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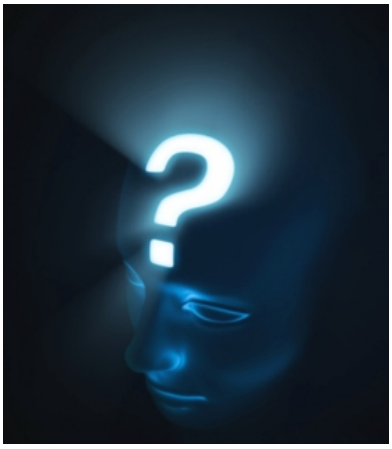
Mind & Brain » Special Editions Volume 23, Issue 5s » Features

Five Common Myths about the Brain

Some widely held ideas about the way children learn can lead educators and parents to adopt faulty teaching principles

Jan 1, 2015 |

MYTH HUMANS USE ONLY 10 PERCENT OF THEIR BRAIN
FACT The 10 percent myth (sometimes elevated to 20) is mere urban legend, one perpetrated by the plot of the 2011 movie *Limitless*, which pivoted around a wonder drug that endowed the protagonist with prodigious memory and analytical powers. In the classroom, teachers may entreat students to try harder, but doing so will not light up "unused" neural circuits; academic achievement does not improve by simply turning up a neural volume switch.



Credit: Kiyoshi Takahase segundo

MYTH "LEFT BRAIN" and "RIGHT BRAIN" PEOPLE DIFFER
FACT The contention that we have a rational left brain and an intuitive, artistic right side is fable: humans use both hemispheres of the brain for all cognitive functions. The left brain/right brain notion originated from the realization that many (though not all) people process language more in the left hemisphere and spatial abilities and emotional expression more in the right. Psychologists have used the idea to explain distinctions between different personality types. In education, programs emerged that advocated less reliance on rational "left brain" activities. Brain-imaging studies show no evidence of the right hemisphere as a locus of creativity. And the brain recruits both left and right sides for both reading and math.

MYTH YOU MUST SPEAK ONE LANGUAGE BEFORE LEARNING ANOTHER
FACT Children who learn English at the same time as they learn French do not confuse one language with the other and so develop more slowly. This idea of interfering languages suggests that different areas of the brain compete for resources. In reality, young children who learn two languages, even at the same time, gain better generalized knowledge of language structure as a whole.

MYTH BRAINS OF MALES AND FEMALES DIFFER IN WAYS THAT DICTATE LEARNING ABILITIES
FACT Differences do exist in the brains of males and females, and the distinctive physiology may result in differences in the way their brains function. No research, though, has demonstrated gender-specific differences in how networks of neurons become connected when we learn new skills. Even if some gender differences do eventually emerge, they will likely be small and based on averages—in other words, they will not necessarily be relevant to any given individual.

MYTH EACH CHILD HAS A PARTICULAR LEARNING STYLE
FACT The notion that a pupil tends to learn better by favoring a particular form of sensory input—a "visual learner" as opposed to one

who listens better—has not received much validation in actual studies. For this and other myths, public perceptions appear to have outstripped the science. Uta Frith, a neuroscientist who chaired a British panel that looked at the promise of neuroeducation, urges parents and educators to tread cautiously: “There is huge demand by the general public to have information about neuroscience for education. As a consequence, there's an enormous supply of totally untested, untried and not very scientific methods.”

SOURCES: *Mind, Brain, and Education Science*, by Tracey Tokuhama-Espinosa. W. W. Norton, 2010; *Understanding the Brain: The Birth of a Learning Science*. OECD, 2007; OECD Educational Ministerial Meeting, November 4–5, 2010