

Long-term meditation leads to different brain organization

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Credit: AI-generated image (disclaimer)

(Medical Xpress) -- People who practice mindfulness meditation learn to accept their feelings, emotions, and states of mind without judging or resisting them. They simply live in the moment.

Several studies have shown that this type of meditation may have



<u>beneficial effects</u> on long-term <u>emotional stability</u> and, consequently, on disorders such as <u>anxiety</u> and <u>major depression</u>. A new study reveals that this mind training has an influence on the default <u>brain</u> network of experienced meditators when they are at rest. Differences in the brain indicate that meditation contributes to better <u>concentration</u> and more objective self-thought.

"We studied the brains of 13 meditators with over 1,000 hours of practice and 11 beginners by analyzing functional connectivity," says Veronica Taylor, the lead author of the study published in the journal *Social Cognitive and Affective Neuroscience Advance Access* in March 2012.

Functional connectivity refers to the synchronization between two or more brain regions that changes over time during a specific task or at rest. This method of analysis can be applied to data from functional magnetic resonance imaging. "Participants remained in a CT scanner for a few minutes and were asked to do nothing," explained Taylor, who is currently completing her Ph.D. in psychology under the supervision of Professor Pierre Rainville.

These analyses enabled the researchers to identify subjects' default brain network, i.e., the set of regions activated at rest when the person is not performing a particular activity.

"We wanted to assess whether the effects of mindfulness meditation persisted beyond the practice," said the doctoral student. "We hypothesized that the default brain network of meditators is structured differently. The default network is associated with daydreaming and selfthought when one is doing 'nothing.' In fact, we thought we would find a different organization because these individuals are used to being in the moment, and their thoughts do not go in all directions when at rest."



Indeed, the results show weaker synchronization between the ventral and dorsal medial prefrontal cortex. "The dorsal part is involved in cognitive processes associated with the self, while the ventral part is associated with <u>emotional</u> self-evaluation," says Taylor. Because these areas are less interrelated, it shows that these people think about themselves more objectively." She adds that the more participants had experience with meditation the weaker the connection, which, according to her, "gives weight to the results."

A curious and interesting fact: the subjects had greater synchronization between areas that all converge in the right parietal lobe. This area is known for having a role in attention, suggesting perhaps a long-term beneficial effect of meditation, but which remains to be proven by research specifically studying attentional processes," says the student.

Although the subjects were tested at rest, Taylor has first-hand knowledge of the tangible benefits of mindfulness meditation in everyday life. "I have practiced meditation for several years and have noticed that my attention is longer and steadier when I concentrate."

"There is still much to discover about the power of meditation," she says. In the meantime, she suggests everyone take it up. "It doesn't cost anything and you can meditate anywhere and anytime... and the benefits are real. "

Provided by University of Montreal

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