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Interventions

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

Abedini, S., Habibi, M., Abedini, N.,... Semple, R. J. (2020). **A RCT of a Modified Mindfulness-Based Cognitive Therapy for Children Hospitalized with Cancer.** *Mindfulness.* [\[link\]](#)

Anderson, N. (2020). **An evaluation of a MBSR intervention for critical care nursing staff: A quality improvement project.** *Nursing in Critical Care.* [\[link\]](#)

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Clement, E., Murphy, P., Lee, A.,... Widder, S. (2020). **Mindfulness as an intervention after multisystem trauma.** *Trauma.* [\[link\]](#)

Feruglio, S., Matiz, A., Grecucci, A.,...Crescentini, C. (2020). **Differential effects of mindfulness meditation conditions on repetitive negative thinking and subjective time perspective: A randomized active-controlled study.** *Psychology & Health.* [\[link\]](#)

Jones, A. M., Strauss, C., Hayward, M. (2020). **A service evaluation of a group mindfulness-based intervention for distressing voices: How do findings from a RCT compare with routine clinical practice?** *Behavioural and Cognitive Psychotherapy.* [\[link\]](#)

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Musa, Z. A., Soh, K. L., Mukhtar, F.,...Soh, K. G. (2020). **Impact of MBCT on Depressive Symptoms Reduction among Depressed Patients in Nigeria: A RCT.** *Issues in Mental Health Nursing.* [\[link\]](#)

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Serpa, J. G., Bourey, C. P., Adjaoute, G. N., Pieczynski, J. M. (2020). **Mindful Self-Compassion (MSC) with Veterans: A Program Evaluation.** *Mindfulness.* [\[link\]](#)

Sun, Y., Wong, S. Y., Zhang, D.,...Yip, B. H. (2021). **Behavioral activation with mindfulness in treating subthreshold depression in primary care: A cost-utility and cost-effectiveness analysis alongside a RCT.** *Journal of Psychiatric Research.* [\[link\]](#)

Yik, L. L., Ling, L. M., Ai, L. M.,...Loong, L. C. (2020). **The Effect of 5-Minute Mindfulness of Peace on Suffering and Spiritual Well-Being Among Palliative Care Patients: A Randomized Controlled Study.** *American Journal of Hospice and Palliative Medicine.* [\[link\]](#)

Associations

Articles examining the correlates and mechanisms of mindfulness

Canby, N. K., Eichel, K., Peters, S. I.,...Britton, W. B. (2020). **Predictors of Out-of-Class Mindfulness**

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Practice Adherence During and After a Mindfulness-Based Intervention.

Psychosomatic Medicine. [\[link\]](#)

Chancey, J. B., Heddy, B. C., Lippmann, M., Meek, D. (2020). **Investigating the Impact of Mindfulness-Based Interventions on Processes of Conceptual, Emotional, and Attitude Change.** *Journal of Cognitive Enhancement.* [\[link\]](#)

Don, B. P., Algoe, S. B., Fredrickson, B. L. (2020). **Does Meditation Training Influence Social Approach and Avoidance Goals? Evidence from a Randomized Intervention Study of Midlife Adults.** *Mindfulness.* [\[link\]](#)

Goei, L. P., Lopez, V., Klainin-Yobas, P. (2020). **Exploring the perceptions of cancer survivors of a mindfulness intervention at a tertiary hospital in Singapore: A descriptive qualitative study.** *Supportive Care Cancer.* [\[link\]](#)

Gutierrez, D., Forbes, L., Johnson, S. K. (2020). **Physical and Psychological Health Predict Adherence to an Online Mindfulness Program for College Students.** *Counseling and Values.* [\[link\]](#)

Huang, F. Y., Hsu, A. L., Chao, Y. P.,...Wu, C. W. (2020). **MBCT on bereavement grief: Alterations of resting-state network connectivity associate with changes of anxiety and mindfulness.** *Human Brain Mapping.* [\[link\]](#)

Hudson, J., Ungar, R., Albright, L.,...Wicker, E. R. (2020). **Older Adult Caregivers' Experiences in an Online, Interactive Mindfulness Intervention.** *Journal of Evidence-Based Integrative Medicine.* [\[link\]](#)

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Leeuwerik, T., Cavanagh, K., Forrester, E.,...Strauss, C. (2020). **Participant perspectives on the acceptability and effectiveness of mindfulness-based cognitive behaviour therapy approaches for obsessive compulsive disorder.** *PLOS ONE.* [\[link\]](#)

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Panda, S., Whitworth, A., Hersh, D., Biedermann, B. (2020). **"Giving yourself some breathing room...": An exploration of group meditation for people with aphasia.** *Aphasiology.* [\[link\]](#)

Piil, F., Axelsen, J. L., Staiano, W., Kirk, U. (2020). **Mindfulness Passes the Stress Test: Attenuation of Behavioral Markers of Mind Wandering During Acute Stress.** *Journal of Cognitive Enhancement.* [\[link\]](#)

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Emotional Facial Expressions Processing. *Mindfulness.* [\[link\]](#)

Smith, A. M., Leeming, A., Fang, Z.,... Poulin, P. (2020). **MBSR alters brain activity for breast cancer survivors with chronic neuropathic pain: Preliminary evidence from resting-state fMRI.** *Journal of Cancer Survivorship.* [\[link\]](#)

Smith, J. L., Allen, J. W., Haack, C.,... Mascaro, J. S. (2020). **The Impact of App-Delivered Mindfulness Meditation on Functional Connectivity and Self-Reported Mindfulness Among Health Profession Trainees.** *Mindfulness.* [\[link\]](#)

Strohmaier, S., Jones, F. W., Cane, J. E. (2020). **Effects of Length of Mindfulness Practice on Mindfulness, Depression, Anxiety, and Stress: A Randomized Controlled Experiment.** *Mindfulness.* [\[link\]](#)

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Wenzel, M., Rowland, Z., Kubiak, T. (2020). **Like clouds in a windy sky: Mindfulness training reduces negative affect reactivity in daily life in a RCT.** *Stress and Health.* [\[link\]](#)

Methods

Articles developing empirical procedures to advance the measurement and methodology

Acabchuk, R. L., Simon, M. A., Low, S.,...Johnson, B. T. (2020). **Measuring Meditation Progress with a Consumer-Grade EEG Device: Caution from a RCT.** *Mindfulness.* [\[link\]](#)

Chalmers, R. A., Pratscher, S. D., Bettencourt, B. A., Medvedev, O. N. (2020). **Applying Generalizability Theory to Differentiate Between Trait and State in the Interpersonal Mindfulness Scale (IMS).** *Mindfulness.* [\[link\]](#)

Crane, R., Hecht, F. M., Brewer, J.,...Kuyken, W. (2020). **Can We Agree What Skilled Mindfulness-Based Teaching Looks Like? Lessons From Studying the MBI:TAC.** *Global Advances in Health and Medicine.* [\[link\]](#)

De Tommasi, C., Richardson, E., Reale, M., Jordan, J. (2020). **Evaluation of a novel application of a mindfulness phone application for patients with brain tumors: A feasibility study.** *Journal of Neuro-Oncology.* [\[link\]](#)

Filligim, R. B., Woods, A. J., Ahn, H.,...Goodin, B. R. (2020). **Pain relief for osteoarthritis through combined treatment (PROACT): Protocol for a RCT of mindfulness meditation combined with transcranial direct current stimulation in non-Hispanic black and white adults with knee osteoarthritis.** *Contemporary Clinical Trials.* [\[link\]](#)

Finlay-Jones, A. L., Davis, J. A., O'Donovan, A.,...Downs, J. (2020). **Comparing Web-Based Mindfulness With Loving-Kindness and Compassion Training for Promoting Well-Being in Pregnancy: Protocol for a Three-Arm Pilot RCT.** *JMIR Research Protocols.* [\[link\]](#)

Hanley, A. W., Garland, E. L. (2020). **Salivary measurement and mindfulness-based modulation of prescription opioid cue-reactivity.** *Drug and Alcohol Dependence.* [\[link\]](#)

Hawley, L. L., Rector, N. A., Da Silva, A.,...Richter, M. A. (2020). **Technology Supported Mindfulness for Obsessive Compulsive Disorder: Self-Reported Mindfulness and EEG Correlates of Mind Wandering.** *Behaviour Research and Therapy.* [\[link\]](#)

Hernandez-Ruiz, E., Dvorak, A. L. (n.d.). **Music Stimuli for Mindfulness Practice: A Replication Study.** *Journal of Music Therapy.* [\[link\]](#)

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Kubo, A., Kurtovich, E., McGinnis, M.,...Avins, A. (2020). **Pilot pragmatic randomized trial of mHealth mindfulness-based intervention for advanced cancer patients and their informal caregivers.** *Psycho-Oncology*. [\[link\]](#)

Lamothe, M., Rondeau, É., Duval, M.,...Sultan, S. (2020). **Changes in hair cortisol and self-reported stress measures following MBSR: A proof-of-concept study in pediatric hematology-oncology professionals.** *Complementary Therapies in Clinical Practice*. [\[link\]](#)

Rogers, H. T., Shires, A. G., Cayoun, B. A. (2020). **Development and Validation of the Equanimity Scale-16.** *Mindfulness*. [\[link\]](#)

Zinzow, H., Shi, L., Rennert, L.,...McLain, M. (2020). **Study protocol for a RCT of mindfulness-based relapse prevention for opioid use disorders.** *Contemporary Clinical Trials*. [\[link\]](#)

Reviews

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

Gál, É., Ștefan, S., Cristea, I. A. (2020). **The efficacy of mindfulness meditation apps in enhancing users' well-being and mental health related outcomes: A meta-analysis of randomized controlled trials.** *Journal of Affective Disorders*. [\[link\]](#)

Heide, A. van der, Meinders, M. J., Speckens, A. E.,...Helmich, R. C. (2020). **Stress and Mindfulness in Parkinson's Disease: Clinical Effects and Potential Underlying Mechanisms.** *Movement Disorders*. [\[link\]](#)

Newland, P., Bettencourt, B. A. (2020). **Effectiveness of mindfulness-based art therapy for symptoms of anxiety, depression, and fatigue: A systematic**

review and meta-analysis. *Complementary Therapies in Clinical Practice*. [\[link\]](#)

Ni, Y., Ma, L., Li, J. (2020). **Effects of mindfulness-based intervention on glycemic control and psychological outcomes in people with diabetes: A systematic review and meta-analysis.** *Journal of Diabetes Investigation*. [\[link\]](#)

Pardos-Gascón, E. M., Narambuena, L., Leal-Costa, C., van-der Hofstadt-Román, C. J. (2020). **Differential efficacy between cognitive-behavioral therapy and mindfulness-based therapies for chronic pain: Systematic review.** *International Journal of Clinical and Health Psychology*. [\[link\]](#)

Rieger, K. L., Lobchuk, M. M., Duff, M. A.,...West, C. H. (2020). **Mindfulness-based arts interventions for cancer care: A systematic review of the effects on wellbeing and fatigue.** *Psycho-Oncology*. [\[link\]](#)

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Vekety, B., Logemann, H. N., Takacs, Z. K. (2020). **The effect of mindfulness-based interventions on inattentive and hyperactive-impulsive behavior in childhood: A meta-analysis.** *International Journal of Behavioral Development*. [\[link\]](#)

Trials

Research studies newly funded by the National Institutes of Health (October 2020)

None reported.

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Highlights

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

Many critical tasks in daily life require sustained attention under stressful circumstances (e.g., air traffic control, combat, and emergency medical response) despite the fact that stress can deplete attention by overtaxing cognitive resources. Lapses of attention increase under conditions of acute stress.

Mindfulness training can have beneficial effects on attention and stress, and researchers are interested in knowing the degree to which it can prevent stress-induced attentional impairment. Piil et al. [*Journal of Cognitive Enhancement*] tested the effects of mindfulness training compared to cognitive performance training on sustained attention following a stressor.

The researchers randomly assigned 48 Danish university students and staff members (average age = 38 years; 58% female) to either 30 days of mindfulness training using the Headspace app, or 30 days of cognitive training using the NeuroNation app. Headspace is a meditation application that teaches core mindfulness skills through guided audio meditations that include mindful breathing, open monitoring, and body scanning. NeuroNation is a cognitive training application consisting of short games intended to strengthen working memory, perceptual accuracy, verbal and arithmetic skills, and logical reasoning. Participants were instructed to use the apps 10 minutes daily for 10 days, 15 minutes daily for the next 10 days, and 20 minutes daily for the final 10 days.

At baseline and after completing one month of training, participants were exposed to a cold pressor stress task and then immediately asked to perform a sustained attention task. The cold pressor task is known to increase stress as measured by increases in sympathetic nervous system arousal (heart

rate, blood pressure, stress hormones). Participants were instructed to put their non-dominant hand in a tank of circulating ice water until it became too uncomfortable to keep it there. Participants were then placed in front of a computer screen and instructed to press a space bar whenever a numeral between 0-9 appeared, except when the numeral was "3." The researchers measured the percent of times participants refrained from pressing the space bar when a "3" appeared. Participants were also assessed on a measure of dispositional mindfulness (the Mindfulness Attention Awareness Scale) before and after training.



The results showed the mindfulness group performed significantly better on the computer-based sustained attention task than the cognitive training group (partial $\eta^2=0.12$; medium effect size). The amount of total time spent using the Headspace app correlated with better sustained attention performance ($r=.56$) while time spent on the NeuroNation app did not ($r=.23$). The mindfulness group had significantly higher mindfulness scores than the cognitive training group immediately following the intervention (partial $\eta^2=0.28$; large effect size).

Before training, the longer participants kept their hand in the ice water, the poorer their subsequent ability to sustain attention ($r=-.64$ for mindfulness trainees; $r=-.76$ for controls). After training, this held true for the cognitive trainees ($r=-.71$) but not for the mindfulness trainees ($r = .10$). If keeping one's hand in ice water longer is more physiologically stressful, this means stress levels were no longer correlated with attentional degradation within the mindfulness group.

The study shows that an app-based mindfulness training can improve sustained attention after a

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stressor and mindfulness disposition compared to a cognitive training app. The study is limited by its lack of physiological stress measures, an assessment of sustained attention under non-stress conditions, and the unknown amount of time each group spent using the app. There is also inconclusive efficacy research on the NeuroNation app.

Children with cancer often have significant cognitive, emotional, behavioral, and academic problems. These result not only from the illness itself, but also the anxieties associated with diagnosis and prognosis, the negative side-effects of oncology treatments, and the lengthy separations from familiar settings and social supports entailed by hospitalization. Psychosocial interventions are needed that can more effectively bolster children's resilience over the course of arduous treatment.

Abedini et al. [Mindfulness] assessed the value of a modified version of Mindfulness-Based Cognitive Therapy for Children (MBCT-C) in reducing internalizing psychological problems (anxiety, depression, and somatization) and attentional problems in school-age children undergoing hospitalization for cancer.

The researchers randomly assigned 40 Iranian children hospitalized for cancer (age range = 11-13 years; 53% male) who met the diagnostic criteria for acute stress disorder and showed elevated internalizing and attentional problems to a modified version of MBCT-C or to treatment as usual. The children were continuously hospitalized throughout the length of the intervention.

MBCT-C was delivered in the Farsi language to small groups of 2-4 participants meeting 5 times a week. The standard MBCT-C protocol was modified to meet the children's physical, motivational, and attentional needs and the demands of the hospital schedule. Group sessions were shortened to 45 minutes each, delivered over a shortened 4-week time-

course, and without the usual raisin, yoga, and mindful movement meditations.

Treatment as usual included limited medical social worker support and a playroom available for 2 hours daily. Children were assessed before and after treatment and at 2-month follow-up for internalizing behavioral problems and attentional difficulties using a parent-completed behavioral checklist, and a child-completed self-report inventory.



The results showed significantly greater reductions in parent-rated ($\eta^2=.53$) and child-rated ($\eta^2=.57$) internalizing symptoms for the mindfulness group compared to controls. Parent-rated symptoms decreased 19 points and child-rated symptoms 20 points, while control parent- and child-rated symptoms dropped only 1 point. The mindfulness group also showed significantly greater decreases in attentional problems compared to controls on both parental ($\eta^2=.76$) and child ratings ($\eta^2=.36$). Parent-rated attentional problems decreased 15 points and child-rated attentional problems decreased 19 points for the mindfulness group while the control group remained essentially unchanged.

The study shows that MBCT-C modified to meet the needs of hospitalized children with cancer and acute stress disorder can significantly improve symptoms of anxiety, depression, somatization, and impairments in attention compared to treatment as usual. These improvements are sustained for at least 2-months after intervention. The study is limited by the absence of post-intervention outcome ratings by clinicians blind to group assignment, and the lack of an active control group which also promoted social interaction with other children with cancer.