The background of the slide features a dark grey field with white line-art silhouettes of a diverse group of people, including men and women of various ages and ethnicities, some appearing to be in conversation or holding objects. The silhouettes are arranged in a loose, overlapping group across the width of the slide.

# **Tending the Heart: Mental Health and Substance Use Issues for Students**

**Cindy Czarnik-Neimeyer, MS, PS  
Catalpa Health/Appleton Schools ATODA & Mental Health Liaison**

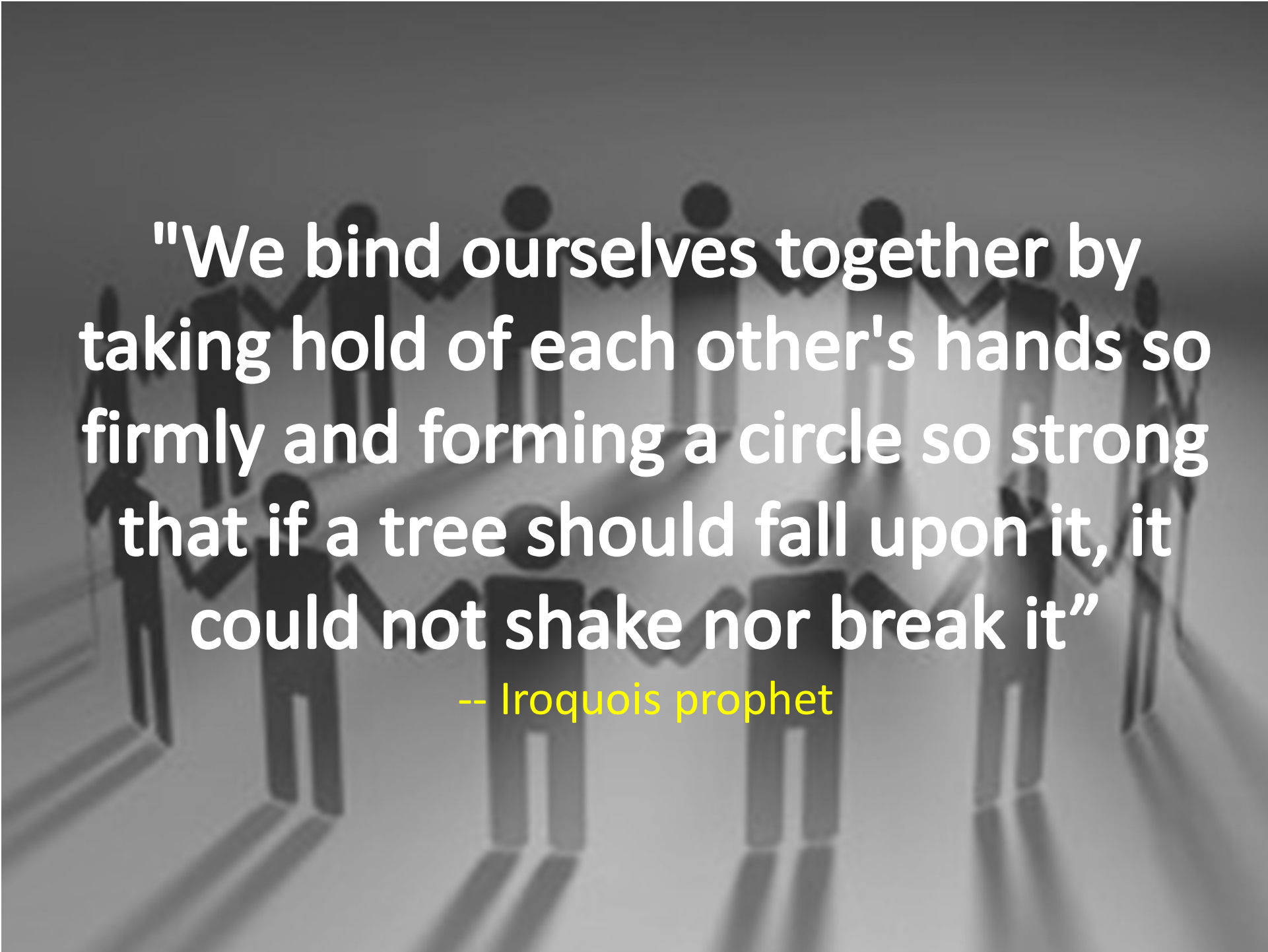
**Chris Wardlow, MAT, PS  
Catalpa Health and Outagamie County**

# Today's questions

- What is comorbidity?
- Why are adolescents vulnerable to developing comorbid disorders?
- What are the risk factors for developing comorbid disorders?
  - How does substance use impact mental health?
  - How does mental health impact substance use?
- What protective factors can reduce the risk of developing comorbid disorders as well as enhance recovery from such disorders?



**Crisis: Danger and Opportunity**

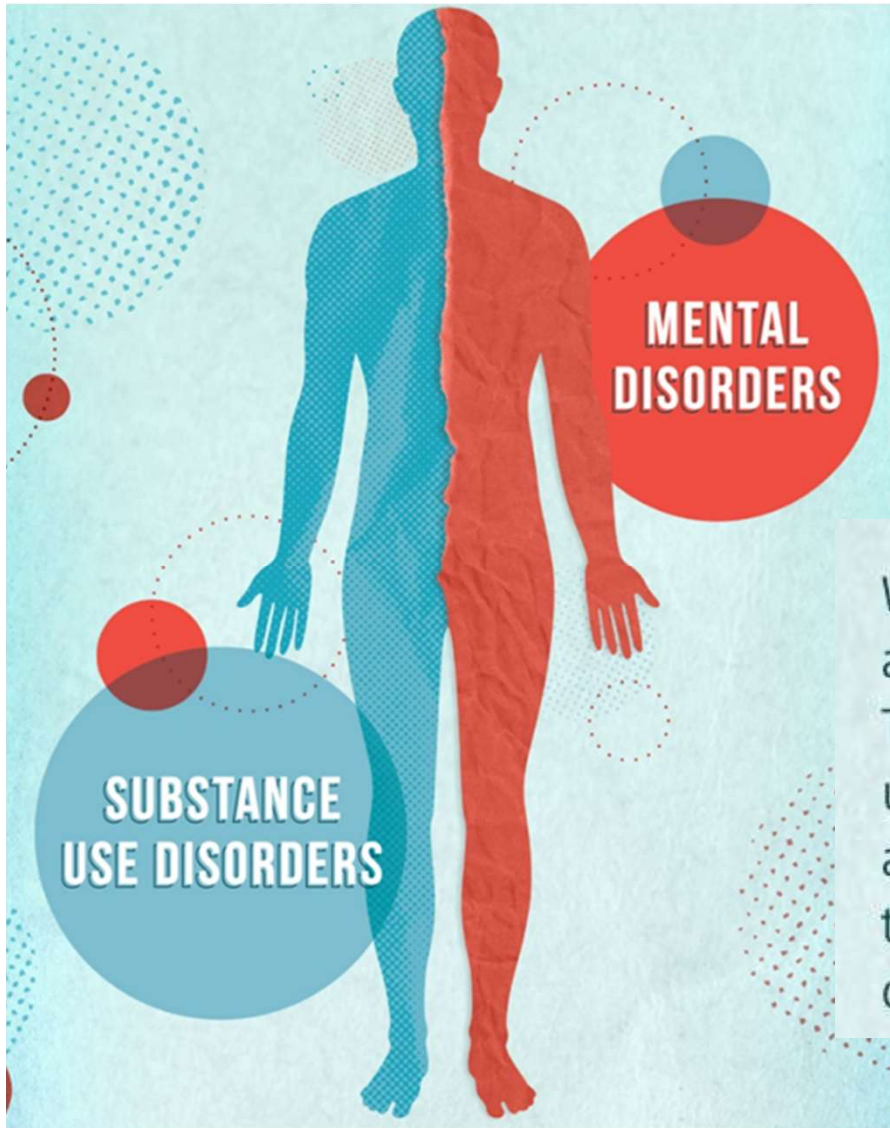


"We bind ourselves together by taking hold of each other's hands so firmly and forming a circle so strong that if a tree should fall upon it, it could not shake nor break it"

-- Iroquois prophet

# Today's questions

- What is comorbidity?



# COMORBIDITY

*Substance Use and Other Mental Disorders*

When a person has two or more disorders at the same time or one after the other. This occurs frequently with substance use and mental disorders. Comorbidity also means that interactions between these two disorders can worsen the course of both.



National Institute  
on Drug Abuse

For more information about finding treatment for yourself or a loved one, visit [drugabuse.gov/related-topics/treatment](https://drugabuse.gov/related-topics/treatment).

# WHO IS AFFECTED?

**7.7**  
**MILLION**

Adults have co-occurring mental and substance use disorders. This doesn't mean that one caused the other and it can be difficult to determine which came first.

Of the 20.3 million adults with **substance use disorders**,

**37.9%**

also had **mental illnesses**.



Among the 42.1 million adults with **mental illness**,

**18.2%**

also had **substance use disorders**.



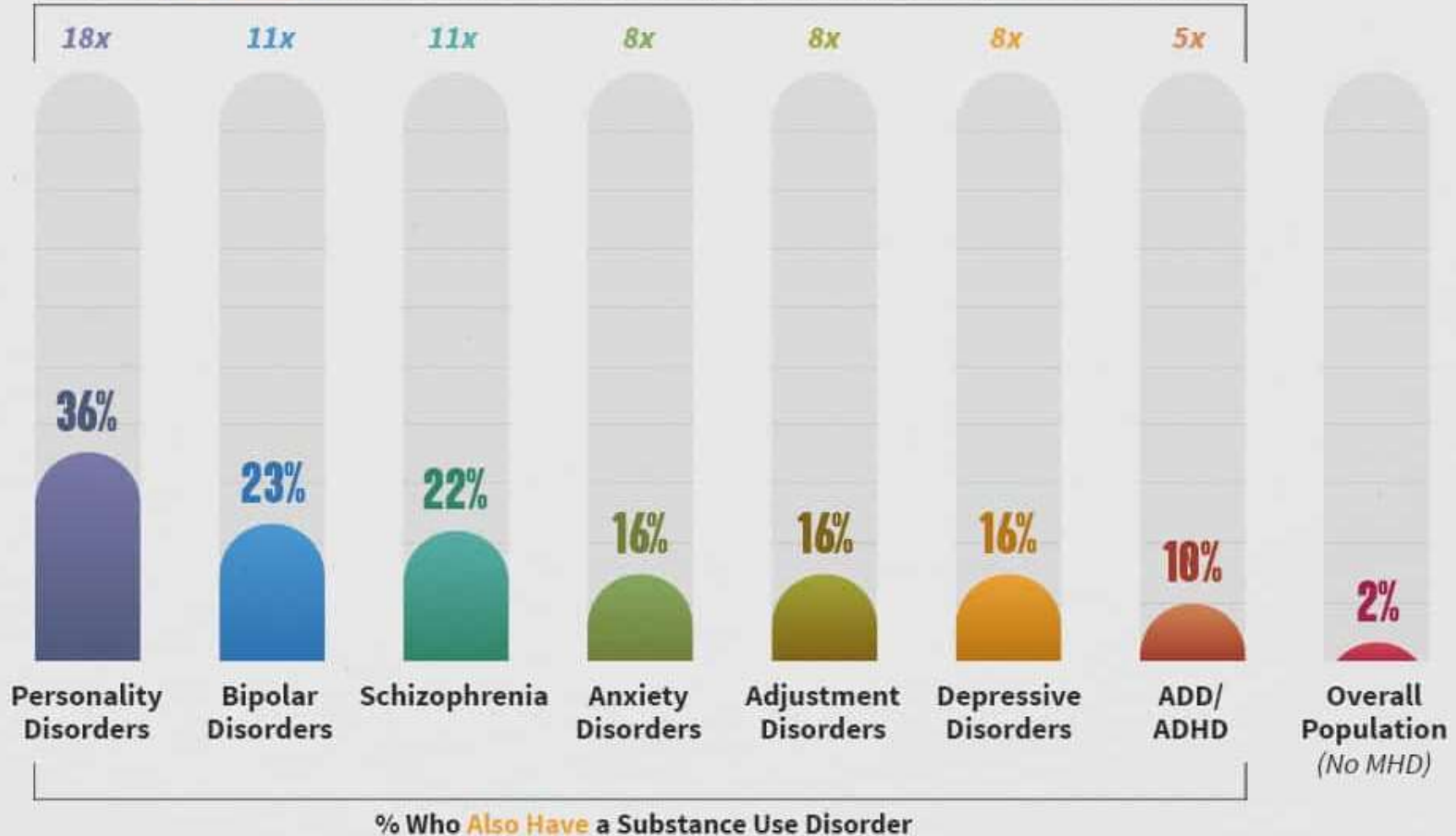
Source: Han, et al. Prevalence, Treatment, and Unmet Treatment Needs of US Adults with Mental Health and Substance Use Disorders. 2017.



For more information about finding treatment for yourself or a loved one, visit [drugabuse.gov/related-topics/treatment](https://www.drugabuse.gov/related-topics/treatment).

# HOW SUBSTANCE USE COMPARES FOR THOSE with a Mental Health Disorder

How Much **More Likely** is a Person With a **MHD** to Have a **SUD** Compared to People Without a **MHD**?

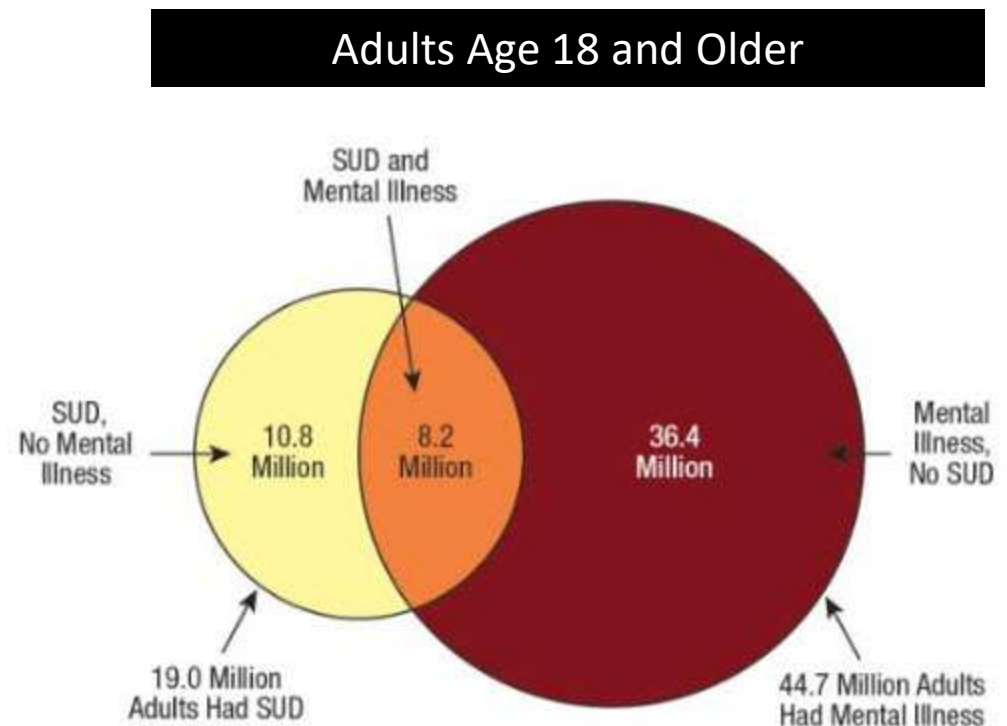


MHD: Mental Health Disorder  
SUD: Substance Use Disorder



# Why do mental illnesses and substance use disorders co-occur?

- **Self-medication**
  - substance abuse begins as a means to alleviate symptoms of mental illness
- **Causal effects**
  - Substance abuse may increase vulnerability to mental illness
- **Common or correlated causes**
  - the risk factors that give rise to mental illness and substance abuse may be related or overlap
- **Both share common genes and involve common brain circuits**



SOURCE: SAMHSA 2016 NSDUD

# Today's questions

- Why are adolescents vulnerable to developing comorbid disorders?

# Adolescence is a vulnerable period



**1 IN 4**

**AMERICANS WHO BEGAN  
USING ANY ADDICTIVE  
SUBSTANCE BEFORE  
AGE 18 IS ADDICTED**

**AMONG ADULTS WITH A  
SUBSTANCE PROBLEM**

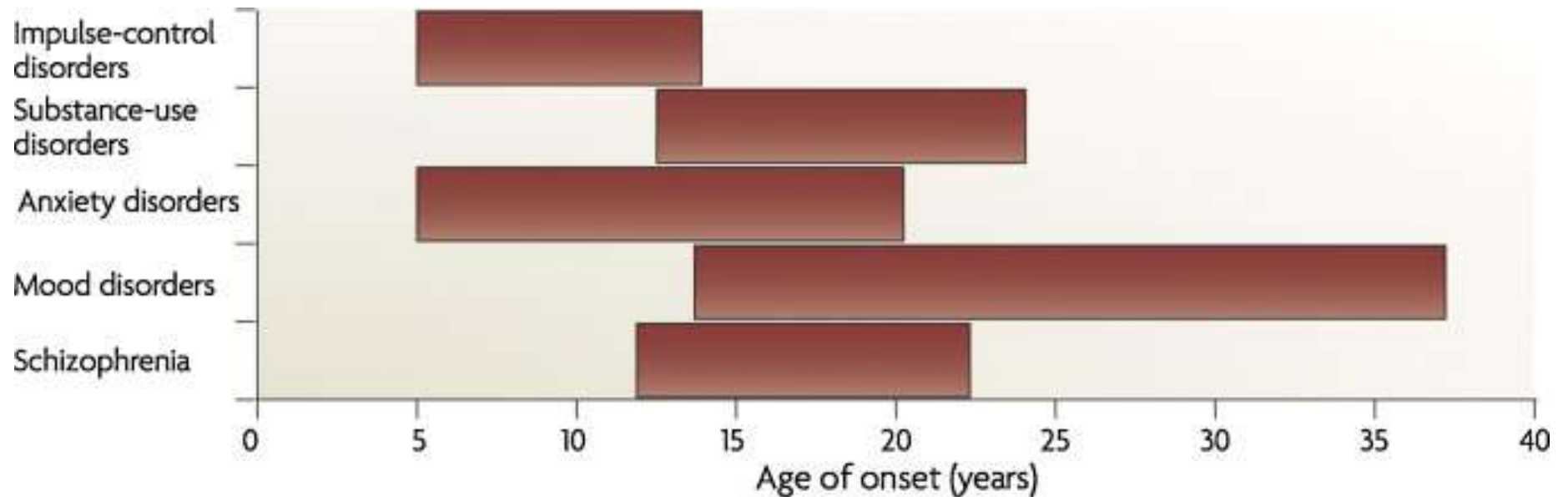


**> 90%**

**BEGAN  
SMOKING,  
DRINKING OR  
USING OTHER  
DRUGS BEFORE  
AGE 18**

# Adolescence is a vulnerable period

Ranges of onset age



Paus, Tomas & Pausova, Zdenka & Abrahamowicz, M. & Gaudet, D. & Leonard, G. & Pike, Bruce & Richer, Louis. (2014). Saguenay Youth Study: A multi-generational approach to studying virtual trajectories of the brain and cardio-metabolic health. *Developmental Cognitive Neuroscience*.

# Adolescence is a vulnerable period



**HALF** of all mental health disorders show first signs before a person turns 14 years old, and **THREE QUARTERS** of mental health disorders begin before age 24.

- mentalhealth.gov

# Adolescence is a Vulnerable Period

1. Adolescence is an important “window” of **opportunity** and **sensitivity** for the brain, particularly for developing brain connectivity.
2. How the brain is used during adolescence, and what it is exposed to, **will have life-long effects.**

Dynamic mapping of human cortical development

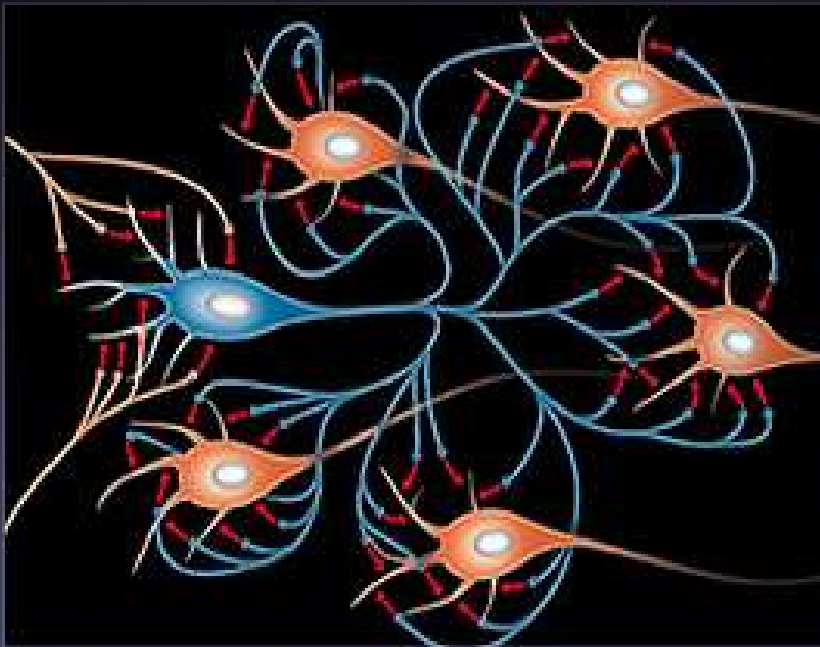


Source: "Dynamic mapping of human cortical development during childhood through early adulthood." Nina Costen et al.

# Adolescence is a Vulnerable Period

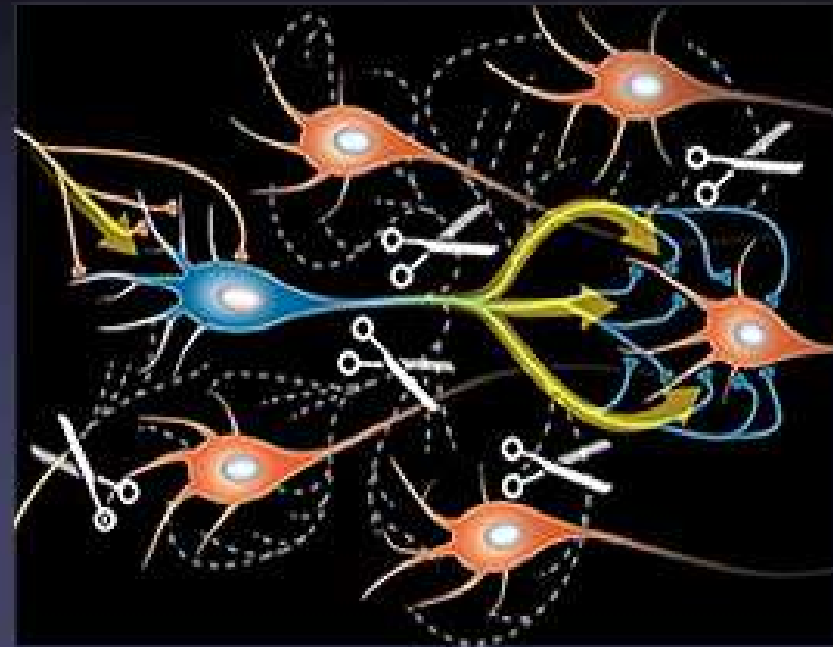
## Nerve Proliferation...

- By age 11 for girls and 12 for boys, the neurons in the front of the brain have formed thousands of new connections. Over the next few years most of these links will be pruned.



## ...and Pruning

- Those that are used and reinforced — the pathways involved in language, for example — will be strengthened, while the ones that aren't used will die out



SOURCES: Dr. Jay Giedd, Chief of Brain Imaging, Child Psychiatric Branch—NIMH; Paul Thompson; Andrew Lee; Kiralee Hayashi; Arthur Toga—UCLA Lab of Neuro Imaging and Nitin Gogtay; Judy Rapoport—NIMH Child Psychiatry Branch. TIME Diagram by Joe Lertola. TIME.com graphic by Garrett Rosso. The Image Bank—Getty Images from the May 10, 2003 issue of TIME MAGAZINE

# Today's questions

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# What increases the risk of developing comorbid mental health and substance use problems?



Branches of the Same Tree

# Mental Illness And Substance Use Disorders Run in the Family

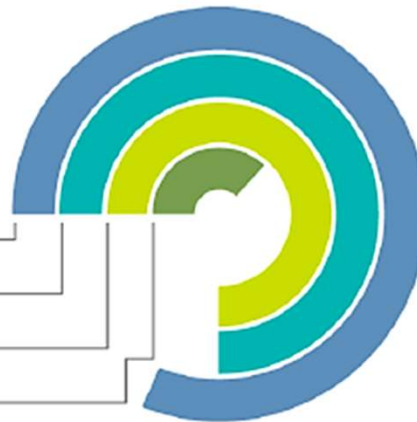
## Genes

**17-28%**

of risk for mental illnesses can be accounted for by variations in common genes.

Much stronger links were found in twin and family studies. Estimates for total heritability, or how much a disease is tied to genetics, are<sup>1</sup>:

Schizophrenia 81%  
Bipolar disorder 75%  
ADHD 75%  
Depression 37%



# Mental Illness And Substance Use Disorders Run in the Family



**GENETICS  
ACCOUNT FOR  
50-75%  
OF ADDICTION**

# 1 in 5 Wisconsin children aged 0–17 have experienced two or more of the following:

## ABUSE



Physical



Emotional



Sexual

## NEGLECT



Physical



Emotional

## HOUSEHOLD DYSFUNCTION



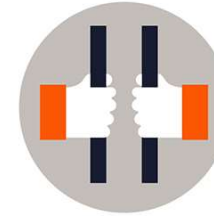
Mental Illness



Mother treated violently



Divorce



Incarcerated Relative



Substance Abuse

## How do ACEs affect health?

**Through stress.** Frequent or prolonged exposure to ACEs can create toxic stress which can damage the developing brain of a child and affect overall health.

Reduces the ability to respond, learn, or figure things out, which can result in problems in school.

Lowers tolerance for stress, which can result in behaviors such as fighting, checking out or defiance.

Increases difficulty in making friends and maintaining relationships.

Increases problems with learning and memory.

Increases stress hormones which affects the body's ability to fight infection.

May cause lasting health problems.

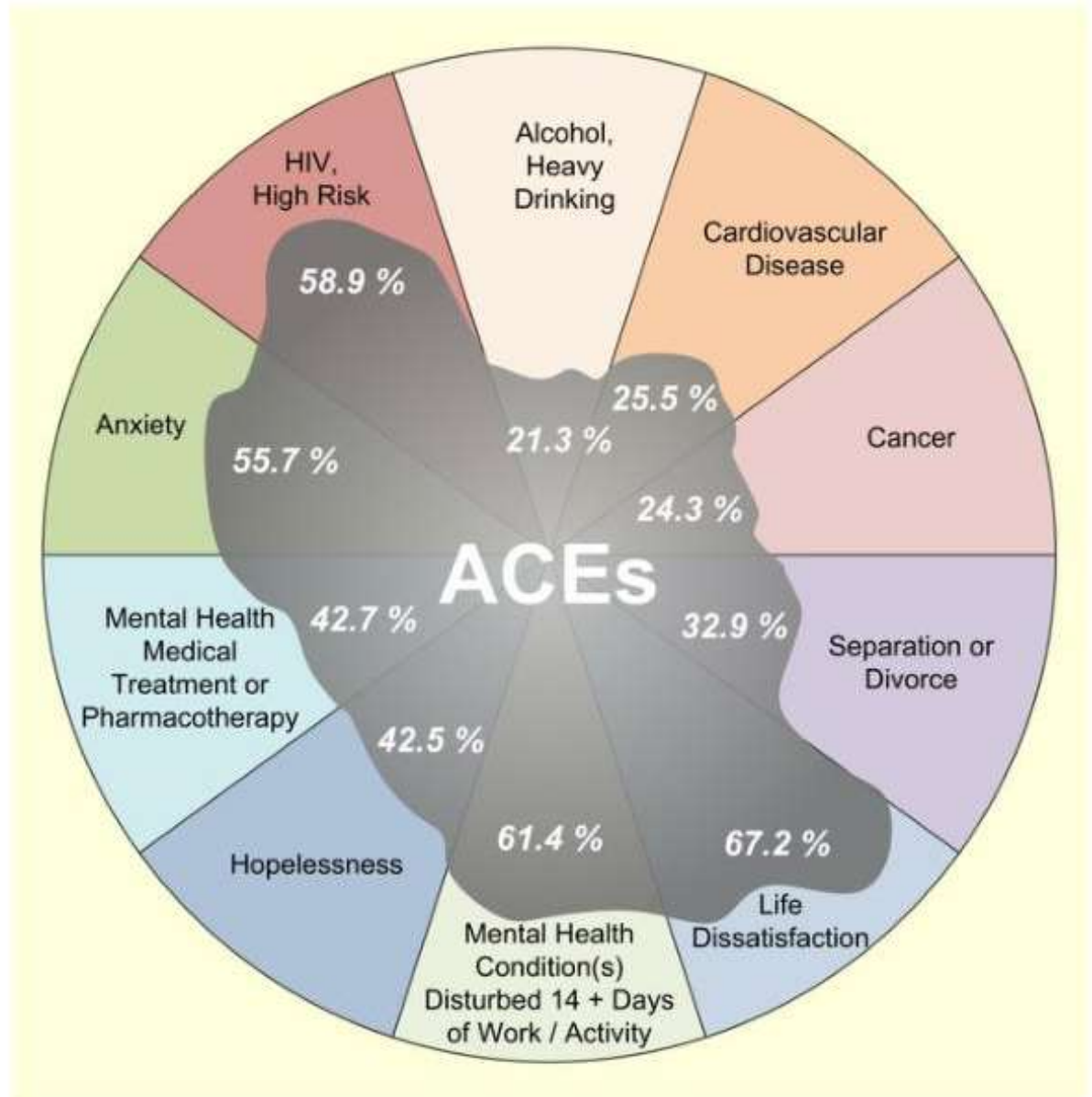
**A Survival Mode Response** to toxic stress increases a child's heart rate, blood pressure, breathing and muscle tension. Their thinking brain is knocked off-line. Self-protection is their priority. In other words:  
**"I can't hear you! I can't respond to you! I am just trying to be safe!"**

# POPULATION ATTRIBUTABLE RISK

A large portion of many health, safety and prosperity conditions is attributable to Adverse Childhood Experience.

ACE reduction reliably predicts a decrease in all of these conditions simultaneously.

Source: Family Policy Council, 2012



# Today's questions

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**TABLE. Emotion-altering actions of addictive drugs**

<b>Drug class</b>	<b>Action</b>
Opiates (eg, oxycodone, heroin, morphine)	Reduce intense feelings of anger, rage, agitation
Depressants (eg, alcohol, benzodiazepines, barbiturates)	
Low to moderate doses	Relax restricted, tense, anxious feelings
High doses	Obliterate distressing emotions
Stimulants (eg, cocaine, amphetamines, methylphenidate)	Activate and energize depressed individuals, augment hypomanic symptoms; calm and improve focus for persons with ADHD
Cannabis	Both stimulating and sedating, depending on the symptoms



# Today's questions

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# Progression of Chemical Dependency in the Adolescent

## Stage 1: Warning

- Experimentation
- Change in school work
- Change in friends
- Inconsistent behavior

## Stage 3: Chronic

- Obsession w/ drugs
- Impaired thinking
- Compulsive drug use
- Admission of defeat

## Stage 2: Crucial

- Legal issues
- Hygiene
- Family concerns
- Loss of willpower
- Drug subculture

## Stage 4: Recovery

- Desire for help
- Learning about the disease
- Honest self-appraisal
- Treatment
- Sobriety
- Support



## WARNING SIGNS



- Drop in grades
- Change in friends
- Emotional highs & lows
- Defiance of rules / regulations
- More secretive
- Loss of initiative
- Withdrawing from family functions
- Change in hygiene
- Not informing you of school activities
- Excuses for being out late
- Abusive behavior
- Isolation
- Money, Rx meds, alcohol missing
- Stealing
- Manipulative
- Weight changes
- Short-tempered
- Legal problems
- Defensive
- Call from school
- Coming home high or drunk
- Paraphernalia

## Risks associated with use of marijuana, alcohol, and tobacco during adolescence

Figure A  
Past Month Binge Drinking (%) by Age of Regular Smoking

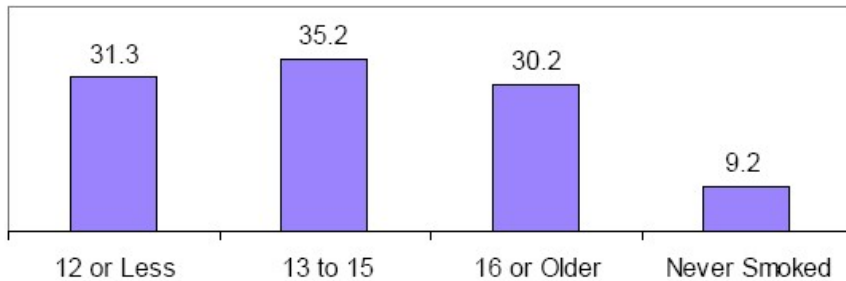


Figure D  
Past Month Marijuana Use (%) by Age of Regular Smoking

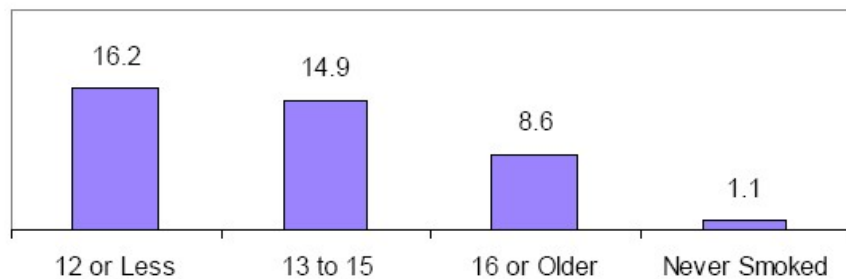
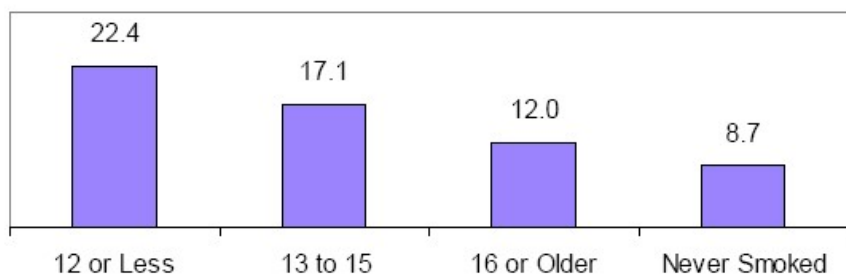


Figure J  
Past Year Serious Psychological Distress Indicator

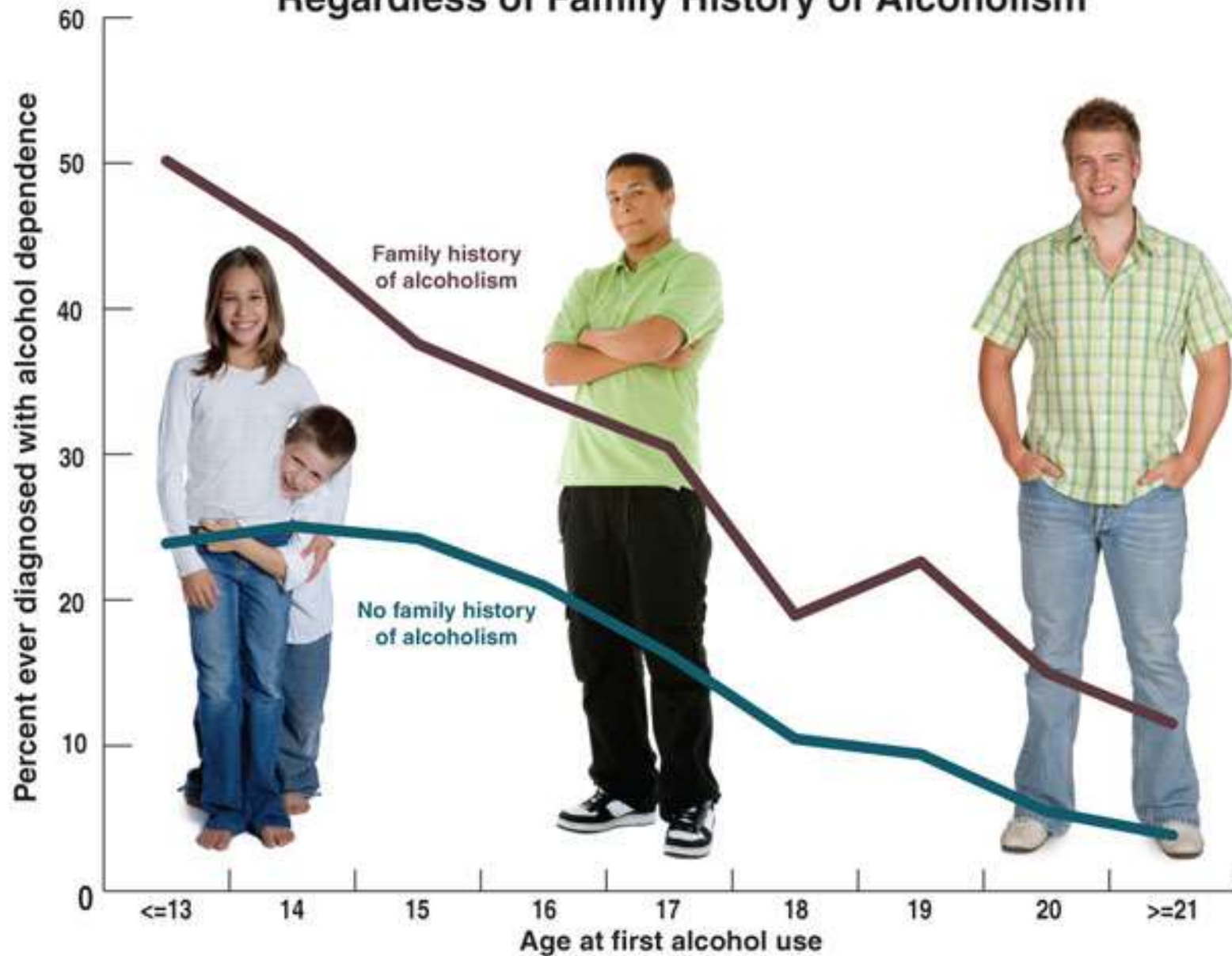


**Comparing teens who started smoking before age 12 to their non-smoking peers:**

- **More than 3X likelier to binge drink**
- **Nearly 15X likelier to smoke marijuana**
- **More than 2.5X likelier to report experiencing psychological distress**

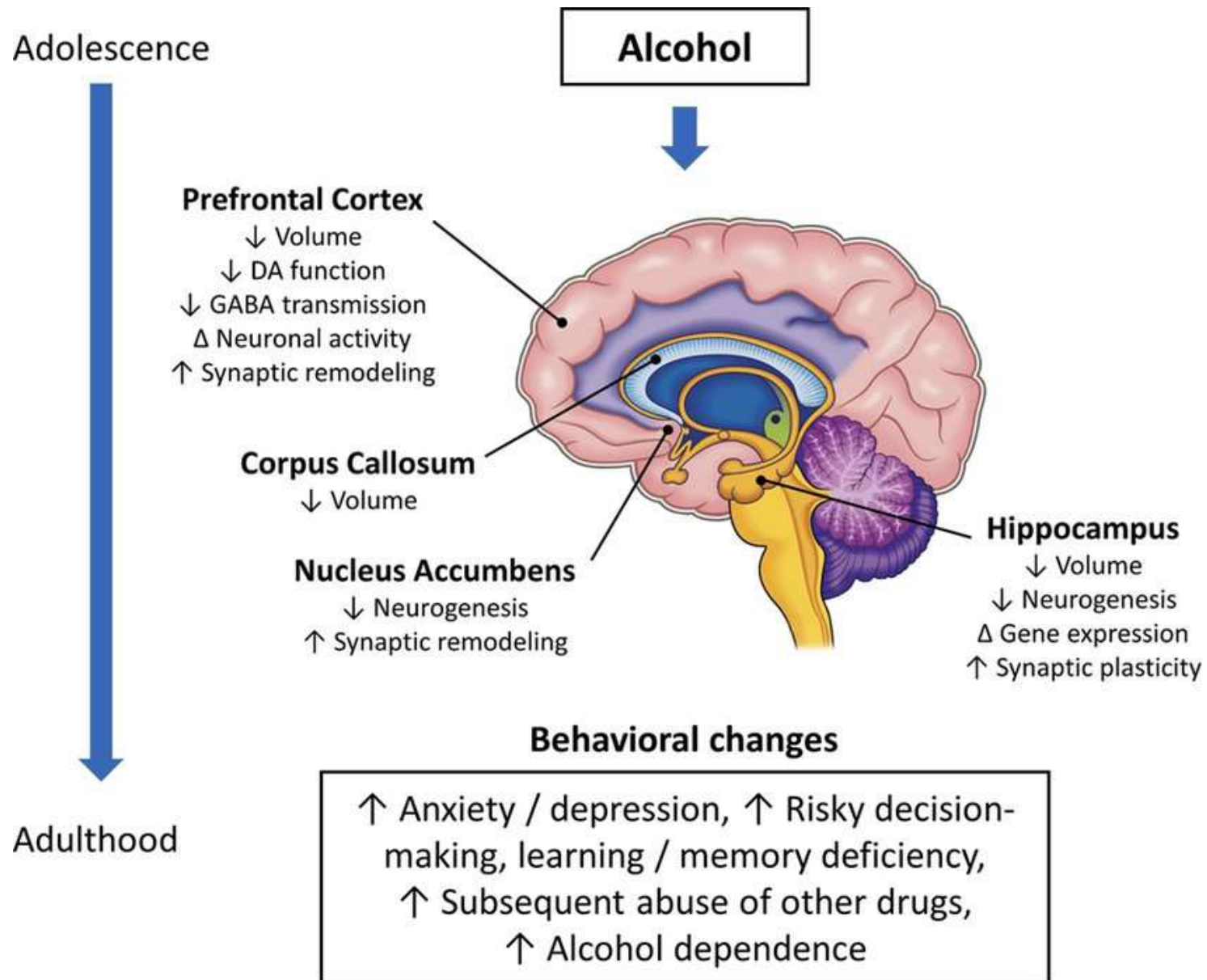
SOURCE: National Center on Addiction & Substance Abuse. Tobacco. The Smoking Gun (PDF). October 2007.

## Drinking at Younger Ages Raises Risk of Dependence, Regardless of Family History of Alcoholism

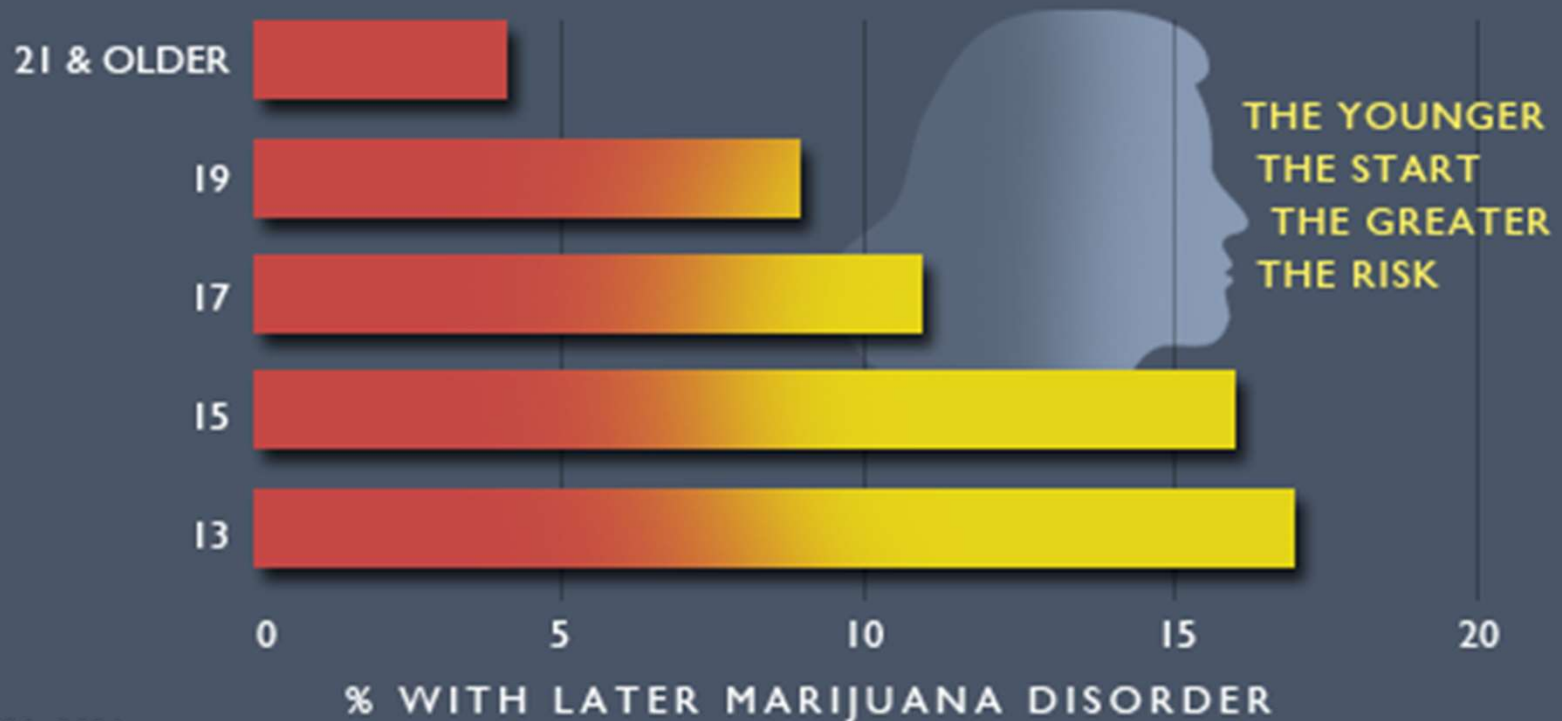


Source: 2001-2002 National Epidemiologic Survey on Alcohol and Related Conditions

# Long-term effects of adolescent alcohol use on adult brain function and behavior



## AGE AT FIRST USE & LATER MARIJUANA DISORDER

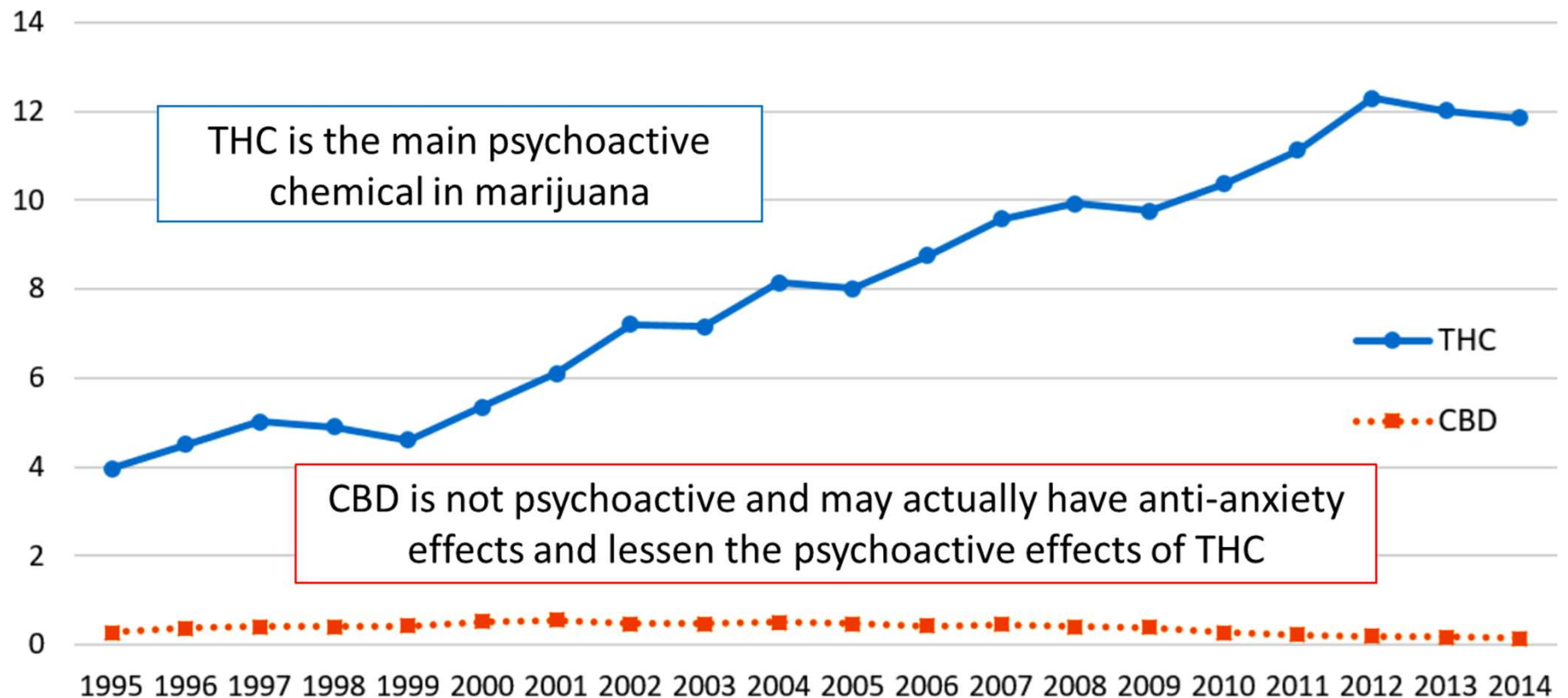


SAMHSA, 2006

**25-50% risk for adolescents who become daily users.**

SOURCE: Adapted by CESAR from Substance Abuse and Mental Health Services Administration, Results from the 2009 National Survey on Drug Use and Health: Detailed Tables, 2010. Available online at <http://www.samhsa.gov/data/NSDUH/2k10ResultsTables/Web/PDFW/Sect6peTabs38to40.pdf>.

# Average Concentration (%) of THC and CBD in Cannabis Samples Seized by DEA from 1995 - 2014

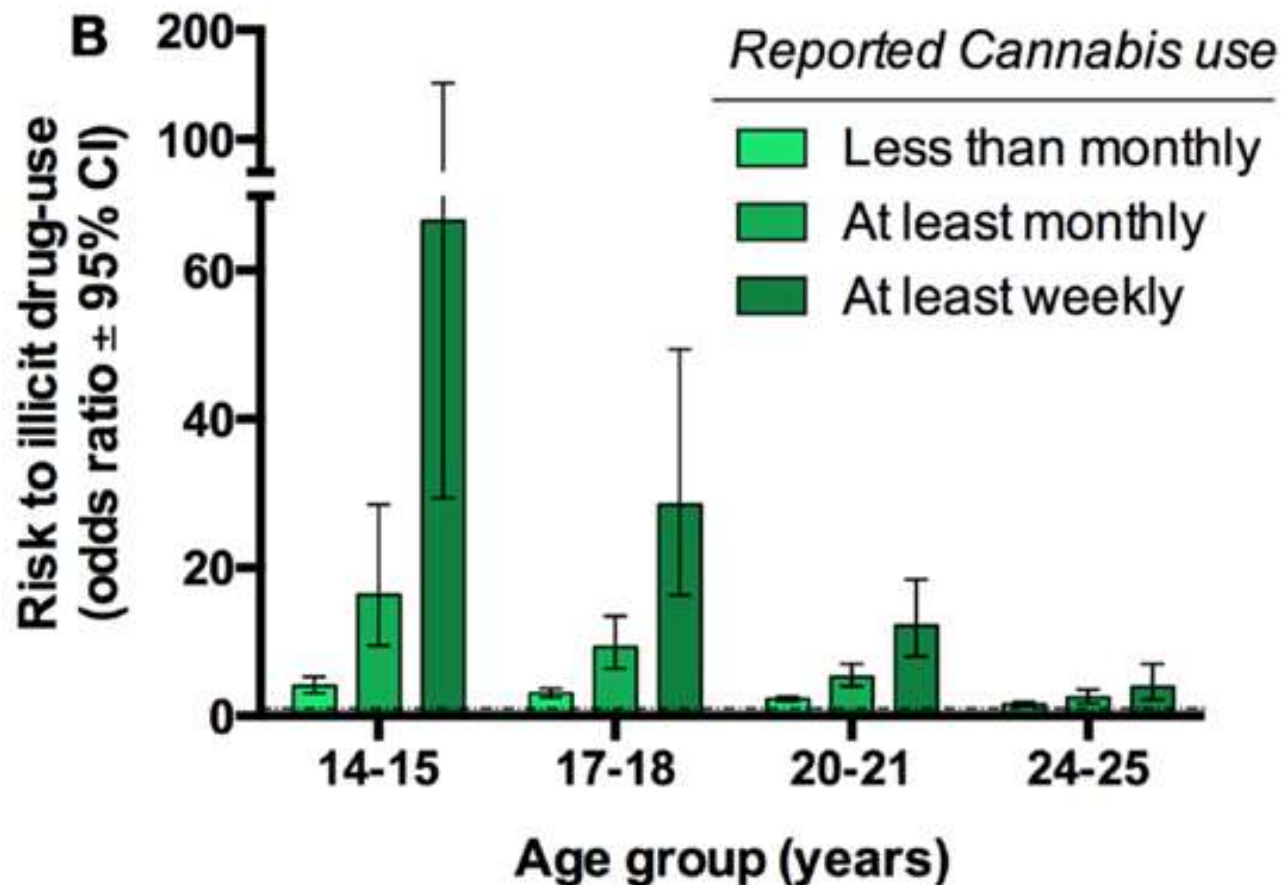


Source: ElSohly MA, Mehmedic Z, Foster S, Gon C, Chandra S, Church JC. Changes in cannabis potency over the last 2 decades (1995–2014): analysis of current data in the United States. *Biological Psychiatry*. 2016 Apr 1;79(7):613-9.



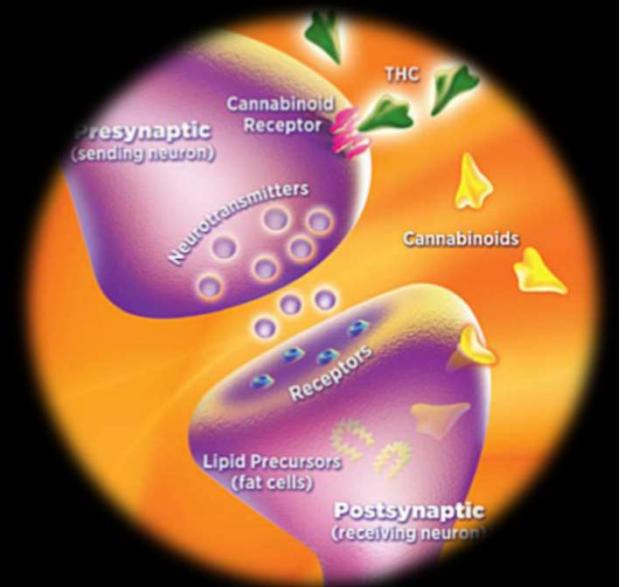
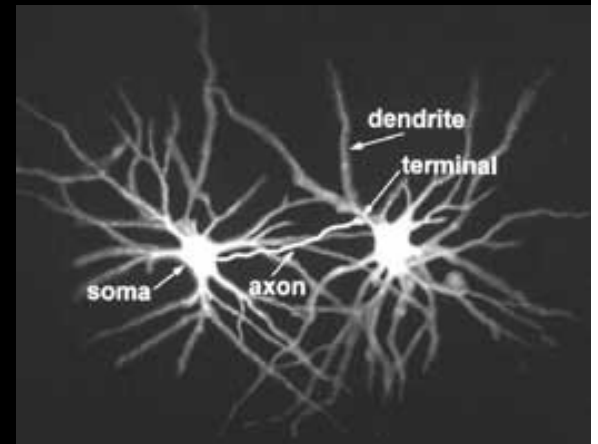
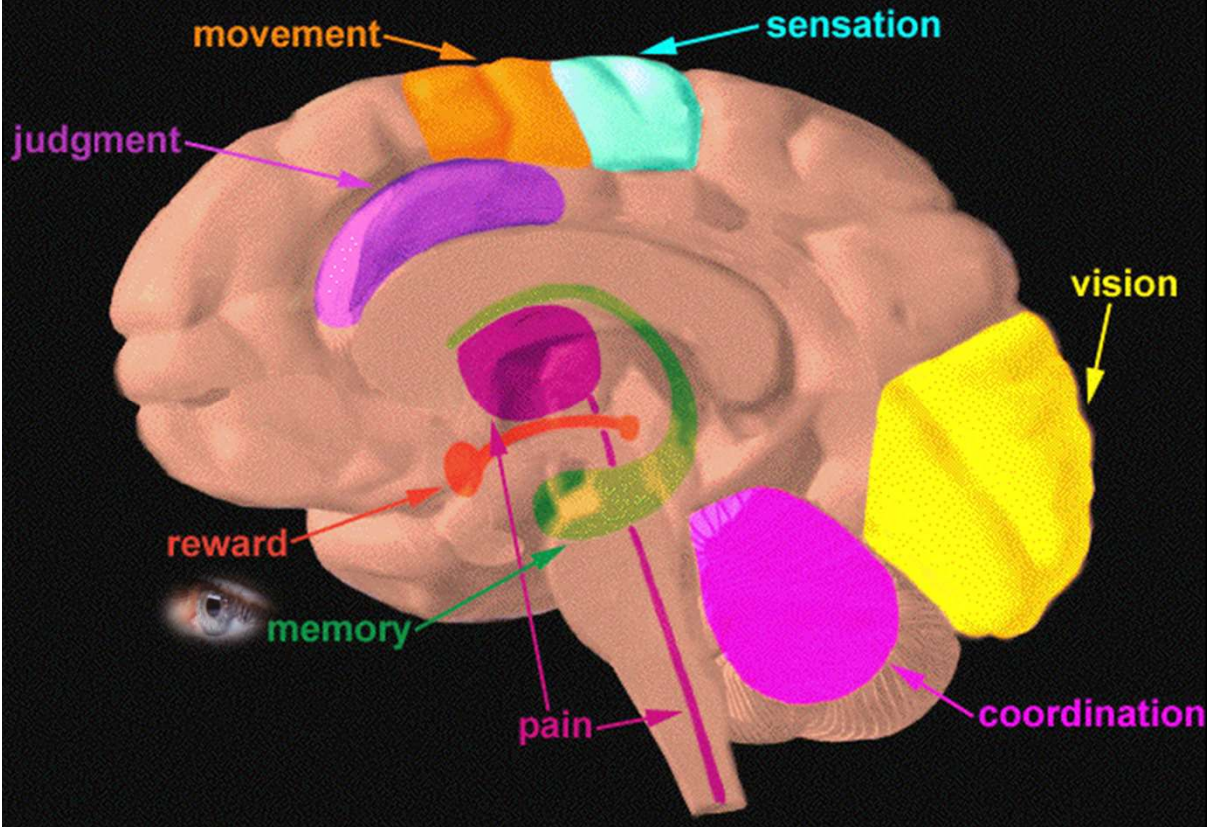
# Risks associated with teen marijuana use

Cannabis use is associated with progression to use other illicit substances

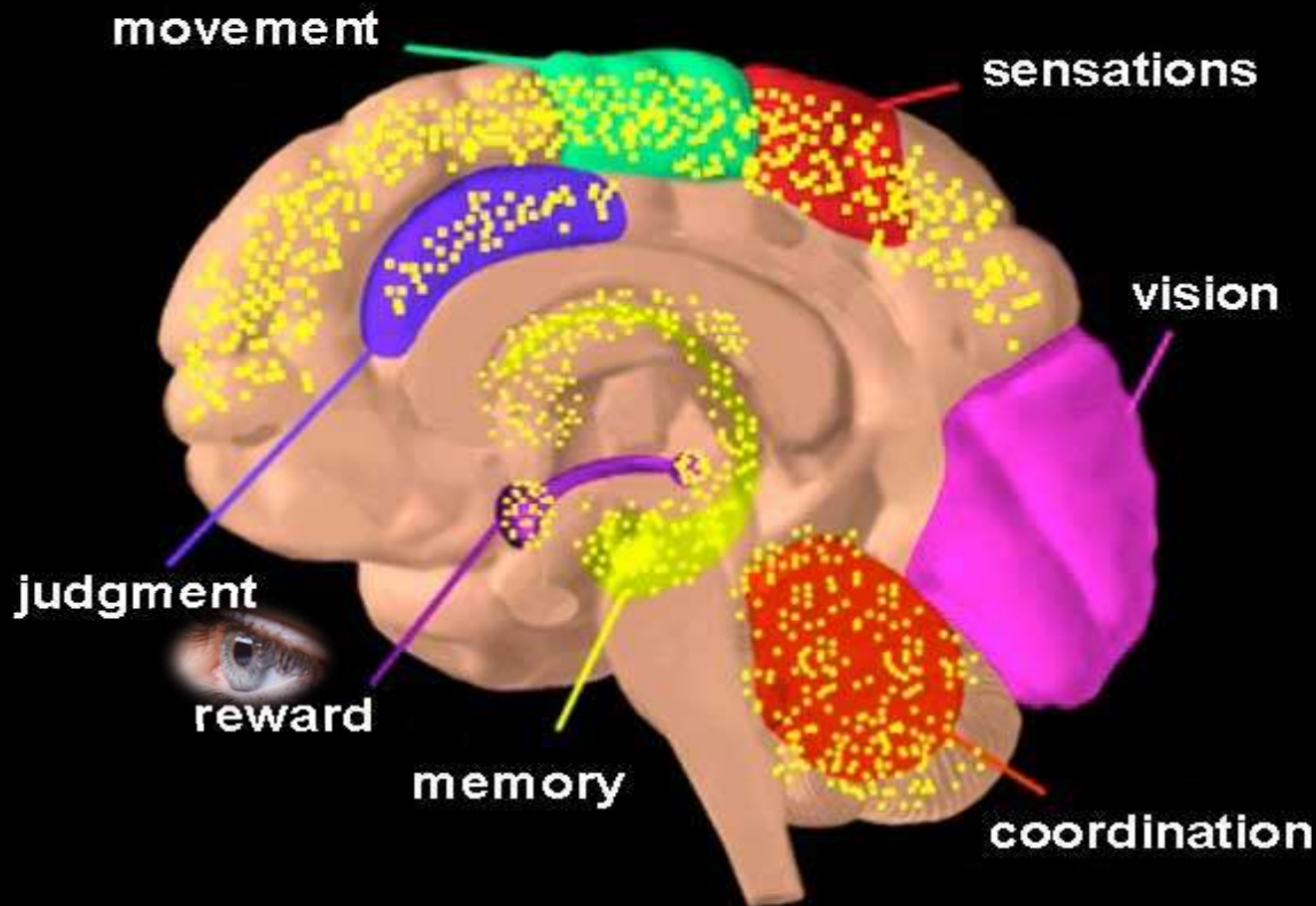


SOURCE: Chadwick, B., Miller, M. L., & Hurd, Y. L. (2015). Cannabis use during adolescent development: susceptibility to psychiatric illness. *Clearing the smokescreen: The current evidence on cannabis use*, 32

# Endocannabinoids are naturally occurring chemicals in the brain known as neurotransmitters



# Endocannabinoids bind to receptors located on neurons throughout the brain



When these receptors are activated by naturally occurring cannabinoids in the brain, they are like dimmer switches, signaling to neurons to slow down communication.

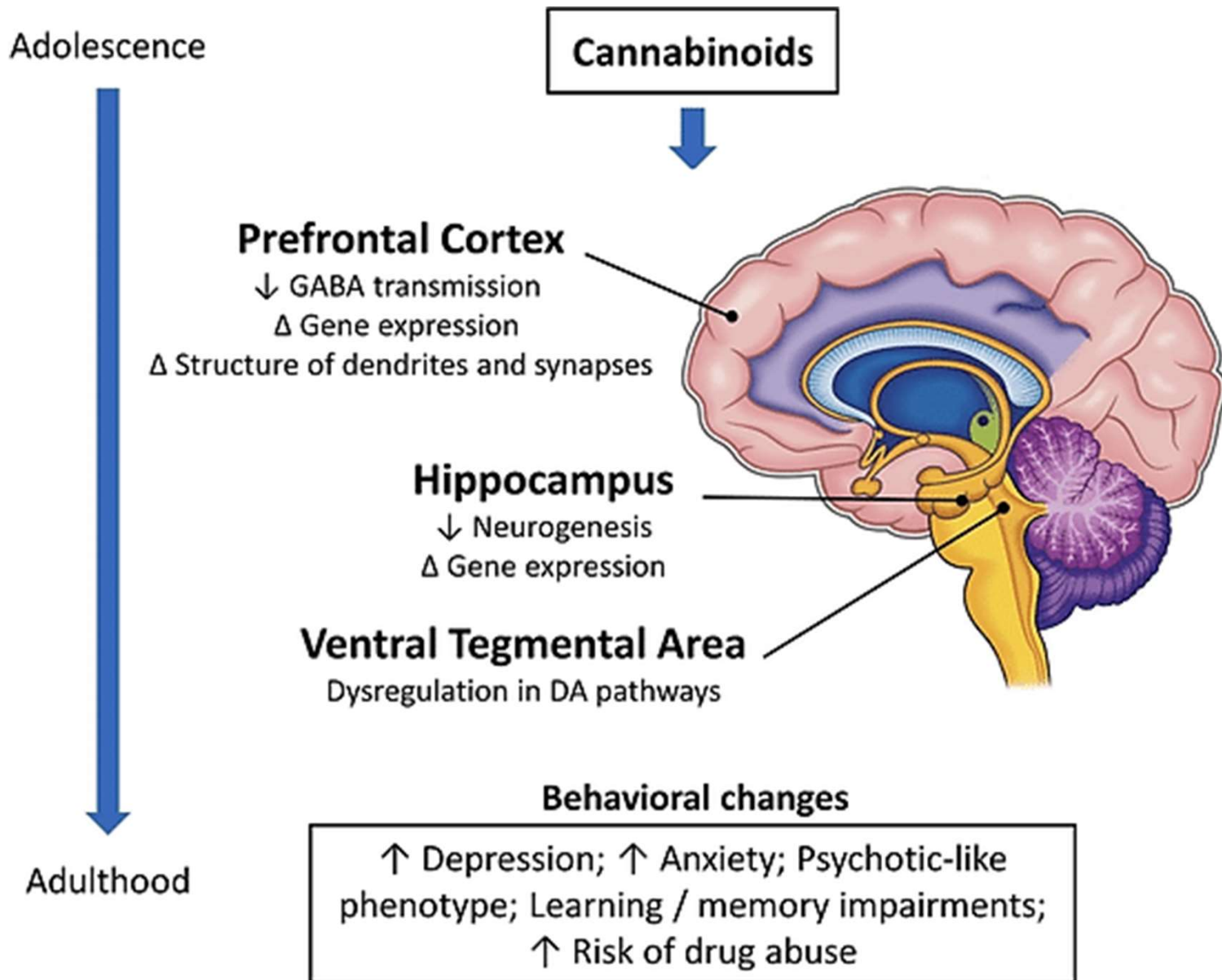
# Endocannabinoids

- Help shape brain development by...
  - guiding neurons to grow to the right places in the brain for correct function
  - controlling neuron activity, thereby affecting **pruning** and brain wiring
  - supporting **myelin** growth on neurons

# THC vs. Endocannabinoids

- Chemically very similar
- Both dial down neuron activity to change neurotransmitter release
- THC has a **MUCH STRONGER, LONGER** effect than anandamide on brain cells
- THC interferes with our own brain's system for protecting neurons and keeping brain activity in balance

# Long-term effects of adolescent cannabis use on adult brain function and behavior



# Vulnerability to Developing Mental Illness

Studies show regular marijuana use during adolescence **increases risk 2 to 7 times** for developing

- Psychosis
- Schizophrenia
- Anxiety
- Depression.

Source: Malone DT et al. Adolescent cannabis use and psychosis: epidemiology and neurodevelopmental models. *Brit J Pharmacol.* 2010;160:511-522

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# School and Family Connections in Adolescence Linked to Positive Health Outcomes in Adulthood

## YOUTH EXPERIENCE RISKS

**17%** of students considered attempting suicide

**19%** have been bullied at school

**14%** misuse prescription pain medicine



## SCHOOL & FAMILY CONNECTIONS HELP PROTECT YOUTH

Adults who experienced strong connections as youth were

**48%-66%**  
**LESS LIKELY TO:**

Have mental health issues

Experience violence

Engage in risky sexual behavior

Use substances

## SCHOOLS, FAMILIES, & PROVIDERS CAN HELP



**SCHOOLS** can implement positive youth development programs



**PARENTS** can have frequent & open conversations



**PROVIDERS** can discuss relationships & school experiences

# Adults can help reduce youth substance abuse



## SCHOOL ENGAGEMENT HELPS

Youth who participate in extracurricular activities are

**1.5x LESS**

likely to misuse prescription drugs.<sup>1</sup>



## FAMILY MEALTIME MAKES A DIFFERENCE

Sharing a family meal and actively listening to kids is of incredible value and worth.<sup>2</sup>



## ADULTS CAN HELP REDUCE YOUTH ALCOHOL USE

Youth who can ask a parent, guardian, or other adult for help are

**1.5x LESS**

likely to binge drink.<sup>3</sup>



## TEACHERS CAN HELP REDUCE YOUTH MARIJUANA USE

Youth who agree that teachers care and encourage them are

**1.7x LESS**

likely to use marijuana.<sup>4</sup>

***It is more important than ever to have a conversation with children about harmful effects of alcohol, marijuana, and prescription drugs use and abuse.<sup>5</sup>***

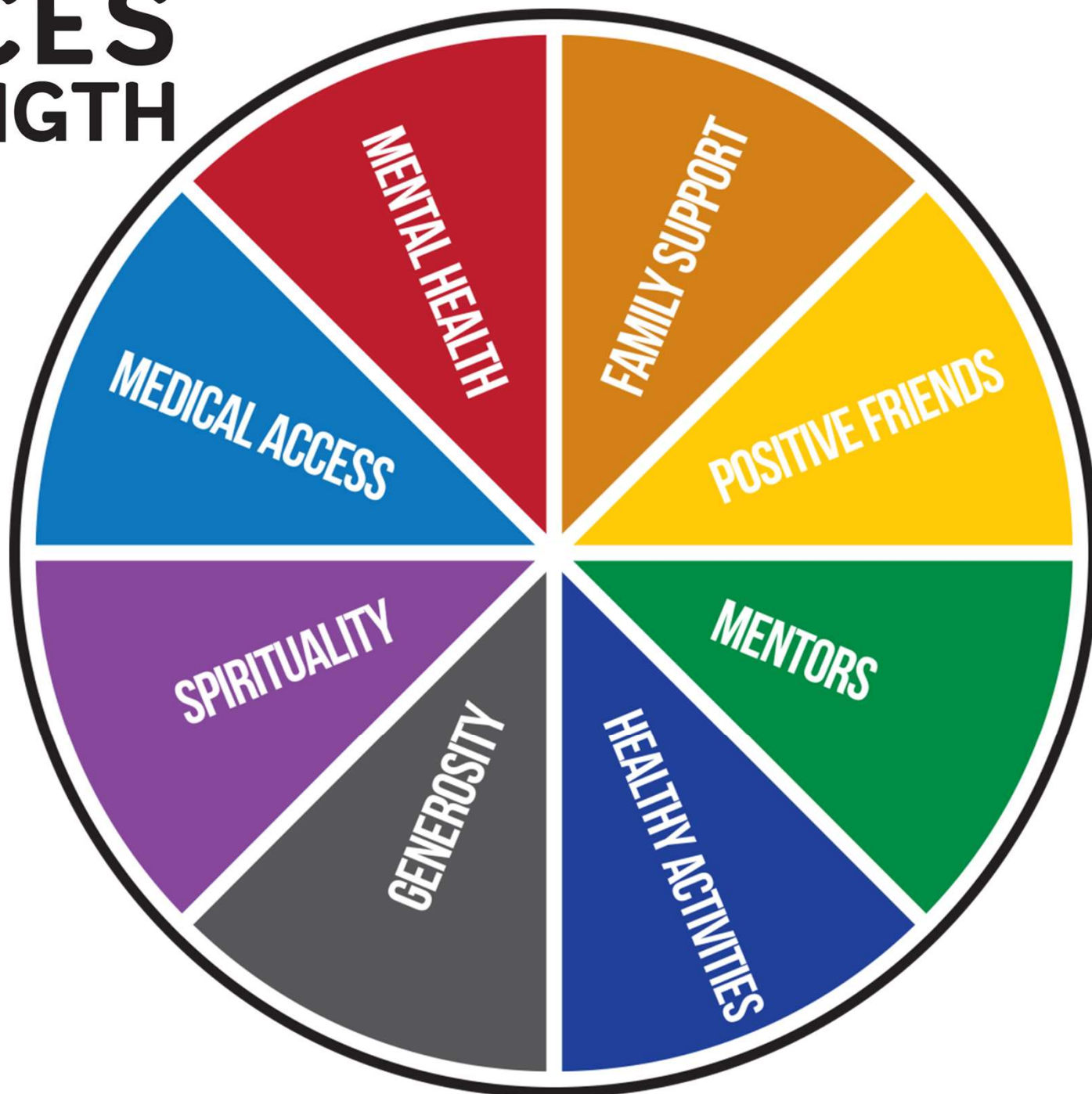
**SPEAK NOW,  
HERE'S HOW**

## START THE CONVERSATION

- What will you do if there is alcohol at the party?
- How would you handle it if a friend offered you marijuana?
- If your friend gave you his prescription, what would you say?

**Get more tips on how to start the conversation at [speaknowcolorado.org](http://speaknowcolorado.org)**

# SOURCES OF STRENGTH



# SEL Core Competencies

## Self-Management

- Regulating one's emotions
- Managing stress
- Self-control
- Self-motivation
- Stress management
- Setting and achieving goals

## Social Awareness

- Perspective taking
- Empathy
- Respecting diversity
- Understanding social and ethical norms of behavior
- Recognizing family, school, and community supports

## Relationship Skills

- Building relationships with diverse individuals and groups
- Communicating clearly
- Working cooperatively
- Resolving conflicts
- Seeking help

## Self-Awareness

- Labeling one's feelings
- Relating feelings and thoughts to behavior
- Accurate self-assessment of strengths and challenges
- Self-efficacy
- Optimism

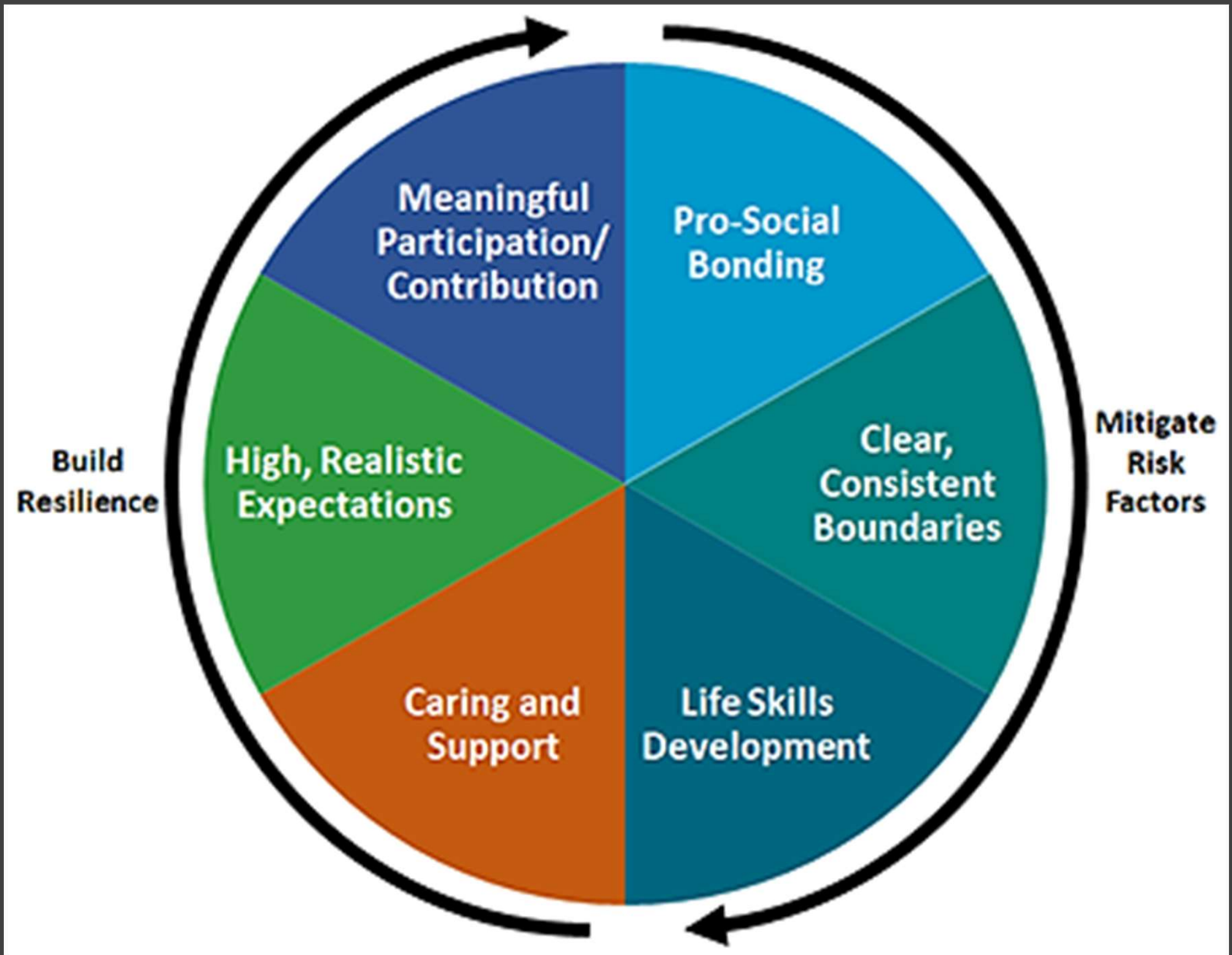


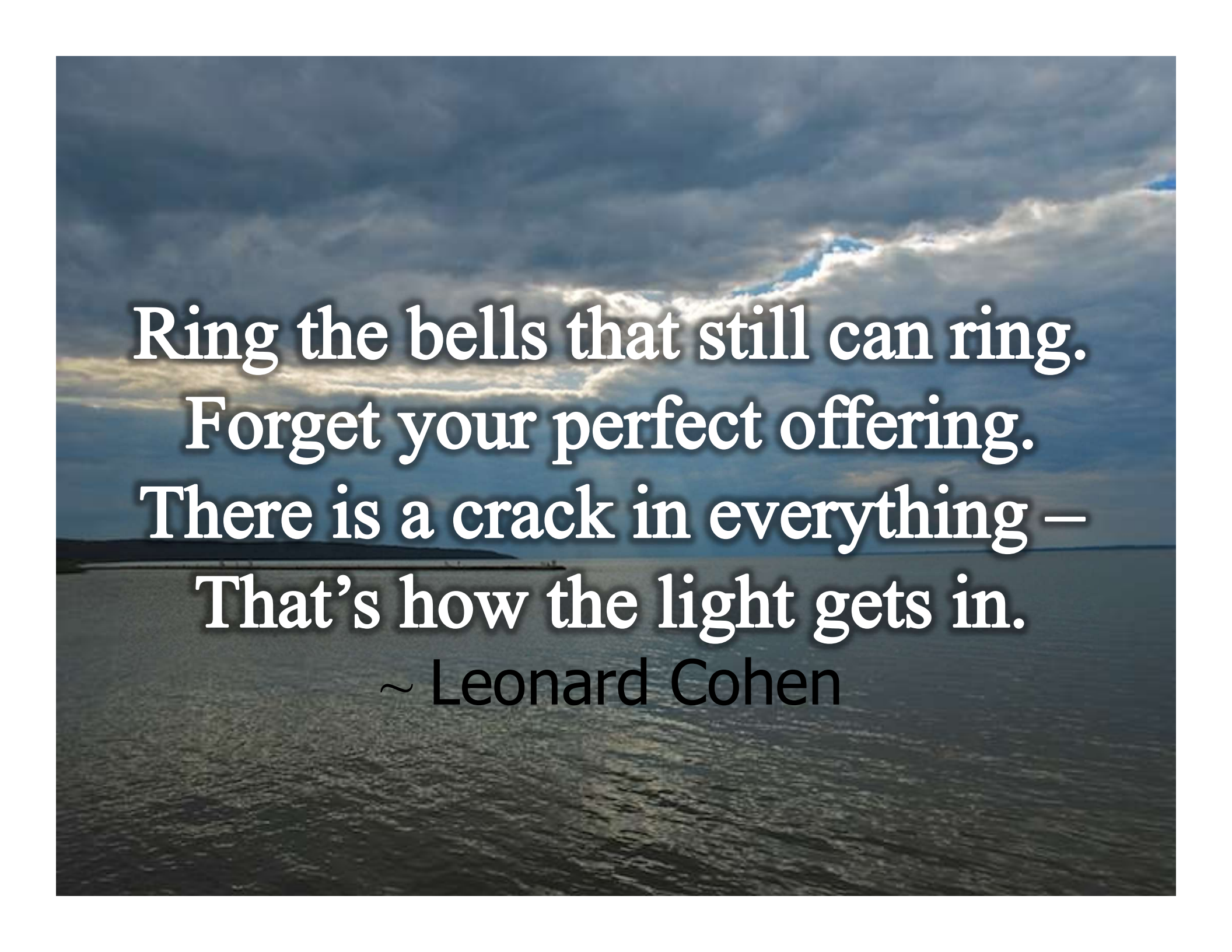
## Responsible Decision-Making

- Considering the well-being of self and others
- Recognizing one's responsibility to behave ethically
- Basing decisions on safety, social and ethical considerations
- Evaluating realistic consequences of various actions
- Making constructive, safe choices for self, relationships and school

Sources: CASEL, Acknowledge Alliance

# Fostering Resiliency in Young People





Ring the bells that still can ring.  
Forget your perfect offering.  
There is a crack in everything –  
That's how the light gets in.

~ Leonard Cohen



## kintsukuroi

(n.) (v. phr.) "to repair with gold"; the art of repairing pottery with gold or silver lacquer and understanding that the piece is more beautiful for having been broken