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# mindful

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*"I want to look at the neural mechanisms of mindfulness and see how they can improve our well-being."*

David Creswell,  
director of the Health  
& Human Performance  
Laboratory at Carnegie  
Mellon University



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**EAT LUNCH** silently today. Look at what's at the end of your fork or spoon. Appreciate it. It will taste better. Find more on Twitter @mindinterruption

## Dissecting Mindfulness

**"Can I study meditation and have a future as a scientist?"**

In 2001, when David Creswell asked his graduate school advisor at UCLA that question, the answer was not obvious. Only 28 scientific papers on mindfulness had been published that year. Nonetheless, his advisor encouraged him, saying, "If you study meditation in a scientifically rigorous way, you could make quite an impact."

Creswell, an assistant professor of psychology at Carnegie Mellon University in Pittsburgh, is also director of the university's Health & Human Performance Laboratory. He has become one of the leading researchers in a field of study that has grown exponentially over the past decade, with more than 400 scientific papers published every year.

Stress is a big reason for the increased interest. "If you look at the mindfulness meditation literature in medicine over

the past 10 years, you'll see the studies are almost entirely focused on stress-related diseases," Creswell says. "Irritable bowel syndrome, some cancers, depression, psoriasis—there's a pattern here of disorders known to be either triggered by or exacerbated by stress."

Creswell's strategy has been to identify significant populations where stress may be a key element in deteriorating health and see if a mindfulness intervention can help.

For example, a small randomized control trial conducted in 2009 found that mindfulness could slow disease progression in HIV-positive adults who exhibited moderate to high stress. The HIV virus attacks specific components of the immune system, most notably CD4 +T lymphocytes that help block pathogens and infections. When the lymphocytes decline to a certain point, HIV becomes AIDS. Stress accelerates this process. According to the results published in *Brain, Behavior, and Immunity*, participants in the control sample showed the expected

decline in lymphocytes, but "counts among participants in the eight-week MBSR program were unchanged from baseline," the level prior to taking the training.

Creswell gave *Mindful* a preview of another study that is yet to be published. Researchers randomly assigned stressed, chronically unemployed adults to either a three-day MBSR program or a standard rest-and-relaxation retreat. Brain scans taken before and after the retreat showed that the brains of the people who had taken MBSR had been changed in ways that helped them manage their stress more effectively.

Creswell's own interest in studying mindfulness started in high school. "My fascination was to understand how meditation gets under the skin to influence health." For a psychology project, he strapped a heart-rate monitor to a meditator, observing a drop of 10 to 15 heartbeats per minute.

"I remember being so disappointed—I think I had some idea that their heart would stop or something," he recalls. "But

all these years later, I'm still kind of doing the same thing, albeit in perhaps a more nuanced and scientific way: attaching physiological monitors to meditators and studying what happens as a result of meditative experience."

His interest in mindfulness led him to a monastery in France, then to meditation retreats in the U.S., where he deepened his experience of meditation and recognized its health benefits for himself and others. In 2001, he decided to pursue graduate studies in social psychology at UCLA.

To date, Creswell and his colleagues have published 11 scientific papers about their mindfulness-based research. In future studies, Creswell says he intends to "barrel more deeply into the mechanisms of mindfulness. I want to really look at the various components or facets of mindfulness—the ability to be present-minded, the ability to accept and respond to information in a nonjudgmental way. I want to pull them apart, understand them, and see just how they can improve our well-being." ●



David Creswell, director of the Health & Human Performance Laboratory at Carnegie Mellon University, researches how mindfulness interventions can help with diseases that are exacerbated by stress.

### Research Highlights

A sampling of David Creswell's mindfulness-related studies.

**A 2013 study published in *Social, Cognitive and Affective Neuroscience*** found that mindful attention can reduce both self-reported cravings in smokers and neural activity in the craving-related region of their brains.

**A study in *NeuroImage* in 2013** concluded that mindfulness-based cognitive therapy may be an effective treatment for reducing anxiety and mood symptoms in patients with generalized anxiety disorder.

**In 2012, a study published in *Brain, Behavior and Immunity*** found that an eight-week Mindfulness-Based Stress Reduction (MBSR) program helped decrease loneliness in older adults.

**A study published in *Psychological Inquiry* in 2007** examined the theory and evidence of how mindfulness curtails distress and enhances mental health, physical health, and behavioral regulation.



For more about David Creswell's research, go to [mindful.org/creswell](http://mindful.org/creswell)

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