

**Attention Deficit Hyperactivity Disorder (ADHD) and Cannabis Use Disorder: A Toxic Couple**

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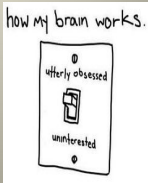
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**What is Attention Deficit Hyperactivity Disorder (ADHD)?**

I. Inattention

- Poor attention span on boring stimuli
- Hyperfocus on interesting stimuli
- Drawn to thrill seeking/stimulating activities
- Distracted very easily




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**What is ADHD?**

II. Impulsivity

- Behaviors
- Hypervarbal
- Emotionally Impulsive
- Decisions
- Instant Gratifiers
- Impulse Control Habits




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## What is ADHD?

### III. Hyperactivity

- On the go, Always in motion
- Hard time sitting through long classes/sessions
- Restlessness, Constantly fidgeting
- Mentally racing, Multiple thoughts at once
- (Only 20% have conduct disorder)



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## Executive Functions

### I. Attention:

- Sustain focus
- Shift attention
- Manage Hyperfocus
- Transition from one thing to another
- Trouble shifting attention can result in inflexibility and look oppositional

### II. Action:

- Control, self-monitor and learn from mistakes.
- Difficulties can lead to frustrating, unintentional misbehavior.
- Learn more slowly from behavioral interventions than others or to be careless in their work.

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## Executive Functions

### III. Activities:

- Organize
- Plan
- Prioritize
- Time Management
- Attempts to manage ADHD can be undermined by ADHD



### IV. Information Management and Processing:

- Remember
- Organize
- Retrieve

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### Executive Functions

V. Emotion Regulation:

- Experience emotions without impulsively acting on them
- The Failure to Suppress Emotions
- ADHD often more empathic and sensitive
- Emotions are felt strongly (positive or negative)




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### Executive Functions

VI. Effort:

- Persevere when activities are challenging (stick-to-it-tiveness)
- Work efficiently
- Often gets labeled as poor motivation
- ADHD is not related to intelligence
  - Not about “knowing what to do”
  - About “Doing what you know”
- Actualizing your intentions

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### ADHD Facts

- 8% prevalence (most likely higher)
- Affects all genders, races, ethnic backgrounds, socioeconomic levels. (Better today at identifying)
- Manifests in different ways for different people in different developmental stages
- Can you outgrow ADHD?
- ADHD Spectrum rather than categorical
- 50%-60% have a learning disability (Dyslexia is common)

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### The ADHD Brain

- An under aroused brain (Low Dopamine)
- An uninhibited brain (Low GABA)
- Frontal lobe takes longer to mature



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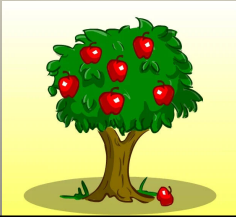
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### The ADHD Brain

- 30% less chronological age in executive functions
- Genetics: The apple does not fall far from the tree.
- DRD4 Gene



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### Is ADHD an illness?

- Does not suggest brain damage or defects
- ADHD is not a mental illness
- Simply a way the brain is wired
- Context specific



- Goal is to create the optimal environment for the ADHD brain
- Not every strategy works for every ADHD person every time, even within an individual
- Effortful at first to figure out but worth it over time

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**ADHD and Clinical Disorders**

- Depression
- Bipolar Disorder
- Suicide
- Anxiety Disorders (OCD, Panic Disorder, Generalized Anx)
- Eating Disorders (Bulimia, Binge Eating Disorder)
- Personality Disorders (Borderline Personality Disorder)
- Addictive/Impulse-Control Disorders

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**ADHD and Substance Abuse**

- Having ADHD is 5-10 times more likely among adult alcoholics
- ADHD in 25% of patients treated for Alcohol/substance abuse
- ADHD doubles likelihood of nicotine dependence

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**ADHD and Substance Abuse**

- More likely to try/experiment with drugs
- Shorter bridge between drug abuse and dependence
- Earlier onset of cigarette and substance abuse
- More impairment
- Wilens et al (2007):
  - Only 30 percent used to get high.
  - 70% for mood improvement, sleep etc.

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**ADHD and Appeal of Cannabis**

- “Helps me focus.”
- “I’m less bored.”
- “It helps me sleep.”
- “It makes things more fun.”
- “It grounds me.”
- “It slows down my racing ADHD brain.”
- “It reduces my anxiety.”
- “It helps with my mood.”

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**ADHD and Appeal of Cannabis**

- Mitchell et al (2016): Sample of Internet posts. 25% endorsed as treatment, 8% reported it harmful, 5% both helpful and harmful, and 2% null effects.
- Found equal rates saying cannabis therapeutic and harmful on mood, other psychiatric conditions and other domains of daily life (sleep).

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**ADHD and Cannabis Use Disorder**

- Lee et al (2011): Large meta-analysis:  
ADHD 2X more likely to develop CUD than non-ADHD.  
Were twice as likely to have ever used marijuana.
- Zaman et al (2015):  
Samples of CUD: ADHD ranges from 33%-38%
- Loflin et al (2014): 53% of non-daily users and 57% of daily users have ADHD

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**ADHD and Cannabis**

- Mochrie et al (2018): 1748 male and female college students. ADHD more likely to engage in marijuana use. Substance use risk high after controlling for depressive symptoms.
- De Alwis et al (2014): ADHD associated with substance abuse even after controlling for depression, conduct disorder, SES, anxiety
- Brandt et al (2019): Cannabis use more prevalent in ADHD group (14%) than non-ADHD group (4%). Hyperactive used earlier than inattentive.

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**ADHD and Appeal of Cannabis**

- Activates the brain's reward system
- Release dopamine at levels higher than typically observed
- Reduces GABA = Decreased inhibition
- Peer groups
- Low self esteem
- Sensation seeking
- Poor impulse control
- Sleep Problems

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**ADHD and Cannabis**

- Artigas et al (2019): Genetic overlap between ADHD and CUD whereas having ADHD predicts CUD
- Hjorthøj et al (2019): ADHD and CUD share genetic markers
- No evidence that cannabis is helpful for ADHD in long-term

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**Cannabis on the ADHD Brain**

- It's what's NOT happening that is the bigger problem (negative symptoms)
- Self-report is bias since focuses more on "positive" symptoms
- Motivation (Short-Term and Long-term)
- Memory (prior to age 25): Alters hippocampal and orbitofrontal cortex functioning
- Shift attentional focus
- Processing

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**Cannabis on the ADHD Brain**

- Learning
- Perform complicated tasks with many executive steps
- Motor Problems (balance, posture, coordination)
- Time Perception and Reaction Time
- Reduced Impulse Control (on an already impulsive brain)
- Emotional Dysregulation
- Exacerbation of any comorbid disorder

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**Cannabis on the ADHD Brain**

- Earlier usage predict worse outcomes
- Younger than 25, cannabinoid receptors concentrated in white matter (communication, learning, memory, emotions)
- Affects formation of neuronal connections. May be irreversible.



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**Cannabis and Psychosis**

- COMT comes in two forms: "Met" and "Val."
- Individuals with one or two copies of the "Val" variant have a higher risk of developing schizophrenic-type disorders if they used cannabis during adolescence.
- Those with only the Met variant were unaffected by cannabis
- ADHD associated with COMT Gene: "Val" variant (Eisenberg et al, 2002)
- ADHD + CUD in Adolescence = Higher risk of Psychosis

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**Medicinal vs. Self-Medicating**

- Just because it achieves effects does not mean it is good (alcohol, gambling, food, sex, etc)
- Legal in 11 states does not mean it is medicinal
- Self-Medicating brings you to an altered state
- Self-Medicating can easily lead to addiction

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**Medicinal vs. Self-Medicating**

- Self-Medicating is without medical supervision
- Self-Medicating can lead to overdose
- Proper Medication monitoring has low rates of addiction
- Medication is meant to bring you to your authentic self

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**Treatment of ADHD and CUD**

- **TREAT ADHD**
- Wilens et al (1998) found higher relapse episodes in ADHD
- ADHD must be treated and managed for successful sobriety



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**Treatment of ADHD and CUD**

- Executive Function Coaching
- Cognitive-Behavioral Therapy (CBT)
- Dialectical Behavior Therapy (DBT)
- Contingency Management
- Psychotherapy (talk therapy)
- Treatment of Co-Morbid Disorders

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**Stimulant Treatment and ADHD**

- Medication (primarily stimulants)
- Use of stimulants sometimes frowned upon in CUD treatment
- Biederman et al (1997) found stimulants decrease prevalence of substance abuse in ADHD
- Stimulants take up to an hour to raise dopamine levels.
- Stimulant abuse amongst ADHD patients low risk
- **ADHD stimulant treatment is not a violation of sobriety**

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**Treatment of CUD + ADHD**

- Chauchard et al (2018):
- Motivations to quit among 23 ADHD/CUD people.
  - 87%: "to save money"
  - Most common strategy to maintain abstinence was "stopped associating with people who smoke marijuana" (43%)
  - 96% reported more than one withdrawal symptom
- Cessation of cannabis better learners in a week of stopping
- Marijuana Anonymous

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**Talking to your ADHD Children About Cannabis**

- Look for windows to start the conversation pro-actively
- Move away from the morality of it and focus on the science
- Try to understand why your child is using
- Validate the benefits but emphasize the costs
- "Weed" from years ago is different than today's drug

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**Talking to your Children About Cannabis**

- Promote healthier coping skills and skills to say "no" to peers
- Explain difference between using cannabis before 25 versus after 25 (perhaps later with ADHD brains)
- Establish clear boundaries and rules
- **KNOWLEDGE IS POWER. THERE IS HOPE!**

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### Positive features of ADHD

- Risk takers
- Multi-taskers
- Creative
- Entrepreneurial



- Think “outside the box”
- Socially charismatic
- Drawn to their passion
- Distractibility is actually associative, divergent, creative thinking of their internal or external world

- Positive models of ADHD individuals

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