Acceptability of Mindfulness-Based Interventions for Substance Use Disorders

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New Mexico State University
• Affects over 20 million Americans
• Costs over $400 billion annually
• 40-60% relapse within one year post-treatment
• Treatment and relapse prevention programs are a high priority for NIH research
Mindfulness-Based Interventions

- Mindfulness-based interventions (MBIs) for SUD – 3rd wave of cognitive behavioral therapies
- MBIs have been developed for issues in which stress, emotional, or physical pain are concerns
- Essential core meditative practices
  - grounded in silence
  - stillness
  - self-inquiry
  - embodiment
  - emotional sensitivity
  - acceptance of emotional expression
## Mindfulness-Based Model

<table>
<thead>
<tr>
<th>Neural circuitry of addiction</th>
<th>Associated brain areas</th>
<th>Target in mindfulness intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reward</strong> (craving &amp; pleasure)</td>
<td>Medial PFC, anterior cingulate cortex, nucleus accumbens, amygdala, VTA</td>
<td>Increasing present moment awareness, sitting with discomfort</td>
</tr>
<tr>
<td><strong>Learning &amp; memory</strong> (habit)</td>
<td>Dorsolateral PFC, orbitofrontal cortex, dorsal striatum, amygdala, hippocampus, VTA</td>
<td>Reduced reactivity to drug cues, sitting with discomfort without going on autopilot</td>
</tr>
<tr>
<td><strong>Motivation &amp; drive</strong></td>
<td>Orbitofrontal cortex, anterior cingulate cortex, dorsal striatum, VTA</td>
<td>Greater self-regulation, cultivating non-reactivity including reduced reactivity to drug cues, choice selection</td>
</tr>
<tr>
<td><strong>Stress responses</strong></td>
<td>HPA axis, amygdala and extra-hypothalmic CRF system</td>
<td>Increasing present moment awareness, sitting with discomfort, greater self-regulation, reduced reactivity to drug cues</td>
</tr>
<tr>
<td><strong>Executive control</strong></td>
<td>Ventromedial PFC, orbitofrontal cortex, dorsolateral PFC, anterior cingulate cortex</td>
<td>Greater self-regulation, enhanced attentional control, actively allowing discomfort via choice selection</td>
</tr>
</tbody>
</table>

Witkiewitz, Lustyk, & Bowen (2013)
History of MBIs in the U.S.

- Mindfulness-Based Stress Reduction (MBSR)
  - Jon Kabat-Zinn in 1979
- University of Massachusetts Medical Center
- Popular among middle-class, educated, White Americans
- Often expensive
- Historically, not tested among minority populations
Acceptability

- Multifaceted construct reflects appropriateness, based on anticipated or experienced cognitive and emotional responses to the intervention
Significance of Acceptability

- More likely to adhere to and benefit from the intervention (Hommel et al., 2013)
- Facilitators are less likely to alter the intervention (Proctor et al., 2009)
- Growing priority in clinical research (Moore, et al., 2015)
  - Medical Research Council did not mention acceptability in 2000,
  - 2015, mentions acceptability 14 times without conceptual and operational definitions
- 43 systematic reviews of healthcare interventions, none mentioned an acceptability theory or framework (Sekhon, 2017)
• Of 17 MBI for SUD studies, only 4 measured acceptability
• Acceptability Measures
  – Satisfaction
  – Practice
  – Follow-up retention rates
  – Attendance
• Always assessed after the intervention
• All concluded the intervention was acceptable
• None assessed variation in acceptability

Issues found in the literature

• 6 studies used retention, attendance, or follow-rates to assess feasibility
  – Creates confusion in conceptual and operational definitions

• Issues using retention/completion/attendance
  – Inaccurate
    • Can complete without accepting
    • Can accept without completing

• Satisfaction and practice – more accurate

• Lack of assessment of initial acceptability

• Lack of attention to the measurement of acceptability
• Inconsistent types of measures of acceptability
• Acceptability is “multifaceted”
  – Majority studies use single measure
  – Acceptability is a term to describe multiple measures
  – Cannot conclude acceptability based on single measure
    • If using satisfaction, conclude satisfaction
Moment-by-Moment in Women’s Recovery (MMWR)

- MBI for SUD
  - Adapted from Mindfulness-Based Stress Reduction
    - Ethnoracially diverse women
    - Low literacy
    - Low income
    - Relatable content and examples
    - Trauma and mental health
MMWR

- 80 minutes, 2x week, 12 sessions, 6 weeks
- During residential treatment
- MMWR facilitators
  - trained in both MBSR and MMWR
  - on-site master's-level clinician
- Instructional manual with standardized lesson plans
• Class segments:
  – Welcome, brief check-in, discussion of objectives, brief mindfulness practice
  – Educational presentation, discussion of content
  – Mindfulness practice related to the session themes
  – Sitting or walking meditation, body scan, or stretching
  – Review reading and practice assignments for the next class, and closing meditation
• Topics:
  – Preventing relapse
  – Building inner safety in treatment
  – Healthy ways of coping with stress
  – Role of perceptions
  – Anxiety, fear, & panic attacks
  – Shame & guilt
  – Self-talk
  – Mindful communication
  – Anger & violence
  – Painful thoughts
Purpose

• To test intervention and participant characteristics that may be associated with acceptability:
  – time in treatment prior to starting the intervention
  – mindfulness predisposition
  – trauma severity

• To test the association between acceptability factors (satisfaction and practice) and mindfulness application at the end of session 12
• Screening assessments were conducted to determine eligibility prior to consent and in-person interviews
• Further information was abstracted from clinic records
• Acceptability data were collected via self-administered surveys during intervention sessions.
Methods - Procedures

Inclusion Criteria
- a new patient at the study site
- female
- 18-65 years of age
- diagnosed with SUD
- fluent in English
- agree to participate.

Exclusion Criteria
- inability to understand or sign the informed consent
- have a cognitive impairment
- have any untreated psychotic disorder/severe mental health disorder
- be imprisoned
- have reported suicidality (past 30 days)
- be over six months pregnant.
Methods – Measurements

• Demographics/Covariates - Baseline
  – Age, Education (years), Race/Ethnicity

• Time in Treatment
  – number of days between treatment entry and intervention start
Methods – Measurements

• Mindfulness Predisposition - Baseline
  – Five Facet Mindfulness Questionnaire (FFMQ)
  – 25 items, 5 subscales, 1= “Never/rarely” to 5 = “always”
    • observing, describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience
  – Sample item: I paid attention to sounds, such as clocks ticking, birds chirping, or cars passing

• Trauma severity - Baseline
  – PTSD Symptom Scale - Self Report (PTSS-SR)
  – 17 items, 3 subscales, 0 = “Not at all” to 4 = “almost always”
  – Sample item: how often have you been bothered by having bad dreams or nightmares about the traumatic events?
Methods – Measurements

• Satisfaction – Session 2
  – 17-items, 1 = “not at all” to 5 = “very much”
  – Sample item: How much did you enjoy participating?

• Formal Practice – Session 3
  – 6 items, 0 = “Never” to 5 = “4 or more times a day”
  – Sample item: How often did you practice walking meditation?

• Informal Practice – Session 3
  – 8 items, 0 = “Never” to 5 = “4 or more times a day”
  – Sample item: How often did you practice or use mindfulness to be aware of your emotions?
Methods – Measurements

• Mindfulness Application – Session 12
  – Applied Mindfulness Practice Scale (AMPS)
  – 15 items, 3 subscales, 0 = “never” to 4 = “almost always”
    • Decentering, positive emotion regulation, negative emotion regulation
  – Sample item: In the past 7 days, I used mindfulness practice to see that my thoughts are not necessarily true
## Participants

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<th>Variable</th>
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### Results - ANOVA

#### Racial/Ethnic differences

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<td>Between</td>
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<td>Within</td>
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<td><strong>Mindfulness Application</strong></td>
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<td>Between</td>
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<td>Within</td>
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### Results – Regression 1

**DV - Satisfaction**

<table>
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<tr>
<th>Predictor</th>
<th>$R^2$</th>
<th>F</th>
<th>$\beta$</th>
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### Results – Regression 2

DV – Formal Practice

<table>
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<th>$R^2$</th>
<th>F</th>
<th>β</th>
<th>t</th>
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### Results – Regression 3

**DV – Informal Practice**

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## Results – Regression 4

**DV – Mindfulness Application**

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<th>t</th>
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Discussion

• Time in treatment prior to intervention start did not predict any acceptability variables
  – May be able to introduce sooner without reducing acceptability

• Mindfulness Predisposition was related to informal practice but not formal practice or satisfaction
  – Intervention is acceptable even among women with lower mindfulness predisposition, but they may not have as frequent of informal practice by session 3
Discussion

• Satisfaction was the strongest predictor of mindfulness application
  – It is important for women to enjoy the intervention and find the teachings useful for them to apply the teachings later
Discussion

- No significant Race/Ethnic differences
- Trauma severity was a positive predictor of formal and informal practice
- Limitations
  - Small sample size
  - Possible third variable effects
- Future Directions
  - Further investigate what predicts satisfaction
  - Assess longitudinal acceptability
Implications

• Evidence-based interventions are not one-size-fits all, but it can be difficult to personalize interventions to fit everyone
• Identifying participant characteristics that influence acceptability of the intervention can inform precise adaptation designed for specific subgroups
Intervention Adaptation

• Many adaptive modifications mainly address surface structure, rather than deep structure
  • Surface structure: matching intervention materials and messages to observable ‘superficial’ characteristics of the target population
    • Language translation
  • Deep structure: involves incorporating the cultural, social, historical, environmental, and psychologic forces that influence the target health behavior in the proposed target population (Resnicow et al., 2000)
    • Relatable content and examples

Social Determinants as Contextual Factors in Health

- Social Determinants of Health
  - Conditions in the environments that affect a wide range of health, functioning, and quality of life outcomes and risks (DHHS, 2014)

- Social determinants include:
  - Poverty
  - Residential segregation
  - Access to:
    - Education, training, jobs
    - Health care services
    - Community-based resources
    - Resources to meet daily living needs
  - Social support
  - Exposure to crime
Health Disparities

- Health Disparities
- Differences in the incidence, prevalence, morbidity, and burden of diseases and other adverse conditions that exist among specific population groups. (DHHS, 2014)
  - Have multiple determinants
  - Disparities in SES a major cause
  - Lack of access to quality care
  - Include historical inequities
  - Persistent racial and ethnic discrimination
  - Distrust of the health care system
- Account for higher rates of mortality and morbidity
- Current limitations in evidence-based interventions in reducing health disparities
Reducing health disparities involves eliminating health inequalities by creating, “public health systems that translate efficacy documented by research into effectiveness in the community.”

Future Directions

• Scaling up interventions for broad dissemination
  – Applicable to large groups
  – Relatable and relevant to specific groups
  – Cost-effectiveness

• Theoretical Congruence
  – Maintain fidelity while improving fit


Acceptability of a Mindfulness-Based Intervention among Women with Substance Use Disorders

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Acknowledgements

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About me