Managing Stress: Mindfulness-Based Strategies

Kristoffer Rhoads, PhD
Clinical Neuropsychologist
Associate Professor, Department of Neurology
Memory and Brain Wellness Center
Harborview Medical Center/University of Washington School of Medicine

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What is Stress?

- Emotional
- Physiological
- Environmental

• Stress is not what happens to you, but how you react to what happens

• “...demands exceed personal and social resources the individual is able to mobilize.”

  RS Lazarus

• Change can induce a stress response.

See: Life Events Rating Scale at:
http://www.changeforlife.com/holmes_rahe.html
Acute vs. Chronic

**Acute**
- “Fight or flight”
- Response to physical threat

**Stress Hormones**
- Adrenaline
- Cortisol

**Chronic**
- Psychological
- Interpersonal
Effects – Chronic Stress

• Nervous System
  – Increased blood pressure, heart rate, platelet activity

• Endocrine - Increased cortisol &
  – Increased blood sugar
  – Increased insulin
  – Increased cholesterol
  – Impaired cognition

• Immune
  – Susceptibility to infection
Basic Neuroscience
Stress and the Brain

The brain under stress: structural remodeling

- Prefrontal cortex: Atrophy
- Amygdala
- Hippocampus
- Hippocampus atrophy
- Amygdala, hypertrophy and later atrophy

McEwen 2006
Stress and the Brain

Control

Chronic stress

Prefrontal cortex and hippocampus

Control

Chronic stress

Amygdala and orbitofrontal cortex

Davidson & McEwen 2012
Some Acknowledgements

• Stress is
  – Unavoidable
  – Uncomfortable
  – Unhealthy
  – Unwanted

• Stress is not
  – Unmanageable
  – Unnecessary
  – Unacceptable
  – Unnatural

• There’s also no one “right” or “best” way to deal with stress
Stress and Cognitive Efficiency
Stress Management Practices

Physical
   Yoga, tai chi, running, weights

Spiritual
   TM, Qigong, prayer

Meditation
   - Concentrative – Mantra, prayers, visualization, qigong, yoga
   - Receptive/awareness – Vipassana, mindfulness
   - Reflective/analytical – disciplined thinking for insight
   - Expressive – dancing, chanting, fast breathing, drumming, calligraphy

Other
   - Nature, silence, gratitude, forgiveness
“Could we up the dosage? I still have feelings.”
Mindfulness

• Relationship with Eastern meditation practices
  – Not tethered to them
  – Unconstrained to ideologies/beliefs
• Resting of attention in the present moment
• “Here and now” vs “then and there”
• Core components of openness to whatever the present moment contains
  – Non-judgmental
  – Gentleness
  – Curiosity
  – Acceptance
• Engagement over avoidance
Mindfulness

• ‘Doing’ versus ‘Being’
  – Habits versus intentions
  – Passive recipient versus active receiver
  – Avoiding verses approaching
  – Fusion of thoughts and reality versus thoughts being thoughts
  – Striving versus flowing
• Is not:
  – Escape
  – A different form of avoidance
  – Emptying the mind of all thoughts
  – Competitive
  – A relaxation technique
  – Exclusive
  – Dogmatic
Mindfulness

• “Mindfulness means paying attention in a particular way: on purpose, in the present moment, and non-judgmentally.” (Kabat-Zinn, 1994)

• “Life can be found only in the present moment. The past is gone, the future is not yet here, and if we do not go back to ourselves in the present moment, we cannot be in touch with life.” – Thich Nhat Hanh
WHAT WAS (then and there)
WHAT IS (here and now)
WHAT IF (where and when)
• Core attitudes (Kabat-Zinn, 1990):
  – Non-judging
  – Patience
  – Beginners Mind
  – Trusting
  – Non-striving
  – Acceptance
  – Freedom from attachment
Mindfulness

• Practice, not Mastery
  – Meditation
  – Body Scan
  – Breath
  – Sounds
  – Movement
  – Enhanced awareness
    • Body
    • Mind
    • World
Meditation and Cognition

- **Changes in cortical structures**
  - White matter
    - Brain stem
    - Putamen
    - Frontal lobes
  - Function
    - Frontal
    - Parietal
  - Default mode network

- **Changes in cognitive skills** (Chiesa et al., 2011)
  - Processing speed
  - Attention
    - Selective vs. divided
  - Working memory
  - Executive function
    - Mental flexibility
<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>n</th>
<th>Mean age ± SD</th>
<th>Experience with meditation</th>
<th>Loci with increased cortical thickness</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lazar et al. (2005)</td>
<td>Various</td>
<td>20</td>
<td>38.2</td>
<td>9.1 ± 7.1 years, 6.2 ± 4 h per week</td>
<td>Anterior insula, parts of frontal lobe, auditory cortex in temporal lobe</td>
<td>Somato-sensory, auditory, and interceptive processes</td>
</tr>
<tr>
<td>Pagnoni and Cekic (2007)</td>
<td>Zen</td>
<td>13</td>
<td>37.2 ± 6.9</td>
<td>&gt;3 years per day</td>
<td>Putamen</td>
<td>Attention</td>
</tr>
<tr>
<td>Holzel et al. (2008)</td>
<td>Vipassana</td>
<td>20</td>
<td>34.1 ± 4.7</td>
<td>8.6 years, 2 h daily</td>
<td>Anterior insula, right hippocampus, left inferior temporal gyrus</td>
<td>Anterior insula – awareness of internal experience</td>
</tr>
<tr>
<td>Væstergaard-Poulsen et al. (2009)</td>
<td>Tibetan Buddhism</td>
<td>10</td>
<td>55 ± 6.2</td>
<td>16.5 ± 5.1 years</td>
<td>Medulla oblongata, anterior cerebellum, superior, and inferior frontal gyrus</td>
<td>Breath control, resistance to stress, attention, calmness</td>
</tr>
<tr>
<td>Luders et al. (2009)</td>
<td>Various</td>
<td>22</td>
<td>53 ± 11.5</td>
<td>24 ± 12 years</td>
<td>Orbito-frontal cortex, right talamus, left inferior temporal gyrus</td>
<td>Regulation of emotions and sensory functions</td>
</tr>
<tr>
<td>Grant et al. (2010)</td>
<td>Zen</td>
<td>17</td>
<td>37.6 ± 10.9</td>
<td>&gt;1000 h</td>
<td>Anterior cingulate cortex, secondary somato-sensory cortex</td>
<td>Anterior cingulate cortex – adaptive control of behavior</td>
</tr>
<tr>
<td>Holzel et al. (2011)</td>
<td>MBSR</td>
<td>16</td>
<td>39 ± 4</td>
<td>0</td>
<td>Left hippocampus, posterior cingulate cortex, temporo-parietal junction, cerebellum</td>
<td>Learning, memory, regulation of emotions, empathy</td>
</tr>
<tr>
<td>Luders et al. (2013b)</td>
<td>Various</td>
<td>50</td>
<td>51.4 ± 12.8</td>
<td>20 years</td>
<td>Hippocampus, especially subiculum</td>
<td>Subiculum – regulation of stress</td>
</tr>
<tr>
<td>Grant et al. (2013)</td>
<td>Zen</td>
<td>18</td>
<td>37.1 ± 10.9</td>
<td>&gt;1000 h</td>
<td>Cingulo-fronto-parietal network</td>
<td>Attention</td>
</tr>
</tbody>
</table>

\(n\), number of subjects, SD, standard deviation, MBSR, mindfulness-based stress reduction, IBMT, integrative body mind training.
Meditation and the Brain

Hölzel et al., 2007
Meditation and the Brain

Marciniak et al., 2014
Summary

• Validated, longstanding practice
• Non-denominational / trans-theoretical adjunct
• Likely multifactorial direct and indirect impact
  – Risk factors
  – Direct cortical effects
  – Direct functional effects
• Not a cure-all
• Requires effort
• Addresses multiple domains
  – Including quality of life
The Importance of Self-Compassion

- Self-kindness
  - Not self-pity

- Self-acceptance
  - Not self-esteem

- Self-compassion
  - Not self-indulgence or self-flagellation

- Importance of connection to a larger, common human condition
  - Versus isolation

- Importance of mindful awareness and engagement
  - Versus over-identification or fusing thoughts and reality
A Few Final Words on Acceptance

Acceptance is:
the nonjudgmental acknowledgement of “what is.”

Acceptance is not:
giving up, throwing in the towel, or quitting

Acceptance is also not:
the gnashing of teeth, beating of one’s head against the same wall over and over or swearing at the universe
Perhaps the Final Word on Acceptance?

“I can’t fight this, so I might as well dance with it and lead as much as possible.”
Resources

• Mindfulness Northwest
  • http://www.mindfulnessnorthwest.com/

• Seattle Mindfulness Center
  • http://seattlemindfulnesscenter.com/

• Mindfulness for Beginners/Full Catastrophe Living (Kabat-Zinn)
Memory and Brain Wellness Center

https://depts.washington.edu/mbwc/
Harborview Medical Center
325 9th Ave., 3rd Floor West Clinic
Seattle, WA 98104
Phone 206-744-3045
Fax 206-744-5030
krhoads@uw.edu
References/Resources


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