Association for the Chronically Mentally Ill (ACMI)

December 9th, 2020

The webinar will start @ 5:30PM

ACMI Educational Webinar:

The Impact of Substance Use on the Developing Adolescent Brain by Dr. Shawn Kelly

- Information presented is not medical advice
- Please mute all lines except presenters
- Submit questions in chat window
- Those requesting a Certificate of Attendance need to send an email to contact@acmionline.com with following information:
  - First name
  - Last name
  - Email address
- Meghan Skrobel |Copa Education will be sending the certificate

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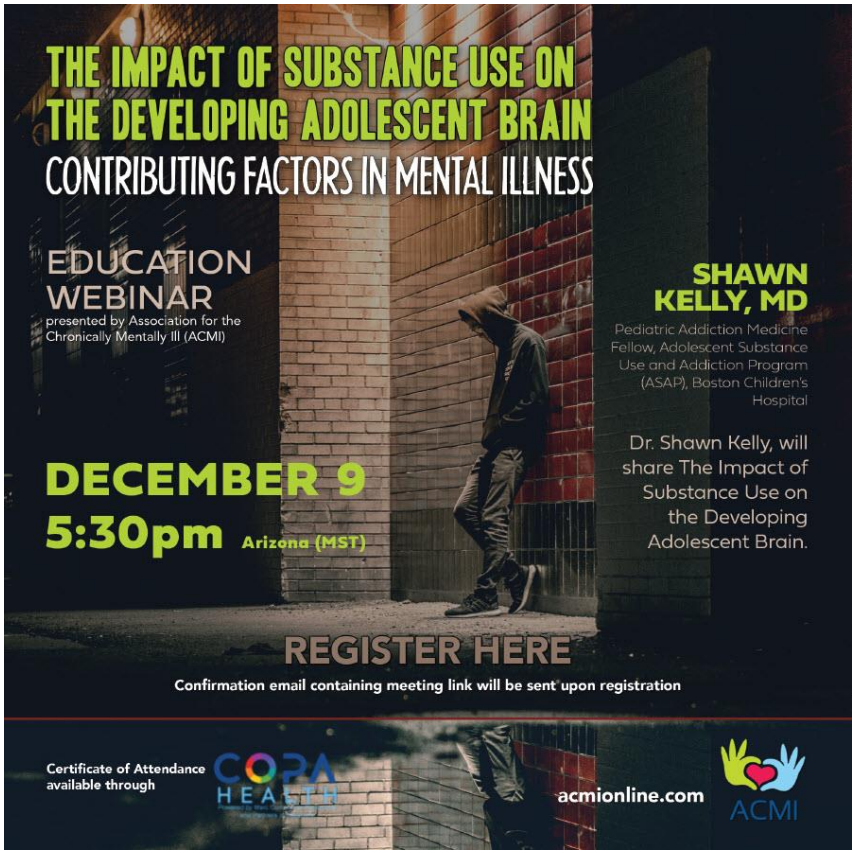
INTRODUCTIONS



TODAY'S SPEAKER

- Dr. Shawn Kelly is a Pediatric Addition Medicine Fellow at Boston Children's Hospital

ACMI Educational Webinar:

A conversation with Dr Kenneth Paul Rosenberg- author of Bedlam: An Intimate Journey Into America's Mental Health Crisis

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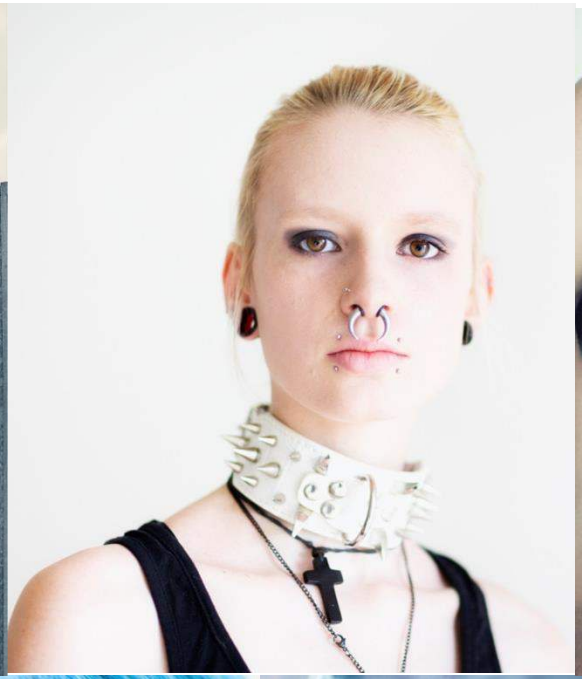
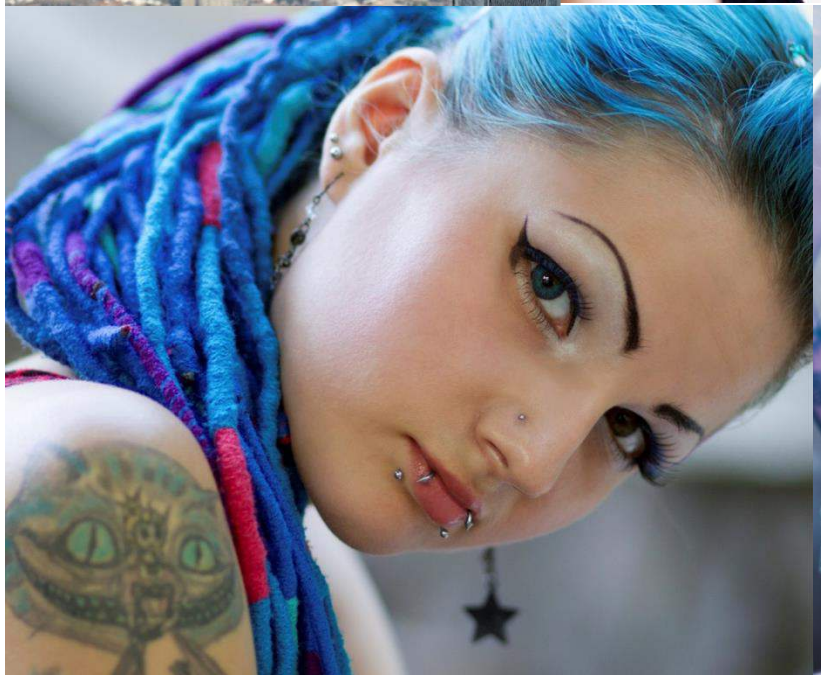
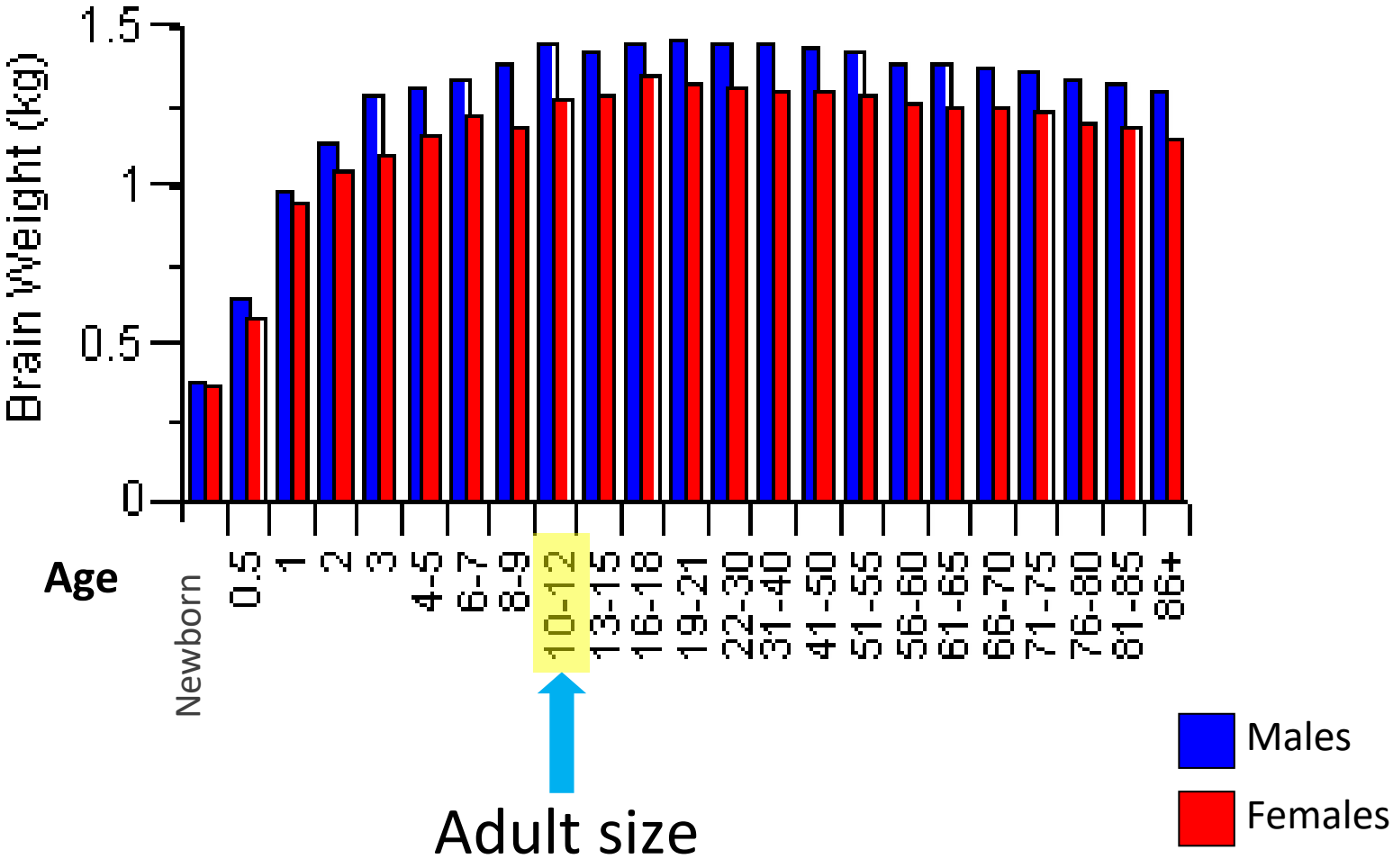




Brain weight by age



Source: Dekaban, A.S. and Sadowsky, D. (1978). *Annals of Neurology*, 4:345-356.

Neuron growth in brain development

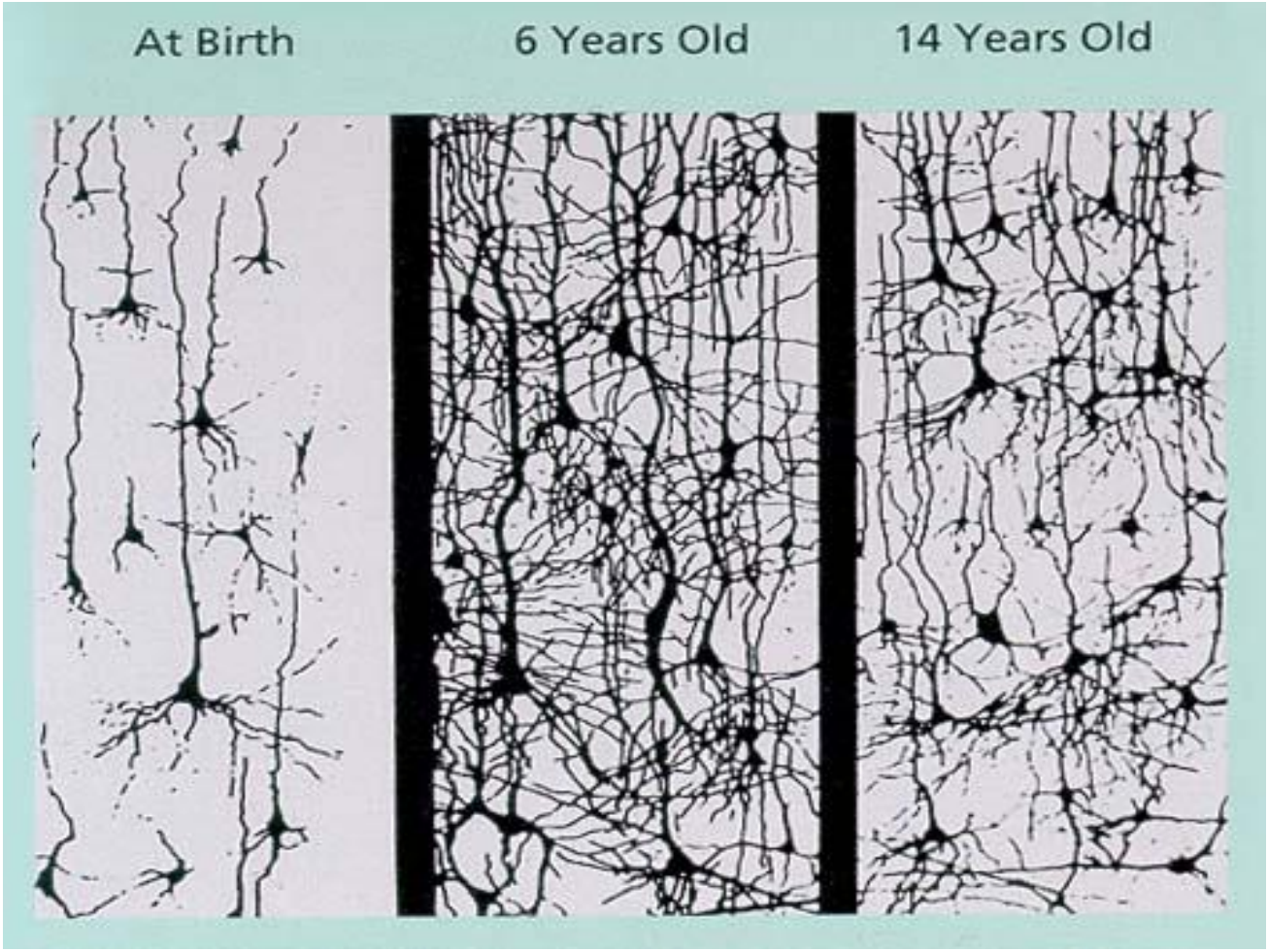
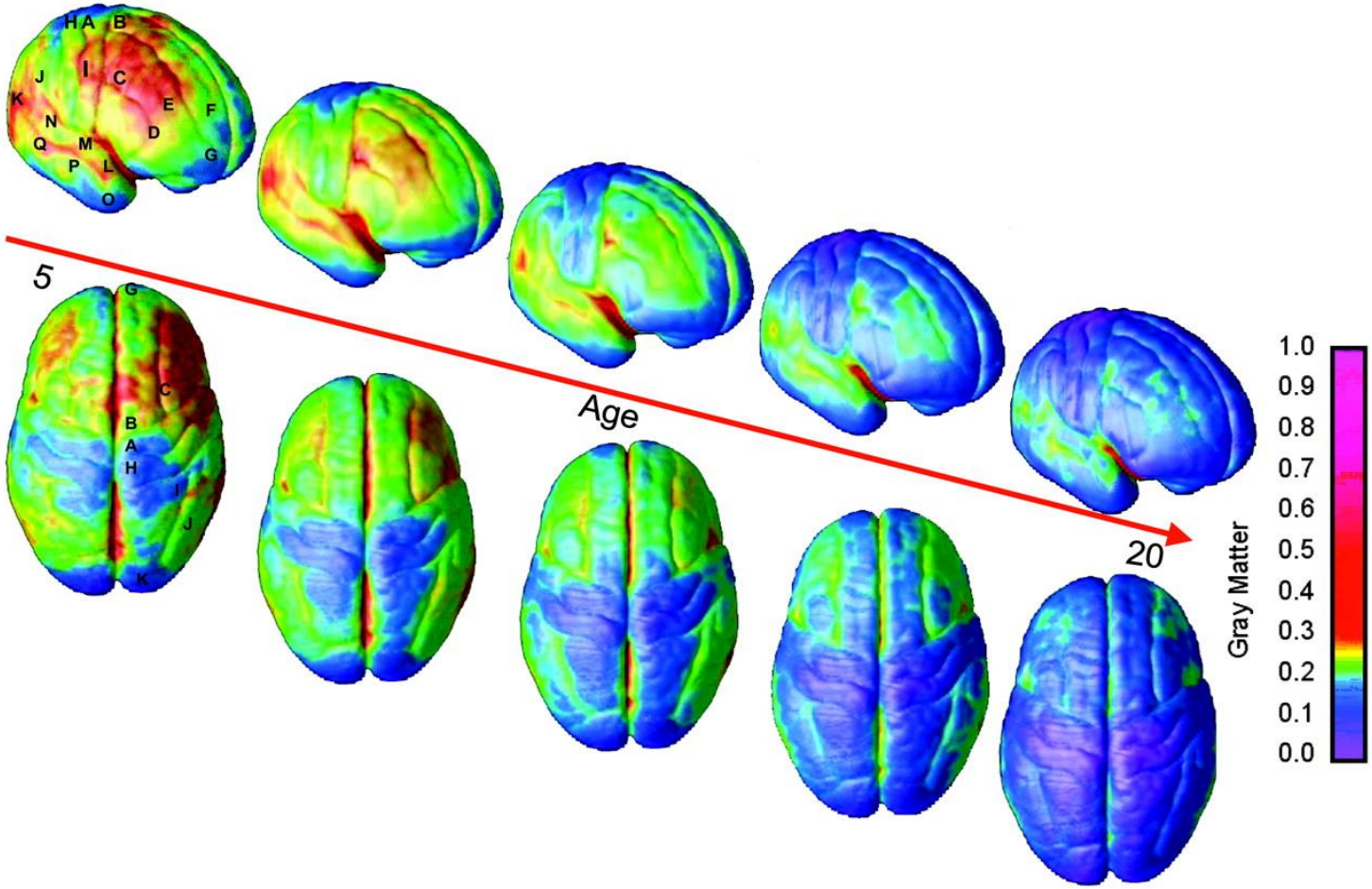
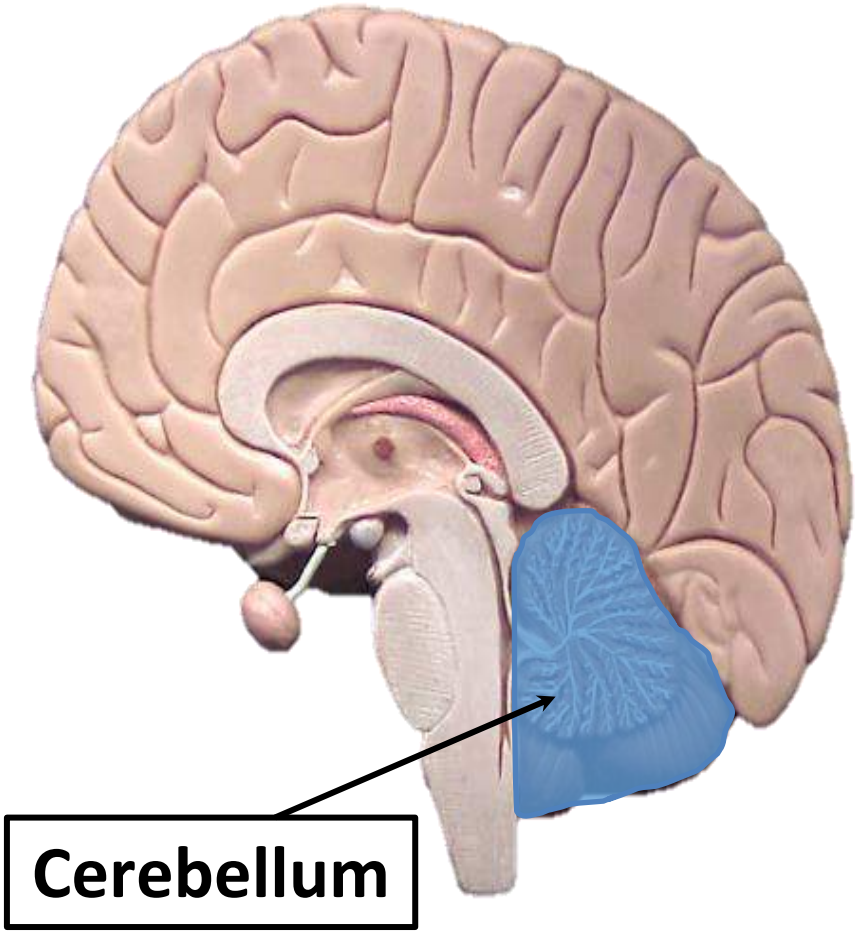


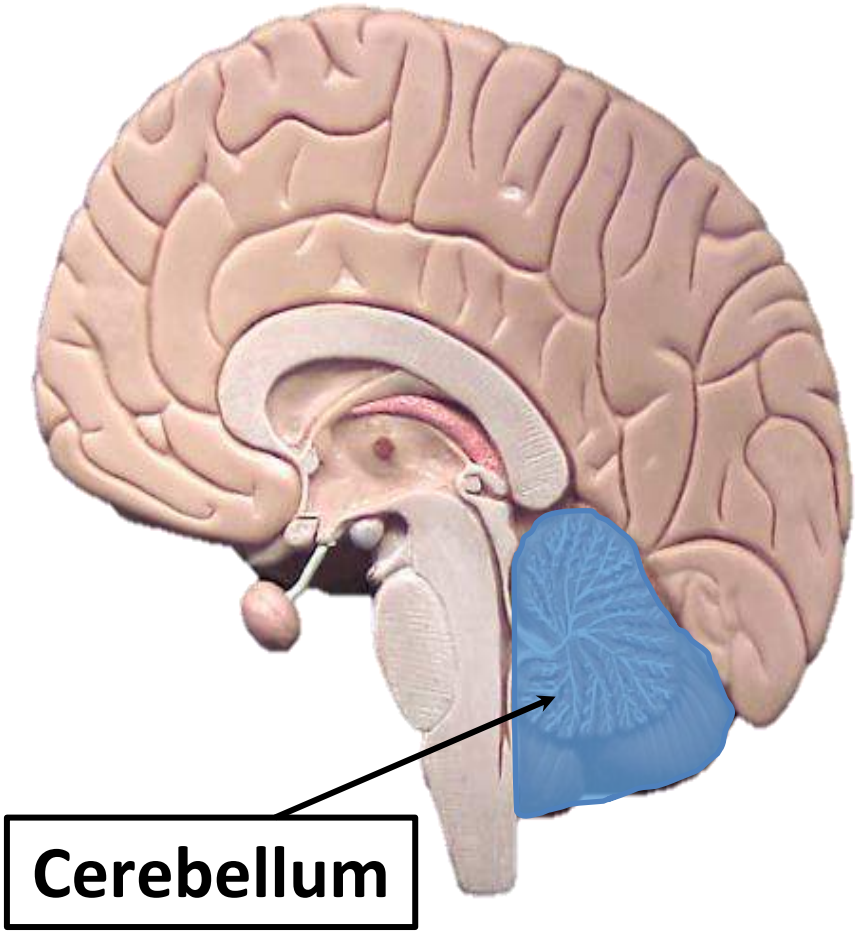
Image retrieved from: http://etec.ctlt.ubc.ca/510wiki/Brain-based_Learning

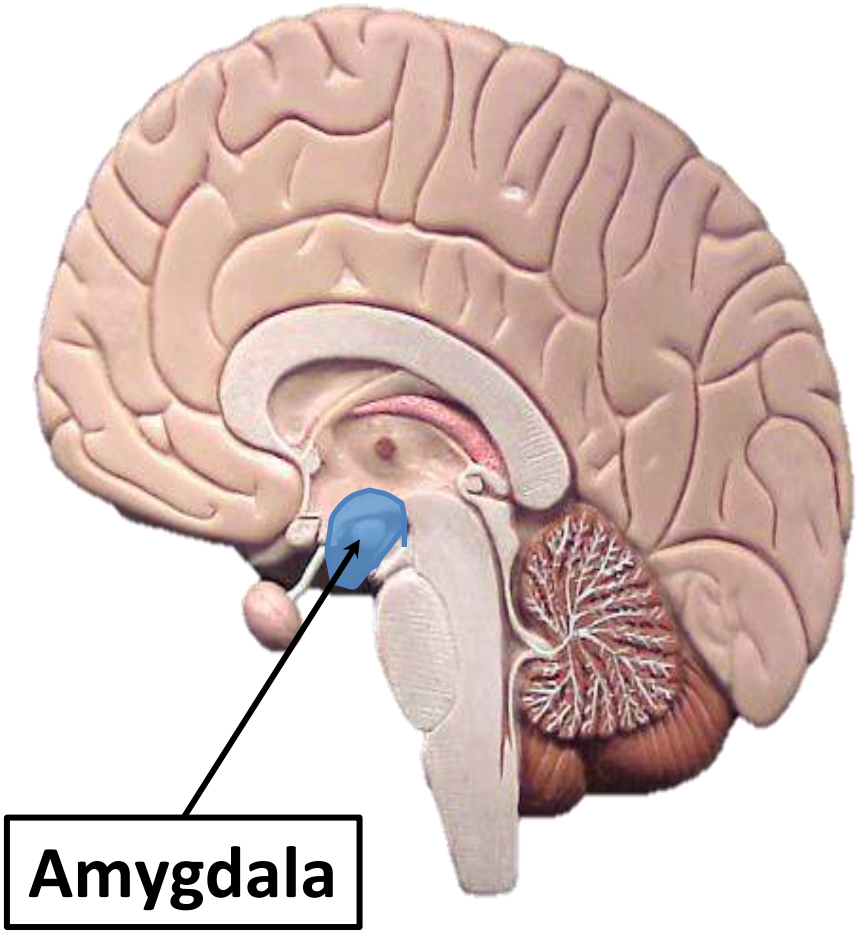
Brain maturation

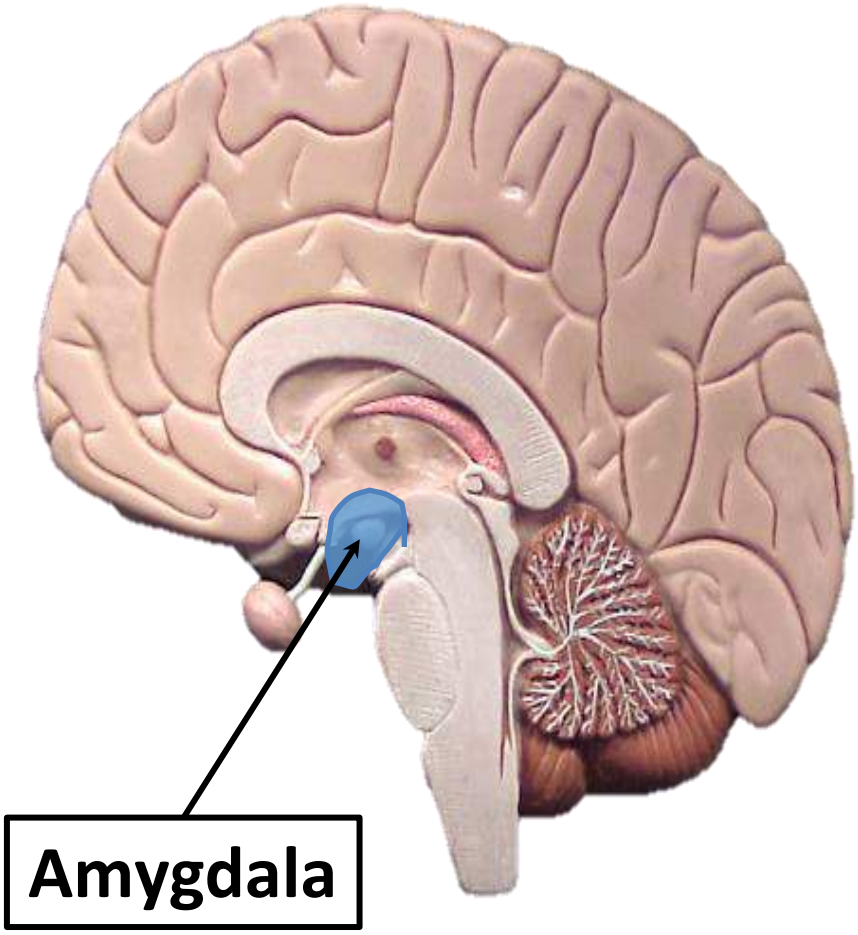


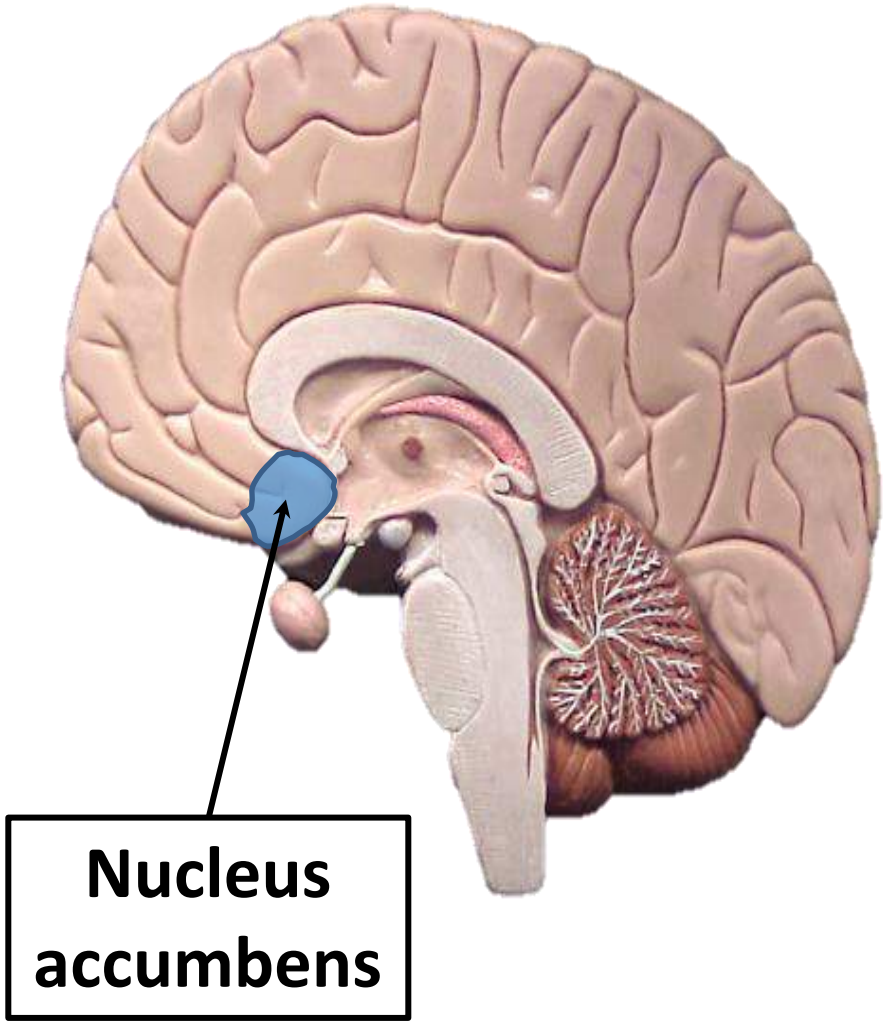
Source: Copyright (2004) National Academy of Sciences, USA. Gogtay et al. *PNAS* 2004:101(21):8174-8179. Retrieved on February 17, 2015. Permission received from PNAS.

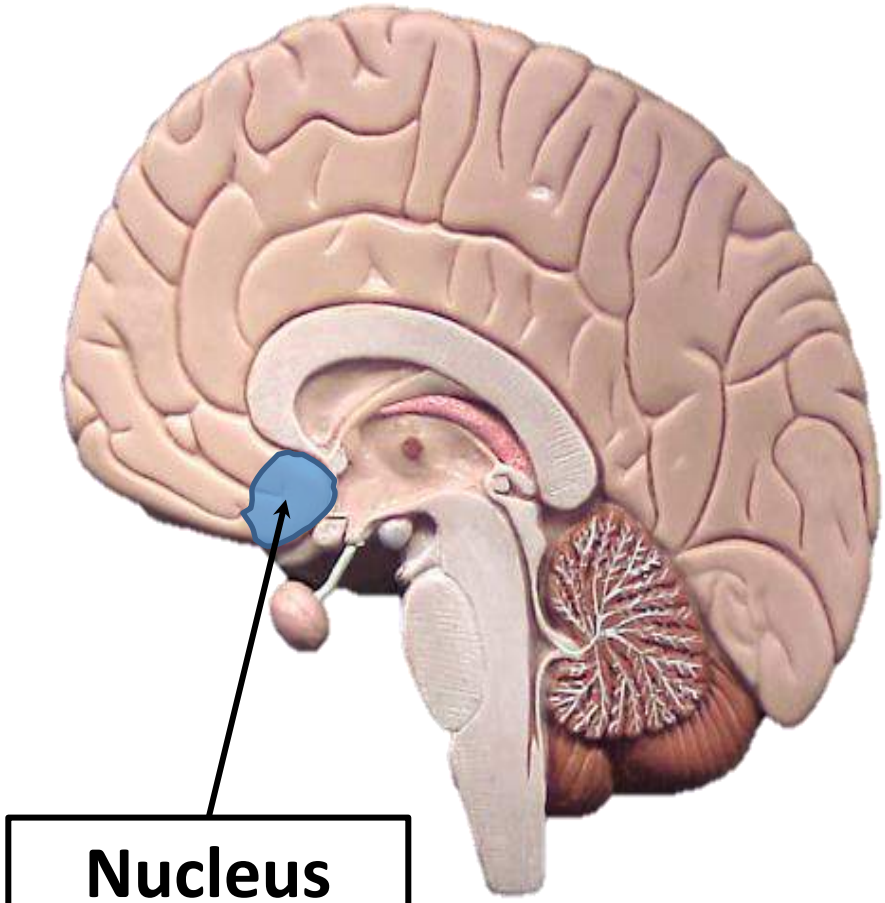




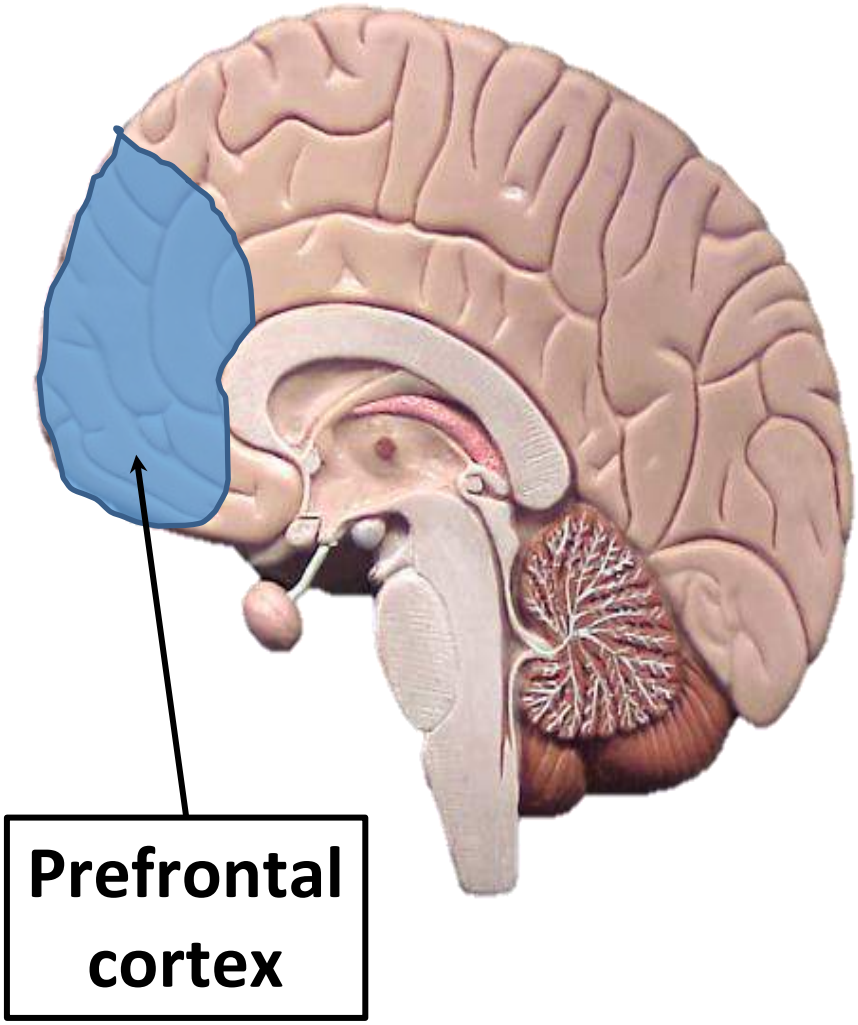


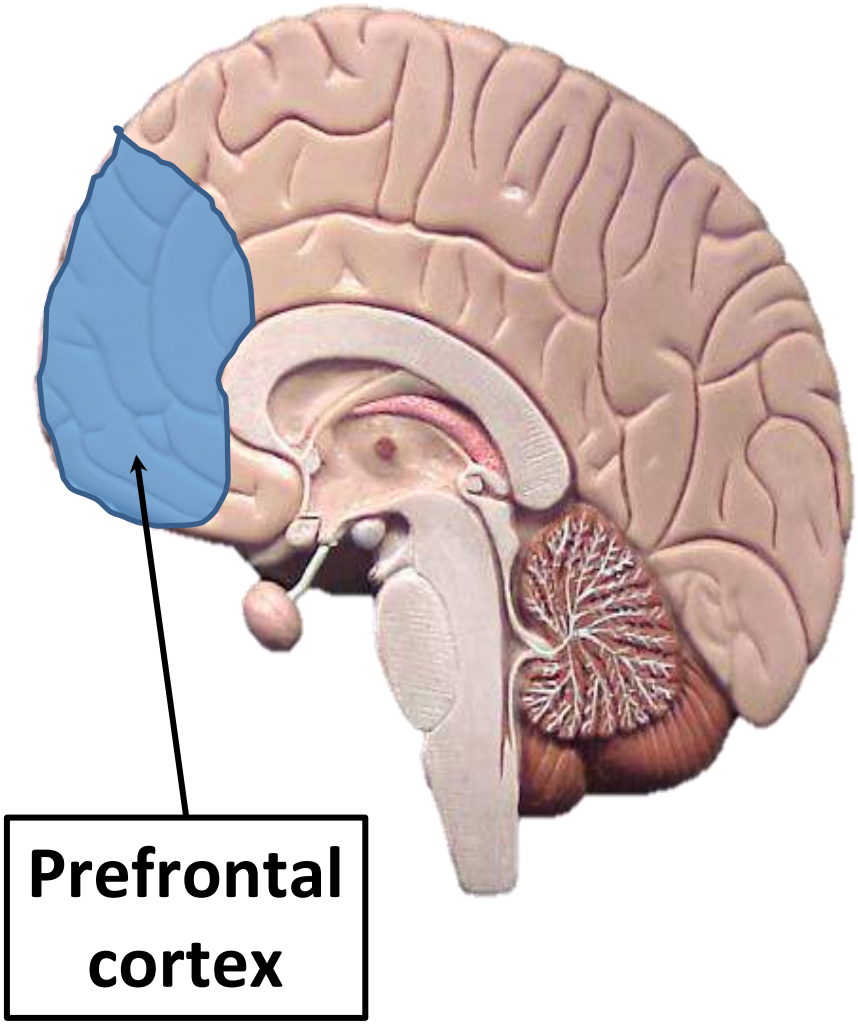


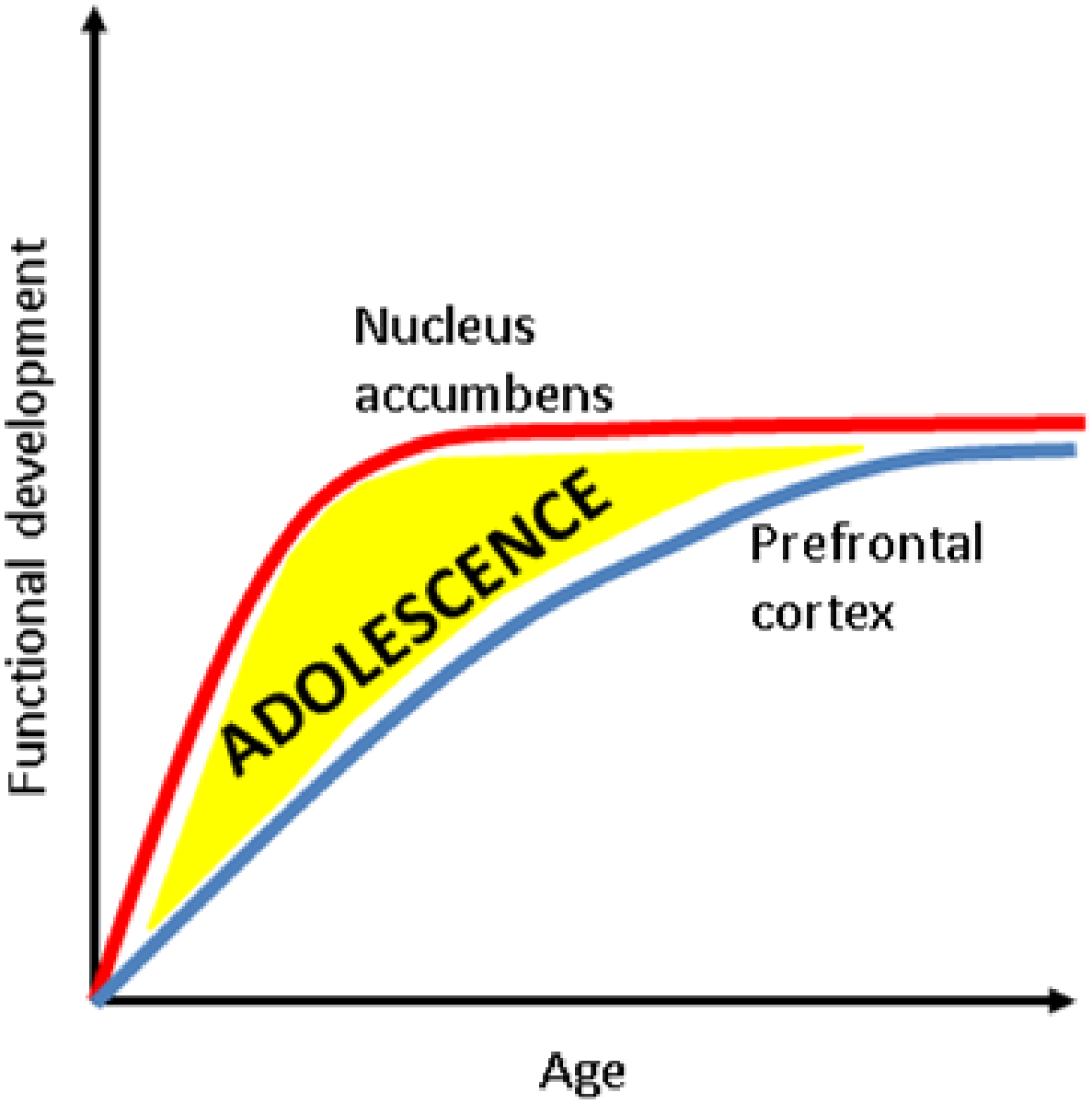




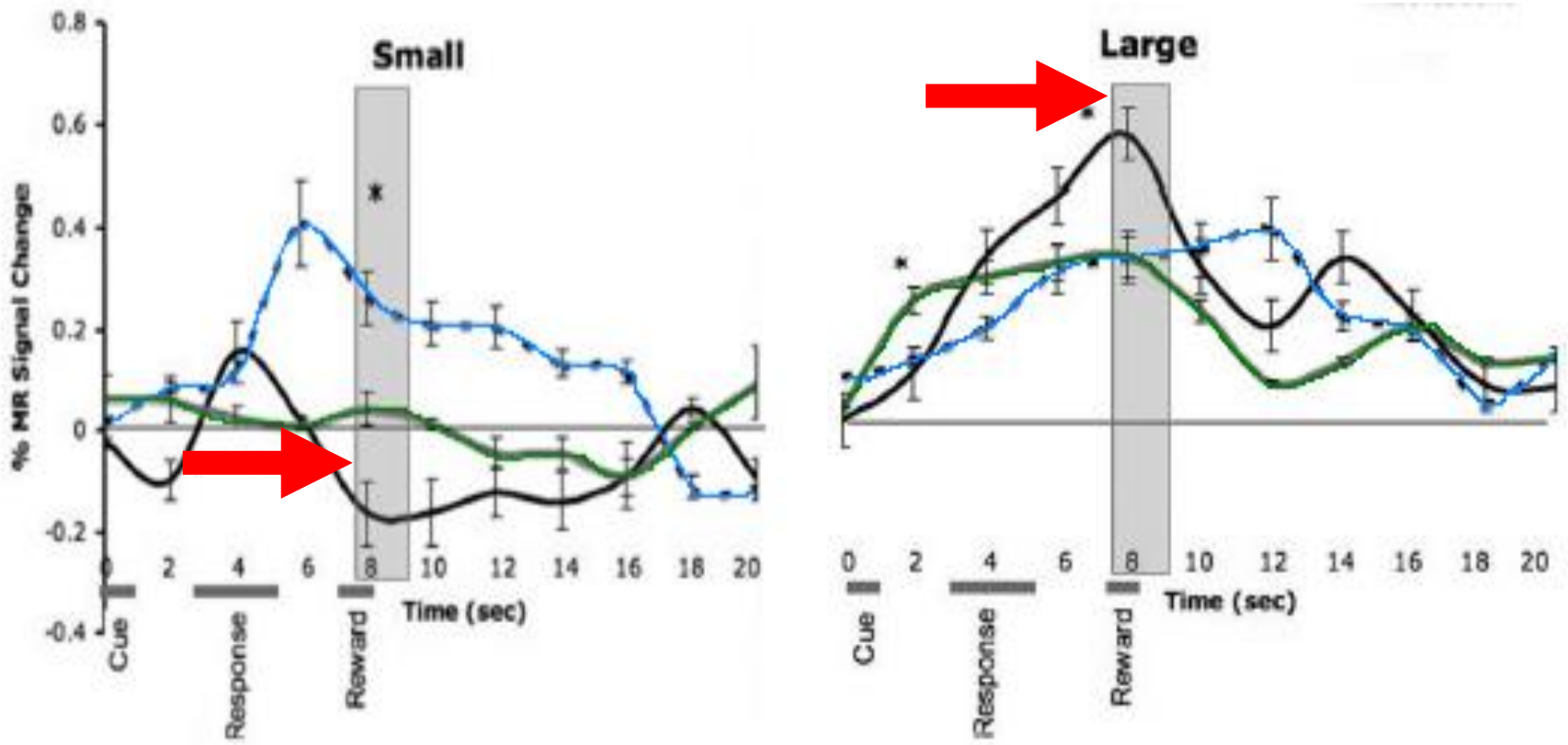
Nucleus accumbens







Source: Casey BJ, et al., Development Reviews. 2008; 28: 62-77.



Children, ages 7-11

Teens, ages 13-17

Adults, ages 23-29

Activation of the reward pathway by addictive drugs

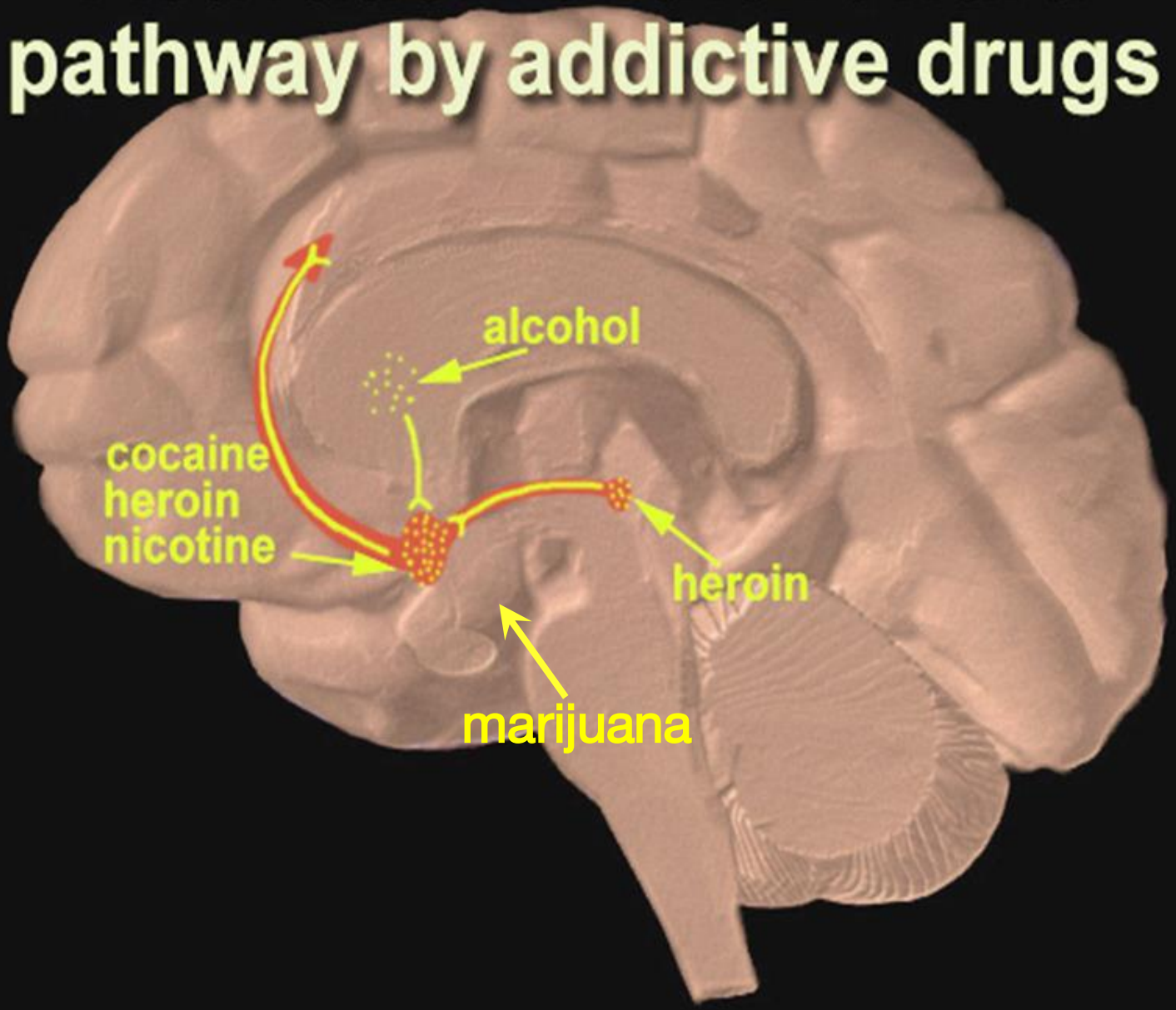
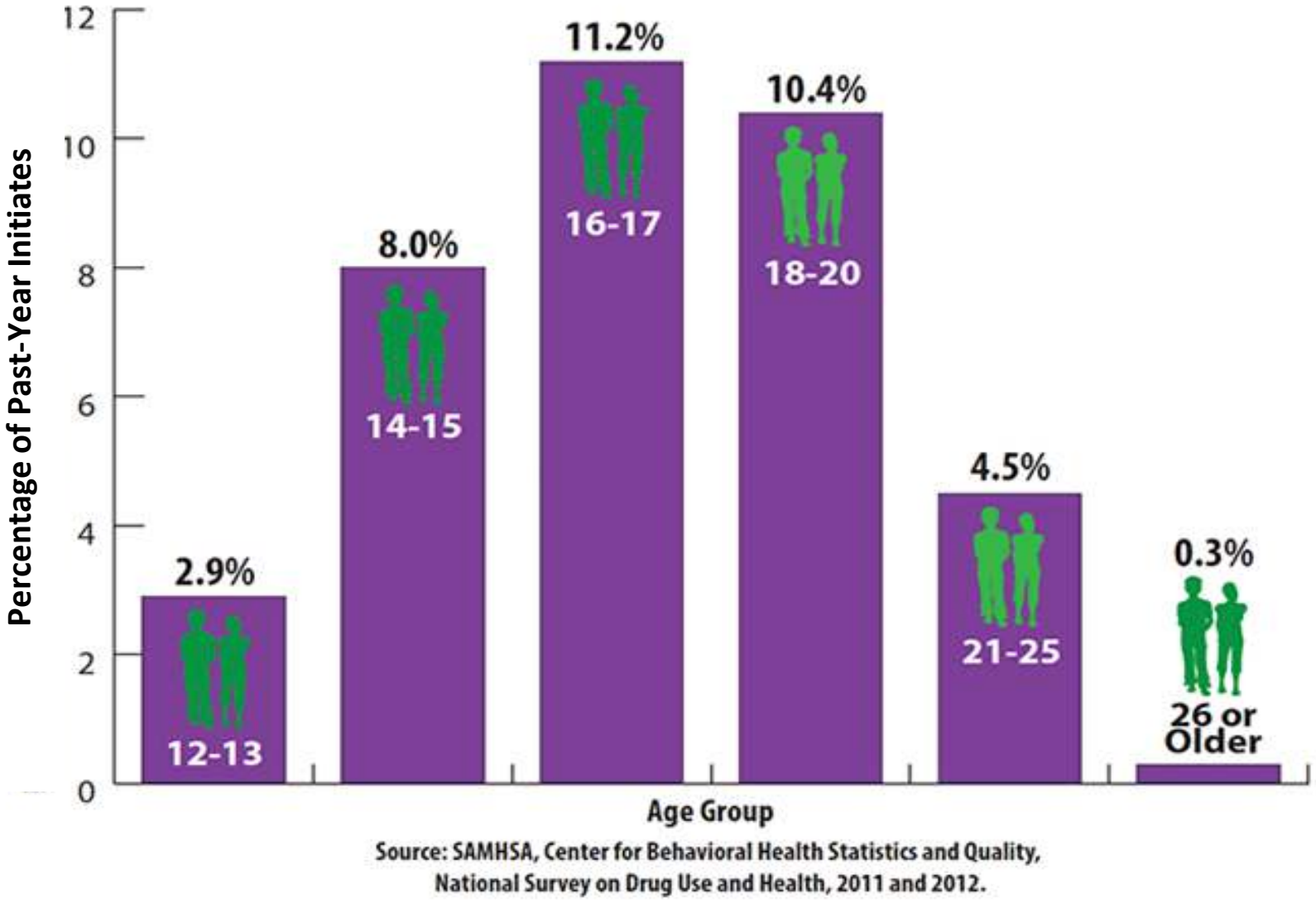


Image retrieved on February 17, 2015, from http://www.drugabuse.gov/publications/teaching-packets/neurobiology-drug-addiction/section-iv-action-cocaine/7-summary-addictive-drugs-activate-reward

Adolescents are **developmentally primed** to use drugs

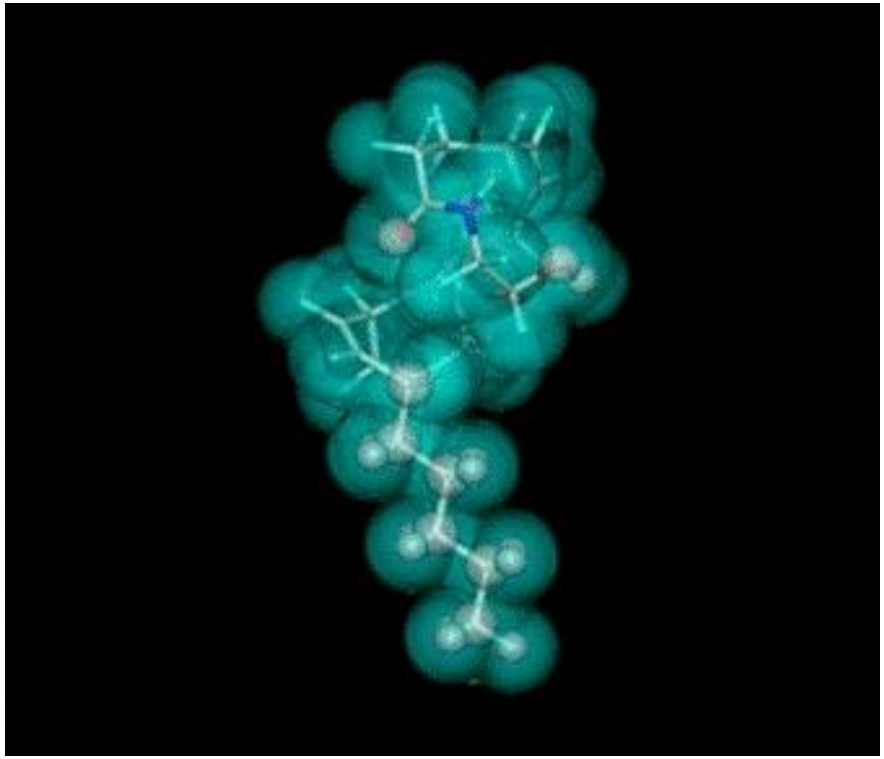
Most drug use starts in adolescence



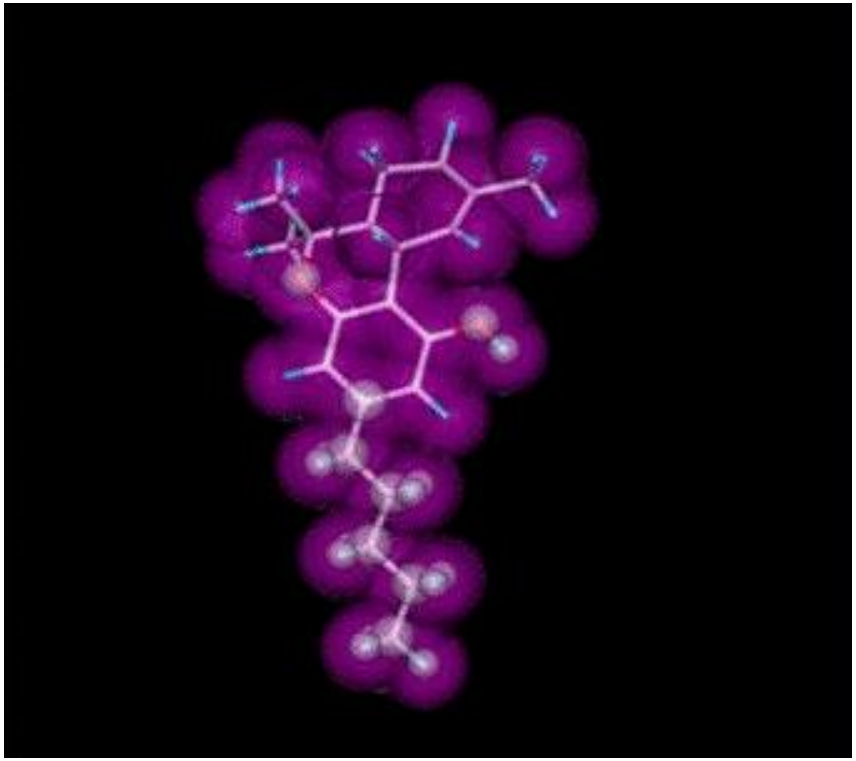
Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2011 and 2012.

Adolescents are **developmentally vulnerable** to develop substance use disorders

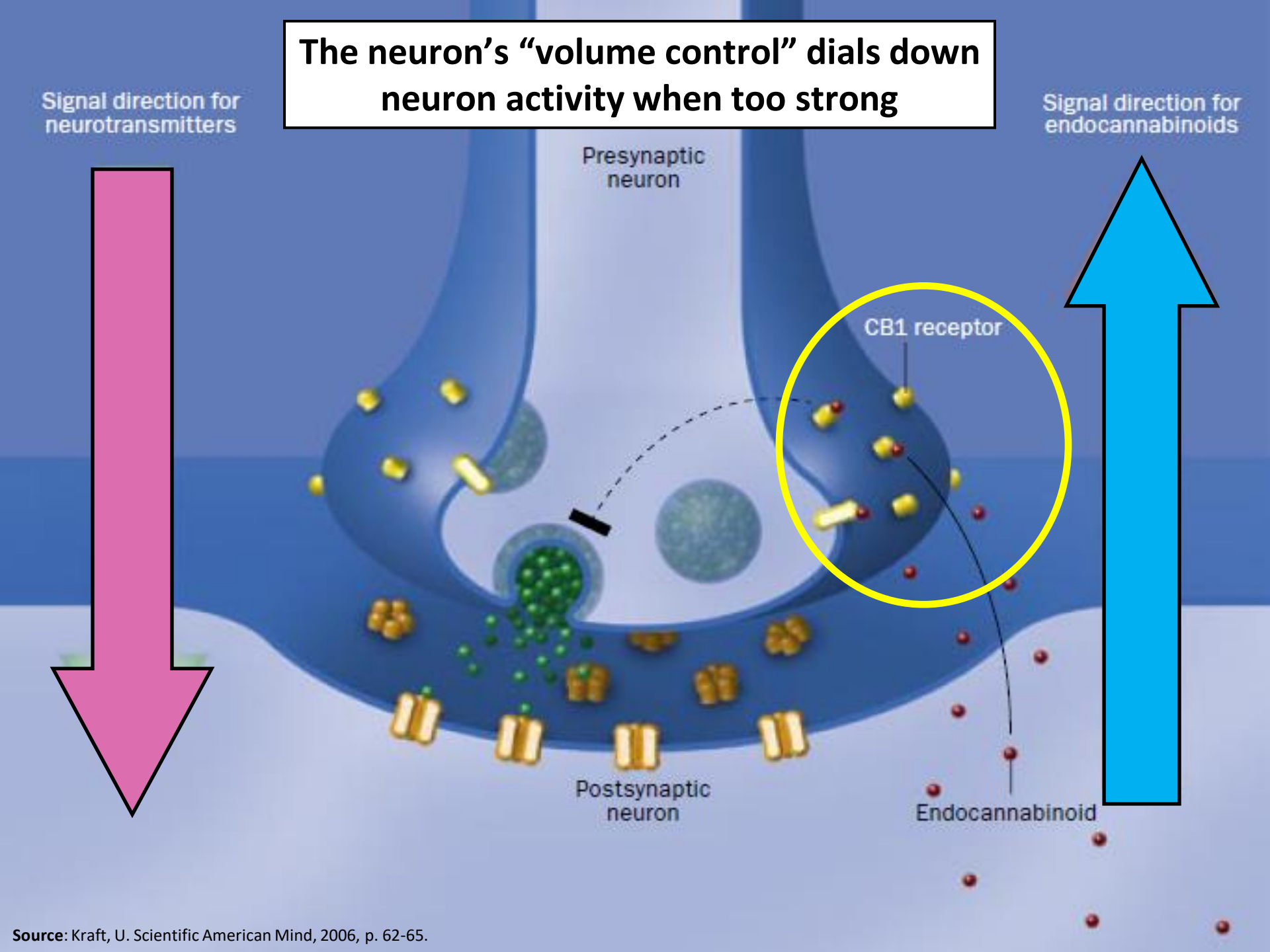
Anandamide



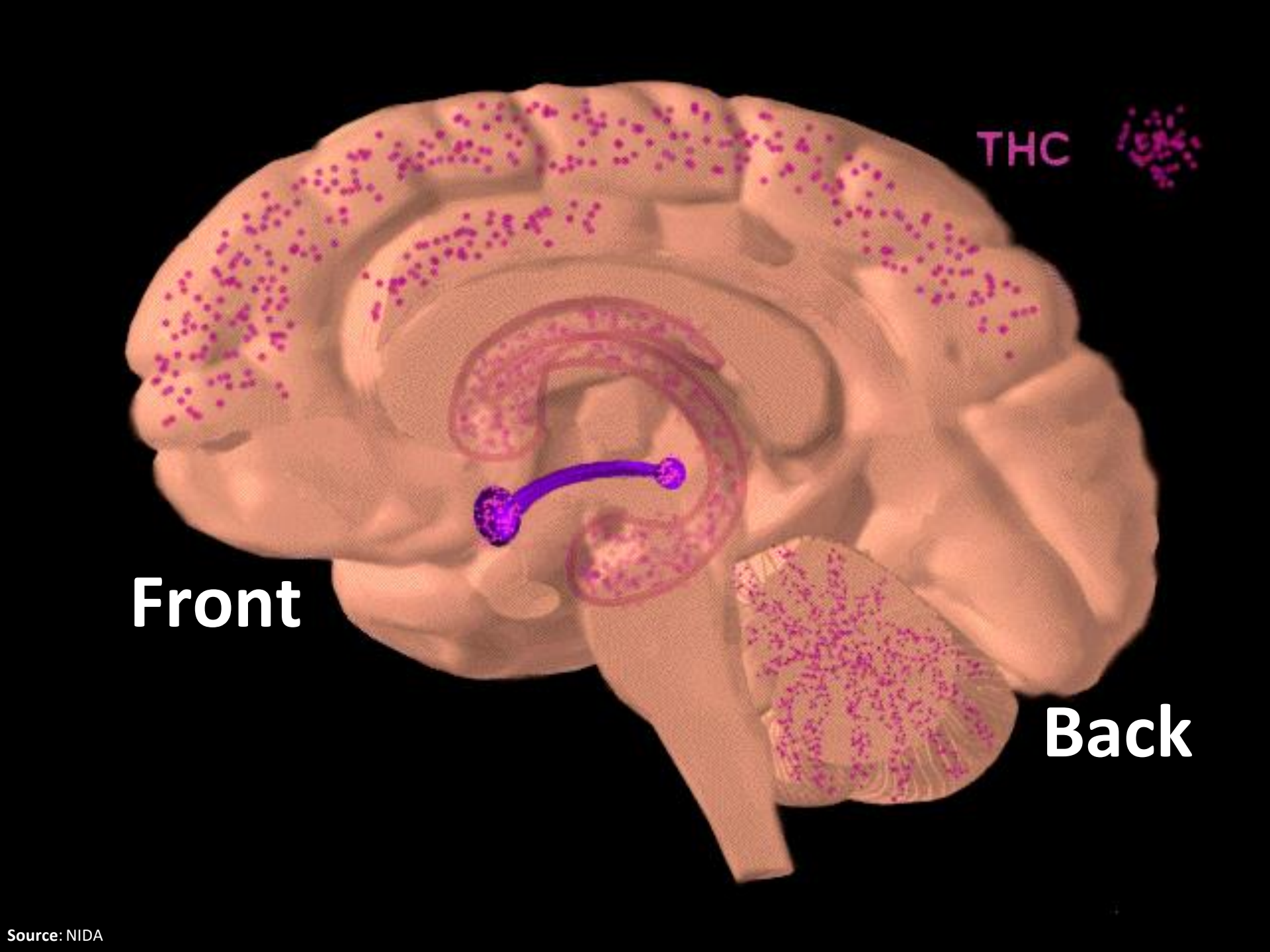
THC



The neuron's "volume control" dials down neuron activity when too strong



Source: Kraft, U. Scientific American Mind, 2006, p. 62-65.



Source: NIDA

Receptor binding in brain tissue

Compound	Potency relative to THC
(-)-Delta9-THC	1
Anandamide	.47*

*The affinity of anandamide for cannabinoid receptors ranges from about one-fourth to one-half that of THC. The differences depend on the cells or tissue that are tested and on the experimental conditions, such as the binding assay used.

Source: Joy J, Watson SJ, Benson JJ, eds. Cannabinoids and animal physiology. In: *Marijuana and Medicine: Assessing the Science Base*. Washington, DC: Division of Neuroscience and Behavioral Health - Institute of Medicine. National Academies Press; 1999:288

THC vs. Anandamide

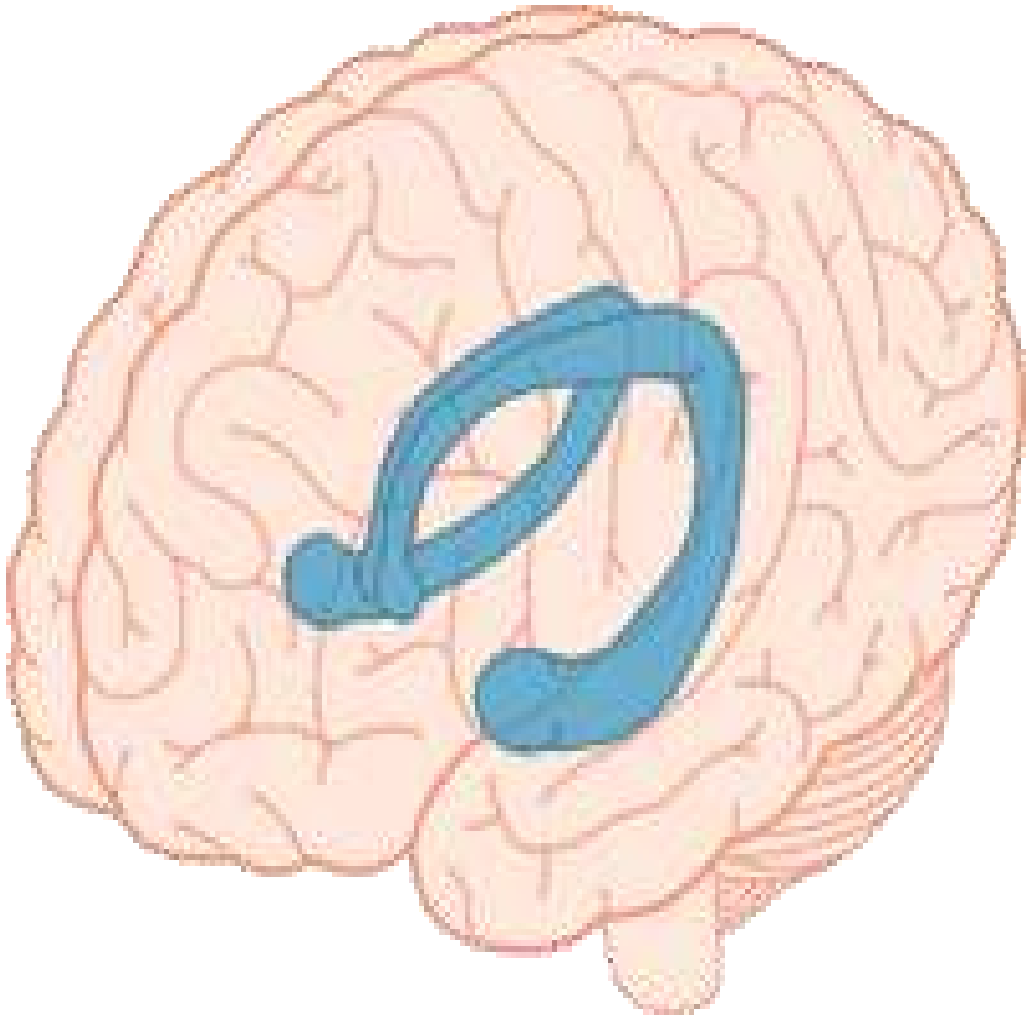
Source: Joy J, Watson SJ, Benson JJ, eds. (1999). Cannabinoids and animal physiology. In: *Marijuana and Medicine: Assessing the Science Base*. Washington, DC: Division of Neuroscience and Behavioral Health -Institute of Medicine. National Academies Press.

Long-term effects associated with marijuana use in adolescence

Psychosis[1]
Depression[2,3,4]
Anxiety[4]
Diminished life satisfaction and achievement[5,6,7]
Cognitive decline[8,9]
Addiction[10,11]

1. Griffith-Lendering, et al. (2013). 2. Manrique-Garcia, et al. (2012). 3. Fairman BJ & Anthony JC (2012). 4. Patton GC ,et al. (2002). 5. Fergusson DM, Horwood LJ, & Swain-Campbell N (2000). 6. Fergusson DM & Boden JM (2008). 7. Brook JS, et al. (2013). 8. Meier MH, et al. (2012). 9. Zalesky A, et al. (2012). 10. Lopez-Quintero C, et al. (2011). 11. Hall W & Degenhardt L (2009).

Memory impairment



Source: Iversen L. How cannabis works in the brain. In *Marijuana and Madness*. Ed. Castle & Murray, 2004. Oxford University Press.

Persistent cannabis users show neuropsychological decline from childhood to midlife

Madeline H. Meier[a,b,1], Avshalom Caspi[a,b,c,d,e], Antony Ambler[e,f], HonaLee Harrington[b,c,d], Renate Houts[b,c,d], Richard S. E. Keefe[d], Kay McDonald[f], Aimee Ward[f], Richie Poulton[f], and Terrie E. Moffitt[a,b,c,d,e]

[a]Duke Transdisciplinary Prevention Research Center, Center for Child and Family Policy, [b]Department of Psychology and Neuroscience, and [c]Institute for Genome Sciences and Policy, Duke University, Durham, NC 27708; [d]Department of Psychiatry and Behavioral Sciences, Duke University Medical Center, Durham, NC 27710; [e]Social, Genetic, and Developmental Psychiatry Centre, Institute of Psychiatry, King's College London, London SE5 8AF, United Kingdom; and [f]Dunedin Multidisciplinary Health and Development Research Unit, Department of Preventive and Social Medicine, School of Medicine, University of Otago, Dunedin 9054, New Zealand

Source: Meier et al. Proceedings of the National Academy of Sciences. 2012. Available at: www.pnas.org/cgi/doi/10.1073/pnas.1206820109

The Dunedin Study

N = 1,037

13 yrs (Pre-initiation) **18 yrs** **21 yrs** **32 yrs** **38 yrs**

1 **2** **3** **4** **5**

Assessment ages

Source: Meier et al. (2012). Persistent cannabis users show neuropsychological decline from childhood to midlife. *P Nat Acad Sci* 109(40):E2657–E2664.

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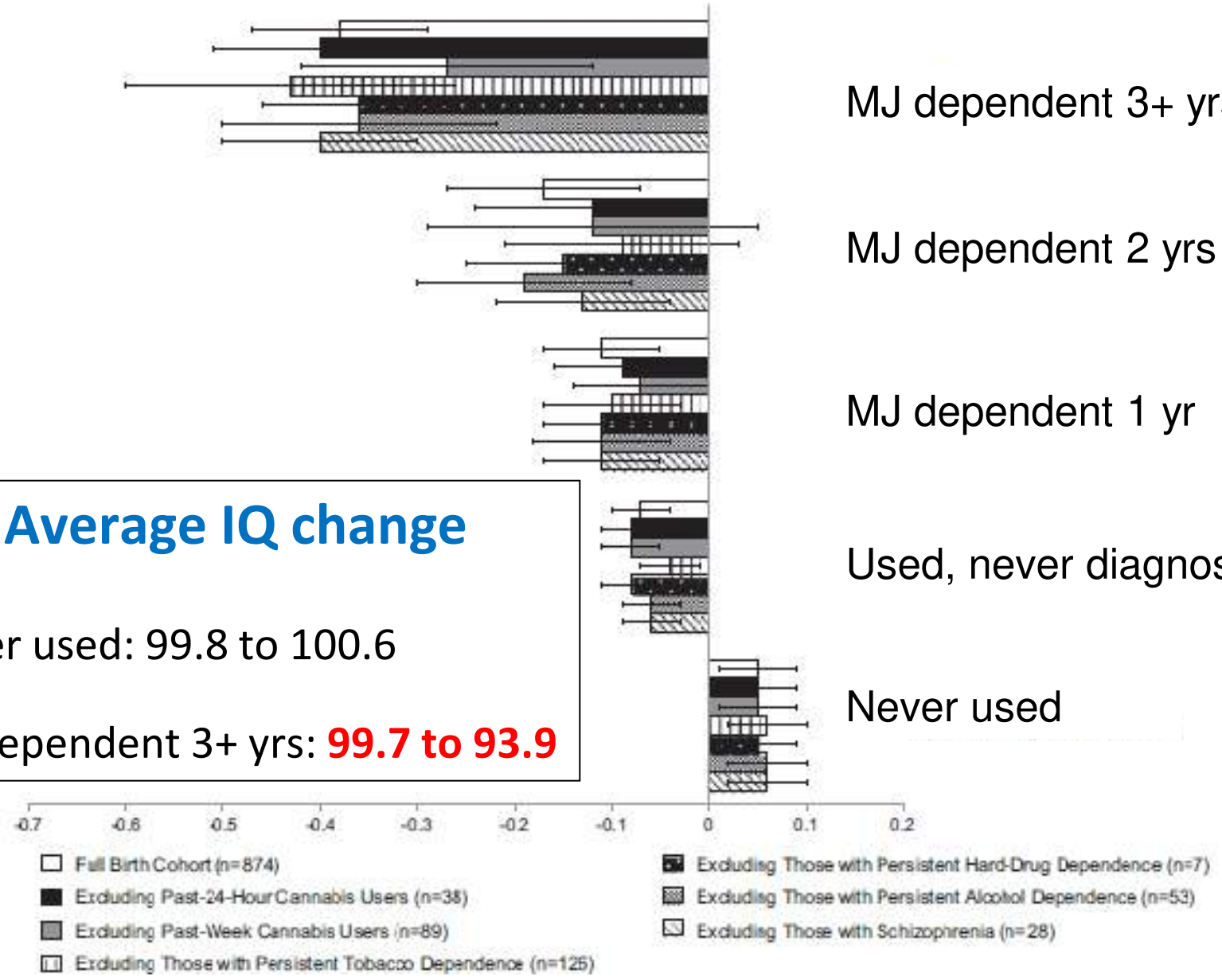


Average IQ change

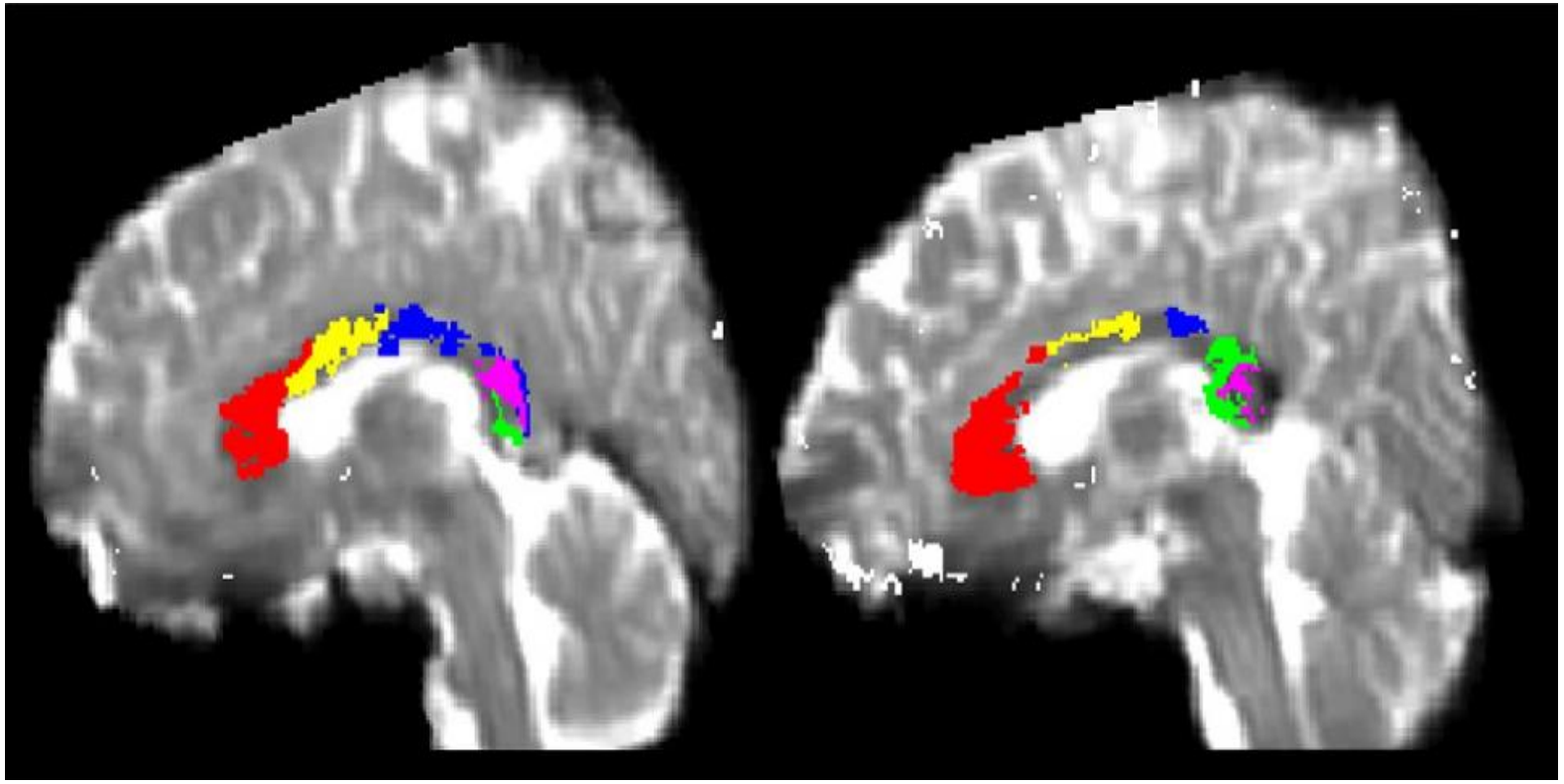
Never used: 99.8 to 100.6

MJ dependent 3+ yrs: **99.7 to 93.9**

Source: Meier et al. (2012). Persistent cannabis users show neuropsychological decline from childhood to midlife. *P Nat Acad Sci* 109(40):E2657–E2664.

Healthy non-user

Daily MJ user



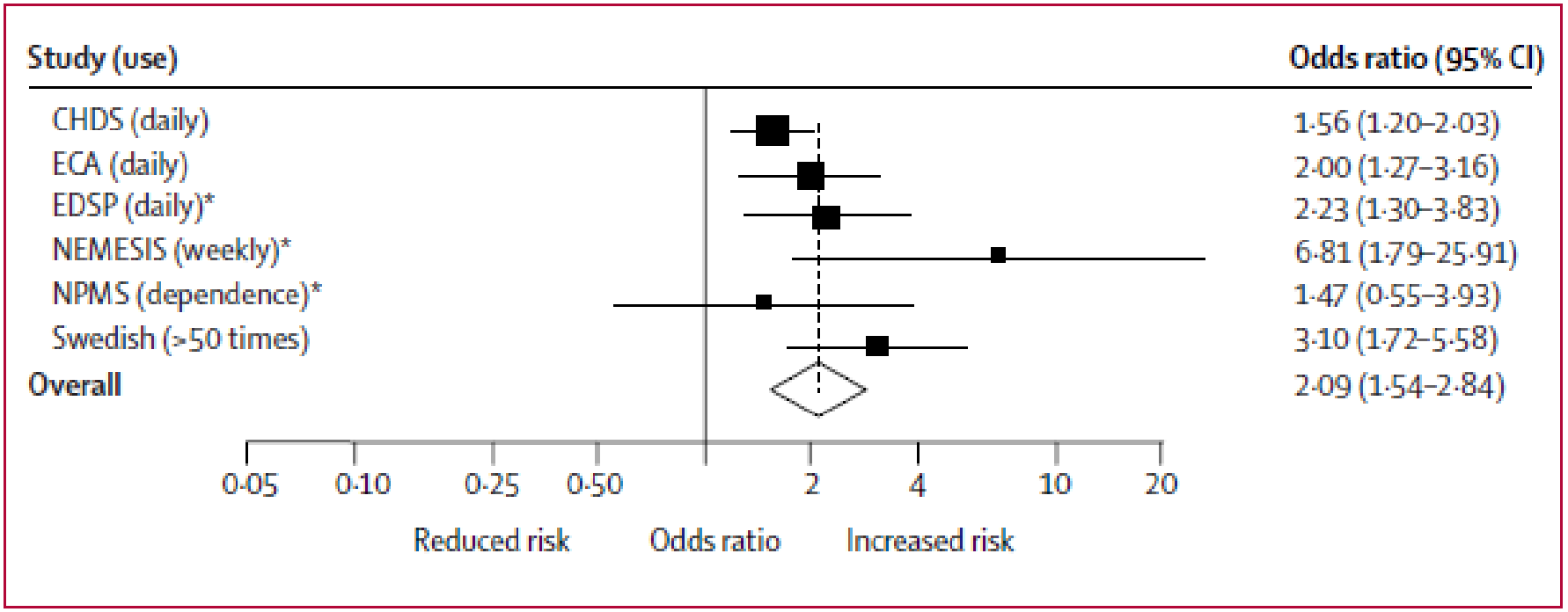
Source: Arnone D, Barrick TR, Chengappa S et al. (2008). Corpus callosum damage in heavy marijuana use: Preliminary evidence from diffusion tensor tractography and tract-based spatial statistics. *Neuro Image* 41:1067-1074.

Marijuana

- Hallucinations (27%)
- Paranoia/Anxiety (33.6%)
- Any psychotic symptom (42.9%)

Levy S, Weitzman, ER. Acute mental health symptoms in adolescent marijuana users. *JAMA Pediatrics*. 2018 Dec 17;doi 10.1001/jamapediatrics.2018

Marijuana use and psychotic disorders



A meta-analysis of 6 studies found an increased risk of psychotic outcome among those who used cannabis most frequently compared with non-users (Adjusted Odds Ratio: 2.09, 95% CI: 1.54-2.84).

Source: Moore et al. (2007). Cannabis use and risk of psychotic or affective mental health outcomes: a systematic review. *Lancet* 370(9584):319–28.

Association between cannabis use and schizoaffective disorder

	# Exposure	# Cases	HR Crude	HR adjusted*
Never used cannabis	39, 978	47	1	1
Ever used cannabis	5,109	12	2.1 (1.1-3.8)	0.8 (0.2-2.9)
>50 times	855	7	7.5 (3.4-16.7)	**7.4 (1.0-54.3)**

*Adjustments for: prior personality disorders at conscription, IQ, disturbed behavior in childhood, social adjustment, risky use of alcohol, smoking, early adulthood socioeconomic position, use of other drugs, brought up in a city. The category "Ever used cannabis" includes all individuals who reported cannabis use, including those who reported ">50 times".

Sources: Griffith-Lendering, Addiction, 108(4), 733-740. Manrique-Garcia, BMC Psychiatry, 12, 112.

Cannabis use and risk of psychotic or affective mental health outcomes: a systematic review

Theresa H M Moore, Stanley Zammit, Anne Lingford-Hughes, Thomas R E Barnes, Peter B Jones, Margaret Burke, Glyn Lewis

Summary

Background Whether cannabis can cause psychotic or affective symptoms that persist beyond transient intoxication is unclear. We systematically reviewed the evidence pertaining to cannabis use and occurrence of psychotic or affective mental health outcomes.

Methods We searched Medline, Embase, CINAHL, PsycINFO, ISI Web of Knowledge, ISI Proceedings, ZETOC, BIOSIS, LILACS, and MEDCARIB from their inception to September, 2006, searched reference lists of studies selected for inclusion, and contacted experts. Studies were included if longitudinal and population based. 35 studies from 4804 references were included. Data extraction and quality assessment were done independently and in duplicate.

The evidence is consistent with the view that cannabis increases risk of psychotic outcomes independently of confounding and transient intoxication effects.

strong. The uncertainty about whether cannabis causes psychosis is unlikely to be resolved by further longitudinal studies such as those reviewed here. However, we conclude that there is now sufficient evidence to warn young people that using cannabis could increase their risk of developing a psychotic illness later in life.

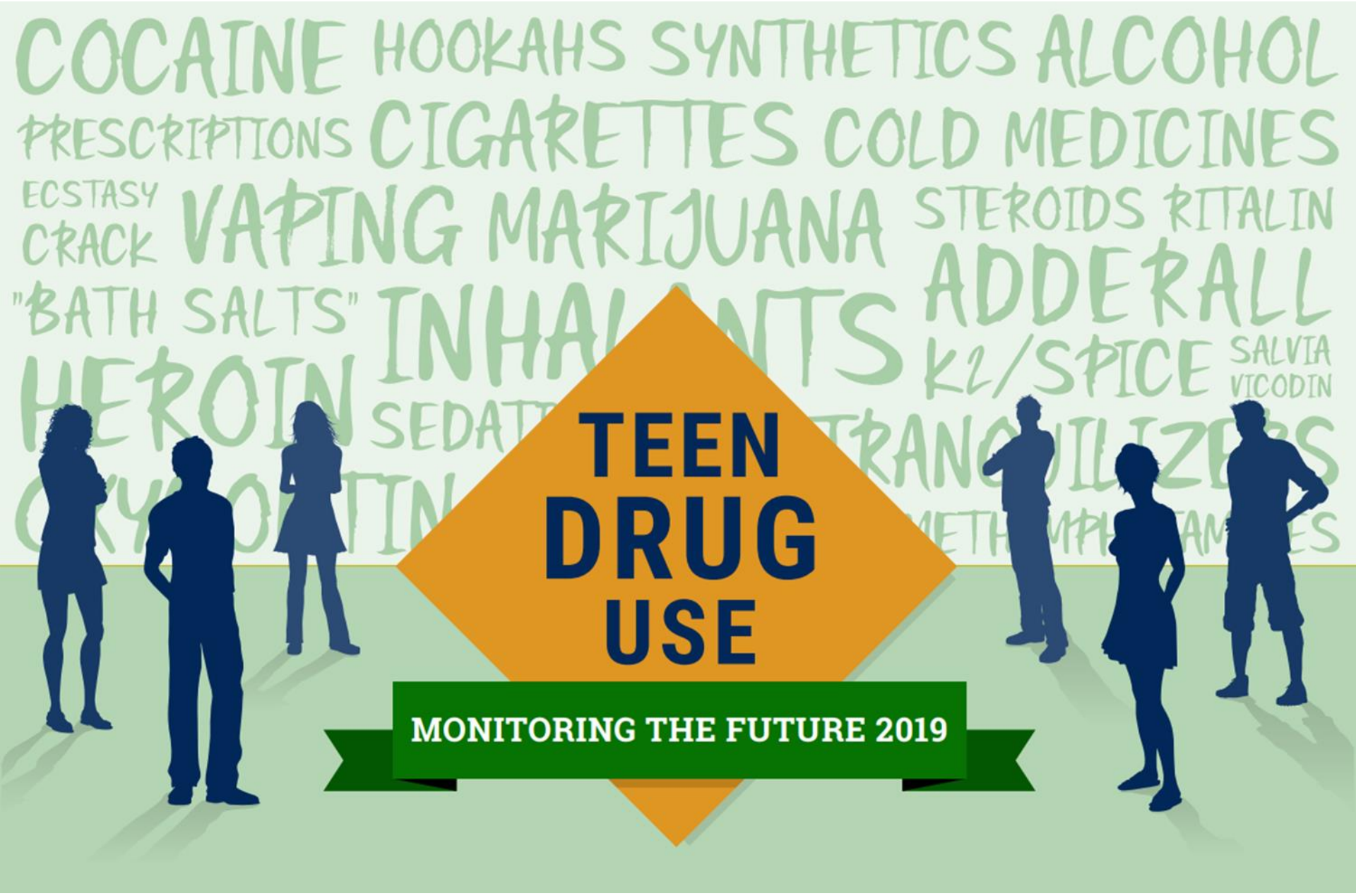
Lancet 2007; 370: 319–28

See Editorial page 292

See Comment page 293

Academic Unit of Psychiatry (T H M Moore M Sc, S Zammit PhD, A Lingford-Hughes PhD, G Lewis PhD) and Department of Social Medicine (M Burke M Sc), University of Bristol, Bristol, UK; Department of Psychological Medicine, Cardiff University, Cardiff, UK (S Zammit); Department of Psychological Medicine, Imperial College, London, UK (T R E Barnes DSc); and Department of Psychiatry, Cambridge University, Cambridge, UK (P B Jones PhD)

Correspondence to: Dr Stanley Zammit, Department of Psychological Medicine, Cardiff University, Cardiff CF14 4XN, UK

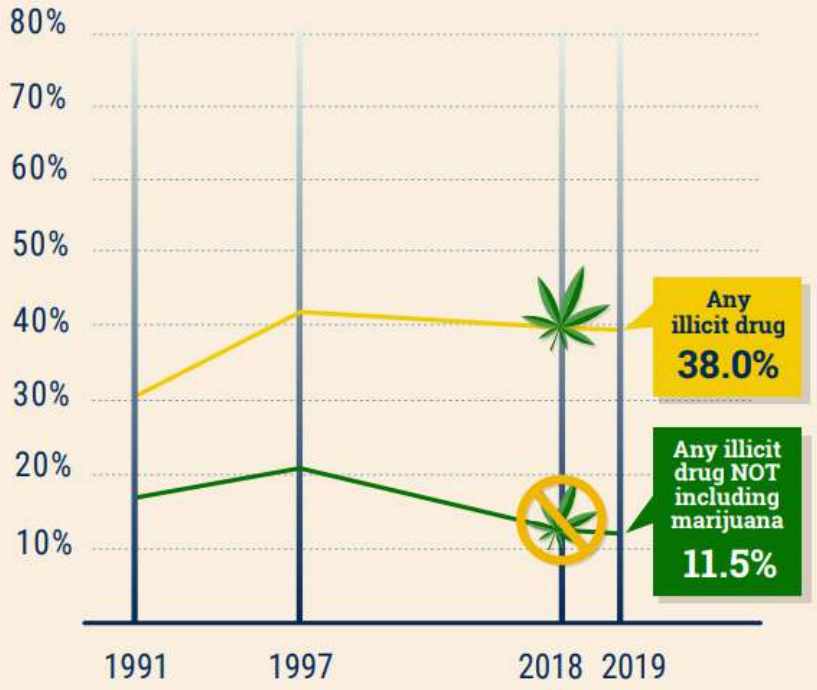


Vaping & Cannabis Trends Among Young Adults (19-22) | National Institute on Drug Abuse (NIDA)

ILLICIT DRUG USE

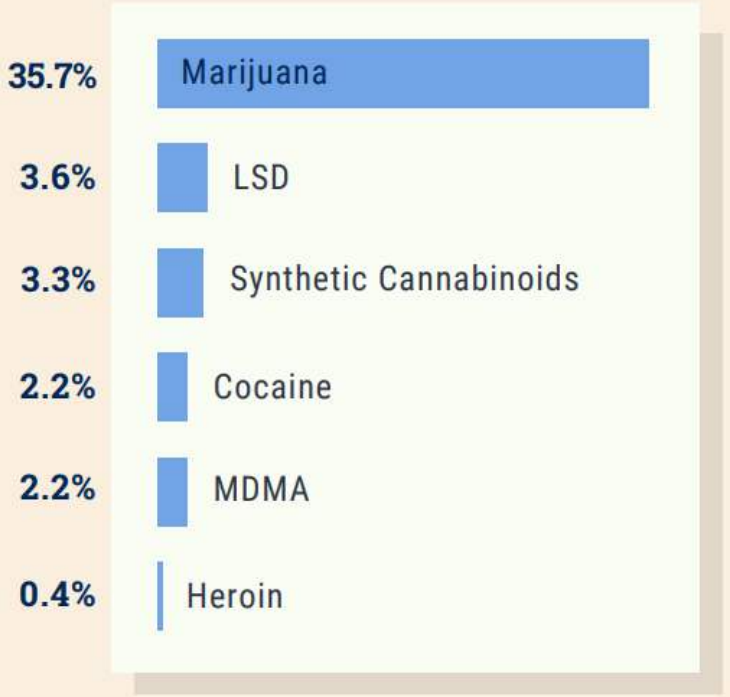
ILLICIT DRUG USE STEADY

Past year use among 12th graders



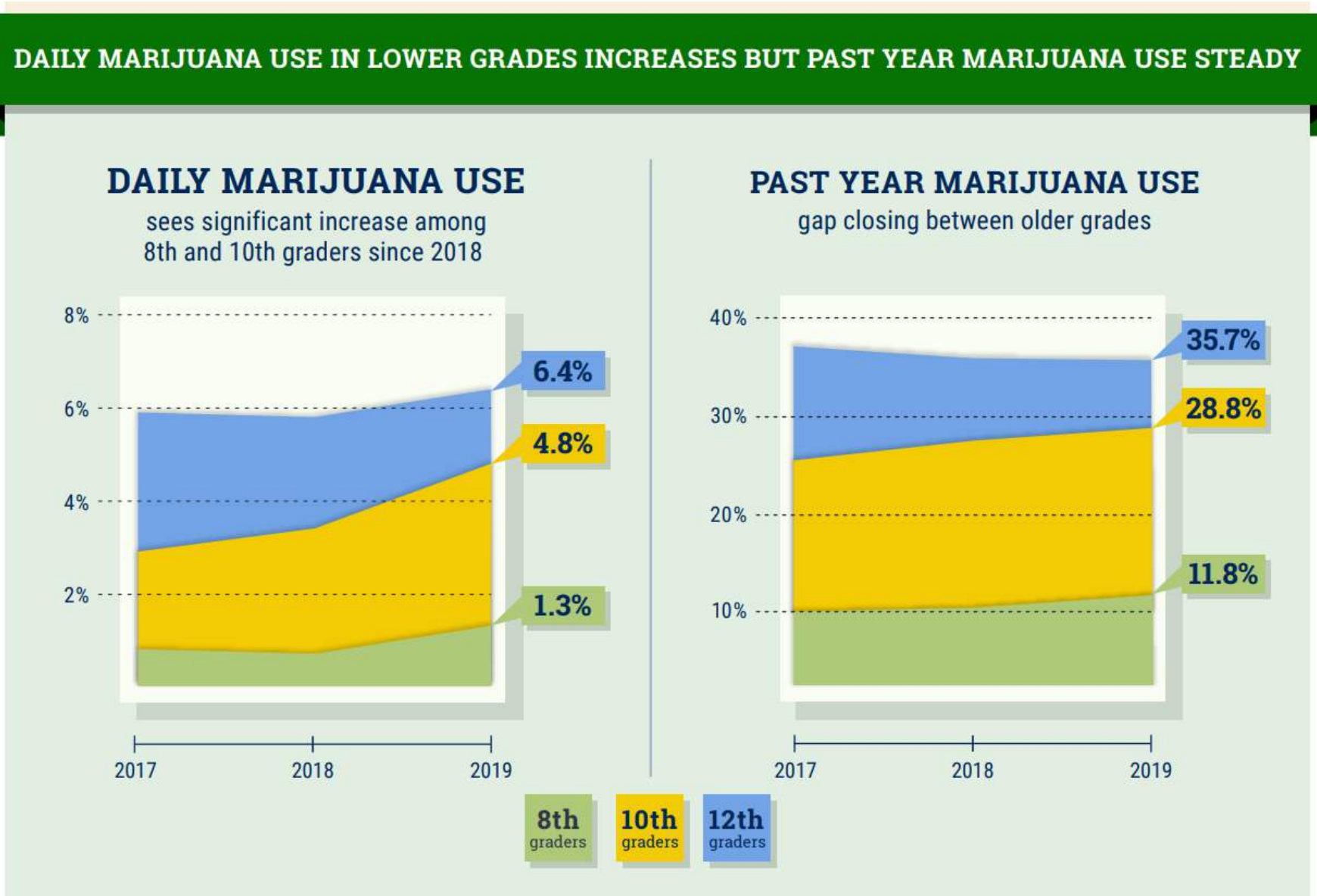
PAST YEAR ILLICIT DRUG USE

Past year use among 12th graders



[Vaping & Cannabis Trends Among Young Adults (19-22) | National Institute on Drug Abuse (NIDA)]

DAILY MARIJUANA USE IN LOWER GRADES INCREASES BUT PAST YEAR MARIJUANA USE STEADY



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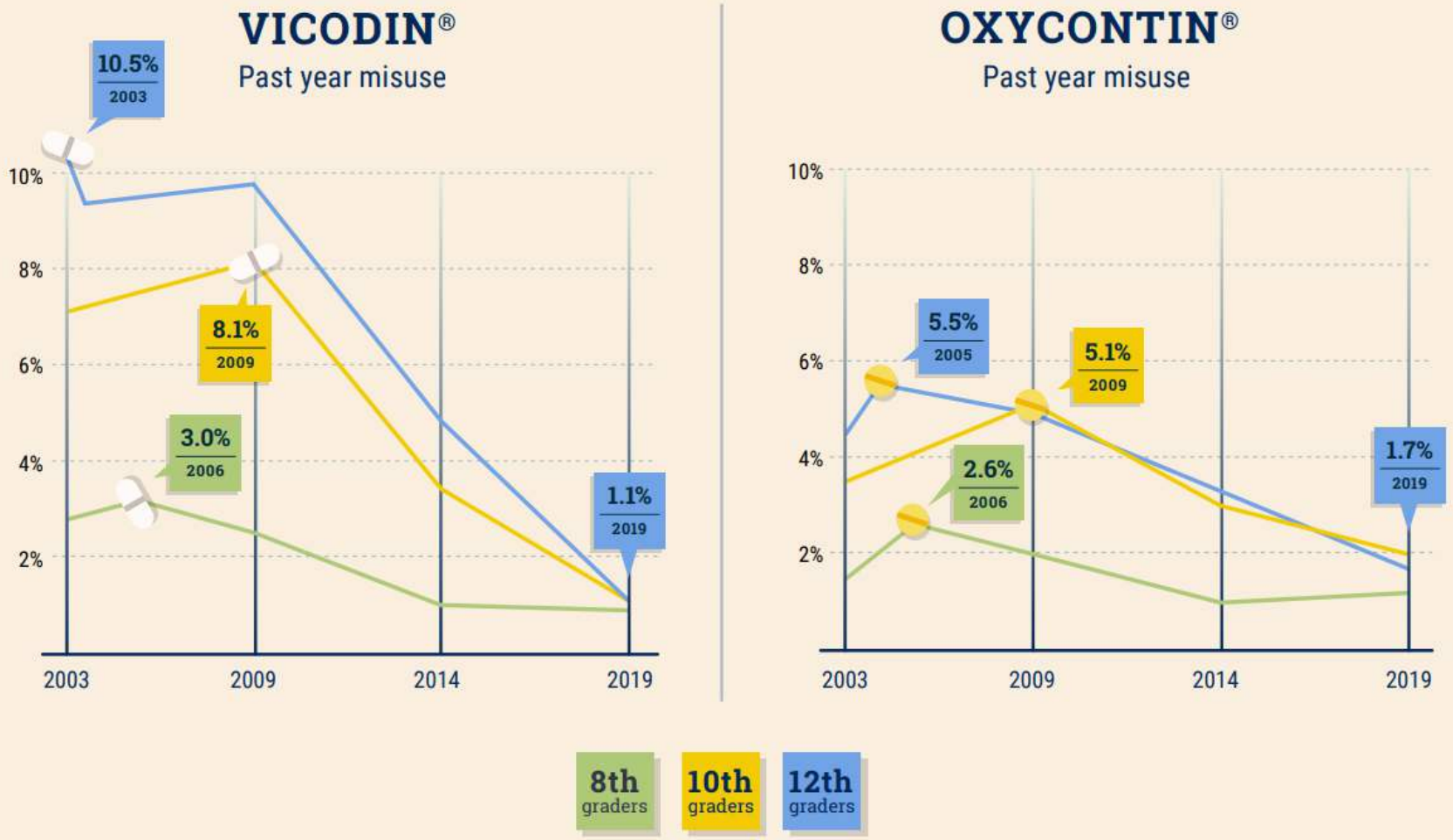
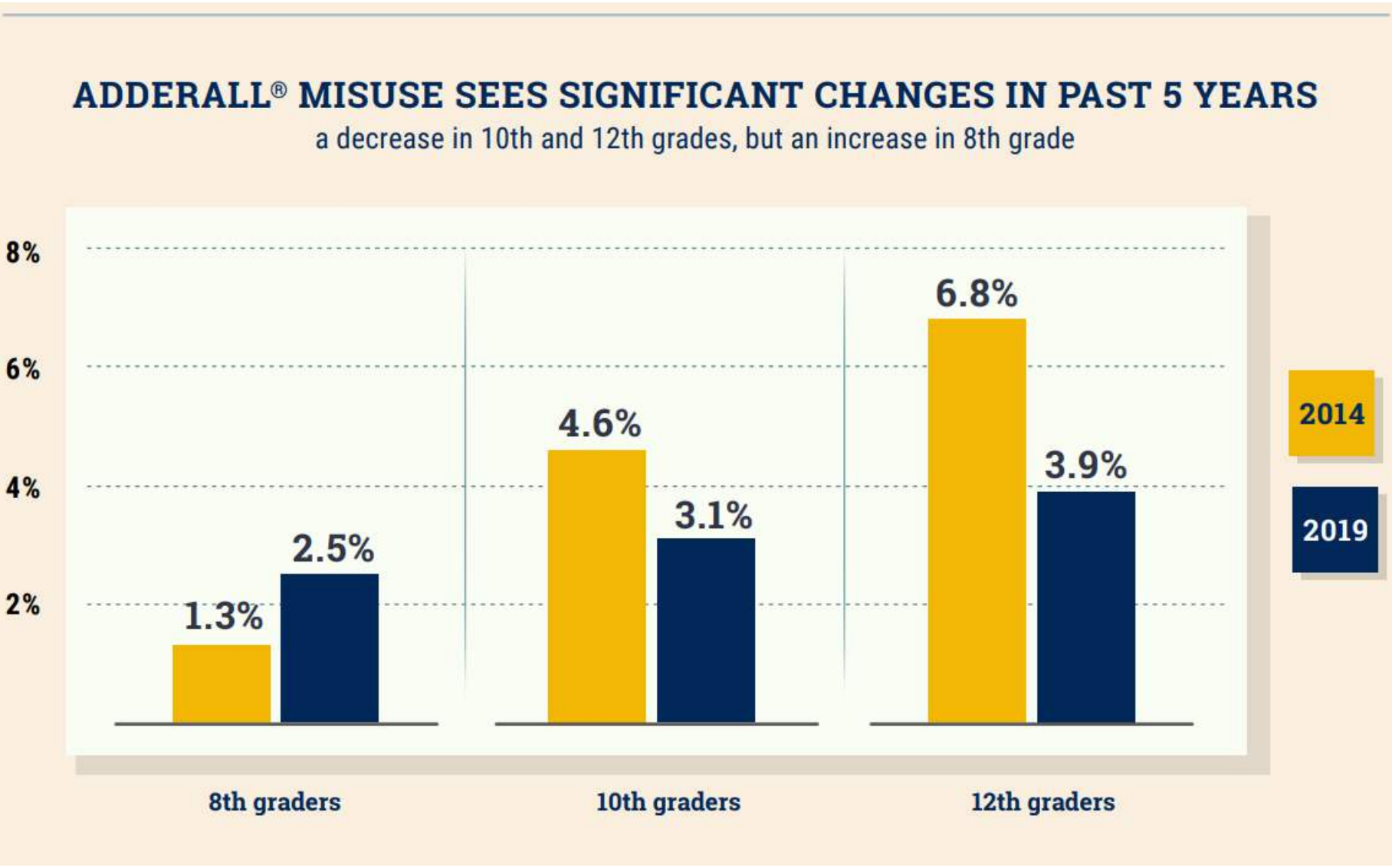
PRESCRIPTION DRUG MISUSE CONTINUES DECLINE FROM PEAK YEARS



Vaping & Cannabis Trends Among Young Adults (19-22) | National Institute on Drug Abuse (NIDA)



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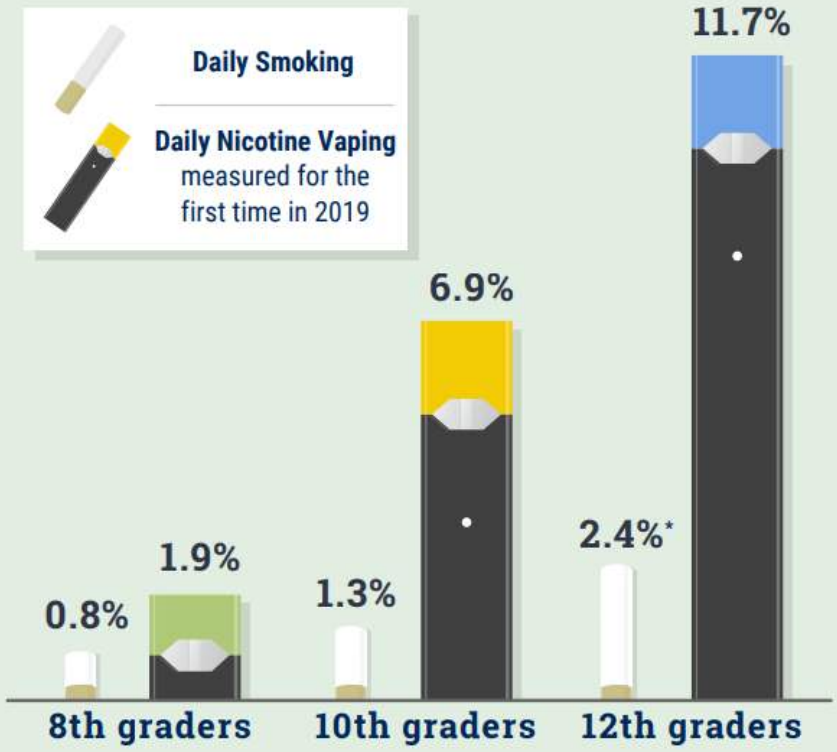
TOBACCO AND NICOTINE: VAPING THREATENS PROGRESS

NICOTINE – DAILY USE



*Significant decline from 2018 (3.6%)

CIGARETTE SMOKING (PAST MONTH) DECLINES OVER PAST TEN YEARS

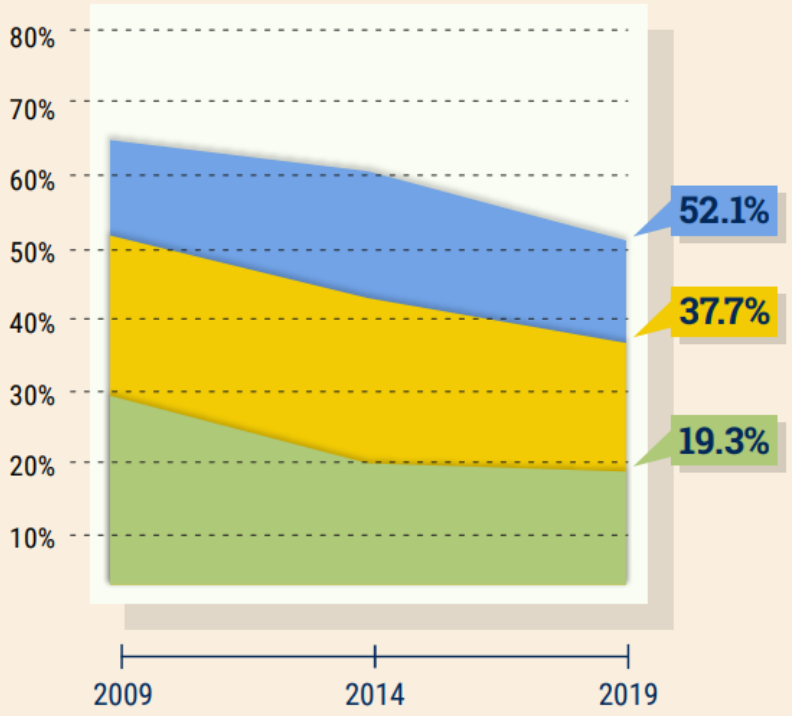
*Significant decline from 2018 (7.6%)

Vaping & Cannabis Trends Among Young Adults (19-22) | National Institute on Drug Abuse (NIDA)

ALCOHOL USE CONTINUES ITS DECLINE

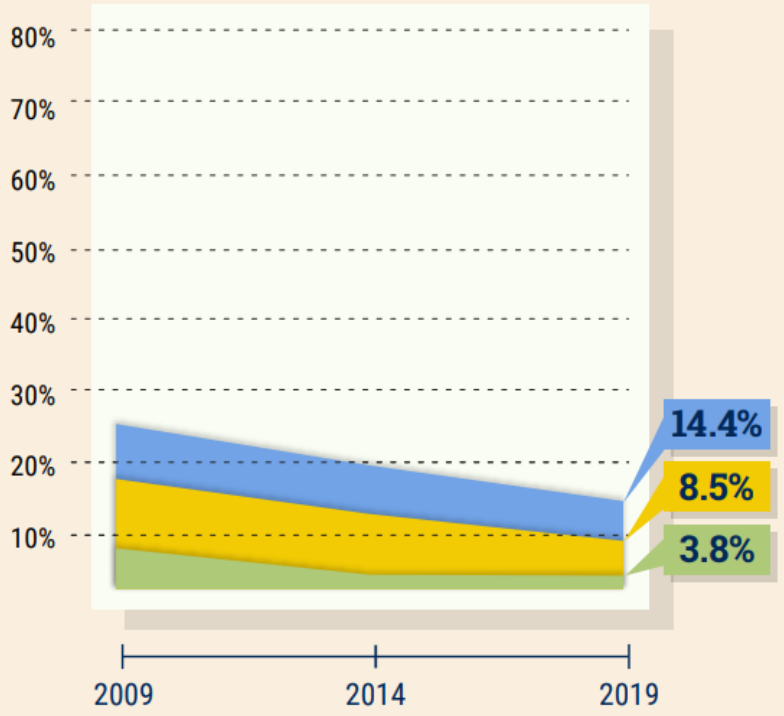
PAST YEAR ALCOHOL USE

Significant long-term decrease in all grades



BINGE DRINKING*

Significant long-term decrease in all grades



8th graders | 10th graders | 12th graders

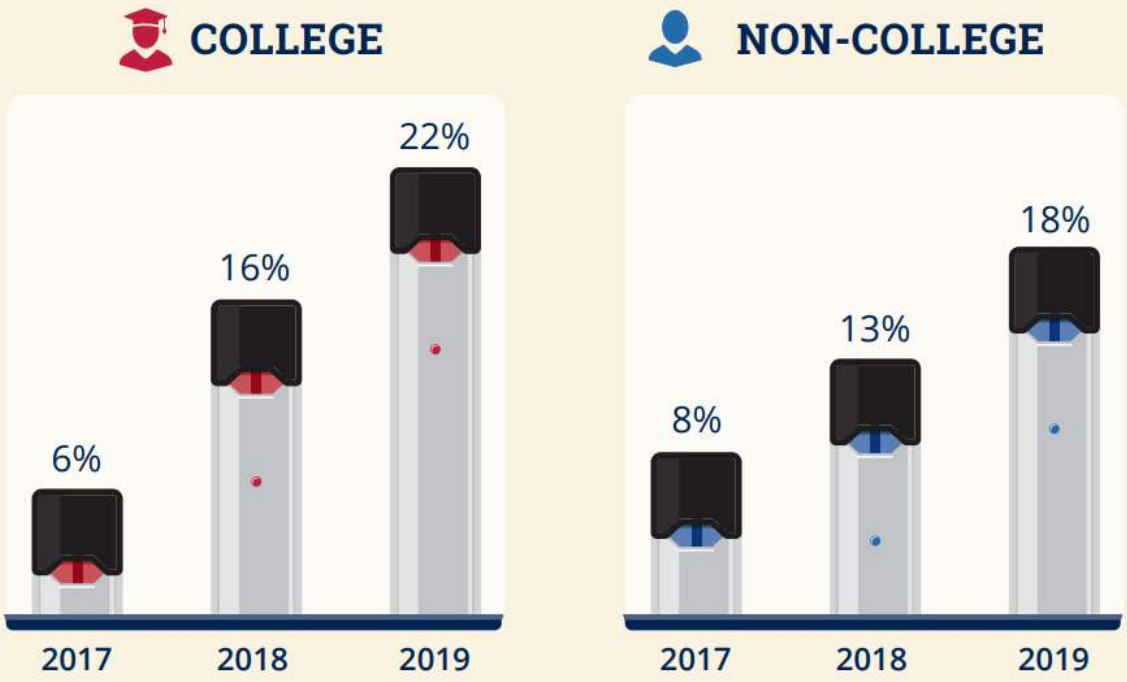
*5 or more drinks in a row in the past two weeks

Vaping & Cannabis Trends Among Young Adults (19-22) | National Institute on Drug Abuse (NIDA)

VAPING & CANNABIS TRENDS AMONG YOUNG ADULTS (19–22)

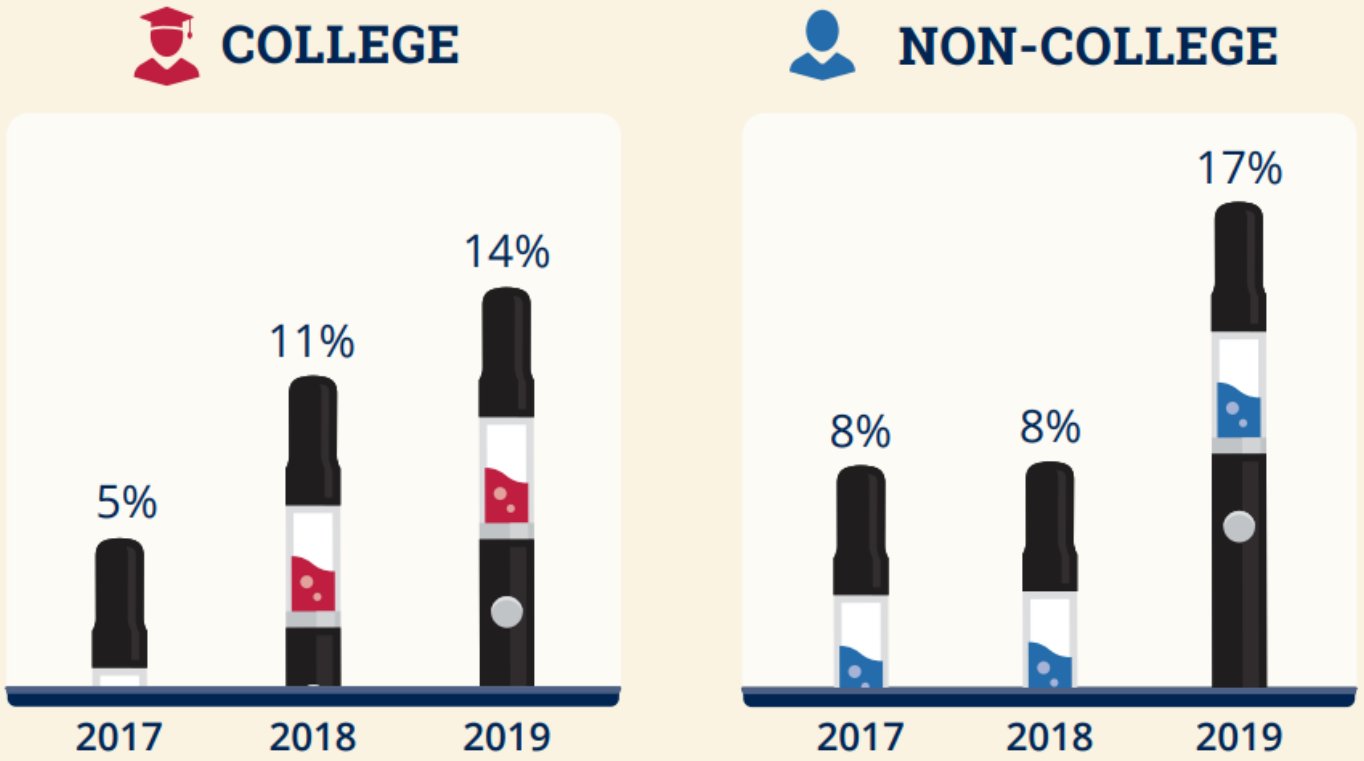
2019 Monitoring the Future College Students and Young Adults Survey Results

Past month **NICOTINE VAPING** rose dramatically over 3 years.



Vaping & Cannabis Trends Among Young Adults (19-22) | National Institute on Drug Abuse (NIDA)

Past month **CANNABIS VAPING** increased sharply among non-college young adults in 2019.



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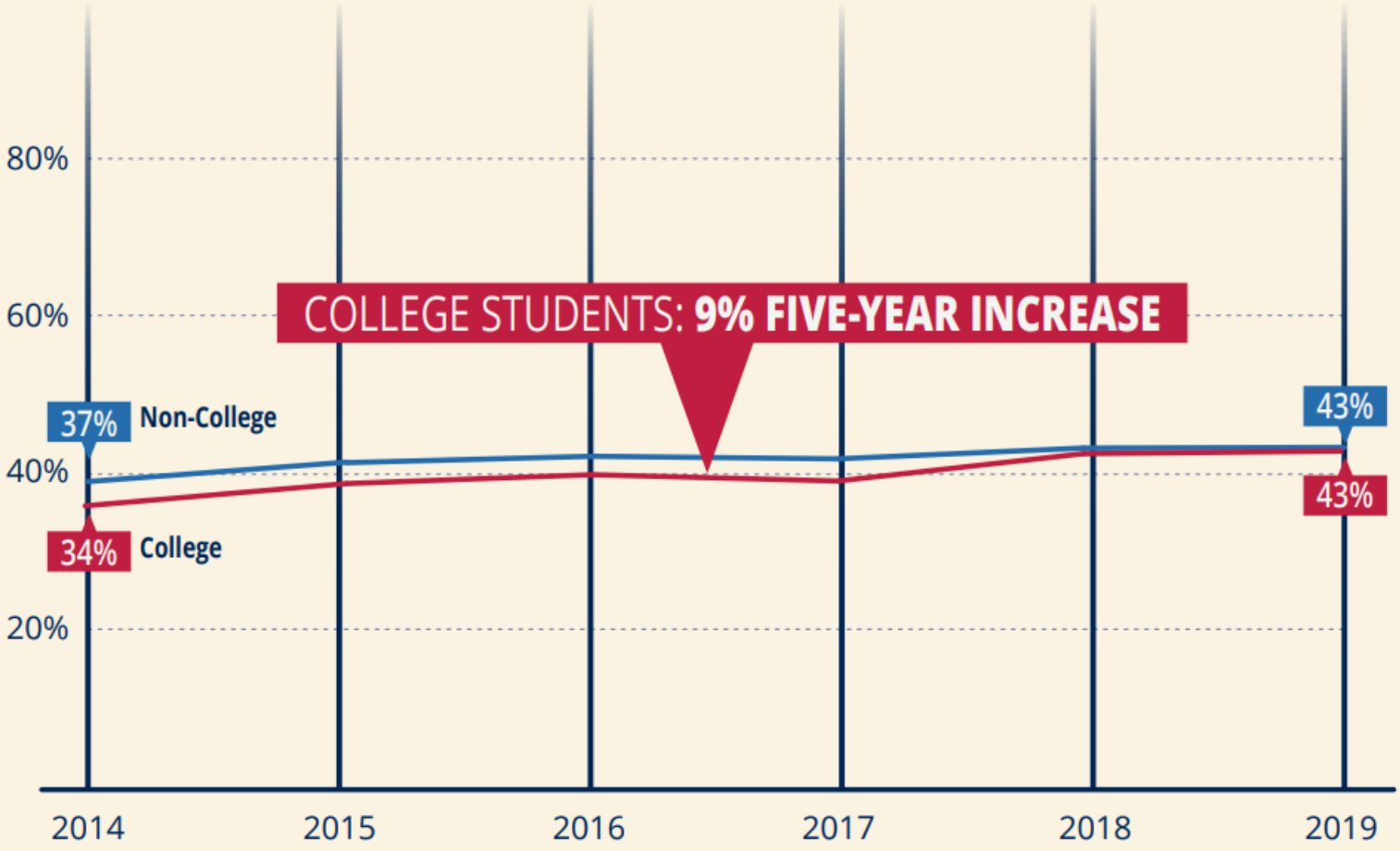
Past year **CANNABIS USE** remained at historic highs.



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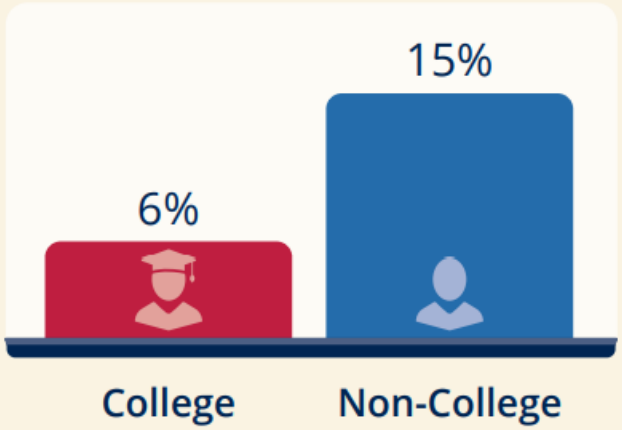
Daily **CANNABIS USE** was more common among non-college young adults in 2019.

Daily use* of cannabis was nearly 3x as high among young adults not attending college compared to peers in college.

DAILY USE 2019



*Cannabis use on 20 or more occasions in past 30 days

Figures have been rounded to the nearest whole number.

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