

Substance Use in Adolescents & Young Adults

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Disclosures & Research Grants (Douaihy)

- NIDA
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- CDC
- Goodblend/Parallel
- Royalties for academic books published by OUP; PESI Publishing & Media; and Springer



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Scope of My Work (Douaihy)

- Practitioner
- Educator/trainer
- Program developer and implementer
- Researcher/mentor/collaborator
- Advocacy and public health policies
- Research interests: Psychology of behavior change/motivational interviewing, pharmacological & psychosocial treatments for substance use disorders in adolescents and adults, and HIV



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Scope of My Work (Miller)

- Clinical Work: Child and Adolescent Psychiatry, Adolescent Substance Use, Collaborative Care with Pediatricians



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Objectives

At the conclusion of this presentation, the participants should be able to :

- Learn about the recent and emerging trends in substance use among adolescents and young adults (AYAs)
- Identify the consequences of substance use in AYAs
- Summarize the neurobiological changes and risk factors associated with substance use in AYAs
- Review the screening and assessment processes
- Discuss the evidence-based treatments for substance use disorders (SUDs) for this population
- Understand the implications for prevention and treatment

Trends in Substance Use in Youth Selected Epidemiological Survey: MTF 2021

U.S. Students Reporting Any Past-Year Illicit Drug Use*



*Illicit drug use in this survey was defined as use of marijuana, LSD, other hallucinogens, crack, other cocaine, or heroin; or any use of narcotics other than heroin, amphetamines, sedatives (barbiturates), or tranquilizers not under a doctor's orders.

Source: 2021 Monitoring the Future Survey



nida.nih.gov



MTF 2021

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Mixed News

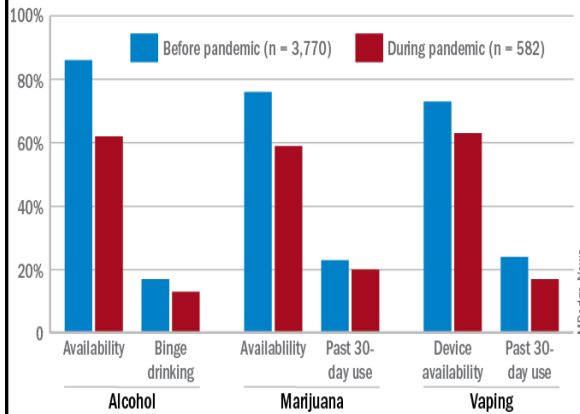
- Dramatic decreases in one year in drug use
- The percentage of students who reported using marijuana (in all forms, including smoking and vaping) within the past year decreased significantly for eighth, 10th, and 12th grade students
- Cessation did not play a large role in the substantial, overall declines in past 12-month marijuana use in 2021
- The decreases are likely the result of fewer initiates to marijuana smoking and vaping in 2021, as evidenced by the large declines in lifetime use
- Now what??

MTF, 2021



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MONITORING THE FUTURE SURVEY
Teens' drug availability, use before and during COVID-19 pandemic



Note: Surveys conducted Feb. 11 to March 15, 2020, and July 16 to Aug. 10, 2020.

Source: Drug Alcohol Depend. 2021 Jun 24. doi: 10.1016/j.drugalcdep.2021.108822



Even a pandemic can't stop teen's alcohol and marijuana use!

Limiting supply not enough!

Joint effects of perceived risk and perceived availability!

Drug Alcohol Depend., 2021 Jun 24.
Levy et al., 2021

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Current Trends in Drugs of Use

- **Marijuana** use among young adults (ages 19-28) increased to all-time highs in 2019 Annual and 30-day prevalence of **vaping marijuana** showed significant increases in 2019 for 19-28-year olds
- Annual and 30-day prevalence of **vaping nicotine** also showed significant increases in 2019 for 19-28-year olds
- **Any illicit drugs other than marijuana**, annual use has been relatively steady the last few years, with the five-year trend (2014-2019) showing a small significant decline

Schulenberg, J. E., Johnston, L. D., O'Malley, P. M., Bachman, J. G., Miech, R. A. & Patrick, M. E. (2020). *Monitoring the Future national survey results on drug use, 1975-2019: Volume II, College students and adults ages 19-60*. Ann Arbor: Institute for Social Research, The University of Michigan. Available at <http://monitoringthefuture.org/pubs.html#monographs>



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Current Trends in Drugs of Use

- **Alcohol** use among young adults has been level in recent years for the most part
- **Cigarette** use continued to decline to all-time lows among young adults in 2019
- Perceived risk: marijuana, other illicit drugs, LSD/MDMA, heroin/opioids, stimulants, and sedatives, vaping an e-liquid with nicotine, and e-cigarette

Schulenberg, J. E., Johnston, L. D., O'Malley, P. M., Bachman, J. G., Miech, R. A. & Patrick, M. E. (2020). *Monitoring the Future national survey results on drug use, 1975–2019: Volume II, College students and adults ages 19–60*. Ann Arbor: Institute for Social Research, The University of Michigan. Available at <http://monitoringthefuture.org/pubs.html#monographs>

Prescription Drugs & Teen Culture

- It normalizes misusing of these drugs
- Legitimate reasons – with or without a prescription – to stay awake, remain alert or to go to sleep or get high or try something new
- “Pharming” and “bowling” parties
- Are often unaware that these activities can lead to disastrous results
- Warning physical and behavioral signs as well as school performance

Public Health Impact of Current levels of Marijuana Use

- 17 % or 1/6 adolescents who try marijuana (and among daily users) will become “addicted” or have a cannabis use disorder vs 9% of adults
- 2013 PEW National Survey: > 50% Americans currently favor legalization of marijuana (unprecedented)
- 33 states and Washington, DC have medical MJ; 11 states and Washington, DC have legalized MJ
- **So why should we care?**
- **Is marijuana a fairly low risk, benign recreational drug?**

Prevalence of SUDs

- Heterogenous
- Most youth who use do not get addicted
- Prevalence is high: 15 % meeting criteria for alcohol use disorder & 16 % for drug use disorder by the age of 18
- Tobacco, alcohol and marijuana typically first addictive substances that are tried
- Likelihood of developing an SUD increases when drug and alcohol use is initiated during adolescence
- Majority of adults who have SUD started using before the age of 18 and develop the disorder by the age of 20

The Case of Opioid Use-Urgently Needed Focus

- Opioid use disorder (OUD) is a pediatric and adolescent problem
- Two in three adults treated for OUD first used opioids when they were younger than age 25
- Individuals who initiate substance use during adolescence and young adulthood are at substantial risk for long-term worse outcomes, mortality and morbidity
- Steadily increasing prevalence of OUD and opioid-related overdoses and deaths in AYAs: almost 5000 in 2017
- Unintentional injuries are the leading cause of death among AYAs with poisonings (medications and all illicit substances) the most common unintentional injury (CDC, 2018)

The Case of Prescription Opioid Use

- 27.5% reported using a prescription opioid in the past year
- 3.8% of adolescents and 7.8% of young adults engaged in opioid misuse or having an OUD
- Source: friends or relatives or from a single provider
- Polysubstance use is the norm: cocaine, hallucinogens, inhalants, tobacco, alcohol, and cannabis
- Risk of progression to OUD well documented for youths exposed to prescription opioids
- Risk of progression from non-medical prescription opioid use to heroin use significantly greater for young adults compared with persons 25 years and older

Is Marijuana a “Gateway Drug”?

- Does marijuana use cause “hard drug” use?
 - High risk children predictably have high rates of cocaine and opiate use most marijuana users do not use “hard drugs”
 - Availability & perception influence sequences
 - Specific sequence does not have predictive implications

Is marijuana “addictive”?

- Compulsion & loss of control
- Tolerance & withdrawal

Conclusion: Marijuana is a “gateway” to marijuana addiction



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Manifestations of Substance Use



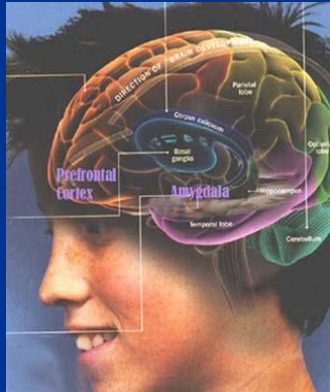
NIDA, 2013

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Consequences

- Increased morbidity and mortality
- Drug use is a major contributing factor to: unemployment; poor health; accidents; suicide, psychiatric disorders; and decreased life expectancy
- Major impact on individuals, families, and communities
- Relationship between substance use among AYAs and suicide

The Adolescent Brain –“A Work in Progress”



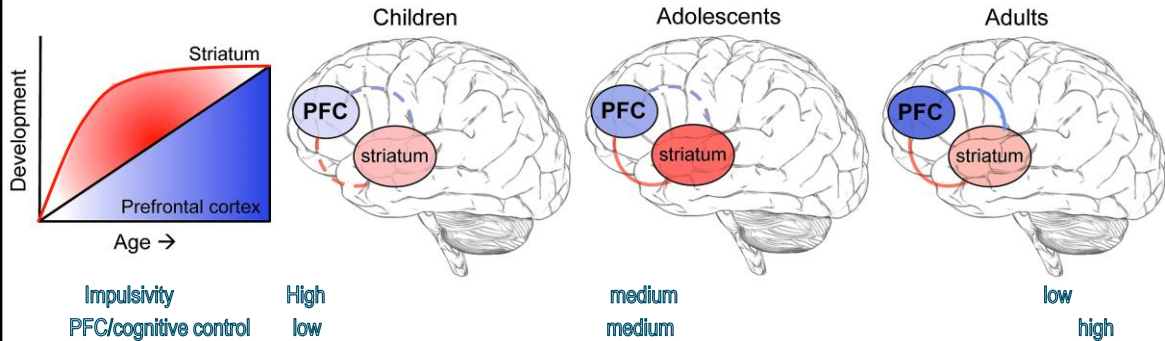
Why do most 16-year-olds
drive like they're
missing a part of their brain?



BECAUSE THEY ARE.



Youth appear to be more vulnerable to addiction in part due to rapid brain development



• “what teens do during their adolescent years – whether it's playing sports or playing video games – can affect how their brains develop”
--J Giedd

Environment and activities during teenage years guide selective synapse elimination (“pruning”) during critical period of adolescent development

Risk Factors

- There are multiple genetic and environmental risk factors that make adolescents vulnerable to the initiation of substance use
- *Earlier* use of tobacco, alcohol, and drugs is more likely to result in substance use disorders in adulthood
- Paralleling other substance use in AYAs, risk factors for opioid misuse include psychiatric comorbidity, housing instability, school absenteeism, friends who misuse opioids and living in a rural area
- DSM-5: One size does not fit all!

Neurotoxicity of Cannabis

- Cannabis (CB1) receptor plays a critical regulatory role in development of pre-frontal cortex; increases risk of psychosis; produces more lasting cognitive deficits
- Compared to controls or those who started smoking marijuana after age 17, those who start smoking marijuana before age 17 have > deficits in executive functioning, working memory, verbal fluency, learning
- Adolescents who started smoking marijuana between 14 and 22 but stopped by age 22 had > cognitive problems at age 27 than non-users
- Regular cannabis use during adolescence was associated with 6-8 point reduction in adult IQ

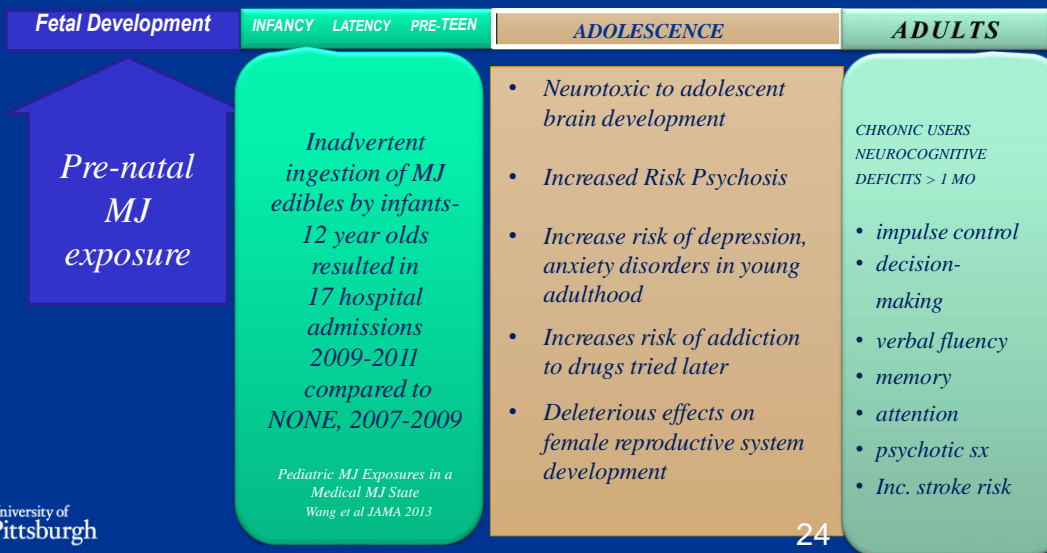


Brooke et al., 2008; Meier et al., 2012; Pope, 2003

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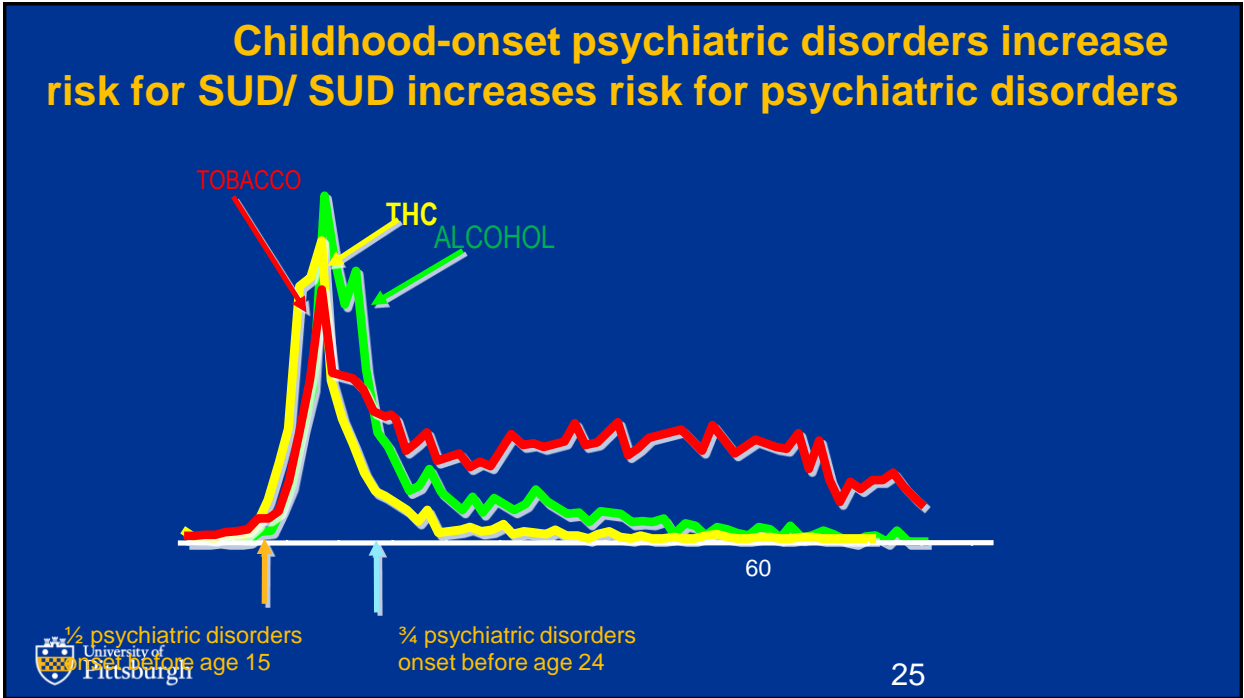
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Mental Health Risks, Brain, & Neurocognitive Effects of MJ- (Wilkinson, 2015, NAS, 2017)

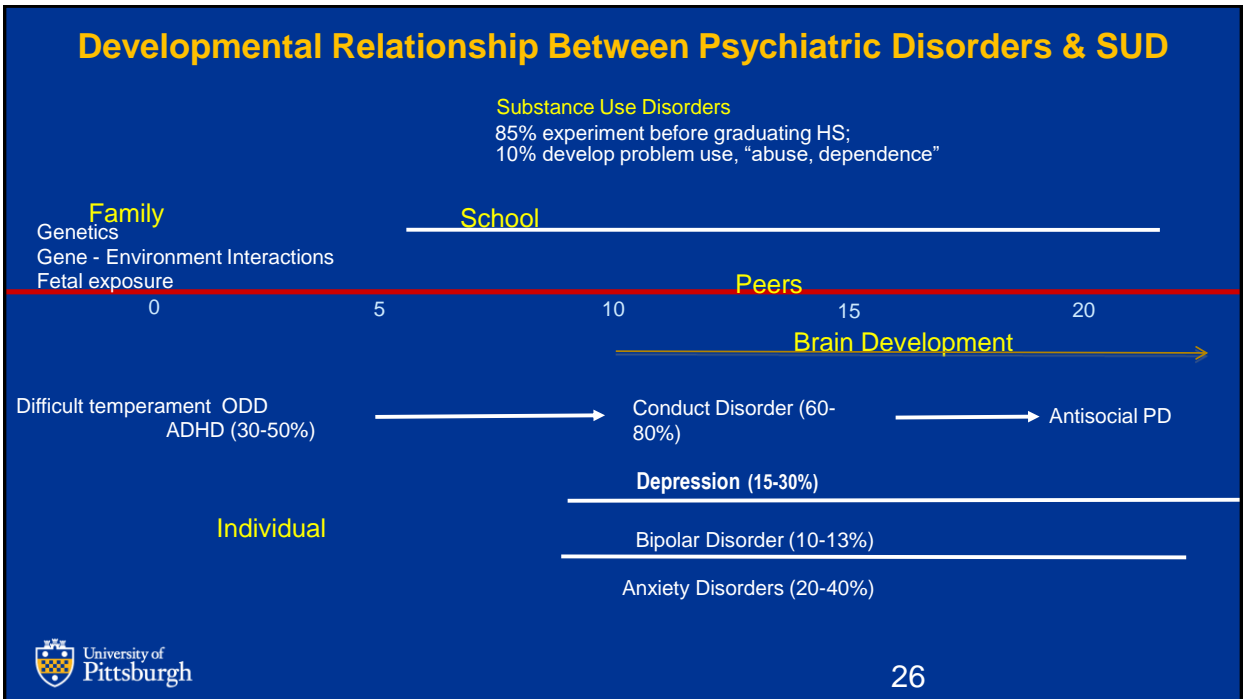


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Co-occurring Psychiatric Disorders

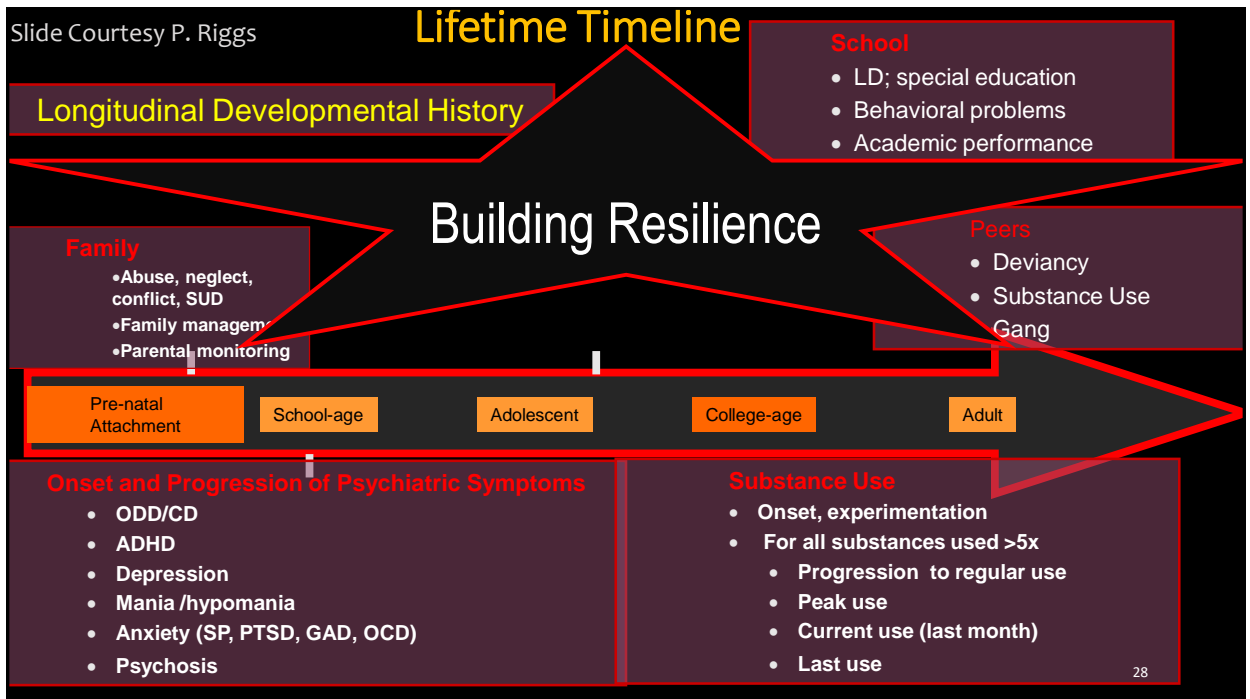
- Majority of youth referred for substance use treatment have at least one co-occurring psychiatric disorder (COD)
- Adolescents with SUD are at a six times risk of having a COD
- COD are associated with poorer treatment outcomes, both physical and psychological when either disorder is not treated
- Youth with COD have multiple challenges including trauma, family instability, school problems, and involvement in the juvenile justice system
- Standardized programs for treating CODs in youth have not been yet empirically validated



Riggs, 2003

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Screening & Evaluation

- Lack of routine screening and failure to use validated screening method
- Two brief screeners S2BI (Screening to Brief Intervention) & BSTAD (the Brief Screener for Tobacco, Alcohol, and Other Drugs)
- Delivered electronically
- Subsequent evaluation for level of substance involvement and severity
- CRAFFT and ASSIST/NIDA-Modified ASSIST
- SBIRT (Screening, Brief Intervention and Referral to Treatment)
- Diagnostic evaluation using DSM-5
- Functional analysis crucial
- Urine drug testing (UDT)



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Roberts et al., 2012; Levy et al., 2014; Kelly et al., 2014; Randall et al., 2001; Gray et al., 2019; Washio et al., 2014

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Screening & Evaluation

- Multidimensional
- Collateral information
- Frequent reassessment to refine treatment as needed
- Parents and guardians are more accurate reports of youth emotional and behavioral symptoms
- AYAs are more accurate reports of their own substance use
- “Ecologically contextual”



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Evidence-based Treatments for SUDs in AYAs



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Conceptual Issues in Treating AYAs with SUDs

- Need for services/Systems of care issues
- Difference in treatment needs between adolescents and adults
- Significant clinical differences: Polysubstance users; less withdrawal; serious problems without meeting SUD criteria
- Less likely than adults to seek treatment on their own
- Psychopathology occurs commonly in AYAs population



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Consent to Treatment

PA code 3130.91

“A minor may consent to medical treatment for conditions relating to drug and alcohol use...it is not necessary to obtain the consent of another person...**There is no age limit...**”

“...if the program is federally assisted, the **program may only disclose such information to the minor’s parent or guardian with the minor-patient’s prior written consent...**”



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Consent to Treatment

PA Mental Health Procedures Act

“Under the Mental Health Procedures Act, a child who is 14 years or older shall consent to mental health treatment, including the administration of psychotropic medication...”

“The consent of the parent or legal custodian is not valid in these instances.”



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Challenges

- Most adolescents do not recognize cannabis use as a problem, are mandated to treatment, and their motivation for change fluctuates
- Co-occurring problems (mental, trauma, legal) are typical. May predate, be exacerbated by, or caused by cannabis use
- Influences of parents/guardians, peers, school, justice system may be outside the influence of the clinical setting



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Assessment & Educational Challenges

- Adolescents may not trust confidentiality
- Adolescents may misrepresent cannabis use
- Parents may provide additional information
- Parents may struggle with accepting the implications of consent and confidentiality regulations
- Parents may hope that visits = positive outcomes
- Adolescents may hope that visits = status quo?



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Treatment Goals

- Abstinence vs “harm reduction”
 - Substance use not legal
 - Relationship use and disorder in teens
 - Controlled use might be challenging for teens
 - Parental legal responsibilities
- Motivational Interviewing
 - Fundamental person-centered approach based on respecting autonomy, collaboration and evocation and acceptance
 - Clinical style and an approach to strengthen motivation for change
 - Reduce discord and address ambivalence



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Systems Issues-Treatment Approaches-Colliding Cultures

- Different models in mental health and substance use treatment have resulted in the development of parallel or sequential but not intersecting/integrated treatment systems with different funding streams, mandates and treatment philosophy



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Evidenced-Based Treatments

- “...the integration of the best research evidence with clinical expertise and patient values (humanistic approach)”
- *Based on the definition used in “Crossing the Quality Chasm: A New Health System for the 21st Century” (2001), by the Institute of Medicine*

Interventions for Reducing Adolescent Alcohol Use Meta-analytic Review

- Treatment is better than no treatment
- Treatment is effective for reducing alcohol/drug use in AYAs
- Individual cognitive/behavioral treatment showed higher effect sizes and better long-term effects compared to family-based interventions

Evidence-Based Treatments for AYAs

Psychiatric Disorders

Conduct Disorder (60-80%)

- ❖ Family-Based
- ❖ CBT

Depression, Anxiety (30-40%)

- ❖ CBT
- ❖ Pharmacotherapy

ADHD (30-50%)

- ❖ CBT
- ❖ Pharmacotherapy

Substance Use Disorders

❖ Family-based therapies; Evidence-based: MST, MDFT, ACRA, BSFT, FFT

❖ CBT+ MET

❖ Pharmacotherapy



Gray et al., 2019

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Consider Medication Safety & FDA Approval for Other Indications

Alcohol Use Disorder

- ACAMPROSATE
- NALTREXONE
- TOPIRAMATE
- GABAPENTIN

NAC

Cannabis

Opioid Use Disorder

- METHADONE
- BUPRENORPHINE
- NALTREXON

BUPROPION
VARENICLINE

Nicotine

Cocaine/Methamphetamine Use Disorder

- BUPROPION
- NALTREXONE
- N-Acetyl-cysteine (NAC)

NALTREXONE
NAC

Gambling



Gray et al., 2019

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The Case of Buprenorphine

- Personal and socio-economic determinants
- Barriers in accessing treatment and/or remaining in treatment to achieve substantial recovery
- Limited screening in primary care
- Services to support AYAs with OUD hard to navigate
- Stigma from peers and society

Role of Mutual Support Programs: 12-Step Program for SUD in AYAs

- iTSF in terms of abstinence no better than motivational enhancement therapy/cognitive-behavioral therapy (MET/CBT)
- iTSF showed benefits in terms of 12-Step attendance and consequences
- iTSF may provide an integrated evidence-based approach

ADDICTION
RESEARCH REPORT

SSA
041101111

A pilot randomized clinical trial testing integrated 12-Step facilitation (iTSF) treatment for adolescent substance use disorder

John F. Kelly¹, Yifrah Kammer², Christopher W. Kahler³, Bettina Hoepfner¹, Julie Yeterian¹, Julie V. Cristello¹ & Christine Timko⁴

Recovery Research Institute, Massachusetts General Hospital and Harvard Medical School, Boston, MA, USA¹; University of Connecticut Health Sciences Center, Farmington, CT, USA²; Department of Public Health, Brown University, Providence, RI, USA³; and VA Palo Alto Health Care System and Stanford University Medical School, Menlo Park, CA, USA⁴

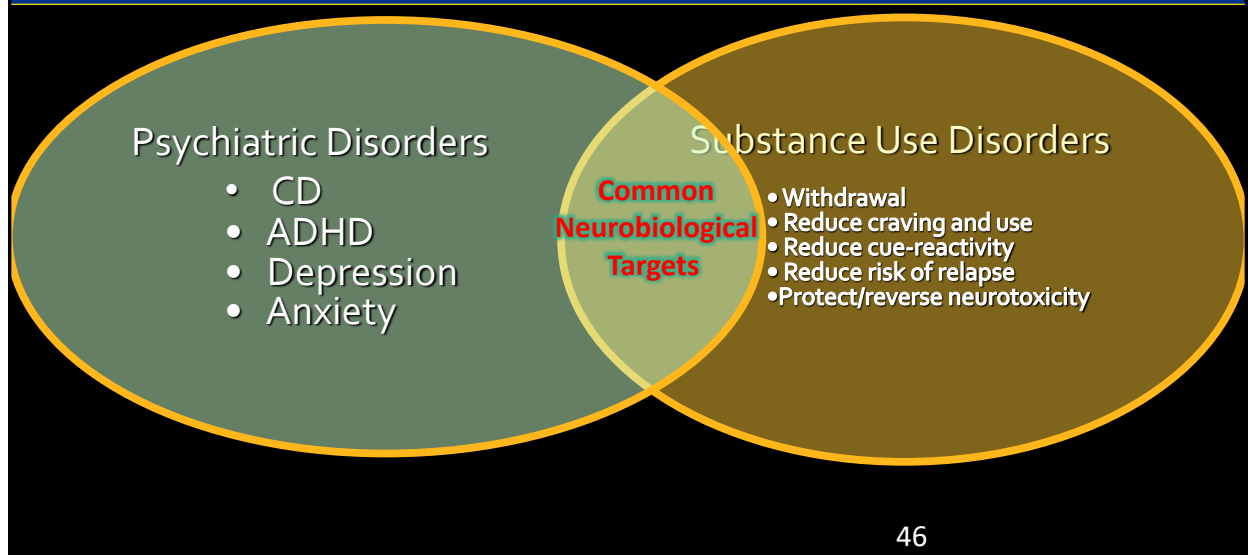
ABSTRACT

Background and Aims The integration of 12-Step philosophy and practices is common in adolescent substance use disorder (SUD) treatment programs, particularly in North America. However, although numerous experimental studies have tested 12-Step facilitation (TSF) treatments among adults, no studies have tested TSF-specific treatments for adolescents. We tested the efficacy of a novel integrated TSF. **Design** Explanatory, parallel-group, randomized clinical trial comparing 10 sessions of either motivational enhancement therapy/cognitive-behavioral therapy (MET/CBT; n = 30) or a novel integrated TSF (iTSF; n = 29), with follow-up assessments at 3, 6 and 9 months following treatment entry. **Setting** Out-patient addiction clinic in the United States. **Participants** Adolescents (n = 59; mean age = 16.8 (1.7) years; range = 14–21; 27% female; 78% white). **Intervention and comparator** The iTSF integrated 12-Step with motivational and cognitive-behavioral strategies, and was compared with state-of-the-art MET/CBT for SUD. **Measurements** Primary outcome: percentage days abstinent (PDA); secondary outcomes: 12-Step attendance, substance-related consequences, longest period of abstinence, proportion abstinent/mostly abstinent, psychiatric symptoms. **Findings** Primary outcome: PDA was not significantly different across treatments (b = 0.08, 95% confidence interval (CI) = -0.08 to 0.24, P = 0.33; Bayes' factor = 0.28). Secondary outcomes: during treatment, iTSF patients had substantially greater 12-Step attendance, but this advantage declined thereafter (b = -0.87; 95% CI = -1.67 to 0.07, P = 0.03). iTSF did show a significant advantage at all follow-up points for substance-related consequences (b = -0.42; 95% CI = -0.80 to -0.04, P < 0.05; effect size range d = 0.26–0.71). Other secondary outcomes did not differ significantly between treatments, but effect sizes tended to favor iTSF. Throughout the entire sample, greater 12-Step meeting

Integrated treatment Principles

- Coordinated care and continuing care
- Involves:
 - Mental Health
 - Substance use
 - Workplace
 - School-based
 - Primary care

Improving Treatment Outcomes Combined Pharmacotherapy & Behavioral



Double-blind Fluoxetine Trial in Comorbid MDD-CUD AYAs

- Acute phase (12-week) efficacy of fluoxetine versus placebo for the treatment of the depressive symptoms and the cannabis use of adolescents and young adults with comorbid MDD-CUD
- Hypothesis: fluoxetine would demonstrate efficacy versus placebo for the treatment of the depressive symptoms and the cannabis use in that population
- Both treatment groups also received manual-based cognitive behavioral therapy (CBT) and motivation enhancement therapy (MET) during the 12-week course of the study
- Fluoxetine did not demonstrate greater efficacy than placebo for treating either the depressive symptoms or the cannabis-related symptoms
- The lack of a significant between-group difference in these symptoms may reflect limited medication efficacy, or may result from efficacy of the CBT/MET psychotherapy or from limited sample size

Clinical Trials for Co-occurring Disorders

- Trials in SUD and ADHD
- Random controlled Trial Fluoxetine vs Placebo +16 weeks CBT in adolescents with MDD, CD, SUD
- Randomized controlled trial of fluoxetine in adolescents with MDD and AUD
- Evaluation of CBT/MET in a treatment trial of comorbid MDD/AUD adolescents
- Treatment trial and long-term follow up evaluation among comorbid youth with MDD and cannabis use disorder

PREVENTION, EARLY INTERVENTION

TREATMENT

CONTINUE EVIDENCE BASED PREVENTION PROGRAMS

CONSIDER : LIFE SKILLS PROGRAM & UNPLUGGED PROGRAM

THESE efficacious interventions currently exist almost exclusively in community-based treatment settings and largely serve youth referred by juvenile justice system

THERE IS A CRITICAL NEED TO ADAPT EXISTING

EVIDENCE-BASED SUBSTANCE TREATMENT INTERVENTIONS AS SCHOOL-BASED INTERVENTIONS.....

TO ADDRESS THE GROWING NUMBER OF HIGH SCHOOL STUDENTS WHO MISUSE, REGULARLY USE, MIUSE, AND WHO ARE ADDICTED ON SUBSTANCES OF USE

Family-based interventions

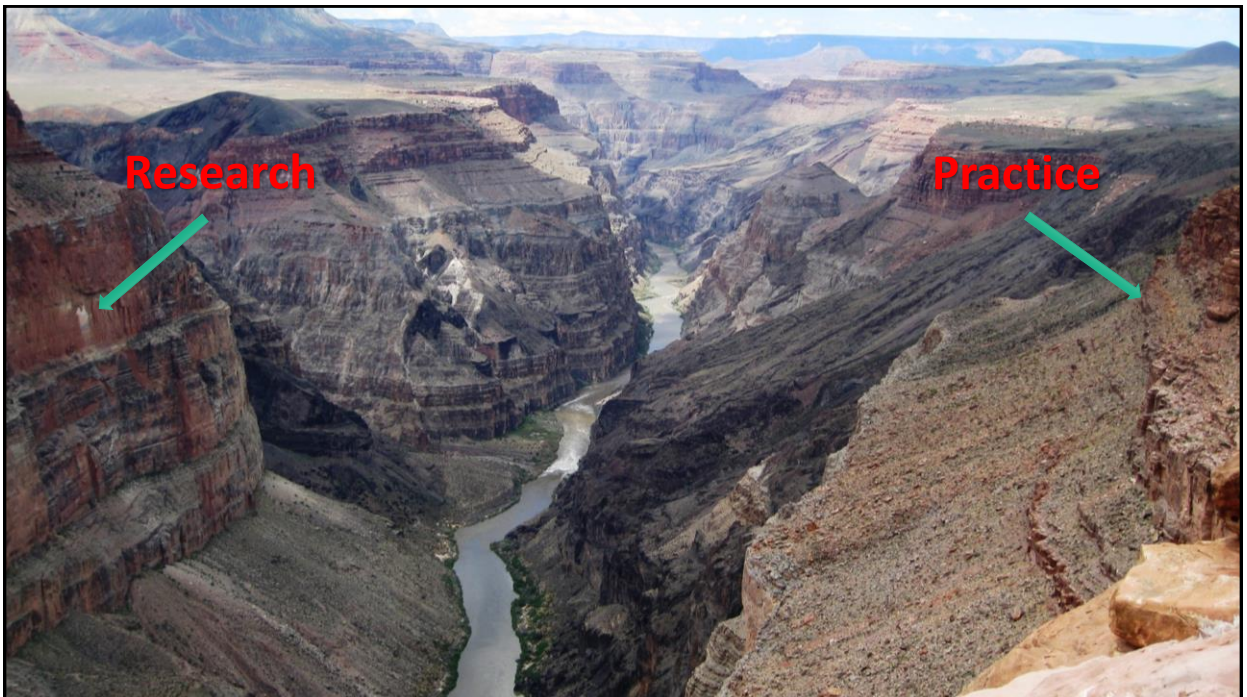
MET/CBT Individual group

CM /motivational incentives

to reward adherence, abstinence, pro-social non-drug activities

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Research → **Practice**

- MET/CBT, 16 weeks
- Incentives
 - paid \$25 per visit; free treatment
 - Could not apply additional incentives/contingencies to enhance abstinence rates
- Psychiatric treatment
 - Constrained by single pharmacotherapy/placebo
 - Could not individually tailor treatment as clinically indicated
- Relapse prevention/ continuing care
 - Constrained by research protocol

- MET /CBT 16 weeks
- CM Incentives “fishbowl”
 - Adherence
 - Abstinence
 - Non-drug alternative activities
- Psychiatric treatment
 - Broader range of options
 - Psychotherapy
 - Pharmacotherapy
- Relapse prevention/continuing care
 - Involvement in non-drug alternative activities sustained drug-free lifestyle

Integrated tobacco Cessation (+vaping)

School-based adaptation



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