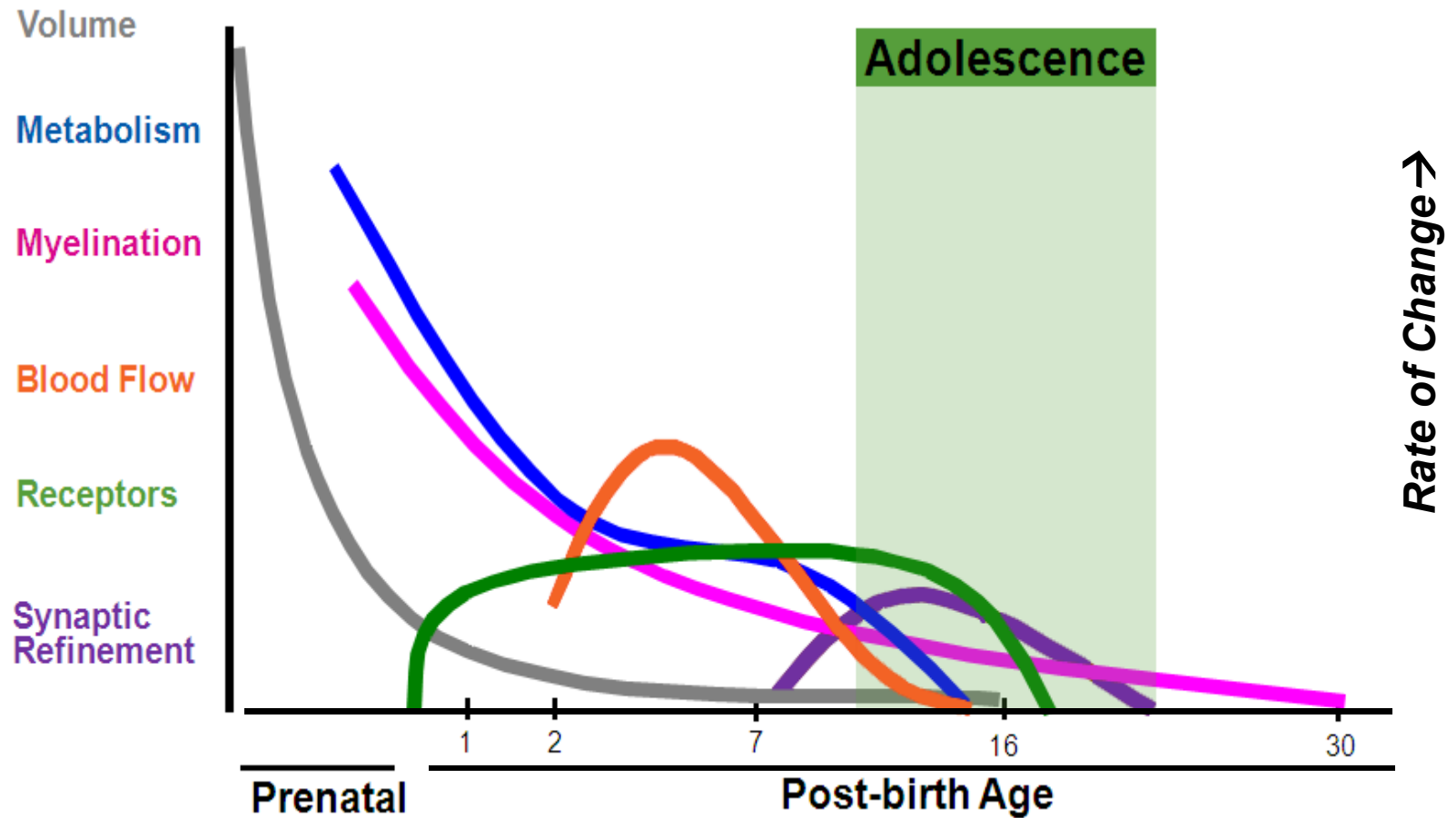
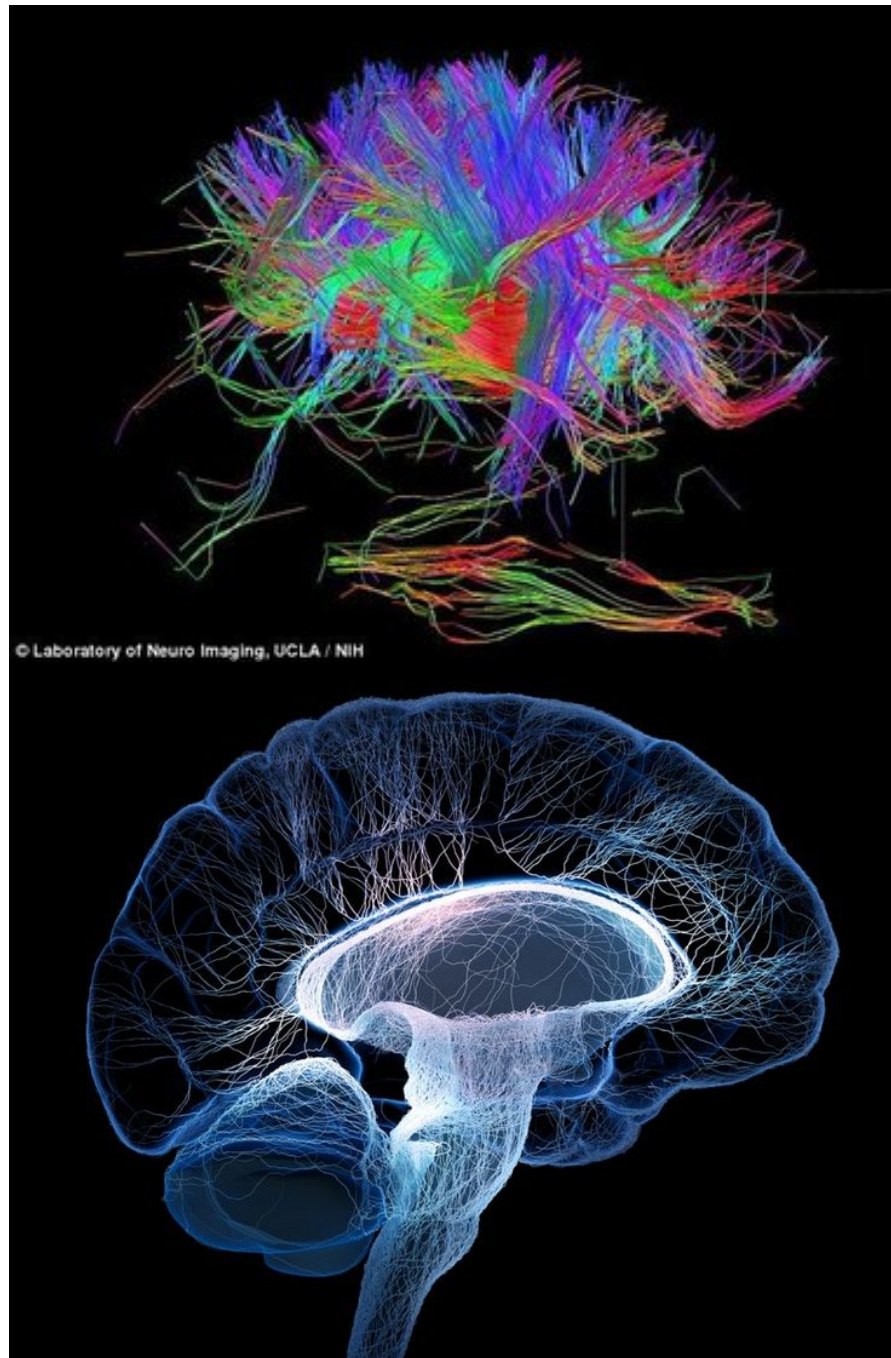




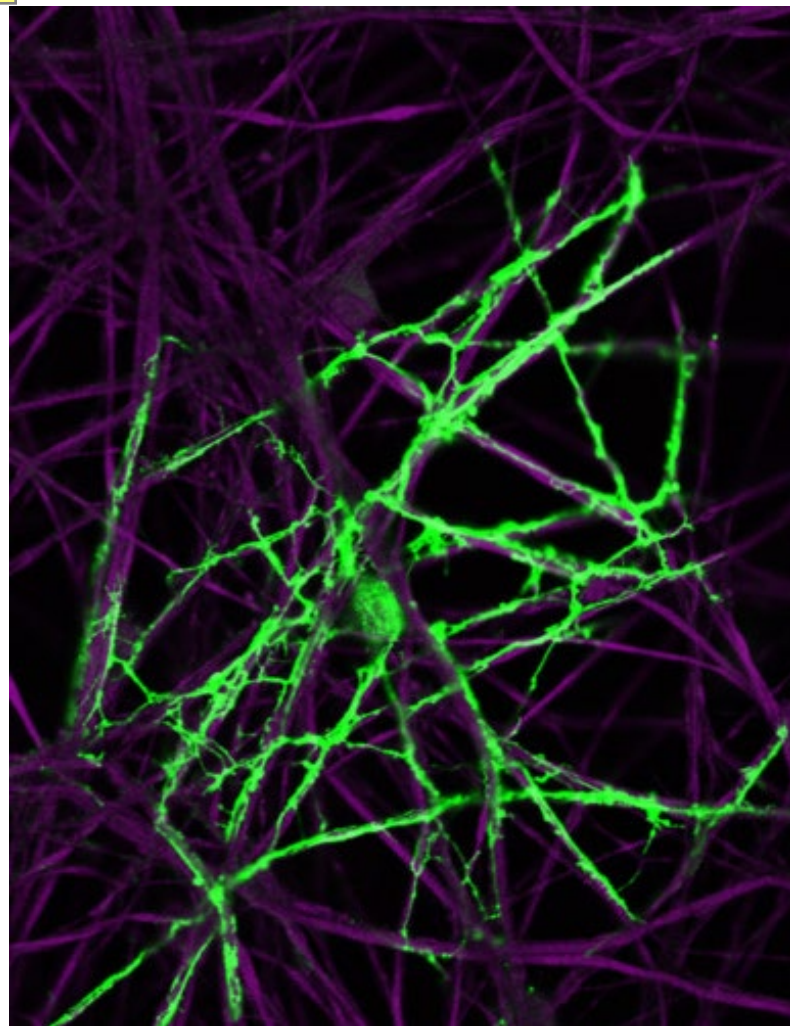
Brain Development



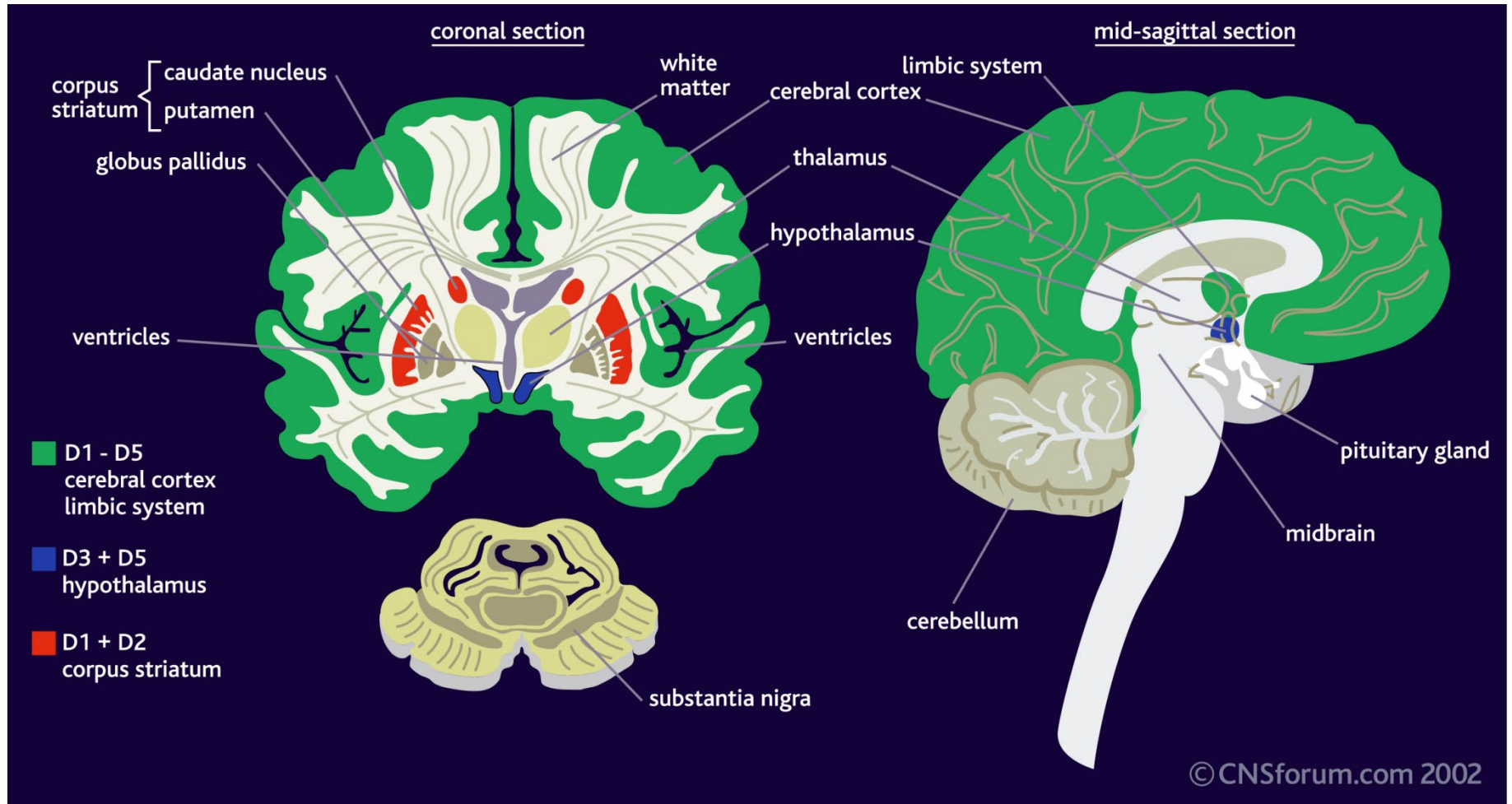
Source: Tapert & Schweinsburg, 2005



Synaptic Refinement



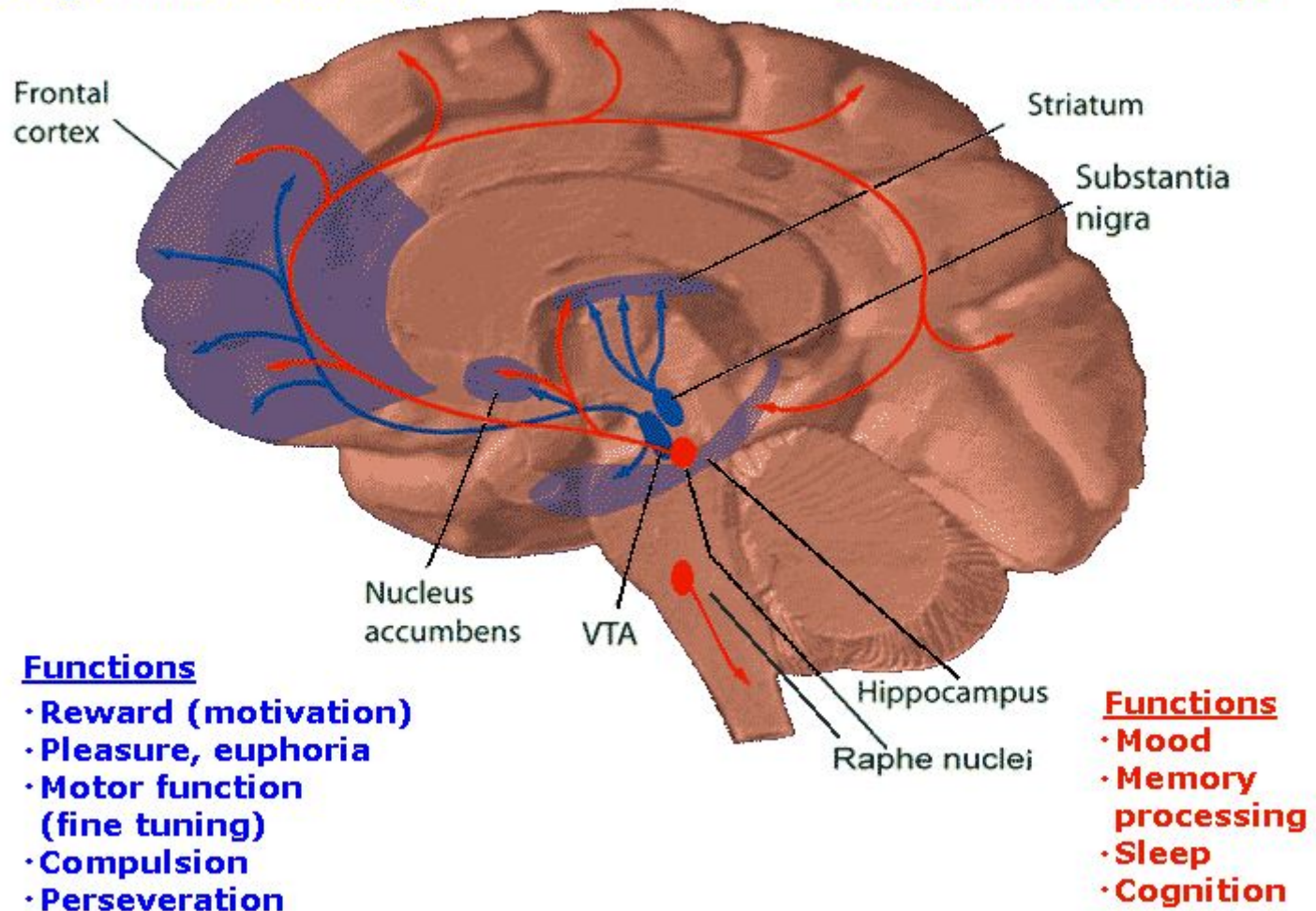
Myelination

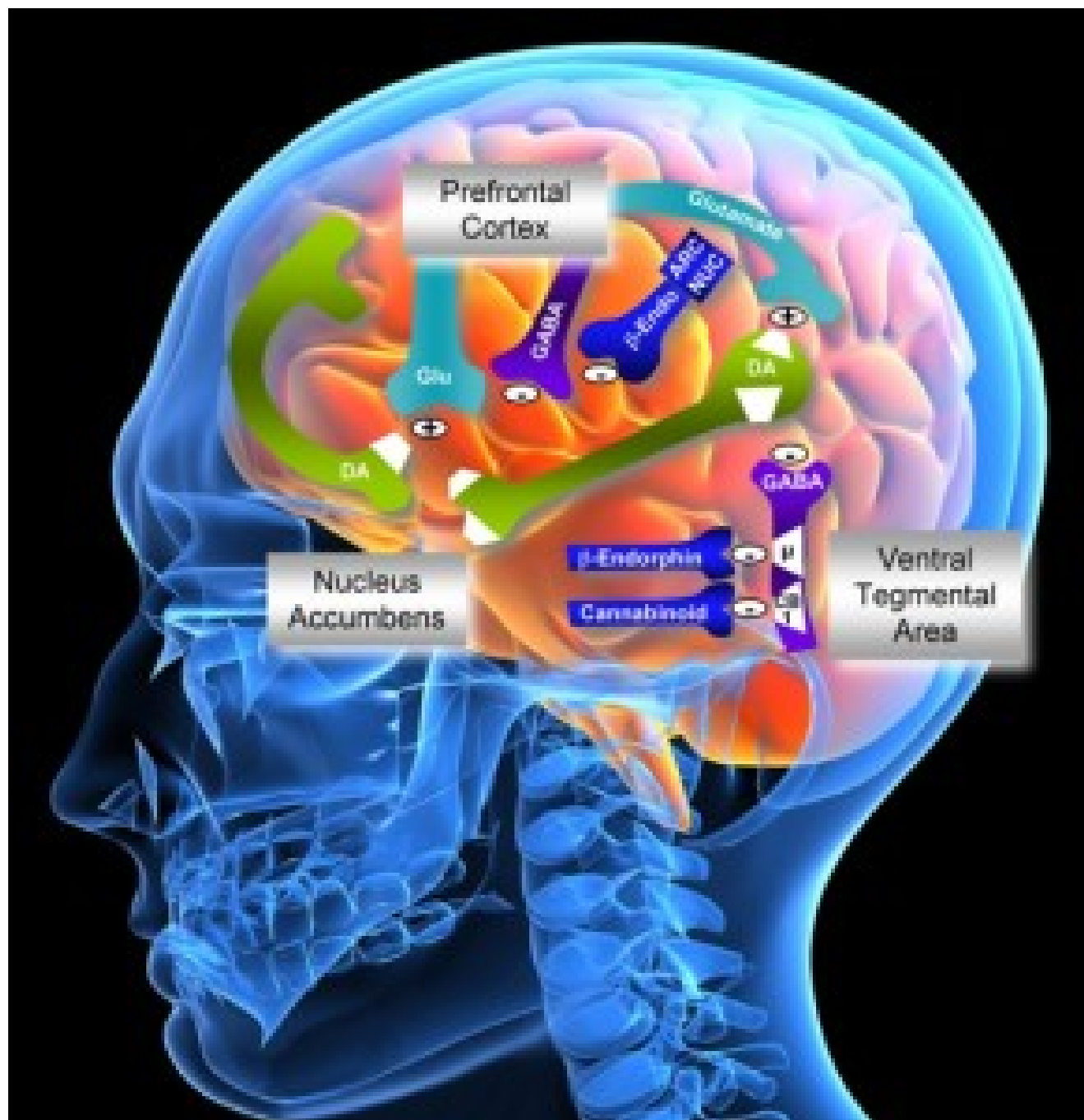


Dopamine Receptors

Dopamine Pathways

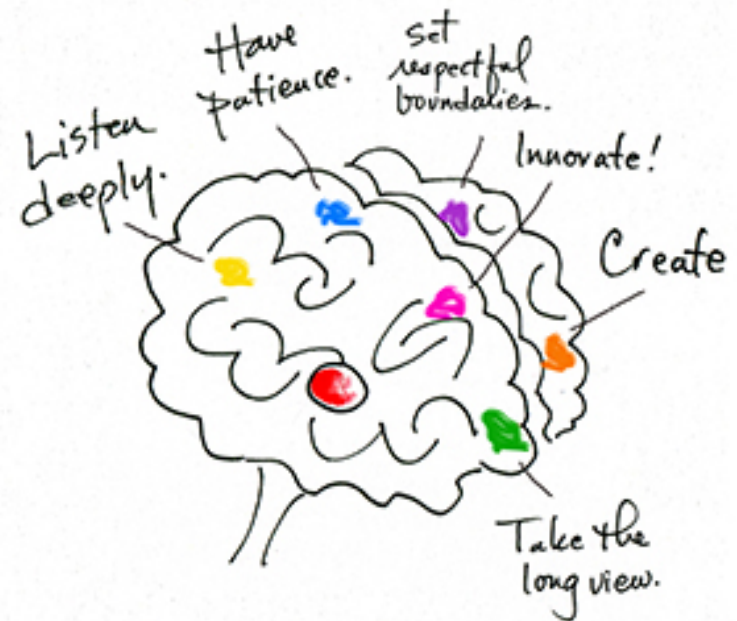
Serotonin Pathways







Lizard brain advice



Cortex advice

Eat, Drink, Have Sex, Use Drugs

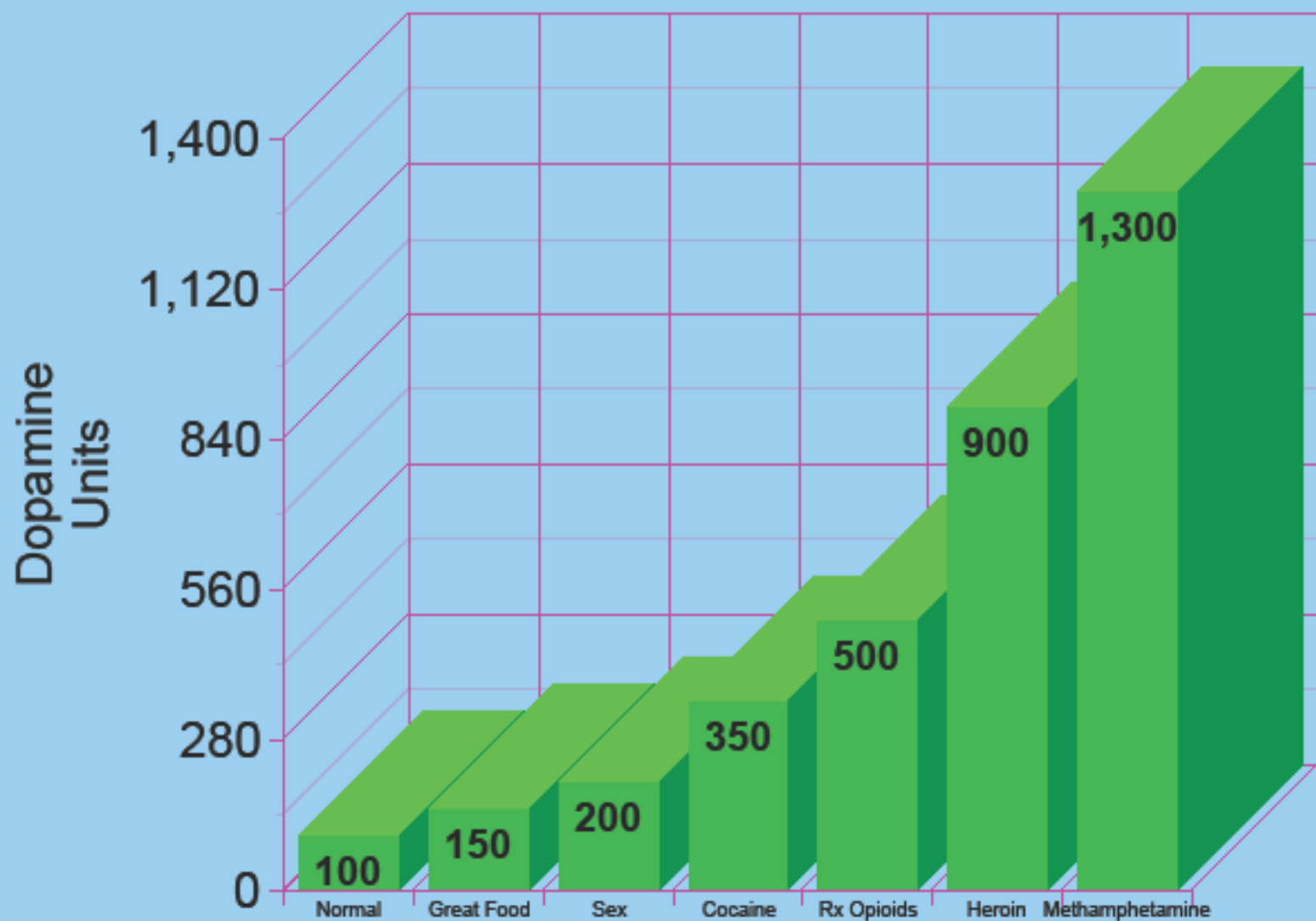


IT IS SAD
TODAY.

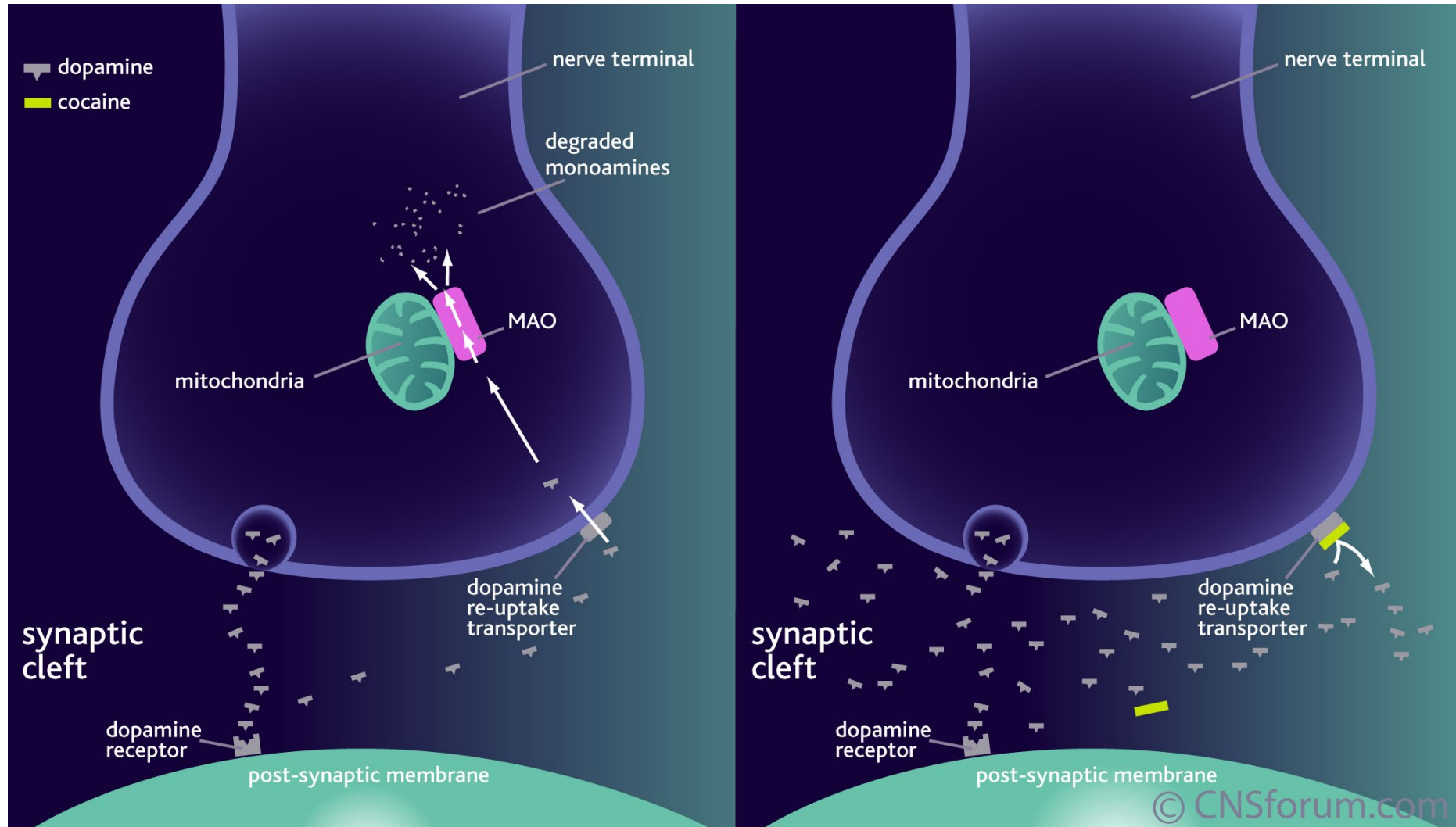


Gio
5-05

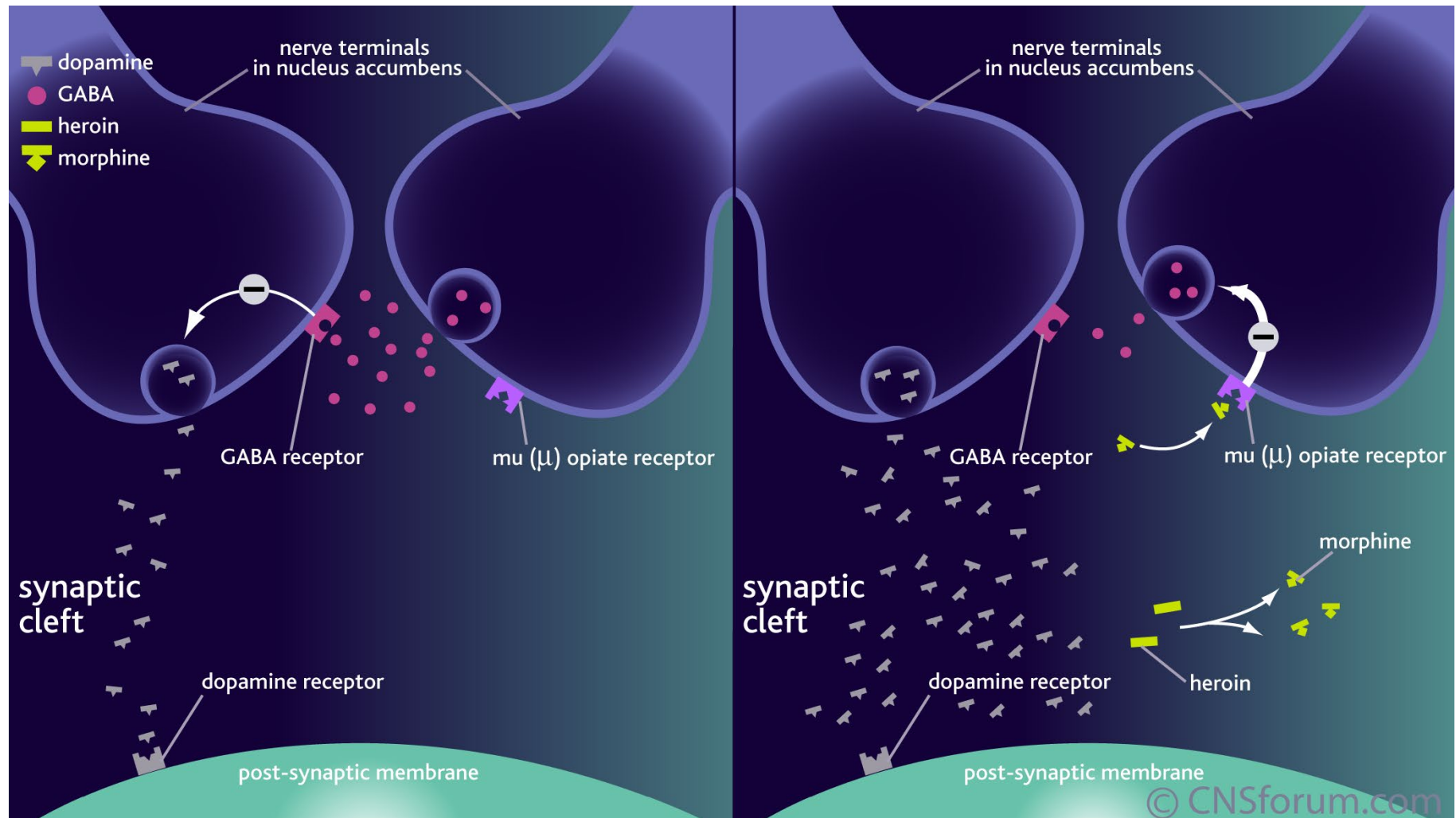
Dopamine Levels



How Cocaine Works

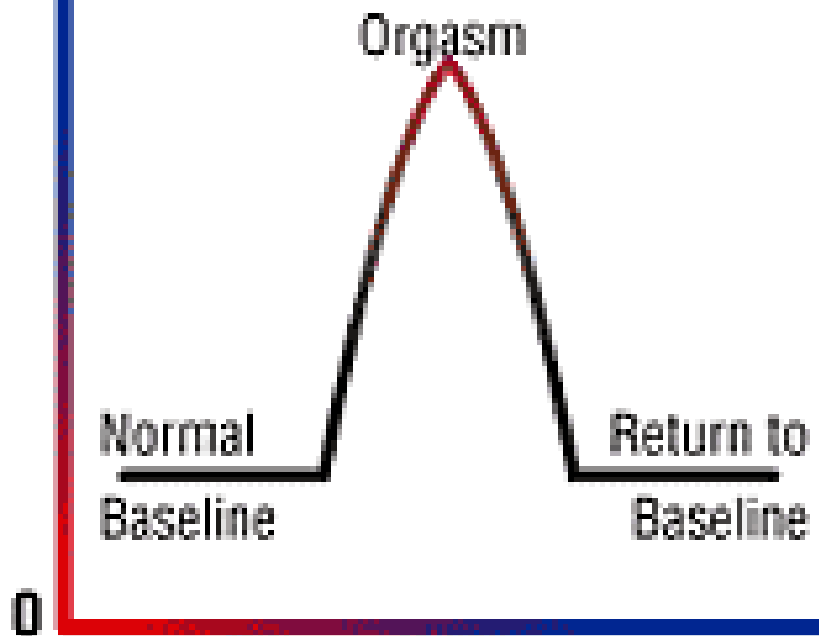


How Heroin Works

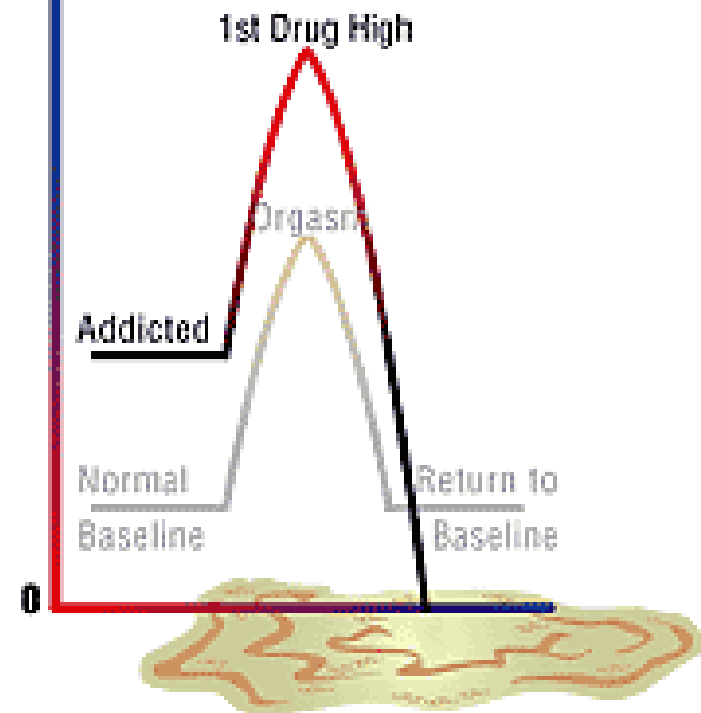




Dopamine Level - Normal Brain

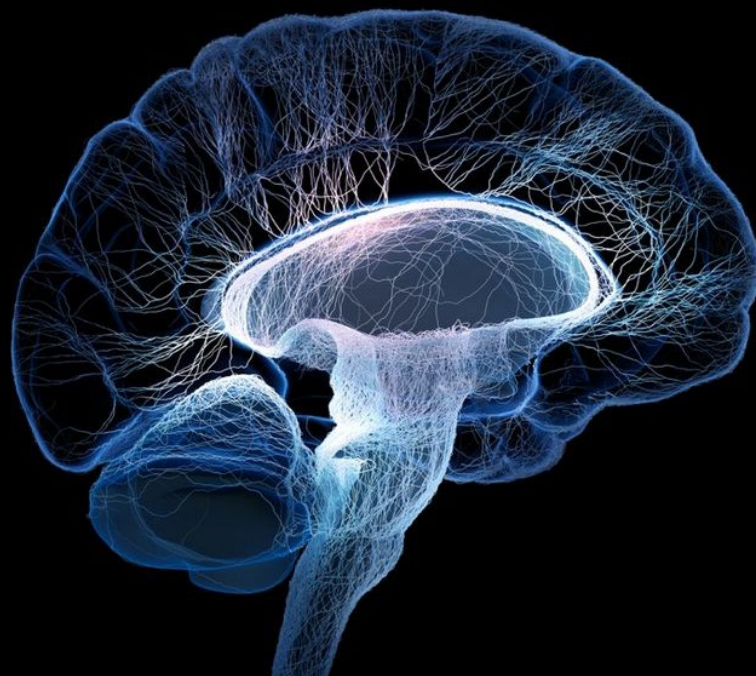


Dopamine Level - Addicted Brain





© Laboratory of Neuro Imaging, UCLA / NIH



Act First,
Think Later

This is Normal Development

Preference
for Physical
Activity and
Sensation
Seeking

More Risky
Impulsive
Behavior



Emotions Felt
Very
Intensely

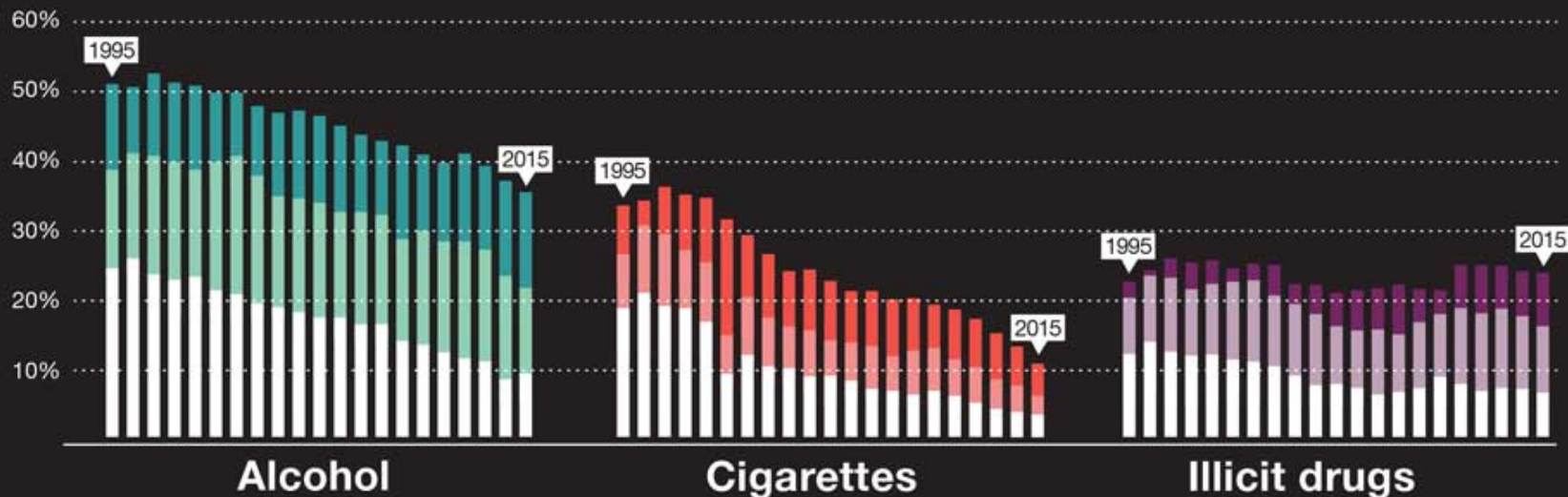
Less than
Optimal
Planning

Less
Consideration
of Negative
Consequences




Strongly
Influenced by
Friends and
Peers




LAST TWO DECADES OF ALCOHOL, CIGARETTE, AND ILLICIT DRUG USE*




*Past-month use



2015

 35.3% OF 12TH GRADERS
 21.5% OF 10TH GRADERS
 9.7% OF 8TH GRADERS

 11.4% OF 12TH GRADERS
 6.3% OF 10TH GRADERS
 3.6% OF 8TH GRADERS

 23.6% OF 12TH GRADERS
 16.5% OF 10TH GRADERS
 8.1% OF 8TH GRADERS



National Institute
on Drug Abuse

WWW.DRUGABUSE.GOV

PAST-MONTH ALCOHOL USE CONTINUES STEADY DECLINE

2016



12th graders
33.2%

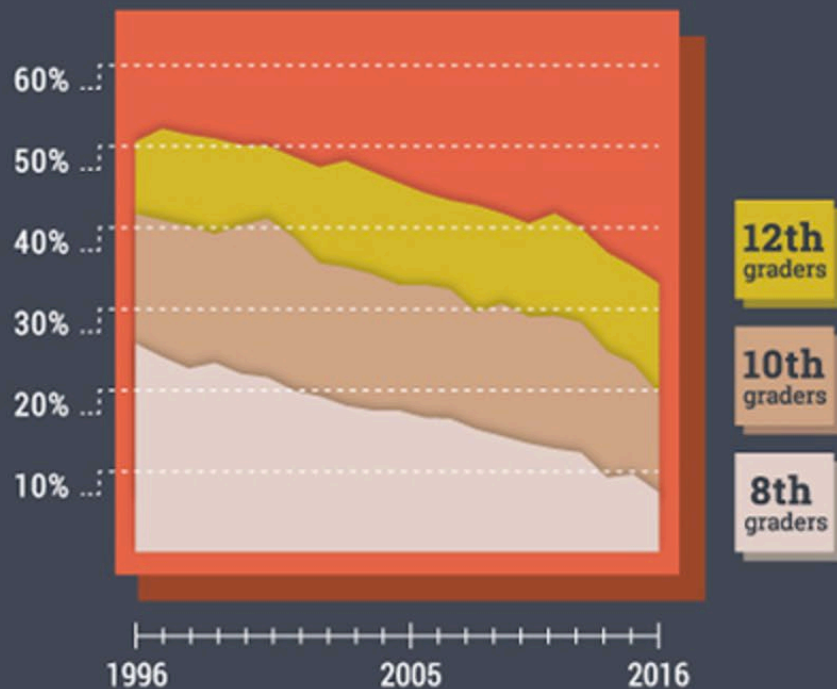


10th graders
19.9%



8th graders
7.3%

1996 – 2016

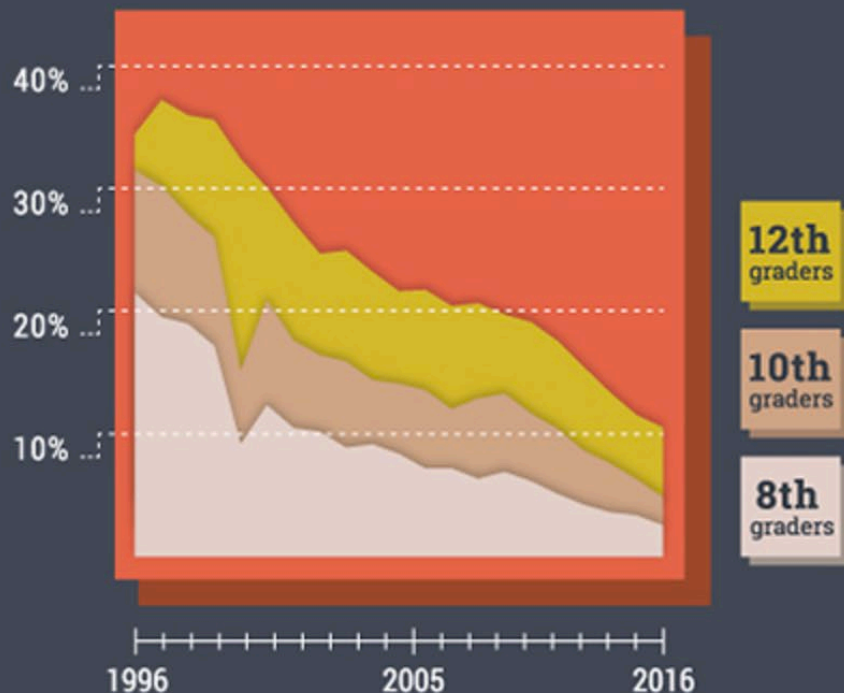


National Institute
on Drug Abuse

DRUGABUSE.GOV

PAST-MONTH CIGARETTE USE CONTINUES STEADY DECLINE

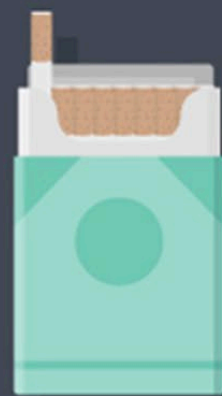
1996 – 2016



2016



12th graders
10.5%



10th graders
4.9%



8th graders
2.6%

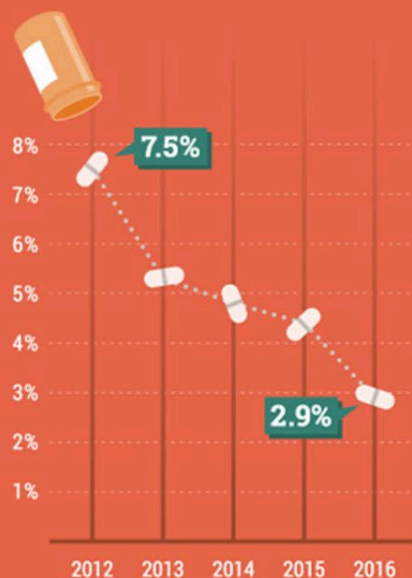


National Institute
on Drug Abuse

DRUGABUSE.GOV

PRESCRIPTION/OVER-THE-COUNTER VS. ILLICIT DRUGS

VICODIN®

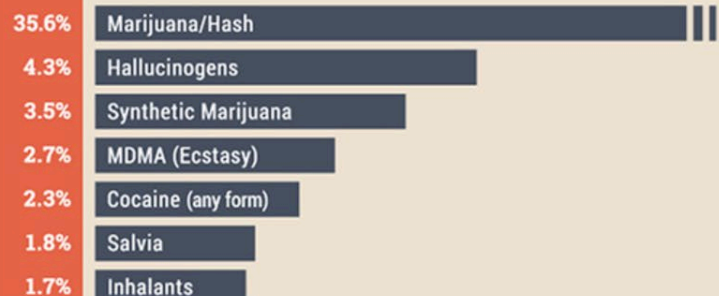


Past-year misuse of Vicodin® among 12th graders has dropped dramatically in the past 5 years. So has misuse of all Rx opioids among 12th graders despite high opioid overdose rates among adults.

PRESCRIPTION/OTC



ILLICIT DRUGS



Past-year use among 12th graders

STUDENTS REPORT LOWEST RATES SINCE START OF THE SURVEY

Across all grades, past-year use of inhalants, heroin, methamphetamine, alcohol, cigarettes, and synthetic cannabinoids are at their lowest by many measures.

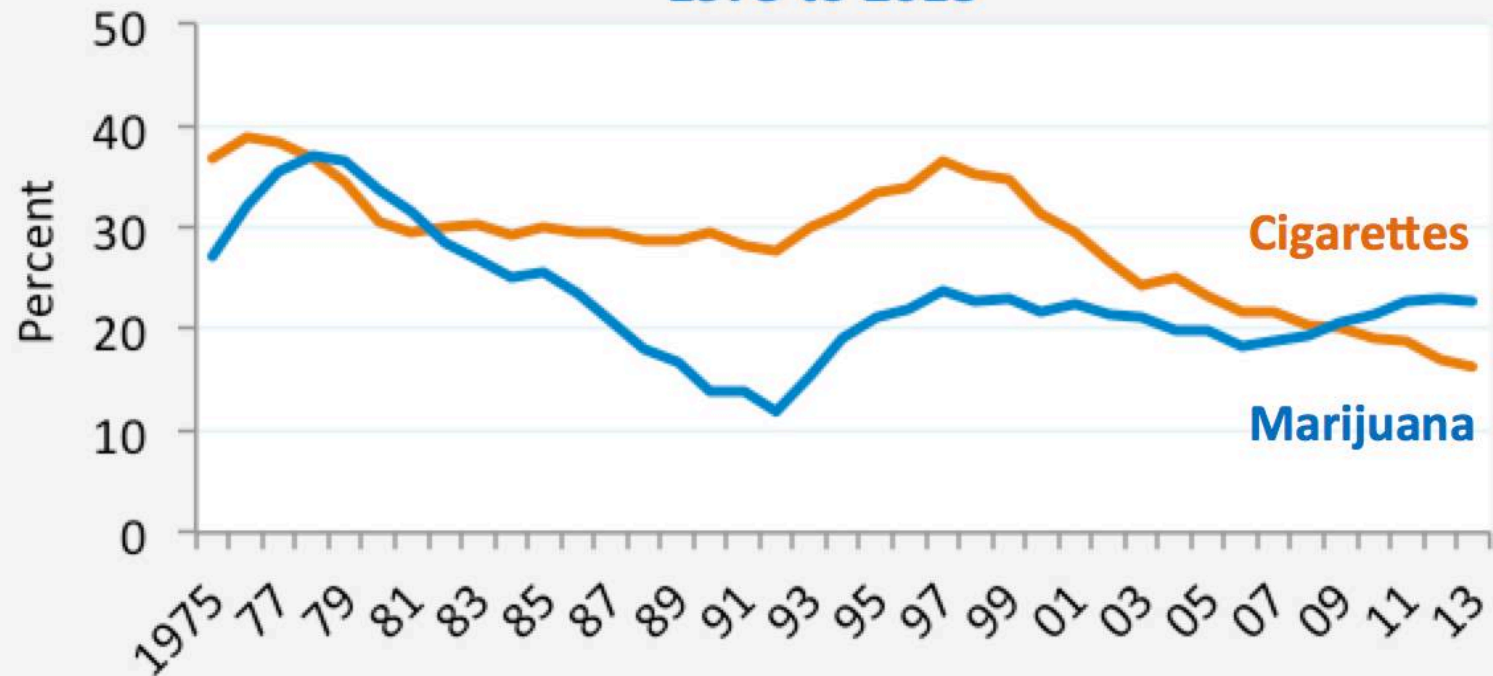


National Institute
on Drug Abuse

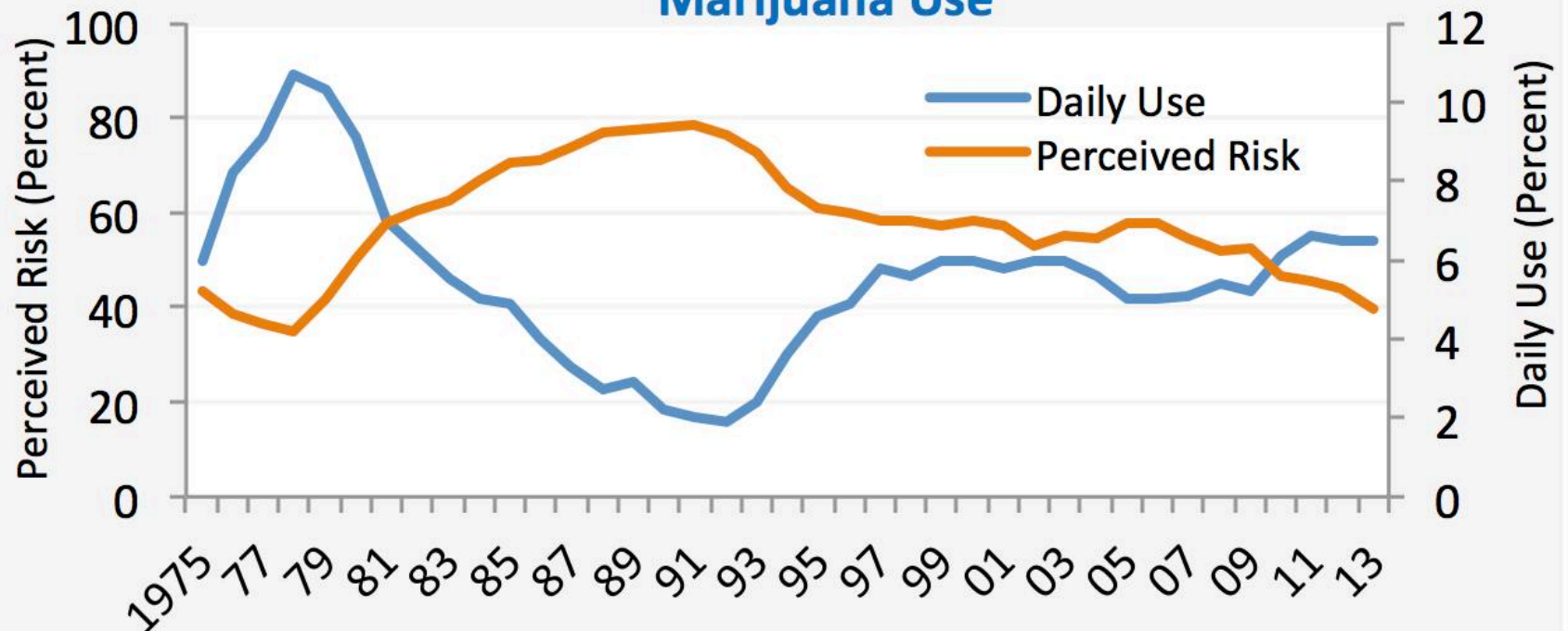
DRUGABUSE.GOV



Percentage of U.S. 12th Grade Students Reporting Past Month Use of Cigarettes and Marijuana, 1975 to 2013



Percentage of U.S. 12 Grade Students Reporting Daily Marijuana Use vs. Perceived Risk of Regular Marijuana Use



Source: The Monitoring the Future study, the University of Michigan

“Not
Addictive”

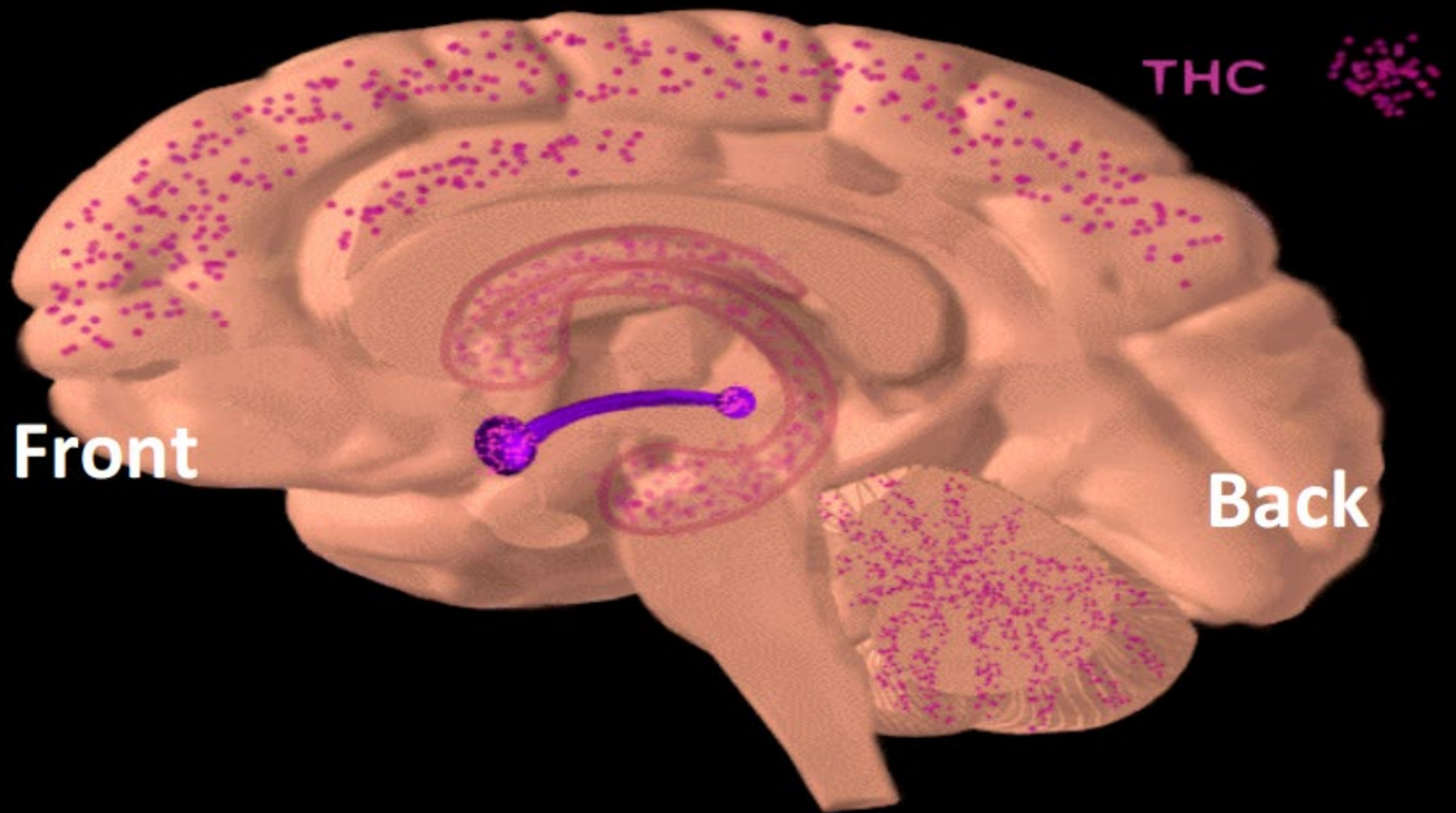
“It’s Natural”

“Better than
Alcohol”

“It’s
Medicine”

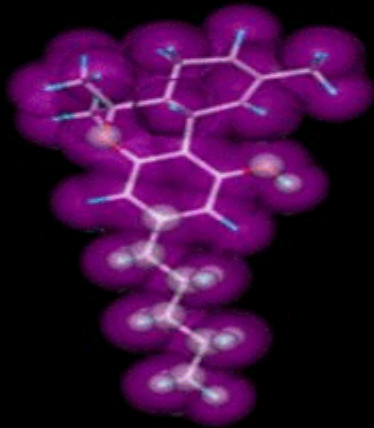
“It is Legal”

“Never Killed
Anyone”



Marijuana
(Tetrahydrocannabinol)

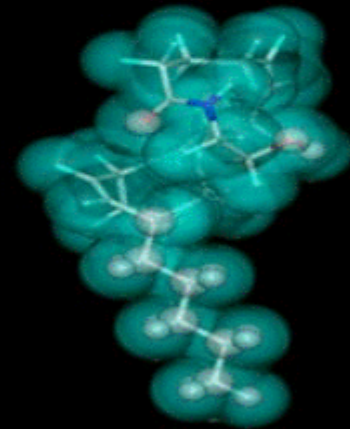
Drug



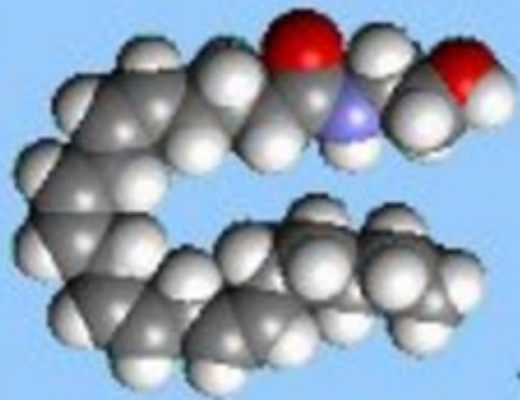
THC

Endo-cannabinoid
(Anandamide)

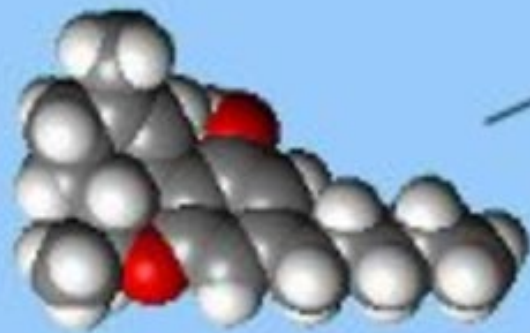
Brain's Chemical



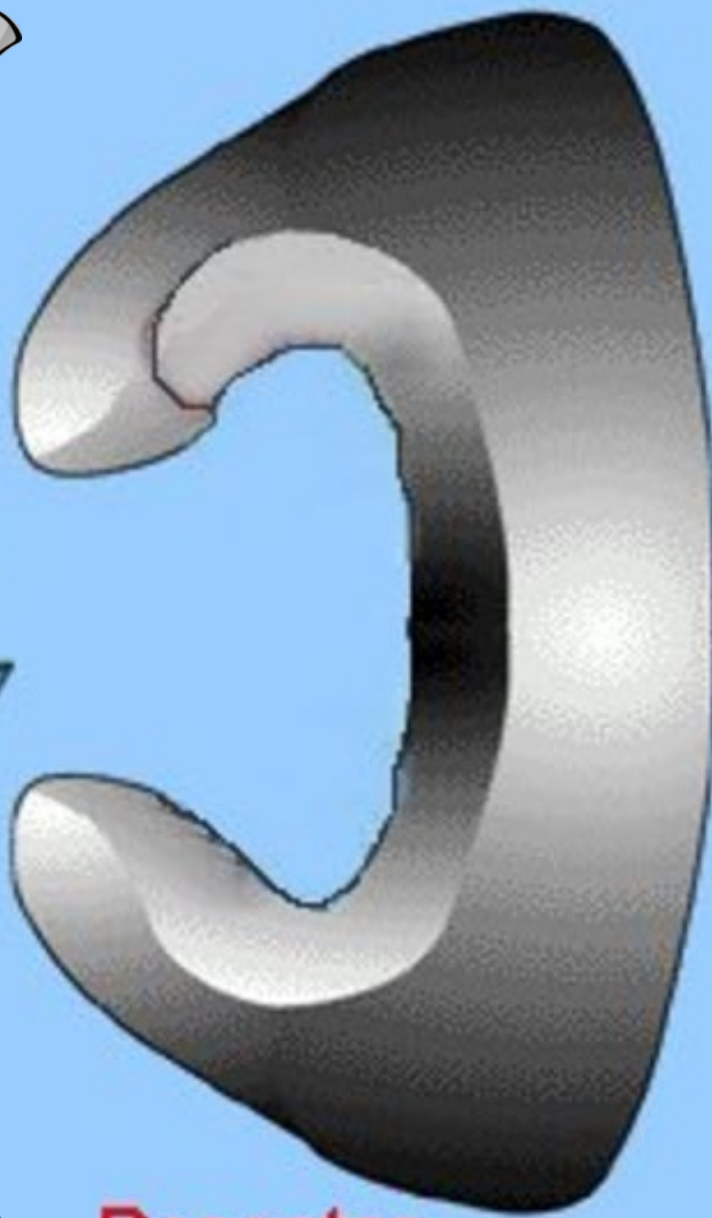
Anandamide



anandamide



THC



Receptor

Acute effects of using marijuana (during intoxication)

Altered judgment

Slowed reaction time

Euphoria

Increased appetite

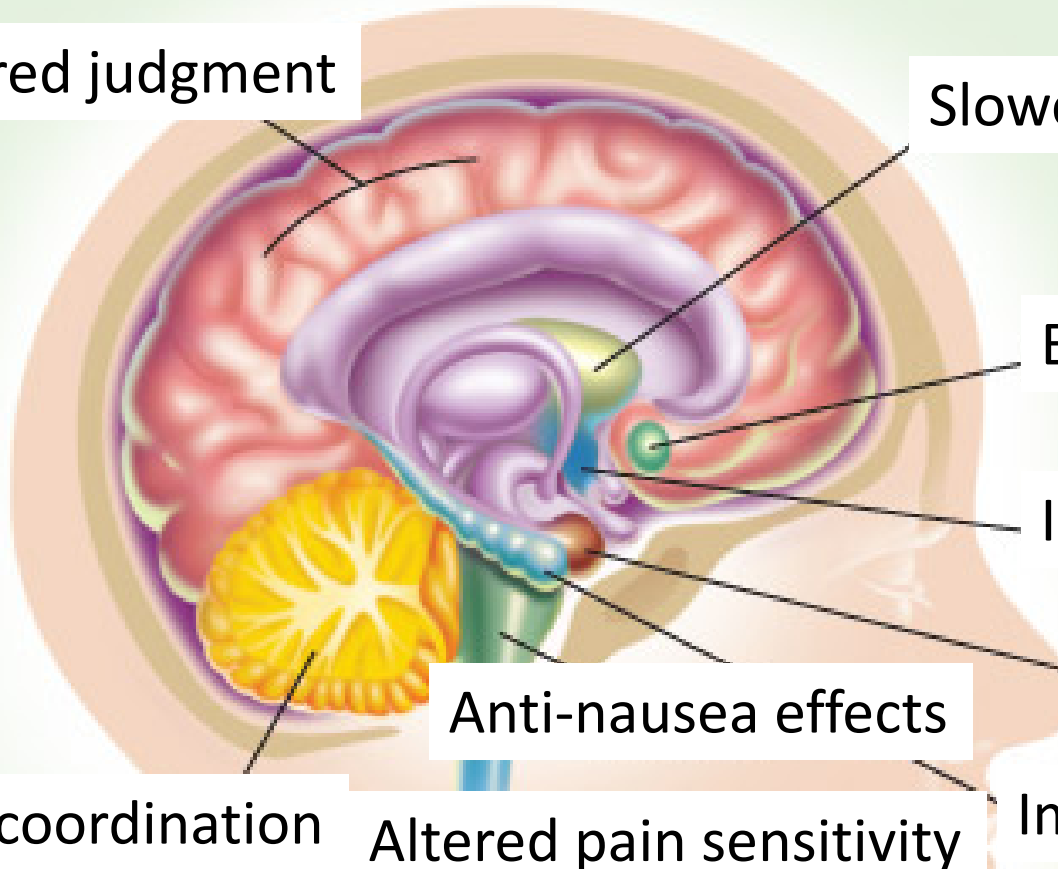
Panic/paranoia/
psychosis

Anti-nausea effects

Impaired coordination

Altered pain sensitivity

Impaired memory

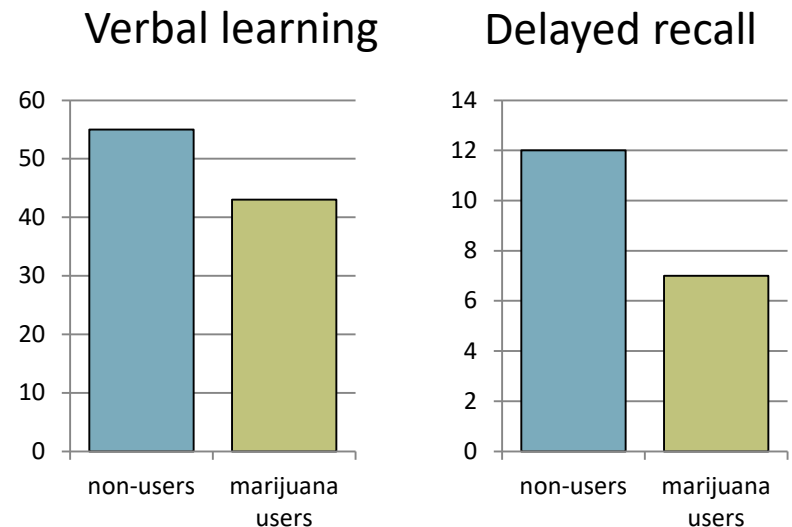


Deficits in cognitive functioning among active users

Many studies show that adolescents who use marijuana heavily tend to score worse than non-users on tests of:

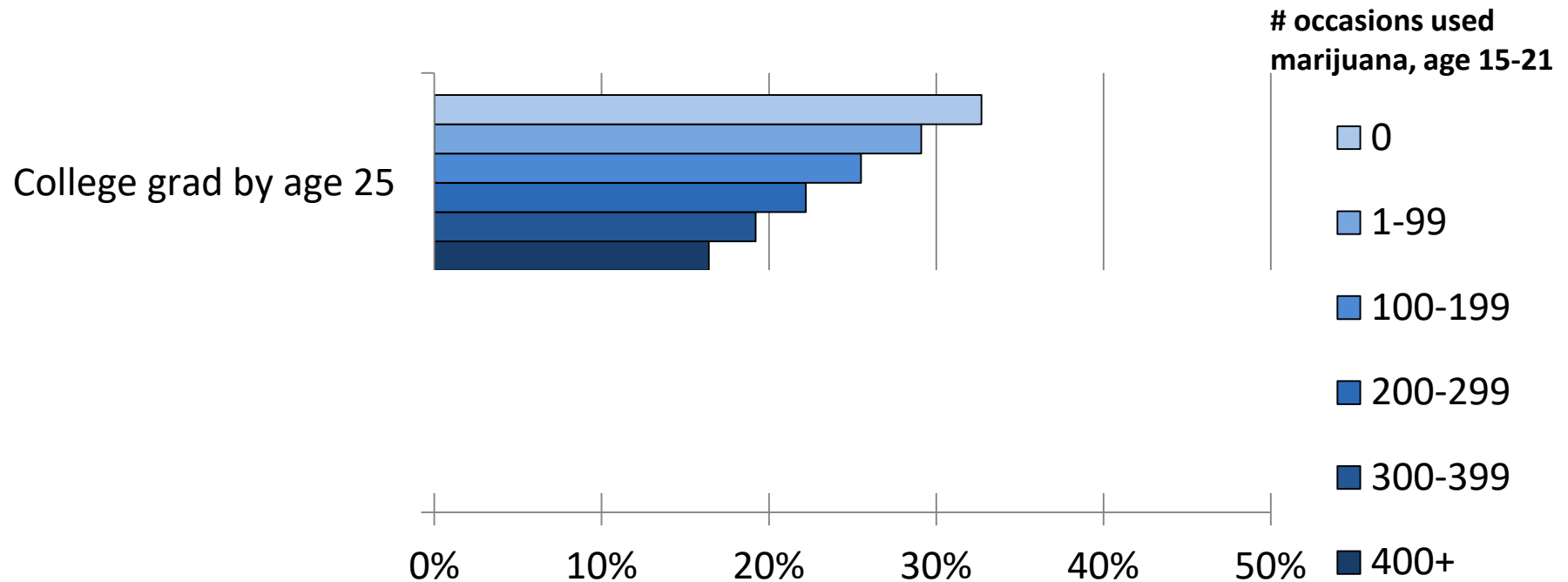
- attention
- verbal learning
- memory
- processing speed

... even when they are not high.



Messinis, et al 2006

Adult life outcomes affected by marijuana use in adolescence



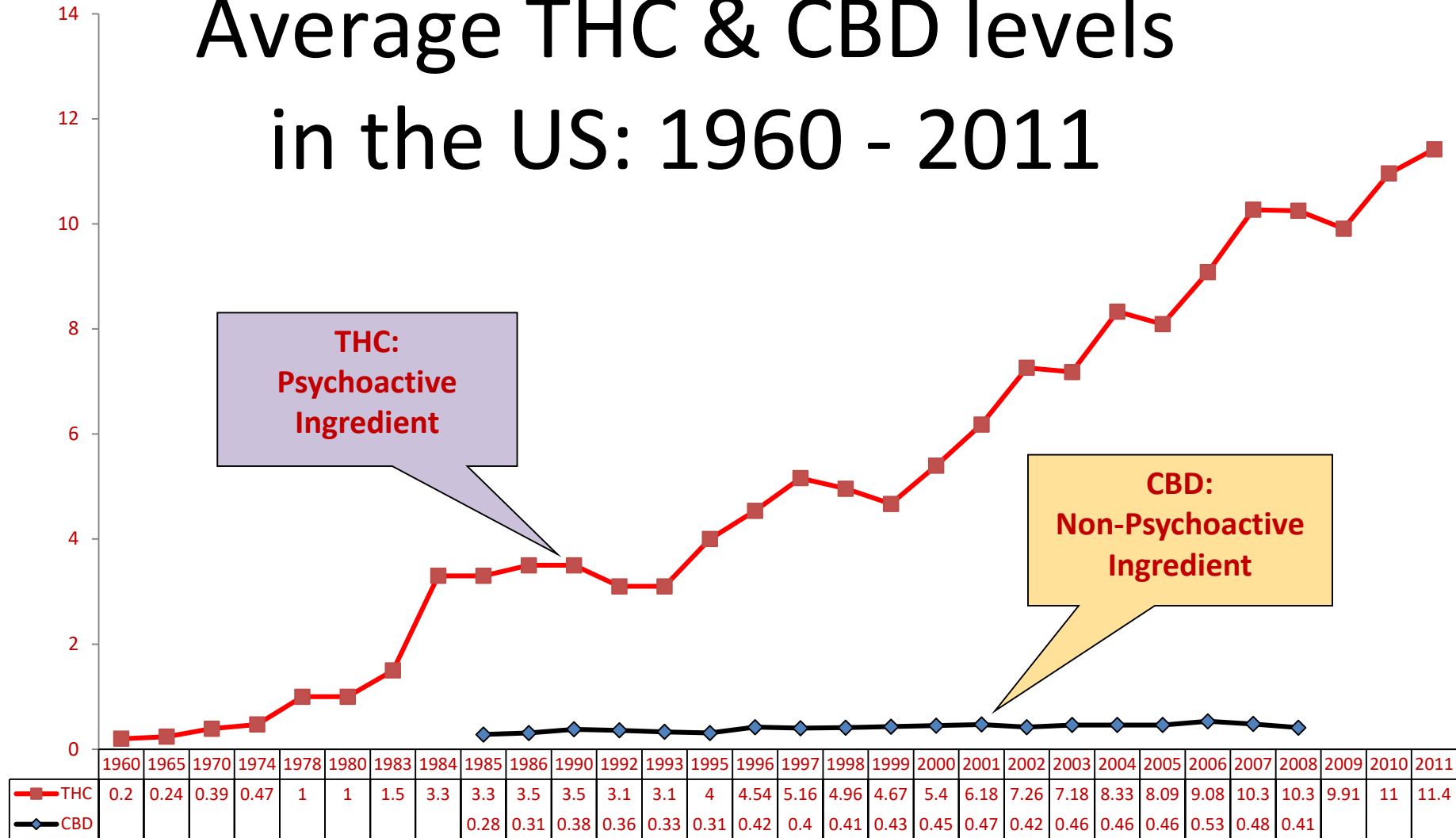


Loss of adult IQ with marijuana dependence in adolescence

Findings:

- **Those who developed marijuana dependence before age 18 showed IQ decline in adulthood.**
- The longer their dependence persisted, the greater the decline, with a decline of 8 IQ points for the most persistent users.
- **Those who began using in adulthood did not show IQ decline.**
- Quitting in adulthood did not restore functioning in those who began in adolescence.

Average THC & CBD levels in the US: 1960 - 2011



Data from the NIDA-sponsored Potency Monitoring program at the University of Mississippi, showing average THC and CBD levels in samples of marijuana seized by federal, state and local governments in each year shown.



THC Concentrates



"Green Crack" wax



"Ear Wax"



Butane Hash Oil (BHO)



Hash Oil Capsules



"Budder"

"Shatter"



SMOKING



PIPE



BONG



BUBBLER



DAB



JOINT



BLUNT

BEVERAGES



TEA



SODA



ALCOHOL



MILK

Ways to
consume
marijuana

EDIBLES



CANDY



ICE CREAM



BAKED GOODS

VAPORIZING



DESKTOP VAPORIZER



PORTABLE VAPORIZER

OTHER



CAPSULES



SPRAY

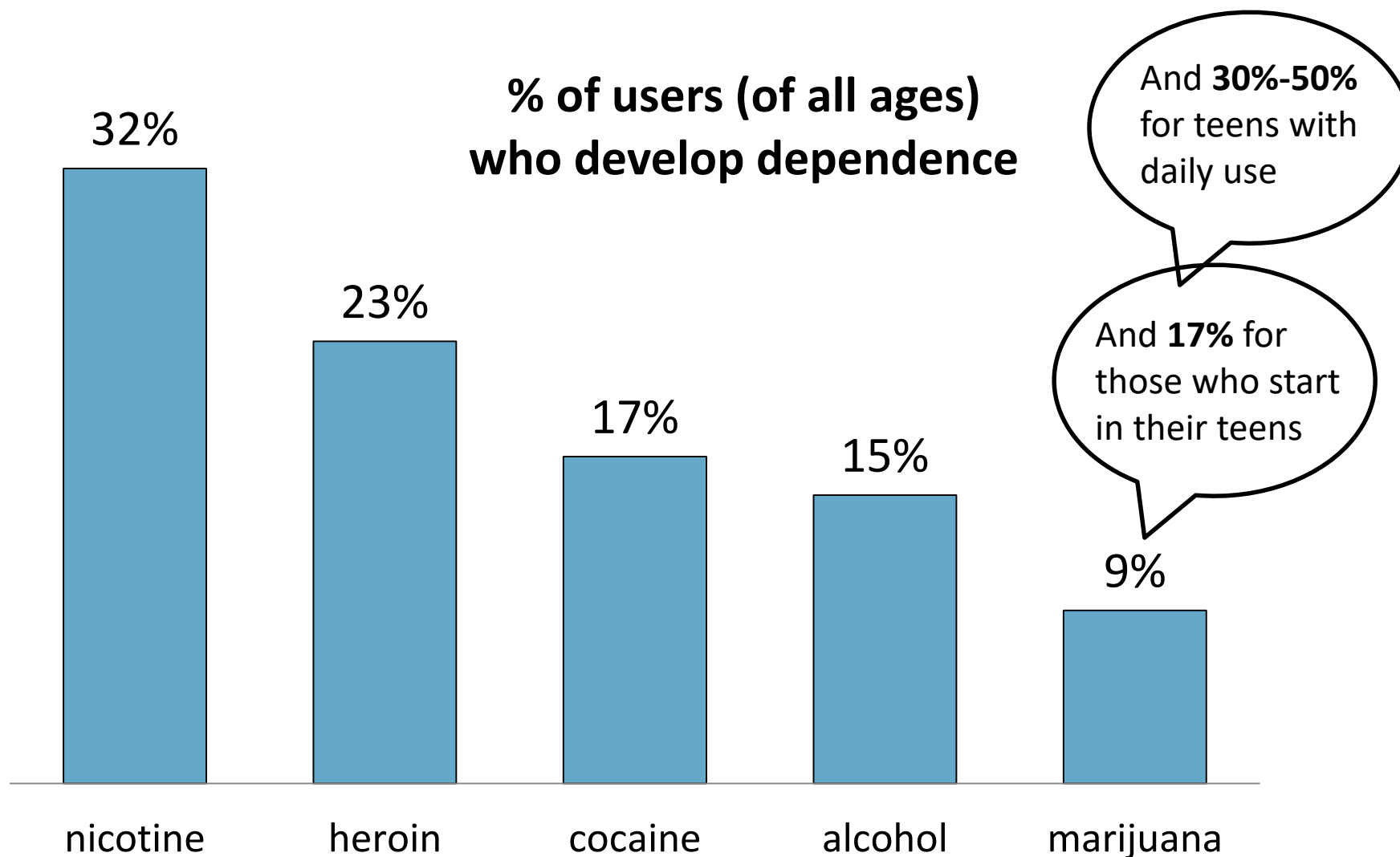


TINCTURE

Products & packaging:
Like this?



Is Marijuana Addictive?



Big Marijuana — Lessons from Big Tobacco

Kimber P. Richter, Ph.D., M.P.H., and Sharon Levy, M.D., M.P.H.

The United States is divided over the legalization of marijuana. Arguments in favor include protection of individual rights, elimination of criminal sentencing for minor offenses, collection of tax revenue, and elimination of the black market. Counterarguments include the

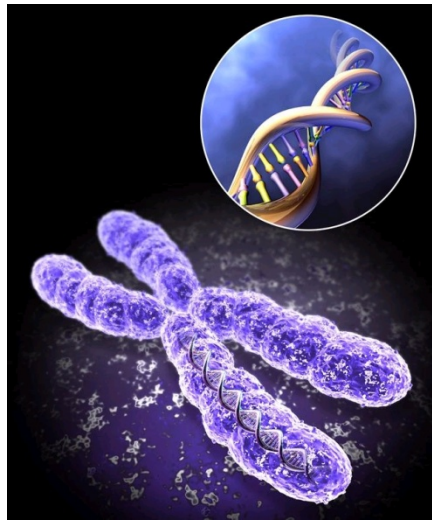
N ENGL J MED 371:5 NEJM.ORG JULY 31, 2014

399

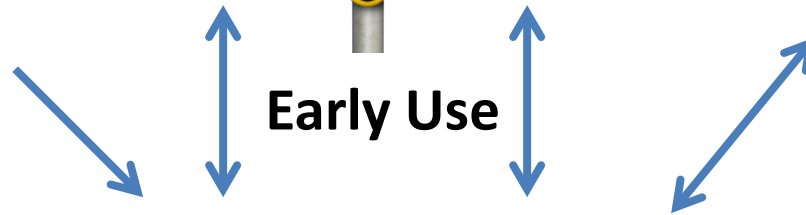
The New England Journal of Medicine

It took the medical and public health communities 50 years, millions of lives, and billions of dollars to identify the wake of illness and death left by legal, industrialized cigarettes. The free-market approach to tobacco clearly failed to protect the public's welfare and the common good: in spite of recent federal regulation, tobacco use remains the leading cause of death in the United States.

History and current evidence suggest that simply legalizing marijuana, and giving free rein to the resulting industry, is not the answer. To do so would be to once again entrust private industry with safeguarding the health of the public — a role that it is not designed to handle.



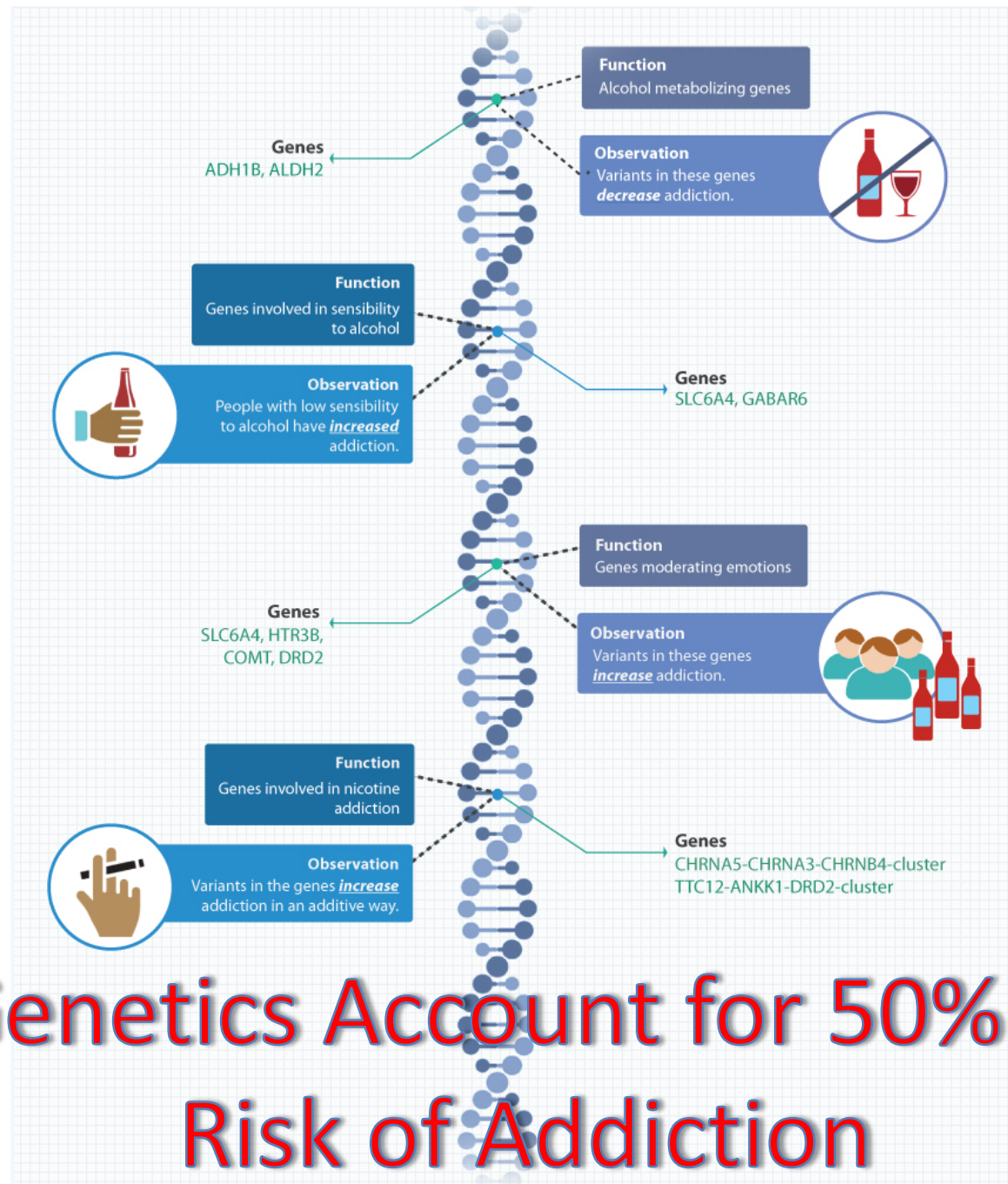
Genetics



Trauma

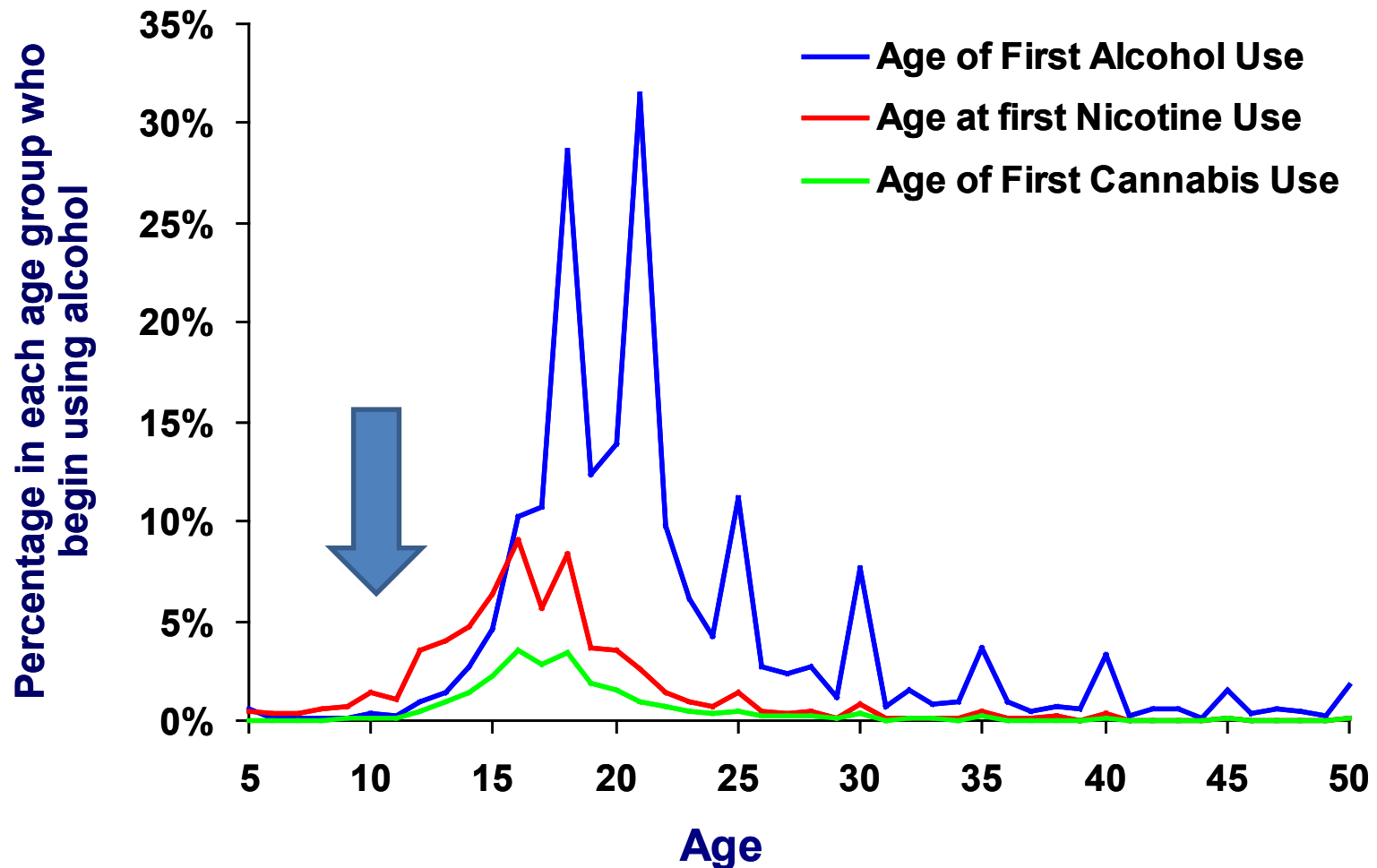


Poor Mental Health



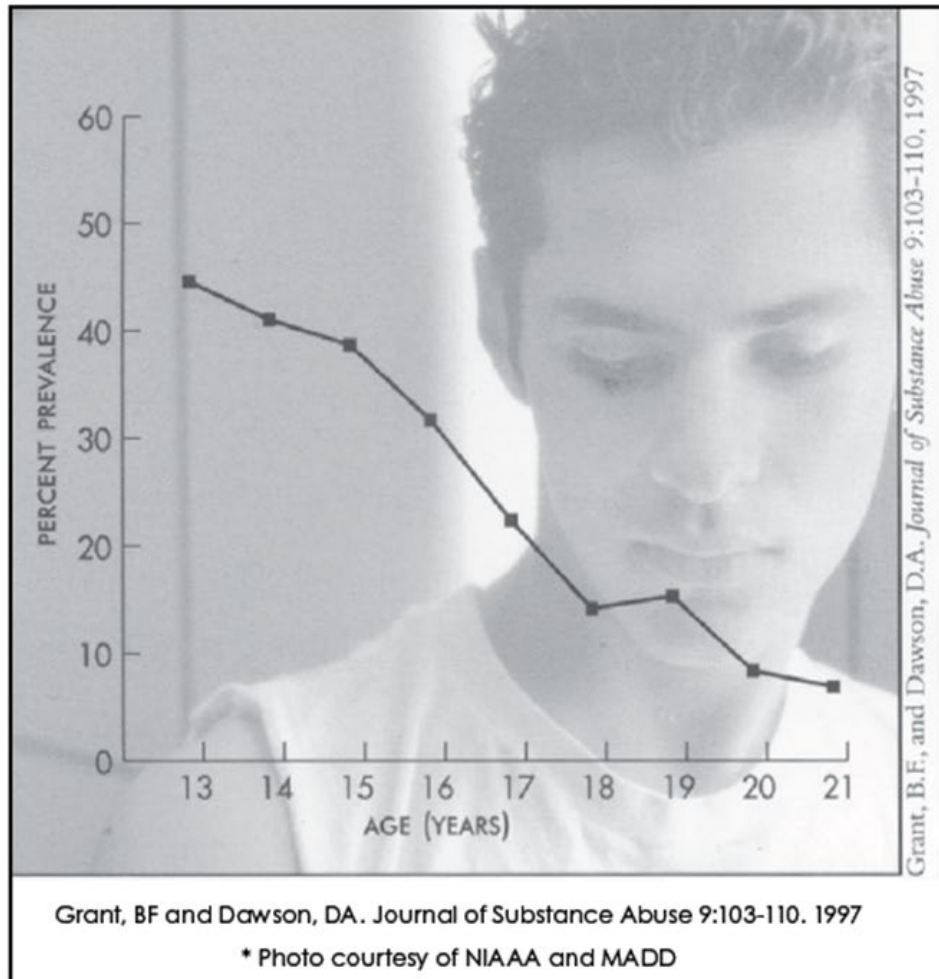


Addiction is a Developmental Pediatric Disease



Source: NIAAA National Epidemiologic Survey on Alcohol and Related Conditions, 2003

Teen Alcohol Use Wires The Brain For Addiction



40% of kids who begin drinking at age 15 will become alcoholics.

Only 7% of those who begin drinking at age 21 become alcoholics.





Adverse Childhood Experiences
Emotional Neglect
Abuse
Household Dysfunction

Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults

The Adverse Childhood Experiences (ACE) Study

Vincent J. Felitti, MD, FACP, Robert F. Anda, MD, MS, Dale Nordenberg, MD, David F. Williamson, MS, PhD, Alison M. Spitz, MS, MPH, Valerie Edwards, BA, Mary P. Koss, PhD, James S. Marks, MD, MPH

Background: The relationship of health risk behavior and disease in adulthood to the breadth of exposure to childhood emotional, physical, or sexual abuse, and household dysfunction during childhood has not previously been described.

Methods: A questionnaire about adverse childhood experiences was mailed to 13,494 adults who had completed a standardized medical evaluation at a large HMO; 9,508 (70.5%) responded. Seven categories of adverse childhood experiences were studied: psychological, physical, or sexual abuse; violence against mother; or living with household members who were substance abusers, mentally ill or suicidal, or ever imprisoned. The number of categories of these adverse childhood experiences was then compared to measures of adult risk behavior, health status, and disease. Logistic regression was used to adjust for effects of demographic factors on the association between the cumulative number of categories of childhood exposures (range: 0–7) and risk factors for the leading causes of death in adult life.

Results: More than half of respondents reported at least one, and one-fourth reported ≥ 2 categories of childhood exposures. We found a graded relationship between the number of categories of childhood exposure and each of the adult health risk behaviors and diseases that were studied ($P < .001$). Persons who had experienced four or more categories of childhood exposure, compared to those who had experienced none, had 4- to 12-fold increased health risks for alcoholism, drug abuse, depression, and suicide attempt; a 2- to 4-fold increase in smoking, poor self-rated health, ≥ 50 sexual intercourse partners, and sexually transmitted disease; and a 1.4- to 1.6-fold increase in physical inactivity and severe obesity. The number of categories of adverse childhood exposures showed a graded relationship to the presence of adult diseases including ischemic heart disease, cancer, chronic lung disease, skeletal fractures, and liver disease. The seven categories of adverse childhood experiences were strongly interrelated and persons with multiple categories of childhood exposure were likely to have multiple health risk factors later in life.

Conclusions: We found a strong graded relationship between the breadth of exposure to abuse or household dysfunction during childhood and multiple risk factors for several of the leading causes of death in adults.

Medical Subject Headings (MeSH): child abuse, sexual, domestic violence, spouse abuse, children of impaired parents, substance abuse, alcoholism, smoking, obesity, physical activity, depression, suicide, sexual behavior, sexually transmitted diseases, chronic obstructive pulmonary disease, ischemic heart disease. (Am J Prev Med 1998;14:245–258) © 1998 American Journal of Preventive Medicine

Finding Your ACE Score

While you were growing up, during your first 18 years of life:

1. Did a parent or other adult in the household **often or very often**...
Swear at you, insult you, put you down, or humiliate you?
or
Act in a way that made you afraid that you might be physically hurt?
Yes No If yes enter 1 _____
2. Did a parent or other adult in the household **often or very often**...
Push, grab, slap, or throw something at you?
or
Ever hit you so hard that you had marks or were injured?
Yes No If yes enter 1 _____
3. Did an adult or person at least 5 years older than you **ever**...
Touch or fondle you or have you touch their body in a sexual way?
or
Attempt or actually have oral, anal, or vaginal intercourse with you?
Yes No If yes enter 1 _____
4. Did you **often or very often** feel that ...
No one in your family loved you or thought you were important or special?
or
Your family didn't look out for each other, feel close to each other, or support each other?
Yes No If yes enter 1 _____
5. Did you **often or very often** feel that ...
You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you?
or
Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?
Yes No If yes enter 1 _____
6. Were your parents **ever** separated or divorced?
Yes No If yes enter 1 _____
7. Was your mother or stepmother:
Often or very often pushed, grabbed, slapped, or had something thrown at her?
or
Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard?
or
Ever repeatedly hit at least a few minutes or threatened with a gun or knife?
Yes No If yes enter 1 _____
8. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?
Yes No If yes enter 1 _____
9. Was a household member depressed or mentally ill, or did a household member attempt suicide?
Yes No If yes enter 1 _____
10. Did a household member go to prison?
Yes No If yes enter 1 _____

Now add up your "Yes" answers: _____ This is your ACE Score.

WHAT ARE THEY?

ACEs are
ADVERSE
CHILDHOOD
EXPERIENCES

The three types of ACEs include

ABUSE



Physical



Emotional



Sexual

NEGLECT



Physical



Emotional

HOUSEHOLD DYSFUNCTION



Mental Illness



Incarcerated Relative



Mother treated violently



Substance Abuse



Divorce

HOW PREVALENT ARE ACEs?

The ACE study* revealed the following estimates:

ABUSE

Physical Abuse 28.3%

Sexual Abuse 20.7%

Emotional Abuse 10.6%

percentage of study participants
that experienced a specific ACE

NEGLECT

Emotional Neglect 14.8%

Physical Neglect 9.9%

HOUSEHOLD DYSFUNCTION

Household Substance Abuse 26.9%

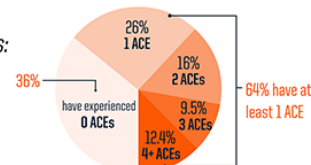
Parental Divorce 23.3%

Household Mental Illness 19.4%

Mother Treated Violently 12.7%

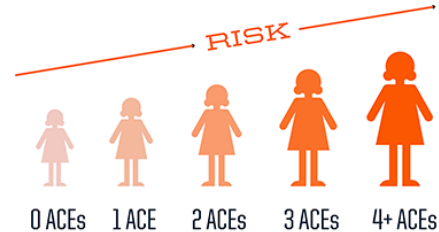
Incarcerated Household Member 4.7%

Of 17,000 ACE
study participants:



WHAT IMPACT DO ACEs HAVE?

As the number of ACEs increases, so does
the risk for negative health outcomes



Possible Risk Outcomes:

BEHAVIOR



Lack of physical activity



Smoking



Alcoholism



Drug use



Missed work

PHYSICAL & MENTAL HEALTH



Severe obesity



Diabetes



Depression



Suicide attempts



STDs



Heart disease



Cancer



Stroke



COPD



Broken bones

“I was really messed up, drinking, using drugs. My parents weren’t helping the situation. It took a long time, I ran away from home, got suspended from school but the Student Assistance Counselor at my school didn’t give up on me and finally convinced me to get treatment. It took a few times going to different programs but I am clean and sober today. I don’t think I would have made it without her help.”

- Jason, former student, age 26

I don't know exactly why, but I feel better after I talk to you. I am not so mad...." - *Melissa, age 13*

"My Student Assistance Counselor helped me through the toughest years of my life. She taught me how to cope with the alcohol abuse in my family. I still visit her to this day because she helped me so much."
- *Mallory, former student, age 24*

"My Student Assistance Counselor is really funny, and sassy and helps me with my problems which I have a lot of."
- *Jola, age 12*

ACEs Connection

A Community-of-Practice Social Network

Join the movement to prevent ACEs, heal trauma & build resilience.



[HOME](#) / [MEDIA](#)

Media

Sort By Post Date ▾

All

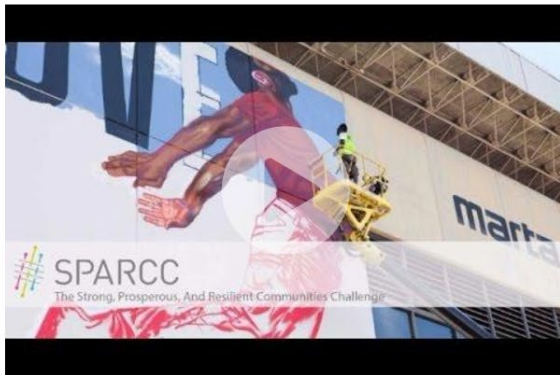
Photos

Videos

Audio

Files

VIDEO



Introducing the Strong, Prosperous, And Resilient Communities Challenge (SPARCC) [6 min - Low Income Investment Fund]

JANE STEVENS • 10 HOURS AGO

FILE



Barriers to Success - Moving Towards a Deeper Understanding of Adversity's Effects on Adolescents (America's Promise Alliance) 24 page report.pdf

 [RSS Feed for Resources](#)

Clip Sets

[DOWNLOADS CATEGORIES](#) →

Clip Comments

Very informative. Thanks for sharing. This information needs to be available and supported by those participating the in the rights of...

3/27/17 @ 4:33 PM

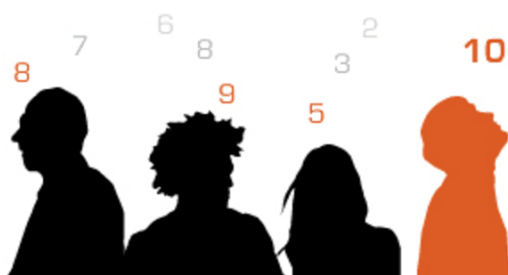


Thanks for your comment, Rick. It is both, in that our culture shapes boys to express their trauma outwardly, and girls to express their...

3/27/17 @ 4:31 PM



Jane I say this with respect...Violence and abuse is not a gender problem; it is a human problem



ACES Too High!

NEWS

ACEs = Adverse Childhood Experiences

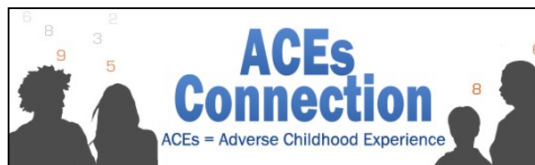


[HOME](#) [ACES SCIENCE 101](#) [GOT YOUR ACE SCORE?](#) [ACES IN ACTION](#) [ACES CONNECTION](#) [RESEARCH](#) [RESOURCES](#) [ABOUT](#)

ACEs Connection

If you're working to lower ACE scores in your personal, work, play, faith-based or community life — and this includes any endeavor, from art to politics — please consider joining [ACEs Connection](#). It's the companion social network to [ACEsTooHigh.com](#).

ACEsConnection.com is for people who are implementing — or thinking about implementing — trauma-informed and resilience-building practices based on ACEs research. As of October 2014, more than 3,000 people had joined.



If you join, you automatically receive a daily digest with summaries and links to the latest news, research and reports about ACEs research and implementation, plus a weekly roundup of activity within the network. ACEsConnection members post blogs, photos, videos, and events; they can find, message and chat with others who are working on similar projects. They participate in groups. There are topic-based groups....for pediatricians, educators, people in criminal justice, for the faith-based community. There are geographic-based groups....for cities, counties and states.

To join, just head to [ACEsConnection.com](#) and sign up!

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Follow

TWEETS

Did you know?? [#Legislation](#) addressing [#trauma](#) to be introduced soon in US House and Senate [acesconnection.com/blog/legislati...](#) 31 minutes ago

RT [@healWRITEnow](#): Those of us with high ACE scores are not traumatized by this knowledge. We are traumatized by trauma.[https://t.co/OU9QQjq...](#) 1 week ago

RT [@HealthFedMARC](#): MARC networks “move the needle” on policies to reduce [#ACEs](#) & build [#resilience](#) [bit.ly/2mwfFKG](#) [@HEARTSris](#)

Talk Early, Talk Often

“Delay, Delay, Delay or Avoid Altogether”



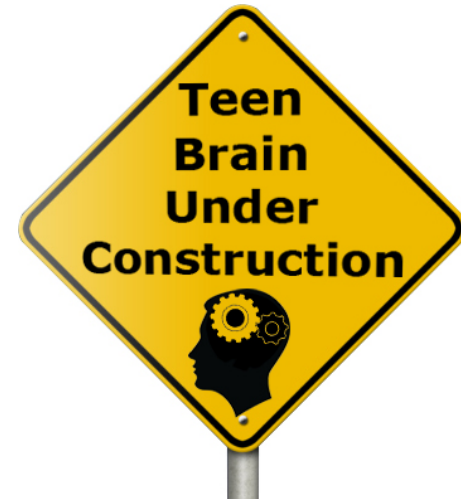
Genetics

+



Trauma

+



Early Use

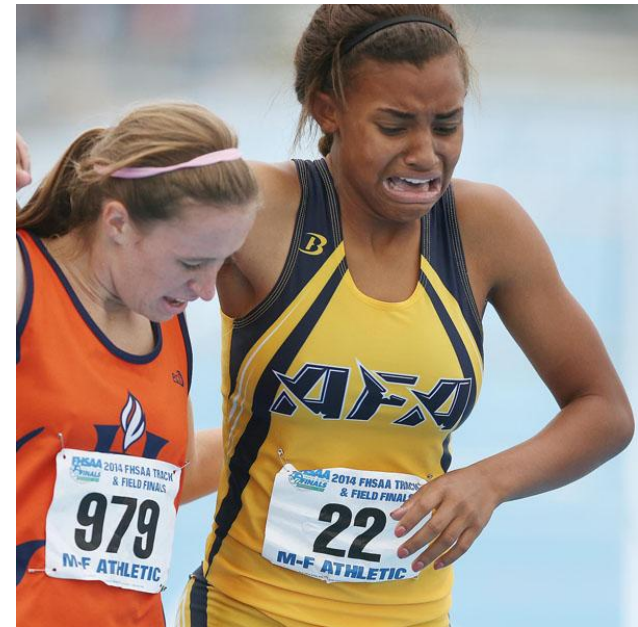
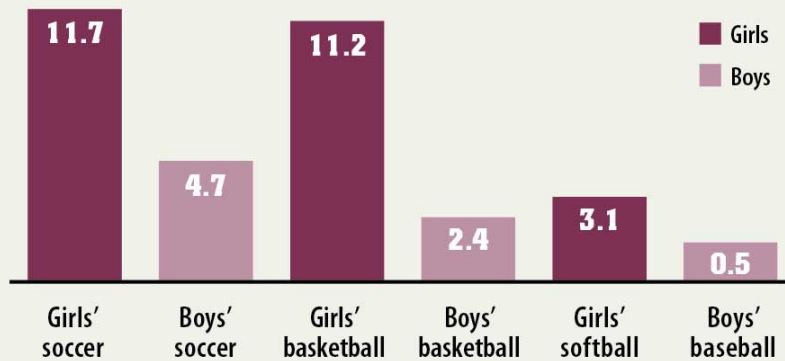


FIGURE 2 High school ACL injury rates

High school anterior cruciate ligament (ACL) injury rates per 100,000 athlete exposures (AEs) by sport and sex. (An athlete exposure is 1 athlete participating in 1 practice or competition.)



Adapted from Comstock RD, et al.³





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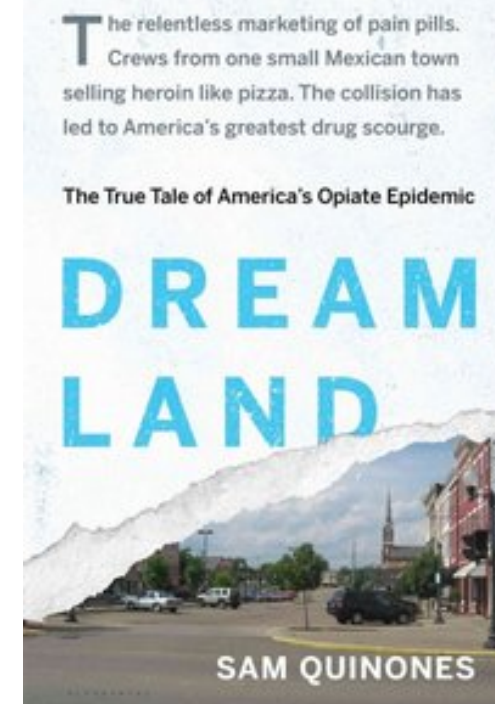
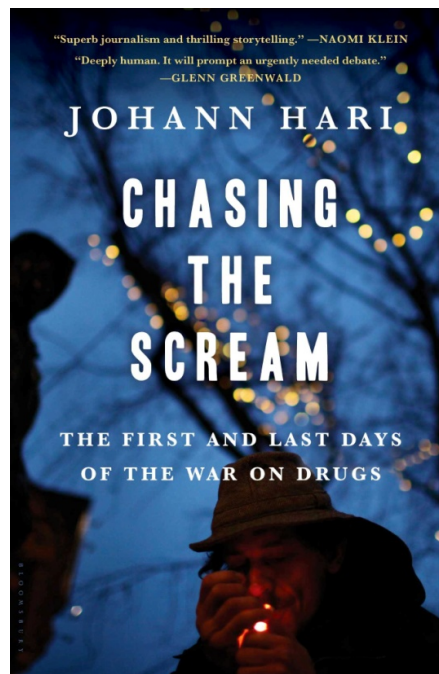
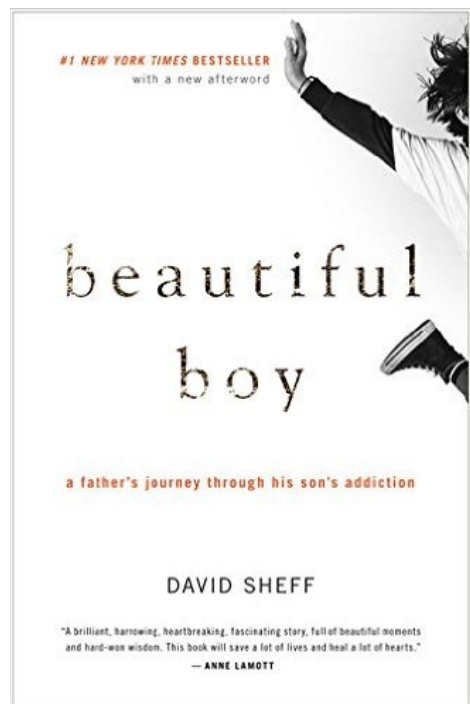
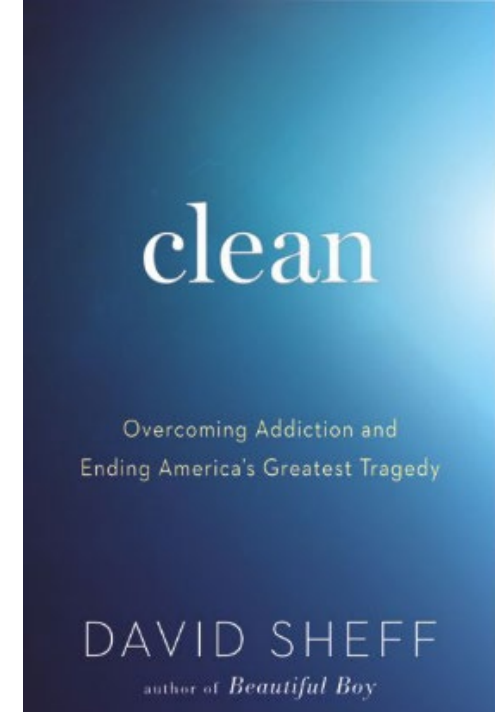
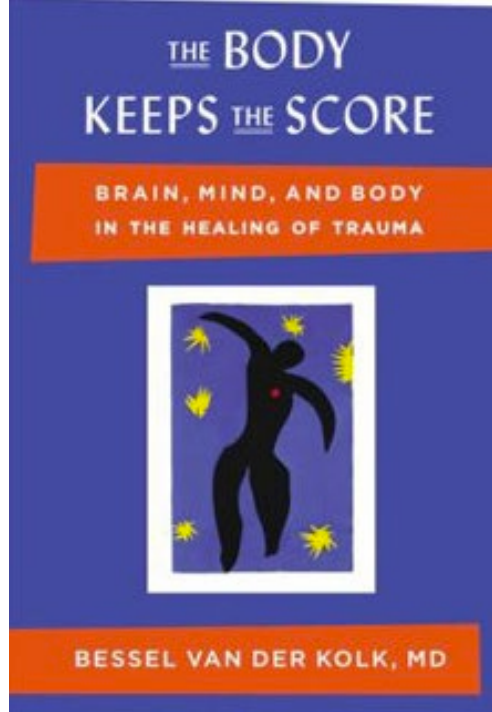
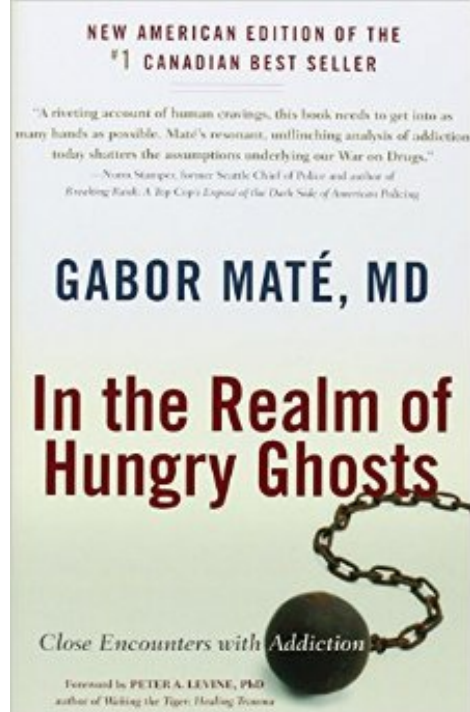



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