

Large-scale study assesses the short-term impact on stress of self-administered mindfulness exercises

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Christoph Spiessens teaching one of his mindfulness classes. Credit: Alessandro Sparacio

Mindfulness practices, derived from ancient meditative traditions, have become increasingly popular in modern society. Past studies have found that these practices, which encourage people to intentionally direct their attention to the present moment, can have a multitude of benefits, such

as reducing stress, aiding emotional regulation and improving concentration.

Researchers at Université Grenoble Alpes, Swansea University, and other institutes worldwide carried out a large-scale study aimed at further exploring the effects of mindfulness practices on stress levels. Their findings, [published](#) in *Nature Human Behaviour*, suggest that self-administered mindfulness practices could be beneficial for reducing self-reported stress in the short term.

"At the beginning of my Ph.D. we decided that a logical first step to gather evidence was to assess the quality of existing studies through a [meta-analysis](#)," Alessandro Sparacio, first author of the paper, told Medical Xpress. "Our goal was to determine whether the current evidence on self-administered mindfulness was sufficient. We found that the existing studies were of insufficient quality and that their sample sizes were simply too small."

When they reviewed previous literature focusing on self-administered mindfulness practices, Sparacio and his colleagues found that most studies had significant limitations. While this did not necessarily mean that mindfulness interventions were ineffective, it reduced the certainty with which they could be deemed beneficial.

The researchers thus decided to carry out a new study that addressed the limitations they identified. The study they conducted is a first of its kind, as it involved a far larger number of participants recruited by different institutes worldwide.

"Fortunately, my first two years of the Ph.D. were spent at Grenoble's CORE Lab, where my colleagues had extensive experience with 'big team science' projects," Sparacio said.

"Patrick Forscher, then a postdoc in our team, had recently written a significant theoretical paper outlining the pros and cons of big team science and was instrumental in helping me set up this project. Additionally, a fellow Ph.D. student, Olivier Dujols, had just established his research infrastructure for his STRAEQ-2 study."

To overcome the limitations of previous studies, Sparacio relied on the support of the CORE lab team at Université Grenoble Alpes, where he attained his Ph.D. Before conducting the actual experiment, he also surveyed many mindfulness practitioners, to identify the most appropriate practices for the study.

The large-scale study spanned across 37 sites, involving 61 researchers at different institutes in the US, UK, Europe, and Australia. A total of 2,239 individuals took part in the study, an unprecedented number for mindfulness-related research.

As the study was carried out at the peak of the COVID-19 pandemic, participants completed the [mindfulness exercises](#) online. The researchers assessed four of the most well-known mindfulness exercises: mindful breathing, body scan, mindful walking and loving-kindness meditation.



Christoph Spiessens, the mindfulness instructor who recorded the audio tracks included in the experiment. Credit: Christoph Spiessens.

"For the body scan exercise, participants mentally scanned different parts of their bodies, refocusing on each part whenever their minds wandered," Sparacio explained.

"In mindful breathing, participants concentrated on their breath without trying to change it, gently bringing their attention back to their breath whenever they were distracted. Loving-kindness meditation involved participants directing feelings of loving-kindness toward themselves and then extending these feelings to others. During mindful walking, participants walked in a quiet, distraction-free environment, focusing on the physical sensations of walking and the contact of their feet with the

ground."

The study participants were asked to complete a questionnaire about their stress levels via a link provided to them, both before and after the mindfulness exercise. Their responses were compared to those of a control group, who had instead listened to randomly selected stories of the same duration as the exercises.

"Each participant engaged in a 15-minute mindfulness meditation session at home, previously recorded by, Christoph Spiessens, a certified instructor," Sparacio said. "This approach ensured that participants could practice mindfulness in a familiar and comfortable setting, which was especially important during the pandemic, when minimizing stress was crucial."

The large-scale study carried out by Sparacio and his colleagues specifically assessed the short-term effects of mindfulness exercises on stress levels, as participants shared their feedback immediately after the exercise. The team found that the exercises significantly reduced subjective stress levels, with most participants reporting feeling less stressed after completing them.

"This was an intense but rewarding project, and I am truly grateful for everyone who contributed, directly or indirectly," Sparacio said. "As a mindfulness practitioner, I was initially disappointed with the outcome of our meta-analysis, hoping for high-quality evidence supporting self-administered mindfulness. However, our multi-site study at least partially vindicated my belief that self-administered mindfulness can be effective."

Overall, the results of this multi-national collaborative research effort suggest that self-administered mindfulness exercises can help to reduce stress levels in the short-term. Given its large sample size and the team's

efforts to overcome previous limitations, it could increase confidence in some of the short-term benefits of these practices.

"While I was biased in favor of mindfulness, one of my supervisors, Dr. Rocha IJerman, was skeptical and therefore kept me on my toes to provide high-quality evidence," Sparacio said. "Yet, he now also admits that the evidence we gathered has shifted his perspective toward believing that mindfulness does work."

While the team's results highlight the benefits of mindfulness, Sparacio feels one should remain cautious in using it to make practical recommendations. This is because it still did not address some limitations of mindfulness research.

"Although this study provides the best evidence we have so far, there are still limitations to address," he said.

"For example, does the effect hold for people of lower income? Are the observed effects not simply due to 'expectation effect'? How do different personality types influence the effectiveness? And what happens with long-term engagement in mindfulness? In summary, while we can presume that self-administered mindfulness is generally effective, individuals looking to apply mindfulness in their own lives should do so thoughtfully, keeping these questions in mind."

Sparacio and his colleagues in Singapore are currently designing a follow-up multi-site project focusing on self-administered mindfulness exercises. This project, which could include 17 of the sites at which the previous study was conducted, could overcome further experimental limitations, while also assessing long-term and physiological effects.

More information: Alessandro Sparacio et al, Self-administered mindfulness interventions reduce stress in a large, randomized controlled

multi-site study, *Nature Human Behaviour* (2024). [DOI: 10.1038/s41562-024-01907-7](https://doi.org/10.1038/s41562-024-01907-7)

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