Adolescents, AOD Use, and Learning

Scott Caldwell

In-service presentation to Deerfield High School Staff
September 19, 2008

Goals for this presentation:

1. Deepen understanding of adolescent development
2. Increase knowledge of Deerfield youth and AOD use
3. Identify ways to increase school-based protective influences to reduce teen risks

Where do you stand?
[activity]

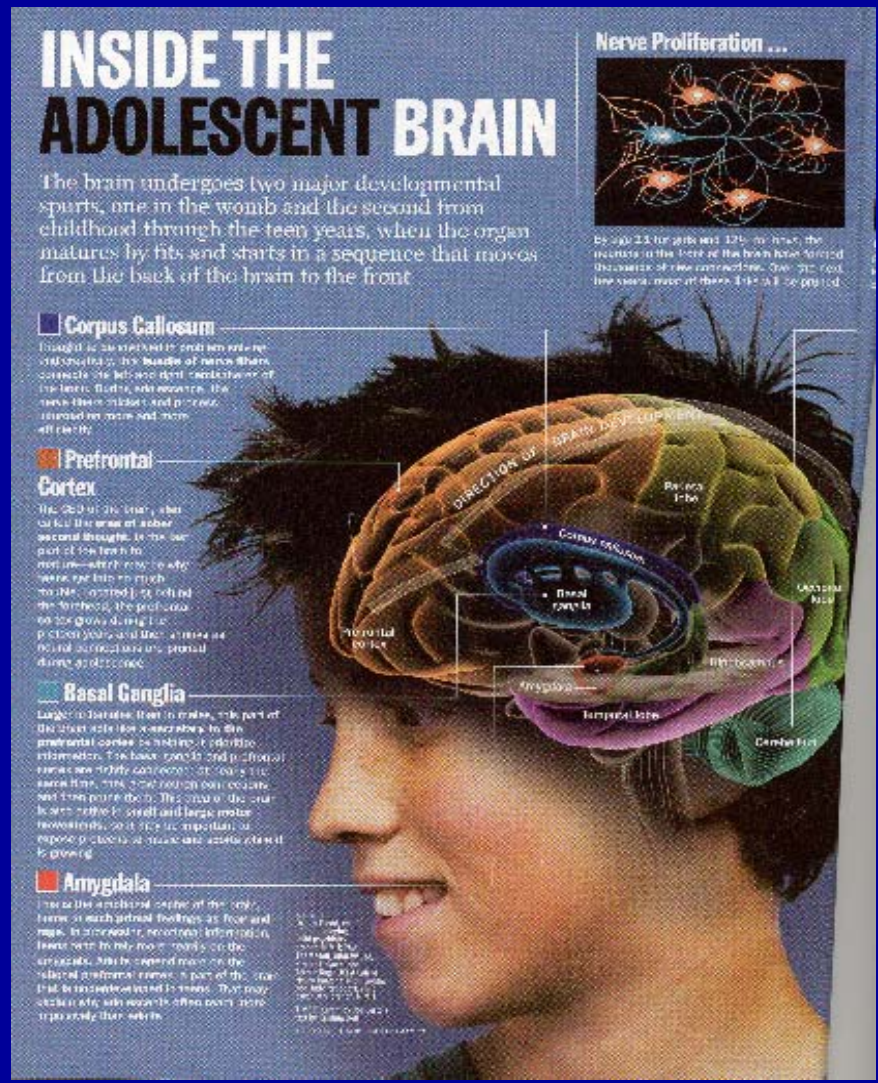
What’s going on during adolescence? Characteristics of teen development?

Key adolescent developmental tasks:

- Individuation
- Autonomy development
- Relationship building
- Competency
- Identity formation

Adolescent Neuroscience

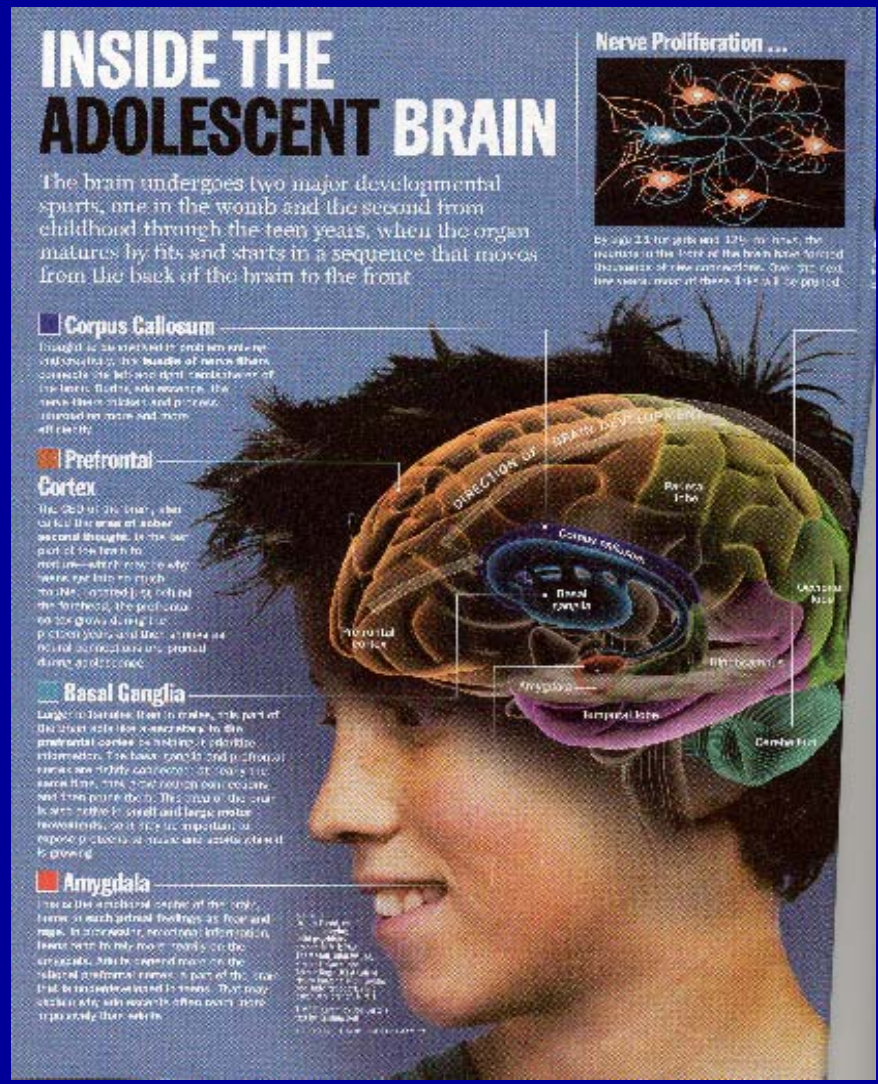
- New science



Imaging technology provides windows into the developing brain

Adolescent Neuroscience

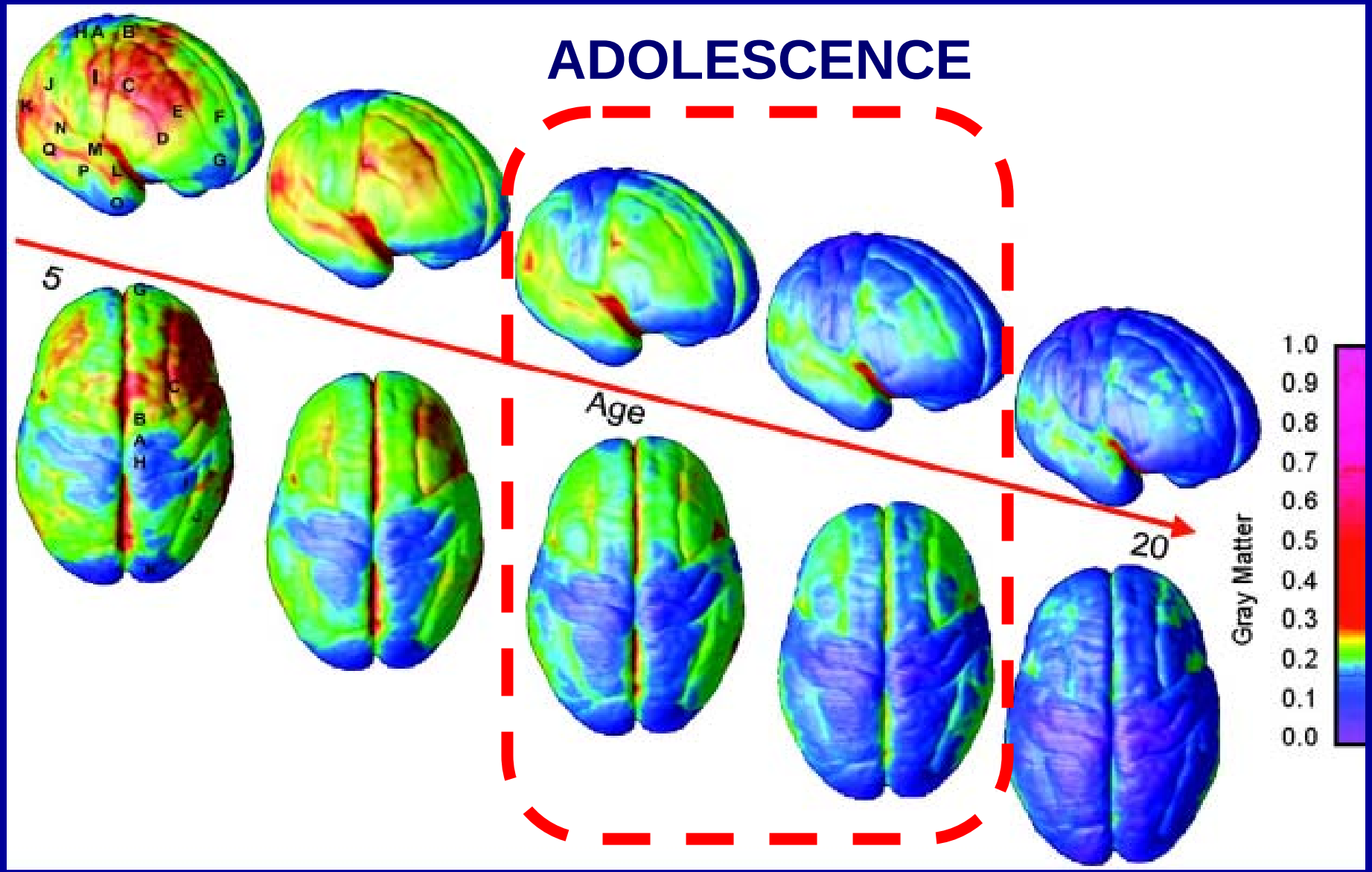
- New science
- Insights into teen behaviors
- Implications for parents, educators, and counselors



General findings:

- Adolescence is a period of profound and unique brain maturation

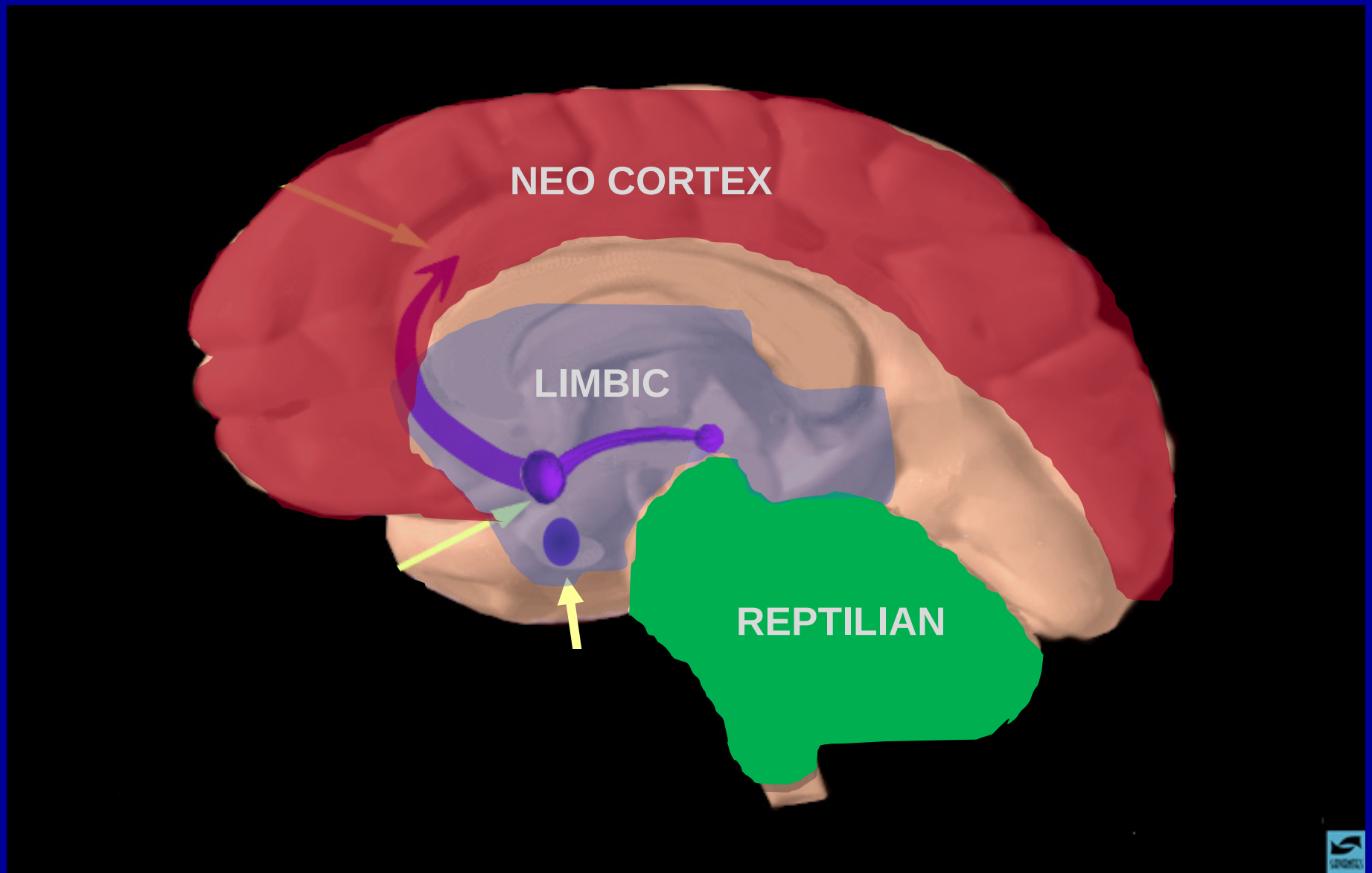
Brain development

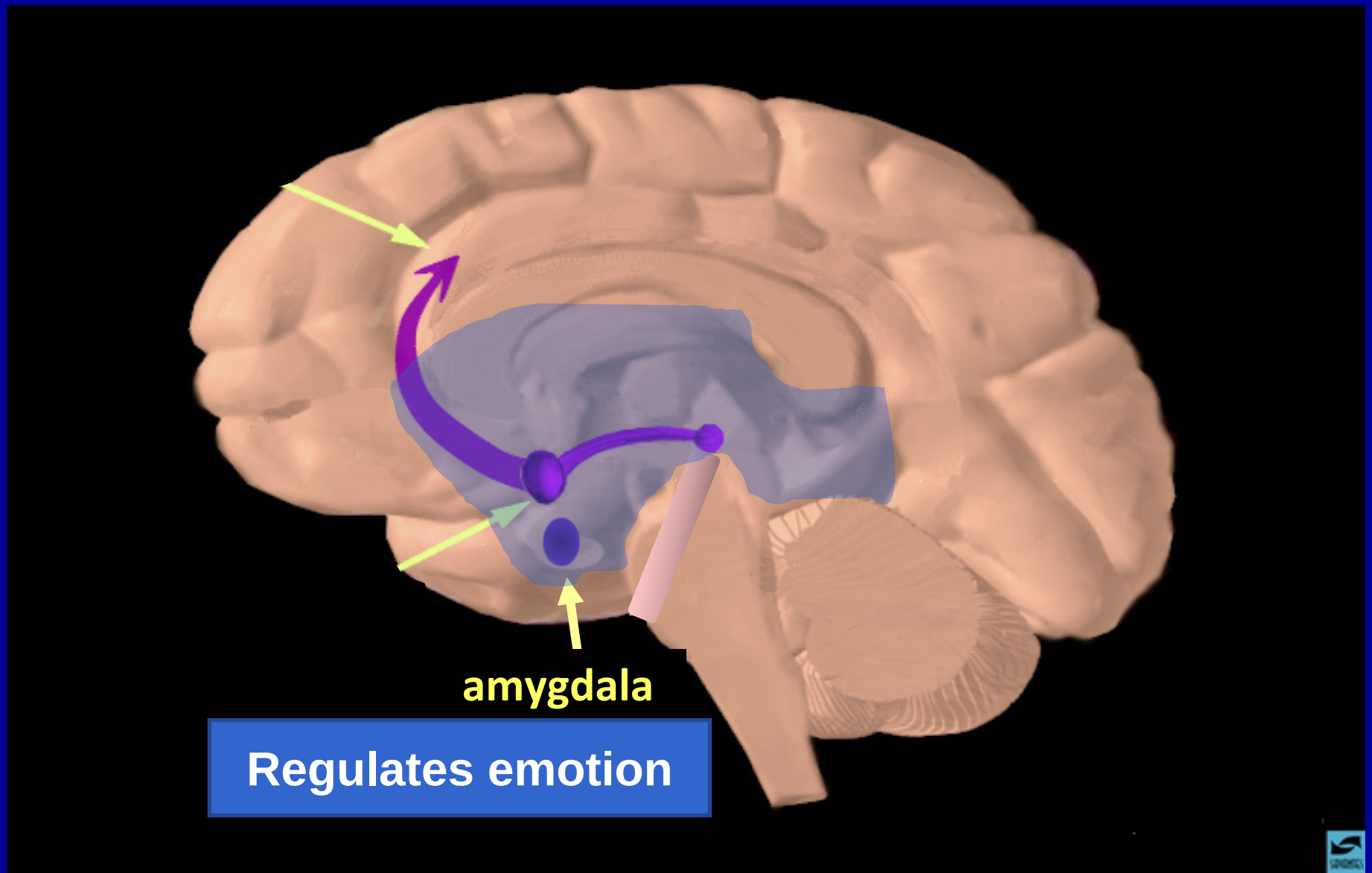


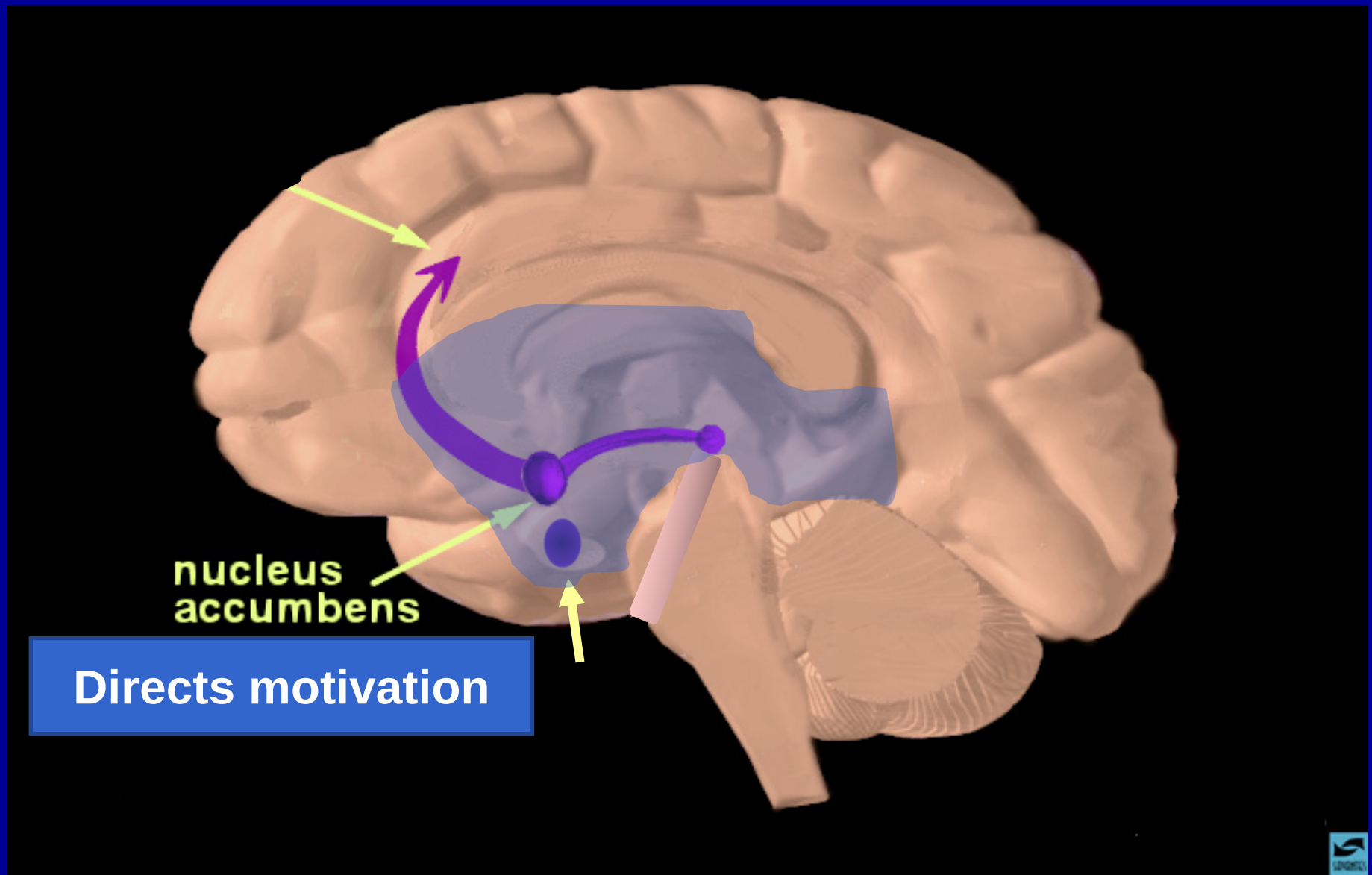
General findings:

- Adolescence is a period of profound and unique brain maturation
- Remodeling of basic structure
- The brain maturation process is not complete until about age 24!!

Three Brains in One

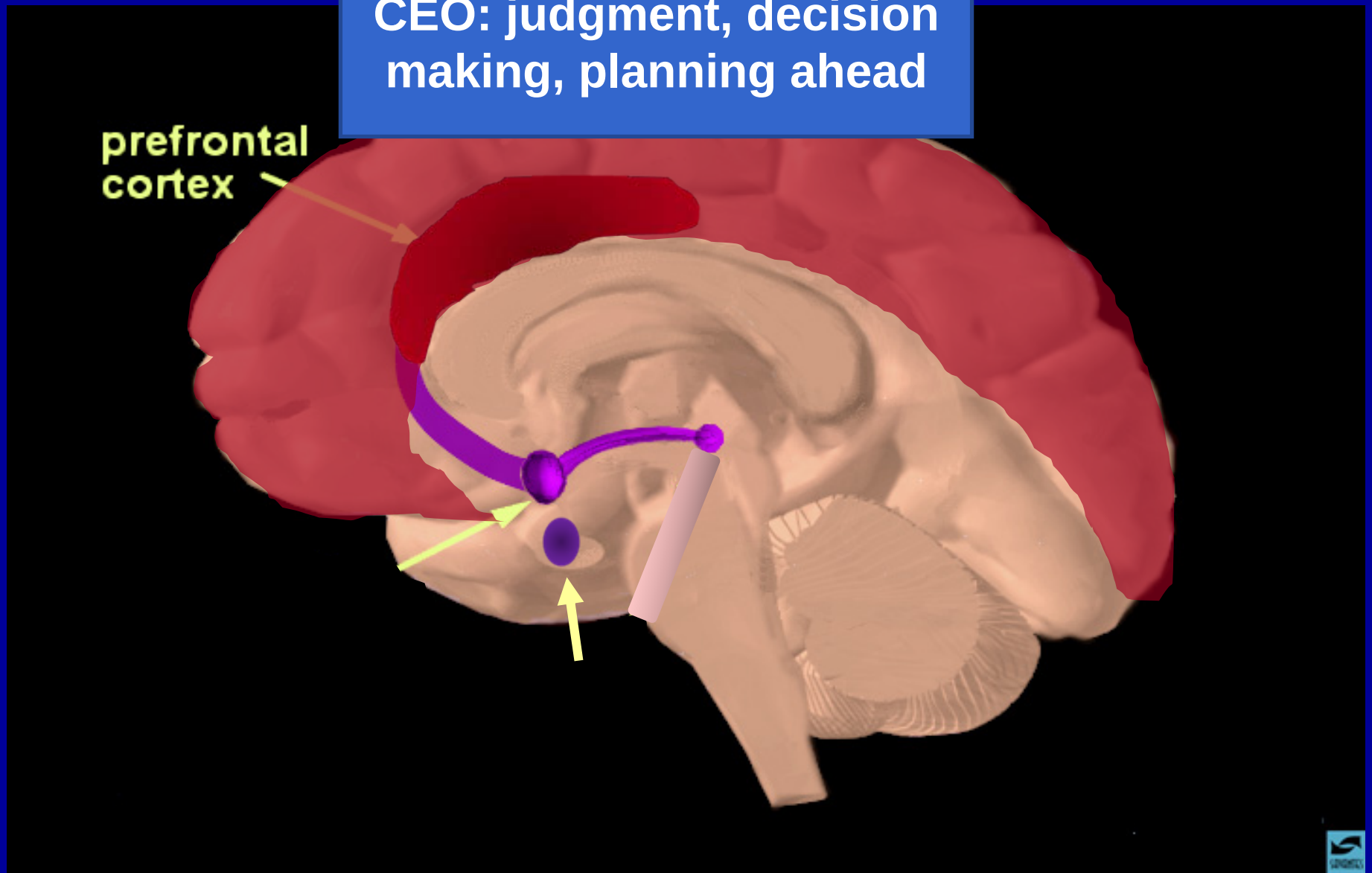



amygdala
Regulates emotion

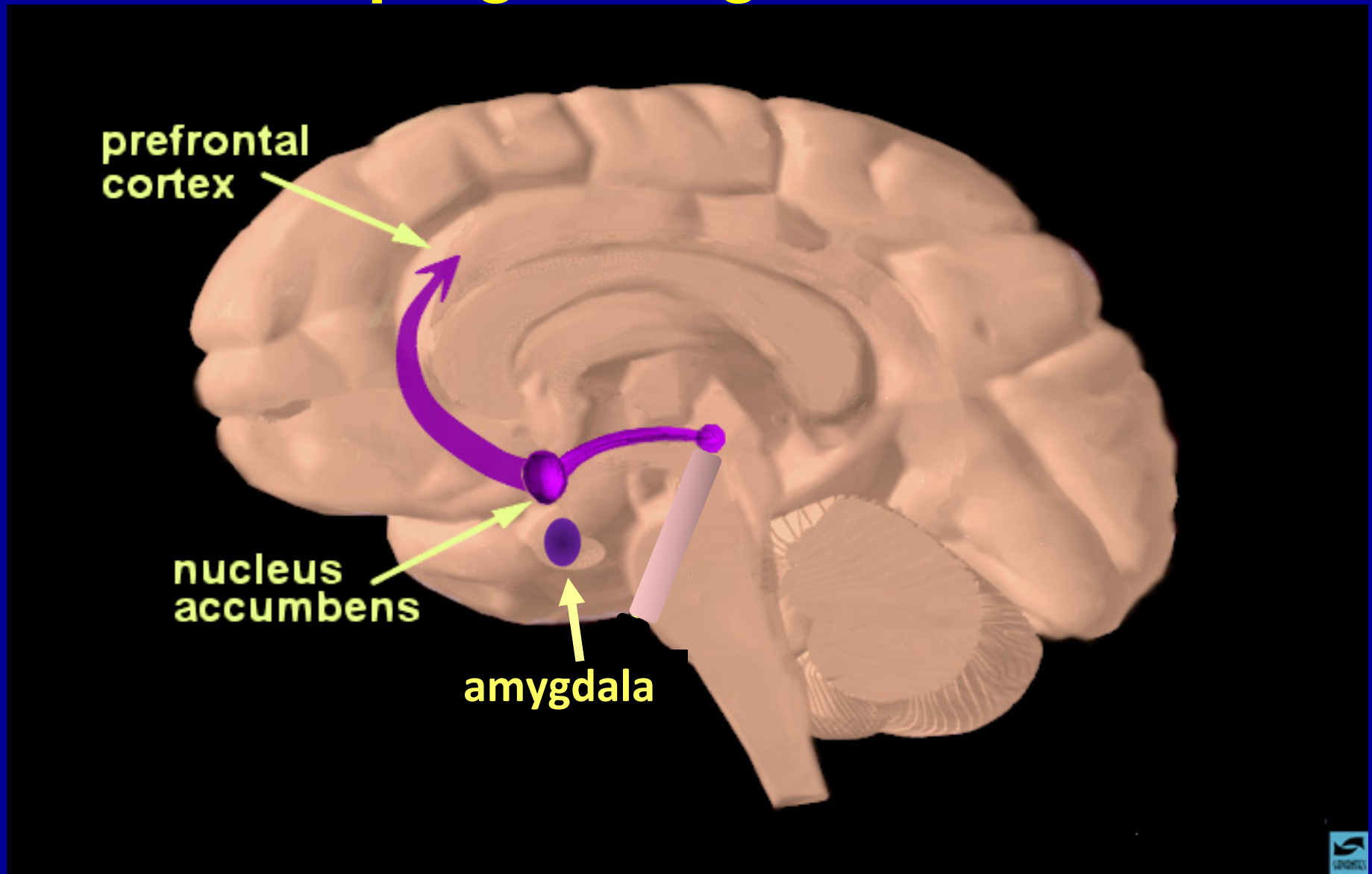


Directs motivation

CEO: judgment, decision making, planning ahead



Research: These areas are still developing during adolescence



Understanding teenage behavior:

- Limits to motivation: preferences for low effort, high excitement activities
- Limits to emotional regulation: moodiness, quick to anger and “hot” emotions
- Limits to judgments: increased risk taking, decreased planning ahead

Understanding teenage behavior:

- Limits to motivation:
- Limits to emotional regulation:
- Limits to judgments:

These limits are normative, biologically-driven, and inevitable!

AOD use amplifies these vulnerabilities

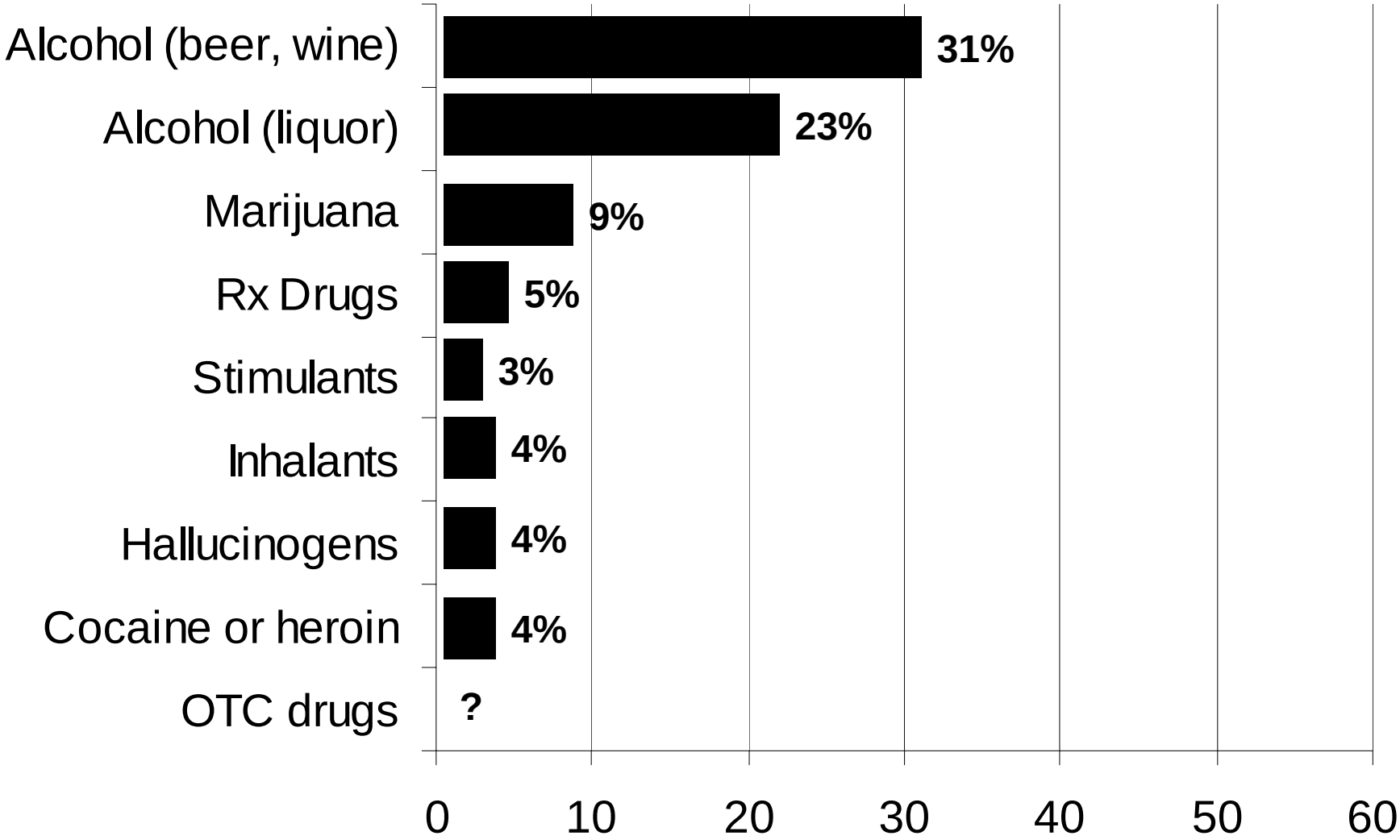
Deerfield Youth & AOD Use

Dane County Youth Assessment

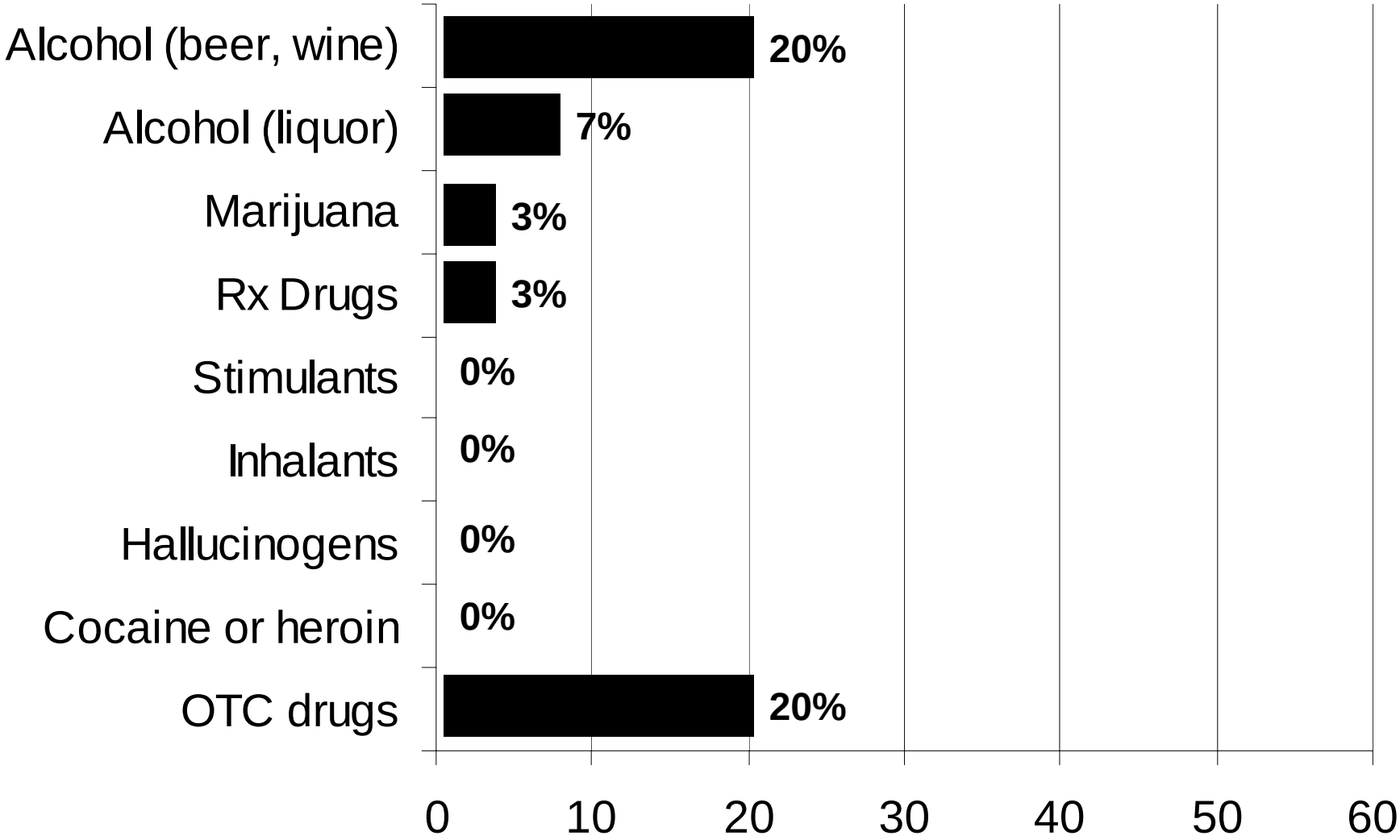
Source: DCYA (2008)

Brian Koenig,
Principal Investigator

Any past year use by 9-12th graders



Any past year use by 7-8th graders



Alcohol

Alcohol Use by Deerfield
9th – 12th graders

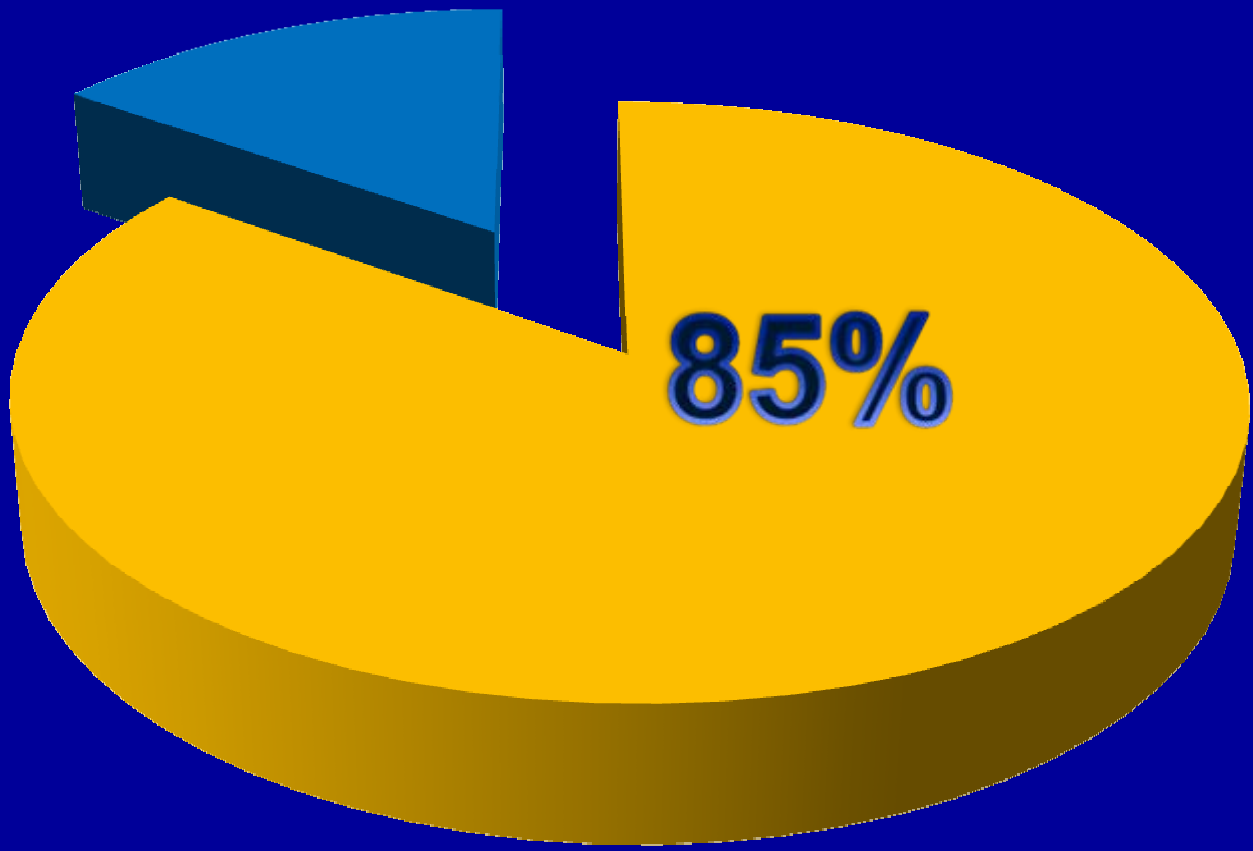
- Percentage drinking beer/wine past year: **31%**
- Percentage drinking liquor past year: **23%**
- Percentage drinking past 30 days: **20%**

Alcohol affects teens differently than adults:

1. Reduced sensitivity to intoxication

Source: Clark (2004); Deas et al. (2000); Tapert (2006); Winters (2004)

Of Deerfield youth who drank within the past 30 days, percentage who reported <u>binge drinking</u>:



Source: DCYA (2008)

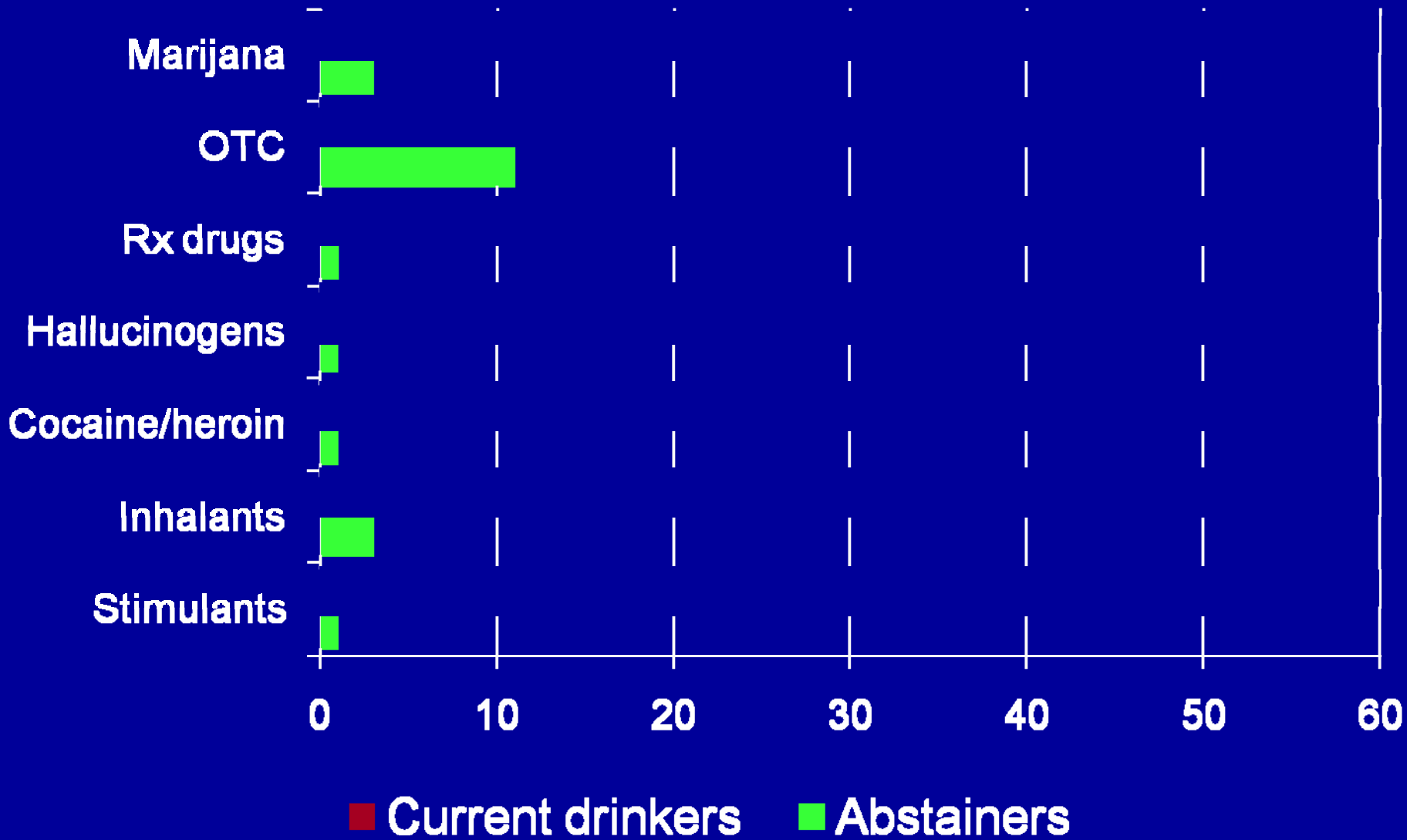
Alcohol affects teens differently than adults:

1. Reduced sensitivity to intoxication
2. Involvement with other drug use

Source: Clark (2004); Deas et al. (2000); Tapert (2006); Winters (2004)

Current drinking is strongly associated with prevalence (%) of past year drug use

Source: DCYA (2008)

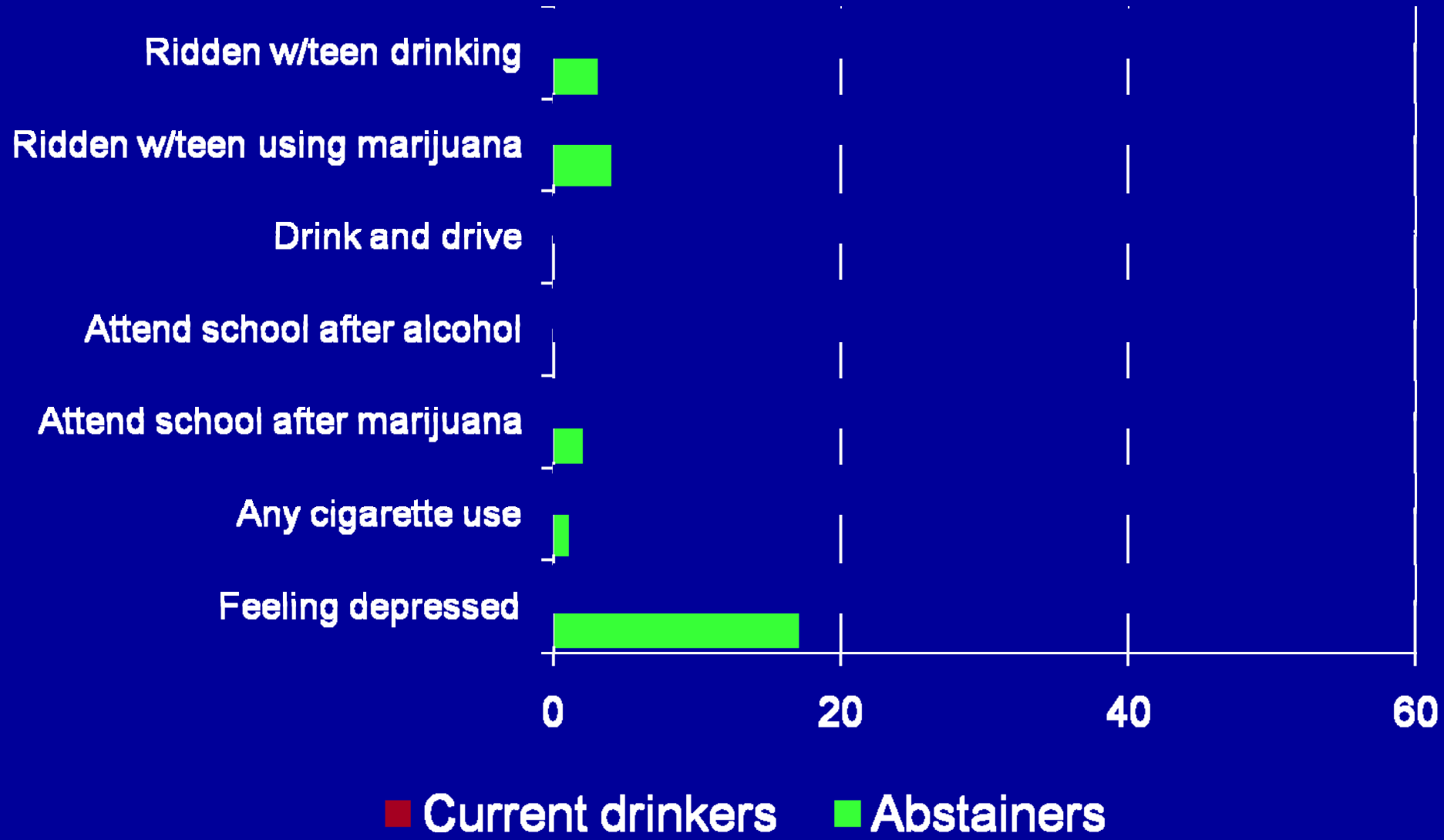


Alcohol affects teens differently than adults:

1. Reduced sensitivity to intoxication
2. Involvement with other drug use
3. Greater risk taking

Source: Clark (2004); Deas et al. (2000); Tapert (2006); Winters (2004)

Current drinking is strongly associated with prevalence (%) of current risk behaviors



Alcohol affects teens differently than adults:

1. Reduced sensitivity to intoxication
2. Involvement with other drug use
3. Greater risk taking
4. Risk for cognitive and learning deficits

Source: Clark (2004); Deas et al. (2000); Tapert (2006); Winters (2004)

Binge drinking and the teen brain

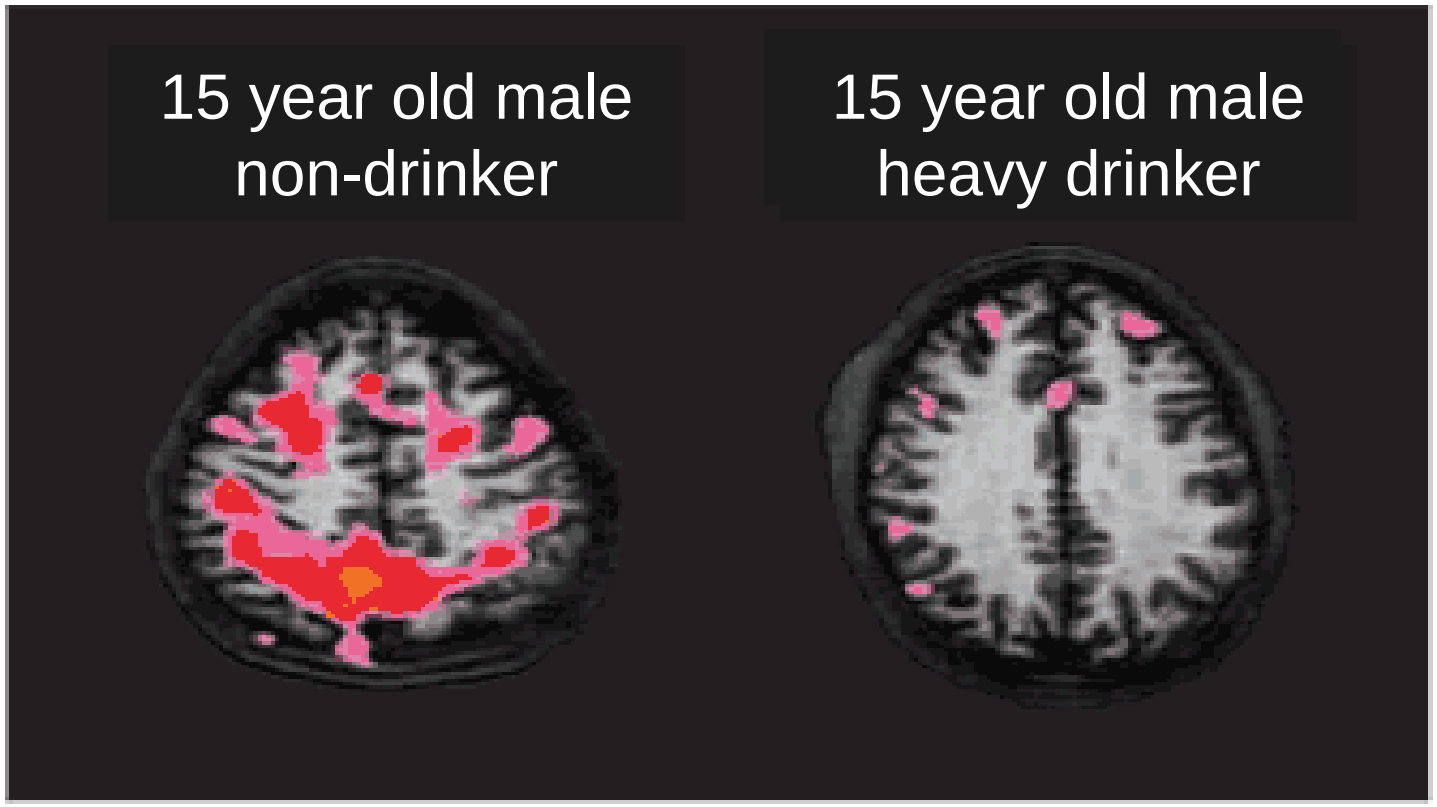
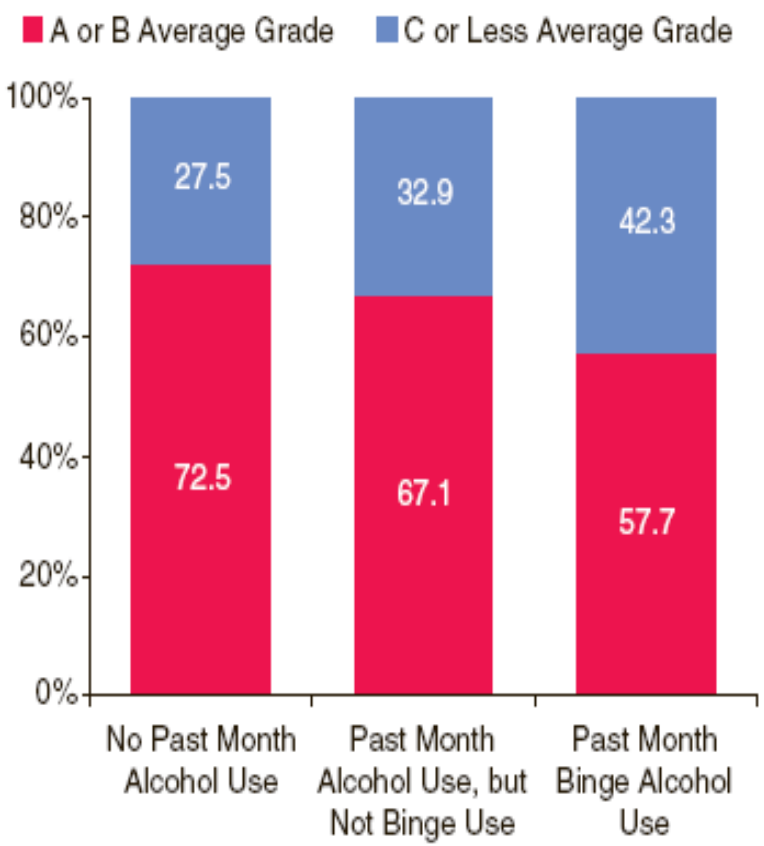


Image from Susan Tapert, PhD, University of California, San Diego.

Figure 3. Average Grades During the Last Semester or Grading Period among Students Aged 12 to 17, by Past Month Alcohol Use: 2002 to 2004



Source: SAMHSA, 2002, 2003, and 2004 NSDUHs.

By late-adolescence, those with extensive drinking histories compared to controls showed:

- 10% - 35% ↓ hippocampus volume (brain structure converts information to memory)
- ↓ brain activity during memory tasks
- ↑ brain activation when shown alcohol images

Source: Brown et al. (2000), Tapert (2006)

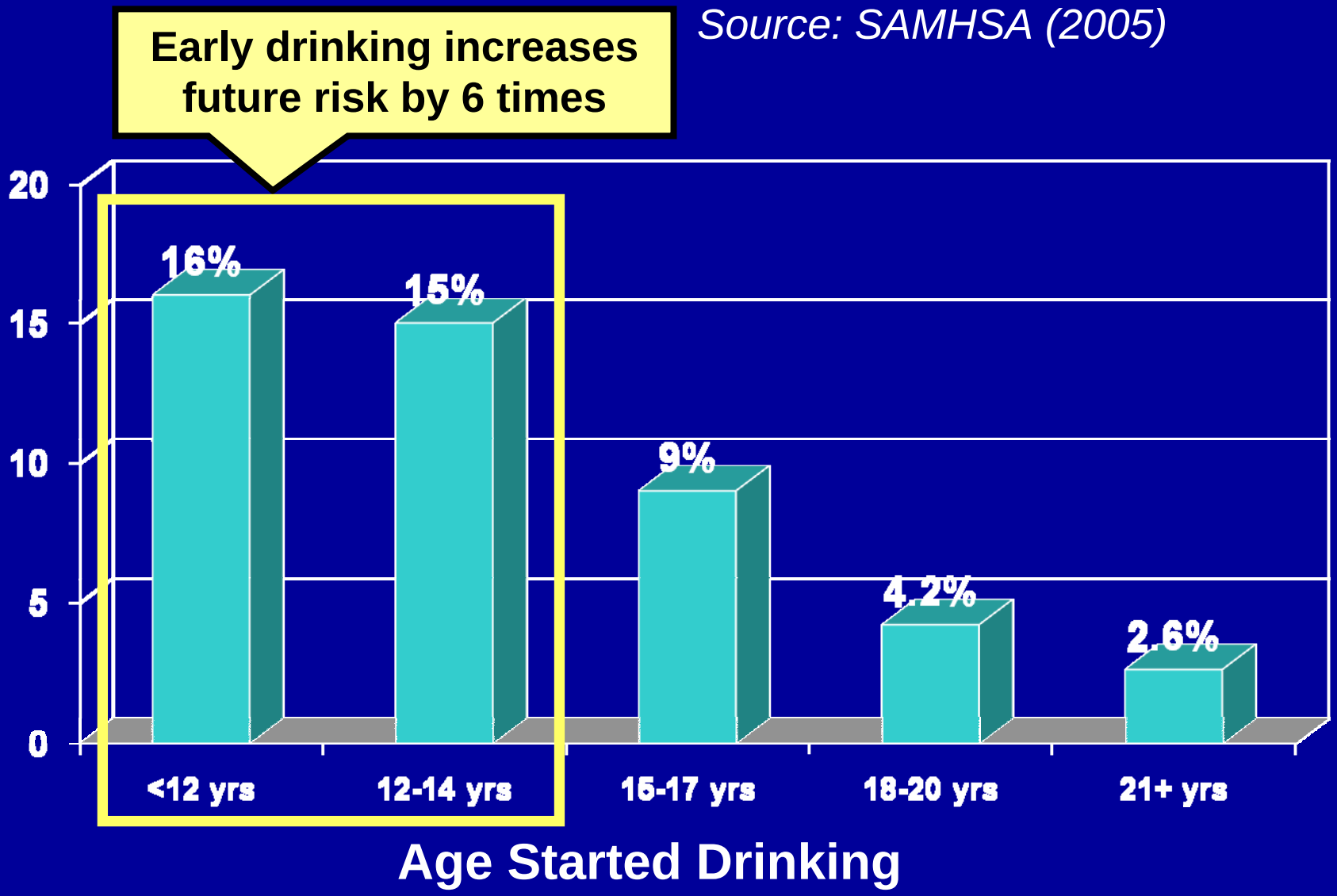
Alcohol affects teens differently than adults:

1. Reduced sensitivity to intoxication
2. Involvement with other drug use
3. Greater risk taking
4. Risk for cognitive and learning deficits
5. Risk for long-term alcohol problems

Source: Clark (2004); Deas et al. (2000); Tapert (2006); Winters (2004)

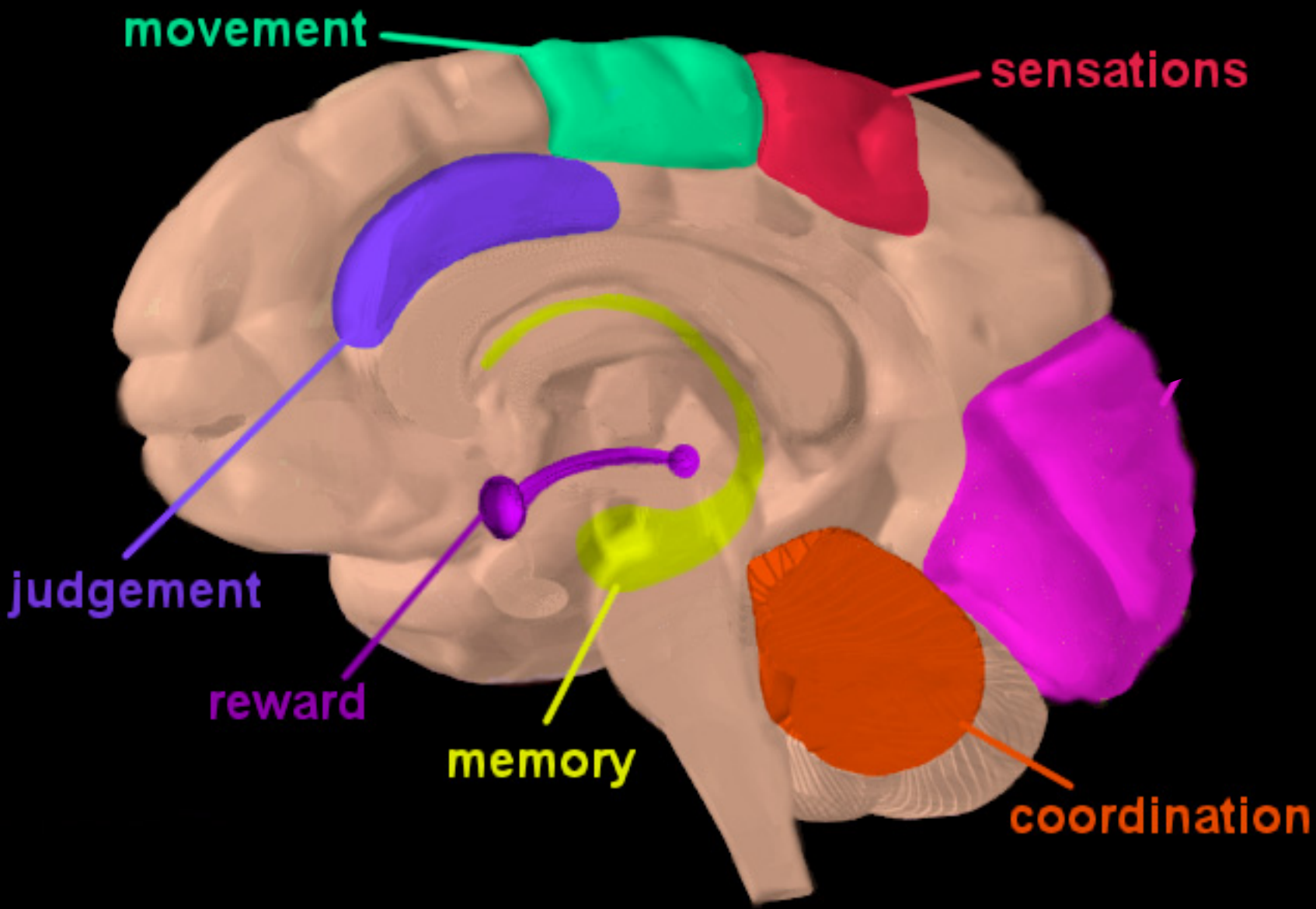
Percentages of Past Year Alcohol Dependence or Abuse Among Adults Aged 21 or Older

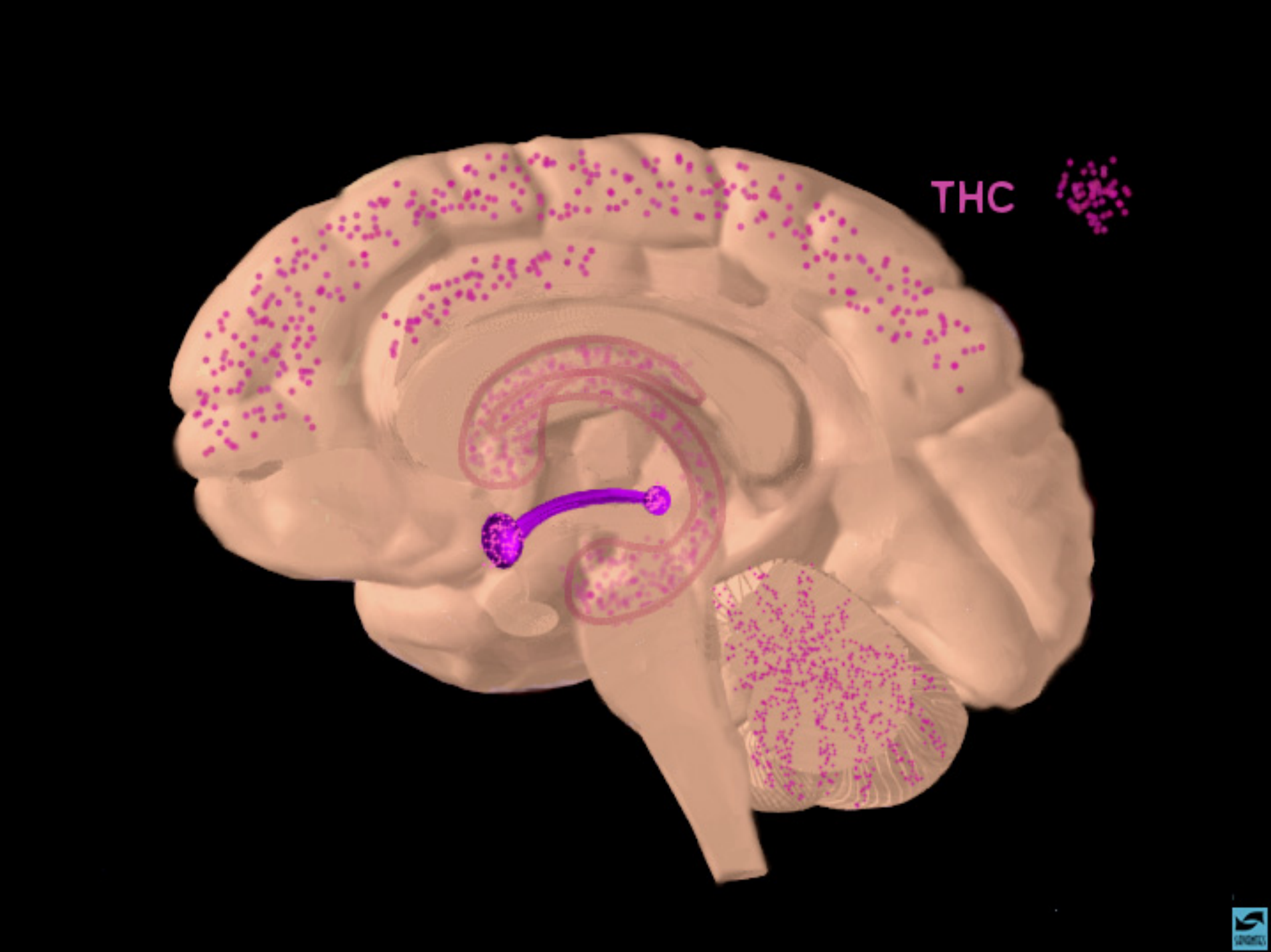
Source: SAMHSA (2005)



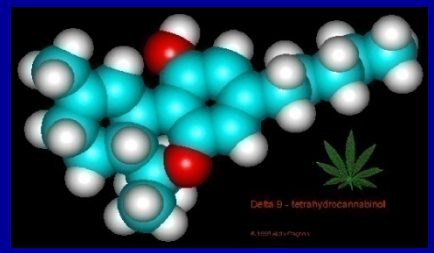
Marijuana

Marijuana affects…




THC

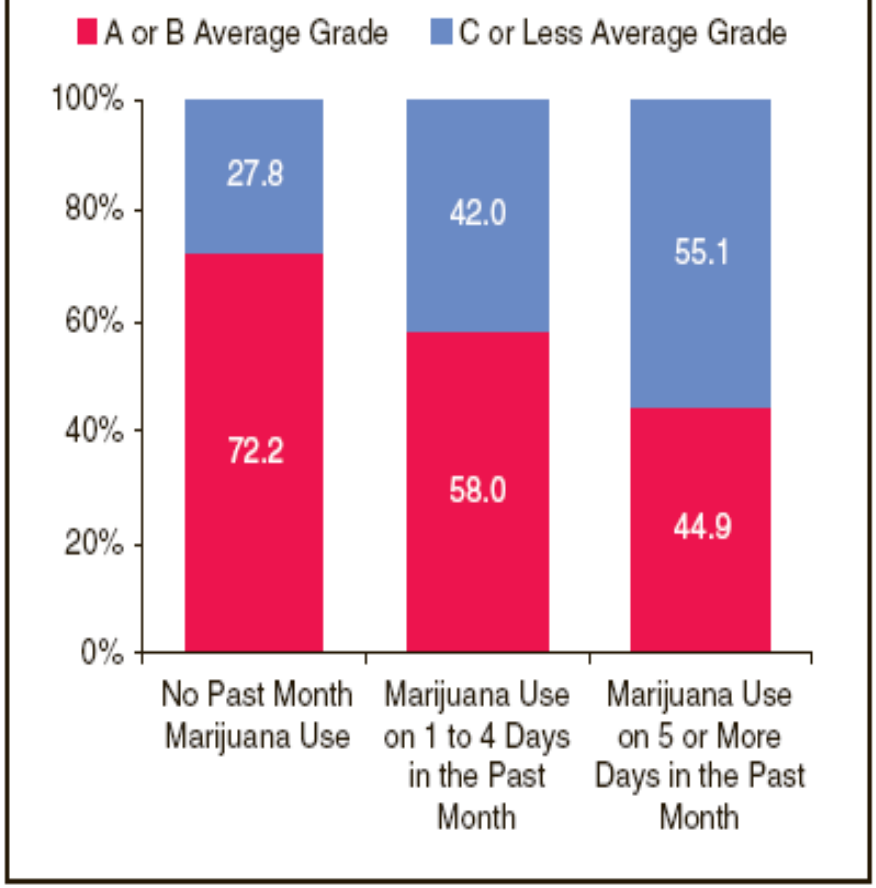
Marijuana and teens:



- Substantial increase in THC potency since the 1980s

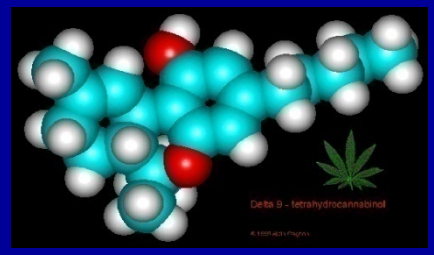
- Effects associated with:
  - decreased immune system function
  - decreased motivation
  - poor academic achievement

Figure 4. Average Grades During the Last Semester or Grading Period among Students Aged 12 to 17, by Past Month Marijuana Use: 2002 to 2004



Source: SAMHSA, 2002, 2003, and 2004 NSDUHs.

Marijuana and teens:

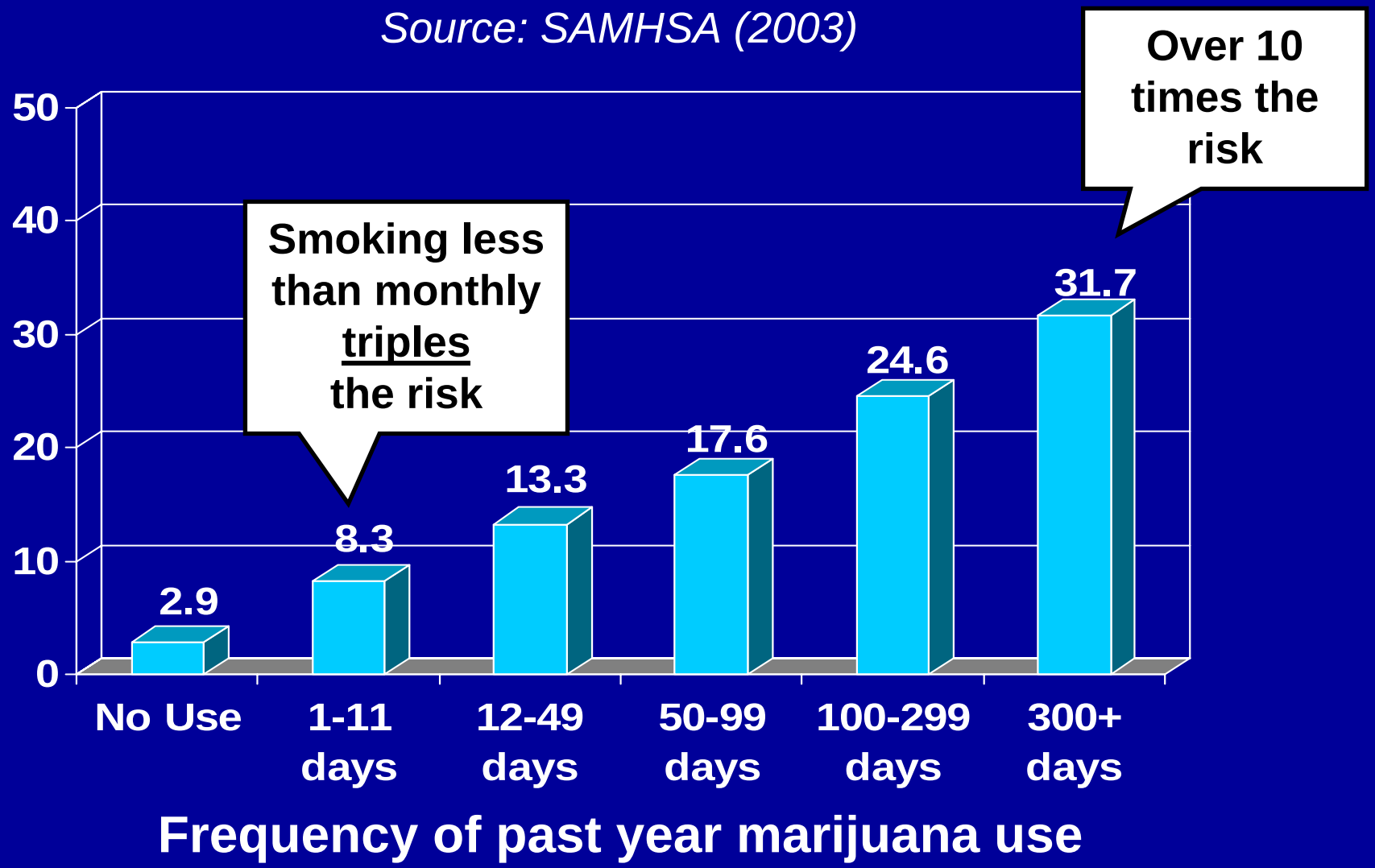


- Substantial increase in THC potency since the 1980s

- Effects associated with:
  - decreased immune system function
  - decreased motivation
  - poor academic achievement
  - conduct problems and delinquency

Percentages of those aged 12-17 who stole or tried to steal anything worth $50 or more

Source: SAMHSA (2003)

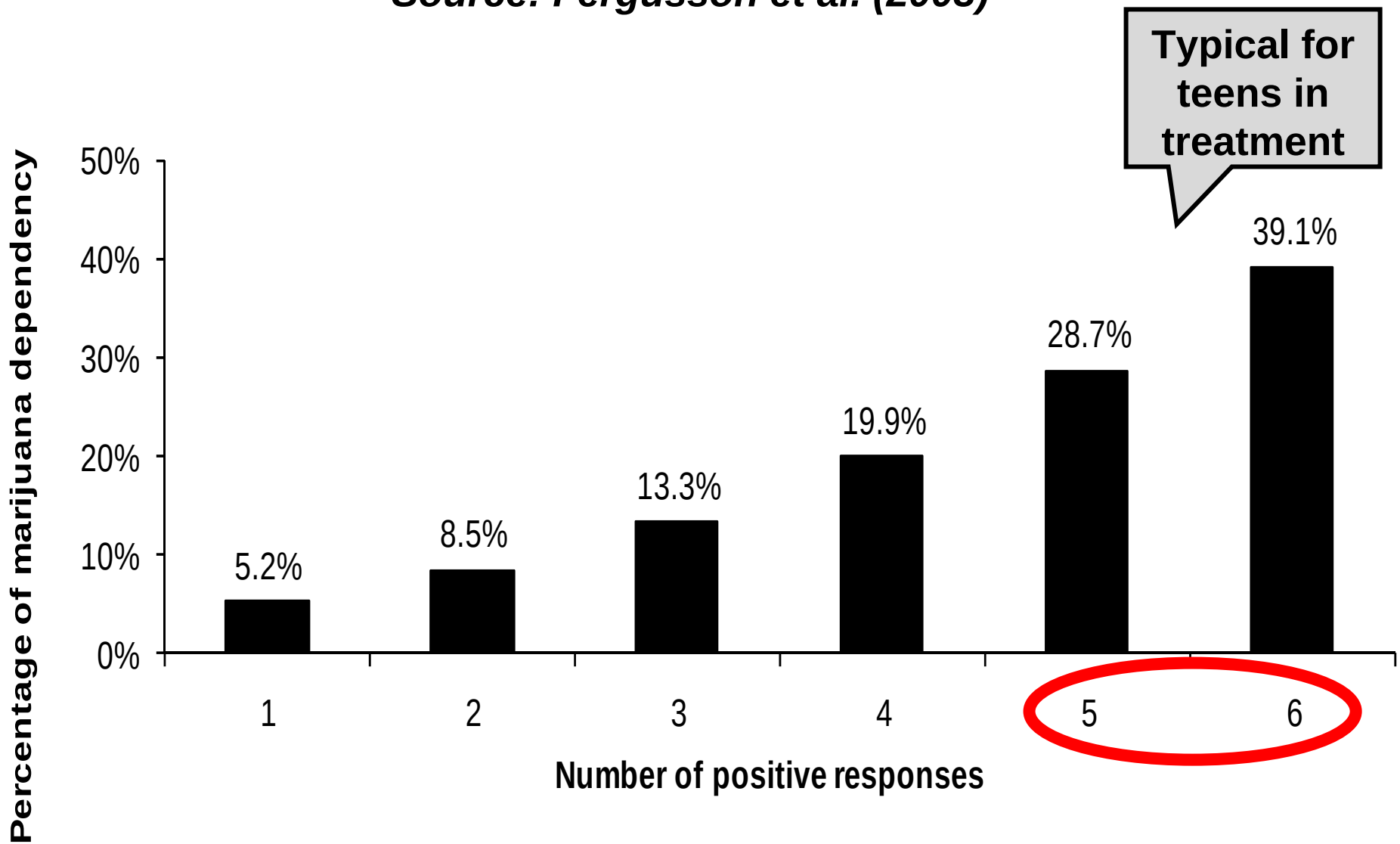


But is marijuana addictive? Can teen users get hooked?

- Frequent use (4% of Deerfield 9-12th graders)
- Tolerance to effects
- Positive expectancies for effects

Number of positive responses to marijuana by teens relates to later addiction

Source: Fergusson et al. (2003)



Is marijuana addictive?
Can teen users get hooked?

- Frequent use
- Tolerance to effects
- Positive expectancies for effects
- Low problem recognition
- Decreased activities and social relations
- Withdrawal is possible

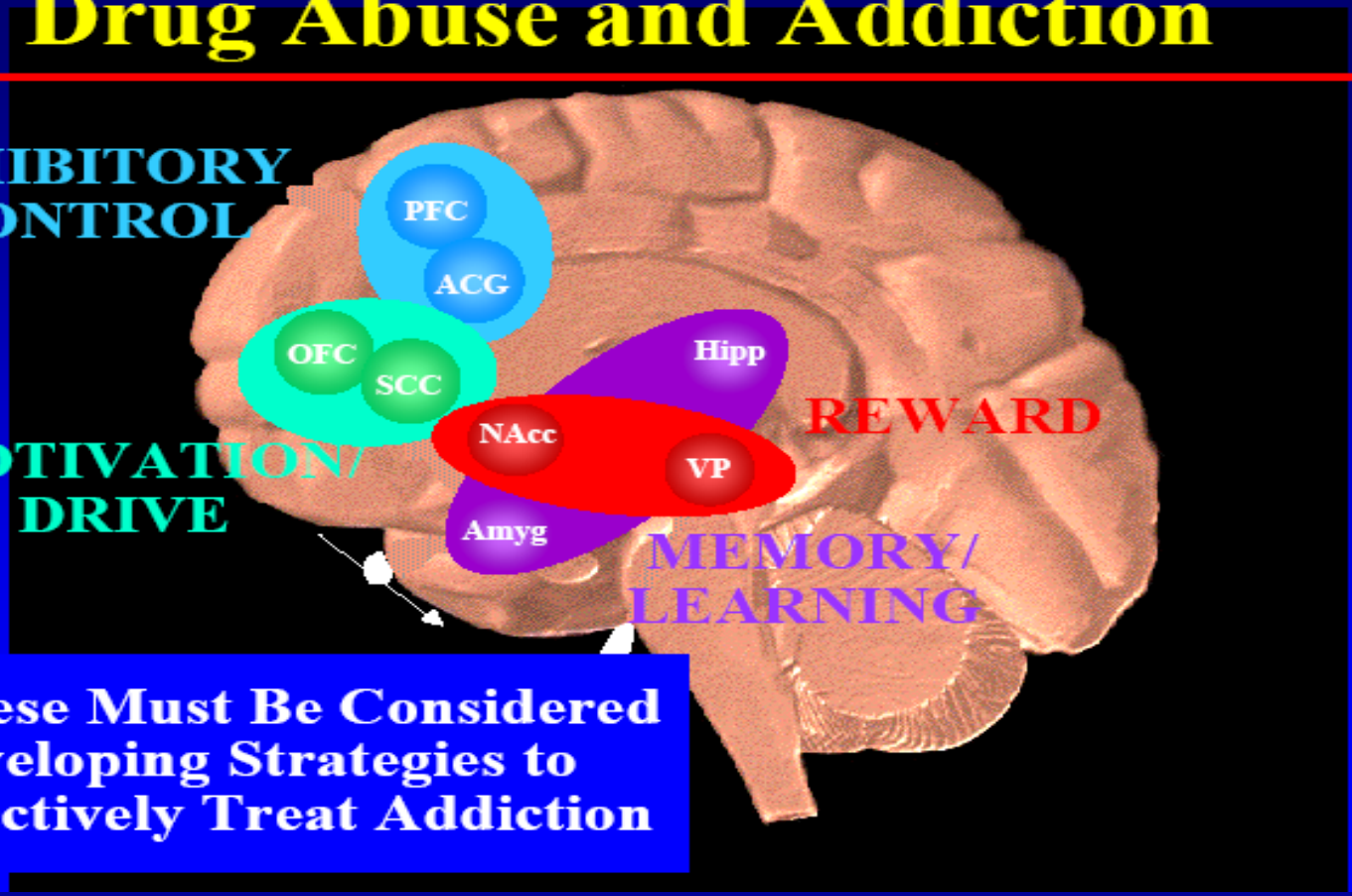
Cannabis withdrawal prevalence reported by adolescents in outpatient treatment

Source: Vandrey et al. (2005)

Withdrawal Symptom	Moderate or Severe Ratings
Craving	74%
Irritability	50%
Depressed mood	44%
Sleep difficulty	44%
Restlessness	36%
Increased anger	31%
Decreased appetite	27%
Physical symptoms	1% - 18%

The very brain systems developing during adolescence are implicated in addiction.

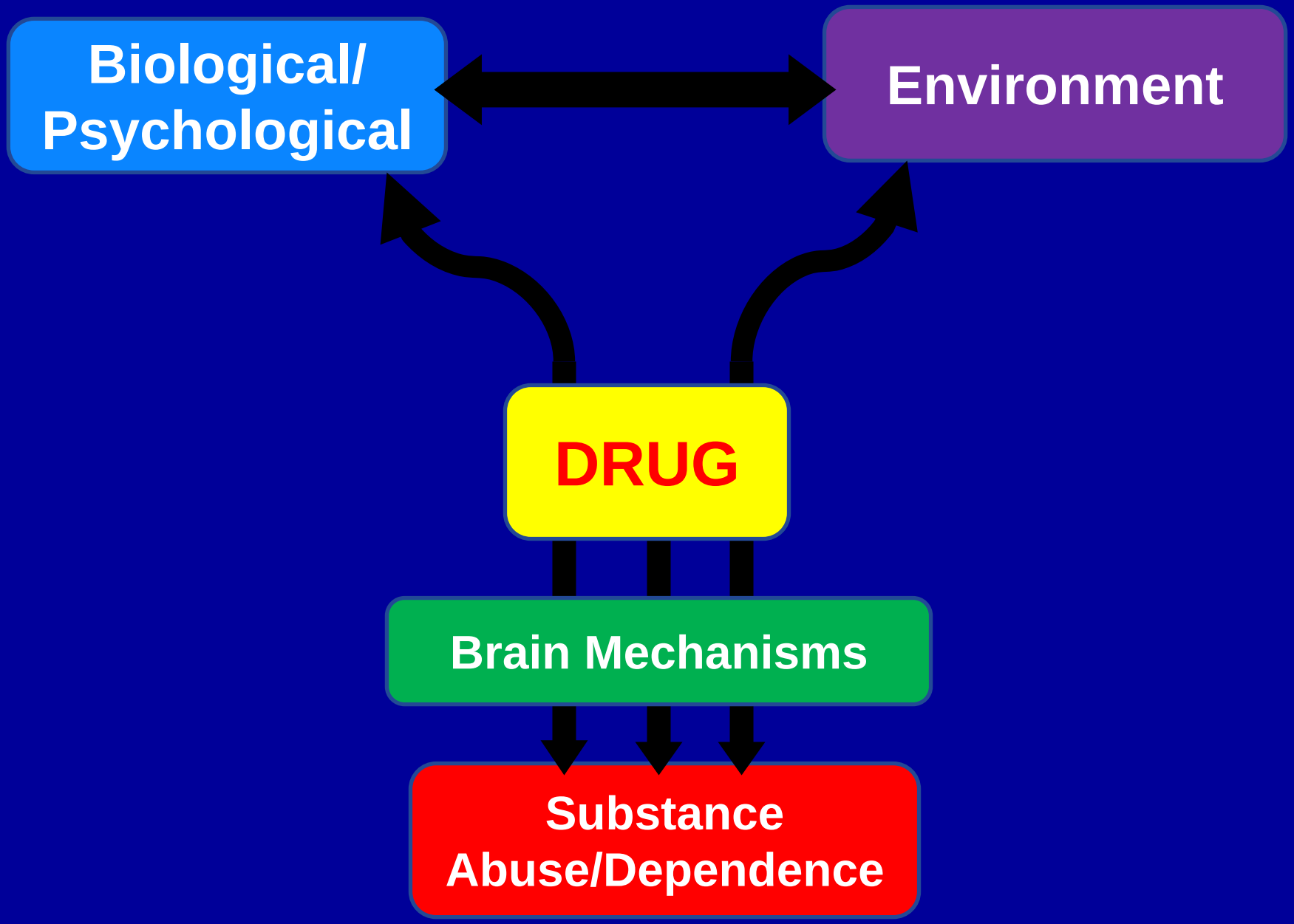
Circuits Involved In Drug Abuse and Addiction



All of These Must Be Considered In Developing Strategies to Most Effectively Treat Addiction

What are the risk factors (causes) for adolescent AOD problems?

RISK FACTORS

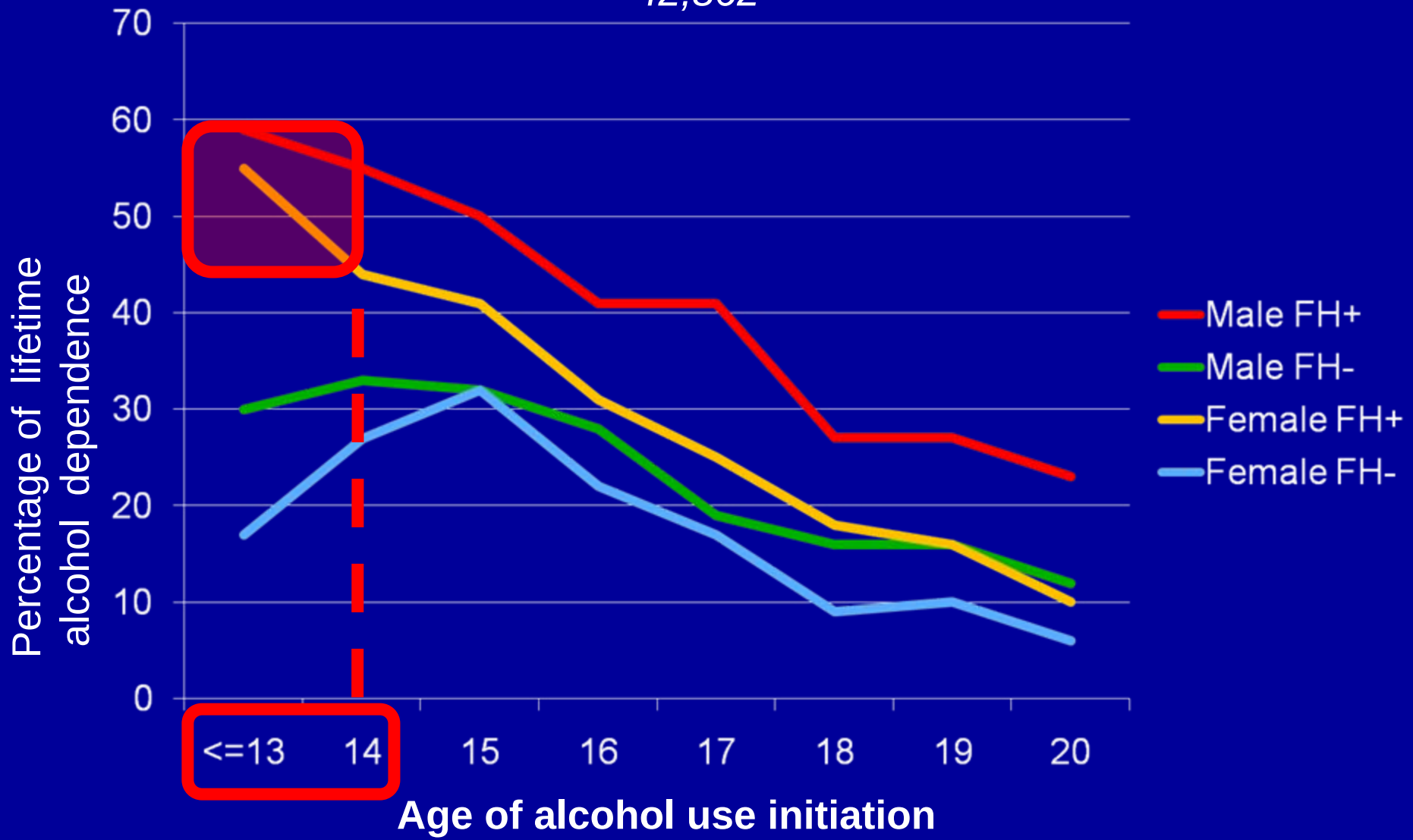


Biological factors

- Family history – genetic vulnerability
- Difficult temperament
- Male
- Early onset of puberty
- Sleep difficulties
- Early age of use initiation

Age at First Alcohol Use and Lifetime Prevalence of Alcohol Dependence by Gender and Family History (FH)

Source: Grant (1998) National Longitudinal Alcohol Epidemiologic Survey; N = 42,862



Psychological factors

- Difficulties regulating emotion (chicken or egg?)
- Behavioral undercontrol
- Trauma or extreme stress experiences
- Low risk perception
- Thrill seeking
- Positive expectancies for effects

Social factors

- Modeling of substance abuse
- Peer rejection
- Disconnection from home or school
- Association with drug abusing peers (peer selection)
- Ineffective parenting practices

What to do? How to effectively exert your protective influences? What are the school-based protective factors?

Principles of effective prevention

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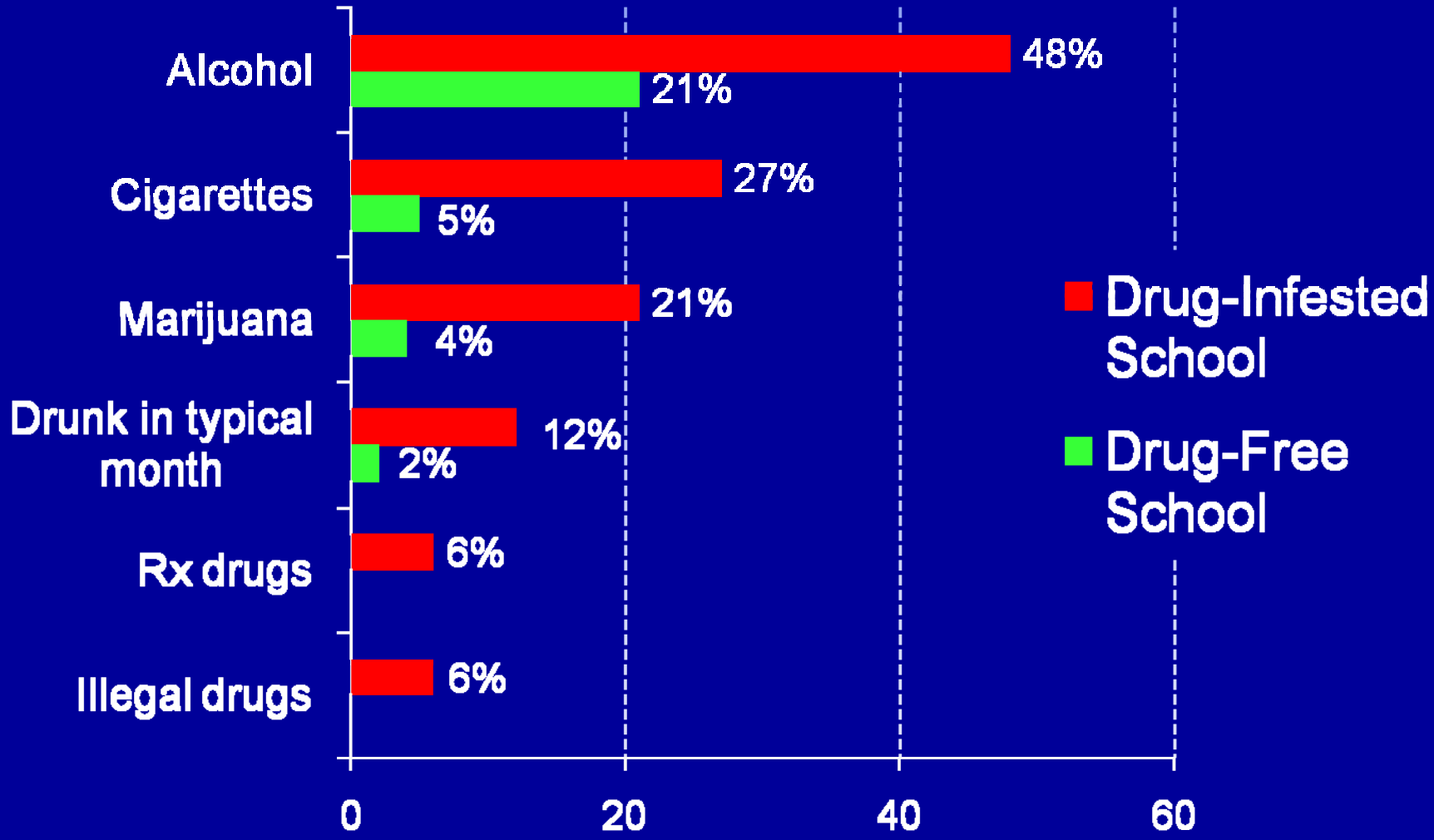
1. Supportive and caring teacher-student relationships

Principles of effective prevention

1. Supportive and caring teacher-student relationships
2. Clear expectations for AOD-free school

Percentage of teens who have used AODs by Drug-free vs. Drug-infested school

"Is your school a drug-free school or is it not drug free, meaning some students keep drugs, use drugs or sell drugs on school grounds?"



Source: Center for Addiction and Substance Abuse (CASA, 2007)

Principles of effective prevention

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3. Active disapproval of any AOD use

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6. Drug-free and prosocial activities available
7. Strong teacher-parent relationships: school support for “authoritative” parenting

What are practices and attitudes of “authoritative” (effective) parents?

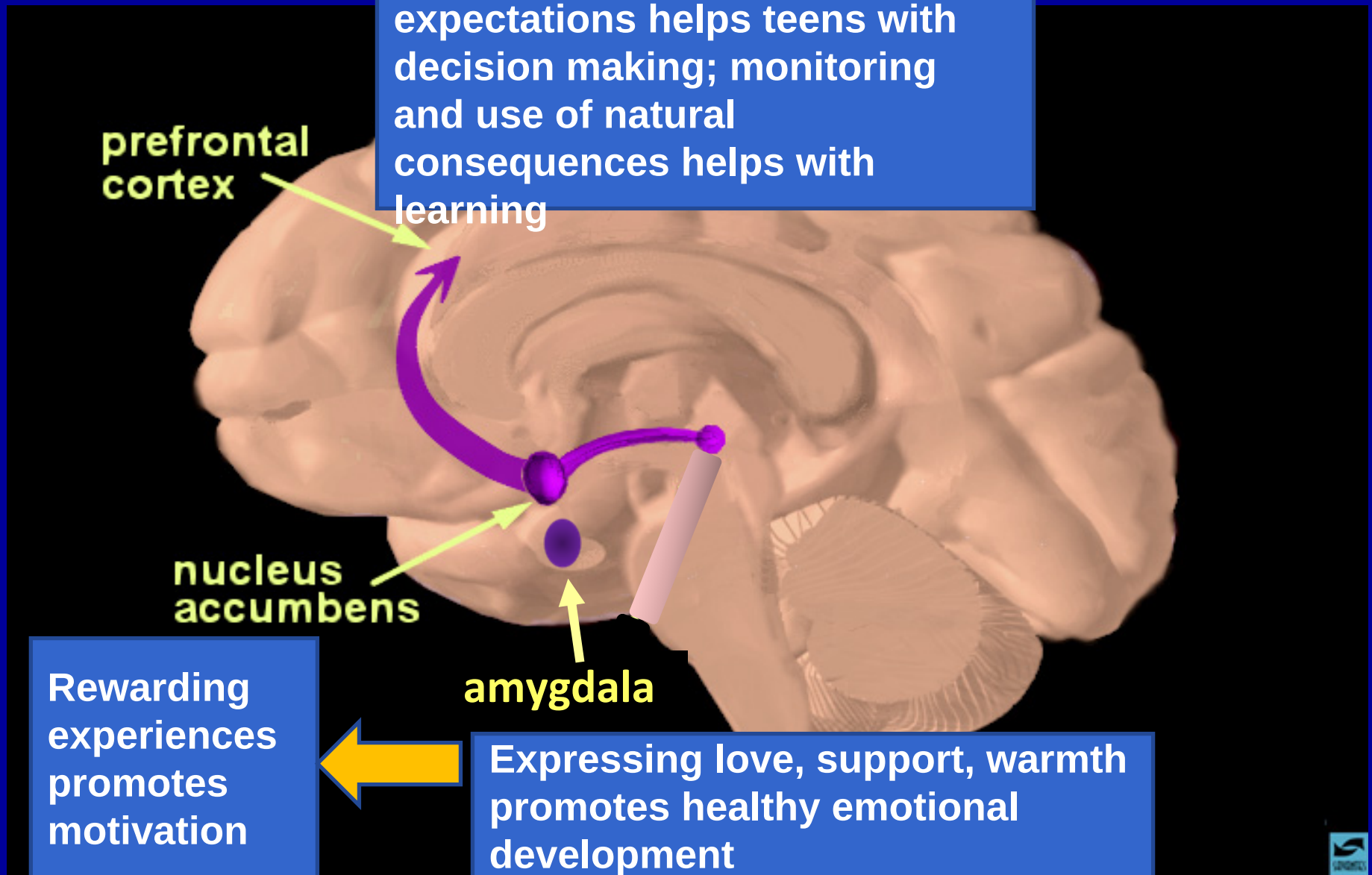
Authoritative parents…

- Know they have influence (not control)
- Involved and supportive
- Warmth in communication
- Also, clear expectations and limits
- Non-permissive on any AOD use
- Monitors whereabouts, activities, peer relations, mood, school performance (*trust but verify*)
- Accountability when the rules are broken

  (*firm but fair*) consistency is important
- Understands the value of “natural consequences” for promoting learning

Back to the teen brain…

Clear, non-permissive expectations helps teens with decision making; monitoring and use of natural consequences helps with learning



Rewarding experiences promotes motivation

Expressing love, support, warmth promotes healthy emotional development

Deerfield youth on their parents:

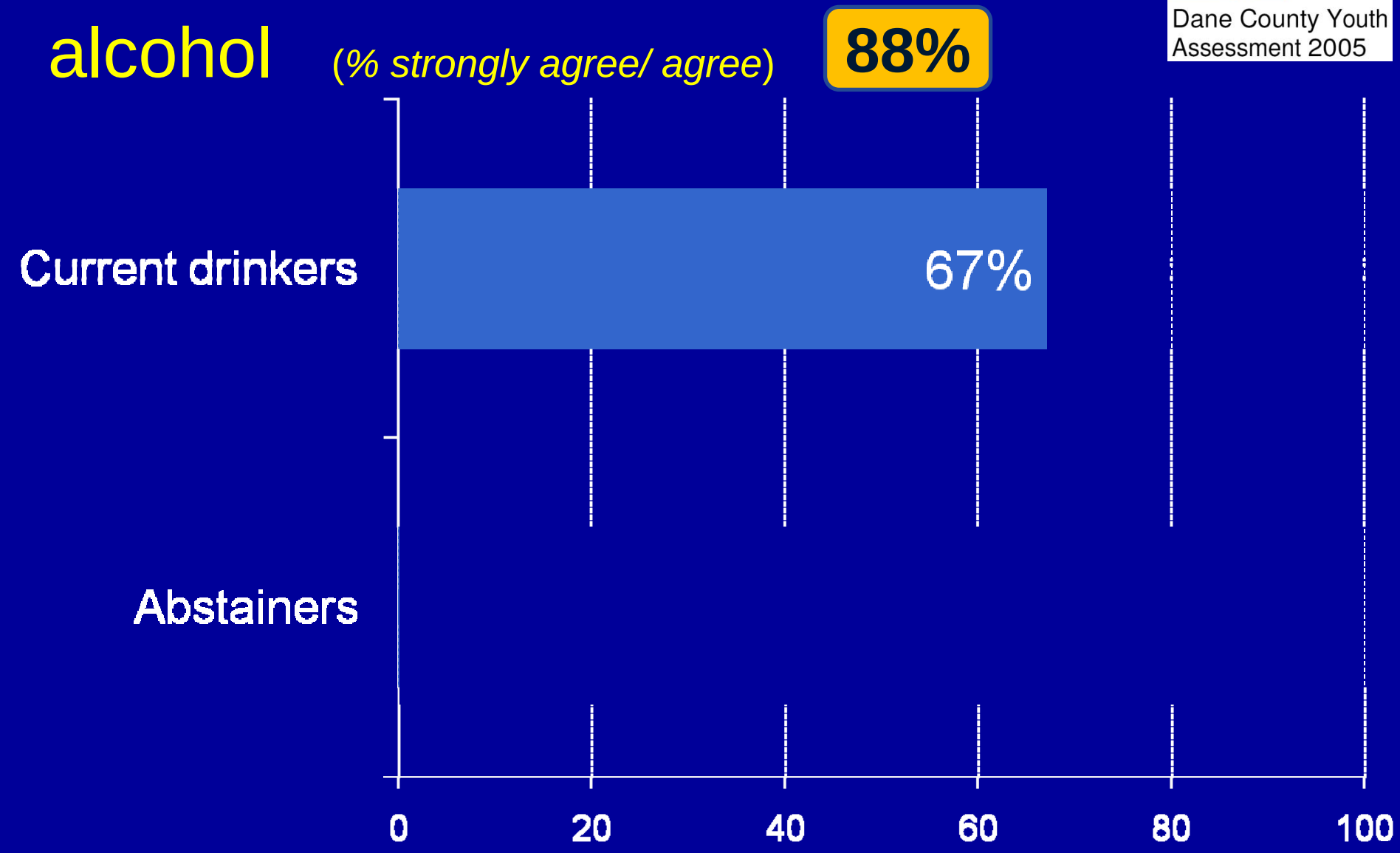
- Percentage of high school students who reported having “good conversations” about AOD with parents: **17%**
- Percentage of middle school students: **11%**

Source: DCYA (2008)

My parents think it's wrong to drink alcohol

(% strongly agree/ agree)

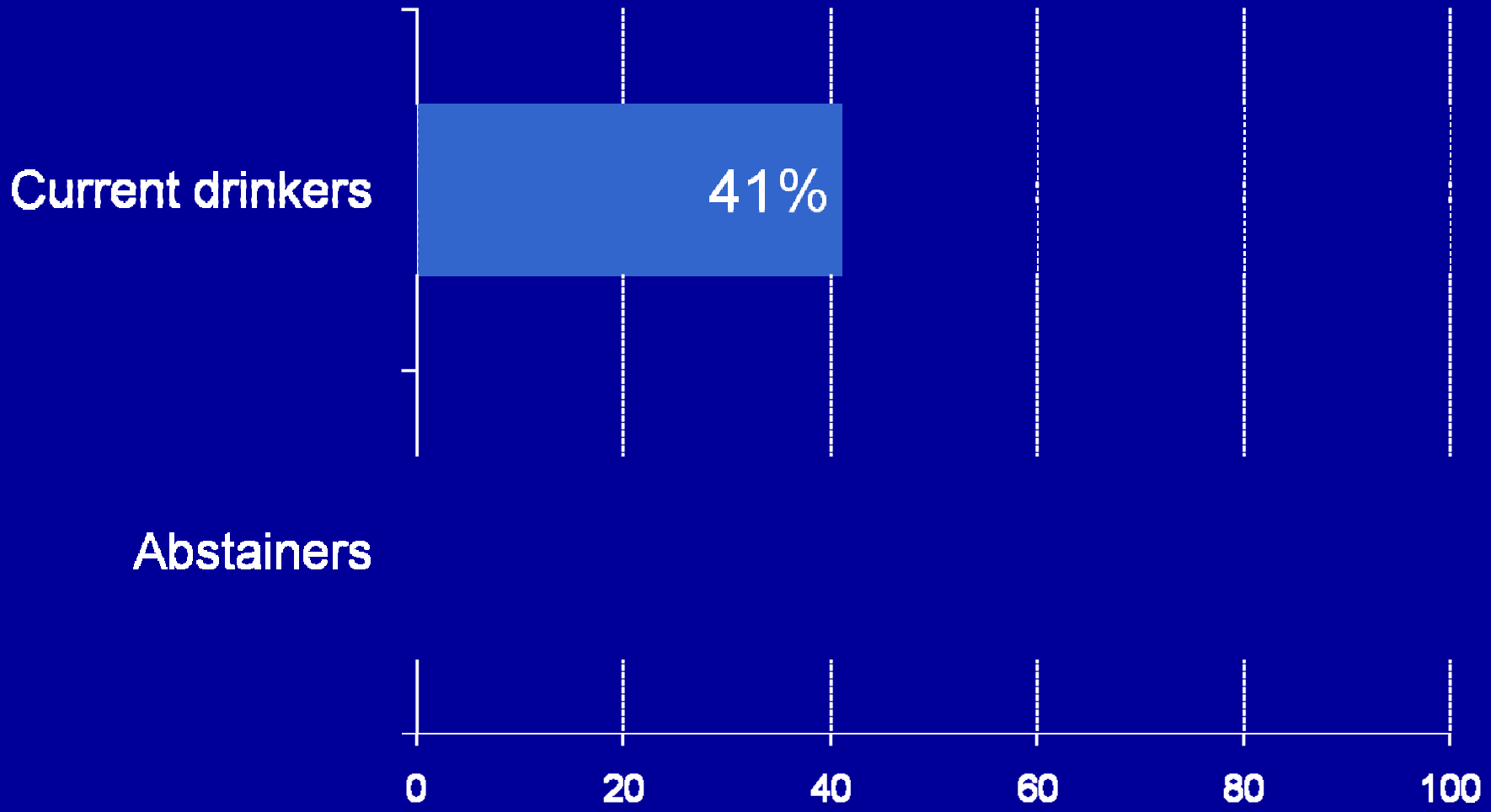
Dane County Youth Assessment 2005



Source: DCYA (2008)

My parents know what I'm doing after school *(% often/ very often)* **82%**

Dane County Youth Assessment 2005



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7. Strong teacher-parent relationships: school support for “authoritative” parenting
8. “SBIRT” model for student services:

   Screening, Brief Intervention, Referral for Treatment

Summary: Dispelling Common Myths about Teens and AODs

- Teens are not basically “mini adults”
- Most Deerfield high school students are abstaining from alcohol and other drugs
- However… alcohol can profoundly impact teens in ways that are different than adults
- Regular marijuana use can lead to addiction
- Peer pressure does not drive AOD problems; peer selection does with biopsychsocial factors
- There is a great deal that can be done to deter AOD use initiation and reduce risk

Thank you!

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