

Educational Neuroscience and the Adverse Childhood Experiences Study (ACES)

"Adverse childhood experiences are the single greatest unaddressed public health threat facing our nation today."

Dr. Robert Block, the former President of the American Academy of Pediatrics

As highlighted by the Collaborative for Academic, Social, and Emotional Learning (CASEL, 2003), "A study estimating the relative influence of 30 different categories of education, psychological, and social variables on learning revealed that social and emotional variables exerted the most powerful influence on academic performance" (p. 7). If this is the case, what are our students carrying in each day to our classrooms and how should we respond?

A study done by the Center for Disease Control and Prevention and Kaiser Permanente, known as the Adverse Childhood Experiences Study (ACES), sheds some light on the first part of this question. With over 17,000 participants from largely upper middle-class and college educated backgrounds, the ACE Study considers the effects of childhood adversity on population health and social well being in adulthood. Types of childhood adversity measured in this study included emotional, physical, and sexual abuse; emotional and physical neglect; and household dysfunction such as domestic violence, substance abuse, mental illness, parent separation or divorce, and incarceration of a family member (Felitti, Anda, et al, 1998). The results were staggering: 21% of the participants had been sexually abused as children, 19% had a household member with a mental illness, and 28% had been physically abused. Two-thirds had experienced at least one ACE and these experiences are common across all income levels, races, and cultures. What also became clear is that the more ACES someone had, the greater their risk for poor health and social outcomes. In addition to these already staggering numbers, the National Child Traumatic Stress Network (NCTSN) (2008) included the following as situations that could cause some level of traumatic stress in a child: death or loss of a loved one, life threatening illness in a caregiver or faced by a child, bullying, community violence, natural disasters, and living in chronically chaotic environments in which housing and financial resources are not consistently available.

When it comes to education, neuroscience focusing on how the brain learns is making it clear that adversity, trauma, and stress have significant effects on a child's social, emotional, and cognitive development. Simply stated, stressed brains do not learn the same as brains that feel safe, can emotionally regulate, and feel connections. However, because these stressors either go unrecognized or there is a lack of knowledge about their effects on learning and behavior, traumatized and stressed children are often identified or mislabeled as having behavior, discipline, and/or learning issues in a school setting (Harris, Lieberman, & Marans, 2007). The promising and hopeful news in regards to the latest research on the effects of trauma, adversity, and stress on development is that a child's brain is highly plastic (Perry, 2009, November). As the NCTSN (2010, March) states, "ongoing neurobiological maturation and neural plasticity also create continuing opportunities for recovery and adaptive developmental progression" (p. 5). As Dr. Robert Anda, one of the ACE Study co-founders, states, "What's predictable is preventable." ACES are not destiny and the most promising news for educators is that research is showing that emotional connection is the number one factor in changing the trajectory of ACES. As Dr. Jill Bolt Taylor (2008) states, "we are feeling creatures who think, not thinking creatures who feel," so paying attention to student's social and emotional needs is paramount if we want them to achieve their full academic potential.

Breathe and

movement: These two things are critical to both calming the stress response and engaging students in learning. These are often called brain intervals, mindfulness, or focused attention practices and there are many ways to teach these but a few can be found here:

[http://
www.edutopia.org/
blog/brain-breaks-
focused-attention-
practices-lori-
desautels](http://www.edutopia.org/blog/brain-breaks-focused-attention-practices-lori-desautels)

"We tend to view misbehavior as a resistance because we know where we want children to go. Children view misbehavior as protection because they know where they have been." (L. Tobin)

So knowing this, what are some strategies we can begin to incorporate in to our schools and classrooms?

Teaching students about their own neuro-anatomy:

This is a good place to start and enhances any other strategies used. It is empowering for students to know that the behaviors and academic difficulties they might face have a biological base that is present in all of us and they have the power to change and control what they are experiencing. There are a number of good resources to tap into for this including the following:

- The Sentis Brain Animation Series <https://www.youtube.com/playlist?list=PL53nCCeNj-RQDhbjE9LjvnFad-wdB5bw7>
- Dr. Dan Siegel's Brain-Hand Model: <https://www.youtube.com/watch?v=06FUN9vH2Ik>
- Teach the book *Brain Rules* by Medina
- The Teenage Brain Explained: <https://www.youtube.com/watch?v=hiduiTqIei8>
- Neuroscience for Kids: <http://faculty.washington.edu/chudler/neurok.html>
- Edutopia series: <https://www.edutopia.org/blog/film-festival-brain-learning>
- Using the movie *Inside Out*: <http://revelationineducation.com/videos/>
- Video by Dr. Jill Bolte Taylor: https://www.youtube.com/watch?v=PzT_SBI3I-s

Teachers' brains are as important as students' brains. Many teachers are starting to incorporate **amygdala** (the area of the brain that controls emotion) stations in their classroom after teaching students about their neuro-anatomy so students have a place to go when they begin to feel stressed and can calm themselves down. Modeling is also a key component, so teachers and staff are talking about operating from their own amygdalae or pre-frontal cortexes and creating teams focused on supporting one another when they are stressed by students or professional demands. A few schools have carved out amygdala stations specifically for teachers and staff. Truly, the teacher's brain state and response is always more important than the student's.



Building connection and community:

Students need to feel four things to thrive emotionally and academically: Am I important to someone here? Am I good in my efforts here? Can I influence my world here? How can I share my gifts to help others here? There are a variety of ways to start building that connection and here are a few ideas:

- Notice everything that goes well and right especially with your students who are struggling the most behaviorally.
- 2X10 strategy: for 2 minutes each day, 10 days in a row, teachers have a personal conversation with a student about anything the student is interested in, as long as the conversation is G-rated.
- Create opportunities to serve others.
- Share stories that provide relevancy, meaning, and a felt connection.
- Study the ecology of the age/grade levels of your students and incorporate that in to your lesson planning.
- Invite students to co-plan and co-teach, giving them an opportunity to show off their strengths, abilities, and passions.
- Place students in a leadership role that helps them to feel connected and purposeful.
- Connect emotionally with the content because your instruction matters.

Discipline

Schools need to consider the source of problem behavior when disciplining their students. It is a change in lens from thinking “what is wrong with this student” to “what happened to this student.” It is the same lens that tells us that all behavior is a form of communication. Schools have been very good in the past at stopping the behaviors they don’t want, but they are not very good at starting the behaviors they do want to see (Desautels, 2016). Staying connected through conflict is key to all of this and Dr. Desautels provides a Dual Thought Sheet that can be used to guide a student and teacher when a discipline issue occurs. Both student and teacher need to be in a regulated brain state and ideally the student has been taught about their neuro-anatomy and stress response and been given some calming strategies. It is also important to note that the sheet does not have to be filled out that day, rather it is better to wait until both teacher and student are calm and a teacher has time to be present with the student. Consequences will still occur but should be aligned to the new behavior that is sought whenever possible.

Dual Thought Sheet – Youth and Adult Working Together

Youth AND Adult answer 1-5 independently

Discuss and then complete 6-10 together.

1. What was the challenge?
2. What led up to this challenge?
3. How did I handle this?
4. Could I have prevented this challenge/problem?
5. What are two adjustments I will make the next time?
6. What is our challenge?
7. What led to this challenge?
8. In the future, how can we handle this together?
9. Can we prevent this challenge problem in the future?
10. What are two adjustments we will make?

How childhood trauma affects health across a lifetime:

http://www.ted.com/talks/nadine_burke_harris_how_childhood_trauma_affects_health_across_a_lifetime

Reasonable Consequences

The brain loves to make sense out of experiences, information, and relationships that fit together. This is why we need to implement consequences that attend to the hurt or pain that one person has caused another. Consequences for poor decisions and the choices aligned with them will make sense and feel relevant and meaningful to students who are ready to process this information, responding from their frontal lobes in a calm brain state. This is the place in which they’ll experience and feel the connection between choices and consequences. Here are some examples of those connections:

- For a student who interrupted whole-class learning, have him or her create an extra-credit assignment for the class on a specific topic or standard.
- For a student who used unkind words to another classmate, have these two partner to create a special assignment, job, or favor for another class or the cafeteria or office staff, starting a “pay it forward” chain for a week of school.
- For a student who showed disrespectful behavior toward an adult, have him or her write a letter of apology explaining what was beneath the hurt feelings that caused the behavior, accompanied by a plan of action to make amends for the hurt feelings that he or she caused.

There are many YouTube videos presenting kindness, empathy, and the tough struggles of others that students will enjoy and learn from such as Pennies of Time, Random Acts of Kindness, Kind Kids Club. These activities help us reach beyond our own stubborn egos and negative emotions to serve another.

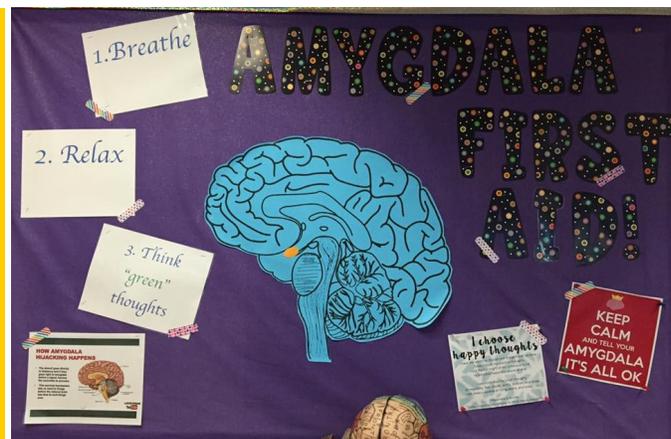
What are other ways that we could align consequences to impact future behaviors with positive emotion?

Students who are constantly relating new standards and material to personal experiences perform better than those who memorize for the test!

Brain Breaks not only create novelty, but they give the brain some incubation time to fix and form neural circuits!

References/Resources

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Websites:

Revelations in Education: Dr. Lori Desautels: www.revelationsineducation.com

Child Trauma Academy: Dr. Bruce Perry: <http://childtrauma.org/>

Edutopia Articles by Dr. Lori Desautels: <https://www.edutopia.org/users/dr-lori-desautels>

YouTube: Dr. Lori Desautels: <https://www.youtube.com/user/loridesautels>