

# USING YOUR MIND TO CHANGE YOUR BRAIN

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## KEY FACTS ABOUT YOUR BRAIN

- Shaped by evolution, especially of emotional and relational capacities; for example, the bigger the primate social group, the bigger the brain
- 3 pounds, 1.1 trillion cells, including 100 billion “gray matter” neurons
- Always “on” – 2% of the body’s weight uses about 25% of its oxygen
- Average neuron has about 5000 connections (synapses), 500 trillion in all
- Synapses fire 1 to 100 times a second; quadrillions of synapses activate each minute
- Brain regions linked by neural pulses synchronized within a few milliseconds
- Highly interconnected network full of circular loops: awareness of awareness . . .
- Number of possible brain states: 1 followed by a million zeros
- The most complex object known in the universe

## YOUR MIND CHANGES YOUR BRAIN

- Both temporarily, in electrochemical waves lasting mere milliseconds, and permanently, as existing synapses get strengthened and new ones get made
- As circuits get used, they strengthen their connections; “neurons that fire together, wire together.” Your experience matters, leaving an enduring trace behind.
- London taxi drivers have thicker regions that create visual-spatial memories.
- Mindfulness and concentration meditations activate different parts of the brain.

## YOUR BRAIN CHANGES YOUR MIND

- Brain activity generates mental activity (mostly forever outside awareness).
- Trauma shrinks the hippocampus, which becomes less able to create new memories.
- More active left frontal lobes foster positive emotions.

## YOU CAN USE YOUR MIND TO CHANGE YOUR BRAIN TO CHANGE YOUR MIND FOR THE BETTER. IN JUST ONE EXAMPLE, MINDFULNESS PRACTICES:

- Trigger patterns of neural pulsing that produce relaxed alertness
- Activate positive emotion circuits, building resilience and resistance to depression
- Increase serotonin, a neurotransmitter that supports mood, sleep, and digestion
- Thicken the anterior cingulate, strengthening attention and self-observation
- Thicken the insula, strengthening internal sensing and empathy for others
- Stimulate the parasympathetic nervous system (PNS) for relaxed well-being
- Strengthen the immune system, improve cardiovascular health, dampen chronic pain