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Study Suggests Meditation Can Help Train Attention

By SANDRA BLAKESLEE
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In meditation, people sit quietly and concentrate on their breath. As air swooshes in and out of their nostrils, they attend to each sensation. As unbidden thoughts flutter to mind, they let them go. Breathe. Let go. Breathe. Let go.

Ruth Fremson/The New York Times
Meditation involves special breathing and letting thoughts go.

According to a study published today in the online edition of the journal PloS Biology, three months of rigorous training in this kind of meditation leads to a profound shift in how the brain allocates attention.

It appears that the ability to release thoughts that pop into mind frees the brain to attend to more rapidly changing things and events in the world at large, said the study's lead author, Richard Davidson, a professor of psychology and psychiatry at the University of Wisconsin in Madison. Expert meditators, he said, are better than other people at detecting such fast-changing stimuli, like emotional facial expressions.

Dr. Ron Mangun, director of the Center for Mind and Brain at the University of California, Davis, who was not involved in the study, called the finding exciting. "It provides neuroscience evidence for changes in the workings of the brain with mental training, in this case meditation," he said. "We know we can learn and improve abilities of all sorts with practice, everything from driving to playing the piano. But demonstrating this in the context of meditation is interesting and novel."

Recent research has shown that meditation is good for the brain. It appears to increase gray matter, improve the immune system, reduce stress and promote a sense of well-being. But Dr. Davidson said this was the first study to examine how meditation affects attention.

The study exploited a brain phenomenon called the attentional blink. Say pictures of a St. Bernard and a Scottish terrier are flashed before one's eyes half a second apart, embedded in a series of 20 pictures of cats. In that sequence, most people fail to see the second dog. Their brains have "blinked."

Scientists explain this blindness as a misallocation of attention. Things are happening too fast for the brain to detect the second stimulus. Consciousness is somehow suppressed.

But the blink is not an inevitable bottleneck, Dr. Davidson said. Most people can identify the second target some of the time. Thus it may be possible to exert some control, which need not be voluntary, over the allocation of attention.

In the study, 17 volunteers with meditation experience spent three months at the Insight Meditation Society in Barre, Mass., meditating 10 to 12 hours a day. A novice control group meditated for 20 minutes a day over the same period.

Both groups were then given attentional blink tests with two numbers embedded in a series of letters. As both groups looked for the numbers, their brain activity was recorded with electrodes placed on the scalp.

Everyone could detect the first number, Dr. Davidson said. But the brain recordings showed that the less experienced meditators tended to grasp the first number and hang onto it, so they missed the second number. Those with more experience invested less attention to the first number, as if letting it go. This led to an increased ability to grasp the second number.

The attentional blink was thought to be a fixed property of the nervous system, Dr. Davidson said. But this study shows that it can change with practice. Attention is a flexible, trainable skill.

Just ask Daniel Levison, a staff researcher in the psychology department at the University of Wisconsin who meditated for three months as part of the study. “I’m a much better listener,” he said. “I don’t get lost in my own personal reaction to what people are saying.”