Chapter 16

# Raising Adolescent Kids: The Storm Before the Calm

"Youth are heated by nature, as drunken men by wine."

—Aristotle

I have two children ages thirteen and sixteen. I can be totally objective and unbiased when I say they're pretty terrific. They're sweet souls whose bodies, minds, emotions, behaviors, and brains are in a state of rapid-fire change. As a parent, I'm now navigating the perfect storm of adolescent behavioral management (somewhat of an oxymoron). So are my children. In researching the neurobehavioral breakthroughs of recent years, I couldn't help but contemplate the implication for parents raising adolescent children.

If you have already raised children through adolescence, kudos! You may find yourself reading this chapter, looking back on your experiences, and thinking, "Yes. That explains a lot of what I experienced!" If you have children that haven't yet reached adolescence, now might not be a bad time to start a support group.

While I'm a proud and loving parent who desires to have full control over my children's destiny, I've reached the sobering conclusion that the true CEO is the brain that sits in my teenagers' heads. Instead of repeated and

frustrating attempts to understand their behaviors, I have chosen to understand better their CEO.

I am not their CEO. And you, despite your most loving intentions, are not your adolescent kid's CEO either. That's not to dismiss the significance we make in the lives of our kids who are riding this emotional roller coaster. We've all been there ourselves. Remarkable isn't it? Somewhere between experiencing this stage and aging to the point of parenting adolescent children, we've crossed the great generational gap. Just as we want to use our knowledge to exert more influence, we see our teenager's brain trumped by capricious and insatiable drives for independence, social stability, and reward-satisfaction. And that's okay. The behavior that we universally observe in our adolescents is necessary en route to developing a better compass for navigating the uncertain and capricious waters to come.

My objectives in this chapter are:

- To briefly examine current understanding regarding the neurobiological underpinnings of puberty and adolescent behavior.
- To review the nature of behavioral risk-taking that reflects the rapidly evolving biology of puberty as it races ahead of the CEO's ability to provide more rational oversight.
- To contemplate the parental implications made possible by examining adolescence from a mind-emotion-brain-behavior-body (ME-$B^3$) perspective.

Historically it was thought that we were born with a full complement of brain cells. The accepted premise was that these cells, neurons, and synapses solidified themselves into a "fixed" pattern of structure and function by early childhood, gradually dwindling in number and function as we age. More recent research in brain development has revealed a much more dynamic process than once thought. Consistent with the themes I've examined thus far, this dynamic process continues actively to adapt and change during adolescence and early adulthood. The implication is that of the dramatic potential for plasticity and adaptation in a brain that was once thought to be in its completed state.

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other stage, molding and configuring more significantly in response to a growing repertoire of experiences and to the environment. This, from a parental perspective, points to "ripeness" in the potential for influence (influence = power), despite not having complete control of your child's CEO. This makes us more like the chairman of the Board of Trustees that provides fiduciary oversight of the CEO. You get the picture.

Dr. Jay Giedd and Dr. Judith Rapaport, at the National Institute of Mental Health (NIMH) in Bethesda, MD, with colleagues from McGill University in Montreal, studied the brains of kids using MRI imaging at two-year intervals. What they found was very interesting. While much of the brain is fully developed by age six, there remain areas that continue to change significantly well into late adolescence (adolescence as arbitrarily defined by ages ten through twenty). In babies, there's actually an overgrowth of neurons (brain cells) and synapses (spaces between cells where transmitters communicate to many other neurons), followed by a reduction of some of these cells and synapses that are not in regular use by the age of three. It would appear early on, that we begin to unload that which doesn't serve us.

What was also seen, and of some surprise, was that a similar overgrowth of cells and synapses occurred again just before puberty (age eleven for girls and age twelve for boys). This proliferation occurred in the prefrontal cortex, that area in the brain behind our forehead. It's as if the brain's garden is suddenly fertilized, watered, and in receipt of abundant sunshine. Then during adolescence, the frontal lobes demonstrate a "pruning process," in which—as in early childhood—there is a systematic trimming back of the branches and leaves that are not selected for use (note the word "selected").

As the garden is pruned back in adolescence, the neurons are wrapped in a protective coating called myelin or white matter. This has the effect of strengthening the connection between the signals passing from one neuron to the next. It's kind of like going from a telephone modem to broadband cable modem or DSL. Another interesting observation involves the cerebellum, located in the back of the brain, just above the top of your neck. This region has always been thought to regulate motor or muscle function, coordination, and balance. In adolescence, the cerebellum—in addition to the prefrontal cortex—shows some evidence of change. It "lights up" when kids are asked to perform mental tasks. It may be that the cerebellum functions as a co-processor, assisting frontal lobe activity in its cognitive capacity.

Please note that this stage of growth and refinement is occurring primarily in the prefrontal cortex. And recall that the prefrontal cortex is the CEO's office, controlling, planning, reasoning, thinking abstractly, surveying, and managing emotional and behavioral impulses. Interestingly, teens with schizophrenic behavior—characterized by disordered thought and impairment of impulse control and reasoning—have been found to have significant loss of gray matter in the prefrontal lobes. Other regions of the brain proliferate and prune as well, though these regions seem to complete this task at a younger age. For example, areas of the brain responsible for language and spatial orientation (temporal and parietal lobes respectively) show few changes beyond the age of twelve.

## CRITICAL OBSERVATION #1: THE PREFRONTAL CORTEX OF AN ADOLESCENT IS NOT QUITE READY FOR PRIME TIME

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Our challenge as parents is to recognize this as a time of both great vulnerability as well as great opportunity. A better understanding of the biological underpinnings of adolescence may help explain how your sweet, affectionate, and empathetic Sunday school role model has been transformed, seemingly overnight, into a sullen, labile, indifferent, withdrawn, unpredictable, and ghastly caricature from a Tim Robert's movie. But there are also important parental and public health implications in understanding the effects of the neurobiological process on adolescent behavior.

Though most adolescents do just fine during this volatile and capricious developmental stage, there are consistent themes in adolescent behavior patterns that are universally expressed in all cultures:

***An increase in time spent with peers and a decrease in time spent with family***
I no longer take this personally. My kids once considered me a walking Mardi Gras; now they desire to spend less time with my wife and me. A strong drive to venture away from the nest is a necessary right of passage to assure survival without parental dependence. From a developmental success perspective, he or she with the most solid network of social connections and placement on the hierarchy of social status will be at an advantage. As I've discussed in pre-

vious chapters, these social networks continue to serve us well throughout life both mentally and physically. There is a clear health advantage to deep and meaningful social connection. My teens perhaps are just jockeying for a better position as adulthood approaches. Anyway, I simply can't compete with cell phones, the Internet, and the ubiquitous Instant Message systems.

***Your teen's capacity for empathetic expression may be conspicuously lacking.*** In the chapter on conflict management, I introduced the recent discovery of "mirror neurons," which are concentrated in the frontal lobes and able to create patterns of brain activity that allow us to "feel" the experiences of others. Intuitive skills like reading the faces of others—expressions that signal fear, fatigue, worry, and weariness—are not fully refined in the adolescent. You may have noticed that your teen's awareness of and response to what may be an obvious need and empathy-inviting opportunity—helping with chores, assisting a sibling, problem solving a family issue—are underwhelming, to say the most. When you may feel most in need of empathetic support, your terrific teen may simply not "read the landscape." Instead of saying, "Mom you look tired," you hear, "Can I have the keys, I'm in a hurry?"

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This is not to say that empathy is totally lacking in adolescents. I'm sure some of you are thinking, "Not my kid, he/she is sensitive." Sensitivity and empathy are different in nature. The catharsis of self—so strong in adolescence as the drive for independence strengthens—will limit abstract interpretation of the circumstances they confront. The anterior cingulate gyrus, deep in the prefrontal cortex, and the limbic structures, both important in the expression of empathy, have not yet completely networked. As a consequence, an adolescent may be very sensitive (not wanting to hurt another) and yet need help recognizing the opportunity to extend that sensitivity (reading the angst on another's face). This is another example of a developmental process that can be both a source of hurt and opportunity—an opportunity in that plasticity can help to sculpt a teen's awareness of others' perspectives, thoughts, and feelings. More on this later in the chapter.

***Increased risk-taking and exploration***

There is a sobering paradox in the life of an adolescent. On one hand, they boast the healthiest burst of bone development, muscle mass, energy, stamina, learning capacity, speed, reaction time, and immune function than at any other time in life. They are also at a 200 to 300 percent increased risk for mortality compared to kids less than the age of ten. And not surprisingly, the common causes of serious injury and mortality in teens are the result of high-risk behaviors:

- Accidents
- Recklessness
- Alcohol and substance abuse
- Suicide
- Depression
- High-risk sexual activity
- Homicide
- Eating disorders

Substance abuse, for example, has been on a rising trend in the U.S. Estimates suggest that approximately 50 percent of high school seniors consume alcohol at least once per month. By the time teens reach eighth grade, nearly 50 percent have had at least one drink and 20 percent have been "drunk"! It is estimated that 17 percent smoke cigarettes, the quintessential bane of health promotion efforts. Use of heroin and methamphetamines is increasing at an alarming rate. Of equal concern is that teens perceive less risk associated with these behaviors in recent years (from 20 percent in 1999 to 40 percent in 2004 perceive less risk).

We've all been there, and most of us—but not all—have been spared our lives and have avoided significant disability. There's a fine line between taking risks as a biologically driven desire to learn and experience and foolishly risking life and limb. A complete and wise frontal lobe would sure come in handy when such risky decisions are contemplated. As Ronald Dahl, MD, from the University of Pittsburgh once noted, "Adolescents make a lot of decisions that the average nine-year-old would look at and say, that was a dumb thing to do."

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## CRITICAL OBSERVATION #2: AS THE ONSET AGE OF PUBERTY DECREASES, THE DURATION OF ADOLESCENCE INCREASES

If you study what happens during puberty, you can begin to separate hormonal-induced behavioral drive from those that are more a manifestation of a brain that needs more time and experience. In other words, some behaviors are a direct manifestation of puberty itself (the nature aspect) and others reflect the shortcomings of an executive center that needs more time and mentoring (the nurturing aspect).

You may have noticed that puberty is occurring at a younger age. In the U.S., for example, the average age of menarche has decreased from fifteen to sixteen in 1800 to twelve and a half. Also, by the age of ten, breast and pubic hair development was seen in two-thirds of Euro-Americans and in 95 percent of African American girls.

As it is, the maturing process of the brain continues into the late teens and early twenties. With the onset of adolescence now occurring much earlier, the span of time that teens remain vulnerable to risk-taking behavior is increasing. Or you might say that the puberty-driven penchant to engage in risky sexual behavior, for example, is getting further ahead of the prefrontal cortex's ability to rein it in.

Puberty is defined by changes in male and female reproductive hormones. The hypothalamus in the center of the brain sets this cascade in motion, releasing a hormone called GnRH or gonadotropin releasing hormone. This stimulates the pituitary gland to produce FSH (follicle stimulating hormone) and LH (luteinizing hormone). These hormones stimulate estrogen release by the ovaries in women and testosterone release by the testes in men. Breast and testicular development begin. The adrenal glands (the same organs involved with fight-flight in their production of cortisol and adrenalin) are stimulated to enhance more androgen production. This contributes to pubic and axillary (armpit) hair growth. It is in this perfect storm of reproductive development that romantic desire, risky behavior, and reward-seeking are taken to hitherto unrecognized levels, threatening to overwhelm the executive center's capacity to effectively manage. Bring back any memories?

As if that wasn't enough, the pituitary gland also produces a surge of growth hormone resulting in dramatic changes in stature, muscle mass, bone development, voice, etc. These dramatic physical changes when combined

with changes in sexual development may themselves elicit an "external" response from others, affecting thought and emotion. Thoughts like, "Wow, people find me attractive," or emotions like, "I thought we were just friends, now I'm confused by the mixed messages I'm receiving." Remember the profound capacity for thought and feeling to affect behavior. You can appreciate why I refer to this as "The Perfect Storm" of behavioral navigation. It can also be "The Perfect Storm" of parenting.

## CRITICAL OBSERVATION #3: ON THE ADOLESCENT RACETRACK OF LIFE, THE ENGINES HAVE STARTED BUT THE DRIVER HASN'T COMPLETED TRAINING

***Adolescents experience an increase in conflicts with authority.***
I know this comes as a shock to you. I know I never conflicted with my parents (ah, the beauty of memory distortion). Now I try to see the behavior from a human developmental perspective. This allows me to transform an experience I could easily take personally to one that's attributed to a specie-necessary survival skill.

There's clearly a necessity for adolescents to "push themselves away" to grow and learn outside the predictable and boring confines of the nest. Adolescents (not unlike adults) also need to establish self-interest-based ego-satisfaction as they jockey for a higher place on the mythical ladder of popularity. (Though ultimately, it will be important to learn the difference between popularity, which so sweetens the feedback of our reward response, and relationships that support on a deeper and more health-promoting level. In other words, the difference between being liked and being sustained.)

Conflict is an inevitable byproduct of this need to establish an individual position of approval, acceptance, affirmation, and affection. The perception is that there's a lot of competition out there—so many teens, transiently and peripatetically, willing to assume risk to satisfy sensation—seeking and reward-craving drives. The "ignited passions," as described by Robert Dahl, MD, are lit by puberty and accompany a whirlwind of activity in the amygdala-limbic areas, resulting in emotional impulses that can quickly take over the race car, particularly when the track gets challenging. An amygdala-limbic highjack of a still vulnerable prefrontal cortex can set the brush of conflict in motion, quickly consuming the landscape in its path. Ignited passions

proliferate at a time when planning, logic, reasoning ability, inhibitory control, and problem-solving skills have not fully developed. While your driver's race car is poised to speed into the emotional-motivational-reward wind tunnel, your race-car driver is mostly untrained and without a map. Expect collision to look like conflict.

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As an aside, male teens and female teens demonstrate behavioral patterns in response to conflict that sometimes look different. While young men will tend to engage fight-flight, settling the conflict in a vacant lot, young women understand that the best way to seek revenge is to undermine the social stability of the adversary. For young women, it's social. For most guys, it's force or alpha-like behavioral domination.

Another paradox here is that most adolescents by age fifteen can sit down, take a computer-generated test, and generate adult capacity for abstract thought, reasoning, and decision-making. However, when "test" conditions are reproduced in "the wild," the multidimensional and spontaneous world out there, these competencies break down. When my teens appear dysfunctional in their emotional and interpersonal skill capacity, I see less rebellion and more a need to offer guidance. After all, they're victims of cognitive delay, unable to effectively manage the emotional catapult of puberty. Unfortunately we cannot use this excuse as adults.

## CHANGES IN SLEEP PATTERN

The neurobehavioral basis for the alteration of sleep-wake patterns in our teens is still not well understood. What is well described and what I have experienced is perfectly consistent:

- Teens go to sleep later
- Teens wake up later

In a perfect world, where the learning capacity of teens was maximally exploited, school would start at 10 a.m. and finish at 6 p.m. No adolescent on earth will experience maximum learning capacity at 7 a.m.

## BEHAVIORAL PATTERNS IN ACTION

Let's look at a common scenario that highlights some of these behavioral patterns and the underlying biology that fuels them. You're fifteen-years-old. While at a social gathering at a friend's house, you're introduced to a sixteen-year-old, a junior at the local high school you attend. There's an immediate spark of attraction. Some innocent touching on the arm and shoulders turns into a series of innocent kisses. Soon you have to be picked up by your father as the party draws to an end. As you sit in the back seat on the way home, you feel on top of the world. Your feelings are a whirlwind of surprise, bliss, ecstasy, romance, satisfaction, and anticipation. You are in love. You are certain of it. Despite exchanging less than five-hundred words and knowing very little about the stranger you just met, you contemplate that this could be the one you spend the rest of your life with. The consumption of thought about this stranger intensifies. You can hardly bear the thought of having to wait another thirty-six hours before the next contact. All you can think about is your next connection. This relationship, in its infancy, has almost instantaneously risen to the top of the motivational pyramid. Eating, family, and sleep have become secondary. No one can convince you that this is not as serious as you think. Seeking reward and attachment leave little room for an alternative interpretation.

Your parents sense something is up. They're seeing less of you. You're spending more time multitasking—talking and text messaging on your cell phone, sending Instant Messages on the computer—as a flood of communication with friends pours in and discussion with parents tickles to a drip. You say less at the dinner table and leave more food on your plate. Your parents gingerly probe for an avenue of insight, a glade of light into your consciousness. You offer little. "They would never understand what you're experiencing anyway." Your academic studies and piano lessons are less of a priority right now. You would relinquish them in a heartbeat to share another romantic encounter with this new friend.

Sound familiar? Love at first sight? It almost seems a rite of passage into adulthood. Shakespeare continued this universal theme in Romeo and Juliet in 1595, capturing the whirlwind of youthful passion and the tension between sexual interest and romantic motivation on one hand, and the requisite self-regulation of adulthood on the other.

So what advice can emerge from a greater understanding of the biological fallout from puberty? What can be taken away from these effects on brain biology? What can be recommended based on recent neuroscientific insights that suggest the need for the prefrontal lobe to be pruned and refined during later teenage years? How do we as parents reconcile an engine that is ready to run with a driver that is still lacking driving skills? In researching this topic, I came upon some key messages that were distilled from a recent New York Academy of Sciences symposium on adolescent brain development. I offer them to you.

***1. Much of the behavior characterizing adolescence is rooted in biology. When mixed with social influences, adolescents are more likely to conflict with their parents, take more risks, and experience wide swings in emotion.***

In other word's, your teen's brain, its CEO, is under the powerful influence of forces beyond your parental control. While this is hardly a comforting thought, it does help to shift attention from expectation of full parental control to one of acceptance and greater awareness for opportunity to emerge from the "ignited passion." This is a huge shift, as any parent knows. The ability to reason with a frontal lobe that is still "pruning," that is less effective in complex social situations, and that is buffeted by a storm of strong emotional motivation will not come easily. Don't take this personally. The anger, conflict, impulsivity, and reshuffling of the value pyramid is less intended to be an attack on you and more the need to transition, as all species do, from nest and full dependence to independent flight and self-care. Within the perfect storm of pubertal challenge, appreciate that your teen's brain development (which may seem conspicuously delayed at times) is working its way to full maturation.

The challenge for us as parents:

- Don't take it personally. Remember your amygdala's fight-flight button will get pushed. As your button is pushed, you'll want to fight back, get tough, and teach them a lesson. Fortunately, you have a frontal lobe that has a wealth of experience imbedded and has hopefully been nicely pruned. Consider strategies for avoiding an amygdala highjack of your own.
    - Meditation
    - Relaxation response

- Prayer
- Social support
- Counseling
- Exercise
- Music
- Pursuing recreational interests

- Be present in the moment despite a message that may imply, "No Parent Welcome." Resist the natural tendency to want to back off, withdraw, and lose interest. Be more aware of your pattern for handling conflict. Kerry and Patterson, in their book *Crucial Conversations*, make the distinction between two distinct and maladaptive styles of handling delicate situations. One is silence (avoidance, withdrawal, or masking). The other style is violence (controlling, labeling, or attacking).
  - Listen, even if it doesn't sit right with you.
  - Make eye contact and look for the subtitles of non-verbal communication.
  - Observe with interest, the behavior of your teen. Do not lose faith in finding opportunity to connect in a meaningful way.
- Stay connected. Instead of reacting to the behaviors that come as a consequence of frontal lobe "pruning," try to assist with the pruning itself. It's natural to want to avoid and distance yourself from someone who is behaving like they're radioactive. Adolescent behavior will do that. Here your frontal lobe must say, "Stay connected, stay interested, stay the course." While your teen may not leave many doors open for you to enter, it's important to be there when they do.
- Stay sane. Safeguard your own sanity in ways that model effective adult behavior.
  - Avoid shouting matches that are consuming, conflicting dead-ends.
  - Get eight hours of sleep each night.
  - Limit alcohol use in the home.
  - Get more exercise. It's a great antidote to stress, better than Prozac and with fewer side effects.
  - Meditation and the relaxation response are excellent methods to reduce the allostatic load that sometimes comes with the raising of adolescent teens.

***2. The lack of synchrony between a rapidly maturing physical body and a latent-maturing brain can explain many behavioral patterns seen in teens.***

Parents appreciate all too well the ease with which teenage pregnancy, STDs, and HIV can occur. Parents universally fear the consequences of their teen's sexual behavior. While education is critical, it's not going to be enough to rein in the fireworks of romantic motivation and reward seeking. While widely debated by legislators, health care professionals, educators, theologians, and social scientists, it's apparent that adolescence is a time when developmentally reward-seeking drives and romantic motivation will trump reasoning, regardless of how smart the teen is or how "solid" the family is. When it comes to adolescent sexual behavior, emotion will tend to trump logic.

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And while I agree with promoting abstention, to "just say no" is missing the biological basis of why we behave the way we do. I'm an advocate of education, abstention, and protection. Our teens are of a generation where puberty starts earlier and their internal executive center of reasoning lags much later. I don't trust my teen's pruning frontal lobe and developing cerebellum to "just say no" when the power of the amygdala-limbic enterprise that Shakespeare and many others have written about over the centuries pushes to have the last word. These are important issues from a public health perspective. I am a proponent of sex education, birth control, and the "morning after" emergency contraception. As of this writing, the FDA has not yet approved emergency contraception despite its efficacy and safety

***3. Adolescent reward-response systems may be different from that of adults, prompting them to seek higher levels of novelty and stimulation to achieve the same feeling of pleasure.***

This generalization based on current neurodevelopmental and neuroendocrine data affirm what all parents of teens know and feel all too well. The biological underpinnings of reward response and risk taking are very significant. Behavior that may seem blatantly rebellious and defiant, at least at times, expose a developmental vulnerability that teens confront in this white water rapid ride into adulthood. The vulnerability created by a reward-response system is very difficult for logical reasoning to compete with. Knowing your kid is a good kid with good moral values is great though not neces-

sarily enough to neutralize the risk-taking allure and the uncertain ability to link choice with consequence. Good kids can drink too much. Good kids will get pregnant. Good kids can try heroin or crack just a few times and get hooked. Good kids will drive fast and experience their lives moment to moment.

When examined this way, the perpetual tension a parent feels between the need to let go for the sake of growth, learning, and independence, and the need to exert greater control is understandable. Tension. Tension. Tension. As parents know well, the domain of parental control with a teen is different from that of an eight- to ten-year-old. A prepubescent biology is much easier to exert influence over than that of a teen's pushing the limbic limit. We therefore must confront the anxiety of having to relinquish some of that control to jockeys not quite ready to ride their untamed horses. Still we can set limits. Concrete limits are very important-curfew, driving contingencies, etc. When you examine teen receptivity from the perspective of an amygdala highjack, *a specific message that links cause and effect and makes clear some expectation of accountability is likely to be more effective*. As parents, it's a good idea to set limits that are non-negotiable.

How we behave and perform as parents has the greatest influence over the behavior of our children. This is also true in every other domain of our lives—work, family, friends, community. With varying degrees of success, our behavior—what we say, how we say it, tone, choice of words, actions—will add to our teen's experiential repertoire of learning. *This is where great opportunity exists to influence the prefrontal lobe pruning process.*

The potential exists for nurture to refine what nature has given us. The perpetual challenge in raising adolescents is where the rubber of risk-taking behavior meets the road of reasoning. Here are some concluding suggestions for tailoring the parental approach to the biology you confront.

- In addressing areas of concern, focus on the behavior. Be specific. I no longer find myself focusing on issues like responsibility, respect, knowledge, or personality type. Important though these domains may be, they're inherently subjective in the criteria we choose to define them. Focusing on a specific behavior/performance issue minimizes the tendency to fall into the frustrating exchange of what it means to be responsible. It's hard for anyone to dismiss a behavior that's been observed. It is, after all, the behavior we wish to influ-

ence. Charles Dwyer, PhD, at the University of Pennsylvania, sums it up beautifully. We're more likely to influence behavioral change in anyone (friend, colleague, or teen) by addressing the individual's perceptions and values. For example: "You're an adult now, you need to be more responsible and respectful vs. please keep your room neater." Ultimately, the emphasis should shift from:

| **Old focus** | | **New focus** |
|---|---|---|
| Attitudes | | |
| Style | → | Behavior |
| Personality | → | Performance |
| Respect | | |
| Responsibility | | |

What we as parents leverage to influence behavior in our teens should also be reexamined, based on findings from current social science. For example:

| **Old focus** | | **New focus** |
|---|---|---|
| Parental Knowledge | | Parental Behavior |
| Skill | → | What you say |
| Experience | | How you say it |
| Authority | | Active listening |
| Power | | Problem-solving |
| | | Behavior modeling |

- Rules and behavioral guidelines should be specific and concrete. Allowing some negotiation latitude—curfew, number of passengers allowed in the car, etc.—will leave your teen feeling more engaged and more of a negotiating partner, instead of receiving another parental mandate. The more concrete, the harder it is to impose subjective interpretation. Make sure there is clear communication and mutual understanding. A written contract can also serve to "bond" a more enduring and effective commitment.
- Apply the Ju-Jitsu approach in response to problem behaviors. This is much easier said than done. The principle, as this martial arts philosophy implores, is to "silently" absorb the energy of the circumstances, reserving the tendency to want to fight back, lash out, and punish. If both you and your teen enter the mode of an amygdala highjack, the communication is doomed. Transforming the under-

standable desire to exert parental authority to an approach that more calmly and consciously addresses options and consequences will serve you better. This approach also models a higher level of reasoning, which your teen's plastic prefrontal lobe needs to observe, experience, and absorb. *Speak when you are angry, and you will make the best speech you'll ever regret.*

- Dr. Ronald Dahl at the University of Pittsburgh refers to the adolescent "ignition of passion." The same "heat of nature" that Aristotle referred to can be harnessed for positive behaviors as well. Igniting the passion of music, generosity, theatre, literature, dance, compassion, athletics, academics, relationships, and worship can facilitate meaning, value creation, and a reward response that will reinforce positive, health-promoting, and risk-reducing behaviors.

  A study published in the *Journal of Adolescence* examined the relationship between religion and health in American youth. Religiosity, as measured by worship attendance, prayer, and the personal degree to which God was central in the lives of these youth, was linked to better decision making; increased academic and social competence; lower rates of smoking, teen pregnancy, suicidal ideation, and elicit drug use; and higher life satisfaction.

- Praise your teens! They're primed to seek and savor reward. Take every opportunity to praise and reinforce desirable behaviors and performance. Affirmation should shower your adolescent's behavioral garden.

- I offer one last opinion on assisting the teen jockey about to gallop away from the stable. While I have no direct scientific evidence for this (as I do not believe it has been well studied), I offer the following observation. You and I are well aware of the "gut feelings" that guide our thinking and behavior, sometimes in very subtle ways. The neurobiological expressions of fear, uncertainty, risk assessment, danger surveillance, etc., are deeply rooted in our midbrain where fight-flight maintains its sentry, perpetually scanning for imminent threat.

  The many mediators of the fight-flight response have been vigorously reviewed. Feeling queasy, anxious, crampy, tight, and on edge are some of the ways our gut attempts to speak to us. In this sense, the gut instincts are primed and ready for sending a warning before the prefrontal lobe can safely take over. Our gut, in essence, is an extension of our brain's communication to us.

  I recommend that you ask your teen to isolate him or herself for five minutes when confronting a decision to engage in high-risk be-

havior, one that may have a strong siren song of reward or the pressure to conform attached to it. Have them close their eyes, relax their breathing, and bring the current circumstances into focus. Once there, have them bring their awareness to their gut. What is their gut telling them? Is what they are about to do creating any gut anxiety, fear, or apprehension? Helping our kids (and ourselves) to become more attuned to the signals our gut sends us is like having an additional trusted friend, 24-7, guiding our choices, with or without a clear cognitive understanding. Trusting your gut is critical.

And when all is said and done as parents, we are grateful for another safe day. We pray that tomorrow will be safe as well and have faith that the right dose of guidance and understanding will lead to a smooth transition. After all, we've all been there and done that!