

PERSONAL *TRANSFORMATION*

MASTERY



- Master your brain
- Overcome fear
- Build confidence
- Get motivated
- Know your life purpose
- Develop a healthier you
- Build good habits
- Get focused

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GUIDE 8: MASTER YOUR BRAIN

If you were to buy a car, a computer, a games console or even a toy of some sort, then in all likelihood it would come with an instruction manual of some sort so that you could find your way around it and how you should use it.

This is important because it allows you to get the very most from it and it allows you to avoid making mistakes that could damage it.

But unfortunately, the most important and most complex things in the world come with no such instruction manual. Take children for example: any new parent will tell you just how dismayed they were when they realized that no one could tell them how to be an effective mother/father.

And then there's the big one: our own brains. These are the most complex supercomputers in the entire world and they are what create all of our subjective feelings, sensations and experiences. And yet our brains come with no instructions and no guidance: we are left simply to try and figure them out on our own.

So, the question becomes: how can you master your brain?

Fortunately, neuroscientists and psychologists are uncovering more of the brain's secrets every single day. While there is still a *huge* amount left to learn, we know more than we ever did and a lot of this information can be used practically to help us become happier, smarter and more effective versions of ourselves.

Read on and we'll see how you can master your brain for complete and total self-mastery.

HOW YOUR BRAIN WORKS

Neuroscience is a subject that can take decades to learn and even then it will be necessary to specialize in one area – like I said, it's a complex piece of machinery. There is much more than can possibly explained here then, but we can nevertheless give a brief overview to give you some important clues as to how the brain *essentially* works.

So, what do we know?

First of all, the brain is made up of neurons. These neurons are cells that have long tendrils called axons and dendrites. These reach out so as to almost touch each other and that in turn means that they will be close enough for small signals to jump across the gap. This in turn creates a huge map made up of billions of neurons with incredibly intricate connections. This network is called the 'connectome' and everyone's is slightly different. These individual differences are what give us our different skills and abilities and our different personalities.

Every single experience that you have can be mapped to one or more of these neurons. Each neuron represents a sensation, a

memory, an experience, a feeling or something else. Your vision is mapped to a huge array of neurons that represent what you're seeing and likewise, your memory is made up of lots of interlinked neurons that reflect your thoughts and ideas.

These neurons are groups roughly into different regions throughout the brain based on their function. In the occipital lobe for instance we have all the neurons responsible for our sight. In the motor cortex we have neurons that correspond with movements and sensations throughout our body. Our prefrontal cortex is where we handle things like planning and motivation. Our brain stem handles breathing. And our hippocampus stores many of our memories. This is why damage to a specific area of the brain can result in a loss of specific function and this organization is so extreme that there have even been cases where a head trauma has led to a patient losing their memory of vegetables and *nothing else*.

Interactions between neurons occurs through 'action potentials'. These are electrical impulses that occur once a neuron has received enough stimulation. That stimulation is normally the result of lots of nearby neurons firing enough to put it past a certain excitability threshold. When an action potential occurs, this can also result in the release of neurotransmitters. These are chemicals released from vesicles (sacs) that alter the way that neurons work – perhaps making them more or less likely to fire, or

perhaps making the event seem more or less important/sad/happy/memorable.

Another factor that influences our individual differences is our balance of neurotransmitters and hormones. If you have lots of the feel-good neurotransmitter serotonin, then you will be often in a good mood and you'll be relaxed. If you have lots of cortisol and glutamate, then you will be a more wired and panicked kind of person.

Neurotransmitters and Outside Influences

What's important to recognize here, is that those neurotransmitters are not *just* a result of what is happening in the brain but can also be a result of biological signals from our bodies. For example, if you have low blood sugar, then your brain produces more of the stress hormone cortisol. This is an evolutionary response that is intended to make us seek out more food – but it is also the reason that we tend to feel anxious and angry when we haven't eaten for a while. This is where the experience of being 'hangry' comes from!

Conversely, serotonin can be released when we eat something and our blood sugar spikes. This is why we feel good when we've just eaten. That serotonin eventually converts to melatonin though, which is the sleep neurotransmitter, and which

suppresses neural activity. This is why we will often feel tired and dopey after a big meal.

Countless other things also influence our balance of brain chemicals. Bright light for instance can actually *reduce* the production of melatonin and increase the production of cortisol and nitric oxide to wake us up. Remember: there were no artificial lights in the wild and so our brain could rely solely on this signal to know what time of day it was!

While there is much more to it than that, this very generally describes the form and function of the brain and how it gives rise to our individual experiences.

BRAIN PLASTICITY

Another aspect of the brain that is very important to familiarize yourself with is plasticity. Brain plasticity – also called neuroplasticity – is the brain's ability to adapt and grow.

For a long time, it was thought that the brain *only* formed new neurons and new connections during childhood and after that point, it was set in stone. However, we now know that this process continues until we die and is a crucial aspect of the way our brain functions. It does slow down slightly in adults but it is still

what gives us the ability to learn, to change our minds and to acquire new skills.

Neural plasticity occurs through practice, repetition and events that we believe to be very important. The saying among neuroscientists goes: ‘what fires together, wires together’. In other words, if you experience something, a neuron will light up. If you experience that thing at the same time as another thing, *two* neurons might light up (or more likely, two groups of thousands of neurons).

If you keep re-experiencing those two things together, a connection between them will begin to form. Subsequently, that connection will become stronger through a process called myelination during which point the dendrites and axons become insulated to better conduct the flow of electricity. Eventually, one neuron firing will *cause* the other neuron to fire. This is how you can then learn a complex series of movements when performing a dance, or how you can memories words in a new language.

HOW TO HACK YOUR BRAIN AND TAKE CONTROL OF YOUR PERFORMANCE

This might sound like a lot to take on board, but hopefully you have the basic gist regarding a number of your brain’s functions.

Hopefully, you also might have found some of this pretty interesting. After all, it is *very* relevant to all of us!

So now the question is how you can actually *use* this information in a productive way?

Controlling Neurotransmitters

One way to hack your brain for greater productivity, happiness or whatever else, is by influencing the production of neurotransmitters. We've learned that these influence our mood and our ability to learn... so changing the balance of these chemicals could certainly be very useful.

This is why a lot of people are interested in the idea of 'nootropics'. Nootropics are smart drugs – supplements and medications that can influence the production of neurotransmitters so that we have more goal-oriented dopamine or less fear-inducing cortisol. Modafinil alters the production of orexin, which can completely change our sleep/wake cycle so we feel more awake more of the time. This is also what caffeine does, by removing the inhibitory neurotransmitter adenosine (or neutralizing it, to be more precise).

The problem with this strategy is that it fixes the brain into a specific, unnatural state and prevents you from being able to

easily 'switch modes'. No one brain state is superior to all others – for example, creativity actually requires relaxation, not stimulation.

Worse, the brain can adapt to those changes by creating more or less 'receptor sites' (the points where the neurotransmitters work) to make us more or less sensitive to the neurotransmitters in question. This can eventually lead to addiction.

Some neurotransmitters work better by focussing more on neuroplasticity, or more on energy production, but for the most part this is *not* the solution.

What is a much more useful solution is to look at those factors that naturally influence neurotransmitter release. If you want to hack any system, then the answer is to look at what the inputs are.

So, we know that bright light can increase energy and make us less sleepy, so why not consider investing in a daylight lamp which is designed to combat SAD (Seasonal Affective Disorder) by simulating the sun's rays? We know that cold likewise can increase focus, while heat can help us to feel more relaxed and happy. We know that the sun and that exercise can boost our mood through the production of serotonin.

We also know that our brain is subject to certain natural cycles – those relating to sleep and hunger for instance. By timing our

productivity *around* those things, we can work more effectively and freer from distraction.

And if you find yourself feeling very stressed or depressed, then it might pay to consider some of the biological factors that may be causing that. Perhaps you're hungry? Or perhaps you're a little ill and the pro-inflammatory cytokines are causing brain fog? Once you know the problem is transient and biological, it can be much easier to let it pass.

Controlling Your Brain

More importantly though, it is critical that you learn to create the moods and the feelings that you need by changing the way you think and use your brain.

The thing that makes humans unique is our ability to visualize – to internalize events and to imagine future scenarios or possibilities. This is our working memory at play and it is what enables us to think of long-term goals and to invent new ideas. And if you believe in the theory of 'embodied cognition', then you might find that this is even what we use to understand plain English (look it up – it's fascinating!).

When we visualize or imagine, we do so by lighting up the same neurons in the brain as though the event were really happening.

Neurologically, we find actually doing something and imaging doing something almost indistinguishable.

This means that you can use visualization in order to practice things and develop skills – you can trigger brain plasticity just as though you were really practicing the event! Not only that, but you can also use this as a way to trigger the correct neurotransmitters in order to put yourself in the correct state of mind.

Ultimately, this will lead to the ability to control your own emotions – to trigger the best possible mental state for the task at hand. It requires training of your visualization skills and the awareness to then *use* those skills to ease your anxiety and to motivate yourself to focus and to become more alert as necessary. This is the neuroscience that underlies psychological approaches such as cognitive behavioral therapy and philosophies such as stoicism.

This is *also* why it is so important to avoid bad habits – even bad habits in our thoughts – as ruminating and indulging actually strengthens connections that make those habits harder and harder to break.

There's a lot more to making the most from your own brain, but I hope this basic primer has given you a better understanding a little more control.