

The most evil disease imaginable ...

- Wouldn't look like a "disease" at all (nearly invisible epidemiologically)
- Genetic, but with variable penetrance (genotype ≠ phenotype)
- Repulsive symptoms easily confused with "willful badness"
- Self-deception as a clinical feature
- Poor prognosis if untreated, but some will get better (inexplicably)
- Chronic and relapsing (not acute, nor cured)
- Culturally & politically divisive (would tap into society's deepest prejudices, stigma, superstitions and attack its core values)
- Maximally economically destructive (solutions based on greed & exploitation)
- Would cover its tracks (by blaming other diseases)
- Would only submit to "weird" solutions: peer support, patient accountability, personal evaluation, and spiritual growth (not just a medication or surgery)

Objectives

- 1) Describe effect of severe stress on the brain's pleasure system.
- 2) Promote health care advocacy for patients with addiction within local and national health care systems.
- 3) Identify evidence based guidelines for treating addiction in primary care including pharmacological and non-pharmacological options.

Leading Causes of Death

- | | |
|------------------------------------|-----------|
| 1. Heart Disease | ADDICTION |
| 2. Cancer | ADDICTION |
| 3. Chronic Lower Pulmonary Disease | ADDICTION |
| 4. Hypertension/Stroke | ADDICTION |
| 5. Accidents | ADDICTION |
| 10. Suicide | ADDICTION |
| 12. Liver Disease/Cirrhosis | ADDICTION |

Murphy SL, Xu JQ, Kochanek KD. Deaths: Preliminary Data for 2010. National Vital Statistics Reports; vol 60 no 4. Hyattsville, MD: National Center for Health Statistics; 2012

Is Addiction a
Disease or am I
just a **Dirt bag**?

“Choice” vs. “Disease”

- | | |
|-----------------------------------|--------------------------------------|
| ● Free Will exists | ● No Free Will |
| ● Responsibility | ● No Responsibility |
| ● Can stop | ● Can't stop |
| ● Punishment and Coercion DO work | ● Punishment and Coercion DON'T work |
| ● BEHAVIORS | ● SYMPTOMS |

Frustrating. Revolting. Criminal!



- Lying
- Cheating
- Stealing
- Irresponsible
- Denial
- Selfishness
- Lack of caring

Proposed causes:

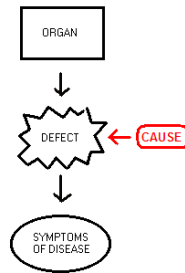
- | | |
|----------------------|------------------|
| • Sociopathy | • Lying |
| • Criminality | • Cheating |
| • Self-centeredness | • Stealing |
| • Character defects | • Irresponsible |
| • Addict personality | • Denial |
| • Demonic possession | • Selfishness |
| • Gang culture | • Lack of caring |
| • Bad parenting | |

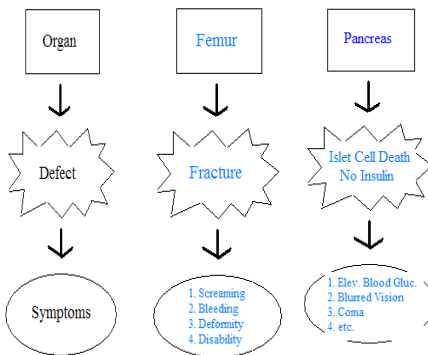
So, what do you have to do to get into the Disease club?

What is "disease"?

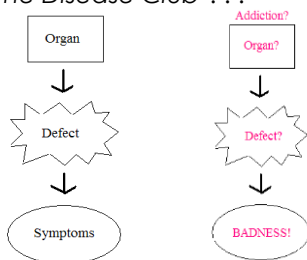
The Disease Model

(a CAUSAL model)





If ever we could fit addiction into this model, then it would win admission into "The Disease Club". . .

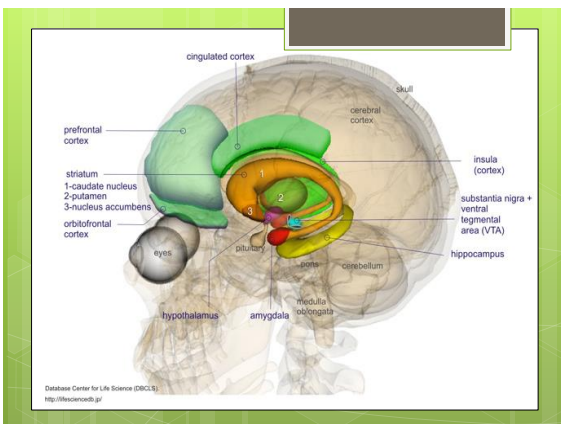




Addiction is a **BRAIN** disease

- The brain's a **HARD** organ - very complex and difficult to study
- There are no good tests for brain diseases (yet)
- So people with brain diseases start out at a disadvantage
- The symptoms of brain diseases are more likely to be labeled as "badness"











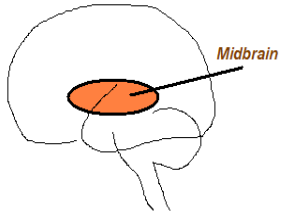






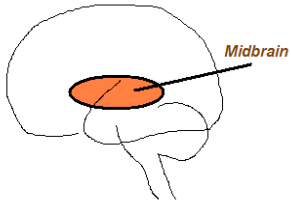
The Midbrain is the **SURVIVAL** brain

- Not conscious
- Acts immediately, no future planning or assessment of long-term consequences
- A life-or-death processing station for arriving sensory information



The Midbrain (aka Limbic Brain) is your **SURVIVAL** brain. It handles:

- **EAT!**
- **KILL!**
- **SEX !**
















Drugs work in the **Midbrain**

- NOT in the Cortex

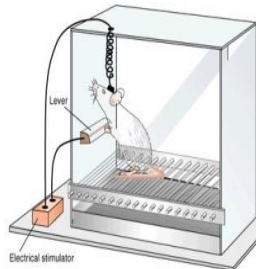
(and how do we know this? ...)



Midbrain
- survival
- unconscious
- no free will

Olds and Milner: Rats self-administer electric stimulation to the septal areas of the brain

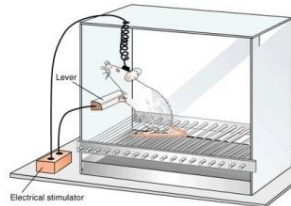
1. **EAT !!**
2. **KILL !! (defend)**
3. **SEX !!**



Olds and Milner: Rats self-administer electric stimulation to the septal areas of the brain

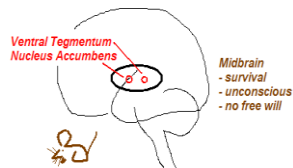
**NEW #1:
DRUG!!**

2. EAT !!
3. KILL !! (defend)
4. SEX !!



Mice preferentially self-administer drugs of abuse like cocaine ONLY to the Reward Centers of the Midbrain.

- To the exclusion of all other survival behaviors
- To the point of death!





Mice get addicted to drugs, but ...

- Mice don't weigh moral consequences
- Mice don't consult their "Mouse God"
- Mice aren't sociopaths
- Mice don't have bad parents
- There are no "Mouse Gangs"



In addition, the drug hijacks the survival hierarchy and is so close to actual survival that it is indistinguishable from actual survival.

New #1: **DRUG!**

2. EAT!
3. KILL!
4. SEX !



In addiction: a line is crossed

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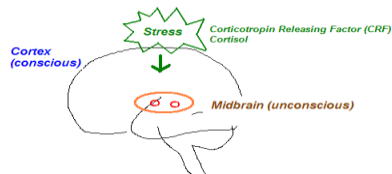
NON-ADDICT

(never used drugs)
(experimented in past)
(uses drugs)
(abuses drugs)

ADDICT

DRUG = DRUG DRUG = SURVIVAL

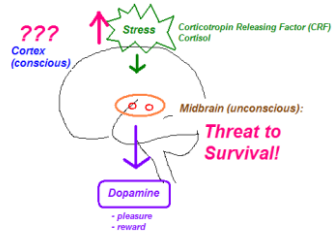
STRESS : a major player in addiction
& relapse



We all face stress, yes . . .
But we don't all:

- Face the same **severity** of stress
- Face the same **pattern** of stress
- Have the functioning **coping mechanisms**
- Come to the table with the **same brain**

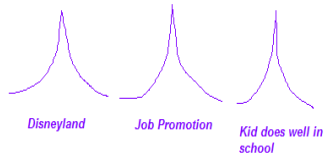
The Dopamine System changes in conditions of severe, chronic stress



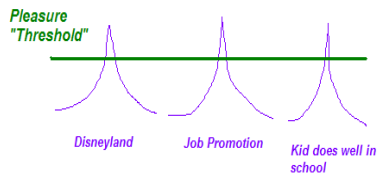




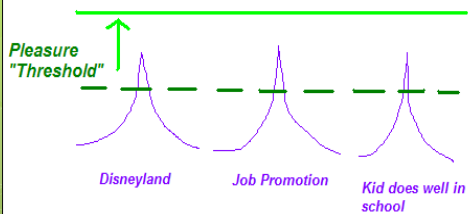
Stress changes the brain's ability to process **Dopamine** (pleasure)

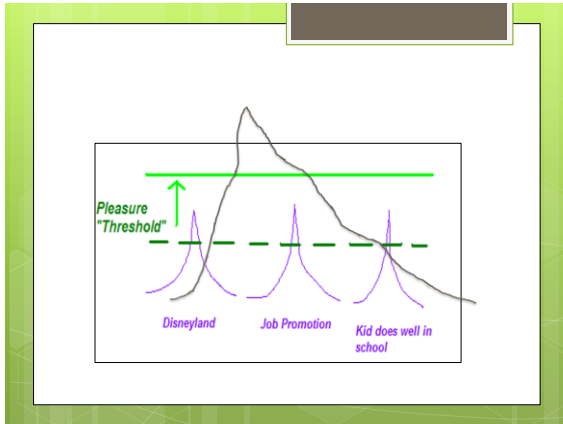


The Brain has a Hedonic "Set Point"



High stress hormone levels reset the brain's pleasure "set point"





In addiction, the drug hijacks the survival hierarchy and is so close to actual survival that it is indistinguishable from actual survival

**New #1:
DRUG!**

2. EAT!
3. KILL!
4. SEX !

Now that the midbrain has found what secures **survival** ...

... how does it **motivate** the individual to repeat that behavior?

Craving / Drug Seeking

- Not quite as conscious as deliberative acts
- More automatic - like driving a car home from work without really thinking about it
- "I was vaguely aware that what I was doing was not too smart"
- "There I was again with a drink in my hand thinking that this time things would be different"
- **HYPOFRONTALITY**

Why the "Choice Argument" fails ...

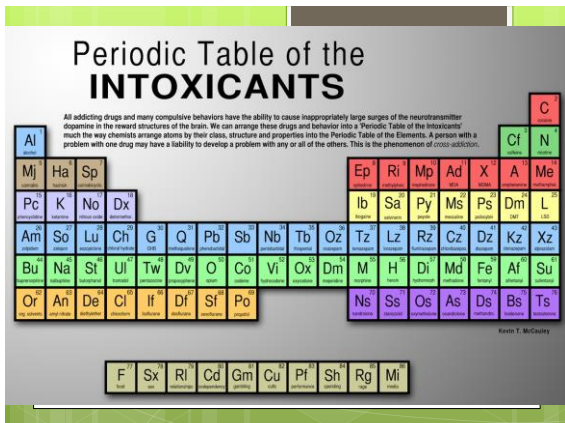
- It fails to take into account **CRAVING**
- The "Choice Argument" measures addiction only by the addict's external **behavior**
- It ignores the inner **suffering** of the patient
- You don't actually have to have drug use for the defective physiology of addiction to be active
- The addict cannot choose to not **crave**

Two important sentences that summarize the neuroscientific research on addiction:

Addiction is a disorder of the brain's ability to properly perceive **pleasure** (a dysfunction of the hedonic system)

That has major consequences for the brain's ability to make **choices** (a disruption of its decision-making capacity)

The answer to the question, "Is addiction really a disease?" is, addiction is a *disease of choice*.



So ... how DO we break the hold of craving and turn the Frontal Cortex back "on" ?

Relapse

- Three things that are known to evoke relapse in humans:

1. Brief exposure to drug itself (DA release)
2. Exposure to drug cues (GLU release)
3. Stress (CRF release)

(example of a dangerous relapse-triggering behavior:

talking about drugs (cues) with other newly-sober addicts in treatment (stressed) while smoking (DA surge)

The Two Tasks of Addiction Treatment:

1. To give the addict workable, credible tools to proactively **manage stress and decrease craving**
2. For each individual addict, **find the thing which is more emotionally meaningful than the drug** - and displace the drug with it

The 12 Steps of Recovery

1. Admitted we were powerless over our addiction and our lives had become unmanageable.
2. Came to believe there is a higher power that can restore us to sanity.
3. Made a decision to turn our will and our lives over to the care of God as we understood him.

The 12 Steps of Recovery

4. Made a searching and fearless moral inventory of ourselves.

5. Admitted to God, ourselves and another human being the exact nature of our wrongs.

6. We were entirely ready to have God remove all these defects of character.

The 12 Steps of Recovery

7. Humbly asked God to remove our shortcomings.

8. Made a list of all persons we had harmed, and became willing to make amends to them all.

9. Made direct amends to such people wherever possible, except when to do so would injure them or others.

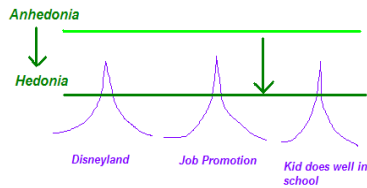
The 12 Steps of Recovery

10. Continued to take personal inventory and when were wrong promptly admitted it.

11. Sought through prayer and meditation to improve our conscious contact with God as we understood God, praying only for knowledge of God's will for us and the power to carry that out.

12. Having had a spiritual awakening as the result of these steps, we tried to carry this message to other addicts, and to practice these principles in all our affairs.

Then . . .



Definition of Addiction

- Addiction is a dysregulation of the midbrain- dopamine (pleasure) system and the cortex- glutamate (memory) due to unmanaged stress resulting in the symptoms of:
 - Loss of control
 - Craving
 - Persistent drug use despite negative consequences.

Addiction fits the "Disease Model!"



If Addiction is a “Disease,” then ...

- Addicts are patients!
- Addicts have the same rights as all patients
- All the ethical principles that apply to other patients now also apply to addicts

● Addiction has parity

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