Mindfulness Based Stress Reduction: Learning to Live in the Present

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I do not have conflicts of interest to disclose
What is mindfulness?

Non judgmental moment to moment awareness

- Practice
- Attitude
Mindfulness

- *Intentional* cultivation of *attention* using meditative techniques

- *Attitude* of openness, curiosity and acceptance

- Acknowledging the reality of the present moment, without getting caught up in thoughts about, or emotional reactions to it

- Creates an approach to stressful situations which promotes response rather than automatic reaction
National government survey

2002- 15 million Americans had used meditation in the past year

2007- 20 million had used meditation in the past year

2007- 1% of children
Walter Cannon

“Fight-or-Flight” response

Acute physiologic reaction:

• Sympathetic nervous system activity
• Central nervous system arousal
• Skeletal-muscle activity
Stress response - *nonspecific* response of the body to *any* demand.

Unchecked, the organism becomes *susceptible to disease and death*.

Stress - major cause of disease because chronic stress causes *long-term chemical changes*.

“Every stress leaves an indelible scar, and the organism pays for its survival after a stressful situation by becoming a little older.”
Richard Lazarus

Stress:

a transaction between a person and the environment that is appraised as being taxing or exceeding resources and endangering one’s well-being
The Link Between HPA Axis Activation and Chronic Medical illness

1. Hypothalamus and pituitary gland: excessive ACTH

2. The adrenal gland: excessive catecholamines and cortisol

3. Increased catecholamines: can lead to coronary artery disease or cardiac arrhythmias

4. Increased catecholamines (through platelet activation) and increased cytokines contribute to atherosclerosis and/or hypertension

5. Cortisol antagonizes insulin and contributes to dyslipidemia, type 2 diabetes, and obesity; increases in cortisol also suppress the immune system

Musselman DL et al 1998
Mindfulness: Stress Antidote

- Decrease the severity of the stress response
- Modify it’s effects
Stress Response

Environmental stressors (work, home, neighborhood)

Major life events

Trauma, abuse

Perceived stress (threat, helplessness, vigilance)

Behavioral responses (fight or flight; personal behavior — diet, smoking, drinking, exercise)

Individual differences (genes, development, experience)

Physiologic responses

Allostasis

Adaptation

Allostatic load

McEwen BS, Protective and Damaging Effects of Stress Mediators, NEJM 1998;
Mindfulness Based Stress Reduction (MBSR)

- 1979 Stress Reduction Clinic founded by Dr. Jon Kabat-Zinn at University of Massachusetts Medical Center for chronic pain patients

- 1995 Center for Mindfulness in Medicine, Healthcare and Society in the Division of Preventive and Behavioral Medicine

- Tens of thousands of people have attended MBSR programs worldwide

- Numerous clinical research studies
MBSR

• 2 hour mandatory orientation

• 8 weekly 2 ½ hour classes – 8-30 participants

• All day retreat

• Guided exercises in mindfulness meditation practices – sitting, walking, eating, interpersonal mindfulness

• Gentle stretching and mindful movement

• Group discussions about the practice and incorporating mindfulness into everyday life

• Daily home practice assignments using workbook and CDs

• Teachers on CFM website
Benefits of MBSR

- Reduction of stress and anxiety
- Useful for a variety of chronic medical conditions including chronic pain
- Improvement in sleep
- Increased concentration and mental focus
- Ability to respond vs react
- Increased ability for self care
Contraindications

- Psychosis
- Active suicidal ideation
- Severe MDD not in remission
- Acute PTSD
- Severe attention disorders
- Dementia
Principles of Teaching MBSR

• Derives from vipassana or insight form of Buddhist meditation

• Actual experience more important than didactic material

• Teaching from the moment and one’s own practice

• Presented as a secular program, use of ordinary language, no Pali or Sankrit words

• Non formulaic - although specific curriculum, flexible approach

• Use of poetry and stories for illustration
Orientation session

- No cost
- Mandatory
- 2 hours – includes 1:1 brief interview
- Introduction to concept of mindfulness and meditation
Class 1

Theme: Introduction to mindfulness- definition, letting go of judgment, expectations...
Why are you here? The workability of challenges...

Guided meditation – example

Discussion of experience- dyads, group

Class guidelines

Eating meditation (beginner’s mind)

Body scan

CD’s, practice manual, home practice assignment
Theme: Perception & responding.: how you see things or don’t will largely determine how you respond to them -how one sees program, pain, any stressor etc. How perception may be narrowed by mindset. The need to have a flexible perspective, open mind

Body scan
Discussion of class and home practice- challenges, etc

Mindstate → Perception (including how stressful something is) → Behavior
Theme: Learning to be present with whatever is..

Guided meditation

Discussion of practice

Mindful movement (gentle yoga) while noticing S,T,E including body’s limits

Mindful walking

Mindfulness of everyday life

Pleasant events – S,T,E
Class 4

Theme: Recognition of stress - how do we know the unpleasant? Effect of stress on the body. Use of mindfulness and to work with and recover from stress

Guided meditation

Discussion of practice

Discussion of unpleasant event – S,T,E

Where do we find stress- internal and external, stress physiology

Definitions of stress

Not the stressor but how one handles it that determines how stressful something is –by changing how you look at something you can change your experience of it

Stress → React
Stress → Awareness, pause → Choice and Response (Breathe)
The truth that many people never understand, until it is too late, is that the more you try to avoid suffering the more you suffer because smaller and more insignificant things begin to torture you in proportion to your fear of suffering (being hurt).

Thomas Merton
Class 5

Theme: Continued exploration of noticing and response to stress. Emphasis on capacity to respond rather than react. Resilience as capacity to bear stress

- Guided meditation - with increased awareness
- Mindful movement
- Written reflection on halfway point of class
- Discussion of reflection and practice
- Maladaptive responses to stress
- Mindful response to stress

Awareness → Pause → Choice → Effective Response
Class 6

Theme: Stressful communication and interpersonal mindfulness

Sitting, moving meditations

Discussion of mid way reflection and practice

Discussion of upcoming all day retreat

Reflection and discussion of a difficult communication

Old habits and personal styles can effect

Paying attention → Pausing → Openness and Flexibility → Response (not react)

new perspective

maybe awareness of not taking interaction personally

Exercise in mindful speaking (pausing) and mindful listening (active listening vs passive hearing)
**All Day Retreat**

**Theme:** Moment to moment presence. Being with what is whether pleasant or unpleasant. Noticing.

**Guidelines**

Most of day in silence (types of silence)

Meditations – sitting, walking, visual, food

Loving kindness meditation – compassion for self and others

Breaking of silence and discussion
Class 7

Theme: Mindfulness of daily life. Choices of daily living - what is nourishing and what is not.

Changing seats exercise - changing perspective. Pleasant or unpleasant, When faced with change in our lives, are we rigid or flexible? Can we be at home wherever we are?

Discussion of retreat

Discussion of what we take in – when is it nourishing and when is it maladaptive? Same thing can be both, depending on intention and use
Theme: Keeping up the momentum of what’s been learned. Resources to support the practice. The shared experience of past 8 weeks

- Period of practice: body scan, movement, sitting meditation
- Discussion of practice and making it your own
- Reflection on course and evaluation, letter to self
- Brief review
- Resources and reminders handout
- Discussion of experience

Goodbye...
Mindfulness Based Interventions

- Mindfulness Based Stress Reduction (MBSR)
- Mindfulness Based Cognitive Therapy (MBCT)
- Mindfulness Based Relapse Prevention (MBRP)
- Mindfulness Based Eating Awareness (MB EAT)
- Mindfulness Based Mental Fitness Training (MMFT)
- Mindfulness for ADHD (MAP)

Interventions where mindfulness is a component (DBT, ACT)
Mindfulness in Education Network (MIEN)

http://www.mindfuled.org
Research in MBSR
MBSR and Healthcare Utilization

Roth, B 2002
MBSR and Medical Symptoms

Medical Symptoms (MSCL Total Score)

BEFORE PROGRAM

AFTER PROGRAM

$t=6.46$

$df=102$

$p<0.0001$

Reibel, D et al 2001
MBSR and Chronic Medical Illness

• 15 published studies (meta-analysis)

• Outcomes related to mental and physical health, well-being, and quality of life.

• Clinical diagnoses - fibromyalgia, chronic pain, rheumatoid arthritis, type 2 diabetes, chronic fatigue syndrome, multiple chemical sensitivity, and cardiovascular diagnoses.

• All studies showed improvements after MBSR. No negative change was reported.

Merkes, M 2010
Chronic pain diagnoses: chronic neck or back pain, chronic headaches/migraines, arthritis, fibromyalgia

- 99 patients
- 39% with 2 or more comorbid pain conditions
- Mean duration of pain = 12.1 years

Significant improvement on all measures of physical and mental function (SF 36 & SCL 90R)

Largest improvement in pain severity and functional limitations:
  Chronic back/neck pain, arthritis and two or more comorbid pain conditions
<table>
<thead>
<tr>
<th>Meditation study overview</th>
<th>Sample size, population</th>
<th>Interventions</th>
<th>Control</th>
<th>Length of baseline, no of BP readings</th>
<th>Intervention details</th>
<th>Template training</th>
<th>Results</th>
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<tbody>
<tr>
<td>TM (11)</td>
<td>215 adults aged 18-50 yrs, with high normal BP</td>
<td>Active (Sudarshan Kriya)</td>
<td>Passive</td>
<td>3 readings taken at 1 month intervals for 6 weeks</td>
<td>Randomized, blind; controlled</td>
<td>TM group showed significant decrease in resting DBP and in DBP during mental stress.</td>
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<td>TM (12)</td>
<td>295 (female, n=145)</td>
<td>Active (CVD risk factor prevention program)</td>
<td>Passive</td>
<td>3 readings taken at 1-month intervals</td>
<td>Randomized, single blind; controlled</td>
<td>Significant reductions in DBP and SBP in the group with a CVD risk factor prevention program.</td>
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<td>None</td>
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</table>
MBSR and Asthma

Pbert, L et al  2012
Longer Term Effects of MBSR

Carlson, L et al 2007
Means ± SE antibody rise from the 3- to 5-week to the 8- to 9-week blood draw in the Meditation and Control groups. The ordinate displays the difference in the log-transformed antibody rise between the 3- to 5- and the 8- to 9-week blood draws derived from the hemagglutination inhibition assay.

Davidson, R et al  2003
Brain Function and MBSR

![Graph showing changes in Log Right-Left Alpha Power in μV²/Hz between Time 1 and Time 2 for Control and Treatment groups.](image)

Davidson, R et al 2003
Antibody Rise and Frontal Activation

Log Right - Left Alpha Power in µV²/Hz

Antibody Titer (HIA)

$r = .53$

$p < .05$
MBSR and the Brain
MBSR and Grey Matter Density

Holzel, B et al 2010
MBSR and Amygdala Volume

Gray matter concentration change (%) in cluster in the right amygdala vs. change in perceived stress scale score.
Effect of Chronic Stress on Cell Aging

Epel 2005
MBSR and Telomerase in Breast Cancer

Telomerase Activity (TA)

Mean Change Telomerase Activity (SEM)

(p < .01)

Lengacher, CA et al 2014
Mindfulness Meditation and Telomeres

Positive Cognitive States
- Meta-cognition, perceived control, challenge appraisals (Affective balance)

Positive Arousal
- High androgens, GH axis, vagal tone

MINDFULNESS

Stress Cognitions
- Threat appraisals, rumination (Negative affect)
- High cortisol, insulin, oxidative stress

Epel, E et al. 2009
Change in Pro-inflammatory Gene Expression With Meditation

Kaliman, P et al 2013
# MBSR Effects on Anxiety and Depression

<table>
<thead>
<tr>
<th>Study</th>
<th>Positive change on depression or anxiety</th>
<th>Compliance with mindfulness measured</th>
<th>Active control group used</th>
<th>Random assignment</th>
<th>Follow-up</th>
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<td>Goldenberg$^{11}$</td>
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<td>Astin$^{16}$</td>
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<td>Marcus$^{21}$</td>
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<td>Carlson$^{22}$; Speca$^{7}$</td>
<td>√</td>
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<td>McMillan$^{23}$</td>
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<td>Davidson$^{24}$</td>
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<td>Tacon$^{25}$</td>
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<td>Weiss$^{29}$</td>
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</table>
39 studies totaling 1,140 participants
Psychiatric or medical diagnosis

Overall:

- Anxiety (Hedges’ g = 0.63)
- Mood symptoms (Hedges’ g = 0.59)

Anxiety and mood disorders:

- Anxiety (Hedges’ g = 0.97)
- Mood symptoms (Hedges’ g = 0.95)

Hofmann, S et al 2010
## MBSR and Anxiety Disorders

### Effect of treatment on outcome — ITT sample.

<table>
<thead>
<tr>
<th>Variables</th>
<th>MBSR (n = 39)</th>
<th>WLC (n = 37)</th>
<th>F (1,74)</th>
<th>ES (between)</th>
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<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>ES (within)</td>
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<td>BAI</td>
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<tr>
<td>Pre-treatment</td>
<td>20.4</td>
<td>9.4</td>
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<td>PSWQ</td>
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<td>STAI-S</td>
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<tr>
<td>Pre-treatment</td>
<td>40.5</td>
<td>9.2</td>
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<tr>
<td>Post-treatment</td>
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<td>12.6</td>
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<td>STAI-T</td>
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<td>Pre-treatment</td>
<td>52.8</td>
<td>11.0</td>
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<td>Post-treatment</td>
<td>44.5</td>
<td>12.6</td>
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<td>BDI-II</td>
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<td>Post-treatment</td>
<td>125.7</td>
<td>22.3</td>
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<td>114.4</td>
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</table>

BSR = Mindfulness-based stress reduction; WLC = Wait-list control group; resales we are willing to do so. Abbreviations: ITT = Intention-to-treat; MBSR = Mindfulness-based stress reduction, WLC = Waiting-list Control; M = mean; SD = standard deviation; ES = effect size (Cohen’s d); BAI = Beck Anxiety Inventory; PSWQ = Penn State Worry Questionnaire; STAI-S = State-trait Anxiety Inventory-State; STAI-T = State-Trait Anxiety Inventory-Trait; BDI-II = Beck Depression Inventory; SCL-90-R = Symptom Checklist 90-R Global severity index; BIS = Bergen Insomnia Scale; FFMQ = Five-Factor Mindfulness Questionnaire (total score).

*p < 0.05; **p < 0.01; ***p < 0.001.
# MBSR and SAD

<table>
<thead>
<tr>
<th></th>
<th>Baseline Mean ± SD</th>
<th>Post-MBSR Mean ± SD</th>
<th>t Test, effect size</th>
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<tbody>
<tr>
<td>LSAS</td>
<td>68.7 ± 21.2</td>
<td>49.3 ± 17.0</td>
<td>4.3***, .59</td>
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<tr>
<td>BDI-II</td>
<td>8.7 ± 9.1</td>
<td>3.4 ± 3.2</td>
<td>2.2*, .27</td>
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<td>RSQ</td>
<td>26.4 ± 6.5</td>
<td>19.3 ± 95.7</td>
<td>3.8**, .53</td>
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<td>STAI-State</td>
<td>41.5 ± 9.3</td>
<td>29.6 ± 6.4</td>
<td>8.4***, .84</td>
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<td>RSES</td>
<td>22.7 ± 4.6</td>
<td>27.2 ± 4.7</td>
<td>3.7*, .51</td>
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*Note.* LSAS = Liebowitz Social Anxiety Inventory; BDI-II = Beck Depression Inventory—II; RSQ = Ruminination Style Questionnaire; STAI = Spielber State Trait Anxiety Inventory; RSES = Rosenberg Self-Esteem Scale.

*p < .05. **p < .01. ***p < .001. Effect size = partial eta².

Goldin, P et al 2009
MBSR vs AE for SAD

* p<.05; Error bars = standard error of the mean.
### Effect of treatment on primary efficacy variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Time of assessment</th>
<th>ITT sample</th>
<th>Completer sample</th>
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<tr>
<td></td>
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<td>CBGT ((n = 27))</td>
<td>MBSR ((n = 26))</td>
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<tr>
<td>Liebowitz Social Anxiety Scale-Fear</td>
<td>Baseline</td>
<td>37.3 ± 7.6</td>
<td>40.8 ± 7.9</td>
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<td></td>
<td>Endpoint</td>
<td>23.0 ± 9.5</td>
<td>28.9 ± 8.7</td>
</tr>
<tr>
<td>Liebowitz Social Anxiety Scale-Avoidance</td>
<td>Baseline</td>
<td>34.3 ± 8.6</td>
<td>39.1 ± 8.9</td>
</tr>
<tr>
<td></td>
<td>Endpoint</td>
<td>17.4 ± 8.3</td>
<td>25.3 ± 9.0</td>
</tr>
<tr>
<td>CGI-Illness severity</td>
<td>Baseline</td>
<td>4.7 ± .7</td>
<td>5.0 ± .8</td>
</tr>
<tr>
<td></td>
<td>Endpoint</td>
<td>3.0 ± 1.0</td>
<td>3.9 ± .8</td>
</tr>
<tr>
<td>Social Interaction Scale</td>
<td>Baseline</td>
<td>46.1 ± 8.9</td>
<td>44.6 ± 10.6</td>
</tr>
<tr>
<td></td>
<td>Endpoint</td>
<td>30.2 ± 10.8</td>
<td>34.1 ± 14.9</td>
</tr>
<tr>
<td>Social Phobia Scale</td>
<td>Baseline</td>
<td>33.3 ± 13.2</td>
<td>34.0 ± 14.0</td>
</tr>
<tr>
<td></td>
<td>Endpoint</td>
<td>15.4 ± 8.0</td>
<td>24.6 ± 16.4</td>
</tr>
</tbody>
</table>

Values are mean ± standard deviation. Abbreviations are as follows: ITT, intent-to-treat; CBGT, cognitive–behavioral group therapy; MBSR, mindfulness-based stress reduction; ES, effect size. An ES of .20 is small, .50 medium and .80 large. \(p\)-Values ≤ .05 are statistically significant.
### Degree of Change From Baseline to 2 and 6 Months for PTSD and Functional Status Measures

<table>
<thead>
<tr>
<th>Change at 2 months</th>
<th>PCL score</th>
<th></th>
<th>MCS score</th>
<th></th>
<th>PCS score</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Worsened 10+ points</td>
<td>3</td>
<td>4.2</td>
<td>4</td>
<td>5.3</td>
<td>4</td>
<td>5.3</td>
</tr>
<tr>
<td>Worsened 5–10 points</td>
<td>3</td>
<td>4.2</td>
<td>5</td>
<td>6.7</td>
<td>6</td>
<td>8.0</td>
</tr>
<tr>
<td>Change &lt;5 points</td>
<td>20</td>
<td>27.8</td>
<td>28</td>
<td>37.3</td>
<td>44</td>
<td>58.7</td>
</tr>
<tr>
<td>Improved 5–10 points</td>
<td>17</td>
<td>23.6</td>
<td>13</td>
<td>17.3</td>
<td>10</td>
<td>13.3</td>
</tr>
<tr>
<td>Improved 10+ points</td>
<td>29</td>
<td>40.3</td>
<td>24</td>
<td>32.0</td>
<td>10</td>
<td>13.3</td>
</tr>
<tr>
<td>Change at 6 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worsened 10+ points</td>
<td>4</td>
<td>6.2</td>
<td>4</td>
<td>6.1</td>
<td>2</td>
<td>3.0</td>
</tr>
<tr>
<td>Worsened 5–10 points</td>
<td>4</td>
<td>6.2</td>
<td>2</td>
<td>3.0</td>
<td>6</td>
<td>9.1</td>
</tr>
<tr>
<td>Change &lt;5 points</td>
<td>20</td>
<td>30.8</td>
<td>21</td>
<td>31.8</td>
<td>41</td>
<td>62.1</td>
</tr>
<tr>
<td>Improved 5–10 points</td>
<td>6</td>
<td>9.2</td>
<td>15</td>
<td>22.7</td>
<td>8</td>
<td>12.1</td>
</tr>
<tr>
<td>Improved 10+ points</td>
<td>31</td>
<td>47.7</td>
<td>24</td>
<td>36.4</td>
<td>9</td>
<td>13.6</td>
</tr>
</tbody>
</table>

*Note: PTSD = posttraumatic stress disorder; PCL = PTSD checklist; SF-8 PCS = short form-8 physical component summary; SF-8 MCS = short form-8 mental component summary. A change of 10 or more points is considered clinically significant.*
MBSR and CBT in Anxiety Disorders

Heterogeneous anxiety disorders

MBSR & CBT - Effective at reducing severity and symptoms

CBT - high anxiety sensitivity

MBSR - average anxiety sensitivity and with depressive symptoms

Arch, J et al 2013
MBSR and Stress Reactivity in GAD

Hoge, E et al 2013
Limitations

- Long-term follow-up
- Active controls
- Hard to blind meditation
Clinical use of MBSR

Chronic medical disease

Chronic pain

Non clinical anxiety

Anxiety disorders partially remitted from CBT or pharmacotherapy

Somatic arousal is decreased

Residual depressed mood (MBCT not available)

? Dysthymia

Not as primary treatment for acute MDD, PD, simple phobias
# MBSR and Therapists

## Mean Scores by Group, Pre-Course (Time 1) and Post-Course (Time 2), and MBSR Intervention Effects

<table>
<thead>
<tr>
<th>Variable</th>
<th>MBSR Time 1 M (SD)</th>
<th>MBSR Time 2 M (SD)</th>
<th>Control Time 1 M (SD)</th>
<th>Control Time 2 M (SD)</th>
<th>$p_{inter}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>PANAS positive affect</td>
<td>4.87 (0.75)</td>
<td>5.45 (0.94)</td>
<td>5.14 (0.74)</td>
<td>4.90 (0.95)</td>
<td>.0002</td>
</tr>
<tr>
<td>PANAS negative affect</td>
<td>3.09 (0.90)</td>
<td>2.55 (1.01)</td>
<td>3.04 (1.03)</td>
<td>2.99 (0.89)</td>
<td>.04</td>
</tr>
<tr>
<td>STAI anxiety, present</td>
<td>3.17 (1.19)</td>
<td>2.18 (1.09)</td>
<td>2.67 (1.11)</td>
<td>2.76 (1.01)</td>
<td>.0005</td>
</tr>
<tr>
<td>STAI anxiety, past month</td>
<td>3.43 (0.90)</td>
<td>2.51 (0.77)</td>
<td>3.33 (1.05)</td>
<td>3.44 (1.14)</td>
<td>.0002</td>
</tr>
<tr>
<td>PSS perceived stress</td>
<td>24.64 (7.81)</td>
<td>18.36 (5.15)</td>
<td>21.72 (7.14)</td>
<td>22.91 (7.54)</td>
<td>.0001</td>
</tr>
<tr>
<td>RRQ rumination</td>
<td>3.42 (0.83)</td>
<td>2.78 (0.63)</td>
<td>3.15 (0.92)</td>
<td>3.11 (0.90)</td>
<td>.0006</td>
</tr>
<tr>
<td>SCS self-compassion</td>
<td>18.06 (3.97)</td>
<td>20.92 (3.84)</td>
<td>19.41 (3.75)</td>
<td>19.22 (4.12)</td>
<td>.0001</td>
</tr>
<tr>
<td>MAAS mindfulness</td>
<td>3.76 (0.80)</td>
<td>4.01 (0.51)</td>
<td>4.05 (0.64)</td>
<td>3.80 (0.62)</td>
<td>.006</td>
</tr>
</tbody>
</table>

*Note.* $n = 22$ in MBSR group; $n = 32$ in control group. The $p_{inter}$ column shows the ANOVA Group × Time Interaction Significance Levels. RRQ = Reflection Rumination Questionnaire; PANAS = Positive Affectivity Negative Affectivity Schedule; STAI = State/Trait Anxiety Inventory; PSS = Perceived Stress Scale; SCS = Self-Compassion Scale; MAAS = Mindful Attention Awareness Scale.

---

Shapiro, S et al 2007
### Effect of Therapist Mindfulness on Patients

<table>
<thead>
<tr>
<th></th>
<th>SOM</th>
<th>O-C</th>
<th>I-S</th>
<th>DEP</th>
<th>ANX</th>
<th>HOS</th>
<th>PHOB</th>
<th>PAR</th>
<th>PSY</th>
<th>GSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial MED (n = 63)</td>
<td>69.5 ± 11.7</td>
<td>67.9 ± 14.0</td>
<td>64.6 ± 13.4</td>
<td>72.5 ± 9.0</td>
<td>68.5 ± 12.0</td>
<td>66.8 ± 9.8</td>
<td>65.5 ± 13.0</td>
<td>63.2 ± 12.6</td>
<td>63.1 ± 10.7</td>
<td>72.6 ± 6.8</td>
</tr>
<tr>
<td>noMED (n = 61)</td>
<td>59.6 ± 10.3</td>
<td>62.7 ± 9.8</td>
<td>60.4 ± 14.0</td>
<td>65.9 ± 9.7</td>
<td>62.6 ± 11.4</td>
<td>61.2 ± 11.1</td>
<td>61.4 ± 11.2</td>
<td>59.4 ± 11.8</td>
<td>61.4 ± 9.5</td>
<td>65.6 ± 10.4</td>
</tr>
<tr>
<td>Final MED (n = 63)</td>
<td>54.1 ± 10.7</td>
<td>49.0 ± 12.1</td>
<td>48.5 ± 10.0</td>
<td>49.3 ± 10.5</td>
<td>52.9 ± 10.5</td>
<td>49.3 ± 10.8</td>
<td>50.6 ± 10.4</td>
<td>51.3 ± 10.7</td>
<td>49.1 ± 10.1</td>
<td>50.7 ± 10.5</td>
</tr>
<tr>
<td>noMED (n = 61)</td>
<td>59.3 ± 10.1</td>
<td>58.9 ± 10.9</td>
<td>56.1 ± 12.9</td>
<td>60.5 ± 9.9</td>
<td>58.8 ± 10.8</td>
<td>57.9 ± 8.4</td>
<td>55.5 ± 11.6</td>
<td>55.8 ± 11.9</td>
<td>57.1 ± 9.1</td>
<td>60.1 ± 9.6</td>
</tr>
<tr>
<td>DF</td>
<td>14.1</td>
<td>15.1</td>
<td>11.8</td>
<td>17.8</td>
<td>11.8</td>
<td>14.2</td>
<td>14.2</td>
<td>8.3</td>
<td>9.7</td>
<td>16.4</td>
</tr>
<tr>
<td>95% CI</td>
<td>9.2–18.9</td>
<td>9.5–20.7</td>
<td>6.2–17.3</td>
<td>13.2–22.5</td>
<td>6.8–16.8</td>
<td>9.1–19.4</td>
<td>0.5–14.2</td>
<td>-0.9–13.7</td>
<td>5.6–13.8</td>
<td>12.0–20.6</td>
</tr>
<tr>
<td>p</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
<td>0.048</td>
<td>0.16</td>
<td>&lt;0.01</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

Values are means ± standard deviation. MED = Group treated by therapists practicing Zen meditation; noMED = control group, in which PiTs did not meditate; DF = difference in change between the 2 groups and its 95% CI; p = probability of error for the treatment by time effect within the linear mixed model; SOM = somatization; O-C = obsessiveness; I-S = insecurity in social contact; DEP = degree of depression; ANX = anxiety; HOS = aggressiveness/hostility; PHO = phobic anxiety; PAR = paranoid thinking; PSY = psychoticism.
MBSR for Burnout

70 primary care physicians

MBSR based CME course

Improvements in mindfulness:

- Improvements in total mood disturbance (P < .001)
- Physician empathy (P < .001),
- Burnout (emotional exhaustion and personal accomplishment) (P < .001)

Krasner, M 2009
MBSR Teacher Training- How and Why?

**Personal practice**

**Formal training -** Center for M,M H at U Mass-Oasis Institute

**Phase One:** Silent meditation retreat, 5-10 days

- Eight Week MBSR Course as a participant
- Clarify intentions for pursuing this course of study and practice
- Graduate degree or equivalent work experience

**Phase Two:** Develop practice and understanding- ongoing daily meditation practice; yoga and other body-centered awareness practices

- Additional silent meditation retreat(s)
- MBSR in Mind -Body Medicine , 7 day residential program
- Practicum in MBSR- either 8 week or 9 day residential program
- Begin teaching short sessions of MBSR-based practices
- Attend Teacher Development Intensive (TDI) – 8 day residential program
Full Catastrophe Living
Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness

Jon Kabat-Zinn, Ph.D.
Bestselling Author of Wherever You Go, There You Are
Preface by Thich Nhat Hanh

Fifteenth Anniversary Edition
With a New Introduction by the Author

Insight Meditation
The Practice of Freedom

Joseph Goldstein

the mindfulness solution
Everyday Practices for Everyday Problems

Ronald D. Siegel, PsyD
The range of what we think and do is limited by what we fail to notice.

And because we fail to notice that we fail to notice,

there is little we can do to change until we notice how failing to notice shapes our thoughts and deeds.

~R. D. Laing
Everything can be taken from a man but one thing: the last of human freedoms - to choose one's attitude in any given set of circumstances, to choose one's own way.

Between stimulus and response there is a space. In that space is our power to choose our response. In our response lies our growth and our freedom

Victor Frankel