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## The Impact of Substance Use on Academic Achievement

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## Overview

Background

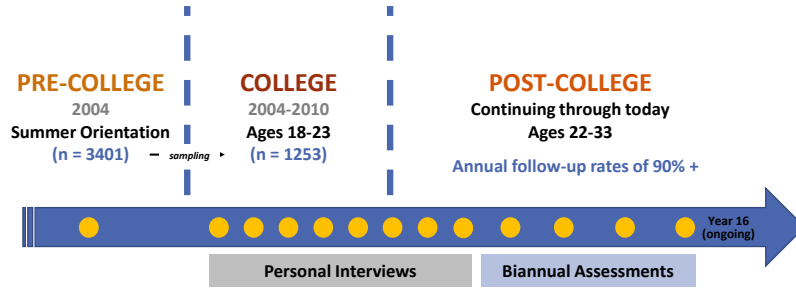
What influences academic achievement?

Behavioral Health and Academic Performance in High School

Preparing for the College Years

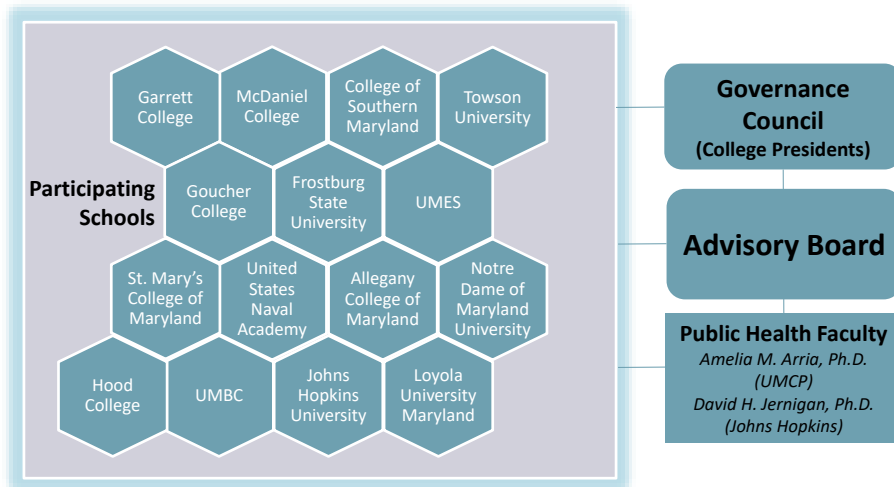
Key Strategies for Parents

Recap/Q & A




For more information and publications from the College Life Study: [www.cyahd.umd.edu/publications](http://www.cyahd.umd.edu/publications)

## The Maryland Collaborative



**Funding Acknowledgment:**  
The Behavioral Health Administration (BHA)  
Maryland Department of Health and Mental Hygiene



**Addressing College Drinking and Drug Use**

A Primer for Trustees, Administrators, and Alumni

ACTA  
AMERICAN COUNCIL OF TRUSTEES AND ALUMNI  
and UNIVERSITY OF MARYLAND SCHOOL OF PUBLIC HEALTH

**SCHOOL OF PUBLIC HEALTH**

**New Report from the American Council of Trustees and Alumni (ACTA)**

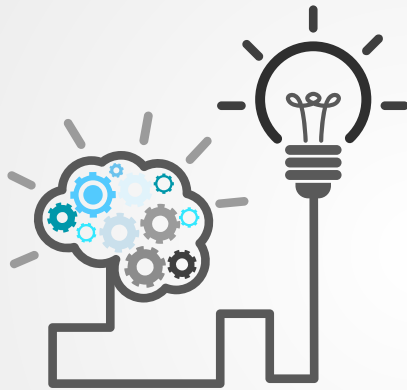
Institutions that do little to confront their “party culture” or appropriately address harmful student behaviors are implicitly sending the message that academic standards come second to recreation. A counterweight to reducing the appeal of substance use is to provide an engaging education that helps students ignite their personal passions and cultivate critical-thinking skills.

<https://www.goacta.org/publications/addressing-college-drinking-and-drug-use>



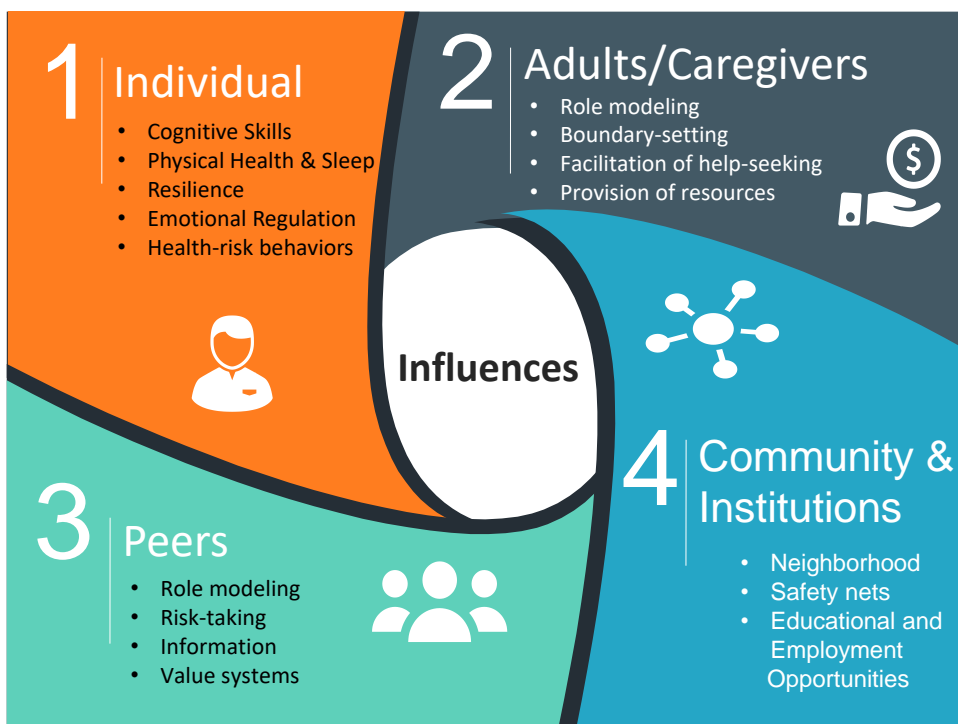
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What influences academic achievement?



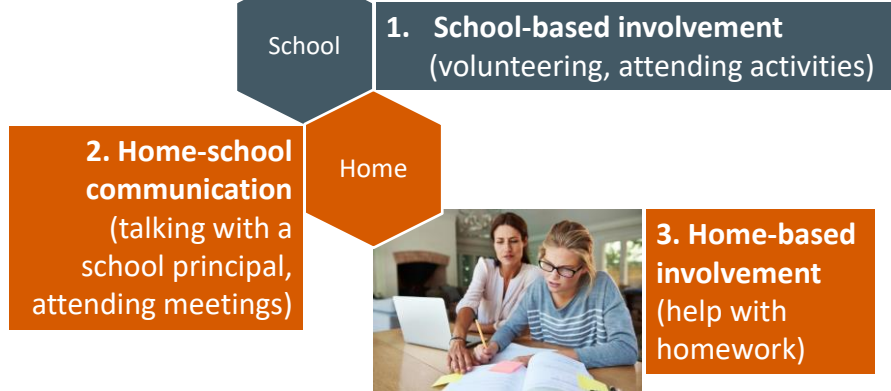
## ACADEMIC ACHIEVEMENT

- Skill Acquisition
- Communication Skills
- Creativity
- Knowledge





## Traditional ways that parents influence academic achievement



## Academic Socialization

Parental involvement that entails **communicating parental expectations for education and its value or utility,**

linking schoolwork to current events,

fostering **educational and occupational aspirations,**

discussing learning strategies with children, and making preparations and

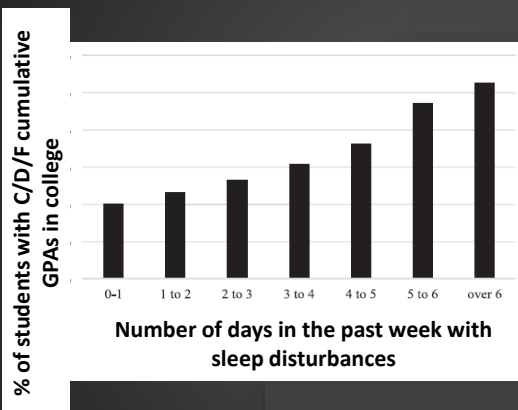
**plans for the future.**

## Cognitive Skills



- Perception and Focus
- Selective Attention
- Learning & Information Processing
- Memory

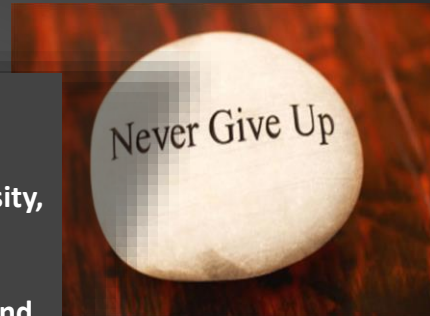
## Physical Health and Sleep



- Chronic Illnesses & Absences
- Disabilities and Attentional Difficulties
- Sleep Problems and Grades

## Grit/Resilience

- Maintain interest & curiosity (motivation) in the face of adversity, failure and disappointment
- Able to elicit help from people and access resources



## Emotion Regulation

### Examples of Common Emotion Regulation Strategies

#### HEALTHY

- ▶ Talking with friends
- ▶ Exercising
- ▶ Writing in a journal
- ▶ Meditation
  - ▶ Therapy
- ▶ Taking care of self when physically ill
- ▶ Getting adequate sleep
- ▶ Paying attention to negative thoughts that occur before or after strong emotions
- ▶ Noticing when you need a break – and taking it!

#### UNHEALTHY

- ▶ Abusing alcohol or other substances
- ▶ Self-Injury
- ▶ Avoiding or withdrawing from difficult situations
- ▶ Physical or verbal aggression
- ▶ Excessive social media use, to the exclusion of other responsibilities



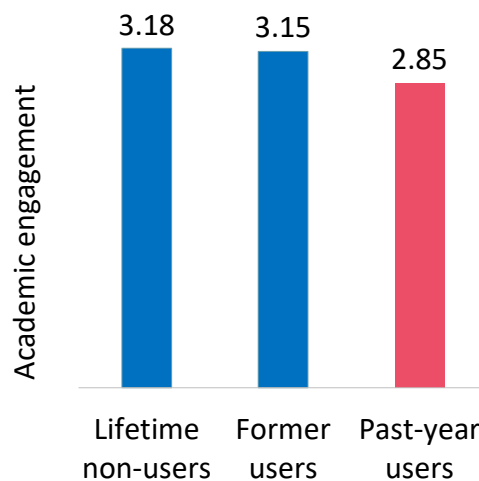


## Behavioral Health and Academic Outcomes during High School

### ***Abstinence from substance use associated with greater academic engagement***

- Nationally representative sample of 9,578 high school seniors
- 63% past-year use; 29% lifetime non-users; 8% use in the past, but not in past year.
- Compared to past-year users, lifetime non-users:
  - Less likely to skip school
  - Less likely to have low grades
  - Greater academic self-efficacy
  - Greater academic engagement

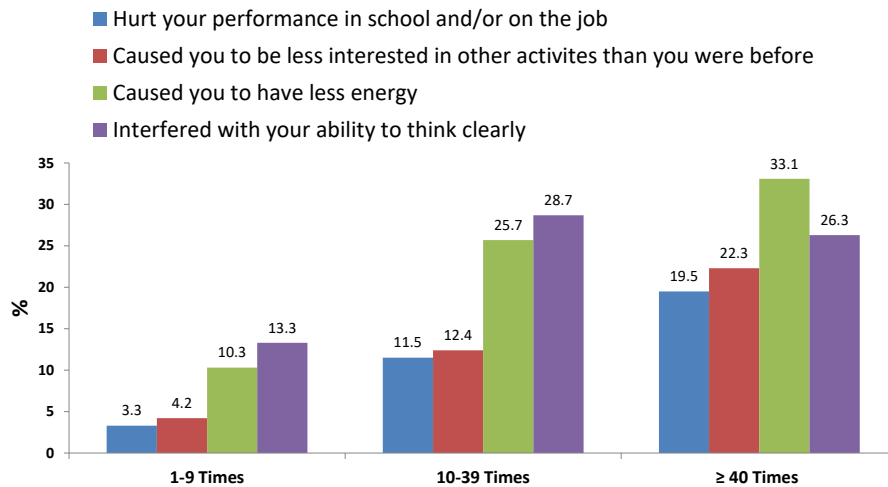
Results adjusted for gender, race, geographical region, parent's education, age, type of high school program.



Bugbee, B.A., Beck, K.H., Fryer, C.S., & Arria, A.M. (in press). Substance use, academic performance, and academic engagement among high school seniors. *Journal of School Health*.



## Self-reported adverse outcomes of marijuana use by high school seniors



Palamar, J. J., Fenstermaker, M., Kamboukos, D., Ompad, D. C., Cleland, C. M., & Weitzman, M. (2014). Adverse psychosocial outcomes associated with drug use among US high school seniors: A comparison of alcohol and marijuana. *American Journal of Drug and Alcohol Abuse*, 40(6), 438-446.

### *Is marijuana use associated with reading and math standardized test scores?*

- Data from a large sample of 10<sup>th</sup> graders in WA state
- Student-level data on standardized test scores was examined in relation to school-level data on past-month substance use

**For each 5% increase in past-month prevalence of marijuana use at their school, students were:**

- **12% less likely to meet math standards**
- **12% less likely to meet writing standards**
- **9% less likely to meet reading standards**

*Similar results were found for tobacco and alcohol*

Arthur, M.W., Brown, E.C., Briney, J.S., Hawkins, J.D., Abbott, R.D., et al. (2015). Examination of substance use, risk factors, and protective factors on student academic test score performance. *Journal of School Health*. 85(8), 497-507.

**Alcohol and marijuana use in middle school associated with worse functioning in high school**

		Marijuana	Alcohol
Grades, future education plans, value put on grades	Academic performance	↓	
Going to class unprepared (without homework, paper, pencil, books) and late	Academic unpreparedness	↑	↑
Anxiety and depression	Mental health	↓	
Problem behaviors (fighting, stealing, etc.)	Delinquency	↑	↑
Able to count on friends, feeling accepted, others want to talk with you	Social Functioning		↓
<i>Stomach pain, headaches, feeling tired, trouble sleeping, physical activity</i>	Physical Health		

D'Amico, E. J., Tucker, J. S., Miles, J. N., Ewing, B. A., Shih, R. A., & Pedersen, E. R. (2016). Alcohol and marijuana use trajectories in a diverse longitudinal sample of adolescents: Examining use patterns from age 11 to 17 years. *Addiction, 111*(10), 1825-1835.



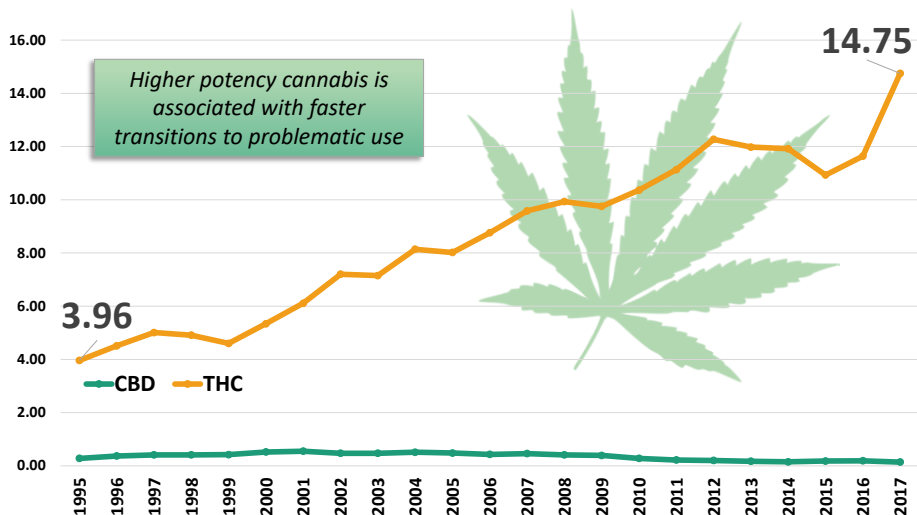
**Surgeon General Releases Advisory on Marijuana’s Damaging Effects on the Developing Brain Encourages Youth and Pregnant Women Not to Use Marijuana**

The Surgeon General Vice Adm. Jerome M. Adams, issued an advisory emphasizing the importance of protecting youth and pregnant women from the health risks of marijuana use.

“There is a false perception that marijuana is not as harmful as other drugs. I want to be very clear – no amount of marijuana use during pregnancy or adolescence is known to be safe.”

**“ NO AMOUNT OF MARIJUANA USE DURING ADOLESCENCE IS KNOWN TO BE SAFE ”**

## THC concentrations have increased dramatically from 1995 to 2017



ElSohly, M. A., Mehmecic, Z., Foster, S., Gon, C., Chandra, S., & Church, J. C. (2016). Changes in cannabis potency over the last 2 decades (1995-2014): Analysis of current data in the United States. *Biological Psychiatry*, 79(7), 613-619.  
 Chandra, S., Radwan M.M., Majumdar C.G., Church J.C., Freeman T.P., & ElSohly M.A. (2019). New trends in cannabis potency in USA and Europe during the last decade (2008-2017). *European Archives of Psychiatry and Clinical Neuroscience* 269:5-15.

## New Potent Forms of Cannabis



**Concentrates: 40-80% THC**

**4 REASONS TO TRY CONCENTRATES**

- HIGHER POTENCY
- MORE EFFICIENT
- FASTER RELIEF
- BETTER FLAVOR

**Medical Marijuana Concentrates**

- Easier, safer and cleaner way to medicate
- High quality and high purity cannabis extracts
- Only recognized and reliable brands
- Disposable pens, vape pens, shatters, waxes and more...

## Cannabis effects on neurocognitive function

- Perception and Focus
- Selective Attention
- Learning & Information Processing
- Memory



Broyd, S.J., van Hell H.H., Beale C., Yücel, M., Solowij, N. (2016) Acute and Chronic Effects of Cannabinoids on Human Cognition—A Systematic Review. *Biological Psychiatry*, 79:557–567.

Crean, R. D., Crane, N. A., & Mason, B. J. (2011). An evidence based review of acute and long-term effects of cannabis use on executive cognitive functions. *Journal of Addiction Medicine*, 5(1), 1-8.



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**FINANCIAL DISCLOSURES:** The authors have no conflicts of interest relevant to the content of this article.

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**KEY WORDS:** Marijuana, cannabis, dependence, drug-related harms, mental health

### REVIEW

## WHY NOT POT?

# A Review of the Brain-based Risks of Cannabis

by **KAI MACDONALD, MD, and KATHERINE PAPPAS, BA**

*Dr. MacDonald and Ms. Pappas are with UC San Diego Psychiatry, San Diego, CA, USA*

*Innov Clin Neurosci* 2016;13(3-4):13-22

### ABSTRACT

In this review, we provide a historical perspective on marijuana, and survey contemporary research investigating its potential negative effects on the brain. We discuss the

### INTRODUCTION

*"I have argued that every human being is born with an innate drive to experience altered states of consciousness periodically . . . this*

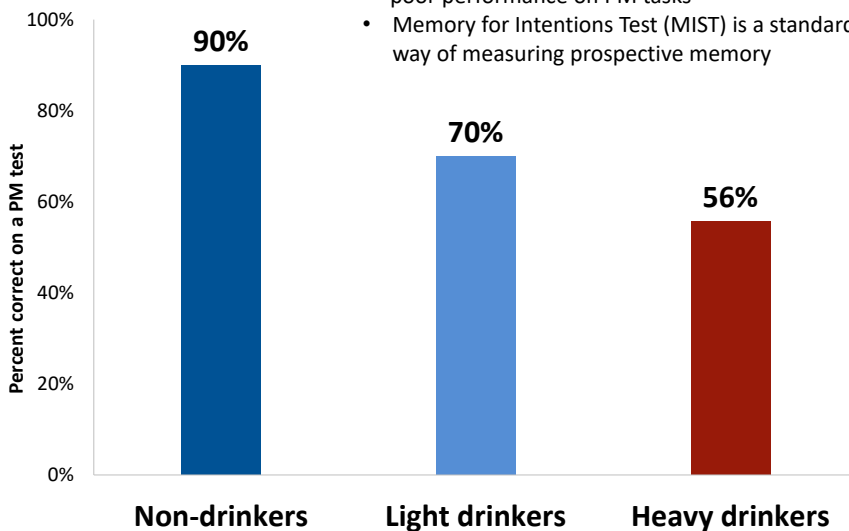
# College Student Drinking Patterns and Prospective Memory



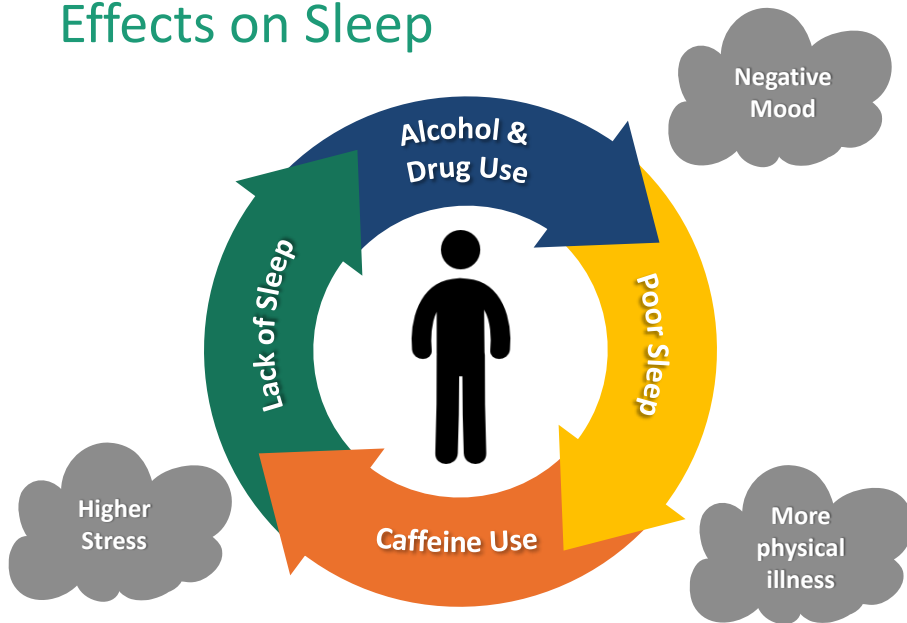
Maria Zamroziewicz and Sarah A. Raskin  
 Trinity College  
 Carol S. Anstad, Rebecca M. Wood, and  
 Carolyn R. Fallahi  
 Central Connecticut State University  
 Broderick Sawyer and Samantha Leen  
 Yale University  
 Howard Tenen  
 University of Connecticut School of Medicine  
 Alicia D. Dager  
 Olin Neuropsychiatry Research Center, Hartford Hospital,  
 Hartford, Connecticut, and Yale University  
 Godfrey D. Pearlson  
 Olin Neuropsychiatry Research Center, Hartford Hospital,  
 Hartford, Connecticut, and Yale University



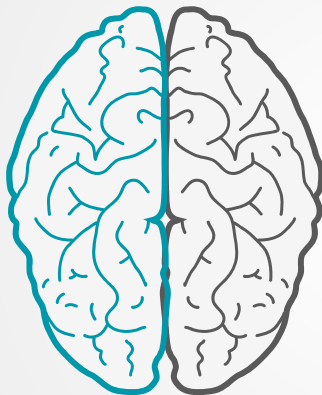
- Heavy drinking was related to greatest deficits in prospective memory (PM)
- Experiencing blackouts was associated with poor performance on PM tasks
- Memory for Intentions Test (MIST) is a standardized way of measuring prospective memory



## Effects on Sleep

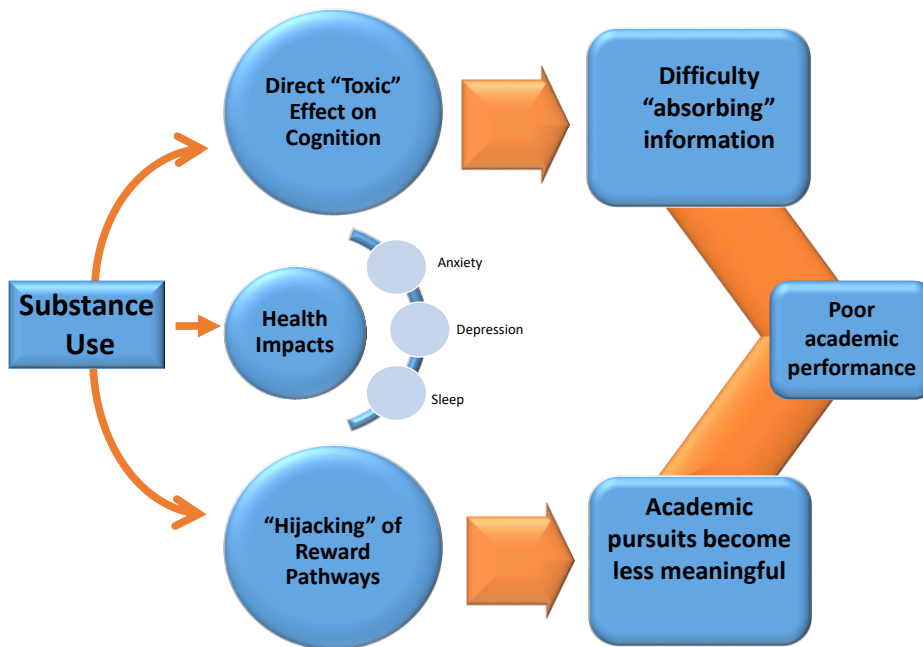


How does substance use interfere with academic performance?

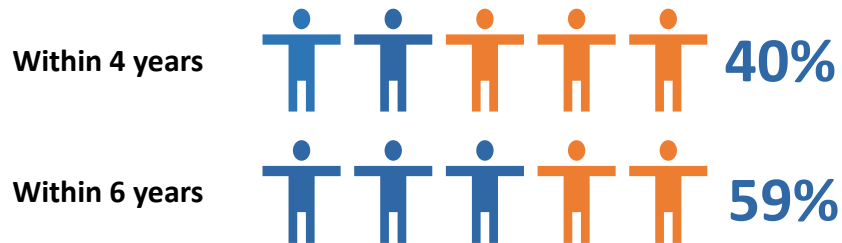


### HIJACKING OF BRAIN REWARD PATHWAYS

*Substance use "hijacks" reward pathways in the brain. Academic pursuits become less meaningful as drugs become more valued.*



## U.S. College Graduation Rates



Source: U.S. Department of Education

States appropriated almost \$6.2 billion dollars to colleges and universities to help pay for the education of students who did not return for a second year.

States gave more than \$1.4 billion dollars and the Federal government more than 1.5 billion in grants to students who did not return for a second year.

Schneider, M. *Finishing the First Lap: The Cost of First-year Student Attrition in America's Four-year Colleges and Universities*, 2010.



## READINESS FOR EMPLOYMENT AMONG COLLEGE GRADUATES



Association  
of American  
Colleges and  
Universities

“When it comes to the types of skills and knowledge that employers feel are most important to workplace success, large majorities of employers do NOT feel that recent college graduates are well prepared. This is particularly the case for applying knowledge and skills in real-world settings, **critical thinking skills, and written and oral communication skills — areas in which fewer than three in 10 employers think that recent college graduates are well prepared.** Yet even in the areas of ethical decision-making and working with others in teams, many employers do not give graduates high marks” (Hart Research Associates, 2015, p. 11).

Hart Research Associates. (2015). *Falling short? College learning and career success*. Washington, D.C.

## TIME Ideas

EDUCATION

### Does College Put Kids on a ‘Party Pathway’?

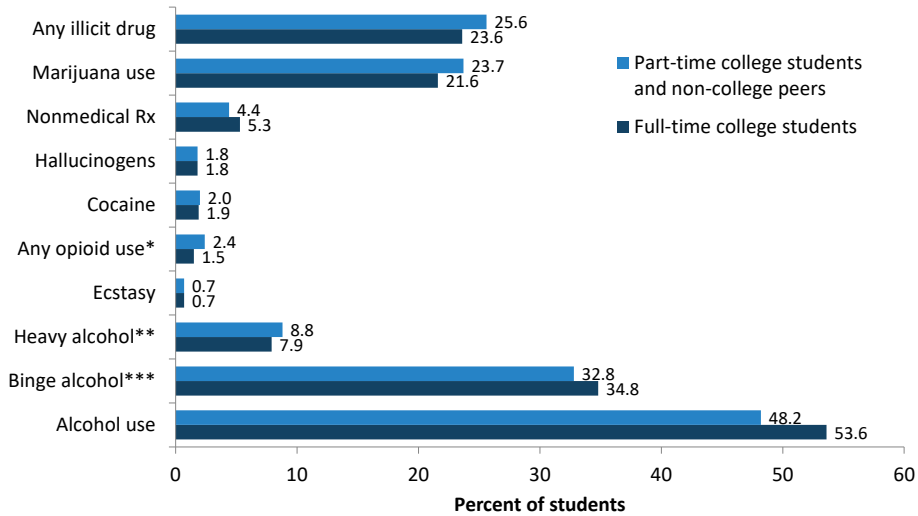
By Annie Murphy Paul | Jan. 23, 2013 | 36

A fair amount of schadenfreude greeted the release last week of a study showing that the kids of parents who pay for college return their families’ largesse by achieving lower grades. The study, conducted by University of California at Merced professor Laura Hamilton and published in the *American Sociological Review*, offered those of us who worked our way through college — or took out burdensome student loans — a rare opportunity to gloat. But our self-congratulation is mistaken, or at least beside the point. Hamilton’s work, and that of other researchers, demonstrates that we should all be concerned about the state of higher education in the U.S. today and that college students enjoying a four-year paid vacation courtesy of their parents are merely a symptom of a larger problem.



KATIE HUISMAN / RK STUDIO / GETTY IMAGES

### National data: Past-month alcohol and other drug use among 18 to 22-year-olds, by college enrollment



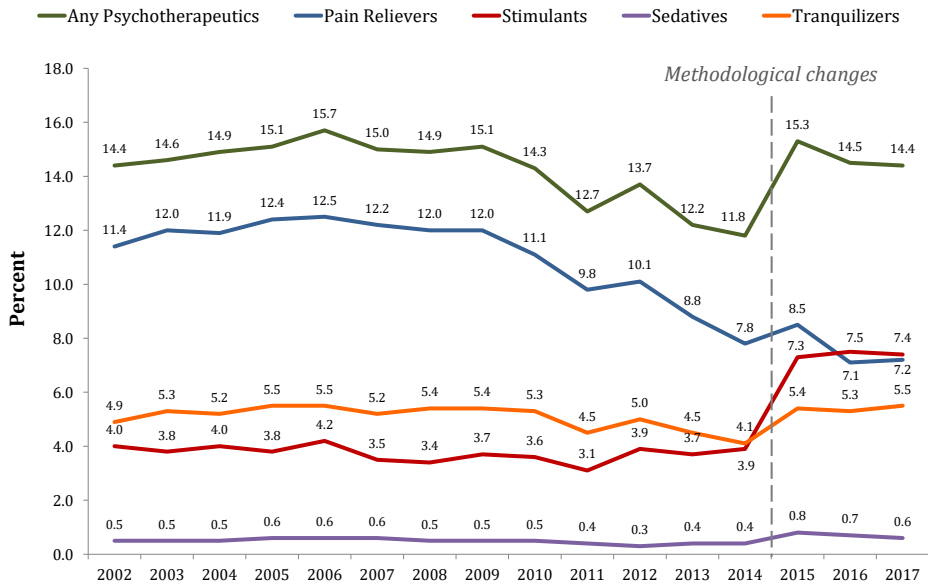
\*This includes heroin use and prescription pain reliever misuse.

\*\*"Heavy use" defined as "Five or more drinks on the same occasion on each of 5 or more days in the past 30 days."

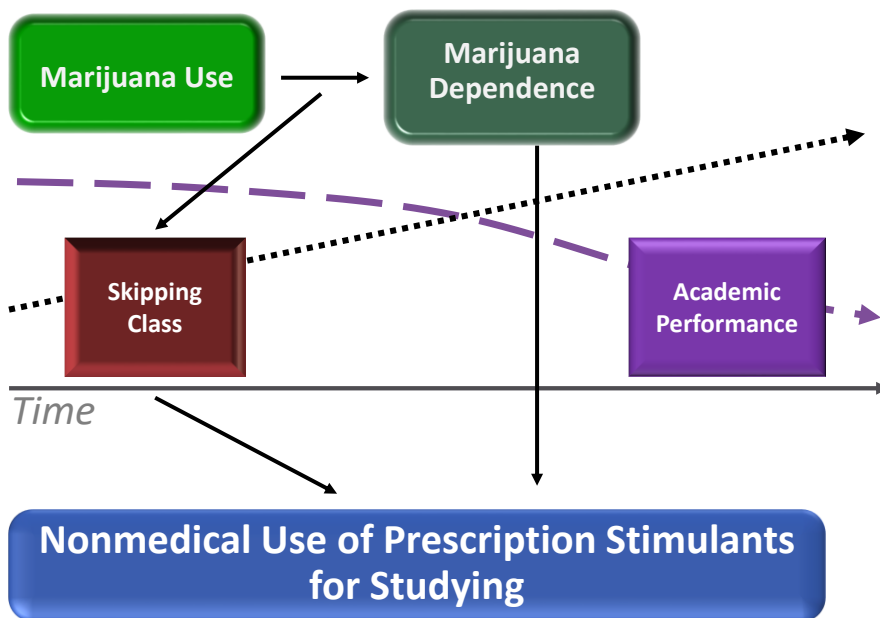
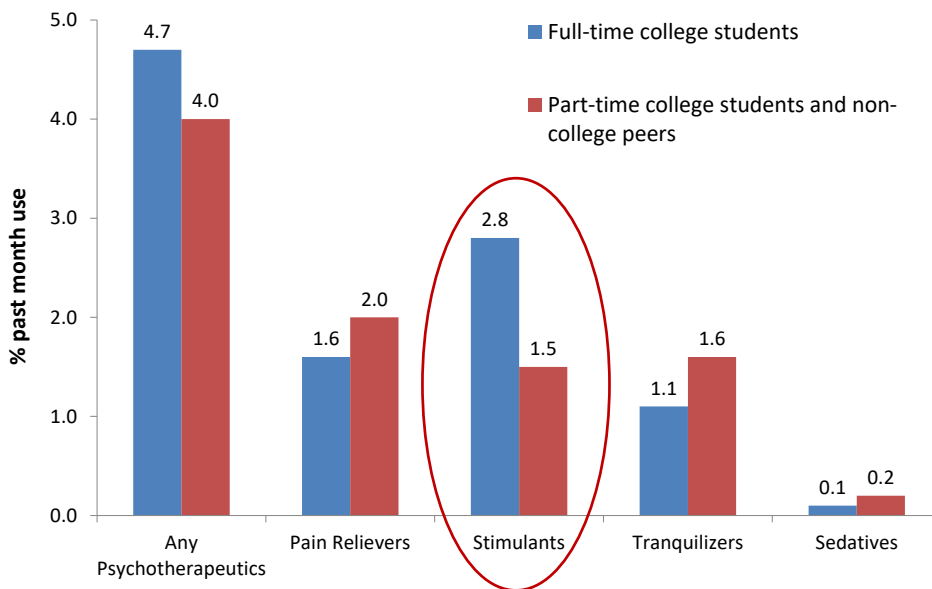
\*\*\*"Binge use" defined as "Five or more drinks on the same occasion at least once in the past 30 days."

Substance Abuse and Mental Health Services Administration (2018). Results from the 2017 National Survey on Drug Use and Health: Detailed Tables, NSDUH Series H-44, HHS Publication No. (SMA) 12-4713. Rockville, MD: Substance Abuse and Mental Health Services Administration.

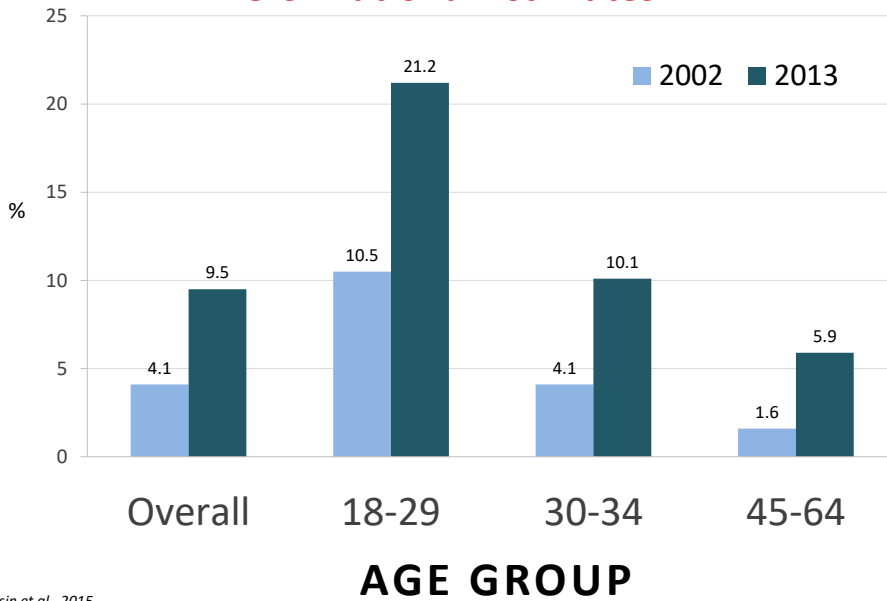
### Past-Year Nonmedical Use of Prescription Drugs among 18- to 25-year-olds, 2002-2016 (SAMHSA, 2017)



**Prescription stimulants are the only class of prescription drugs that are misused more by full-time college students than part-time college and non-college peers; ages 18-22; SAMHSA, 2018**



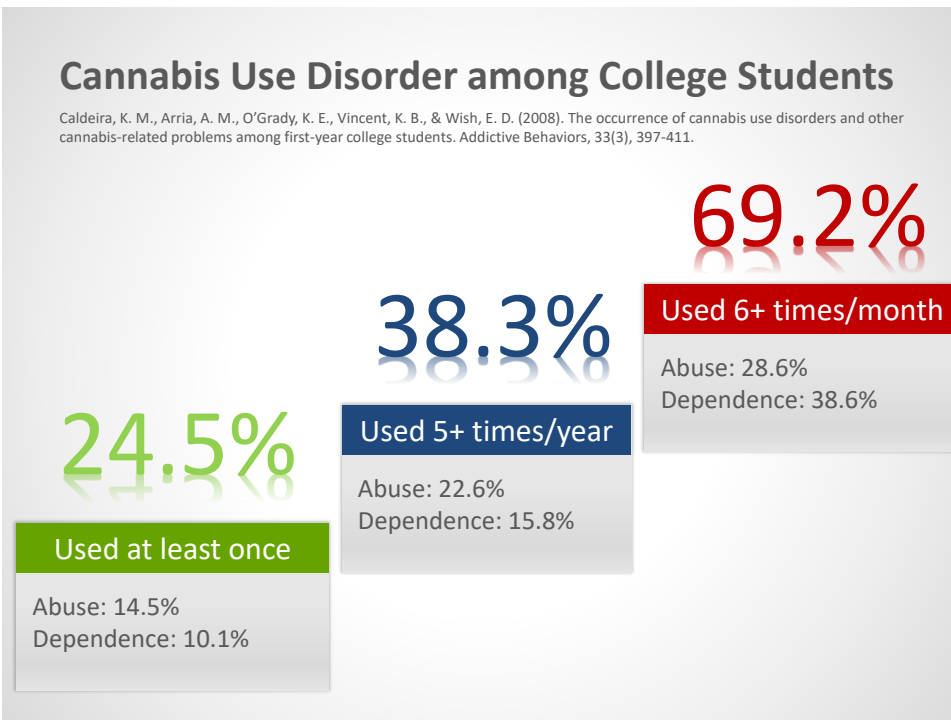
***Increases in Cannabis Use from 2002 to 2013:  
U.S. National Estimates***



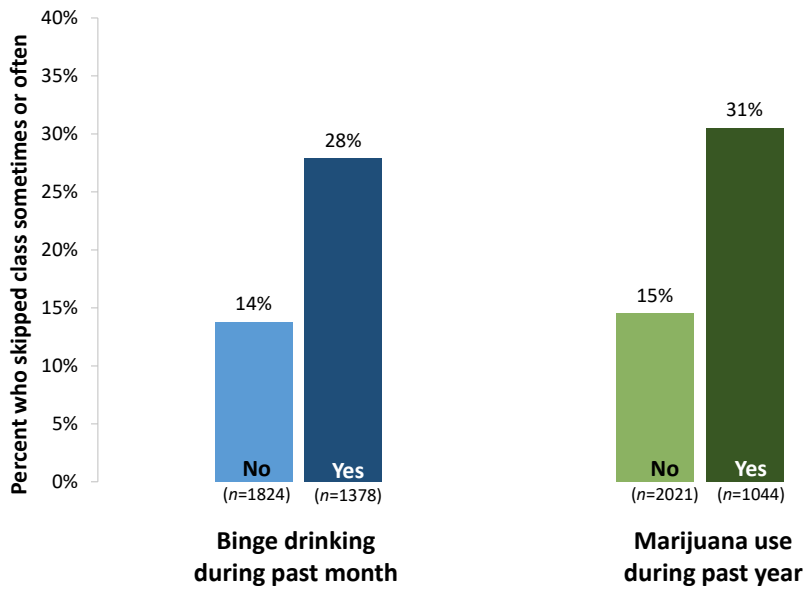
Hasin et al., 2015

**Cannabis Use Disorder among College Students**

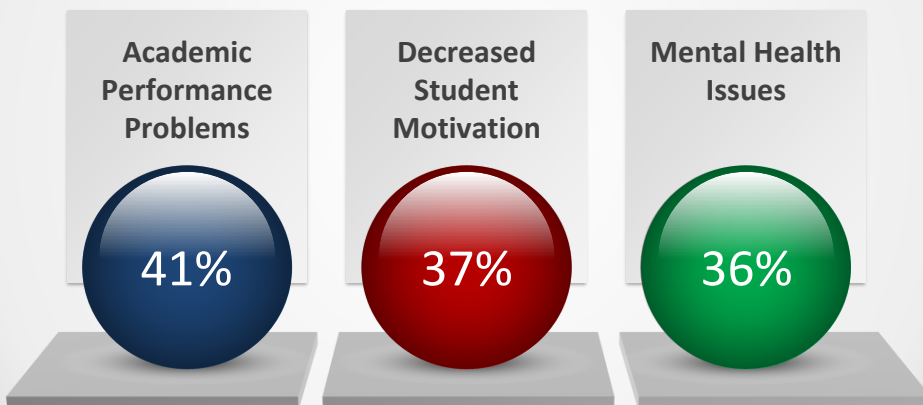
Caldeira, K. M., Arria, A. M., O'Grady, K. E., Vincent, K. B., & Wish, E. D. (2008). The occurrence of cannabis use disorders and other cannabis-related problems among first-year college students. *Addictive Behaviors*, 33(3), 397-411.



**Skipping Class, by Binge Drinking and Marijuana Use  
(across >3500 students attending ten colleges in one state)**



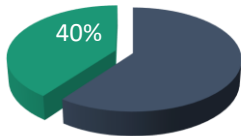
**Cannabis Use Problems:  
Views from College Administrators**



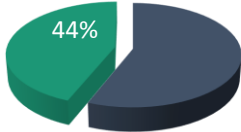
Mary Christie Foundation, 2017 [www.marychristiefoundation.org](http://www.marychristiefoundation.org)

### Concentration problems after being high

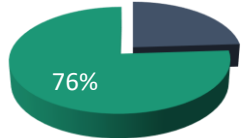
Used 5x in past year



Cannabis Abuse



Cannabis Dependence

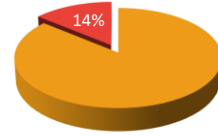


*Cannabis use problems increase with severity of addiction*

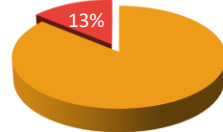
Caldeira, K. M., Arria, A. M., O'Grady, K. E., Vincent, K. B., & Wish, E. D. (2008). The occurrence of cannabis use disorders and other cannabis-related problems among first-year college students. *Addictive Behaviors, 33*(3), 397-411.

### Overslept and missed class

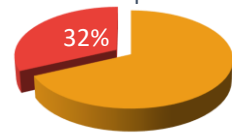
Used 5x in past year



Cannabis Abuse



Cannabis Dependence



## Marijuana use and motivation in college

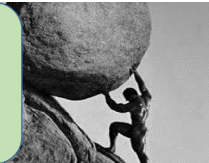
Lac & Luk, 2017

- 198 college students surveyed about their goals
- Students with "high levels of meaning for their goals" were less likely to use marijuana
- For marijuana users, high ratings of self-generated goal achievement associated with less frequent use



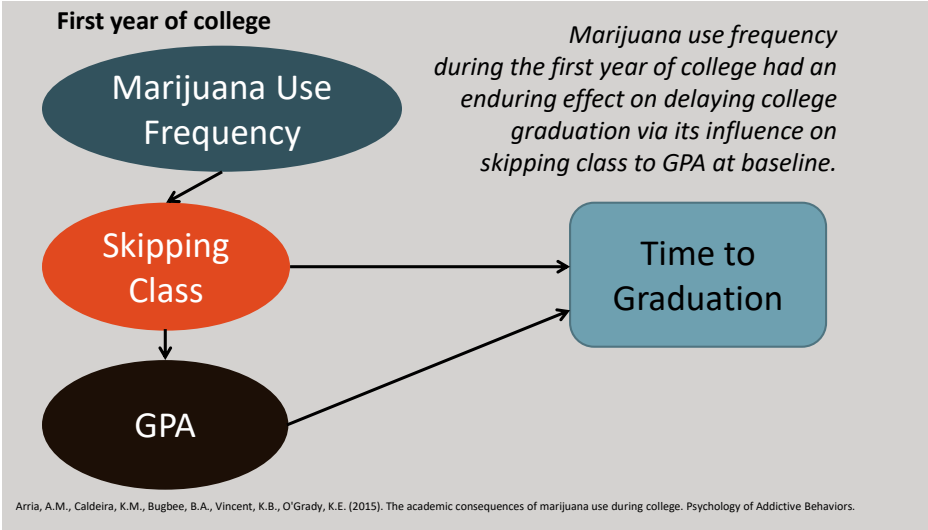
Wright & Palfai, 2012

- 505 college students, two assessments separated by a month
- Marijuana use (but not alcohol or tobacco) predicted lower initiative and persistence scores (controlling for demographics, personality traits, alcohol use, tobacco use, and self-efficacy)
- Marijuana use predicted lower self efficacy

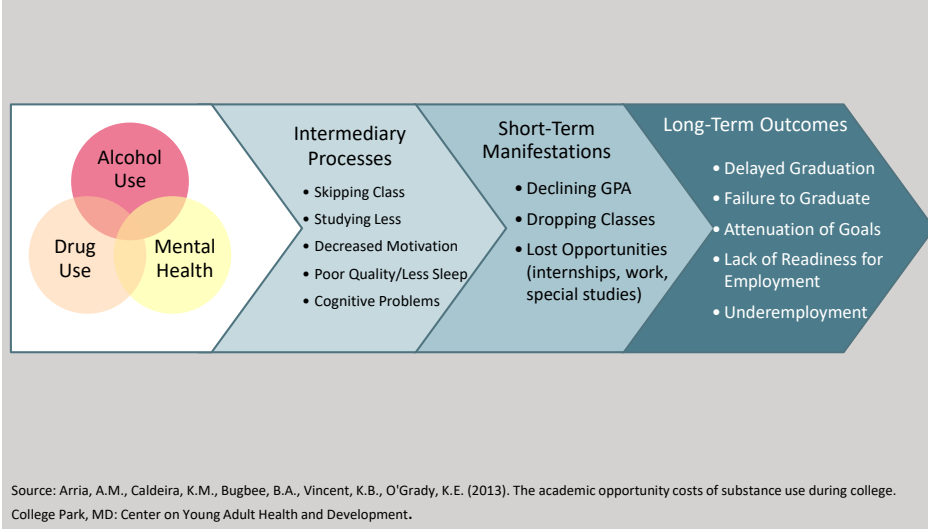


Lac, A., & Luk, J. W. (2017). Testing the amotivational syndrome: Marijuana use longitudinally predicts lower self-efficacy even after controlling for demographics, personality, and alcohol and cigarette use. *Prevention Science*  
 Wright, L. w., & Palfai, T. P. (2012). Life goal appraisal and marijuana use among college students. *Addictive Behaviors, 37*(7), 797-802.

# Marijuana Use, Skipping Class, GPA and Time to Graduation

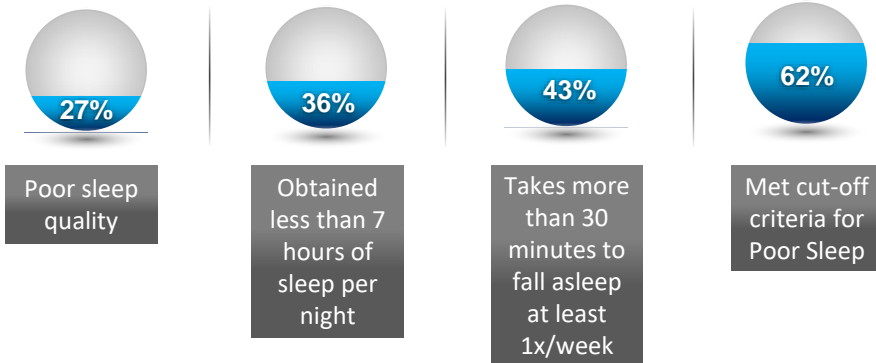


# BEHAVIORAL HEALTH AND YOUNG ADULT OUTCOMES



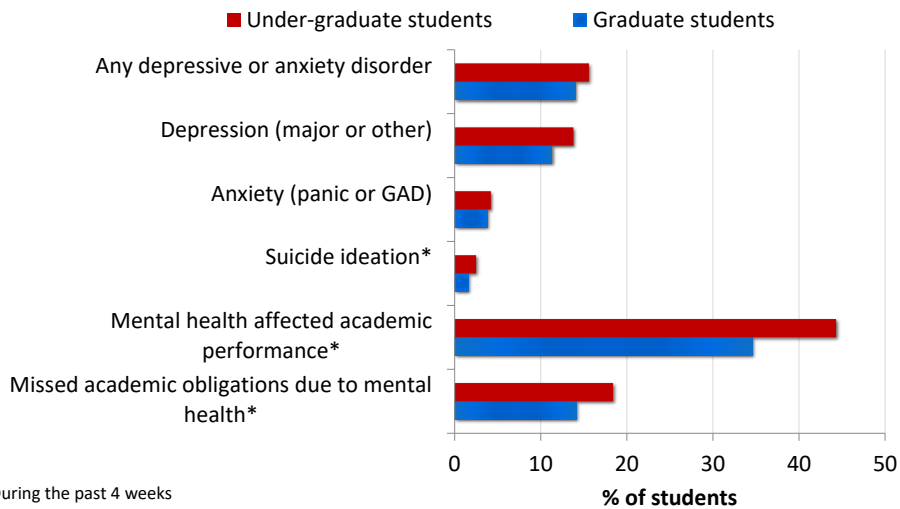
## Sleep Problems among College Students

Prevalence and mental health correlates (Becker, in press, 2018)



- Anxiety and depression symptoms associated with most sleep quality domains as measured by the Pittsburgh Sleep Quality Index (PSQI)
- Anxiety, but not depression, was associated with more sleep disturbances and use of sleep medications
- Depression, but not anxiety, was associated with daytime dysfunction

## How many college students screen positive for current mental health problems?



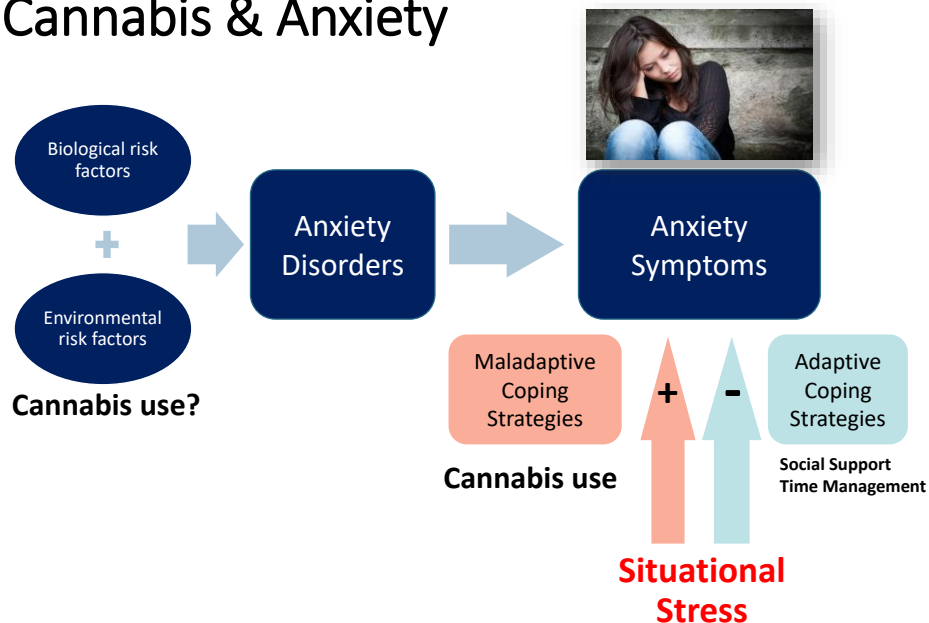
Source: Eisenberg, Golust, Golberstein, & Hefner. (2007). Prevalence and correlates of depression, anxiety, and suicidality among university students. *American Journal of Orthopsychiatry*. 77(4):534-542.



**Nearly half** of students say that their **mental health affected their academic performance** in the past month.

**One in five** missed academic obligations during the past week due to mental health problems.

## Cannabis & Anxiety



Sources: Blanco, et al., 2016; Hill et al., 2017; Cranford et al., 2009; Hasin et al., 2016; Kedzior, et al., 2014; Zvolensky, et al., 2010

## Coping – “Engagement” Strategies

### Problem-Focused Engagement

- I make a plan of action and follow it
- I look for the silver lining or try to look on the bright side of things
- I tackle the problem head on
- I step back from the situation and try to put things into perspective

Problem solving  
&  
Cognitive re-  
structuring

### Emotion-Focused Engagement

- I try to let my emotions out
- I try to talk about it with a friend or family
- I let my feelings out to reduce the stress
- I ask a close friend or relative that I respect for help or advice

Express emotions  
&  
Seek social  
support

## Coping – “Disengagement” Strategies

### Problem-focused Disengagement

- I hope for a miracle
- I hope the problem will take care of itself
- I try to put the problem out of my mind
- I try not to think about the problem

Wishful thinking  
&  
problem avoidance

### Emotion-focused Disengagement

- I tend to blame myself
- I tend to criticize myself
- I keep my thoughts and feelings to myself
- I try to spend time alone

Self-criticism  
&  
social withdrawal



Who do we define as a parent?

## Trusted adults

other biological or non-biological caregivers  
(e.g., aunts, uncles, grandparents, older  
sibling... the list goes on...)

## Start Before College

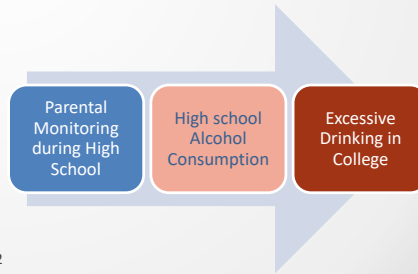
### Parental Monitoring

- Rule Setting
- Supervision
- Consequences



### High levels of parental monitoring in high school...

- Reduce risk for alcohol consumption in high school and excessive drinking during college
- Lower the likelihood of marijuana exposure opportunity during college



Sources: Arria et al., 2008; Kaynak et al., 2013; Pinchevsky et al., 2012

### Providing Alcohol for Underage Youth: What Messages Should We Be Sending Parents?

OVGU KAYNAK, Ph.D.,<sup>1\*</sup> KEN C. WINTERS, Ph.D.,<sup>2,3</sup> JOHN CACCIOLA, Ph.D.,<sup>4,5</sup> KIMBERLY C. KIRBY, Ph.D.,<sup>4,6</sup> AND AMELIA M. ARRIA, Ph.D.<sup>4,7</sup>

<sup>1</sup>Institution Research Institute, Philadelphia, Pennsylvania

<sup>2</sup>Department of Psychiatry, University of Minnesota, Minneapolis, Minnesota

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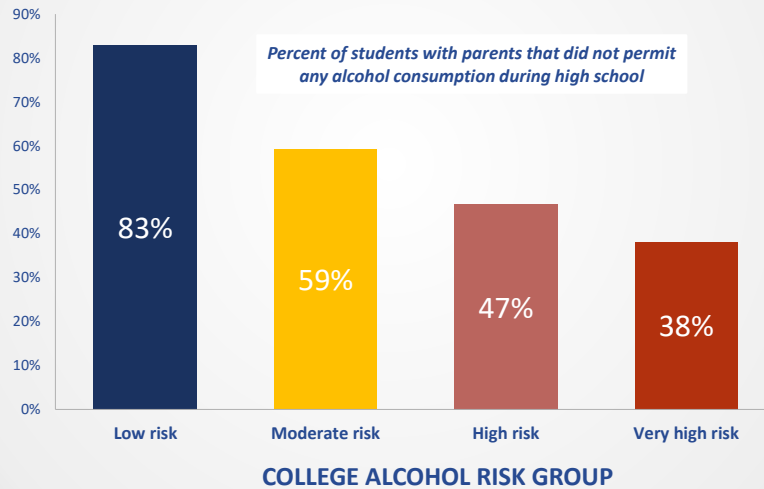
<sup>4</sup>Center on Early Adult Health and Development, Department of Behavioral and Community Health, University of Maryland School of Public Health, College Park, Maryland

### Parent Behaviors that Increase Risk of Excessive Drinking



Kaynak, Ö., Winters, K.C., Cacciola, J., Kirby, K.C., Arria, A.M. (2014). Providing alcohol for underage youth: What messages should we be sending parents? *Journal of Studies on Alcohol and Drugs*, 75(4), 590-605.

## Parent limit-setting: A protective factor



## How You Talk To Your Child About Alcohol Matters!

### Message from Parents

### Risk of Excessive Drinking in College

#### Harm-reduction messages only

*Messages about how to be safe when drinking;  
Messages that some amount of alcohol is acceptable*

**HIGH RISK**

#### Mixed messages

*Combination of harm-reduction messages  
and zero-tolerance messages*

**MODERATE RISK**

#### Zero-tolerance messages only

*Messages that no amount of alcohol is acceptable;  
No messages about safe drinking practices*

**LOW RISK**

Source: Abar et al., 2012



**COLLEGE PARENTS MATTER**  
have the conversation

[www.collegeparentsmatter.org](http://www.collegeparentsmatter.org)

Tools and scripts to improve communication with your college student

[home](#) [who we are](#) [topics](#) [communication tips](#) [faqs](#) [contact us](#)



Getting them to college is just the beginning...  
With **good communication** you will guide them through it.

Your child still needs your guidance to navigate the obstacles standing between them and their diploma. Excessive drinking can be one of the biggest. It is a serious problem that undermines students' health, safety, and academic success, for both themselves and their fellow students. Parents like you can help students avoid such problems... And keeping those lines of communication open is where you start.

**6** HIGH RISK DRINKING SITUATIONS TO TALK ABOUT

**7** TIPS FOR GOOD COMMUNICATION

 THE MARYLAND COLLABORATIVE  
TO REDUCE COLLEGE DRINKING AND RELATED PROBLEMS

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## Tips for Communication

- Don't be afraid to start the conversation.
- As a parent, you are allowed to disapprove of substance use. Give yourself permission to disapprove.
- Focus on one message during the conversation.



## Tips for Communication

**Reject the myth that discouraging drinking or substance use is useless because everyone is doing it.**

- We hear frequently from parents and students: "All the kids drink... that's what everyone does.... all the time..."
- Some parents believe that discouraging drinking is naïve, old-fashioned, or pointless, since drinking is such an established part of the college culture. But *the idea that "everyone drinks all the time" is simply false.*



## Tips for Communication

### **Make communication a regular activity.**

- College students have a lot on their plate. They're juggling classes, work, a social life, and other responsibilities.
- It's better to schedule a time to talk with them, rather than having a conversation when they are multi-tasking or unwilling to talk.



## Tips for Communication

### **Recognize the power of your influence.**

- Some parents say, "They're 18, I can't tell them what to do anymore." True, they're not little children anymore, but your attitudes and directions still matter enormously.
- Parents still play a major role in influencing their college-age child's behavior.





ASK ABOUT  
ACADEMIC  
ENGAGEMENT



HAVE CONVERSATIONS  
ABOUT **OPPORTUNITIES**  
TO USE SUBSTANCES  
AND PEER USE

## UNDERSTAND THE IMPORTANCE OF EMOTIONAL AND BEHAVIORAL REGULATION



## Parenting a grown son or daughter: *A balancing act*

### ***Remember...***

- Guidance is key because the threats are real and serious.
- The earlier you intervene, the better. Trust your instincts.
- Developmentally-appropriate communication is a two-way street.
- You can facilitate getting help when it is appropriate.
- Model positive healthy behaviors and help-seeking behaviors.



KNOW THE  
SAFETY NETS  
OFFERED BY  
SCHOOLS AND  
COMMUNITIES



MAINTAIN  
VIGILANCE AND  
FACILITATE HELP-  
SEEKING

# 6 PARENTING PRACTICES

Help Reduce the Chances Your Child will Develop a Drug or Alcohol Problem

Here are 6 research-supported parenting practices to set you on the right path.



[https://drugfree.org/wp-content/uploads/2011/07/partnership\\_components\\_tool\\_revised\\_031612.pdf](https://drugfree.org/wp-content/uploads/2011/07/partnership_components_tool_revised_031612.pdf)

## Interlocking Dimensions of Student Success





Recap/Q&A

Thank You

For more information, please send an email to Amelia Arria at [aarria@umd.edu](mailto:aarria@umd.edu) and see our website: [www.cyahd.umd.edu](http://www.cyahd.umd.edu)