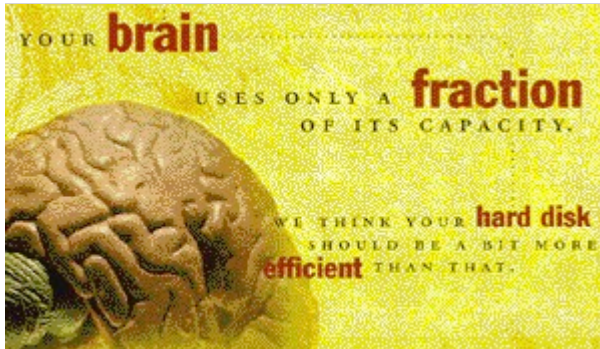


Neuromyth 4

We only use 10% of our brain



One of the most persistent and widely spread brain myths states that we only use 10% of our brains. What a shock, if we think of the 90% of our brain potential, that we don't use! Users of an Internet forum tried to explain this phenomenon: "Sure that we do not use all of our brain", writes one of them, "because then we could not learn new things, as all of the brain capacity would be already used". Another person, on the contrary thinks: "we only use a part of our brain, the rest serves as a reserve. We continuously lose brain cells. That means: In the course of our life we use all of them!" Apart from these explanations, the 10% myth is used in advertisement campaigns. Most often it is found in connection with certain new-age brain jogging products, which promise the access to huge unused brain areas- but the sellers profit most from these products.

Other people try to extend their brain capacity by making use of various methods. Thus it has been stated that: "In the traditional Asian meditation techniques the remaining brain percents are used for extending consciousness and as a spiritual exercise". Consequently, we could learn from Zen monks and yogis to use all of our brain. And for those who won't go along with meditation, they could acquire a heightened brain capacity more easily: through drugs like cannabis. Just imagine what could be reached through the extension of brain usage: Thought transmission, extremely high intelligence, as well as telekinesis. The truth, however, is less fantastic. There is absolutely no scientific evidence, which confirms this myth, not even to some extent. Various theories on the origin of this myth exist, but there is no significant evidence to suggest that we only use 10 or any other specific or limited percentage of our brains. On the contrary, **all existing data shows that we use a 100% of our brains.**

Where does this myth come from?

Today it is difficult to determine from whom this myth stemmed, and how it could have spread so widely. However, it can be traced back to the late 19th century in advertisements and brochures for self-help. Not to mention that, Albert Einstein once said to a journalist that he only used 10% of his brain, as an answer to a question concerning his intelligence. This quotation of Einstein, however, has never officially been recorded. The myth then became famous through Dale Carnegie's best-seller "How to Stop Worrying and Start Living" and through Uri Geller, who explained his "spoon magic" by better usage of the brain.

While no brain scientist has ever spoken about 10%, researchers still contributed to the 10% myth. The ignorance, which ruled at the beginning of brain research, could have contributed to the myth. In the 30s, the researcher Karl Lashley explored the function of certain brain areas with electric shocks. These showed up no effects in many brain regions. Hence, he concluded that these regions did not have any

function. Thus, the term “silent cortex” was created. Today, however, this thesis has turned out to be wrong. Another possibility for the origin of this myth is the ratio of glia cells to neurons in the brain, which is 10:1. Glia cells “only” support neurons in their functioning. But it is the neurons that are used for information processing, and thereby for our thinking and feeling.

Possibly, the success of the myth can be ascribed to our hope to overcome human constraints. How great would it be, if there were such an enormous, unused reservoir for us to tap! But there are arguments, that these wishes won't come true.

Arguments against the 10% myth: We use 100% of our brain.

“90% of the brain are continually lying fallow”- a neuroscientist would immediately doubt that this statement is true for the following reasons:

1. Evolution does not allow any wastefulness. Wastefulness causes an exclusion of the gene pool. Like all other organs, our brain has been shaped by natural selection. While the brain only weighs 2% of the total body weight, it uses 20% of the whole energy. Thus, brain tissue is metabolically expensive to grow and run. Regarding these high costs, it is improbable, that evolution would have permitted the wasting of resources on a scale necessary to build such an inefficient and only partially used organ! A brain that only works with 10% of its power would not be worth the high costs and thereby human beings with their large brains would have already been excluded from the gene pool.

2. Examples from clinical neurology show that losing far less than 90% of brain tissue has serious consequences.

Imagine the following horror scenario: a masked man holds his gun onto your forehead and menaces:

“Give me your money or I will shoot!” According to the 10% myth, you would placidly refuse his order, as the chance that the bullet hits a brain area, which you actually use, lies only at 10%. But reality is different: Nobody would risk such an injury. No stroke or other trauma is without (at least shortly) consequences. No brain region can be damaged without leaving a person with mental or physical deficits.

But there are stories about people who lived for years with a bullet in their brain or who completely recover from a stroke. The fact that these people are able to lead a more or less normal life is due to an extraordinary capacity of the brain: its plasticity. The brain is extremely good in compensation. Other nerve cells are able to take over the tasks of damaged nerve cells, like in a soccer game: If one player gets the red card, the other players take over his role and compensate for his absence. Thereby the team probably might not play as well as before, but it can still play and go for goals. It might also look as if the player with the red card (or the damaged part of the brain respectively) actually was not used at all. But it would be unwise to conclude from a compensated function that we only need 90% of our soccer players or 10% of our brain.

3. Special functions of the brain regions are known: It is possible to create a map of the brain-so that it becomes clear that there is not an inactive 90%.

So far, electrical stimulation of parts of the brain during neurosurgery has failed to reveal any dormant brain area where no perception, emotion or movement can be elicited through the application of these tiny currents. (This can be done with patients under local anaesthetic, because there are no pain receptors in the brain). Furthermore, neuroscientists were able to localize psychological functions to certain brain areas with the help of other methods, like EEG (electroencephalography), MEG (magnetoencephalography), PET (Positron Emission Tomography) or fMRI (functional magnetic resonance imaging). Hence, no inactive areas have been observed in the brain. Even during sleep, no brain area is completely inactive. On the contrary, desiderative activity in certain brain regions would be indicative of a serious malfunction.

More references:

Do we really only use 10 percent of our Brains, Scientific American, June 2004.

Related documents:

- [Neuromyth 1](#) (English)
- [Neuromyth 2](#) (English)
- [Neuromyth 3](#) (English)

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