



Adolescent Brain Cognitive Development

Teen Brains. Today's Science. Brighter Future.

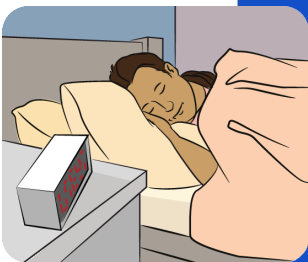
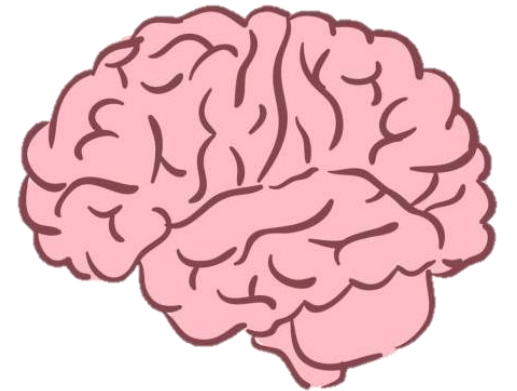
Adolescent Substance Use

Prevention & Treatment

Krista Lisdahl, Ph.D., UW-Milwaukee

Adolescence is a Gateway

- Adolescence is a **gateway** to establishing **health patterns for decades**
- Brain has “**neuroplasticity**” and **executive function, emotion regulation improves, habits formed often last into adulthood**
 - Sleep, physical activity, nutrition, coping styles, relationship patterns, mental health management, **substance use attitudes and behaviors**
- **Golden opportunity to bolster resilience – prevention is best & treat problems early!**




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Reducing Teen Drug Use: *Modifiable* Factors



- **Parenting Factors**

- ↑ **authoritative parenting style** (warm, responsive, and thoughtful discipline and guidance)
- ↑ **parental monitoring** (asking where kids are, who they are with, knowing friends, check intoxication)
- ↑ **family routines** (e.g., mealtimes, outdoor activities, predictable schedules)
- ↓ **parental, older sibling drug/alcohol use** (<7  <14)
- ↓ **access to drugs/alc** in neighborhood & home (locked cabinets, out of view)
- ↑ **family rules** prohibiting drugs/alc use in teens
- ↓ **Adverse Childhood Experiences** (family conflict, neglect, abuse, parental SUD/MH, parent absence, disasters, witness crime)



- **Teen/Peer Factors**

- ↑ **mental health, executive function, memory**
- ↑ **total sleep time** (8-10 hours, 3:10 problems)
- ↓ **friends who use drugs/alc**; ↑ **positive social involvement**

- ↑ **practiced early drink refusal skills**

- **School & Community factors**

- ↑ **school rules prohibiting alc/drug use**
- ↑ **pos feelings of school involvement & support**
- ↑ **school and neighborhood safety**
- ↑ **spirituality, pro-social involvement**
- ↑ **access to mental health screening/treatment**

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Signs of Teen Alc/Drug Problems

- **Addiction can happen in teen/YA years:**
 - Using a drug even though it's harming your health or life (relationships, school)
 - Missing out on or quitting activities due to drugs or alcohol
 - Using more of alcohol or drugs to get same effect; Blacking out; having withdrawal or hangovers; craving or thinking about the drug often
 - Trying to cut back or quit, but having trouble
- **Other Warning signs** can include:
 - Not caring about your appearance
 - Changing friends because of your drug/alcohol use
 - Getting in trouble in school or with the law
 - Having different eating or sleeping habits
- **Screenings are available!** <https://nida.nih.gov/bstad>



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Overdose Prevention/Treatment



If Someone is Overdosing on Drugs or Alcohol: ACT QUICKLY!

Overdose is a dangerous result of drug or alcohol use that happens when someone takes enough of the drug or alcohol for it to reach toxic levels, causing a serious reaction to the body such as changing heart rate, temperature, or stopping someone's breathing.



- If you believe someone is overdosing or in danger after using drugs or alcohol, immediately call 911 for medical attention. Do NOT leave the intoxicated person alone.
- If known, tell the emergency responders what the person took and how much they had. If known, provide any other health information such as medications they take.
- Keep the person on the ground in a sitting or partially upright position to prevent falls. **Help a person who is vomiting:** have them lean forward to prevent choking. If they are unconscious or lying down, roll them onto one side with an ear towards the ground to prevent choking.
- If someone has taken an **opioid, heroin, or prescription pain reliever** and is showing signs of an overdose, **naloxone** as a nasal spray (Narcan) or through an injection (Enzio) can reverse the effects of the drug.

<https://abcdstudy.org/youth-resources/>



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Teen Substance Use Disorder Treatment

- You do not need to wait for “rock bottom” or severe problems! Treatment before 18 may allow more parental involvement
- Top Research Supported Treatments for Teens/Young Adults: **Treatment Works!**
 - Family-based Therapy, Cognitive Behavioral Therapy
 - Motivational Enhancement Therapy, Contingency Management, Mindfulness-Based Cognitive Therapy
- May Assist (partial evidence for reducing use)
 - Feedback on \$\$ spent and effects on health and appearance
 - 12-step peer-based programs or Recovery education high school
 - Health apps; Exercise, yoga, meditation (brain-boosters!)
 - Opioid assisted medications or nicotine replacement (young adults)



SAMHSA National Helpline:

[1-800-662-HELP \(4357\); https://findtreatment.gov/](https://findtreatment.gov/)

NIAAA: Alcohol Treatment:

<https://alcoholtreatment.niaaa.nih.gov/>



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Thank you, ABCD participants and families!



UWM Brain Lab: Faculty: Drs. Chris Larson, Andrew Nencka (MCW); **Grad Students:** Julia Harris, Gabriella Navarro, Chase Shankula, Kyle Baacke, Caylin Faria; **Grad Alums:** Drs. Claudia Padula, Jenessa Price, Skyler Shollenbarger, Tasha Wade, Kristin Maple, Alicia Thomas, Kyle Jennette, Megan Ritchay, Alex Wallace, Kaitlynne Leclaire, Ryan Sullivan, Ashley Stinson. **Staff/Students:** Caitlin Nelson, Erick Bernal, Zachary Paltzer, Hailley Moore, Bo Malames, Clem Schumacher, Vivien Blecking, Sabrina Arassi, Isabelle Wilson, Tierel Hood-Nellum, Kenya Guadalupe Cendejas, Miranda Paltzer, Nada Fouad Abdulijalil, Joshua Roesel. **Funding:** NIH (U01DA041025, MPI: Lisdahl, Larson).



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Extra slides



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Building Healthy Teen Habits



- **Boost Brain/Cognition:**

- **staying in school** helps build cognitive reserve
- **↑ physical activity** ~ ↑ executive functioning, memory
- **no/mild caffeine** ~ ↑ executive functioning
- **longer sleep** ~ ↑ brain volume in frontal and temporal cortex, ↑ concentration, ↓ MH problems (sad, anxious, impulsive)
- **↑ video game** ~ ↑ problem solving, flexible thinking, memory
 - *Caveat:* mature-related content ~ reduced sleep & greater problem behaviors; 2-3 hours max

Video gaming

- ↑ Problem-solving
- ↑ Flexible thinking
- ↑ Recalling facts & skills

Social media

- ↓ Problem-solving



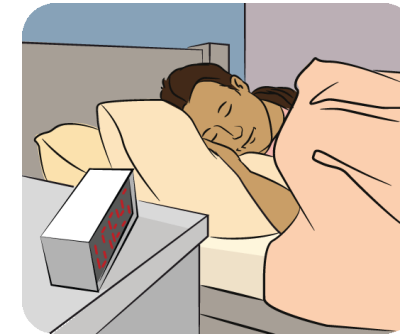
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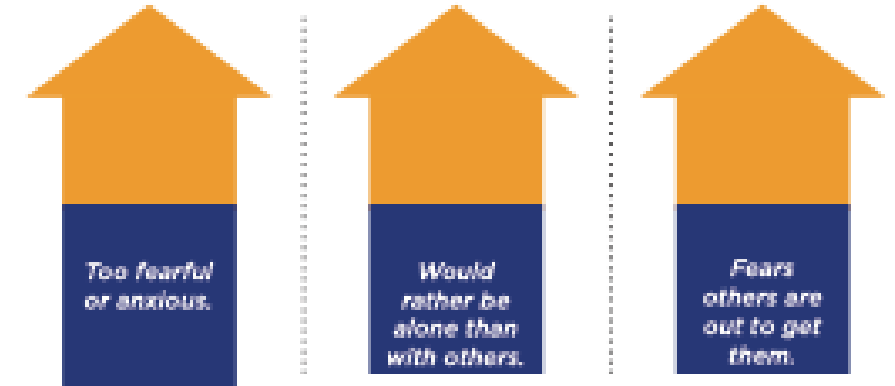
Building Healthy Teen Habits

Promoting General Mental Health/Emotion Resilience:

- ↑ **social support**, **pro-active coping**, **warm parental relations**
- ↑ **total sleep time (8-10 hours!)**
- ↑ **pro social** and **physical activities**
- ↑ **school and neighborhood community connections**
- ↑ **green space access** (e.g., parks, community gardens)
- ↓ **screen time (especially social media/cyberbullying)**
- ↓ **parental alcohol or drug use**
- ↑ **family routines** (e.g., regular mealtimes, outdoor activities)
- ↓ **Adverse Childhood Experiences** (neglect, abuse, parental SUD/MH, prolonged absence from parents)
- ↑ **screening and early treatment**, including suicide prevention, especially in school and pediatric settings



Together, more video watching and less sleep were related to small increases in:

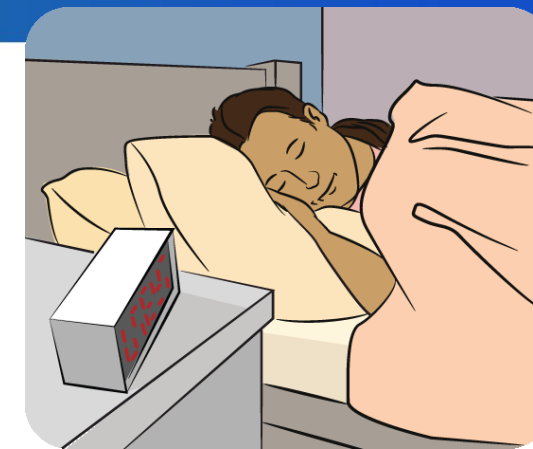


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Building Healthy Teen Habits

- **Sleep: 8-10 hours/day**
 - 3:10 teens have difficulty sleeping!
 - Motive to use alcohol, cannabis ~ fall asleep
 - Motive to use caffeine, nicotine, stimulants ~ stay awake
 - Routine bedtime, dark/cool room, limit stimulants (i.e., caffeine), limit screen time (2-3 hours/day), keep naps short (15-20 mins), keep bedroom for sleep, no screen hour before bed
 - Get sunlight and physical activity during day
 - If sleepwalking, night terrors, snoring, excessive daytime sleepiness -> get screened by physician



What influences how long and how well youth sleep?



Recreational screen activities, such as watching TV or videos, playing video games, texting, or using social media



Drinking beverages with caffeine



Negative childhood experiences, such as experiencing or witnessing violence or abuse, or living in unsafe or unstable environments



Perceived threat (e.g., crime, conflict) in the neighborhood, at school, or in the family



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Parents: Modeling Healthy Habits

- If parent/guardian drink alcohol, try to **limit to lower-risk levels** (see below)
- **Treat substance use problems** in the household and have open conversations
- Make **clear rules** that **prohibit teenage substance use** ~ allowing early use linked with greater odds of drinking by 9th grade, binge drinking in high school, and early SUD
- Be mindful about **older sibling use & providing substances**; be careful where you **store substances** (locked cabinets preferred)
- **Monitor youth** (check-in about school progress, get to know their friends, ask where they are going, who they are spending time with, have them check-in when return home, look for signs of intoxication or substance use). Note: **over-surveillance** or **over-helping** backfires as youth transition into late adolescence/young adulthood. Parental transition into “autonomy-supportive” warm guidance.



Treating Nicotine Addiction

- Teens who **vape are *more likely*** to transition to **use** other tobacco products (e.g., cigarettes, chewing tobacco)
- **Effective treatments**
 - Behavioral therapies like **cognitive behavioral therapy (CBT), motivational therapy, contingency management**
 - *May* assist: **App-based** quitting programs, **supportive social media**, feedback on **\$\$ spent** and **effects on health and appearance**
 - FDA-approved medications approved for **adults**: Bupropion (Zyban[®]), Varenicline (Chantix[®]), and nicotine replacement therapy products (gum, patches, sprays, inhalers, and lozenges) with use reduction plan



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