Dr. Rob’s Science Connection -- Enhancing Brain Health

## Five Popular Brain Myths – Part 1

## Issue 11

There are quite a few myths out there about human brains and in this two- part series we will debunk some of the more popular myths.

1. **Myth: We only use 10% of our brain.** This is probably the most striking and well-known myth about the brain. And, we are not exactly sure where or how this myth started. It is not true that we only use 10% of our brains. We use ALL of our brains, and damaging even a small part of the brain can lead to significant deficits.

2. **Myth: Drinking alcohol kills brain cells.** It is a fact that heavy drinking has been associated with cognitive deficits and a type of dementia known as Korsakoff Syndrome, but alcohol does not directly kill brain cells. However, heavy drinking can affect how brain cells communicate with each other, which might lead to cognitive deficits. So, while it is a myth that alcohol kills brain cells, the research suggests we should avoid heavy drinking in order to maximize brain health.

3. **Myth: Medication is our best chance of reducing dementia rates.** While we have several approved pharmaceuticals that are used to treat symptoms of some types of dementia (e.g., Aricept and Namenda), we don’t have any medications that can help by affecting the underlying causes of dementia. Nor do we have a pharmaceutical that can cure dementia by permanently reversing the pathology or symptoms. We have spent billions of dollars trying to find such medications, but we haven’t made much, if any, real progress. In 2018, Pfizer even announced it was halting research designed to find a pharmaceutical to treat dementia, in part because the lack of success and the bleak outlook. This may sound bleak, but there is a plethora of research showing lifestyle behaviors can affect chances of developing dementia.

4. **Myth: We have only five senses.** This is basic, right? We have five senses: hearing, sight, taste, touch, and smell, right? Wrong! If we define a sense as something we have sensory receptors to detect, and a part of our brain then processes those inputs, then we have many more senses. Here are just some of the other senses we have.

1. Pain (sensed by nocioceptors)
2. Heat (sensed by thermoreceptors)
3. Cold (sensed by thermoreceptors)
4. Proprioception or knowing where our body is (proprioceptive receptors)
5. At least 3 types of touch receptors (known as mechanoceptors)
6. Balance (vestibular receptors in inner ear)

5. **Myth: We have 100 billion brain cells.** This myth has been propagated in textbooks and articles for many years, without any reference to a published study. But in 2009, a study was published that estimated the number of *neurons* at 86 billion, give or take. But another myth might have been debunked with the [2009 study](https://www.ncbi.nlm.nih.gov/pubmed/19226510), and that is that we have 10 non-neuronal cells for every neuron. That also has appeared in countless textbooks for years (without scientific references), but the ratio appears to be closer to a 1:1.

Science is self-correcting, we are constantly learning, revising and increasing our understanding of the world. I have no doubt that some of what we think is fact today will be found to be incomplete or wrong in the future. Accepting new knowledge and evidence requires mental flexibility; I suppose doing so is a form of brain exercise that keeps our minds nimble.

In our second installment, we will cover five more popular brain myths.

**Five (More) Popular Brain Myths – Part 2**

1. **Brain training requires video gaming.**

2. **Crossword puzzles can help our ability to make new memories.**

3. **Memory and cognitive ability go on a steady downhill slide after about age 20.**

4. **You are born with all the brain cells you will ever get.**

5. **We are either visual or auditory learners.**

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