A mindfulness-based intervention for mixed anxiety and depression: Treatment leads to symptom reduction, as well as subjective and physiological improvements in the face of acute stress.

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Disclosure

• The data I am going to present was funded by a Varela Award from the Mind & Life Institute
• I have no financial or commercial relationships that might impact or be impacted by this presentation
• As a graduate student, I make next to nothing...
Explosion of Mindfulness Research

Mindfulness-based Interventions

- Mindfulness-based stress reduction (MBSR; Kabat-Zinn, 1990)
- Mindfulness-based cognitive therapy (MBCT; Segal et al., 2002)
- Mindfulness-based relapse prevention (MBRP; Witkiewitz et al., 2005)
- Mindfulness-based relationship enhancement (MB-RE; Carson et al., 2004)
- Mindfulness-based eating awareness training (MB-EAT; Kirstellar et al., 2005)
- Mindfulness-based Childbirth and Parenting (MB-CP; Vieten & Astin, 2008)

N.B. I am purposely excluding interventions that do not utilize meditation (e.g., ACT, DBT)
Efficacy of MBIs for Anxiety & Depression

Hofmann et al., 2010

Some Definitions of Mindfulness

<table>
<thead>
<tr>
<th>Source</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bishop et al. 2002 (Clinical Definition)</td>
<td>Self-regulation of attention so that it is maintained on immediate experience, thereby allowing for increased recognition of mental events in the present moment. Adopting an orientation of curiosity, openness, and acceptance towards the present moment.</td>
</tr>
<tr>
<td>Olendzki 2011 (Contemporary Buddhist)</td>
<td>Mindfulness is not just heightened attention, but is attention that has become confident, benevolent, balanced, and fundamentally wholesome... Mindfulness practice ripens into insight meditation when one sees directly such things as impermanence, suffering, and selflessness in the arising and passing away of the objects of awarenesss.</td>
</tr>
<tr>
<td>Analayo 2003 (Canonical Buddhist)</td>
<td>“…the practice of sattipatthana requires the establishment of four particular mental qualities, which can be taken to represent the mental faculties of...</td>
</tr>
<tr>
<td></td>
<td>(1) Energy – atapi – diligence</td>
</tr>
<tr>
<td></td>
<td>(2) Wisdom – sampajana – clearly knowing</td>
</tr>
<tr>
<td></td>
<td>(3) Mindfulness – sati – ‘minding’</td>
</tr>
<tr>
<td></td>
<td>(4) Concentration – vineyya abhijjadamanassa – free from desires and discontent</td>
</tr>
<tr>
<td>Psycho-Ed:</td>
<td>Handouts:</td>
</tr>
<tr>
<td>-----------</td>
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</tr>
<tr>
<td>MBSR</td>
<td>Depression, ABCs, triggers, relapse</td>
</tr>
<tr>
<td>MBCT</td>
<td>Anxiety, depression, &amp; stress, Mindfulness, ABCs, the context</td>
</tr>
<tr>
<td>MBI-MAD</td>
<td>Mindfulness, Anx/Depr/Stress, values of mindfulness, <em>brahmavihara</em></td>
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</tbody>
</table>

- **Psycho-Ed:** Stress and Health
- **Handouts:** Mindfulness and related ideas
- **Exercises:** Perceptions are not reality; Mindfulness
- **Guided Practice:** Body scan, Mindful yoga, sitting
- **Homework:** primarily meditation

### Diagram

- **Potential Participants (N = 205)**
  - Eligible (n = 68)
  - Excluded (n = 137)
    - Psych Meds: 94 (66.6%)
    - Smoker: 10 (25.6%)
    - Endocrine: 24 (17.5%)
    - Other Meds: 22 (16.1%)
    - Psych Inc: 18 (13.1%)
    - Meditation: 7 (5.1%)
    - Medical issues: 8 (6.4%)
    - Low Symptom: 4 (2.9%)
    - Coffee: 1 (2.9%)

- **Tx Group (n = 38)**
  - Post-Tx (T2) (n = 25)
  - Follow-Up (T3) (n = 13)
- **Wait-list Group (n = 18)**
  - Lost to Follow-up (n = 6) Dropped (n=2)
  - Follow-Up (T2) (n = 12)
  - Post-Tx (T3) (n = 8)

- **Lost about 1/3**
**Tx Outcome**

![Graph showing Tx Outcome with Cohen's d values for different outcomes.](image)

**Cohen's d**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Cohen's d</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRESS</td>
<td>-1.4</td>
</tr>
<tr>
<td>Core</td>
<td>-1.2</td>
</tr>
<tr>
<td>Som</td>
<td>-1</td>
</tr>
<tr>
<td>PSS-R</td>
<td>-0.8</td>
</tr>
<tr>
<td>PSS-R</td>
<td>-0.6</td>
</tr>
<tr>
<td>Worry</td>
<td>-0.4</td>
</tr>
<tr>
<td>Tension</td>
<td>-0.2</td>
</tr>
<tr>
<td>Joy</td>
<td>0</td>
</tr>
<tr>
<td>Demands</td>
<td>0.2</td>
</tr>
</tbody>
</table>

**Tx (n = 24)**

**WL (n = 13)**

**Treatment Group**

- Self Judgment: $ab = 2.58$
  - 8.99**
- Over Identification: $ab = -1.65$
  - 3.60
- Awareness: $ab = 2.23$
  - 2.71
- Strategies: $ab = -0.57$
  - 0.58*
- Emotional Intensity: $ab = 3.87$
  - 6.70**
Self-Report Questionnaires
Affective Attentional Blink Task

-60m -30m -10m 11m 21m 31m 41m 51m

VAS, HR, BP, Salivary Cortisol, Salivary α-Amylase

Modified TSST

Mental Arithmetic
1,397 – 7 = 1,390;
1,390 – 7 = 1,383;
1,383 – 7 = 1,376;
1,376 – 7 = ?

Alleged Transgression Defense
“I was unjustly arrested for the accusation of being involved in a protest turned violent.”

Kirschbaum et al., 1993; Marsland et al., 2002
T1 - T2 Change in Self-Report by Area Under the Curve

- Fatigued
- Anxious
- Frustrated
- Angry

Pruessner et al. 2003
Repeated Administration of TSST

Cortisol (nmol/L)  NorEpinephrine (pg/mL)

High Responders  Low Responders  High Responders  Low Responders

0  5  10  15  20  25  30  35  40

0  50  100  150  200  250  300

Schommer et al., 2003

Cortisol by Time by Group

0.77μg/dL

T1 - Avg (n = 31)  T2 - Tx (n = 19)  T2 - WL (n = 12)
Summary of Results

- Compared to wait-list, participants in MBI-MAD showed reductions in anxiety, depression, and perceived stress, as well as stress-related worries and tension.

- Decreases in anxiety, depression, and worries were primarily mediated by changes in emotional strength.

- Compared to wait-list, participants showed decreased subjective response to stress and normalized hormonal responses to stress.
## Discussion

- An MBI with more Buddhist context is still effective for reducing anxiety and depression
- How much is too much? Is there a right group for this? How long should MBIs last?
- If emotional strength is main mediator, what does this say about measures of mindfulness?
- What does it say about the Mind-Body relationship that 8 weeks of meditation training can alter neuroendocrine responses to stress?

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