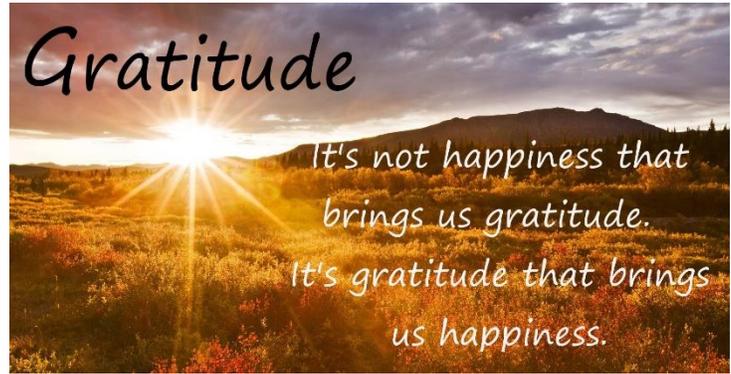


Module Five, Lesson Two

The Science of Gratitude

[Robert Emmons](#) is considered one of the world's leading scientific experts on gratitude, and he says that gratitude has key components. First, it is an affirmation of goodness. We affirm that there are good things in the world, gifts and benefits we've received.

In the second part of gratitude, he explains that gratitude is recognizing that the sources of this goodness are outside of ourselves. We acknowledge that other people—or even higher powers, if you're of a spiritual mindset—gave us many gifts, big and small, to help us achieve the goodness in our lives.



But what does that have to do with the brain?

Gratitude has many and powerful effects on our brain health. It can increase neuron density and lead to greater emotional intelligence, an important part of our cognitive health. But there are many other benefits including:

* **Gratitude and Neurotransmitters**

Gratitude acts as a 'natural antidepressant'. The effects of gratitude, when practiced daily can be almost the same as medications because it can produce a feeling of long-lasting happiness and contentment, the physiological basis of which lies at the neurotransmitter level. We produce more dopamine and serotonin.

Increased Dopamine

Research has found that when we express gratitude, the brain releases a surge of dopamine, a neurotransmitter that plays an important role in many vital functions, including pleasure, reward, motivation, attention, and bodily movements. This surge of dopamine gives you a natural high, creating good feelings that motivate you to repeat specific behaviors, including expressing gratitude even more.

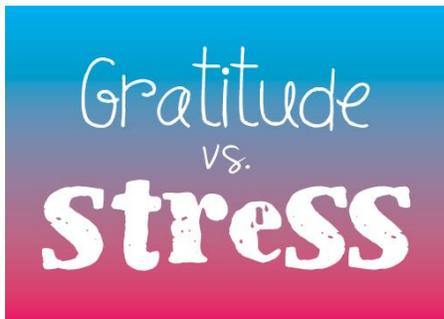
Dopamine also increases the experience and duration of positive emotions. In short, it helps you feel good—and research shows that when you feel good, you are more likely to spread your positivity to those you work, live, and play with. We'll get into this aspect even more in the lesson on Generosity.

- Increased Serotonin Production

In addition to increasing dopamine, gratitude has also been associated with increased serotonin production. Serotonin is often called the happiness chemical because it contributes to feelings of well-being, stabilizes our mood, and helps us feel more relaxed. The simple act of being grateful increases serotonin production in the anterior cingulate cortex, which is an integral part of the limbic system, which is involved with emotion formation and processing, learning, and memory.

*** Release of Toxic Emotions including Stress**

The limbic system is the part of the brain that is responsible for all emotional experiences. It consists of the thalamus, hypothalamus, amygdala, hippocampus, and cingulate gyrus. Studies have shown that hippocampus and amygdala, the two main sites regulating emotions, memory, and bodily functioning, get activated with feelings of gratitude.



People who feel grateful also show lower levels of cortisol, the stress hormone. In several studies, it's been shown that grateful people also have better cardiac functioning and are more resilient to emotional setbacks and negative experiences.

Simply by practicing gratitude we can handle stress better than others partly because it helps our brain to deal with present circumstances with more awareness

and broader perception.

*** Pain Reduction**

In one study conducted on evaluating the effect of gratitude on physical well-being, 16% of the patients who kept a gratitude journal reported reduced pain symptoms and were more willing to work out and cooperate with the treatment procedure. Thanks to dopamine production, gratitude also fills us with more vitality, thereby reducing subjective feelings of pain.

*** Better Sleep**

Studies have shown that receiving and displaying simple acts of kindness activates the hypothalamus, which controls sleep. A brain filled with gratitude and kindness is more likely to sleep better and wake up feeling refreshed and energetic every morning.

*** Social Bonding**

Gratitude is an emotion that helps us build and sustain social bonding.

Since healthy social relationships and interactions are essential to brain health long term, this is an especially important function of gratitude.

Expressing Gratitude

Unfortunately, there is a large gap between the gratitude people report feeling and their expression of gratitude.

According to one study, 90 percent of Americans say they feel grateful for their families, yet only 52 percent of women and 44 percent of men express gratitude on a regular basis.

Some possibilities for this gap include the fear that expressing gratitude may imply indebtedness or weakness.

Given the many benefits of showing gratitude, it's probably worth the effort to express our gratitude.

By consciously practicing gratitude every day, we can help these neural pathways to strengthen themselves and ultimately create a permanent grateful and positive nature within ourselves.

There are many ways to develop your ability to nurture gratitude and express it. See the handout provided in this lesson for some powerful suggestions and a beautiful gratitude meditation.

