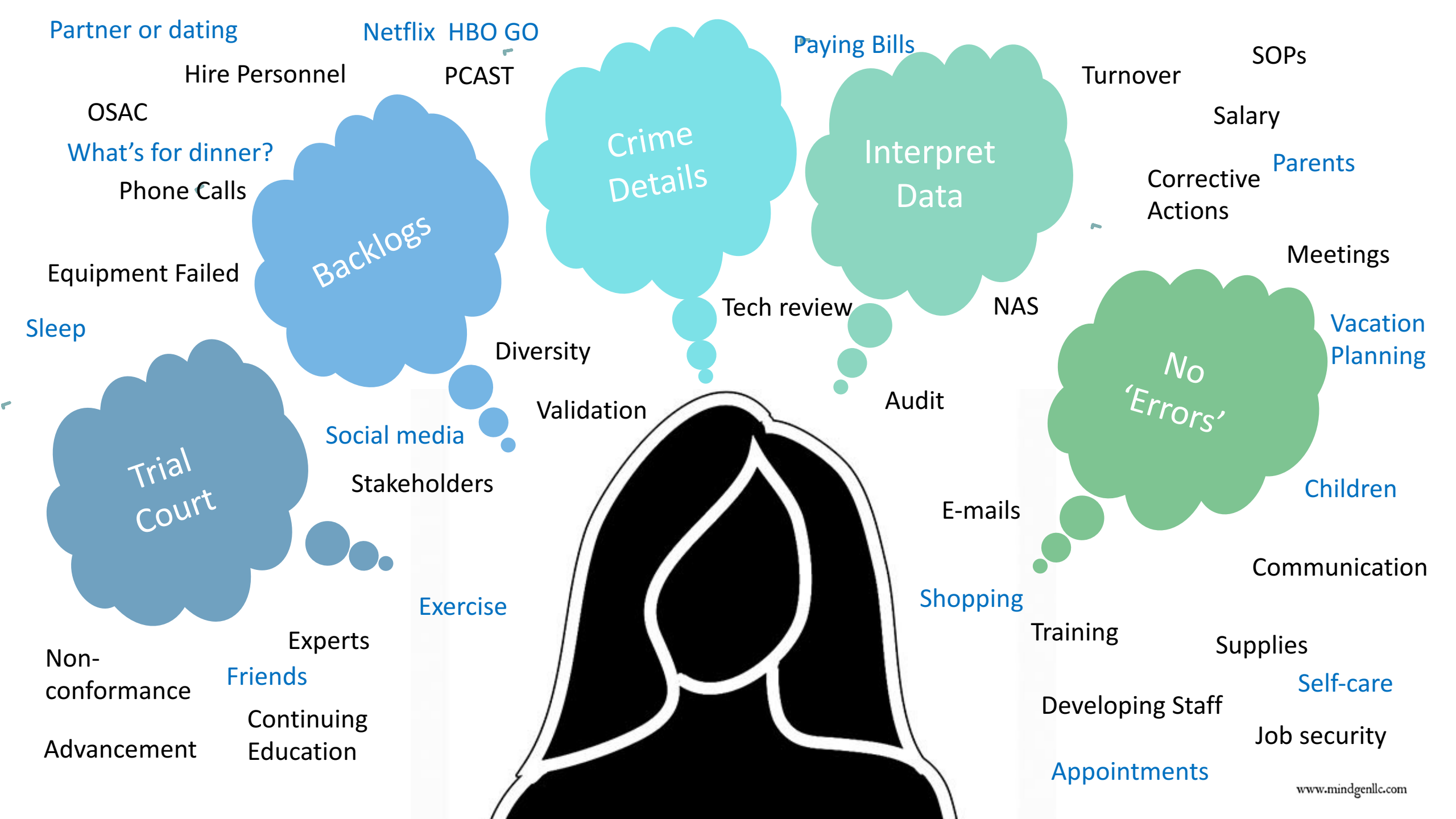
Dropped a plate/tray of samples?

Have you ever?

Added the wrong amount of a reagent to an assay?

Human error may be a major cause of all failures and non-conformaces

Mindlessness → Inattentive, distracted, rushing, multitasking


Partner or dating
Netflix
HBO GO
Hire Personnel
PCAST
OSAC
What's for dinner?
Phone Calls
Backlogs
Crime Details
Paying Bills
Interpret Data
Turnover
SOPs
Salary
Parents
Corrective Actions
Meetings
Equipment Failed
Sleep
Tech review
NAS
Vacation Planning
Diversity
Validation
Audit
Trial Court
Social media
Stakeholders
No 'Errors'
Children
E-mails
Communication
Exercise
Shopping
Experts
Training
Supplies
Non-conformance
Friends
Self-care
Developing Staff
Continuing Education
Job security
Advancement
Appointments
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Stress- Good or Bad?

Supported Positive

- Stress can make people stronger
- Stress can give new perspectives and strengthen priorities
- Stress can lead to skilled performance in risky moments
- Stress can lead to achievement in the face of adversity

Supported Negative

- Stress has been linked to leading causes of death = heart disease, accidents, cancer, liver disease, lung ailments, and suicide
- Stress increases absenteeism from work, increased medical expenses, and loss of productivity
- Stress can cause cognitive impairment, depression, and other mental illnesses

Crum,A.J., Salovey, P., and Achor, S. (2013). “Rethinking Stress: The Role of Mindset in Determining Stress Response.” Journal of Personality and Social Psychology. 104 (4).

Types of Stress

Acute

Short term events that cause a spike in stress reaction which can assist with motivation and be helpful

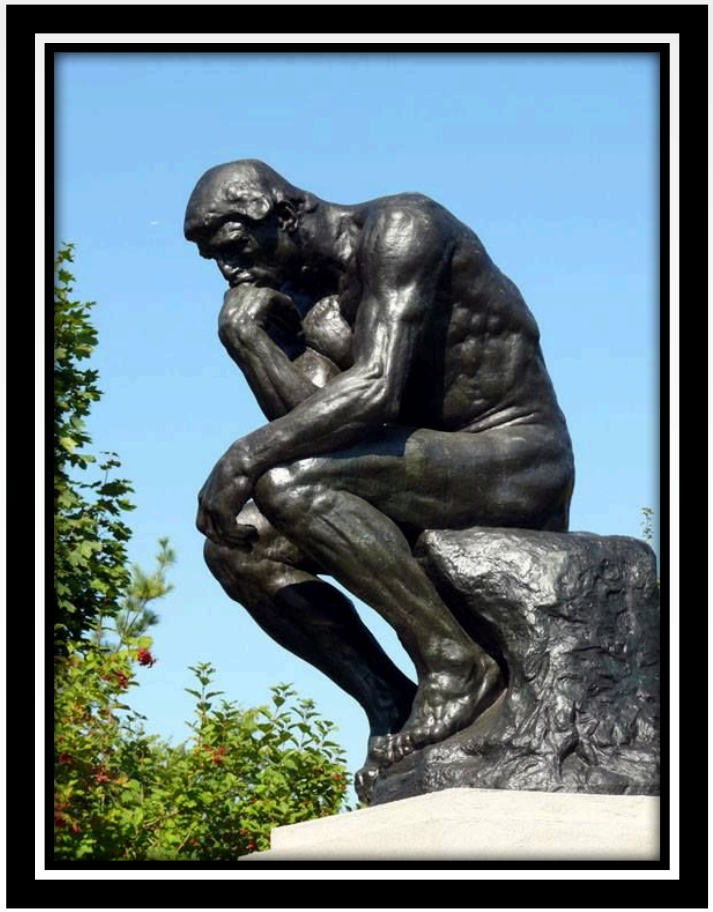
- Participating in a moot court
- Presenting to your peers
- Asking for a raise
- Taking a competency exam

Chronic

Events that are repetitive or long term that keep the stress reaction continuously or often activated

- Overly demanding hours
- Pulled in multiple directions
- Conflicts with coworkers
- Job insecurity

Pressure & negativity becomes stress when …



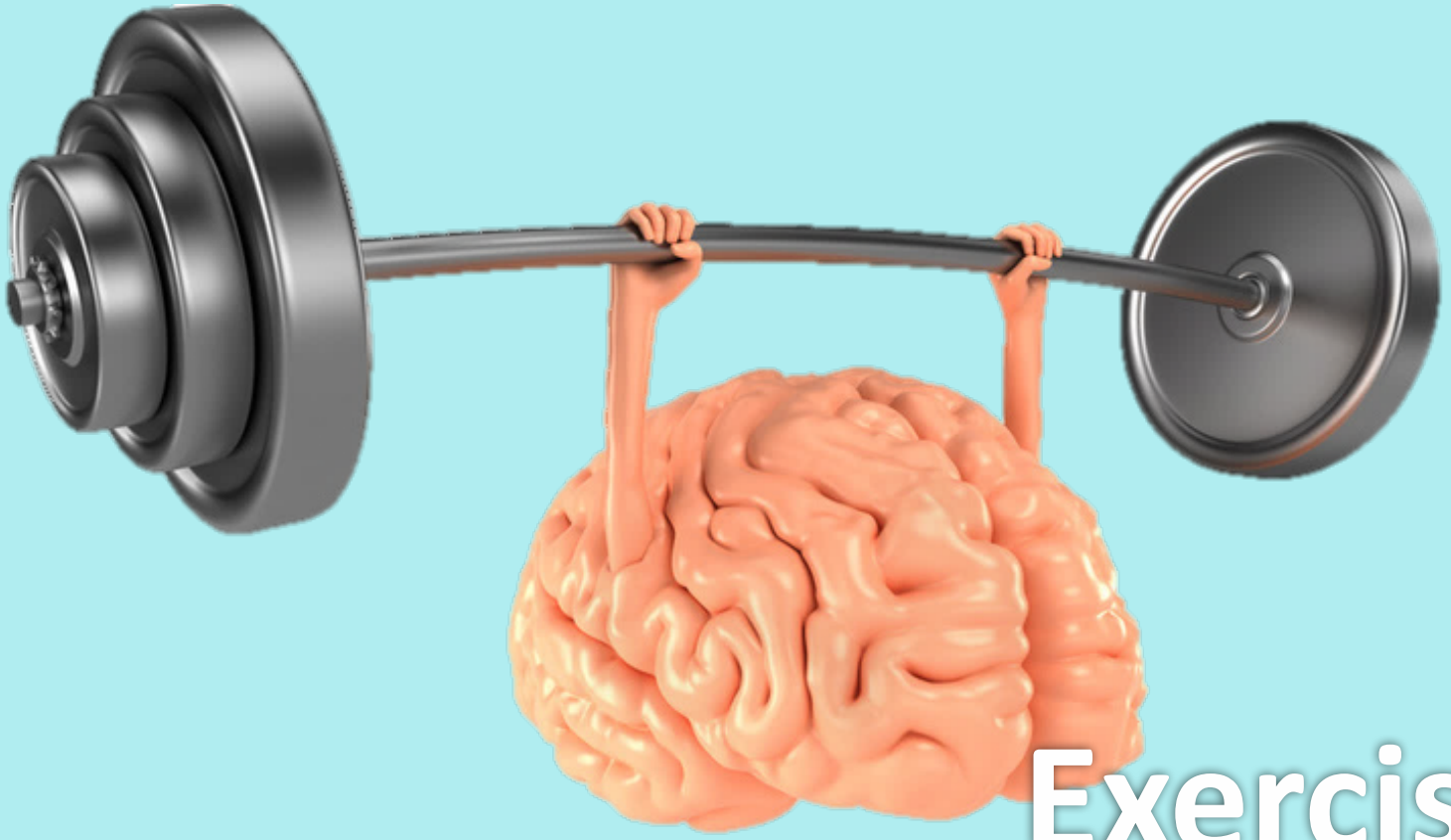
Dwell in past

Ongoing/ Destructive

Ruminate

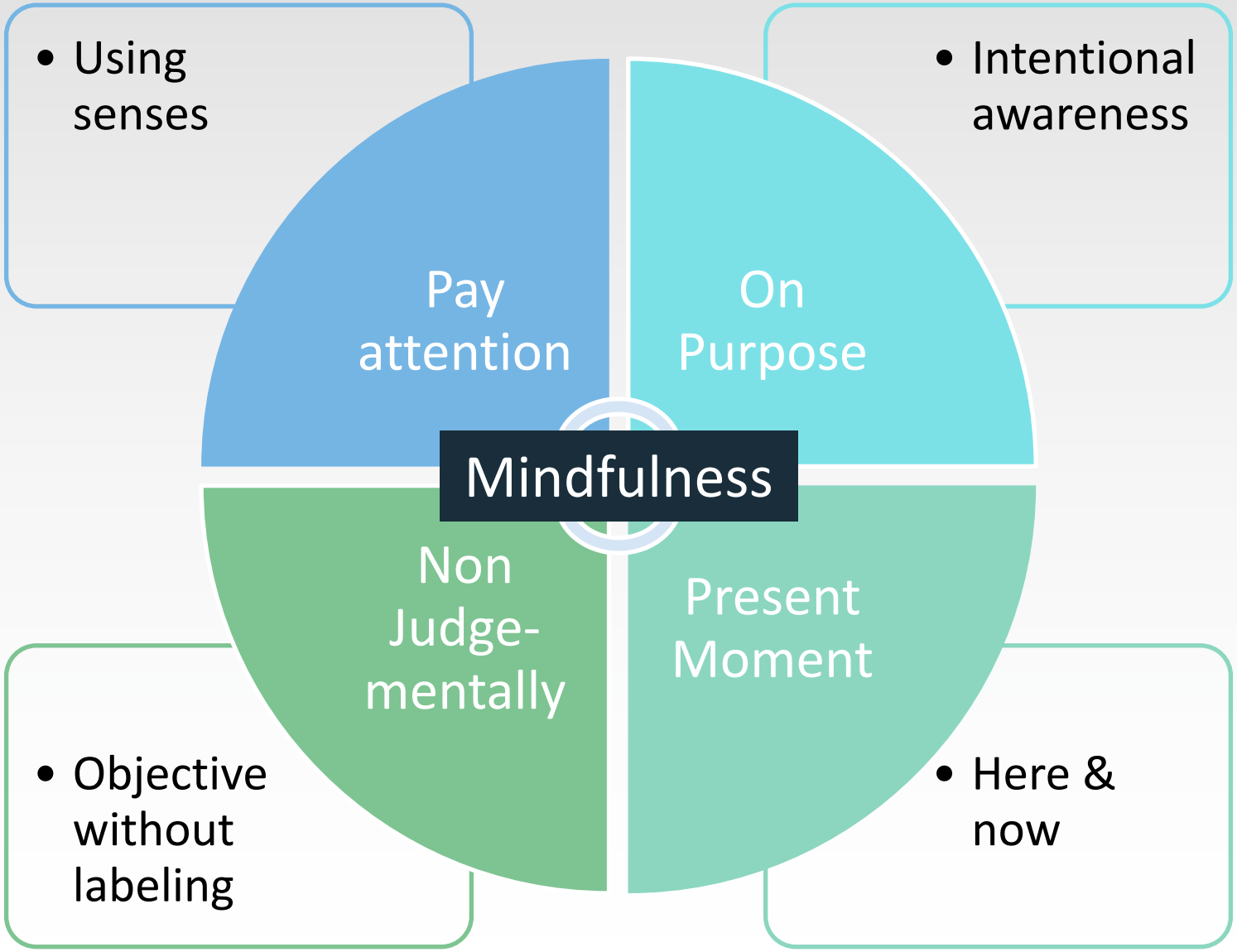
Internal reactions

Overthink Future

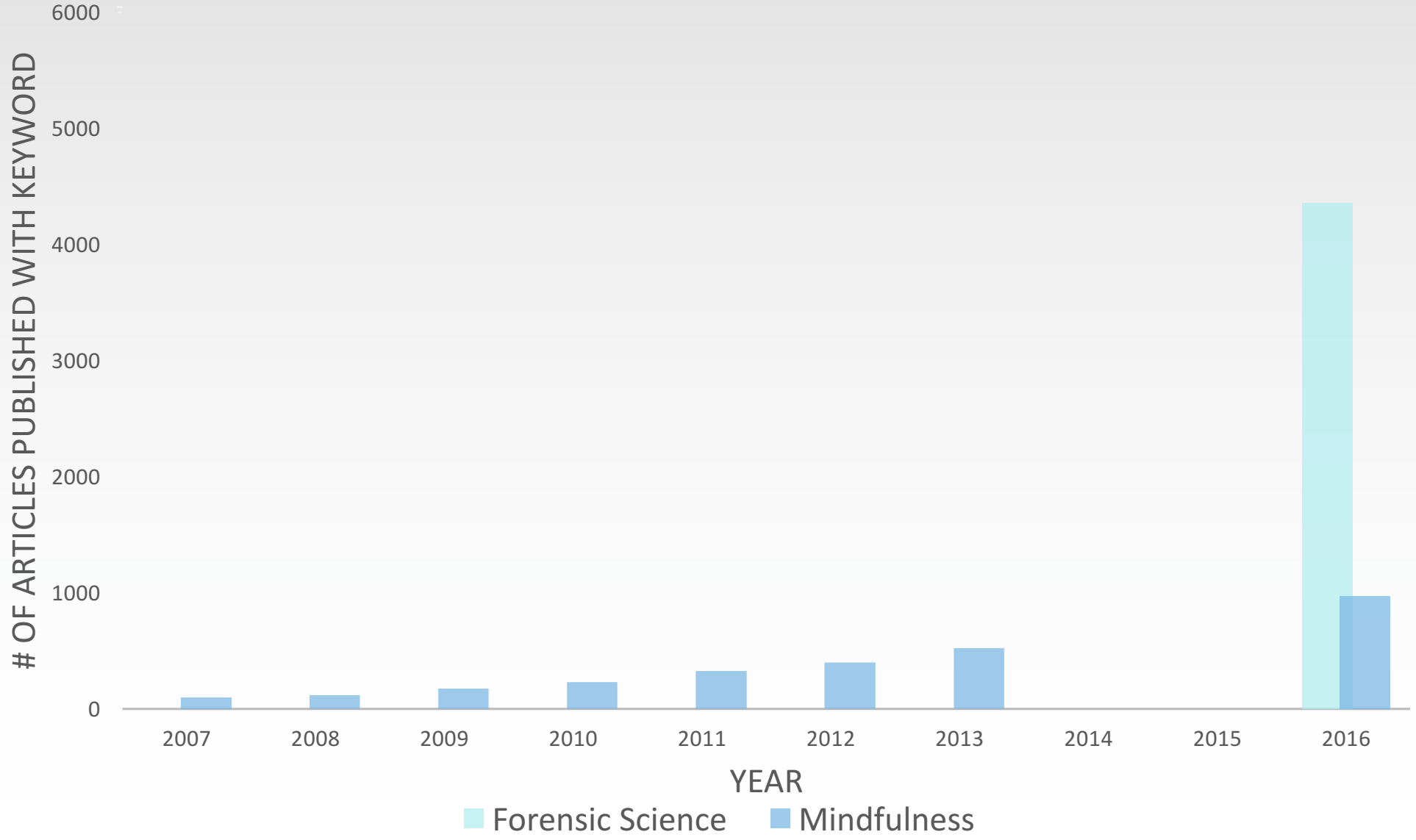


Exercise our Minds

Make stress your friend (again)

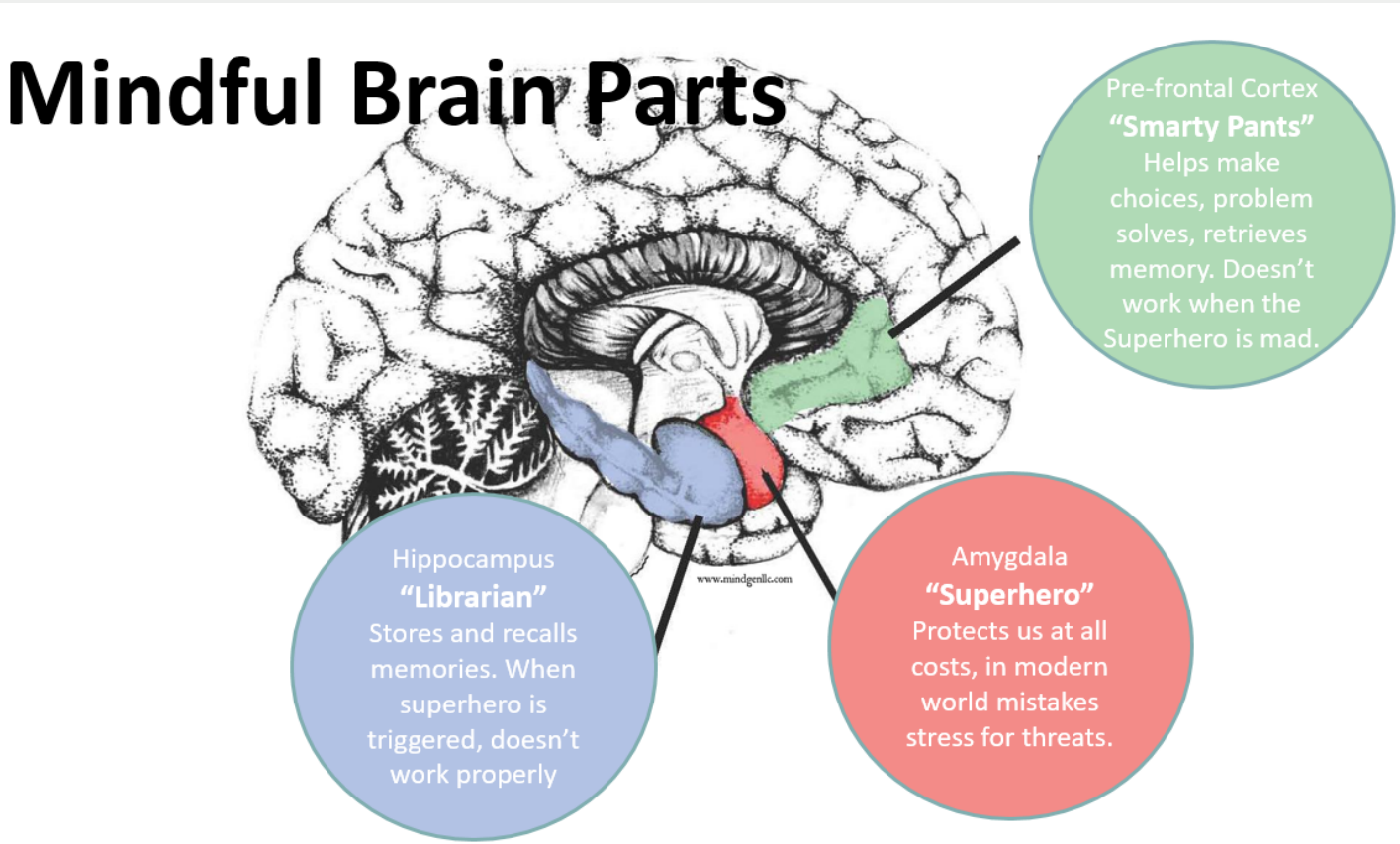

• Using senses
• Intentional awareness
Pay attention
On Purpose
Mindfulness
Non Judge-mentally
Present Moment
• Objective without labeling
• Here & now

Pub Med Search 2007-2016



We Can Change the Brain!

- Mindfulness Meditation:



- ***Increases gray matter density***
- ***Changes brain connectivity***
- ***Associated with increased cortical thickness***
- ***Larger hippocampus***

A Moment of Science

- Mindfulness strengthens parts of the brain connected with **emotion regulation, happiness, learning & memory, and perspective-taking**
  - Kilpatrick, L.A., Suyenobu, B.Y., Smith, S.R. et al. (2011). Impact of mindfulness-based stress reduction training on intrinsic brain connectivity. NeuroImage.
  - Hölzel, B.K., Carmody, J., Vangel, M. et al. (2011). Mindfulness practice leads to increases in regional brain gray matter density. Psychiatry Research.
- Mindfulness aids **working memory and flexible thinking**
  - Jha, A.P., Stanley, E.A., Kiyonaga, A., Wong, L., Gelfand, L. (2010). Examining the protective effects of mindfulness training on working memory capacity and affective experience. Emotion.
  - Siegel, D.J. (2007) Reflections on The Mindful Brain: A Brief Overview Adapted from The Mindful Brain: Reflection and Attunement in the Cultivation of Well-Being.
- Mindfulness meditation **reduces anxiety**
  - Zeidan, F., Martucci, K.T. et al. (2013). Neural correlates of mindfulness meditation-related anxiety relief. Social Cognitive and Affective Neuroscience.
- Mindfulness helps **keep our autopilot mind in check**
  - Niemiec, R. M. (2014). Mindfulness and character strengths: A practical guide to flourishing. Cambridge, MA: Hogrefe.
  - Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. (2013). Mindfulness-based cognitive therapy for depression: A new approach to preventing relapse (2nd ed.). New York, NY: Guilford.
- Mindfulness-based stress reduction can be an **effective treatment for poor sleep**
  - Gross, C.R., Kreitzer, M.J., et al. (2011). Mindfulness-based stress reduction versus pharmacotherapy for chronic primary insomnia: a randomized controlled clinical trial. Explore: the Journal of Science and Healing.
  - Garland, S. N., Carlson, L. E., et al. (2014). Mindfulness-based stress reduction compared with cognitive behavioral therapy for the treatment of insomnia comorbid with cancer: a randomized, partially blinded, noninferiority trial. Journal of Clinical Oncology.

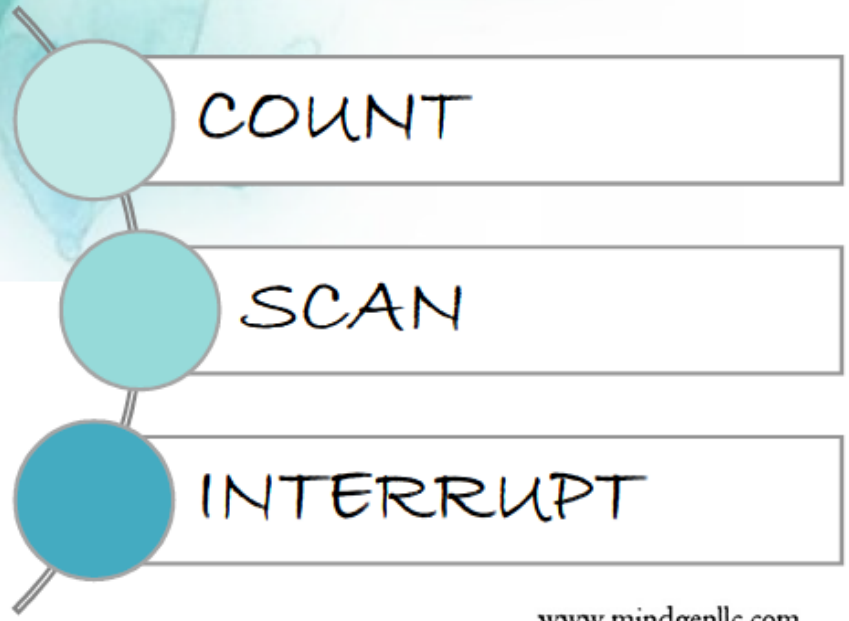

stillness

Benefits of Meditation in the Workplace

Calmer *Focused Attention* *Enhanced Clarity* *More creative* *Less Stress* *Deeper Fulfillment*

3 Steps to Stress Reduction

The 'CSI' Method



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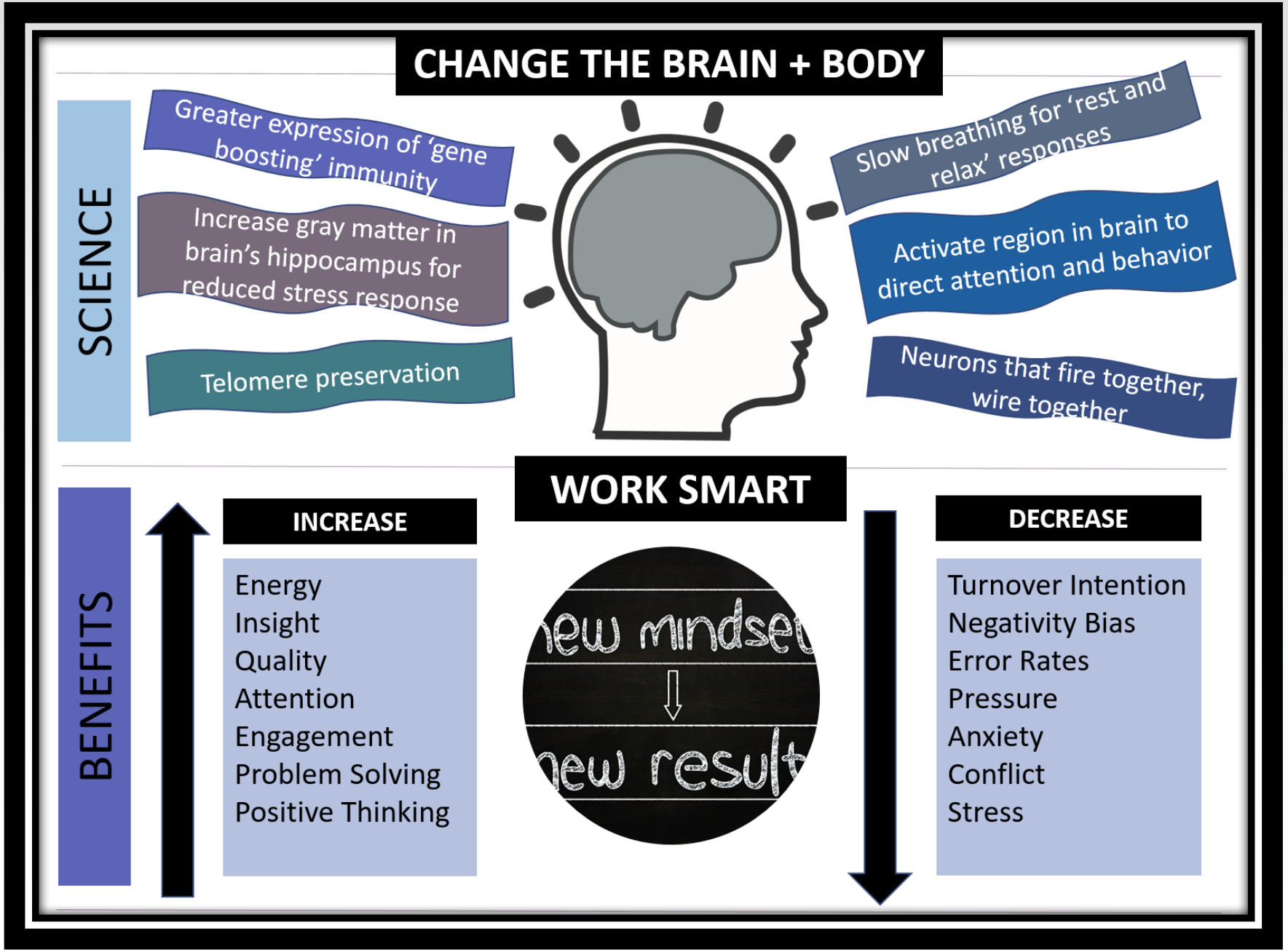
The next time you are in a stressful moment, practice this 3-step method:

1. **COUNT:** Focusing on your breath, begin to count your inhalations and exhalations. If you notice your breath is fast, only 1-2 counts in and out, start to low it down. Take longer, slower, and deeper breaths so your inhalation is 4-7 counts and your exhalation is the same. To continue to calm yourself by using breath alone, drag your exhalation out longer than your inhalation, such as 4 counts in, hold for 5 counts, and 6 counts out.

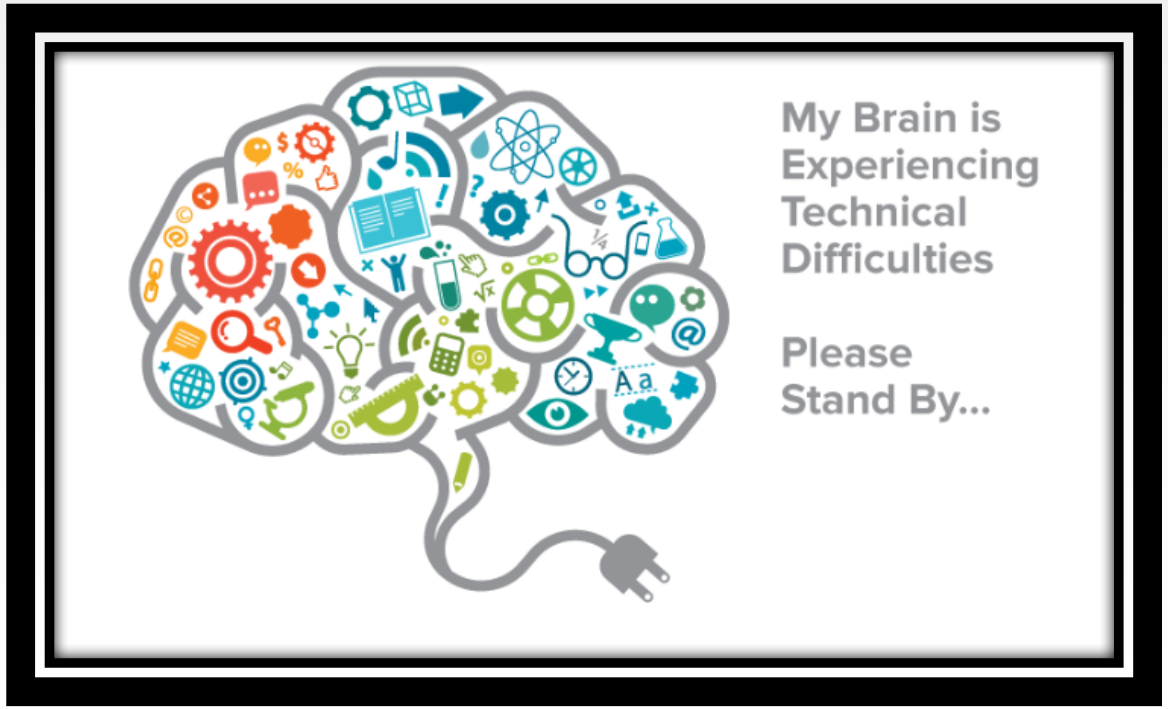
2. **SCAN:** Mentally scan your body for tension. In stressful moments, we tend to have physical responses. Tension frequently is predominant in our jaws, base of skull, neck, shoulders, and chest. Scan your body from head to toe and see where your tension hides. Where do you feel pain or irritation?

3. **INTERRUPT:** A pattern interrupt begins by focusing on the breath. You can have additional positive breath work by mentally breathing into the areas of tension identified during your body scan.

Future of Quality Assurance- Mindfulness to Mitigate Human Error



Key Points



- Forensic scientists experience common workplace pressures and industry specific pressures
- When chronic, stress can decrease performance, productivity, and decision making
- Mindset plays an important role in how a person reacts to stress both psychologically and physiologically
- Mindset can be cultivated to reconstruct how the brain responds to stress through mindfulness practice
- Training forensic scientists in mindfulness is a positive addition to quality improvement programs

JOURNAL OF FORENSIC SCIENCES

J Forensic Sci, 2017
doi: 10.1111/1556-4029.13533
Available online at: onlinelibrary.wiley.com

TECHNICAL NOTE

GENERAL

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Human Factors Effecting Forensic Decision Making: Workplace Stress and Well-being

ABSTRACT: Over the past decade, there has been a growing openness about the importance of human factors in forensic work. However, most of it focused on cognitive bias, and neglected issues of workplace wellness and stress. Forensic scientists work in a dynamic environment that includes common workplace pressures such as workload volume, tight deadlines, lack of advancement, number of working hours, low salary, technology distractions, and fluctuating priorities. However, in addition, forensic scientists also encounter a number of industry-specific pressures, such as technique criticism, repeated exposure to crime scenes or horrific case details, access to funding, working in an adversarial legal system, and zero tolerance for "errors". Thus, stress is an important human factor to mitigate for overall error management, productivity and decision quality (not to mention the well-being of the examiners themselves). Techniques such as mindfulness can become powerful tools to enhance work and decision quality.

KEYWORDS: forensic science, human factors, mindfulness, forensic decision making, expert performance, well-being, workplace stress, forensic error, cognitive forensics, resilience

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