

This is Your Brain on Meditation

Andrew Rader, LAc, MS

"There's a common misunderstanding among all the human beings who have ever been born on the Earth that the best way to live is to try to avoid pain and just try to get comfortable. You can see this even in insects and animals and birds. All of us are the same. A much more interesting, kind, adventurous and joyful approach to life is to begin to develop our curiosity, not caring whether the object of our inquisitiveness is bitter or sweet. To lead a life that goes beyond pettiness and prejudice and always wanting to make sure that everything turns out on our own terms, to lead a more passionate, full and delightful life than that, we must realize that we can endure a lot of pain and pleasure for the sake of finding out who we are and what this world is, how we tick and how our world ticks, how the whole thing just is." - Pema Chodron, "The Wisdom of No Escape and the Path of Loving-Kindness"

Earlier this year, the journal of *Psychiatry Research: Neuroimaging* published a study showing that in just eight weeks of mindfulness meditation practice, structural changes in gray matter were observed. The study had participants meditating for as little as 27 minutes each day. This is the first study documenting that meditating actually changes the brain.

Previously, comparisons of meditators to non-meditators had shown that the brains of those who meditated were different in areas of attention and focus, compassion and emotional intelligence, but this was only correlative. In addition, previous functional MRI studies have showed metabolic changes occurring during meditation, but these studies were not designed to document that these changes lasted beyond the meditation session. Now we have evidence of what many people already know intuitively, that meditation produces significant effects on our brains/minds/consciousness that last far beyond the time on the cushion, and affect our daily lives in profound ways.

Most of our waking hours are spent in unconsciousness. We drive unconsciously, we walk unconsciously, we eat, brush our teeth, even have conversations unconsciously. Our time is spent thinking about the future and the past. We are not aware of what is happening in the present moment. Many of us strive to become more aware of the present moment, to become more conscious, more engaged and more present. Most who have this aspiration will engage in some form of meditative practice.

Instead of moving through life mostly on autopilot or as a prisoner of past conditioning, meditation can be used as a way to create "a more passionate, full and delightful life," as Chodron put it. The creativity comes when the mind disengages with discursive thinking and is allowed to become spacious.

Evolution has created a strategy to respond to life-threatening situations. When we perceive a threat, our survival wiring takes over. The amygdala is in charge of emergencies and gets priority in such a situation. The problem is that in modern times many things trigger this response that are not really life-threatening, think PTSD or anxiety. When the amygdala has hijacked our consciousness we can only focus on the perceived threat to the exclusion of all else. In addition, the amygdala is only good at seeing the basic outline of the problem and can't sort out details. We

respond from conditioned training to these situations and do not bring much thought to the process. This is good if a lion is in the room, but not so good if our boss just criticized our project.

According to Dan Goleman, author of "*The Brain and Emotional Intelligence*," the top five triggers of an amygdala hijack in our modern world are:

1. Condescension and lack of respect.
2. Being treated unfairly.
3. Being unappreciated.
4. Feeling that you're not being listened to or heard.
5. Being held to unrealistic deadlines.

Meditation trains the brain to keep the pathways open between the emotional centers and the thinking centers, specifically the amygdala and the prefrontal cortex. Basically, meditation trains us to use more of our brain for any given situation. Meditation practices offer natural, drug-free, self-administered ways to manage stress and to skillfully manage ourselves and our behavior towards others. Being able to modulate our initial feelings and thoughts and create a measured response is what makes us responsible citizens.

We strive for this because we have been told by most of the ancient traditions that this is where the truth lies. Where health derives from. Where happiness lies. We know this intuitively. More and more we have the help of modern science to substantiate this intuitive knowledge. Until recently, only those who had some degree of faith and spiritual inclinations would avail themselves of these techniques of mind cultivation. Now, those who only trust science can get into the act, and for their own good too!

We see the balancing act of form and formlessness, yin and yang, science and religion playing out on a societal level, as well as an intrapersonal level. Society debates the value of science vs. religion as if it is one or the other that has the truth. Einstein was able to hold that both paradigms of awareness could co-exist within one individual. His legacy endures as a human being who was able to be committed to the scientific method while having faith in the mystery of it all.

Decision-making and meditation

Antonio Damasio, a neurosurgeon, had a patient with a brain tumor that needed excision. In order to extract the tumor, he had to sever connections between the prefrontal cortex, where thinking dominates, and the amygdala, an emotional center. This patient was a successful corporate lawyer, who after surgery was able to do well on every type of intelligence testing offered him, yet his life fell apart. He couldn't function at work, lost his job, got divorced and generally could not live a normal life. He went back to Damasio who tested him and couldn't find anything wrong until the surgeon asked him when he could return for another appointment. The corporate lawyer could not make a decision. This led Damasio to understand that proper decision-making was both an emotional and rational process. We have to be able to feel how a thought affects us before we can decide if that thought works for us. No feeling, no decision. Sales people and advertising executives know a lot more about this than the medical profession.

Meditation will enhance our ability to become aware of our internal process, enabling us to notice the feeling and notice the thought while not having them automatically drive each other. In a study titled, "*Interoception drives increased rational decision-making in meditators playing the ultimatum game*," published by *Frontiers in Decision Neuroscience*, a group of experienced meditators were better able to regulate their emotional responses compared to a control group of non-meditators when playing a game that involved economic decision making. Functional MRI during the game revealed that the insula was the area of the brain involved in controlling negative emotions. The

meditators were more able to decouple negative emotions from their behavior. In other words, meditators are more able to keep their cool.

The implications of this are enormous. The number one killer of teenagers is poor judgment. Imagine what a little meditation could do to enhance the areas of the teenage brain that result in better decision-making. The adult world could also benefit from some enhanced judgment as well.

The fundamental key to all this is self-awareness. Often, I ask patients how they are feeling, right now, in their body. They will usually tell me something like this: "I feel anxious, or tired, or worried, or happy, or stuck, or pain ..." All these descriptions are conceptual and not really descriptions of actual feelings. How do you know you are anxious? You feel a sensation in the body, perhaps the chest, like a pressure, or a constricted feeling, or a heavy sensation, and then the conceptual mind slaps a label on it - "anxious."

Once the label is there, the connection to the actual sensations become less available. We already know what it is, so there is no longer the need to pay so much attention to it. By staying with the actual body sensation and avoiding the temptation to label it, we stay in the present moment. We stay with the actual sensation and we don't think about it as much, or not at all. This brings us into reality and out of fantasy. Our fears and worries tend to recede. If they do arise, we are more apt to see them for what they are, simply thoughts. Now the thoughts arise in a context of feeling the actual sensation. The connection between them is now available to us and we don't need to react from past programming. Now we have a choice, just like the meditators who were able to make better decisions in the money game. Now that's using your inula.

NOVEMBER 2011