

Saber-toothed Tigers and Stressed-out Students

An Examination of the Neuroscience Behind Safe, Secure Learning Environments

A Commentary By

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The human brain is notable for its ability to support cognition, communications skills, consciousness and the capacity to plan appropriate behavior for future occasions.

This was evidenced millions of years ago as our ancestors' brains alerted them to life-threatening risks worthy of their immediate attention, as well as to fleeting *life-enhancing* opportunities. Consider early man foraging for food in the same space as a saber-toothed tiger. The man needed to take fast action to avoid being that predator's next meal. Although he went hungry briefly, he avoided an early demise by sharply focusing his mind and body on any probable fatal encounter.

Fast forward to a school just about anywhere in America today. A student fearful of being teased, bullied, or attacked by a modern-day version of the saber-toothed tiger simply will find it difficult to devote his full attention and thought to academic achievement or classroom instruction. It's reflective of Abraham Maslow's Hierarchy of Needs which asserts that basic physiological and safety needs must be met before any other higher needs can be considered. Fundamentally, the human brain directs our behaviors toward opportunities for survival, and away from dangers that may jeopardize this biological imperative.

It is crucial to recognize that the purpose of a brain is not to remember the past, although that is the popular belief. Instead, the human memory system serves to aid us in navigating the present and planning for the future by making connections, recognizing "patterns," and storing that information. The stored information is retrieved on an as-needed basis, and serves as the foundation for all future planning.

Along with memory systems that developed over the ages, there are physical structures in the brain supporting those systems, which play a central role in processing and storing all emotional information and reactions including fear, anxiety, fight/flight behaviors, and love.

Being capable of foreseeing multiple possible outcomes inside future contexts gave our ancestors a distinct advantage over other beings, particularly over other predators. The part of the brain in which this capability resides is the amygdala, also referred to as the "fear center" in

the brain. It contributes to one's chances of survival by providing quick emotional reactions. (There is an abundance of evidence that a quick response is not always the most intelligent response.)

The lengthy process of thoughtful decision-making can often prove fatal during an emergency. So, time-consuming processes get suppressed...in the name of survival. Consider the practicality here of the adage "better safe than sorry." With these idiosyncrasies of the brain in mind, educators must realize that classroom management has to begin with an examination of the emotional climate of the school and the classroom. That climate will set the stage for all learning and will impact the likelihood of positive student achievement outcomes.

A school's playground might not look like a jungle, but there are hunters and the hunted, as well as predators and prey frequently. As such, a student's perception of his/her own safety largely determines whether s/he will be capable of focusing his/her attention on academic growth and development or focused primarily on personal safety (survival).

The Neuroanatomy of Fear

Any effort to gain insight into school safety cannot occur without a look at the underlying neurobiology responsible for our fear reactions. The human nervous system has two primary components: the central nervous system (CNS); and, the peripheral nervous system (PNS). The CNS is composed of the brain and the spinal column. The PNS consists of all other nerves that extend beyond the brain and the spinal cord. The PNS is further divided into the somatic nervous system (SNS), which governs the parts of the body under voluntary control, like muscles, and the autonomic nervous system (ANS), which regulates what our internal organs are doing at any given moment.

The ANS is largely an involuntary system that regulates the activity of our vital internal organs. The brain monitors the surrounding environment assessing its dangers and opportunities. The ANS is responsible for responding to signals projected from the brain that direct internal organs to either rest or go into activation mode because "a battle may be brewing." This system prepares the body for a flight (run away) or a fight (defend ourselves).

Remarkably, the body-brain makes no distinction in its reaction to a physical, emotional or social threat. In addition, when under stress, it also inhibits the more rational responses commonly associated with the more thoughtful region of the brain, the prefrontal cortex.

An imaginary assailant hiding in a school hallway is not processed any differently than a real one. Stanford University neuroscientist Robert Sapolsky found that what goes on inside the mind can affect every system and cell inside the entire body. Our stress reaction is a physiological response that lasts a relatively short time; until we have concluded that we have successfully evaded our contemporary saber-toothed tiger.

When encountering any perceived threat, our body-brain initiates a search for an appropriate response to the potential hazard. Will it be “fight” or “flight?” In reality, the decision goes beyond merely this binary choice. The two options of fight or flight are sandwiched in between “freeze,” psychologically-based immobilization, and “fright,” a severe state of panic. Research indicates that prolonged fear, even vacillating between the four fear states/reactions, can have a more detrimental effect on the human body than smoking two packs of cigarettes a day. A prolonged fear state often leads to cognitive confusion and decline, along with a host of immune system illnesses. Most important to educators and administrators, a significant number of the health-related issues we see in schools are not caused by stress itself, but by an inability to turn off the stressors, comparable to having no awareness that the predator is no longer in your pursuit.

School Safety and the Brain

Whether you are paging through “*Too Scared to Learn*,” a study by Johanna Lacoé of the Price School of Public Policy at the University of Southern California or speaking to educators with any level of experience working in the classroom with children, the overarching message is clear: the best teaching efforts can be extremely ineffective when students do not feel safe.

Like our food-rummaging ancestor who were most concerned about an encroaching famished feline, students who do not feel safe, will invariably spend the vast majority of their time surveying their surroundings to identify possible threats. Students who sense their own vulnerability will consistently have difficulty paying attention in class. Not so coincidentally, scolding students for *not* paying attention merely compounds their feelings of fear in the classroom. In fairness, they are indeed paying attention...just not to the teacher.

Students, like other mammals, naturally survey their environment to observe what is occurring around them that may jeopardize or enhance their well-being. When a student enters a school building, his/her brain scans the parking lots, schoolyards, buildings, hallways, and people to determine the general environmental safety level. *Is this a safe place to be...now? Will I get along with others or do they appear threatening (including teachers)? Will people in authority here protect me or leave me exposed to danger? Is this place filled with opportunities or dangers?*

A safe physical environment boosts the likelihood of student achievement in the classroom, which can pave the way to improved academic successes schoolwide. A safe, secure environment can increase the ease of learning allowing every student to concentrate, learn, and remember maximizing his/her academic performance. If we do not pursue methods to make learning environments safer, then we are impeding learning, as well as normal brain development and, by extension, the development of healthy bodies and well-adjusted individuals. Chronic stress is toxic to the human body and brain.

What Can Be Done?

A school district, its administrators, teachers and support personnel cannot exclusively target content mastery and test score increases with little to no consideration given to the environment in which that content is delivered by the teacher and received by the student. There is a growing body of neurological evidence supporting the notion that if students do not feel safe, secure and comfortable in a learning environment, their ability to learn is severely compromised, regardless of the quality of instruction or the level of instructional expertise demonstrated by the classroom practitioner. It is vitally important to recognize that emotions evolved strategically over time as the body-brain's most reliable thermostat for gauging safety, which determined survival for our ancestors over the millennia. "Brain-considerate" schools always design themselves around the conditions in which the human brain learns best. Safety is one of those essential ingredients.

Simply put, stressed-out brains (in students or adults) are physically incapable of establishing and maintaining the requisite neural connections inside the brain that are necessary to support content-related learning as well as long-term memory formation. There are neurobiological studies that have identified the myriad alterations in the development of the young brain and the corresponding behaviors exhibited by students who experience long-standing safety challenges.

As I detailed in *"Education in the Real World: Six Great Ideas for Parents and Educators,"* there is ample research supporting the view that a specific set of environmental preconditions for learning must be present in any school environment, if learning is your primary mission. If we want our students to achieve academically, work cooperatively and make intelligent decisions, then it is paramount that we provide an atmosphere that addresses their safety needs first. I offer several guiding principles for enhancing learning in the form of an acronym, "SAI³L," which stands for

Safety (physical, emotional, mental and social)

Acceptance (no put-downs)

Inclusion, Interactions and Involvement (addressing the interpersonal/social aspects of memory formation)

After satisfying these three prerequisite neurophysiological and hierarchical conditions, students are biologically ready for

Learning (where students feel that their learning space is secure enough for them to take risks, explore, discover and grow.)

Every administrator and educator in every school district can take steps to improve the physical, emotional, mental and social safety of every school, allowing each student to prepare

himself/herself for 21st century learning in what should be a supportive 21st century school environment. Here are steps that any and every school can take.

The school

- Make it a place where the physical safety of each child is never in question
- Begin the day with an interactive energizing musical ritual (signaling: “You are now in the ‘safe space’ for learning.” Think of how organ music affects us as we enter a church giving us the same “safety” indicator.)
- Have firm well known boundaries for students
- Provide a healthy diet with foods that include fruits, juices, water, and vegetables daily (learning requires nutrition)

The teacher

- Model civil and respectful interpersonal dialogues
- Set achievable goals for each student. The goal in school should be academic growth, not achieving at an arbitrary performance level. Remember: “If they come to school with a wide range of backgrounds, learn in different ways, master information on different timelines, grow at different rates, then why should we suddenly expect them to all *perform* at the same achievement level?”
- Take advantage of the PERC³S, the human brain’s natural inclination to respond to:
 - Patterns
 - Emotions
 - Relevance
 - Content that has a context and is cognitively-appropriate for each learner
 - Sense-making opportunities abound (the purpose of having a brain is to make sense of the world around us)
- Present students with challenges that promote critical thinking
- Uses humor appropriately (no “putdowns” allowed)

The classroom (“learning spaces”):

- Markedly reduce, if not eliminate stress producers
- Is a non-judgmental place
- Is governed by the notion that there is no emotional risk taken when one participates in learning (the learning goal is participation not perfection)
- Is a place where students engage in physical activities several times a day in the classroom, not just during recess (boosting BDNF)
- Is a place where supportive collaborative relationships facilitate learning, and are the norm

The students:

- Are allowed to express themselves
- Can make errors without a fear of being punished, humiliated, or constantly reminded that they are less-than-perfect
- Are able to participate in mind-body relaxation techniques (mindfulness exercises)
- Are engaged in learning by doing, not by listening (only 13% of learners are auditory learners)
- See learning as an achievable challenge, but within the students' zone of proximal development
- Operate in an environment where instructional "surprises" (demoralizing quizzes, being called to solve problems on the blackboard for public humiliation, etc.)
- Gain academic knowledge, as well as learning the appropriate coping skills and stress relieving techniques that allow them to persevere when challenged.

It makes sense on numerous levels for all involved in and/or concerned about today's students to be as focused on cultivating a safe, secure environment for learning just as much as on the evidence of learning itself.

About Dr. Kenneth Wesson

Kenneth Wesson is a former higher education faculty member and administrator. He delivers keynote addresses on the neuroscience of learning for educational organizations and institutions throughout the United States and overseas. His audiences range from early childhood specialists to university-level educators. Wesson's audiences have included educators and administrative officers from six of the world's seven continents. His work is frequently published and referenced in Parents Magazine, HealthNet, and the journal Brain World. In 2017, Wesson was selected to receive the Marquis Who's Who Lifetime Achievement Award.

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[School Specialty, Inc.](#) (OTCQB:SCOO), a leading distributor of supplies, furniture & equipment, facility safety & security and environment-specific resources to the education, healthcare and other marketplaces, supports efforts to integrate the development and implementation of methods, tools and systems that provide environments that afford physical, emotional, mental and social safety and security to produce better student outcomes. The aim of the 21st Century Safe Schools initiative is to heighten understanding of and support for a holistic approach to designing and equipping and managing school environments in order to ensure safe, successful and forward-thinking learning experiences.