

The Power of the Adolescent Brain: A TAG Talk

Transcript — Segment 1: The Power of the Adolescent Brain

Frances Jensen:

Hi, I'm Dr. Frances Jensen. I'd like to talk to you today about the teen or adolescent and young adult brain. Aside from being a neurologist and a neuroscientist working on brain development, I am also the mother of two teenage sons. I watched them change dramatically as they passed from childhood into adolescence. This led me to look at what is going on with the teenage brain, what's the new literature, what's the new research.

What I found was that until very recently, little was known about the teenage brain. Work had been done on early life changes and also on the aging brain, but this middle ground had been less studied. In the past decade, we've learned that the brain is the last organ in the body to reach full maturity. Therefore, in the adolescent period, it is not done yet.

Two major things are different about the adolescent brain. One is that our brain regions connect together by tracts, but that process doesn't complete until your mid to late-20s. It starts from the back and goes to the front, so the last part of your brain to reach full connectivity is your front lobe. The frontal lobe is there to suppress impulses, suppress risk-taking, make decisions, organization, judgment, empathy, all things that adolescents tend to be challenged by.

The other part of science is that we now know that each brain region itself is actually more active in childhood and adolescence than it will be later in life. Their capacity to learn is higher in adolescence than it is later in life. This is an actual wondrous time in development where people can learn faster. In fact, your IQ can even change in the adolescent years.

Our brain cells learn by increasing the strength of connections between them at a place called a synapse. In fact, children and teenagers have more synapses than adults. They have more of the machinery to actually learn with. This is positive because it means that you can learn and work on your strengths, and correct your weaknesses, during adolescence. But it also suggests that their brains may be vulnerable to the effects of negative, not just positive, things.

This is basically increasing our understanding of how the adolescent brain is more vulnerable to addiction or to the effects of substances of abuse, or even stress, during this window.

[Reeds 03:06] of our brain connect to each other through connections that actually have to be insulated, like a wire would be insulated, to have fast connections, fast real-time connections. This process is a wrapping process that we insulate our connections with something called myeline. The myelination of the brain takes almost two and a half decades. Hence, the last place it's connected, since it's going from the back to the front, is the frontal lobe. This is where teenagers and adolescents have less connectivity relative to adults. Hence, they don't necessarily have the ability to have real-time access for decision-making, impulse control, judgment, and empathy.

I will talk more about teen behavior, addiction, mental health, and how parents and other adults can apply this knowledge to their interactions with adolescents. For more information on teenage brain development and adolescent brain development, please take a look at these websites and resources. Thanks.