How do we Define Addiction? What Starts it? How does it Stop? A Psychological Perspective

Fulbright Seminar, April 25, 2019

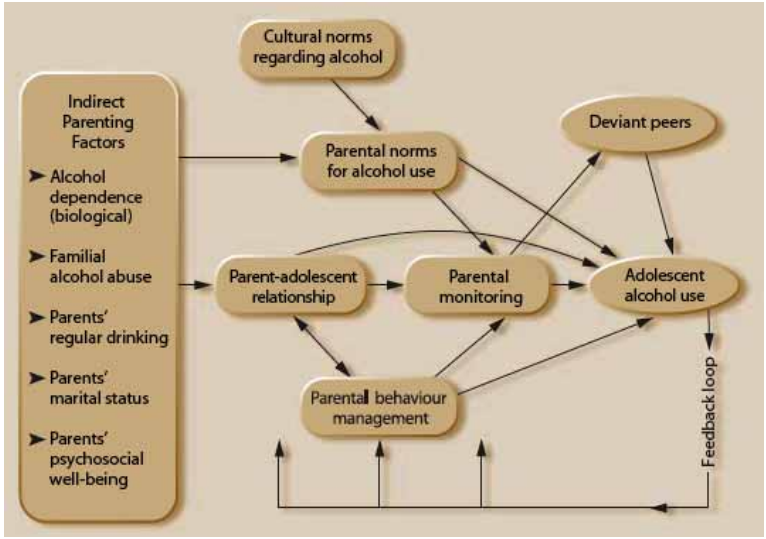
Jennifer P. Read, Ph.D.
Department of Psychology
University at Buffalo, SUNY

Essential Question

- Why doesn't everyone who drinks become an alcoholic? Why just some people? Why do some people stop problem drinking and others never do?
  - Is it a choice?
  - Is it a disease?
  - Biological Destiny?
  - Moral failing?
  - Other people?

Pathways Into & Out of Addiction

- No single causative factor for addiction to alcohol or other drugs
  - No single answer to recovery
- "Box score" vs. "dynamic process" development of addiction is dynamic: influencing, being influenced over time
- Always talking about risk factors, probabilities, rather than causes
  - Some factors higher probabilities than others
  - Always depend on ALL of the other factors.



"How can we comprehend the concept of a person who wants to stop doing something, but they cannot?"

-Nora Volkow, M.D. Director,
National Institute on Drug Addiction

https://www.youtube.com/watch?v=UoIfSJJBh0E

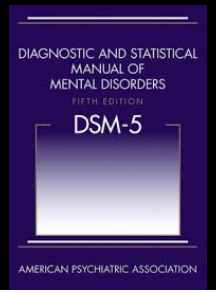
Group Discussion Question

- How do you define addiction? How would you know when someone was addicted? What are the criteria that you would use?

Defining Addiction-Facets to Consider

- Physical dependence?
- Difficulty in giving up? Craving?
- Loss of control?
- Functional impairment?
- Legal/interpersonal/occupational impairment consequences?
- Quantity/Frequency?
- Re-Addiction Liability

DSM 5: Substance Use Disorder

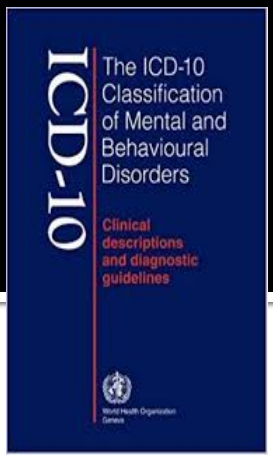


- A. A problematic pattern of substance use leading to clinically significant impairment or distress, as manifested by 2 (or more) of the following, occurring within a 12-month period:

- The substance is often taken in larger amounts or over a longer period than was intended
- There is a persistent desire or unsuccessful efforts to cut down or control substance use
- A great deal of time is spent in activities necessary to obtain, use, or recover from effects of substance
- Craving or a strong desire or urge to use a specific substance.
- Recurrent substance use resulting in a failure to fulfill major role obligations at work, school, or home (e.g., repeated substance related absences or poor work performance; neglect of children or household)
- Continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance (e.g., arguments with spouse, physical fights)
- Recurrent substance use in situations in which it is physically hazardous (e.g., driving an automobile or operating a machine when impaired by substance use)
- The substance use is continued persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance
- *Tolerance,* as defined by either of the following:
  - a. a need for markedly increased amounts to achieve intoxication or desired effect
  - b. markedly diminished effect with continued use of the same amount of the substance

- Withdrawal, as manifested by either of the following:
  - a. the characteristic withdrawal syndrome for the substance (refer to Criteria A and B of the criteria sets for Withdrawal from the specific substances)
  - b. the same (or a closely related) substance is taken to relieve or avoid withdrawal symptoms

Substance Dependence Disorder –ICD10



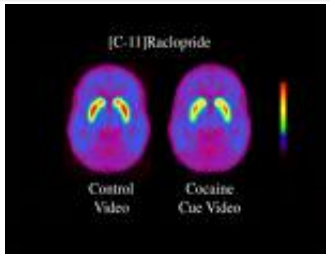
- Three or more of the following must have been experienced or exhibited at some time during the previous year:
  - A strong desire or sense of compulsion to take the substance;
  - Difficulties in controlling substance-taking behaviour in terms of its onset, termination, or levels of use;
  - A physiological withdrawal state when substance use has ceased or been reduced, as evidenced by: the characteristic withdrawal syndrome for the substance; or use of the same (or a closely related) substance with the intention of relieving or avoiding withdrawal symptoms;
  - Evidence of tolerance, such that increased doses of the substance are required in order to achieve effects originally produced by lower doses;
  - Progressive neglect of alternative pleasures or interests because of psychoactive substance use, increased amount of time necessary to obtain or take the substance or to recover from its effects ;
  - Persisting with substance use despite clear evidence of overtly harmful consequences, such as harm to the liver through excessive drinking, depressive mood states consequent to heavy substance use, or substance-related impairment of cognitive functioning. Efforts should be made to determine that the user was actually, or could be expected to be, aware of the nature and extent of the harm.

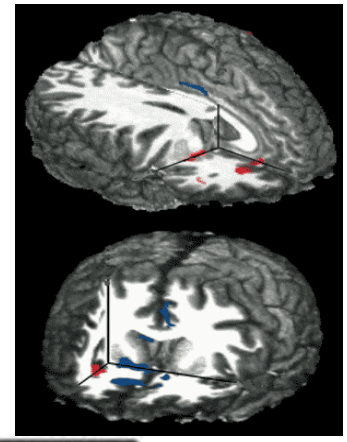
What is Craving?

- Subjective, emotional –motivational states (Tiffany, 1990)
  - Strong, intense desire
  - "Wanted substance so badly, couldn't think of anything else"
- Typically only observed during period of abstinence
- Long thought to have some relationship to use/relapse to use.
  - Evidence for this is very mixed
- Central to concept of addiction

Role of "Craving" in Addiction

- Some investigators suggest the term "craving" to encompass a broad range of phenomena (Tiffany & Drobes, 1991).
  - Craving therefore can contain multiple components:
  - Cognitive/Psychological
  - Physiological (reward centers of the brain become stimulated).
  - Behavioral? – drug seeking behavior as evidence of craving.





Berridge & Robinson (1995) suggest that it is possible to crave a drug without awareness.

What is Addiction?

- A "disease of excessive appetite" – at its most basic level, addiction is a process in which an individual engages in a (risky) behavior to which they become so strongly attached, that they have difficulty regulating/controlling/stopping.
- Perhaps the only criterion necessary is the extent to which something is difficult to give up.
  - "…by long usage, an activity that was originally pleasurable has become a "necessity"
  - "Delight" becomes "need"

- West (2001): Addiction… "violates the individual's freedom of choice…" The individual who is addicted to alcohol cannot choose to use or not. They are compelled to use.

- From Benjamin Rush in the 1700s.

"…It belongs to the history of drunkenness to remark that its paroxysms occur, like other paroxysms of many diseases, at certain periods and after longer or shorter intervals. They often begin with annual drinking and gradually increase in their frequency until they appear in quarterly, monthly, weekly, and even daily intervals."

"The paroxysms are bouts of drunkenness characterized by an inability to refrain from drinking."

"The use of strong drink is at first the effect of free agency. From habit it takes place from necessity."

Rounsaville & Kranzler (1989)

- The alcohol dependence syndrome develops in accordance with behavioral principles via a system of reinforcement that initiates and perpetuates substance taking and dependence. These *positive and negative reinforcement contingencies* involved in heavy use lead to the development of a core set of symptoms designated as the dependence syndrome; it is seen as multidimensional with biologic, social, and behavioral components. The cardinal feature of this syndrome is *impaired control over use*.

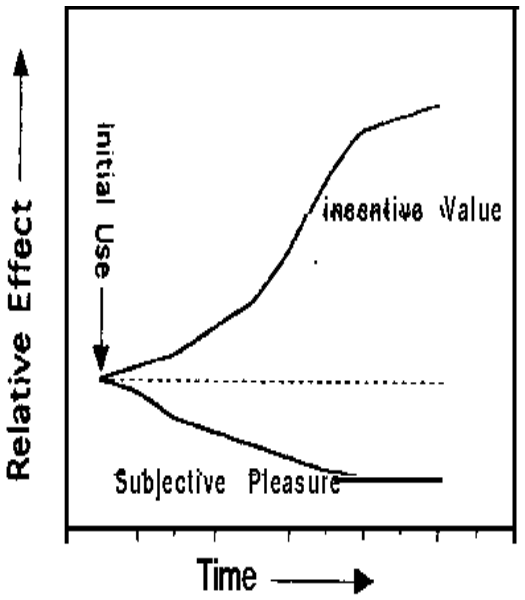
"Systems of Reinforcement", Reward Processes in Addiction

- Reinforcement
  - Behavior is perpetuated, or strengthened (reinforced)
    - Positive reinforcement – a behavior is strengthened by addition of a reinforcing stimulus (praise for positive behavior, payment for desired outcome)
    - Negative reinforcement – a behavior is strengthened by stopping removing, or avoiding a negative or aversive stimulus. (e.g., seatbelts, crying children)
- Reward
  - How valuable, reinforcing something is.
  - How hard someone is willing to work for something.
  - How much someone is willing to pay (suffer, endure)

- In addiction, reinforcement, reward processes are "hijacked"
  - Occurs over the course of repeated, heavy use of the drug.

Addiction and Reinforcement, Reward

- Early (non-problem) use, typically driven by positive reinforcement
  - Using to enhance, achieve pleasurable state
- Later, problem use, typically driven by negative reinforcement
  - Using to reduce negative state (e.g., withdrawal)
  - Paradox, even as drug use is less subjectively pleasurable, demand for drug is stronger
- Shift from positive to negative reinforcement implicated as the shift from non-problematic to problematic use.

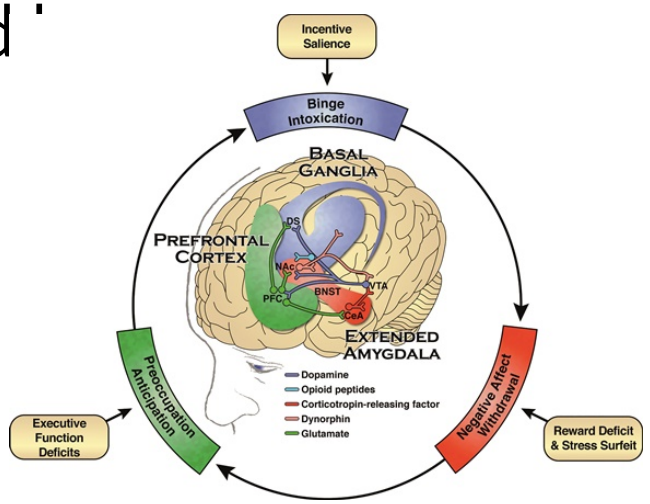


schematic illustration of the hypothetical rel

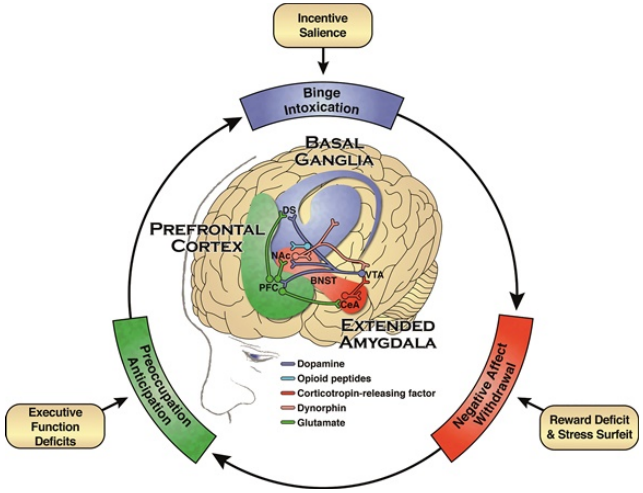
"Disease" Model of Addiction

- More recently, Koob & Volkow have forwarded a "Brain Disease Model"
- Reward and motivation regions of the brain b "hijacked" after chronic use
  - Individual begins to pursue drugs

  as starving person would seek food
  - Conceptualizes addiction as marked
    - Loss of control
    - Compulsive drug taking
    - Inflexible behavior
    - Negative emotional states



- Addiction is a disease of where by Chronic exposure results in
  - Affect
  - Impulse
  - Reward
  - Motivation



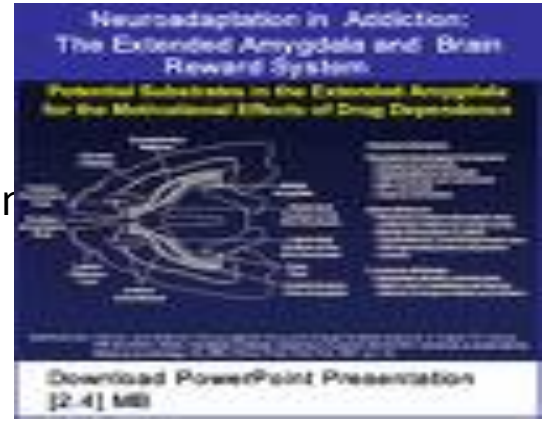
- Evidence of this process can be observed at the structural level, behavioral level

Neuroadaptation, Relapse Liability

- Changes in the brain that occur after repeated drug administration
- Reward pathways become desensitized
  - Less stimulated by same dose of the drug
    - Need more to experience same effects
  - Addicted individual continues to seek the drug
  - Addicted brain is not the same as the non-addicted brain.
    - Affective, self-regulatory, motivational systems compromised.

Addiction, Neuroadaptation, and the Disease Model of Addiction

- "(In long term drug abuse) there is worsening of the underlying neurochemical dysregulations that ultimately form an allostatic state (decreased dopamine and opioid peptide function, increased corticotropin-releasing factor activity). This allostatic state is hypothesized to be reflected in a chronic deviation of reward set point that is fueled not only by dysregulation of reward circuits per se but also by recruitment of brain and hormonal stress responses. Vulnerability to addiction may involve genetic comorbidity and developmental factors at the molecular, cellular, or neurocircuitry levels that sensitize the brain antireward systems. "



- George Koob
  2008
  Annual Review of Psychology

- "Once a pickle, always a pickle."
  - Alcoholics Anonymous saying

Clinical Presentation & Complicating Factors: Comorbidities

Scope of the Problem (cont')

- Approximately 1/5 in the U.S. people affected by addiction
- Estimated annual cost of alcohol misuse in U.S. is around $36 billion.
  - Lost work productivity
  - Impaired family functioning
  - Physical health effects
  - Alcohol & Other Drug (AOD)-related illness
  - Violence
  - Traffic fatalities

SUD/Addiction and Relationships

- Addiction does not just happen to the individual.
  - - Affects & is affected by a system of relationships (family, friends, co-workers, etc) in a reciprocal way.

Addiction → Relationships → Addiction

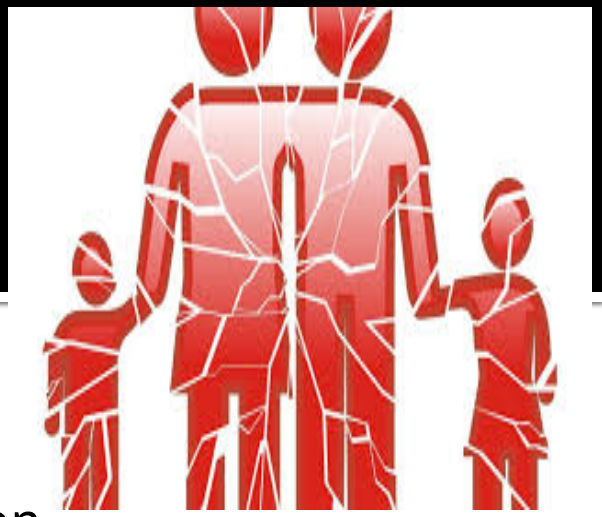
- Also, evidence of *familial adaptation* to addiction
  - History of derogatory terms:
    - "Enabling", "Co-Dependence"
    - Little or no evidence to support these constructs

Better way of thinking about this: Humans innately adaptive.
Will try to respond as best they can to their environment.

This is natural, in many cases, helpful to maintain function.

-BUT can take a toll.

SUD/Addiction and Family Relationships



- Addiction can have profound, even devastating impacts on interpersonal relationships.
- In general, marital/family distress not uncommon.
- Some common evidence of distress*:
  - -Trust
    -Anger
    - Conflict
    - Violence
- Also, evidence of psychological distress among spouses of alcoholics (probably bi-directional)
  - Depression
  - Anxiety
  - Substance use

What are these co-morbidities and why do they happen?

- Co-occurrence sometimes also called "dual diagnosis" or "comorbidity"
- Difficult to disentangle what is a consequence (i.e., follows substance problems) versus what is co-occurring
- LOTS of data show co-occurrence to be rule rather than exception.
  - Presentation by a client with substance use disorder along actually relatively uncommon
- Data generally suggest WORSE outcomes for SUD individuals with co-occurring psychological distress than SUD alone.
  - Implicated in higher risk of onset of substance use disorders
  - More complicated course
  - Lower likelihood of recovery
  - Relapse risk

Comorbidity

- Studies of addiction, causes & treatments complicated by comorbidity.
- For opioid addiction:
  - alcohol (30%)
  - cocaine (~30%)
  - benzodiazepines (20%)
  - cannabis (25%)
  - nicotine (80%)*.
- Beyond comorbidity with other substance use disorders, psychiatric comorbidity also common:
  - Mood disorders (40-50%)
  - Anxiety disorders (25-35%)

Comorbidty- Case of Smoking

- HIGH rates of smoking in those with mental illness, substance use disorders especially
- Reasons for this may include
  - biological factors (e.g., negative affect, dopamine)
  - Enhancement of drug effects, nicotine effects w/co-use
  - Psychosocial factors (low SES, homelessness, poor medical care, access to smoking information/cessation programs).
  - Shared cues
  - Peer groups
  - Contrary to popular belief, best to quit both at same time.

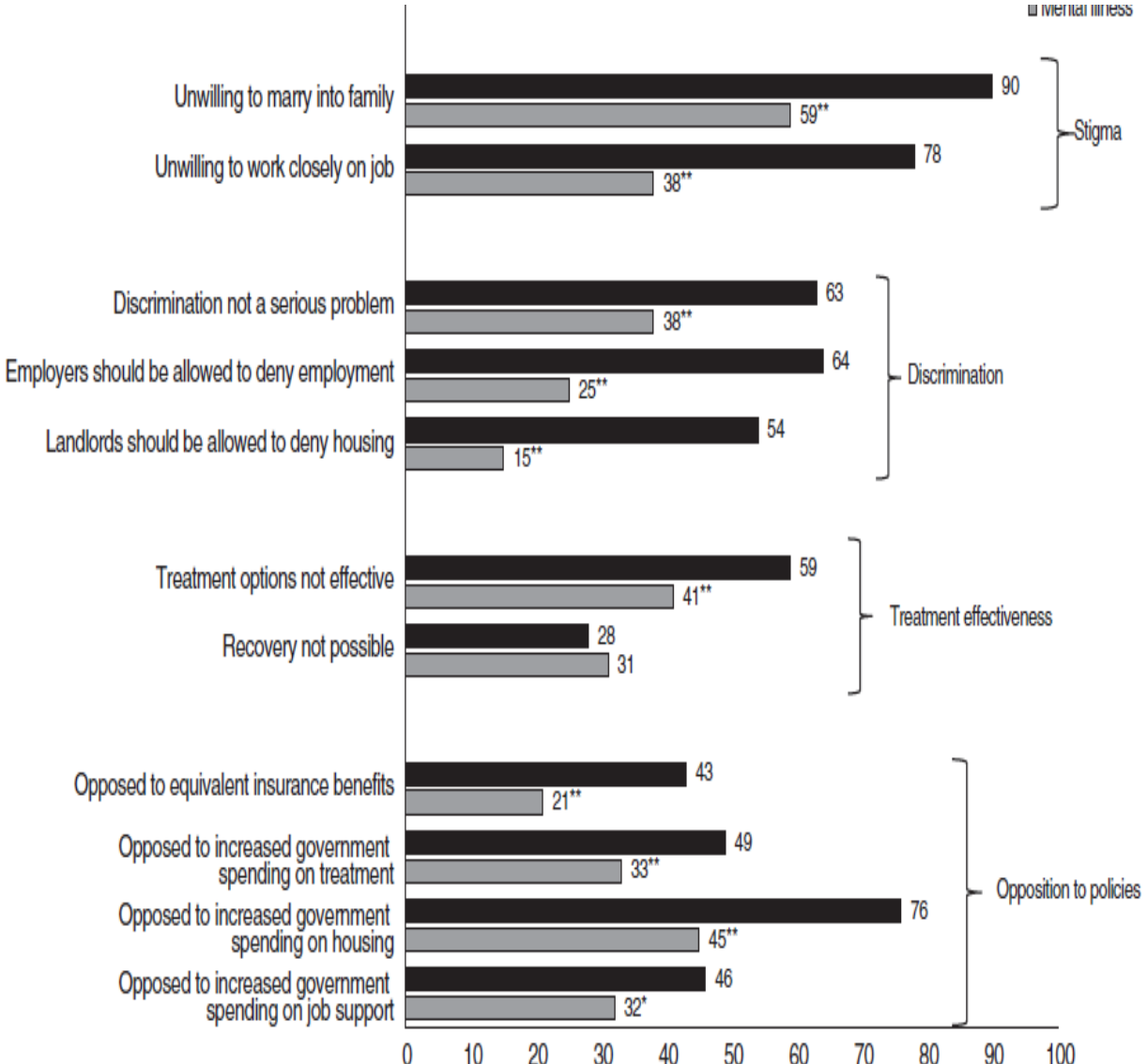
Addiction & Suicide

- Related to, but distinctly different from unintentional overdose
- Association between substance use disorder is complex, obviously, relies on observational correlational studies. Hard to tease out cause-effect.
- 20-60% of all individuals who commit suicide have substance use disorder diagnosis
  - Rates of AOD use prior to suicide are high
  - Suicide rates among those with AOD use disorder range from 8-20%
- Substance use (not just diagnosis) diagnosis predicts both planned and unplanned suicide attempts
    - Also predicts suicidal ideation
- Co-Occurrence: Suicide risk may be even greater among individuals with co-occurring addition and other mental health disorder/distress

Stigma

- Stigma: "a mark of disgrace associated with a particular circumstance, quality, or person."
- Persistent negative attitudes among Americans toward persons with mental illness
  - * addiction in particular.
- Views of the addicted individual as dangerous, irresponsible, degenerate, of defective character
  - Sometimes varies with different drugs (some more "acceptable" than others
    - Less socially acceptable drugs associated with higher levels of stigma Individuals struggling with addiction sometimes (e.g., "alcoholic" or "addict")
  - - Can be associated with negative stereotypes
  - - Also can be confining. Thought to define the person

Public attitudes about persons with drug addiction (N= 347) and mental illness (N=362).



Stigma

Can affect:

- How individuals with addiction are treated by others
- Implications for treatment-seeking
- Sharing/communicating with others
- Employment or social consequences
  - Discrimination (e.g., job, housing, financial)
  - Social isolation

Also can affect how individuals with addiction may view or treat themselves.

- Also may pose a barrier to the individual seeing her/himself as having an addiction.

Examples of Self, Other Stigmas

TABLE 2. A putative matrix describing the stigma of addiction and corresponding attitudes

Social cognitive structures	Public	Self	Label avoidence
Stereotypes and Prejudice	"People with addictions are: dangerous, immoral, to blame for their disorder, criminal."	"I am dangerous, immoral, to blame. Leading to lowered self-esteem and self-efficacy."	"I perceive the public disrespects and discriminates against people with substance use disorders."
Discrimination	"Therefore, employers will not hire them, landlords will not rent to them, primary care providers offer a worse standard of care."	"Why try: someone like me is not worthy or unable to work, live independently, have good health."	"I do not want this. I will avoid the label by not seeking out treatment."
Affirming attitudes			
Recovery		Self-determination	

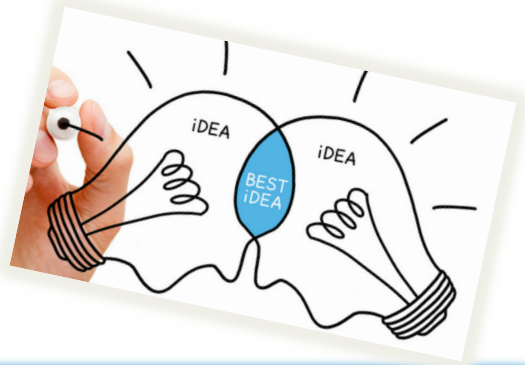
From Corrigan et al., 2017

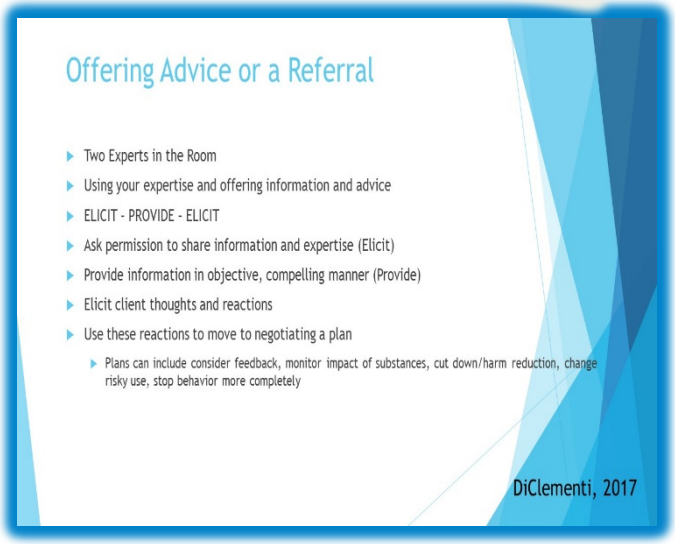
Relapse

- "Relapse" can be defined in many different ways.
  - Any use at all?
  - Problem use?
  - Meet diagnostic criteria?
  - Return back to previous levels of involvement?
  - May best be considered in the broader context of client's case and current needs
- However defined, relapse is COMMON in SUDs
  - Rates between ½ and 2/3
  - Doesn't necessarily mean that the person will never get sober
  - Relapse & Co-Occurrence
  - Some evidence that co-occurring conditions may be risk factor for relapse
  - Thus, it is important to monitor these conditions during recovery stage.

Part II. Interim Conclusions & Clinical Implications

- Co-occurrence is pervasive
  - Most common are other SUDs, depression, anxiety, trauma/posttraumatic stress
  - Suicidal ideation, attempts not uncommon – Don't be afraid to ASK!
- Relapse is common
- Addicted individual may face stigma, shame even within the mental health community





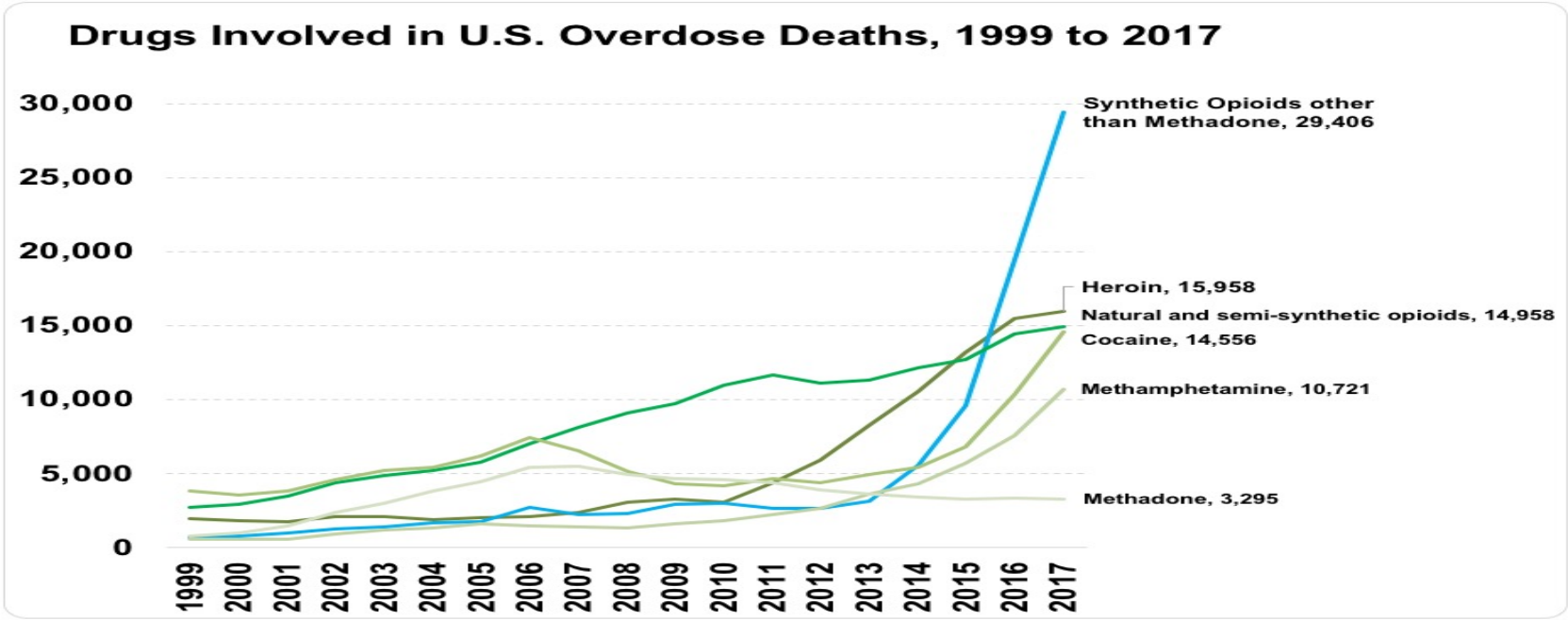
Assess, Educate, Plan

-Assess for co-occurring conditions, suicidal thoughts, plans

- -Educate the client
  - Normalize, discuss what to expect, treatment considerations

How Does the Opioid Crisis Fit In?

Opioids


Drugs Involved in U.S. Overdose Deaths, 1999 to 2017
30,000
25,000
20,000
15,000
10,000
5,000
0
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Synthetic Opioids other than Methadone, 29,406
Heroin, 15,958
Natural and semi-synthetic opioids, 14,958
Cocaine, 14,556
Methamphetamine, 10,721
Methadone, 3,295


Produced By Tom Anderson
THE HEROIN EPIDEMIC
60 MINUTES


Washington
10:17 AM ET
OVERDOSE EPIDEMIC
SURGEON GENERAL: OPIOID OVERDOSES AN EPIDEMIC
CNN
NEWSROOM


THE LATEST NEWS ON
THE OPIOID EPIDEMIC IN AMERICA
ELEVATEREHAB.ORG


TONIGHT
OPIOID NATION:
AN AMERICAN EPIDEMIC
Primetime Special 7pm
Addiction Phone Bank 4pm - 8pm
OPIOID NATION
713-778-8920
CALL TO SPEAK WITH LOCAL ADDICTION EXPERTS NOW

Opioid Addiction in the U.S.

- Currently in the middle of an "opioid epidemic".
- Over-prescription of pain-drugs implicated
- Beginning 30 years ago, US physicians encouraged to prescribe opioid agonists for acute and chronic pain
  - Done on basis of weak evidence (Porteny & Foley, 1986) that suggested that risk for opioid addiction was negligible when opioids were prescribed for pain (Berrettini, 2017)
- Physicians' prescriptions became the major source of opioids over the past 2 decades,
  - Prescription opioid sales rose 300%, w/ more than 50% designated for chronic noncancer pain.
  - Drug overdose deaths nearly tripled during 1999–2014.
  - Of 47,055 drug overdose deaths in 204, 61% involved an opioid
  - 900% increase in persons seeking treatment for opioid addiction (SAMSHA, 2010)

Reinforcement Pathways and Addiction

- Negative reinforcement pathways seen as being inherent to addictive processes.
  - Unlike the slow progression of many other drugs, prescription opioids (for pain) **start** as a negative reinforcement process.
  - Cross-over to problem use among those prescribed opioids is high (around 23%)

What leads to Addiction? Why do some people get addicted and others don't?

Factors the Contribute to Addiction

- Individual level (factors that an individual brings to risk)
  - Genetic or family vulnerability
- Environmental level (things that happen to, or occur outside of the individual)

A. Genetics

- Nature-Nurture Dilemma
  - "Disease Model"
- Research shows a fairly strong heritable component to alcoholism
  - Genotype
  - Phenotype

Genetic Factors

- Studied via
  - Animal Models
  - Genome-wide association studies
  - Familial Studies
    - Twin studies
    - Adoption studies
  - Biological Marker studies

Genetics/Family History

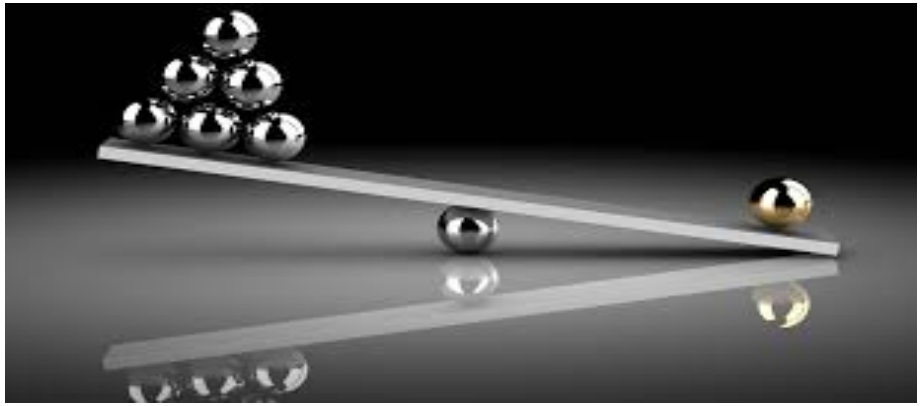
- Research shows fairly strong (50%) heritable component to opioid, other substance use disorders (Tsuang et al., Kendler et al.)
- BUT, there is NO evidence of an "addiction gene"
  - Genotype (genetic information) vs Phenotype (actual observed characteristics)
    - Instead, evidence of certain tendencies, dispositions which may render someone more vulnerable to addiction.

Starting Point: How is Addiction "Inherited"?

- GENETIC factors operate in:
  - Level of response to alcohol
  - Includes sensitivity to alcohol's effects, subjective intoxication
  - Reinforcement
    - Drugs' rewarding effects
    - Drugs' punishing effects
      - Hangover
      - Negative reactions to substance (e.g., "flushing", nausea, etc)
      - Experience of consequences
  - Other risk characteristics (phenotypes)
    - Negative Affect (depression, anxiety, etc.)
    - Impulsivity, sensation seeking
    - Probably thousands of these

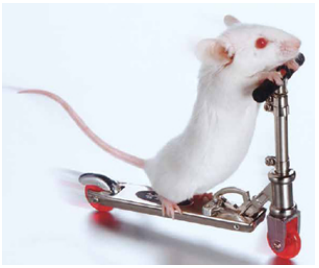
Genetic Contributions

- The playing field is not level from the start point.
  - People come into the world with different vulnerabilities regarding how they will respond to drugs, factors that may lead to drug experimentation, continued use, addition.



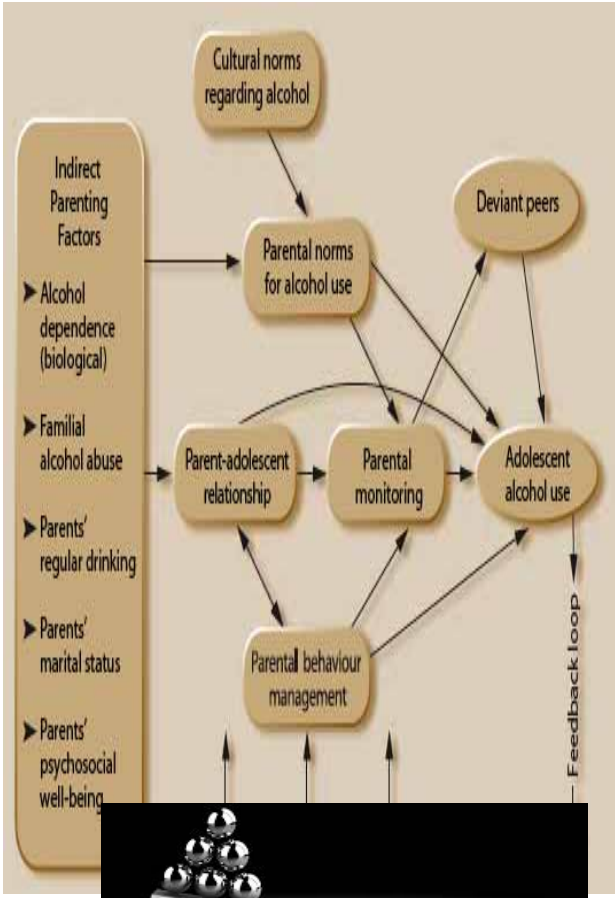
The other half of the story

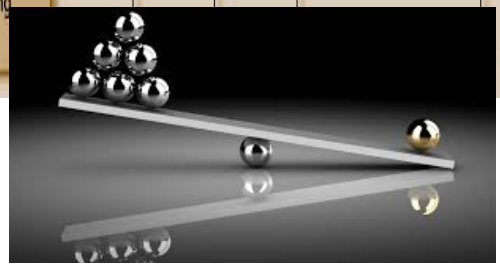
- So, what else is there?
  - LOTS of things. Such as…
  - Drug availability (e.g., laws, access, cultural norms)
  - Neighborhood environment
  - Family Environment
    - Parental behaviors, drug behaviors, attitudes
  - Youth/Adolescent Environment
    - Peer drinking, peer delinquency, attitudes, social support
  - Early life stress, trauma
  - Skills & abilities
    - Coping, IQ, social skills, etc.



So, Why do some people become addicted to Alcohol?

- Path to addition is part of a long course.
- Risk begins at birth (or before) with genetic vulnerabilities
- Over the life course, highly complex interaction of these vulnerabilities, life experiences, chance/luck.
- Also, brain changes associated with chronic use
  - Shape motivational systems.
- Depending on an individuals' course, addiction risk will vary DRAMATICALLY

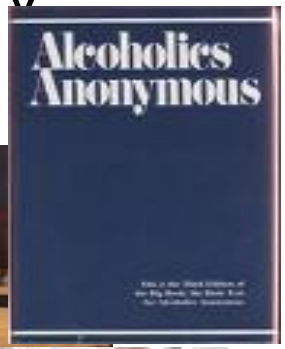




How do we stop Addiction?

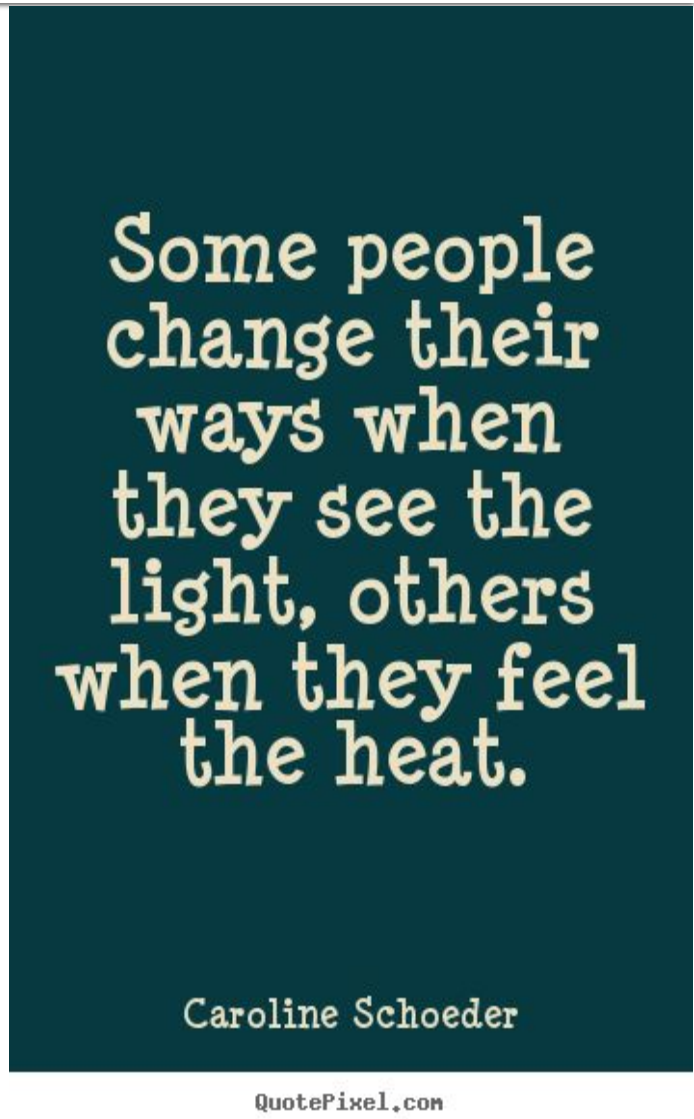
And why do people stop?

- Just like pathway to addiction, pathway to recovery appears to be part of a complex interaction of circumstances
  - No single right answer (equifinality)
- Many treatments are available
  - NO single, best treatment identified
- Perhaps different interventions work for different people?
  - Also the addicted individual has to be comfortable with the TX
- Shared, "common factors" to all treatments may explain efficacy



What Factors are Linked to Recovery from Addiction?

- Negative consequences
  - Subjective distress
  - Cognitive Reappraisal
- Socio-demographic Factors:
  - (age, gender, problem severity)
- NOT a lot of evidence for being "scared straight"
- Social/Environmental Factors
  - Spousal support
  - Family support
  - Sober social network



Change Reinforcement/Reward

- This can be done in a number of ways.
  - Medications typically work by making drug effects less rewarding, or even punishing*.
    - Agonists (e.g., Naloxone, Buprenorphine, methadone)
    - Disulfiram (enzyme inhibitor)

    *Most commonly used (and tested) in combination with psychosocial treatments.
- Treatments that seek to set contingencies so that non-drug use is more reinforcing than drug use.
  - Community reinforcement
  - Family/Couples Therapy
  - Self-help, other group-based treatments

Other Treatments

- Target other etiological/disease factors
  - Skills training for:
  - negative emotion
  - emotion regulation
  - social skills
  - refusal skills

Treatments with Demonstrated Efficacy

- Motivational Enhancement
- Community Reinforcement
- Skills Training
- Behavioral Marital/Family Therapy
- Pharmacotherapy
- AA/NA/12-Step

Thank you!