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Editor-in-Chief

David S. Black, PhD, MPH

Highlights by

Seth Segall, PhD

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## INTERVENTIONS

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

Bazzano, A. N., Anderson, C. E., Hylton, C., Gustat, J. (2018). **Effect of mindfulness and yoga on quality of life for elementary school students and teachers: Results of a randomized controlled school-based study.** *Psychology Research and Behavior Management.* [\[link\]](#)

Bentley, P. G., Kaplan, S. G., Mokonogho, J. (2018). **Relational mindfulness for psychiatry residents: A pilot course in empathy development and burnout prevention.** *Academic Psychiatry.* [\[link\]](#)

Braganza, S., Young, J., Sweeny, A., Brazil, V. (2018). **OneED: Embedding a mindfulness-based wellness programme into an emergency department.** *Emergency Medicine Australasia.* [\[link\]](#)

Çetin, N., Aylaz, R. (2018). **The effect of mindfulness-based psychoeducation on insight and medication adherence of schizophrenia patients.** *Archives of Psychiatric Nursing.* [\[link\]](#)

Fung, J., Kim, J. J., Jin, J.,...Lau, A. S. (2018). **A randomized trial evaluating school-based mindfulness intervention for ethnic minority youth: Exploring mediators and moderators of intervention effects.** *Journal of Abnormal Child Psychology.* [\[link\]](#)

Hamilton-West, K., Pellatt-Higgins, T., Pillai, N. (2018). **Does a modified MBCT course have the potential to reduce stress and burnout in NHS gps? Feasibility study.** *Primary Health Care Research & Development.* [\[link\]](#)

Janssen, L. K., Duif, I., van Loon, I.,...Aarts, E. (2018). **Greater mindful eating practice is associated with better reversal learning.** *Scientific Reports.* [\[link\]](#)

Kang, Y., Rahrig, H., Eichel, K.,...Britton, W. B. (2018). **Gender differences in response to a school-based mindfulness training intervention for early adolescents.** *Journal of School Psychology.* [\[link\]](#)

Lacerda, S. S., Little, S. W., Kozasa, E. H. (2018). **A stress reduction program adapted for the work environment: A RCT with a follow-up.** *Frontiers in Psychology.* [\[link\]](#)

Meyer, J. D., Torres, E. R., Grabow, M. L.,...Barrett, B. P. (2018). **Benefits of 8-week MBSR or aerobic training on seasonal declines in physical activity.** *Medicine Science Sports Exercise.* [\[link\]](#)

Mohammed, W. A., Pappous, A. S., Sharma, D. (2018). **Effect of MBSR in increasing pain tolerance and improving the mental health of injured athletes.** *Frontiers in Psychology.* [\[link\]](#)

Petteys, A. R., Adoumie, D. (2018). **Mindfulness-based neurodevelopmental care: Impact on NICU parent stress and infant length of stay: randomized controlled pilot study.** *Advances in Neonatal Care.* [\[link\]](#)

Rice, V. J., Liu, B., Schroeder, P. J. (2018). **Impact of in-person and virtual world mindfulness training on symptoms of PTSD and ADHD.** *Military Medicine.* [\[link\]](#)

Selchen, S., Hawley, L. L., Regev, R.,...Rector, N. A. (2018). **MBCT for OCD: Stand-alone and post-CBT augmentation approaches.** *International Journal of Cognitive Therapy.* [\[link\]](#)

Sohn, B. K., Oh, Y. K., Choi, J. S.,...Lim, C. S. (2018). **Effectiveness of group CBT with mindfulness in end-stage renal disease hemodialysis patients.** *Kidney Research and Clinical Practice.* [\[link\]](#)

Stewart-Brown, S., Cader, M. C., Walker, T.,...Chilton, A. -M. (2018). **Experiences with a universal mindfulness and wellbeing programme at a UK medical school.** *Health Education.* [\[link\]](#)

de Vibe, M., Solhaug, I., Rosenvinge, J. H.,...Garland, E. (2018). **Six-year positive effects of a MBI on mindfulness, coping and well-being in medical**

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and psychology students; results from a RCT.

*PLoS ONE*. [\[link\]](#)

Wong, C., Yip, B. H., Gao, T.,...Wong, S. Y. S. (2018). **MBSR or psychoeducation for the reduction of menopausal symptoms: A randomized, controlled clinical trial.** *Scientific Reports*. [\[link\]](#)

Zhang, J. Y., Cui, Y. X., Zhou, Y. Q., Li, Y. L. (2018). **Effects of MBSR on prenatal stress, anxiety and depression.** *Psychology, Health & Medicine*. [\[link\]](#)

## ASSOCIATIONS

Articles examining the correlates and mechanisms of mindfulness

Brett, E. I., Espeleta, H. C., Lopez, S. V.,...Leffingwell, T. R. (2018). **Mindfulness as a mediator of the association between adverse childhood experiences and alcohol use and consequences.** *Addictive Behaviors*. [\[link\]](#)

Dhandra, T. K., Park, H. J. (2018). **Mindfulness and gender differences in ethical beliefs.** *Social Responsibility Journal*. [\[link\]](#)

Eisenbeck, N., Luciano, C., Valdivia-Salas, S. (2018). **Effects of a focused breathing mindfulness exercise on attention, memory, and mood: The importance of task characteristics.** *Behaviour Change*. [\[link\]](#)

English, L. H., Wisener, M., Bailey, H. N. (2018). **Childhood emotional maltreatment, anxiety, attachment, and mindfulness: Associations with facial emotion recognition.** *Child Abuse & Neglect*. [\[link\]](#)

Fulton, C. L. (2018). **Self-compassion as a mediator of mindfulness and compassion for others.** *Counseling and Values*. [\[link\]](#)

Garland, E. L., Howard, M. O. (2018). **Enhancing natural reward responsiveness among opioid users predicts chronic pain relief: EEG analyses from a trial of mindfulness-oriented recovery enhancement.** *Journal of the Society for Social Work and Research*. [\[link\]](#)

Jaiswal, S., Tsai, S. Y., Juan, C. H.,...Muggleton, N. G. (2018). **Better cognitive performance is associated with the combination of high trait mindfulness and low trait anxiety.** *Frontiers in Psychology*. [\[link\]](#)

Jang, J. H., Kim, J. H., Yun, J. Y.,...Kang, D. H. (2018). **Differences in functional connectivity of the insula between brain wave vibration in meditators and non-meditators.** *Mindfulness*. [\[link\]](#)

Johnson, D. A. (2018). **The relationship between state mindfulness and working alliance among counselors-in-training.** *J Humanistic Couns*. [\[link\]](#)

Khan, F., Laurent, H. K. (2018). **Assessing the impact of mindfulness and life stress on maternal well-being.** *Mindfulness*. [\[link\]](#)

Li, C., Kee, Y. H., Lam, L. S. (2018). **Effect of brief mindfulness induction on university athletes' sleep quality following night training.** *Frontiers in Psychology*. [\[link\]](#)

Masuda, A., Marshall, R. D., Latner, J. D. (2018). **Mindfulness as a moderator of the association between eating disorder cognition and eating disorder behavior among a non-clinical sample of female college students: The role of ethnicity.** *Frontiers in Psychology*. [\[link\]](#)

Mayer, B., Polak, M. G., Remmerswaal, D. (2018). **Mindfulness, interpretation bias, and levels of anxiety and depression: Two mediation studies.** *Mindfulness*. [\[link\]](#)

Murphy, L., Murphy, G. (2018). **Time to drive: Present vs. Future orientation and self-reported driving behaviour.** *Transportation Research*. [\[link\]](#)

Nicol, A. A., France, K. D. (2018). **Mindfulness: Relations with prejudice, social dominance orientation, and right-wing authoritarianism.** *Mindfulness*. [\[link\]](#)

Perkins-Porrás, L., Riaz, M., Okekunle, A.,...Ussher, M. (2018). **Feasibility study to assess the effect of a brief mindfulness intervention for patients with chronic obstructive pulmonary disease: A RCT.** *Chronic Respiratory Disease*. [\[link\]](#)

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Reid, N., Harnett, P., O'Callaghan, F.,...Dawe, S. (2018). **Physiological self-regulation and mindfulness in children with a diagnosis of fetal alcohol spectrum disorder.** *Developmental Neurorehabilitation.* [link]

Riley, K., Gent, A., McLaren, S.,...Stavropoulos, V. (2018). **The fatigue and depressive symptom relationship in mothers of young children: The moderating role of mindfulness.** *Mindfulness.* [link]

Roush, J. F., Mitchell, S. M., Brown, S. L., Cukrowicz, K. C. (2018). **Thwarted interpersonal needs mediate the relation between facets of mindfulness and suicide ideation among psychiatric inpatients.** *Psychiatry Research.* [link]

Sevinc, G., Hölzel, B. K., Hashmi, J.,...Lazar, S. W. (2018). **Common and dissociable neural activity following MBSR and relaxation response programs.** *Psychosomatic Med.* [link]

Stephens, A. N., Koppel, S., Young, K. L.,...Hassed, C. (2018). **Associations between self-reported mindfulness, driving anger and aggressive driving.** *Transportation Research.* [link]

Tapper, K., Ahmed, Z. (2018). **A mindfulness-based decentering technique increases the cognitive accessibility of health and weight loss related goals.** *Frontiers in Psychology.* [link]

Tarrasch, R. (2018). **The effects of mindfulness practice on attentional functions among primary school children.** *Journal of Child and Family Studies.* [link]

Vandenberg, B. E., Advocat, J., Hassed, C.,...Russell, G. (2018). **Mindfulness-based lifestyle programs for the self-management of Parkinson's disease in Australia.** *Health Promotion International.* [link]

Verweij, H., van Ravesteijn, H., van Hooff, M. L.,...Speckens, A. E. (2018). **Does mindfulness training enhance the professional development of residents? A qualitative study.** *Academic Medicine.* [link]

Wang, Y., Liang, Y., Fan, L.,...Zhou, H. (2018). **The indirect path from mindful parenting to emotional problems in adolescents: The role of maternal warmth and adolescents' mindfulness.** *Frontiers in Psychology.* [link]

Weisman de Mamani, A., Weintraub, M. J.,...Brown, C. A. (2018). **The interplay among mindfulness, caregiver burden, and mental health in family members of individuals with dementia.** *Professional Psychology: Research & Practice.* [link]

## METHODS

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

Broderick, P. C., Frank, J. L., Berrena, E.,...Greenberg, M. T. (2018). **Evaluating the quality of mindfulness instruction delivered in school settings: Development and validation of a teacher quality observational rating scale.** *Mindfulness.* [link]

Chen, X., Wang, D., Zhou, L.,...Li, Y. (2018). **MBRP combined with virtual reality cue exposure for methamphetamine addiction: Study protocol for a RCT.** *Contemporary Clinical Trials.* [link]

Mahalingam, R., Rabelo, V. C. (2018). **Teaching mindfulness to undergraduates: A survey and photovoice study.** *J Transform Education.* [link]

Noone, C., Hogan, M. J. (2018). **A RCT to examine the effects of an online mindfulness intervention on executive control, critical thinking and key thinking dispositions in a university student sample.** *BMC Psychol.* [link]

Russell, L., Ugalde, A., Milne, D.,...Livingston, P. M. (2018). **Feasibility of an online mindfulness-based program for patients with melanoma: Study protocol for a RCT.** *Trials.* [link]

Simpson, R., Simpson, S., Wood, K.,...Mair, F. S. (2018). **Using normalisation process theory to understand barriers and facilitators to implementing MBSR for people with multiple sclerosis.** *Chronic Illness.* [link]

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Spruill, T. M., Reynolds, H. R., Dickson, V. V.,...Hochman, J. S. (2018). **Telephone-based mindfulness training to reduce stress in women with myocardial infarction: Rationale and design of a multicenter RCT.** *American Heart Journal.* [link]

Strauss, C., Gu, J., Pitman, N.,...Whittington, A. (2018). **Evaluation of MBCT for life and a cognitive behavioural therapy stress-management workshop to improve healthcare staff stress: Protocol for two RCTs.** *Trials.* [link]

## REVIEWS

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

Bogusch, L. M., O'Brien, W. H. (2018). **The effects of mindfulness-based interventions on diabetes-related distress, quality of life, and metabolic control among persons with diabetes: A meta-analytic review.** *Behavioral Medicine.* [link]

Collins, R. N., Kishita, N. (2018). **The effectiveness of mindfulness- and acceptance-based interventions for informal caregivers of people with dementia: A meta-analysis.** *The Gerontologist.* [link]

Cooper, D., Yap, K., Batalha, L. (2018). **Mindfulness-based interventions and their effects on emotional clarity: A systematic review and meta-analysis.** *J Affect Disord.* [link]

Garland, E. L., Howard, M. O. (2018). **Mindfulness-based treatment of addiction: Current state of the field and envisioning the next wave of research.** *Addict Sc Clin Prac.* [link]

King, E., Badham, R. (2018). **The wheel of mindfulness: A generative framework for second-generation mindful leadership.** *Mindfulness.* [link]

Mantzios, M., Giannou, K. (2018). **A real-world application of short mindfulness-based practices: A review and reflection of the**

**literature and a practical proposition for an effortless mindful lifestyle.** *American Journal of Lifestyle Medicine.* [link]

Modica, C., Hoenig, K. (2018). **Mindfulness in follow-up care after breast cancer: Can it prevent recurrence?** *Breast Care.* [link]

Rao, A., DiGiacomo, M., Newton, P. J.,...Hickman, L. D. (2018). **Meditation and secondary prevention of depression and anxiety in heart disease: A systematic review.** *Mindfulness.* [link]

Surmitis, K. A., Fox, J., Gutierrez, D. (2018). **Meditation and appropriation: Best practices for counselors who utilize meditation.** *Counseling and Values.* [link]

## TRIALS

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

University of Massachusetts (R. van Lutterveld, PI). **Mindfulness meditation and real-time brain activity in schizophrenia.** NIA/NIMH project #5R03MH112040-02. [link]

University of Michigan (A. King, PI). **Whole brain connectivity and connectomics of MBCT for PTSD.** NIH/NIMH project #1K23MH112852-01A1. [link]

University of New Mexico (B. McCrady, PI). **Neurocognitive and neurobehavioral mechanisms of change following psychological treatment for alcohol use disorder.** NIH/NIAAA project #1R01AA025762-01A1. [link]

University of Pittsburgh (H. Thomas, PI). **Adaption and pilot testing of a MBI for older women with low sexual desire.** NIH/NIA project #5K23AG052628-02. [link]

Veterans Affairs Medical Center San Francisco (J. Ford, PI). **Identifying biomarkers of rumination and mindfulness through concurrent EEG and fMRI studies of schizophrenia and depression.** VA project #2I01CX000497-05. [link]

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## HIGHLIGHTS

*A summary of select studies from the issue, providing a snapshot of some of the latest research*

Most mindfulness research studies do not follow participants long after the intervention ends. At best, a few studies have followed their participants for up to two years. As a result, little is known about whether the effects of mindfulness-based interventions persist, strengthen, or fade over time. To address this limitation, **de Vibe et al. [PLOS One]** followed participants for six years after completing a Mindfulness-Based Stress Reduction (MBSR) program.

The researchers randomly assigned 288 Norwegian medical and psychology graduate students (76% female, average age = 24 years) to a slightly abridged form of MBSR or a no-intervention control. The MBSR program consisted of seven 1.5-hour weekly group sessions and required 20 minutes of daily home practice. Participants were assessed on dispositional mindfulness (using the Five Facet Mindfulness Questionnaire), subjective wellbeing, problem-focused coping and avoidance-focused coping at baseline, one month post-intervention, and at 1, 2, 4, and 6-year follow-up. Problem-focused coping involves facing one's problems head-on by actively addressing them, while avoidance-focused coping consists of avoiding one's problems or suppressing thoughts and emotions about them.

Participants also had the opportunity to enroll in a 1.5-hour mindfulness "booster" class each semester. While most attended at least one booster class, 46% never attended any. There were dropouts at each assessment time-point, with 61% of the participants having dropped out of the study by year six. There was no difference between MBSR and control group dropout rates, but participants with higher baseline avoidance-focused coping were significantly more likely to drop out.

Six-year longitudinal growth curves revealed that the MBSR participants showed significant continuing increases in mindfulness and problem-focused coping, with significant continuing decreases in avoidance-focused coping over time. MBSR rates of increase in mindfulness and problem-focused coping significantly exceeded those of the controls. For example, MBSR mindfulness scores increased by an average of 15 points, while control scores increased by an average of 7 points.



Outcome differences were observed even though half of the MBSR participants no longer practiced formal meditation by year six, and those who did only practiced for an average of 15 minutes weekly. Additionally, about one third of the controls subsequently attended courses in qigong, tai chi, yoga, or meditation that they also practiced for an average of 15 minutes weekly.

Increases in mindfulness were moderately correlated with increases in problem-focused coping ( $r=.67$ ) and decreases in avoidance-focused coping ( $r=-.72$ ). Increases in problem-focused coping were in turn correlated ( $r=.67$ ) with increases in subjective well-being, making it the best predictor of wellbeing.

The study shows that the psychological benefits of MBSR persist and increase over a six-year interval in a young, educated, non-clinical sample. It also demonstrates that most subjective improvements in wellbeing come from increased reliance on problem-focused coping, which is correlated with increased mindfulness. Generalizations from this sample are limited by the relatively high long-term follow-up dropout rate, and by the lack of an active control.

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**Mindfulness-Based Stress Reduction (MBSR)** and Relaxation Response (RR) training are both well-established mind-body interventions designed to reduce stress. While there is some overlap between these modalities—both involve meditative attention to bodily sensations—there are also significant differences. MBSR emphasizes non-judgmental awareness to increase acceptance of the present moment, while RR employs muscle relaxation to induce a parasympathetic state that interferes with the fight-or-flight response. To understand the ways in which these two programs function, **Sevinc et al. [Psychosomatic Medicine]** tested for commonalities and differences in terms of psychological effects and brain correlates.

The researchers randomly assigned 50 volunteers (64% female, average age = 38 years) to either MBSR or RR with 40 of the volunteers completing the programs. Both programs involved 8 weekly 2-hour group sessions with 20 minutes of daily home practice. RR included a body scan meditation emphasizing muscle relaxation along with breath-focused and mantra-focused meditations. Participants were assessed at baseline and after the intervention on self-report measures of mindfulness (using the Five Facet Mindfulness Questionnaire or FFMQ), perceived stress, self-compassion, and rumination.

After the intervention, participants underwent fMRI brain scanning while at rest and while engaging in the body scan meditation specific to each program: the RR body scan emphasized relaxing various muscle groups, whereas the MBSR body scan emphasized mindful awareness of body sensations. The researchers were interested in exploring changes in functional connectivity in specific brain regions of interest. Brain regions exhibiting simultaneous increases and decreases in activity are said to be functionally connected. Usable fMRI data was obtained from 34 participants.

The results showed that both programs significantly reduced perceived stress (RR Cohen's  $d=0.5$ ; MBSR  $d=1.0$ ). After the intervention, RR participants showed significant FFMQ increases on the Describing,

Acting with Awareness, Observing, and Non-reactivity sub-scales, while MBSR participants showed significant increases on the Observing and Non-reactivity sub-scales. MBSR participants also showed a significant increase in self-compassion and a decrease in rumination, but these group differences did not reach statistical significance.



The fMRI results showed that the MBSR and RR body scans both induced a common increased functional connectivity between the brain's ventromedial prefrontal cortex, which plays a role in attention, and the brain's supplementary motor areas, which play a role in voluntary muscle control.

Brain differences by group were also identified. RR practice produced stronger functional connectivity between the right inferior parietal gyrus and the supplementary motor areas, reflecting greater intentional inhibition and control of muscle relaxation. MBSR practice significantly increased functional connectivity between the anterior insula and the Anterior Cingulate Cortex (ACC), reflecting enhanced bodily awareness and regulation of limbic-mediated emotionality. This did not significantly differentiate the MBSR practice from the RR practice, which may be attributed to their shared emphasis on enhanced bodily awareness.

This is one of the first head-to-head comparisons of mind-body practices using both self-report and brain imaging data. Both MBSR and RR reduce stress levels and increase aspects of mindfulness. Their unique pattern of brain commonalities and differences makes sense given that MBSR emphasizes non-judgmental awareness, while RR emphasizes parasympathetic relaxation along with attention to muscular sensations. The results also support the idea that mindfulness is not identical to relaxation: the two have their own unique neurological signatures. The study is limited by its small sample size and lack of an attention-only control.