**Interventions**

*Articles testing the applied science and implementation of mindfulness-based interventions*


ASSOCIATIONS
Articles examining the correlates and mechanisms of mindfulness


Calvete, E., Morea, A., Orue, I. (2018). The role of dispositional mindfulness in the longitudinal associations between stressors, maladaptive schemas, and depressive symptoms in adolescents. Mindfulness. [link]


Fujino, M., Ueda, Y., Mizuhara, H., ... Nomura, M. (2018). Open monitoring meditation reduces the involvement of brain regions related to memory function. Scientific Reports. [link]

Ji, M., Yang, C., Han, H., ... Xu, Q. (2018). The influence of trait mindfulness on incident involvement among Chinese airline pilots: The role of risk perception and flight experience. Journal of Safety Research. [link]


Methods

Articles developing empirical procedures to advance the measurement and methodology of mindfulness


**Contents**

68 New Cites p1

17 Interventions

29 Associations

11 Methods

7 Reviews

4 Trials

Highlights p5

---

**Editor-in-Chief**
David S. Black, Ph.D.

**Highlights by**
Seth Segall, Ph.D.

---

**Reviews**

Articles reviewing content areas of mindfulness or conducting meta-analyses of published research

---

**TRIALS**

Research studies newly funded by the National Institutes of Health (JUL 2018)

---

**Halladay, J. E., Dawdy, J. L.,...Munn, C. (2018).**
Mindfulness for the mental health and well-being of post-secondary students: A systematic review and meta-analysis. *Mindfulness.* [link]

**Lovas, D. A. (2018).**
MBCT for bipolar disorder: A systematic review. *Journal of Affective Disorders.* [link]

---

**Moffit Cancer Center, Tampa (C, Vinci, PI).**
Development of a mindfulness-based intervention for the reduction of alcohol use and smoking cessation. NIH/NCI #1R34AT009689-01A1. [link]

**Northwester University (I. Burnett-Zeigler, PI).**
Effectiveness and implementation of a mindfulness intervention for depressive symptoms among low-income minority adults. NIH/NIMHHD #1R01MD012236-01A1. [link]

**University of Colorado (S. Dimidjian, PI).**
Preventing depressive relapse in pregnant women with recurrent depression. NIH/NIMH project #1R01MH117251-01. [link]

**University of Kentucky (B. Reynolds, PI).**
Using mindfulness training to reduce delay discounting in rural adult smokers. NIH/NIDA project #1R21DA046551-01. [link]
Multiple sclerosis is a central nervous system disorder in which the body’s immune system attacks the fatty layer of insulation surrounding nerve cells. Symptoms may include visual and sensory disturbances, muscle weakness and discoordination, fatigue, pain, and problems with mood and cognition. Stress can worsen these symptoms, and stress management can reduce the risk of the illness spreading to other brain regions. Senders et al. [Multiple Sclerosis Journal] tested the feasibility of using Mindfulness-Based Stress Reduction (MBSR) with multiple sclerosis patients, and whether MBSR worked better than an active control intervention in improving psychological symptoms and wellbeing.

The researchers randomly assigned 67 patients with multiple sclerosis (average age = 53 years, 77% female, 97% Caucasian) to a standard 8-week MBSR intervention or to an education control group matched for time and attention. The control group curriculum covered topics such as medication, symptom management, financial planning, knowing one’s rights, and connecting with resources.

The groups were assessed on a variety of self-report measures of psychological symptoms, stress, and wellbeing at baseline, immediately after program completion, and at twelve months post-intervention. Attention and cognition were assessed using a serial addition task in which participants listened to an audio recording of single digits presented at three-second intervals. Participants had to add each newly presented digit to the previously presented one. Participant expectations for the success of their respective interventions were assessed at baseline, with MBSR assignees having significantly higher expectations.

In regard to feasibility, 85% of the MBSR patients attended at least 6 of the 8 group sessions, thus meeting the author’s standard for course completion. They completed their at-home meditation on 55% of the assigned days for an average of 38 minutes per meditation. There were only two MBSR-related adverse events: a case of muscle cramps after a body scan meditation, and a case of anxiety and migraine following the six-hour retreat. It was unclear if these were due to MBSR activities or random occurrences.

In terms of psychological outcomes, MBSR and educational group participants both showed significant improvements on measures of perceived stress, emotional wellbeing, anxiety, depression, fatigue, resilience, and serial addition proficiency immediately after the intervention. While improvement scores were generally higher for MBSR participants, group differences failed to reach statistical significance. Within-group effect sizes for MBSR ranged from $d = 0.56$ on the serial addition task to $d = 0.77$ on anxiety. Within-group effect sizes for the control group ranged from $d = 0.28$ on the serial addition task to $d = 0.75$ on anxiety. Improvements on stress, anxiety, depression, fatigue, and resilience remained significant at 12-month follow-up for both groups.

The results showed that MBSR was a safe and feasible intervention for multiple sclerosis patients. Both interventions showed improvements on psychological measures up to a year after the intervention. Although MBSR improvements tended to be slightly larger than the active control, the difference did not reach statistical significance. The study’s small sample size may have lacked sufficient statistical power to reveal significant differences between groups. The absence of a no-treatment control and a mindfulness measure makes it impossible to tell whether improvements were spontaneous, due to group support effects, or associated with the specific content of the interventions.
Mindfulness-based interventions can enhance emotional regulation and improve mood, but we are only just beginning to understand the brain mechanisms responsible for these benefits. [Neuroimage] Kral et al. [Neuroimage] compared the brain activity of long-term meditators, short-term meditators, and non-meditators in response to emotionally positive, negative, and neutral images. The researchers sought to discover whether or not the amount of an individual's meditation practice correlated with their response to emotional stimuli.

The researchers recruited a sample of 31 long-term Vipassana meditators (average age = 50 years, 55% female, average meditation practice = 9,000 hours) and compared them to a sample of 127 meditation-naive recruits. Following initial data collection, 86 of the meditation-naive recruits (average age = 48, 63% female) were randomly assigned to a standard 8-week MBSR program or a Health Enhancement program (HEP) which served as a time-and-attention control.

The long-term meditators and the meditation-naive participants spent a day in the laboratory prior to the meditation-naive group’s random assignment to intervention. Following intervention, the meditation-naive group returned to the laboratory for re-assessment. In the laboratory, participants were shown emotionally positive, negative, and neutral images while undergoing functional magnetic resonance imaging (fMRI), a procedure that measures metabolic activity in different regions of the brain. The researchers measured fMRI activity in two specific brain regions: the amygdala, which plays a role in generating emotion, and the ventromedial prefrontal cortex (VMPFC), which plays a role in regulating emotion. Participants also completed a self-report measure of mindfulness, the Five Facet Mindfulness Questionnaire (FFMQ).

Results from the pre-intervention data showed that meditation-naive participants had significantly greater right amygdala activity in response to positive images than long-term meditators. While there were no overall group differences in response to negative images, long-term meditators with the most lifetime Vipassana retreat hours had the smallest right amygdala response to negative images ($r = -0.47$). For all participants, higher scores on the FFMQ Non-reactivity scale (“When I have distressing thoughts or images I just notice them and let them go”) were associated with less right amygdala reactivity to positive images ($r = 0.24$). Long-term meditators had significantly higher FFMQ Non-reactivity scores than meditation-naive participants. HEP control group participants showed significantly greater right amygdala activity in response to positive images than the MBSR participants immediately after the interventions.

The researchers also looked at the degree of functional connectivity (the degree to which activity varied in tandem) between the amygdala and the VMPFC. Long-term meditators showed significantly greater amygdala-VMPFC connectivity in response to negative images than to neutral images. Meditation-naive participants failed to show the same pattern, but the between-group difference was not significant. MBSR participants showed significantly greater amygdala-VMPFC connectivity during positive and negative as opposed to neutral images than HEP controls.

The study shows that short-term meditation practice reduces emotional reactivity by VMPFC dampening of amygdala activity. Long-term meditators, however, regulate their amygdala activity without VMPFC dampening and report superior levels of emotional non-reactivity. The authors suggest that amygdala activity reflects the tendency to hold on to or avoid stimuli rather than the tendency to experience them as pleasant or unpleasant. Long-term meditators may have developed the capacity to attend to stimuli without grasping at them or pushing them away. This differs from the short-term meditators' suppression of emotional reactivity after the fact of its occurrence. The results also suggest that meditation retreats are more effective than non-retrait daily practice in developing this non-reactive capacity.