

Brainstorm: The Power and Purpose of the Teenage Brain, by Daniel Siegel, M.D.

First – please be aware that this is a *secular* and *scientific* view. Dr. Siegel comes from an *evolutionary* point of view, not a Christian view; however, the realities he explains do tell us about how fearfully and wonderfully God has created our minds and brains! And I believe the information is still useful for us.

Myths about adolescence:

1. Myth: Adolescence is a terrible time that you hope you can just get through.
Truth: Adolescence is an opportunity for growth through learning about yourself.
2. Myth: Adolescence is a time when your hormones are raging out of control.
Truth: While there are changes in hormones, the changes in the way adolescents think and feel is more about changes in the **brain**.
3. Myth: Adolescence is a period of immaturity and we don't mature until the mid-20's.
Truth: Adolescence is a necessary period of growth and change.
4. Myth: Adolescents are impulsive.
Truth: The adolescent brain processes the "pros" and "cons" of situations differently.

Brain basics:

"Handy" model of the brain (<http://www.youtube.com/watch?v=DD-lfP1FBFk>)

- Spinal cord brings signals from the body up to the "head brain".
 - Brain stem (awake states, fight/flight/freeze response)
 - Limbic area (emotion, motivation, appraisal, memory, attachment)
 - Cortex (maps of the outside world, internal world of ourselves and others)
 - Middle prefrontal cortex – connects all of these together (more below)
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- Mental health consists of *integration* – linking differentiated parts of the brain and mind so that none of them is over-functioning, but they work together in harmony.
 - Neuroplasticity is the ability of the brain to change and grow over the lifespan.
 - Experience (interpersonal experience, practice, repetition, etc.) changes and strengthens the structure and function of the brain ("Neurons that fire together wire together.").
 - Reflective ("mindful awareness") practices are one form of experience that stimulates growth of the integrative middle prefrontal cortex.
 - Interestingly, the same circuits that enable insight into oneself also enable empathy for others.
 - Developing this capacity (what Siegel calls "mindsight") strengthens nine *integrative* functions of the middle prefrontal cortex: body regulation, attuned communication, emotional balance, response flexibility, empathy, insight (self-knowing awareness), fear modulation, intuition, and morality.

Changes in the brain during adolescence:

The brain is changing in ways that causes adolescents to push back on the adults that raised them. Reasons:

- To prepare them to leave the nest.
- To prepare them to go out in to the world and creatively problem-solve (in new ways – not just the same way the adults in their lives have done them).

Ways that the adolescent brain functions differently from a child or adult:

- Dopamine levels
- "Hyper-rational thinking"
- "Pruning"
- "Myelination"

The “ESSENCE” of adolescence:

- **ES = Emotional Spark** – more signals coming from the limbic area, brainstem, and body are creating emotion and passion that influences the reasoning of the cortex.
- **SE = Social Engagement** – changes in signals from the brainstem and limbic area cause adolescent to begin looking to peers for connection.
- **N = Novelty-seeking** – changes in dopamine levels motivate adolescents to seek new experiences.
- **CE = Creative Exploration** – adolescents are pushing against the status quo and imagining creative solutions to the world’s problems.

Dr. Siegel, in his book “**Brainstorm . . .**”, talks about how developing “mindsight” (through mindful awareness practices) can help both parents and adolescents navigate these features of the second dozen years of life – in a **positive** way.

This book is written for both **parents and adolescents**. It is intended to help parents understand their adolescent children – and to help adolescents understand themselves better.

All information taken from Dan Siegel:

- Book: *Mindsight: The New Science of Personal Transformation*. This book discusses in “lay” terms how integration in our minds/brains leads to mental health and well-being.
- Book: *The Mindful Brain: Reflection and Attunement in the Cultivation of Well-Being*. This is a more technical text that goes in-depth regarding reflective practices and how parts of the brain that are affected by it.
- Website: www.drdansiegel.com
- Various YouTube videos featuring Dr. Siegel

Other books by Dr. Siegel:

- *The Whole-Brain Child: 12 Revolutionary Strategies to Nurture Your Child’s Developing Mind* (with Tina Payne Bryson)
- *Parenting from the Inside Out: How a Deeper Understanding Can Help You Raise Children to Thrive* (with Mary Hartzell)

Helpful videos:

- Brain basics and neural integration: <http://www.youtube.com/watch?v=LiyaSr5aeho>
- What is “mindsight”: http://www.youtube.com/watch?v=rP_06n5y72g
- The importance of mindfulness: <http://www.youtube.com/watch?v=FXxrJEnlboM>
- Integration as mental health: <http://www.youtube.com/watch?v=0TK62FdzzTs>
- Developing “mindsight”: <http://www.youtube.com/watch?v=v2pdN7dQIgM>
- Myths of adolescence: http://www.youtube.com/watch?v=2_sugwAnDLM&feature=youtu.be
- Brainstorm talk: <http://www.youtube.com/watch?v=uhCB-XZOYnY>

Dr. Siegel – blog on “The ESSENCE of Adolescence”:

- <http://drdansiegel.com/blog/2014/02/07/the-essence-of-adolescence/>

Radio interview with Dr. Siegel about “**Brainstorm . . .**”:

- <http://publicradiotulsa.org/post/medical-matters-brainstorm-new-understandings-adolescent-brain> s