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The  
Science of  
Addiction  
& Recovery

FACES & VOICES  
OF RECOVERY

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# The Science of Addiction and Recovery

Courtney Wright, CARES & CPS-Y & George S. Braucht, LPC; September 29, 2016

This *Science of Addiction and Recovery for Adolescents and Families* presentation was prepared by George S. Braucht, LPC: [www.brauchtworks.com](http://www.brauchtworks.com), Flo Hilliard: [fhilliar@wisc.edu](mailto:fhilliar@wisc.edu), and the Faces & Voices of Recovery [www.facesandvoicesofrecovery.org](http://www.facesandvoicesofrecovery.org)

[Brauchtworks.com](http://Brauchtworks.com)



As with other chronic health conditions...

- Over 25 million Americans are in long-term recovery
- Recovery is a real!





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## Our Goals

- 1) Explain the neuroscience of addiction and recovery using the language of young people and examples from their experience
- 2) Discuss why recovery advocacy is important for your families and community
  - > It is science-based
  - > Helps reduce the stigma that is associated with substance abuse and recovery
  - > Recognizes that substance abuse and recovery are issues that impact the entire family





## A moment of silent stillness

"If we had a keen vision of all that is ordinary in human life, it would be like hearing the grass grow or the squirrel's heart beat, and we should die of that roar which is the other side of silence."



George Eliot. (1872). *Middlemarch*.



## Schedule



7:00pm – 9:00pm  
10 minute break  
~ 8:00 pm

Please turn off cell phones, computers, tablets, etc.





## What is recovery?

### Georgia's Definition of Recovery

"Recovery is a deeply personal, unique, and self-determined journey through which an individual strives to reach his/her full potential. Persons in recovery improve their health and wellness by taking responsibility in pursuing a fulfilling and contributing life while embracing the difficulties one has faced.

"Recovery is not a gift from any system. Recovery is nurtured by relationships and environments that provide hope, empowerment, choices and opportunities.

"Recovery belongs to the person. It is a right, and it is the responsibility of us all."




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## Why do we have hope?

- Abuse of alcohol and other drugs is *preventable behavior*
- Alcohol and drug addiction are a health condition from which people recover
- Recovery from addiction is a reality and happens *every day*



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## Why the science of addiction and recovery is important

For the Family:

- helps explain behavior that often seems unexplainable
- reduces stigma, blame and anger for the family and the person with addiction



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## Why the science of addiction and recovery is important (cont.)

### What is **stigma**?

a mark of disgrace associated with a particular circumstance, quality, or person

The Misunderstood Society  
#BreakTheStigma




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## What can neuroscience teach us about addiction and recovery?

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## The brain's complexity

- Responsible for initiating and controlling every:
  - sensations (sight, hearing, touch, smell, taste & internal organs)
  - movement/behaviors
  - emotions (feelings)
  - thoughts (cognition and thinking about our thoughts/feelings)
- Controls everything that makes up our experience!
- Some of the most important changes in the brain occur between the ages of 10-25



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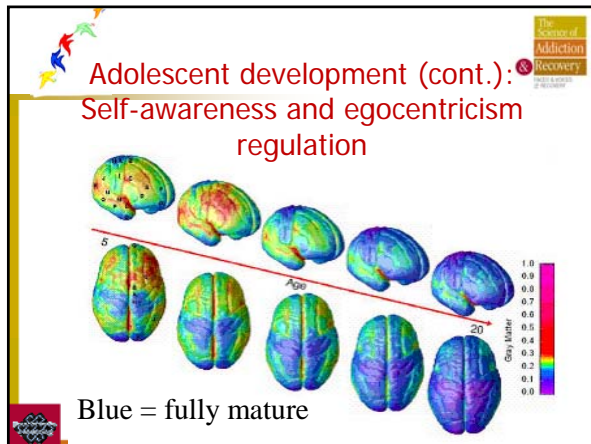
## Adolescent Development

- Brain development and adult abilities continue into the mid to late 20s
- Alcohol and other drug use slows this development sometimes permanently!

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Two things to look for in this video:

1. What triggers the limbic system?
2. Three ways drugs affect the brain

Labels in the collage: Movement, Movement, Dopamine, Addiction, Reward & well-being.

Video: The chemistry of addiction: <https://www.youtube.com/watch?v=ukFjH9odsXw>

Despite many differences, virtually **all substances and behaviors** with the potential for addiction **affect dopamine levels** in the **pleasure/reward pathway** of the brain.

### Why do people use alcohol and other drugs?

*To feel good*  
*To have novel: Feelings Sensations Experiences AND To share them*

*To feel better*  
*To lessen: Anxiety Worries Fears Depression Hopelessness*

Drawings courtesy of Vivian Felsen

Initially, a person takes a drug hoping to change their mood, perception, or emotional state

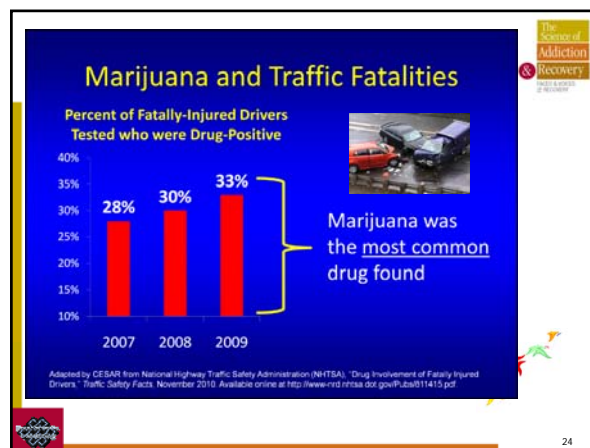
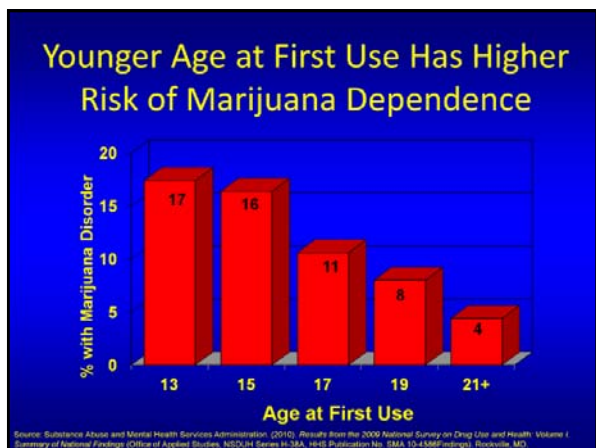
**TRANSLATION . . .**

Hoping to change her/his brain.

**Yeah, but everybody knows that marijuana is harmless, right?**

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- ### Perceptions of Marijuana
- "It is harmless and natural, it is only an herb, and it won't affect me long-term"
  - "It is not addictive"
  - "It doesn't harm me as much as smoking tobacco or drinking alcohol"
  - "It makes me feel calm"
  - "It doesn't affect my thinking or my grades. In fact, I can study better when I'm high"
  - "It's safe because it is used as medicine for cancer and other diseases"
  - "Marijuana is safer than sugar."

- ### Facts about Marijuana
1. In 2012, 4.3 million, or 59%, of the more than 7.3 million people who used any illegal drug were dependent on marijuana.
  2. Marijuana produces addiction in approximately 9%, or 1 in 11, of those who use it at least once.
  3. The addiction rate increases to 1 in 6, or 17%, for users who start in their teens, and 25–50% among daily users.
  4. Among youth admitted into substance abuse treatment, marijuana use was the largest percentage: 74% among 12–14 year olds and 76% percent among those 15–17.

- ### Is Marijuana Addictive?
- ✓ 1 in 11 adults, 9%, become addicted
  - ✓ 1 in 6 children, 17%, who start using under the age of 15 become addicted
  - ✓ Nationally, 4 million people are addicted to drugs and alcohol with 1.2 million addicted to marijuana alone
  - ✓ Short-term effects of heavy marijuana use: memory and learning problems, distorted perception, poor problem solving ability, loss of motor skills, etc.
  - ✓ Long-term effects of heavy marijuana use include permanent physical changes to the brain and its functions.
  - ✓ Anxiety and irritableness are common among users

- ### Environmental factors/external triggers contribute to addiction and recovery
- Availability of alcohol or other drugs (AOD) vs prosocial alternatives
  - Acceptability of AOD use vs non-use
  - Peer pressure to use vs not use
  - Developmental issues: Self-concept
  - Settings (religious, parties, alone)
  - Presence of conditioned cues



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## Understanding people's behavior while addicted

**Key Concept:**

- The parts of the brain that become changed by addiction override factual memory storage by the hippocampus, impair or prevent the development of connections to the prefrontal cortex needed for logical reasoning, and result in reflexive, emotion-based (immature) behavior
- Thus, behaviors (e.g., forgetfulness, relapses, etc.) that "fly" in the face of logic can now be explained







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## Why return to AOD use?

Examples of internal triggers

**HALT: states of deprivation or excitement/celebration**

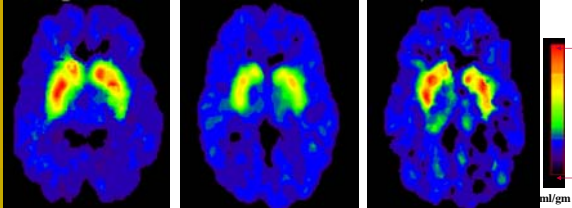
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## Recovery is real!

**Partial Recovery of Dopamine Transporters in Methamphetamine (METH) Abuser After Abstinence**



Non-user      METH Abuser 1 month detox      METH Abuser 14 months detox

Source: Volkow, ND et al., *Journal of Neuroscience* 21, 9414-9418, 2001.






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## Now you know!

**Like other chronic health conditions:**

1. The pathways to recovery are many
2. People attain and stay in recovery every day
3. If relapse occurs, like other chronic conditions, the recovery journey can continue.

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## Now you know!

**Like other chronic health conditions: (cont.)**

- ☺ Over 25 million Americans are in long-term recovery
- ☺ Recovery is a real!





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