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Editor-in-Chief

David S. Black, PhD, MPH

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INTERVENTIONS

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

Bakker, J. M., Lieveise, R., Geschwind, N.,...Wichers, M. (2016). **The two-sided face of antidepressants: The impact of their use on real-life affective change during MBCT.** *Psychotherapy and Psychosomatics.* [\[link\]](#)

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Felder, J. N., Segal, Z., Beck, A.,...Dimidjian, S. (2016). **An open trial of web-based MBCT for**

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REVIEWS

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

Bianco, S., Barilaro, P., Palmieri, A. (2016). **Traditional meditation, mindfulness and psychodynamic approach: An integrative perspective.** *Frontiers in Psychology*. [\[link\]](#)

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Research studies newly funded by the National Institutes of Health (APR 2016)

Johns Hopkins University (E. Sibinga, PI). **Improving treatment adherence in HIV-positive youth through mindfulness training.** NIH/NCCIH project #4R01AT007888-04. [\[link\]](#)

University of Pittsburg (K. Mctigue, PI). **Minding goals: An internet-assisted mind-body behavior program for blood pressure control.** NIH/NHLBI project #5R34HL123500-02. [\[link\]](#)

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HIGHLIGHTS

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

Older adults who complain of subjective cognitive decline (SCD) often appear normal in day-to-day functioning and on clinical assessment, but 60% of them eventually develop either mild cognitive impairment or Alzheimer's Disease. This makes older adults with SCD a prime target for interventions aimed at preventing or slowing cognitive decline. **Smart et al. [Journal of Alzheimer's Disease]** conducted a randomized controlled pilot study to test the effects of mindfulness training versus a psycho-educational control on measures of attention, brain structure and function, and self-reported cognitive complaints, mood, and mindfulness in adults with SCD.

A sample of 23 healthy older adults and 15 older adults with SCD (predominantly Caucasian men and women, average age = 70) were randomly assigned to either an 8-week mindfulness training based on MBSR that was tailored for older adults, or a 5-week program that provided education on memory and aging, situational factors that affect memory, and strategies to compensate for memory difficulties. Participants completed self-report measures of memory complaints, depression, and mindfulness (the Five Facet Mindfulness Questionnaire, or FFMQ).

They also completed an attentional capacity task that required them to be vigilant and respond or withhold responding to letters presented on a computer screen. An electroencephalogram (EEG) recorded the magnitude of their brain's P3 evoked response potentials (ERPs) while performing this task. Higher P3 ERPs reflect increased attentional capacity and are known to decrease in amplitude with SCD. All these measures were obtained both before and after intervention. Structural magnetic resonance imaging (MRI) was also included to detect changes in total brain volume from pre- to post- intervention.

Adults with SCD reported a greater number of subjective memory complaints and had a lower total mindfulness score on the FFMQ than did healthy adults (partial $\eta^2=.44$). SCD adults' subjective memory complaints and memory self-efficacy improved equally in both the mindfulness and the control groups. Neither of the interventions significantly improved FFMQ scores.



The P3 amplitudes of the SCD adults in the mindfulness group improved significantly, while the amplitudes of the SCD adults in the control group did not (partial $\eta^2=.15$). SCD patients increased their P3 amplitudes by an average of 28%, whereas the healthy adults showed no overall change. For SCD adults in the mindfulness group, P3 amplitudes were impaired prior to intervention, but were indistinguishable from those of the healthy adults after intervention. Mindfulness participants significantly reduced their response time variability on the computerized vigilance task, reflecting improved moment-to-moment attention, whereas control group participants showed increased variability (partial $\eta^2=.14$).

Mindfulness participants' total brain volume significantly increased, whereas control group brain volume did not (Cohen's $d=1.8$). Unfortunately, not all of the participants' MRIs were of sufficiently good quality to be included in this analysis. As a result, the researchers were unable to statistically test whether this tendency for mindfulness to increase brain volumes was more pronounced for either the SCD or the healthy adults.

This pilot study shows that mindfulness training can improve moment-to-moment regulation of attention and corresponding brain function in older adults with subjective cognitive decline. Improved attentional regulation may serve as a resource to

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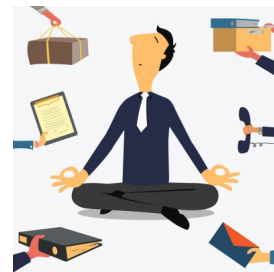
help mitigate functional impairments resulting from early memory decline. The study also demonstrates an effect of mindfulness training on brain volume in older adults. More research is needed to determine whether mindfulness training reduces or slows the progression to mild cognitive impairment or Alzheimer's Disease, or reduces the disability associated with early phases of those disorders.

Personal computing devices have introduced us to the phenomenon of "media multitasking," in which we constantly switch attention between e-mailing, texting, web-browsing, and listening to music, all while ostensibly working. Research has shown that people who engage in large amounts of media multitasking perform significantly more poorly on measures of attentional ability than those who engage in it less. **Gorman et al. [Scientific Reports]** explored whether a brief breath-counting meditation might temporarily ameliorate the attentional deficits associated with media multitasking.

The researchers conducted an online survey of media multitasking in 1,683 college undergraduates. They then selected a research sample of 22 heavy media multitaskers who scored at least a standard deviation above the mean, and a sample of 20 light media multitaskers who scored at least a standard deviation below the mean in frequency of media multitasking.

The students participated in two separate assessment sessions scheduled less than 48 hours apart. They completed the same assessment battery measuring attentional control, working memory, and cognitive flexibility in each of the sessions. The attentional control measures included computer-administered tasks requiring the ability to ignore distractions, detect sameness and difference in the orientation of geometrical shapes, resist impulsive responding, and attend to visual cues requiring different responses. The working memory task involved recording strings of numbers in the reverse order in which they were presented. The cognitive flexibility measure required quickly naming as many possible alternative uses of common everyday objects as one could.

The conditions under which the assessment batteries were administered differed in each of the sessions. In one of the sessions, the assessment battery was broken into tasks that were interspersed with three ten-minute breath-counting meditations. In the other session, the assessment tasks were interspersed with three ten-minute web-browsing periods.



In the breath-counting meditation, participants counted their breaths while pressing a keyboard down arrow during each exhalation. Participants pressed the right arrow key on each ninth breath, then started counting over again. They did this while viewing slow-moving animated natural stimuli. There were no instructions regarding the concept of mindfulness. In the web-browsing intervention, participants browsed various websites such as Wikipedia at will.

Heavy media multitaskers performed significantly more poorly on the attentional tasks than light media multitaskers (partial $\eta^2=.23$). Both heavy and light media multitaskers did better on attentional tasks after breath-counting than after web-browsing (partial $\eta^2=.20$). Lastly, heavy media multitaskers benefited more on attentional tasks from breath-counting than did light media multitaskers (partial $\eta^2=.10$). These effects applied only to the attentional measures; there were no main or interaction effects for either working memory or cognitive flexibility.

The study shows that heavy media multitaskers have an impaired attentional focus that can be either transiently remedied by periods of focused breath-counting, or transiently exacerbated by periods of web-browsing. The study is limited by its assumption that the positive effect of a brief breath-counting practice was due to "mindfulness," which was neither taught nor measured, as opposed to other possible factors such as slowed breathing or relaxation.