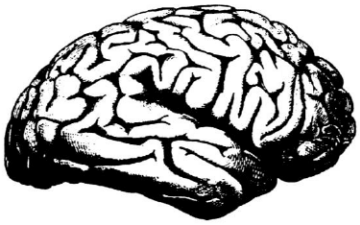
Lesson 1.1.2–Article: You Can Grow Your Brain

YOU CAN GROW YOUR BRAIN

New Research Shows the Brain Can Be Developed Like a Muscle

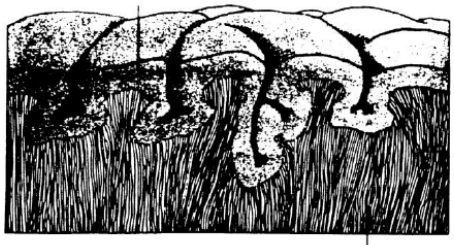
Many people think of the brain as a mystery. We don't often think about what intelligence is or how it works. And when you do think about what intelligence is, you might think that a person is born either smart, average, or dumb—either a "math person" or not—and stays that way for life.



But new research shows that the brain is more like a muscle—it changes and gets stronger when you use it. Scientists have been able to show just how the brain grows and gets stronger when you learn.

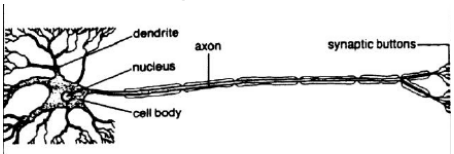
Everyone knows that when you lift weights, your muscles get bigger and you get stronger. A person who can't lift 20 pounds when they start exercising can get strong enough to lift 100 pounds after working out for a long time. That's because muscles become larger and stronger with exercise. And when you stop exercising, the muscles shrink and you get weaker. That's why people say "Use it or lose it!"

But most people don't know that when they practice and learn new things, parts of their brain change and get larger, a lot like the muscles do. This is true even for adults or older teenagers. So it's not true that some people are stuck being "not smart" or "not math people." You can improve your abilities a lot if you practice and use good strategies.



Inside the outside layer of the brain—called the cortex—are billions of tiny nerve cells, called neurons. The nerve cells have branches connecting them to other cells in a complicated network. Communication between these brain cells is what allows us to think and solve problems.

When you learn new things, you actually grow more of these tiny connections and they get stronger. The more you challenge your mind to learn, the more your brain cells grow. Then, things that you once found very hard or even impossible to do—like understanding history, doing algebra, or completing complicated paperwork—become easier. The result is a stronger, smarter brain.

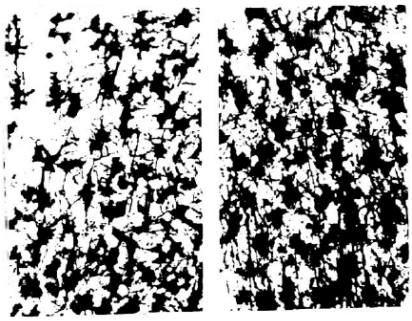


A Typical Nerve cell

How Do We Know That The Brain Can Grow Stronger?

Scientists started thinking the human brain could develop and change when they studied adult animals' brains. They found that animals who lived in a challenging environment, with other animals and toys to play with, were different from animals who lived alone in bare cages.

The animals who lived alone just ate and slept all the time, but the ones who lived with different toys and other animals were always active. They spent a lot of time figuring out how to use the toys and how to get along with other animals.


Nerves in brain of animal living in bare cage.

Brain of animal living with other animals and toys.

These animals had more connections between the nerve cells in their brains. The connections were bigger and stronger, too. In fact, their whole brains were about 10% heavier than the brains of the animals who lived alone without toys.

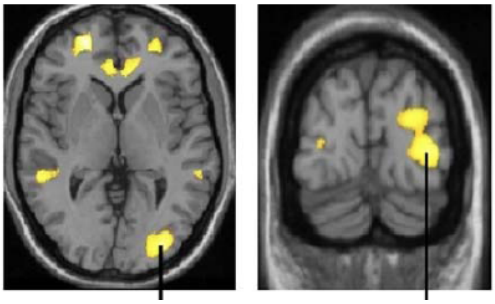
The adult animals who were exercising their brains by playing with toys and each other were also "smarter" –they were better at solving problems and learning new things.

Can Adults Grow Their Brains?

Scientists have recently shown that adults can grow the parts of their brains that control their abilities—like the ability to do math or even to juggle.

In one study, scientists found a group of adults who were not jugglers. They taught half how to practice juggling in the right way. These people practiced for a long time and got much better at juggling. The other half didn't practice, and didn't get better.

Next, the scientists used a brain scanner to compare the brains of the two groups of people. They found that the people who learned how to juggle actually grew the parts of their brains that control juggling skills. Their brains had changed, so they actually had more ability.


In Yellow: Parts of the brain that grew when adults learned to juggle

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This was surprising because these people said before the study that they couldn't juggle—just like some people say they're "not good at math" or "not smart at school." But when they kept trying and learned good strategies for practicing, they actually learned and grew their brains.

Two Parts of Your Brain That Need to Grow: The "Knowing" Part and the "Know How" Part

The brain doesn't just learn things; it also learns how to *do* things. Scientists have shown that people can grow two types of intelligence: the "knowing" type and the "know how" type. The "knowing" type of intelligence is what most people think about when they are learning new things in science or English or history. But you also need to learn skills that let you use your brain in a smarter way.

How do scientists know that you can grow the "know how" part of your brain? One example comes from the brains of taxi drivers in London, England. The streets of London are like a terrible maze. They are very hard to get around in. Brain scientists found that the longer the taxi drivers spent practicing driving in the streets of London, the more their brains grew. The "hippocampus" area of the brain—which controls memory for how to do everyday things—was actually larger! This means the more they practiced driving the confusing streets of London, the more the "know how" part of their brain grew. Although you might not realize it, we all grow the "know how" part of our brains whenever we learn to do new, hard things.

People often forget that we need to grow the "know how" part of our brains. If you study a long time but use a bad strategy, you may not learn—even if you try very hard. A few students study by doing the same set of easy problems and skipping the hard ones. Or they just re-read the textbook but don't try to challenge the ideas. After all, it's easier that way. But when it comes time to do the test, they don't do well because they didn't do things that grew their brains and taught them new things. When this happens, they may even say "I must not be smart at this."

But brain scientists have shown that a stronger brain doesn't just happen to you because you put in the time. You have to practice in the right way. If a weight lifter watched other people exercise all day long, he wouldn't get any stronger. You actually have to practice the right way—and usually that means the hard way—to get better at something. In fact, scientists have found that the brain grows more when you use new and different strategies. The brain grows less when you stick to things you already know.

How do you grow the "know how" part of your brain? You do it by seeking out help from others, like teachers or older students who do well. Or by going to the academic support center or getting tutoring. And then you practice successful strategies. At first it can be hard—sometimes people feel dumb for not knowing simple things like how to take notes, how to study, or even how to sign up for their classes. Or they feel not smart if they go to a tutor. But it's actually the opposite. Practicing better strategies makes your brain smarter.

The Truth About "Smart" and "Dumb"

People aren't "smart" or "dumb" in school. At first, no one can read or solve equations. But with practice, they can learn to do it. And the more a person learns, the easier it gets to learn new things. This is because the "knowing" and "know how" brain muscles have gotten stronger.

This is true for everyone, even adults or college students. Dr. Wittenberg, the scientist from Wake Forest University who did the research on juggling, said "We used to think adults can't form new brain connections, but now we know that isn't true…. The adult brain is like a muscle, and we need to exercise it."

People who don't know this can miss out on the chance to grow a stronger brain. It does take work to learn, just like lifting more weights or becoming a better juggler does. Sometimes it even hurts! But when you feel yourself get better and stronger, you realize that all the work is worth it.

References:

A similar version of this article, written by Lisa Blackwell, can be downloaded from: www.brainology.us/websitemedia/youcangrowyourintelligence.pdf.

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