

Adverse Childhood Experiences

Information & Mini Neuroscience Lesson

Suggested Audience: Ages 13-18

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Some information in this presentation may bring up strong feelings. If you are feeling upset at any time, you are encouraged to take a break or talk to a trusted adult.



What does ACE stand for?

Adverse (adverse is another word for **negative** or **harmful**)

Childhood

Experience



ACEs are **negative experiences** that happen to people **before they are 18**. These experiences are forms of trauma.



ACEs can have long lasting effects on a person's brain and health without the use of healthy strategies.



This means that childhood experiences can still have a big impact on someone's adult life.



Types of ACEs

- **Death of a close family member or friend** (grandparent, parent, caregiver, sibling)
- **Physical neglect** (not taking care of the child's needs)
- **Emotional Neglect** (ignoring child's needs)
- **Violence / Abuse**
 - Physical
 - Sexual
 - Emotional (manipulation)
 - Verbal (unkind words)
- **Addiction** in the household to drugs or alcohol



You can have zero, one, or more than one ACE.
ACEs are never the child's fault.



Why is this important to learn about?

- 61% of adults have at least 1 ACE
 - MOST people have experienced an ACE
- 16% of adults have 4+ ACEs
- The more ACEs you have, the more at risk you are to future health problems, if there is no intervention.
(intervention = help / healthy strategies)





Class Activity!

Work with your table group to figure out which events on the list are ACEs and which are not.



Now we know what ACEs are...

How do they affect a person's brain and health?



ACEs can create TOXIC STRESS

- Some stress is normal
 - Example: feeling nervous before a sports game or big test
 - Small levels of stress can be helpful in helping you feel energized
- **Toxic Stress** is harmful
 - Long-term
 - Needs intervention (help)
 - Example: unresolved ACEs (trauma)





TOXIC STRESS → long-term FIGHT OR FLIGHT mode

Class Questions:

Has anybody heard of fight or flight?

Can you think of an example?

What is fight or flight mode?



Your body releases stress hormones like **adrenaline** and **cortisol** (they help with quick reactions and staying alert), your **heart rate increases**, and your **blood pressure goes up**.

These changes help your body react better in an emergency. Your body forgets **about other things at that moment**.

For Example: If you hear a loud, scary noise while you are taking a big math test, your body focuses all of its energy on the noise, and not on the math test.

→ Reacting to the loud noise is more important than the math test for **survival**.



What happens to your brain during fight or flight mode?
Let's look at 2 important parts of the brain!





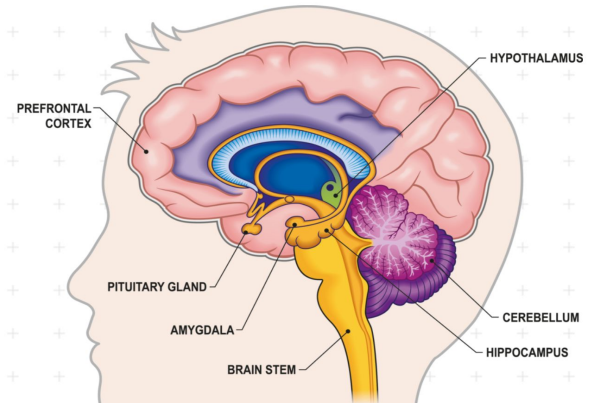
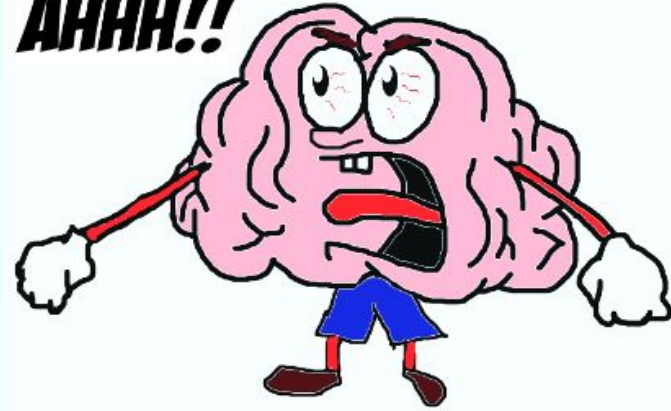
Amygdala = Emotion Center

The Amygdala helps to control emotions like **fear, disgust, and anger**. It is a part of the limbic system in the brain, which helps with fight or flight responses to an emergency.



****In an emergency, the amygdala takes control!**

AHHH!!



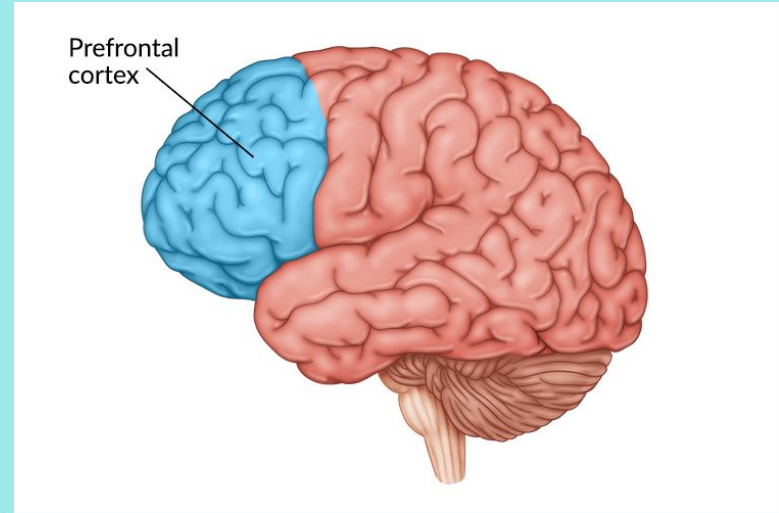


Prefrontal Cortex = Decision Making Center

- **Director** of the brain
- Makes decisions
- Considers consequences
- Problem solves

In a healthy person, the prefrontal cortex is in control most of the time.

****In an emergency, the prefrontal cortex is used less because the amygdala is in charge.**



Fun Fact: Your prefrontal cortex does not fully develop until you are 25! Some of your teachers might not have fully developed brains :). This is also why teens tend to take risks more than adults.



Adverse Childhood Experiences are traumatic...

ACEs can cause your body to feel like there is always an emergency. The body goes into long-term fight or flight mode. This means the body rarely gets a break. This can cause big problems after a while.



ACEs can change the way your brain works

Brain Plasticity

- Your brain has **plasticity**. This means it is **changeable**.
- A person's brain changes based on **what they do and experience in their life**.
- The brains of kids and teenagers have more plasticity than adult brains do.

Your brain is changing every day! Your brain changes more than your teacher's brain does!



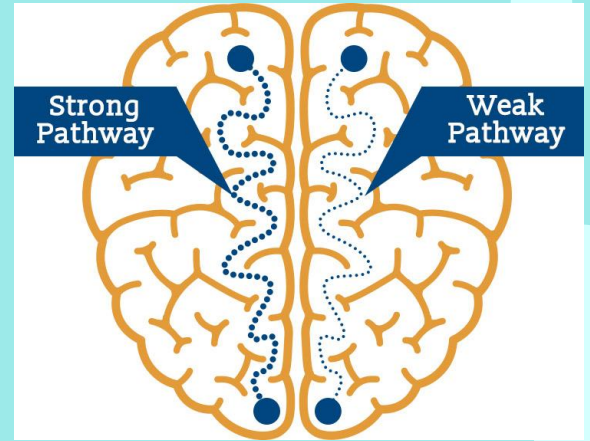


Brain Plasticity

The brain has connections between neurons (brain cells). The brain cells “talk” to each other in this connection.

If a person uses that connection more often, it will become stronger. If a person does not use that brain connection, it will become weaker.

Fun Fact: Brain connections are like muscles, the more you use them, the stronger they get!





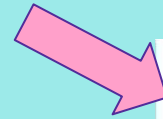
ACEs & The Brain

AMYGDALA IN CHARGE

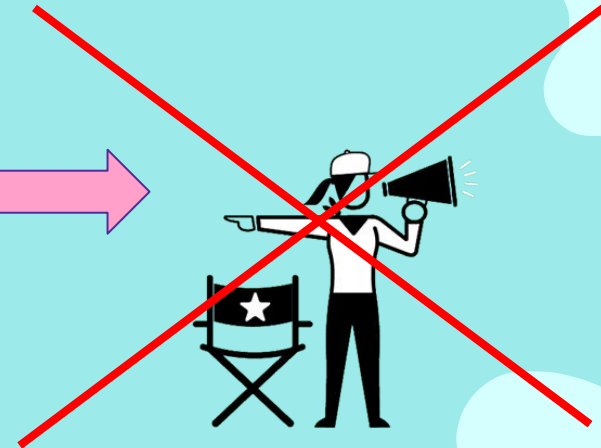
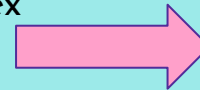
- If someone experiences toxic stress, **their fight or flight brain connections get stronger**. Most of the energy is being used on those connections.
- The amygdala is in charge way more than it should be!

Your brain doesn't have enough time to strengthen connections related to the prefrontal cortex (the normal director):

- Learning
- Memory
- Emotional processing and maturity



Prefrontal cortex does not have enough power.





Short Term Effects of ACEs

- Difficulty focusing and learning in school
- Difficulty controlling emotions
- Getting sick more easily

If a person is dealing with toxic stress, their body and brain are spending most of their time and energy in **fight or flight** mode.

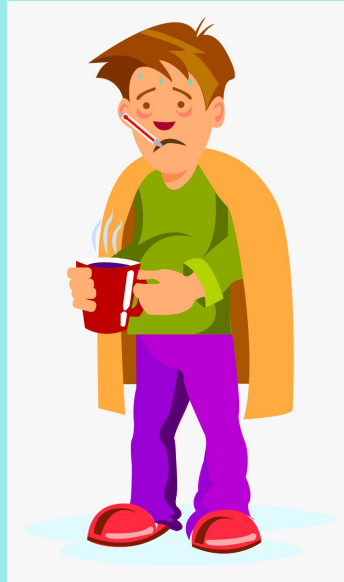




Long Term

Adults with ACEs have increased risk of:

- Heart disease
- Depression, suicide
- Stroke
- Cancer
- Diabetes
- Obesity
- Alzheimer's disease
- Substance misuse
 - Smoking & vaping
 - Drug use
 - Heavy drinking



- Dropping out of school
- Difficulty forming relationships and parenting
- Unemployment
- Homelessness

Not everyone with ACEs will experience these effects. However, having ACEs increases the likelihood.



Different people react differently to ACEs because of nature and nurture.



Both nature and nurture are important in making you who you are!



Nature = what you are born with

- Everyone is born with genetic material from their biological parents called DNA
- DNA determines a person's hair color, eye color, and **even which conditions you are more likely to have during your lifetime.**
- You can not change your DNA

For example: Spongebob's biological mom and dad both have a condition called anxiety. Spongebob's friend, Patrick, only has one biological parent with anxiety. Spongebob is more likely to have anxiety compared to Patrick **because of genetics.**





Nurture = what you experience

- Your environment and lifestyle also shapes who you are too!
- Environment: where you live, support system, friends, positive or negative life events
- Lifestyle: diet, exercise, sleep, stress levels
- Environment and lifestyle can change

Example: Spongebob and Patrick are both super stressed and anxious. Patrick has a supportive home and school environment, and he exercises and gets a lot of sleep. Spongebob does not have a stable support system, and he is not able to get enough sleep and exercise. Patrick is able to cope with his anxiety better compared to Spongebob because of his **environment and lifestyle**.

(This example applies to ACEs as well.)





**What are some things I can do to
make sure I grow up to be a
healthy adult?**

Healthy Strategies & Solutions



- Therapy
- Check ups with a doctor
- Take care of yourself
 - Exercise
 - Eat healthy
 - Get enough sleep
- Get involved in your community
 - Sports teams
 - Clubs and activities
 - Find a job you like
- Strong support system
 - School staff
 - Neighborhood
 - Friendships
- Do things that make you happy
 - Yoga, exercise, meditation, art, spend time outside, music
 - Work towards future goals



It is not your responsibility to deal with problems by yourself. Asking for help is a good thing!



Activities and Ideas!

- Boys and Girls Club
- Local Parks and Nature Conservatories
- Crossfit
- YMCA Camps and Activities
- Student Leadership Programs
- School Therapy Services
- Download a mindfulness app (Insight)



QR code for mindfulness app



Fun Fact:

Your brain is the most plastic when you are younger, so using healthy strategies while you are still a teenager is super effective!!

The brain is always changing, so healthy strategies at any age are helpful!!



Handle With Care - North Central, North Quabbin

If a student is involved in a traumatic event, then the school will receive a **confidential** notice to handle that student with extra care and patience. (No details are given about the event.)

Communication between:

- Police Department
- Emergency Room
- School

Because this is a **confidential** notice, the school staff's only job is to be **extra sensitive to the student's needs and to be aware that the student might need extra support** (short break, homework extensions).





Class Questions

1. Brainstorm healthy activities and people that make you feel happy and supported.
2. What are some new activities / clubs that you wish your school had?
3. Who would you go to if you needed help?
(teacher, caregiver, coach, counselor, neighbor)





Helpful Video!!

<https://www.youtube.com/watch?v=py8deTlxNco>



THANK YOU FOR LISTENING!

Any questions?

**This material may be
shared or printed!**

Citations

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