

# Debunking Four Common Myths of Psychological Science

February 02, 2022



You hear them so often they must be true! Or are they? Popular myths about the human brain include old chestnuts like people only use 10% of their brains, too much sugar sends kids into hyperdrive, and there are left-brain and right-brain personalities.

How did these beliefs get started and why are they so widespread? Charles Blue and Ludmila Nunes take a skeptical deep dive to explore some of the most common myths about psychological science and the

brain.

These are just some of the facts and debunking you'll find on the Association for Psychological Science's [Myths and Misinformation](#) Research Topic page.

**Unedited transcript:**

**[00:00:12.370] – Charles Blue**

With more than 30 years of working in the field of science communication, I've had plenty of opportunities to debunk myths and misinformation. This includes countering nonsense like the conspiracy theory that we never went to the Moon, trying to change the minds of dedicated flat Earthers and sincere young Earth creationists, and explaining the magical thinking behind homeopathy. This is Charles Blue, and you're listening to Under the Cortex. It seems that no matter what field of science I encounter, there's always more bunk to battle. Which brings us to this episode, where I and my colleague Dr. Ludmila Nunes get to debunk some of the top myths in psychological science. Welcome back to the show.

**[00:00:57.170] – Ludmila Nunes**

Hi, Charles. It's nice to be back. And it's nice to be debunking some of these wrong ideas that people have about scientific facts.

**[00:01:07.430] – Charles Blue**

And the funny thing is, sometimes the more you debunk things, the more people believe them. But we'll give it a good try. For the past two years, you and I have spent a fair amount of time writing about the topic of COVID and vaccine misinformation. Mercifully, we haven't had to deal with the most ridiculous claims out there, like people who think they're now magnetic and they stick spoons on their skin to prove it, which is a trick I used to do in elementary school. Or that there are impossibly small, miraculously powerful, and completely flawless microchips in vaccines. Funny how the people who most fearful of being tracked by these imaginary microchips share their thoughts on this subject with the world on a smartphone that they carry constantly. And it does more than simply track their location. But I digress. Today, on Under the Cortex, Ludmila and I will tackle four persistent yet totally wrong myths about psychological science. Let's start with one that found its way into countless movies and TV shows. Do you know what I'm referring to?

**[00:02:12.010] – Charles Blue**

If I had to guess, is it the one about using only 10% of our brain?

**[00:02:17.830] – Charles Blue**

Ding, ding, ding. Yes, that's it. We only use 10% of our brain, which is, of course, pure bunk, but nonetheless, many people still believe it to be true. It was found, even in 2012, that about 50% of primary and secondary school teachers across many cultures endorse this 10% myth. I got to admit, it's

kind of fun to imagine that if we only had some sort of magic potion or pill or blast of energy, we might unlock vast mental powers, not unlike that 2014 movie Lucy, in which Scarlett Johansson finally unlocks 100% of her brain power to attain amazing abilities. That, as they say, is entertainment. It's interesting, really, because the roots of this myth are kind of unclear. But they may go back to more than a century ago, to a misunderstanding of an article published in the journal Science by William James in which he said something very benign like, we are making use of only a small part of our possible mental and physical resources. Really what he was saying is that we don't often feel fully energized, both physically and mentally. And he in no way claims that we only use a small portion of our brain and clearly was not claiming that most people perpetually use only 10% of their brain power.

**[00:03:43.350] – Charles Blue**

Just a few points. The brain burns about 350 to 450 calories each day. That's about 17 calories per gram of brain mass. Now, that's a tremendous amount of energy. And humans would not have evolved such a demanding brain if it only used a fraction of its power. And of course, with modern medical imaging like Pet scans and fMRIs, we can clearly see the entire brain is constantly active, even during periods of sleep. Anything you want to add to that?

**[00:04:16.530] – Ludmila Nunes**

One thing that I find really interesting about these particular myths is the precision of the number. It's only 10%. And my guess, and some researchers have pointed this out, that some of these myths are more propagated because they are so precise that people actually think they are scientific. This is a good example.

**[00:04:37.690] – Charles Blue**

I've noticed in certain online posts, if you want people to believe that the fraction is correct, you should put something down like 67% or 52%, never even numbers like 50% or 80% because that sounds just too made up.

**[00:04:52.830] – Ludmila Nunes**

Yeah, we are lucky. This one, they didn't say it was 12%.

**[00:04:56.990] – Charles Blue**

That would have seemed very scientific and accurate. Yes, but there are other brain myths.

**[00:05:03.570] – Ludmila Nunes**

Yes, there are so many misconceptions about the brain. One of them that I think it's very accepted by a lot of people is that our right brain does one thing and our left brain does a different thing. So the right brain is connected with creativity, artistic interests, and our left brain is more logical, mathematical, more reason based. And of course, this is wrong. People believe in these, I think, because it's comforting that they can take a test and there are several of these tests online, and then they can

categorize themselves as being left brain or right brain. Now, how these myths originated is also unclear, but it might have been because of some research done in the 1960s that indicated that there are differences between the two hemispheres. And this was very good, valid scientific research, but it was done with patients who had had the corpus callosum. So the thick bundle of fibers that connect the two hemispheres, two brain hemispheres sectioned, so those fibers were cut. Usually this was a last resort treatment for epilepsy. But what happens when you cut those is that you prevent communication between the two sides of the brain.

**[00:06:33.850] – Ludmila Nunes**

So of course, then you can isolate certain processes and certain actions as belonging to one hemisphere or the other. But when we are talking about healthy people who have the two brain hemispheres completely connected, we cannot actually isolate functions that depend only on one side of the brain or the other. So this is clearly a myth, but most people still believe in this.

**[00:07:02.390] – Charles Blue**

I actually have listened to a comedian who refers to her husband strictly as left brain because this person happened to get a doctorate in engineering. And that's the very much, I guess, people would consider that the reason side. So he seems to have difficulty interacting culturally with her friends. So just out of spite or being amusing, calls him left brain. I kind of like that, but has nothing to do with which side of the brain is dominant to the other.

**[00:07:31.330] – Ludmila Nunes**

Hopefully that person did not have the corpus callosum cut and both hemispheres are still connected, communicating and contributing to the same tasks.

**[00:07:44.310] – Charles Blue**

Okay, well, here's a myth we've all heard and probably every parent would assume has some truth to it.

**[00:07:52.490] – Ludmila Nunes**

Is these a sweet example?

**[00:07:54.950] – Charles Blue**

Brilliant, yes. The myth, of course, is that too much sugar makes children hyperactive. So first of all, let me start by saying that too much sugar is absolutely a bad thing. People risk a lifetime of metabolic problems such as obesity and diabetes from the overconsumption of sugar, particularly starting at a young age. But does it also fuel uncontrollable rambunctious behavior and tots? That's tough to say. So let's start by considering observations and correlations and causations. Now, most adults will have seen the chaos at a child's birthday party or Halloween after a night of trick-or-treating. You've got children screaming, running around like maniacs. They have difficulty falling asleep until the eventual sugar crash. So with a little bit of selective memory, we put two and two together and conclude cake, ice

cream and sweets push kids into overdrive. Or did it? What about all these times children were together and acted just the same way? They did, but kids were on a normal diet? When parents attend parties, they may also expect children to be hyperactive. So that can contribute both to children's behavior and then parental interpretation of behavior.

**[00:09:15.890] – Ludmila Nunes**

Exactly. What you're talking about is a classic example of people seeing causation when there is only correlation. And the danger with that is that many, many times, correlations are just spurious. There's a funny example about these spurious correlations, and it has to do with Nicolas Cage movies and pool drownings.

**[00:09:39.450] – Charles Blue**

Uh huh. Okay, where are we going with this?

**[00:09:42.010] – Ludmila Nunes**

So the more films Nicolas Cage makes, the more people drown. And if you look at the numbers, you could possibly infer that Nicolas Cage movies are making people drown. They are a causation for drowns. So on average, 54.5 people drown in a pool for every Nicolas Cage film. This is concerning.

**[00:10:11.130] – Charles Blue**

The man has to be stopped. Clearly.

**[00:10:13.520] – Ludmila Nunes**

Obviously. But this is a classic example of a spurious correlation, because the numbers increase as one increases, the other one also does. But of course, his films are not causing people to drown.

**[00:10:26.080] – Charles Blue**

Just like having kids at an event like a birthday party or an amusement park or Chuck E. Cheese. Sometimes it just doesn't matter what they're eating. But in this case there may actually be another confounding factor. Sugar, which parents attribute this to, is often found with other chemicals like caffeine and sodas and chocolates. So there may be more to this than just children consuming sugar. If you have a sugary beverage like, well, like I always have here at the office, my cola, it also has a bit of caffeine to get me through the day. Another reason people may hold on to this particular myth is the fact that sugar is energy. It certainly is. But the question is what does the body do when it has too much energy? We could take another evolutionary look at things. If our ancestors suddenly found this calorie dense food would they undergo a burst of activity and immediately burn off that energy? No, the body would store it later for use when food was not so energy rich. So not to suggest again that sugar or candy or sweets aren't bad when overindulged, but a bunch of kids at a party may not need additional fuel to burn off steam.

**[00:11:46.050] – Ludmila Nunes**

Yeah, this is an interesting one. Sometimes it's just the excitement of being at a party that makes kids overactive. And I have another one, another myth great. This one is also connected to it can be connected to kids, to students in general and it has to do with learning styles. This belief that people usually have that they will learn better if a material is presented, for example, as a video because they are visual learners or if it is presented in an audio format because they are auditory learners. Or some people might prefer to just read things. Now, why this myth is so pervasive and many, many teachers believe in this is because people have indeed preferences. They have learning preferences but they do not have learning styles. So what's dangerous about this is that these individuals who believe in learning styles, they believe that instruction that matches their preference will always improve their learning. And this can take extreme consequences because when you are an instructor and you have several different students in your class and you try to match their learning styles, how can you choose? There are several studies and so this is my area of research.

**[00:13:15.840] – Ludmila Nunes**

I've done some studies in this area too and what they always show is that matching a learning style or a learning preference to the materials will not provide any benefit. In some cases it might even hurt students because you're not allowing them to put more effort and try to work with different materials than the ones they're used to.

**[00:13:42.390] – Charles Blue**

Well, it seems to make sense, I suppose if you prefer learning by watching videos you may even just be harming yourself because you're assuming you're not going to learn any other ways. And again, you're saying this is just a preference. It's not really something that's intrinsic as saying a person learns better one way or other naturally, but they are maybe psyching themselves out or talking themselves out of being able to learn from more variety of modalities.

**[00:14:09.950] – Ludmila Nunes**

Yes, and the variety of modalities can actually help people learn more.

**[00:14:14.610] – Charles Blue**

Well, with that in hand, I think we have tackled a fair few myths. I think we have somewhere in the order of about 30 or 40 more that we could probably go down the path, but we will save those for another day. So I would like to thank you, Ludmila, for joining me once again on Under the Cortex. Thank you Charles, and absolutely looking forward to talking with you again and we'll see if we can come up with some additional myths to debunk. And I also want to say that we have on our website [psychologicalscience.org](http://psychologicalscience.org) our research topics and one of them is myths and misinformation, where you can find some commentary about these and research about other myths and misinformation topics that are out there in the world today. So once again, thanks for joining me.

**[00:15:00.460] – Ludmila Nunes**

Thanks for having me. Charles.