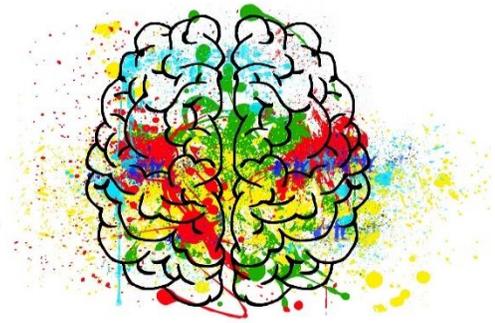


# Grown-Ups Guide to the Adolescent Brain



## *It's still under construction*

The Prefrontal Cortex that manages big-picture thinking, judgment, impulse-control, self-reflection, emotional self-control, empathy, organization, planning, and prioritizing, isn't fully developed until one's mid 20's. Our teenagers' brains are basically like shiny Ferrari's built for speed and full of gas, without the brake system fully installed yet! Our kids with neurological differences i.e. ADHD or Autism, typically have even slower growing neural connections in the PFC. Trauma and stress, and adolescent substance use can also stunt the growth of these crucial connections.

**What it looks like in our kids:** A tendency towards impulsivity, and an inability to see all the potential risks of their actions, how they could turn out for them, or impact others. Our tweens/teens are also more naturally challenged than adults with attention, self-discipline, task completion, organization and emotional management.

## *What fires, wires & They use it or lose it*

Adolescents are at their ripest time of learning since toddlerhood and undergoing a massive remodeling process. Their brains are jam-packed with neurons waiting to be wired together. The very ripest periods are around age 11 for biologically female brains and 14 for male ones. The brain cells that are fired up and used, hardwire together as long-term connections, especially if used repeatedly. The smarty-pants word for this is "neuroplasticity." "Mirror neurons" have been shown to develop these neural connections simply by our kids' repeatedly *observing* others' actions.

What doesn't get used during these formative years is then "pruned" away, to create a more efficient "mental machine." This sorting, sifting, and solidifying of brain cells and learning happens most during deep REM sleep. Lost or destructive connections can be rewired in adulthood but take more work.

**What it looks like:** Since what our tweens and teens engage in, think about, listen to and watch absorbs deeply, they can learn a language, skill, or pick up a long-term habit much easier than we can as adults. Learning acquired during this time is thus likely to stick, become our kids' "defaults" and be resistant to unlearning later...which can be a good or bad thing. This makes adolescents at high risk for addictive relationships with behaviors or substances they use with regularity.

## *"Threat alarms" are extra-reactive*

The amygdala, in the middle of the brain, serves as our animal instinct threat alarm, telling us to fight, take flight, or freeze to protect ourselves from danger. These alarm systems are extra-reactive in our teens/tweens, misperceiving things as aggressive physical, social or emotional dangers and thus registering them as survival threats. When activated, their problem-solving and big picture "thinking brain" and communication centers go "off-line" and are inaccessible to them. As Dan Siegel says, they "flip their lids."

**What it looks like:** What we experience as "over-reactivity," "over-sensitivity," and "over-dramatics." Reactions seem out of proportion to events, and they'll misperceive people as angry or "yelling at them" when they're not. "Using their words" and processing is hard for them when they're upset, and they can explode or shut down as a result.

## *Feel goods feel extra good*

Dopamine is our brains' natural "pleasure chemical," activated when we do something exciting, fun, and pleasurable enough to repeat again. It's also involved in learning and synthesizing memories, so things that spark dopamine are more likely to "wire" strong brain connections. Kids have a natural dip in dopamine during adolescence, so they're craving thrilling experiences. When it does pop off, it does so in extra big bursts. Nothing will ever feel as good or be remembered as well as when you were a teenager!

**What it looks like:** A gravitation towards "thrill-seeking" and novel experiences. Adolescents will repeat "poor" choices that had negative consequences, if the fun, pleasure and belonging they brought are seen as "worth it."

## *"Russian Roulette" Thinking & Risk-Taking*

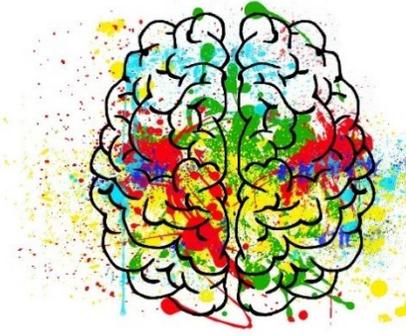
Believe it or not, our tweens/teens actually have "hyper-rational" thinking! Without the wiring or lived years that form big-picture thinking, they tend to make choices based on the *likelihood* of a negative outcome over the possible severity of that outcome.

**What it looks like:** Despite knowing and not wanting the possible consequences of an action, tweens/teens are still likely to choose it if it's more likely to bring them desired outcomes like fun, belonging or relief of stress.

## *Hormonal Chaos*

Reproductive hormones of estrogen, progesterone and testosterone are bursting unpredictably into our pubescent kiddos' brains and bodies, creating havoc in mood fluctuations, along with the science fiction-like changes to their bodies. Their stress hormones are also extra-responsive. Cortisol is higher than in adulthood, particularly for girls, and stays fired up longer. THP is another hormone that has a calming effect on adults, but actually can stir up extra anxiety in teens.

**What it looks like:** Unpredictable and seemingly nonsensical mood swings, that can be significant enough to look and feel like mood disorders, or even trigger them during adolescence. There's an awkwardness in their bodies, and constant self-consciousness and inner narrative of self-judgment that contributes to stress and moodiness.



## ...And How to Parent It

### *Empathize, validate, and empathize some more*

Our teens aren't being "over-dramatic" - they're being flooded with unregulated emotions, unpredictable hormone bursts, and social interactions that register as survival threats all day. They're thus understandably self-consumed and unable to see the big picture beyond it all. Keep in mind they're even more puzzled and frustrated by their feelings and behaviors than we are! When we judge, mock, or invalidate this with reminders that "it's not the end of the world," it fuels the fire and damages their trust in us. Try phrases like "That sounds really hard," or "I see why that would hurt your feelings." Once their "lid is down" they may be receptive to being shown a wider perspective.

### *Avoid personalizing and indignance*

With all that we do for them - the endless sacrifices of time, money and energy - and all the ways that we constantly express how much we care, how can they be so inconsiderate, disrespectful and unappreciative?! Do NOT take it personally. Remember, their undeveloped PFC's are *incapable* of seeing all that is going into raising their difficult selves or very far into their impact on others yet. It'll all be clear to them someday...especially if they parent! Meanwhile...after you validate how difficult their feelings appear, letting them know how their actions feel to you is important in helping their empathy continue to develop.

### *Chill and "co-regulate"*

What our kids need most when they are feeling overwhelmed and out of control of their emotions and actions, is for us to remain steady pillars of support and lighthouses of guidance to help them regain a sense of stability. When we escalate with them, it only feeds their sense of "dysregulation." On the other hand, focusing on and modeling our own calm influences their nervous systems to chill out (called "co-regulation"). Take deep breaths and return to empathizing and validating.

### *Our modeling is crucial*

With our kids' mirror neurons unconsciously wiring what they see and experience from us, there's a big chance they will indeed "do what we do, *not* what we say." Let them see your healthy coping tools in action! This is also inspiration for us to do what's needed to change things about ourselves that we don't want our kids repeating themselves.

## *Don't ask "why?"*

We have an unrealistic habit as adults of asking our kids "WHY did you do that?!" or "What the hell were you *thinking*?!" and expecting logical and insightful answers. Because our kids' processing brains aren't "online" when they have overwhelming emotional input, they will likely struggle to truthfully answer those questions well into teen-hood. We're more likely to get helpful responses by asking what they were *feeling*, or what was *happening* for them when they made a certain choice.

They're not as good at learning from mistakes, so we can help. Not by telling them how they screwed up and the "moral of the story," but by guiding *them* to focus on problem-solving what they need to do to make things right and what they can do next time they're feeling that way, or in a similar situation. This helps them form and strengthen those neural connections in their PFC's, as does using real stories to help illuminate consequences and a broader perspective.

## *Moderate and disassemble exposures*

What our kids experience and are exposed to during these neurologically ripe years matters. This requires our being as conscientious as possible with screening and guiding the media they're exposed to, and helping them disassemble potentially toxic messages to prevent wiring unhealthy beliefs about themselves, others and the world.

## *Support healthy habits and activities*

Support your tweens/teens in developing healthy patterns around eating, sleeping, and self-care, as well as steer them towards positive outlets and coping tools for tough, uncomfortable, and overwhelming thoughts and feelings. Coping skills and mental attitudes like "growth mindset," mindfulness, gratitude practices, and breathing strategies for relaxation instilled now could last a lifetime. When we model and/or engage in these things with our kids, they stick even more. The more these needs are met in healthy ways, the less likely they are to turn to unhealthy means of meeting them.

## *Repetition facilitates learning*

Help our kids wire helpful habits by encouraging repetition. Having them write down things to be remembered, repeating information out loud, creating checklists, calendars, alarms, all help to train adolescent brains to remember and develop routines they'll eventually default to.

## *Support risk-managed excitement*

to be

## *Foster brain growth*

It's recommended that adolescents get at least eight hours of sleep for optimal brain growth and learning (which only about 15 percent of U.S. teenagers are actually getting). If they really want to rock that big test, dance performance or football game, they need to not only get a particularly good night sleep the night before, but also the nights after they study, practice and train. States of brain rest also help solidify learning into long-term memory, which mean low-stimulation screen-free quiet downtime that rests brain activity, like walks, art or meditation. It's also important we help them get adequate brain-feeding nutrition and plenty of omegas, B vitamins, and protein, among others.

## *Avoid brain-stunters*

Heavier adolescent substance use, gaming, social media use and porn viewing have all been shown to disrupt PFC growth and activity, so helping our kids avoid and moderate these during prime brain development are battles worth fighting.

## *They need us to set limits*

Our tweens/teens need us to set boundaries for them with everything from sugar to gaming to sleep to phone activity because their brains aren't fully capable of it yet, and their health and safety is on the line. Think of the bumpers at the bowling alley, designed to keep them from "going in the gutter!" We set it up like scaffolding on a building, serving as their frontal lobes for them, and gradually pulling back as we help them grow their PFC's and observe their trustworthy decision-making skills.

## *Do it NOW*

THIS is the time when our kids get the most impact from support for learning and emotional/mental health issues. If you have concerns about either, don't wait until it's worse. The longer self-destructive or problematic behaviors, thoughts and feelings persist into adolescence, the more likely they are to be resistant to change.

## *Positively frame vs pathologize adolescence*

We tend to notice the things that frustrate or scare us about adolescent brain changes, which often distract us from recognizing the wonderful intensity, playfulness, zest for life, daring, and creative exploration our adolescents possess. Qualities that we unfortunately tend to lose as we age. When we pathologize our kids' "crazy brains" or talk about "surviving the teen years" instead of celebrating and taking advantage of these, we create a wedge between them and us. And they need to feel us close and supportive during this time. Their most exasperating and dangerous features can also be seen as potential keys to their success. It's all in how we guide them.

## References

- The Teenage Brain - *Frances Jensen*
- Brainstorm: The Power and Purpose of the Teenage Brain - *Daniel Siegel*
- Age of Opportunity: Lessons from the New Science of Adolescence – *Laurence Steinberg*
- "Beautiful Brains" by *David Dobbs*, National Geographic, Oct 2011