

Is Addiction Really a “Disease?”

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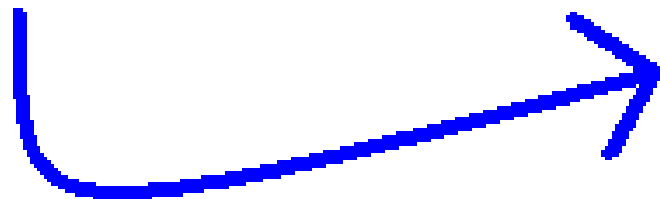
addictiondoctor.com

Behavior:

- lying
- cheating
- stealing
- irresponsibility
- denial
- selfishness
- lack of caring

Cause:

- sociopathy?
- criminality?
- self-centeredness?
- character defects?
- addict personality?
- demonic possession?
- gang culture?
- bad parenting?



Behavior:

- lying
- cheating
- stealing
- irresponsibility
- denial
- selfishness
- lack of caring

*Is Addiction Really a
“Disease?”*

so this is a question about CAUSALITY

“Horvath’s Dilemma”

- **Best argument I’ve ever heard against calling addiction a “disease”**
- **Addiction is a choice**
- **True diseases do not involve choice**
- **The addict can choose not use drugs**
- **The diabetic can’t do that**
- **Therefore, addiction isn’t a disease!**

Is Addiction Really a “Disease?”

so this is a question about CAUSALITY

&

this is a question about the nature of FREE WILL

***What does it take to get into
“The Disease Club?”***

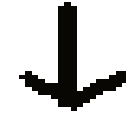
***The
“Disease
Model”***



ORGAN

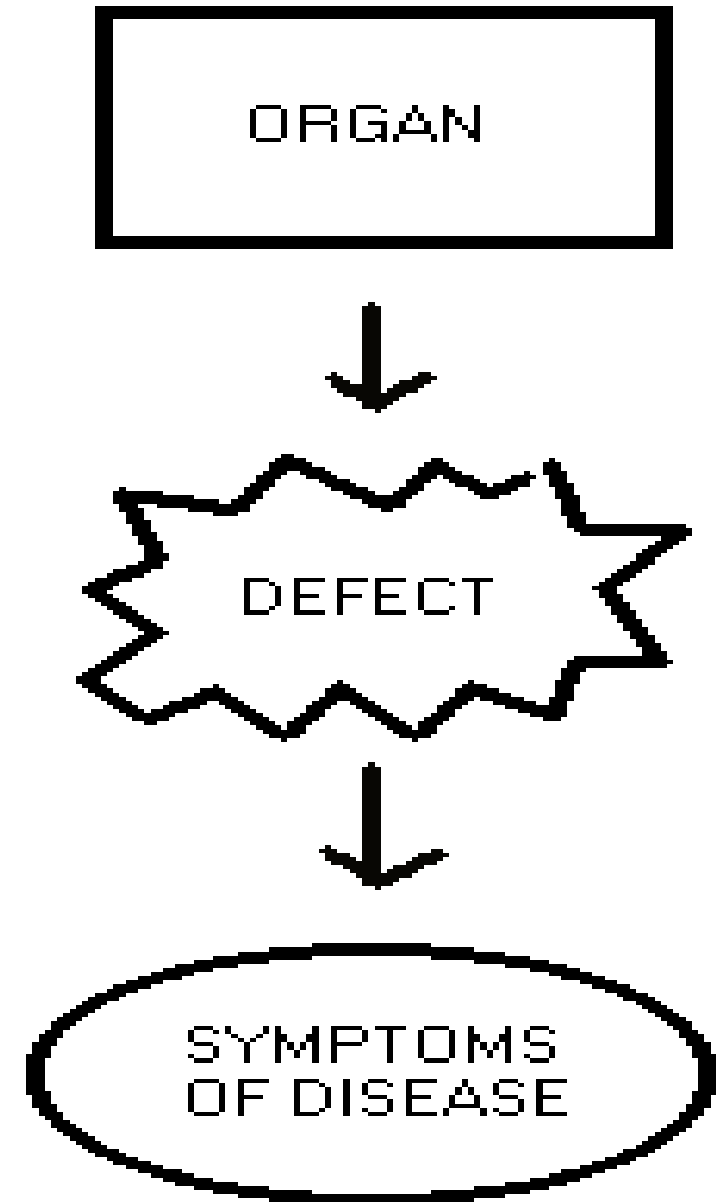
***The
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Model”***

ORGAN

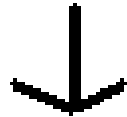


DEFECT

***The
“Disease
Model”***



Organ

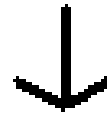


Defect



Symptoms

Pancreas



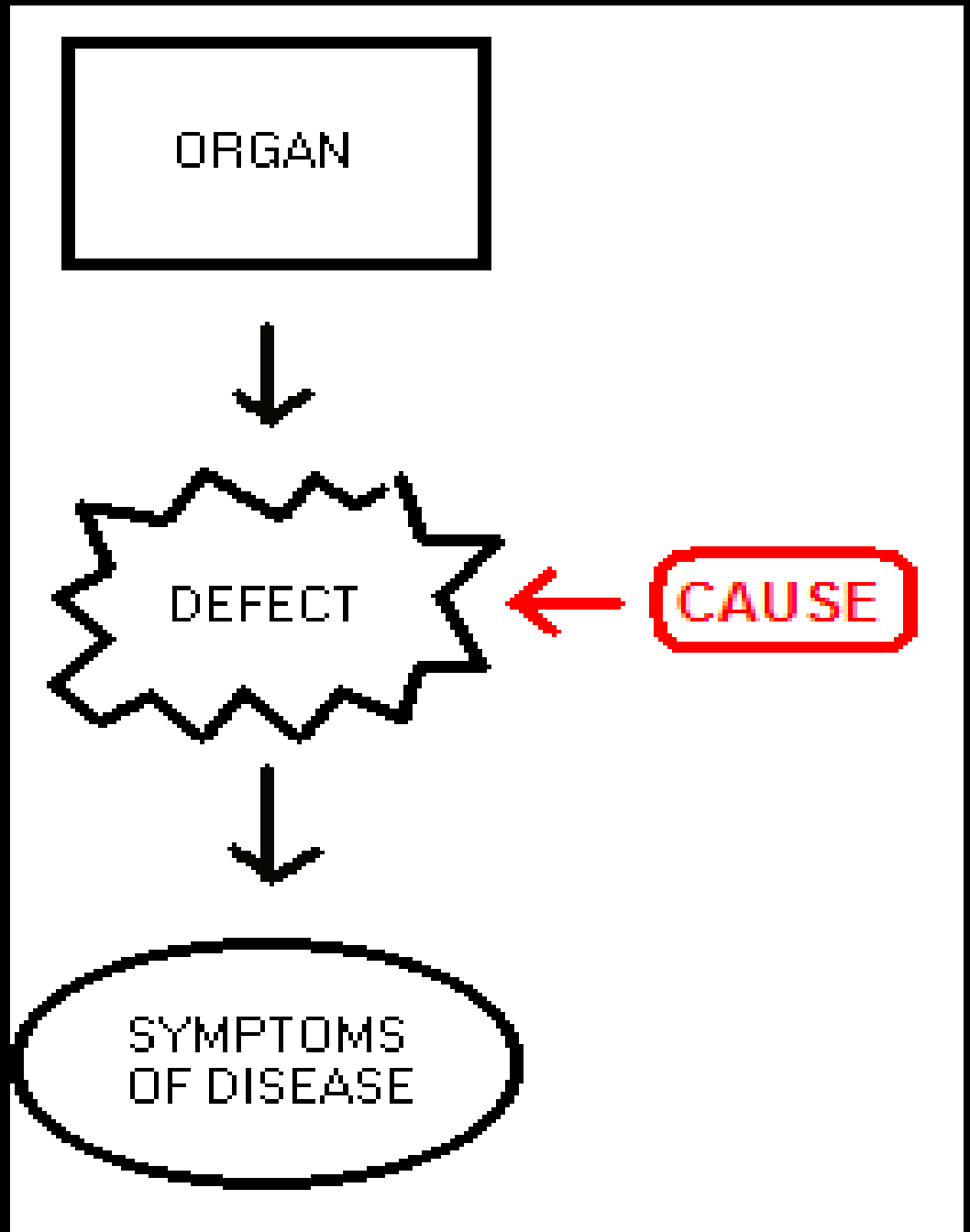
Islet Cell Death
No Insulin



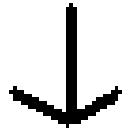
1. Elev. Blood Gluc.
2. Blurred Vision
3. Coma
4. etc.

The Disease Model

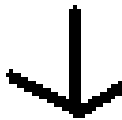
(a CAUSAL model)



Organ

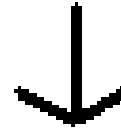


Defect

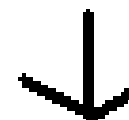


Symptoms

Femur

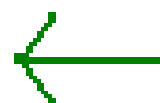
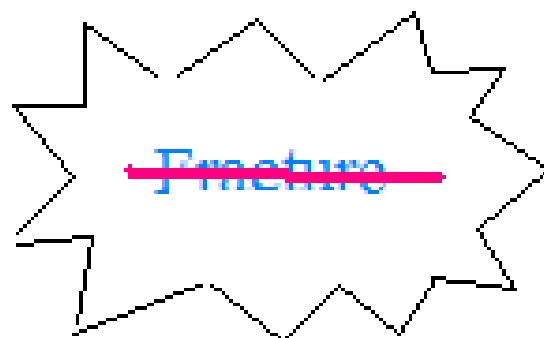


Fracture

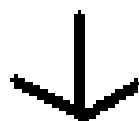


1. Screaming
2. Bleeding
3. Deformity
4. Disability

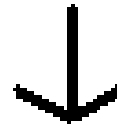
Femur



CAUSE



Pancreas



Islet Cell Death

~~No Insulin~~

Insulin Replacement

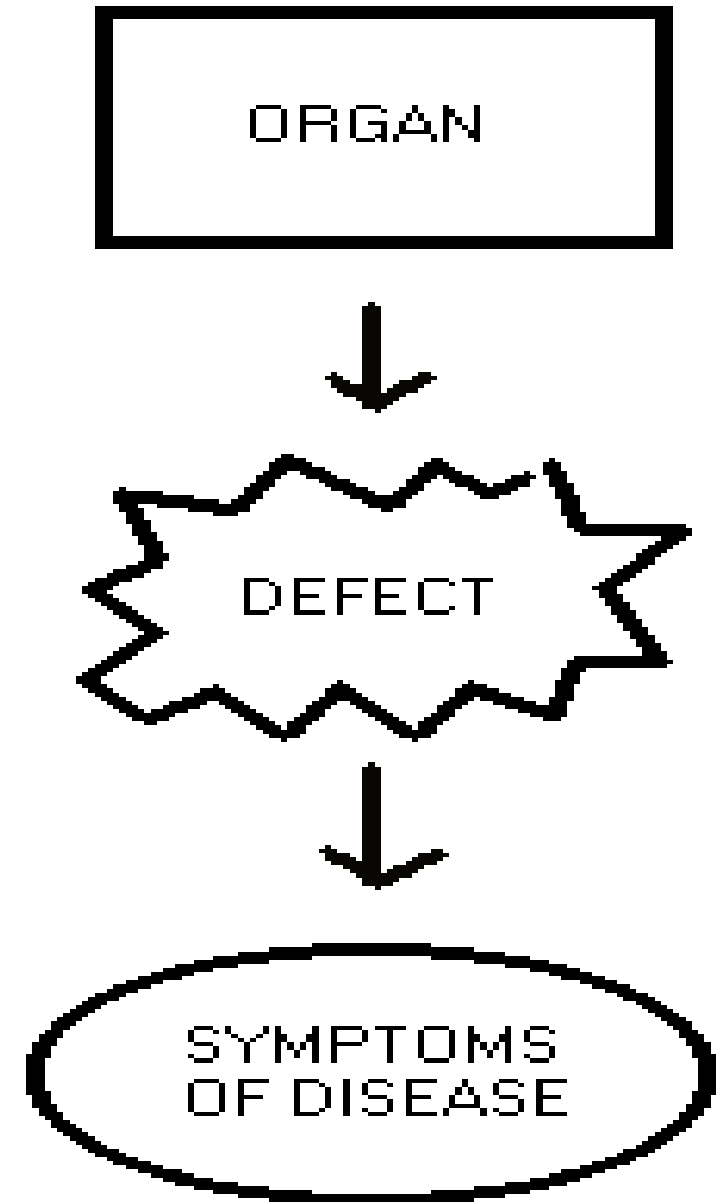
← CAUSE



- ~~1. Elev. Blood Gluc.~~
- ~~2. Blurred Vision~~
- ~~3. Coma~~
- ~~4. etc.~~

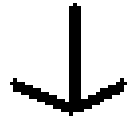
***The
“Disease
Model”***

***a powerful
causal model***

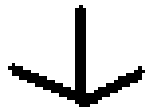


***But what's the **REAL** power of
the Disease Model?***

Organ



Defect



Symptoms

Pancreas



Islet Cell Death
No Insulin



1. Elev. Blood Gluc.
2. Blurred Vision
3. Coma
4. etc.

*The **REAL** power of the Disease Model is
that there is no such organization as
“Mothers Against Diabetic Drivers”*

Organ



Defect



Symptoms

Femur



Fracture



1. Screaming
2. Bleeding
3. Deformity
4. Disability

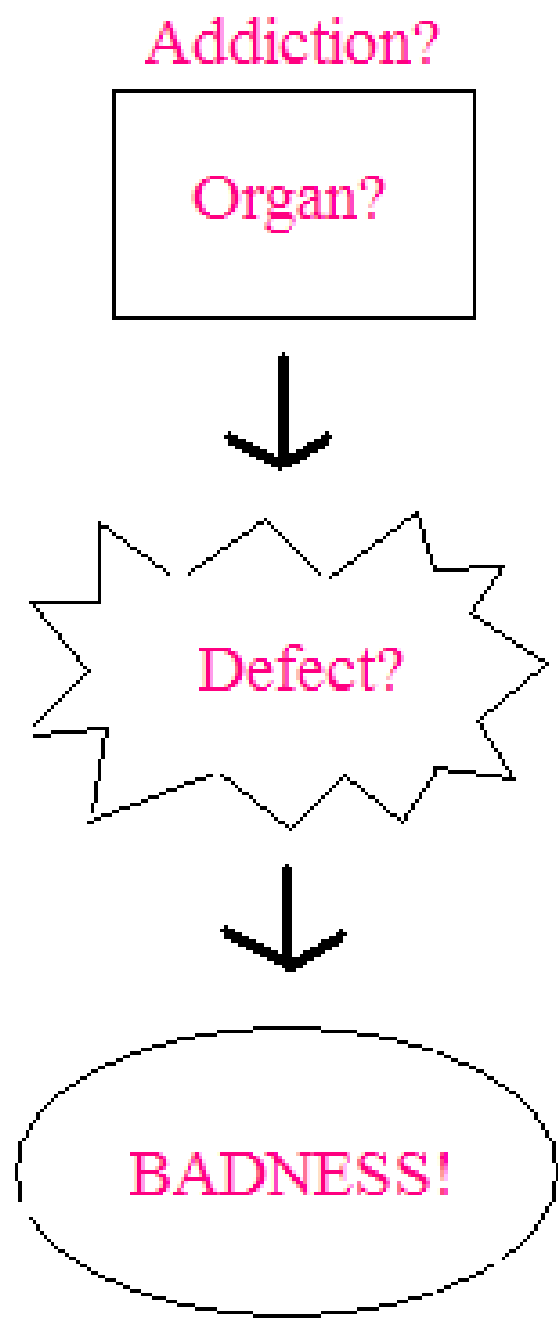
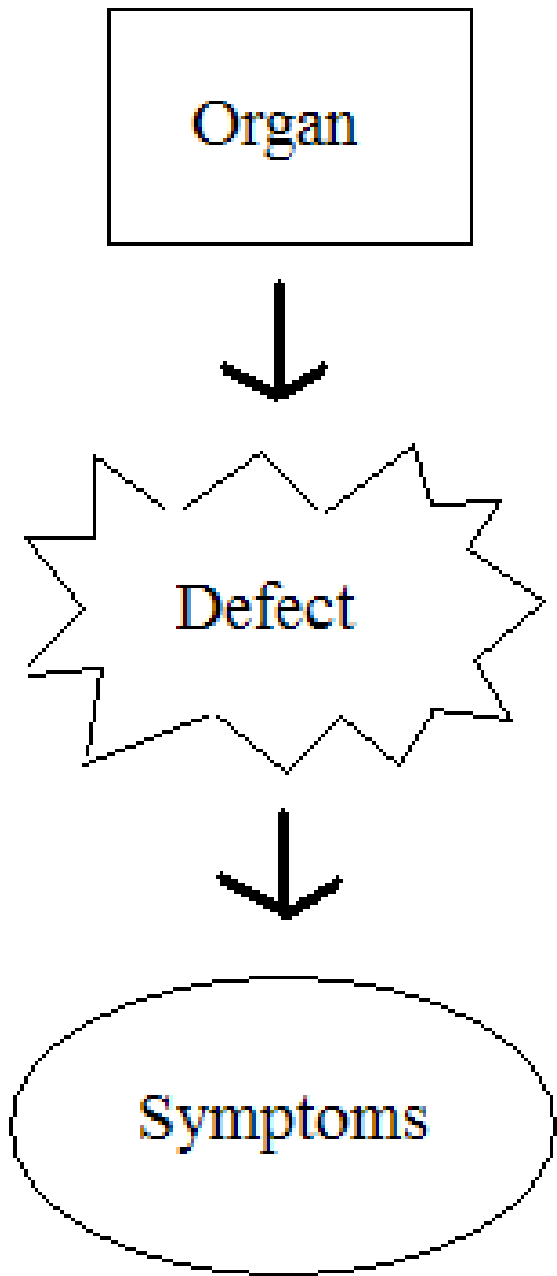
Pancreas

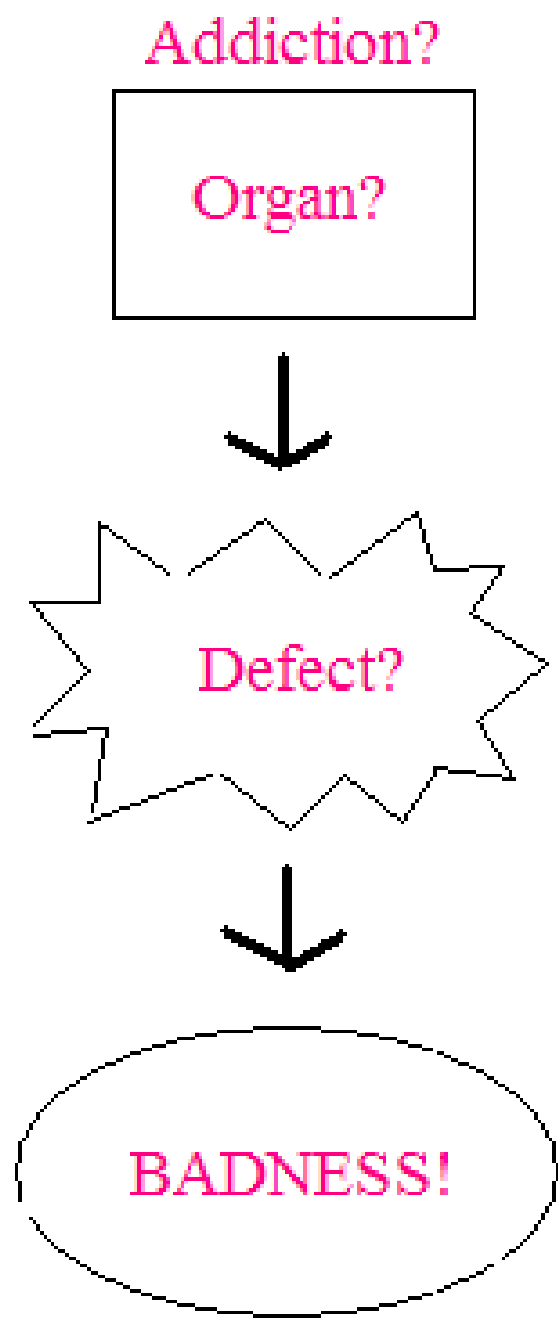
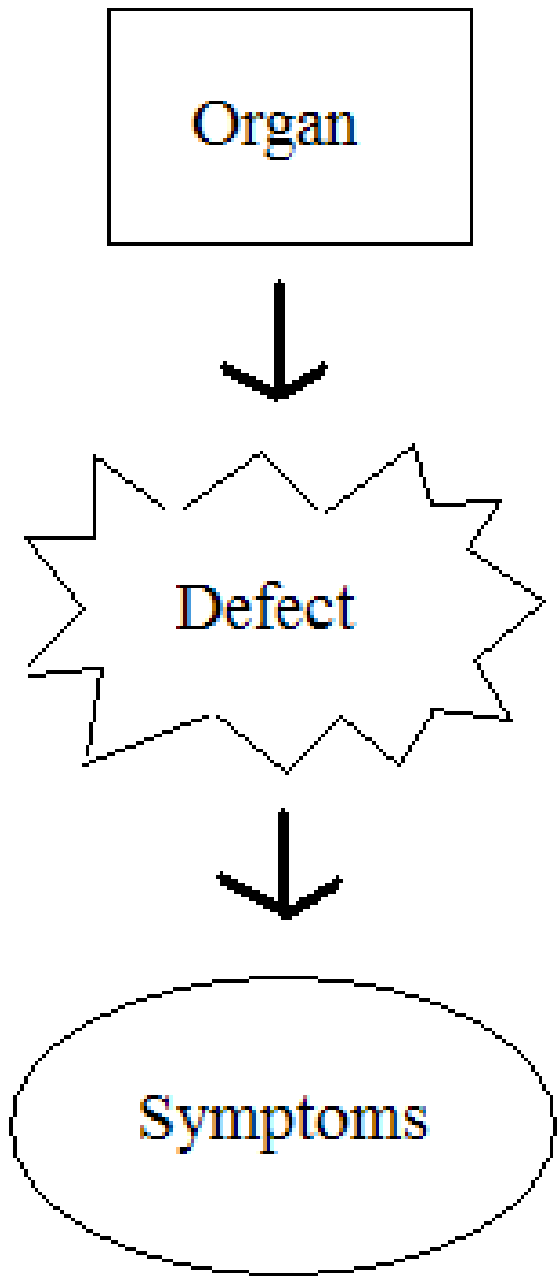


Islet Cell Death
No Insulin



1. Elev. Blood Gluc.
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4. etc.





Other Causal Models of Addiction

Moral Model

(cause: sin, temptation, weak will)

Other Causal Models of Addiction

Moral Model

(cause: sin, temptation, weak will)

Psychoanalytic Model

(cause: “addict personality”

“character defects”)

Other Causal Models of Addiction

Moral Model

(cause: sin, temptation, weak will)

Psychoanalytic Model

***(cause: “addict personality”
“character defects”)***

Social Learning Model

(cause: poor parenting, bad crowd)

Other Causal Models of Addiction

Moral Model

*(cause of addiction: **BADNESS**)*

Psychoanalytic Model

*(cause of addiction: **BADNESS**)*

Social Learning Model

*(cause of addiction: **BADNESS**)*

What's the Causal Model used in Addiction Treatment?

Moral Model

(cause of addiction: BADNESS)

+

Psychoanalytic Model

(cause of addiction: BADNESS)

+

Social Learning Model

(cause of addiction: BADNESS)

What's the Causal Model used in Addiction Treatment?

Moral Model

(cause of addiction: BADNESS)

+

Psychoanalytic Model

(cause of addiction: BADNESS)

+

Social Learning Model

(cause of addiction: BADNESS)

SCUMBAG MODEL

What's the Causal Model used in Addiction Treatment?

Moral Model

(cause of addiction: BADNESS)

+

Psychoanalytic Model

(cause of addiction: BADNESS)

+

Social Learning Model

(cause of addiction: BADNESS)

SCUMBAG MODEL (Tx = Punishment)

Problematic Causal Models

Moral Model

WRONG (*ex. Immolated “witches”*)

Problematic Causal Models

Moral Model

WRONG (ex. Immolated “witches”)

Psychoanalytic Model

WRONG (ex. “Ulcer personality”)

Problematic Causal Models

Moral Model

WRONG (ex. Immolated “witches”)

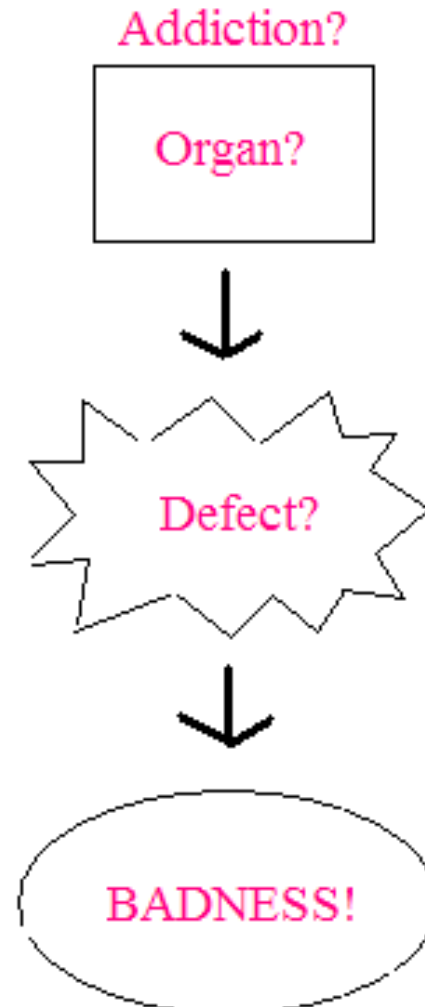
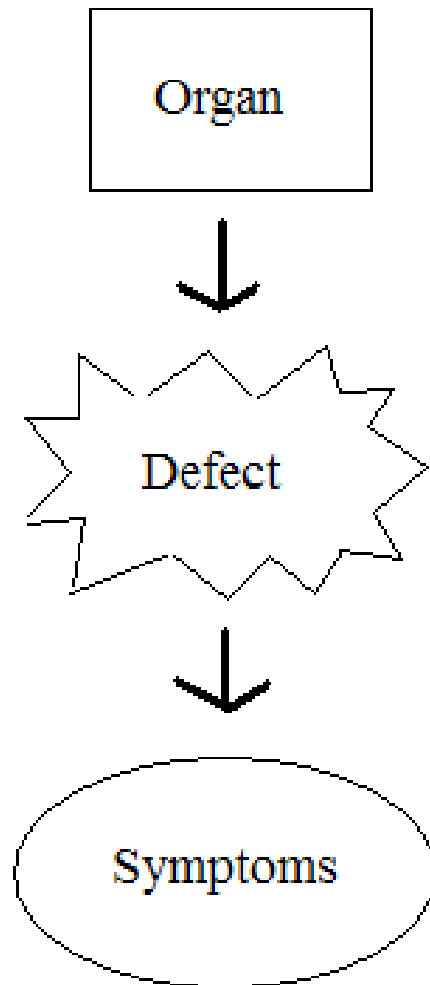
Psychoanalytic Model

WRONG (ex. “Ulcer personality”)

Social Learning Model

WRONG (ex. Catholics w/ Cholera)

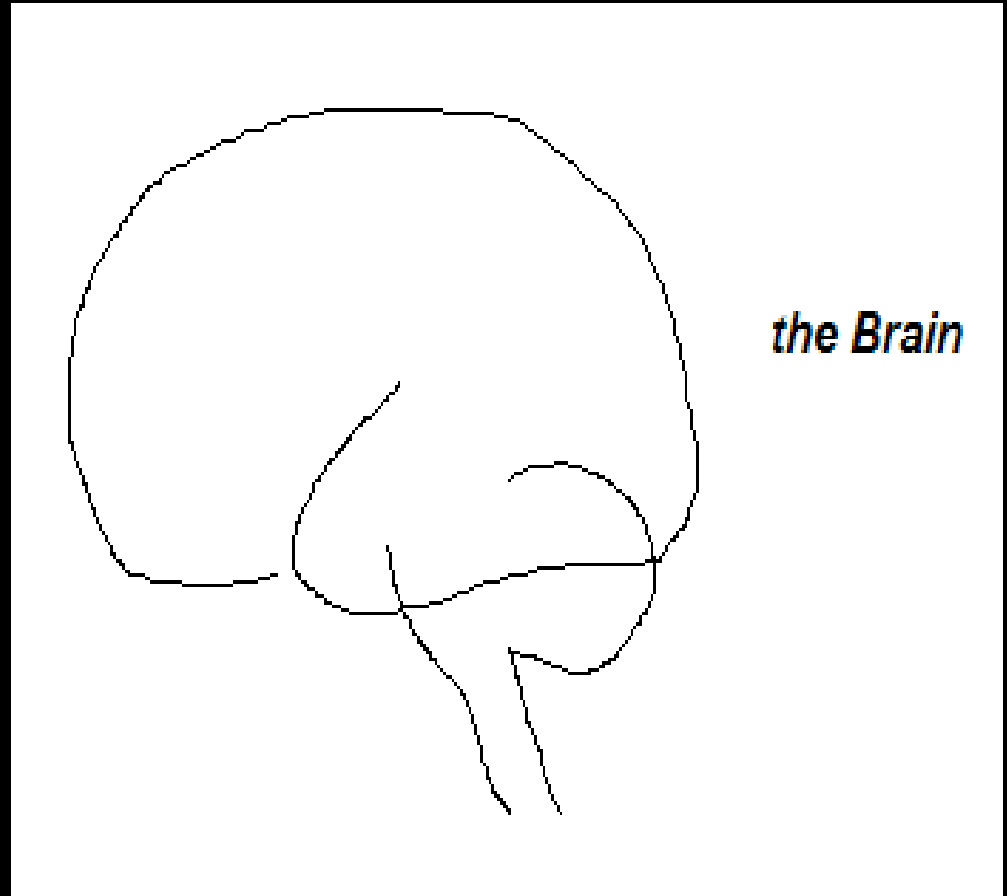
If ever we could fit addiction into this model, then it would win admission into "The Disease Club"...



And now, we finally can ...

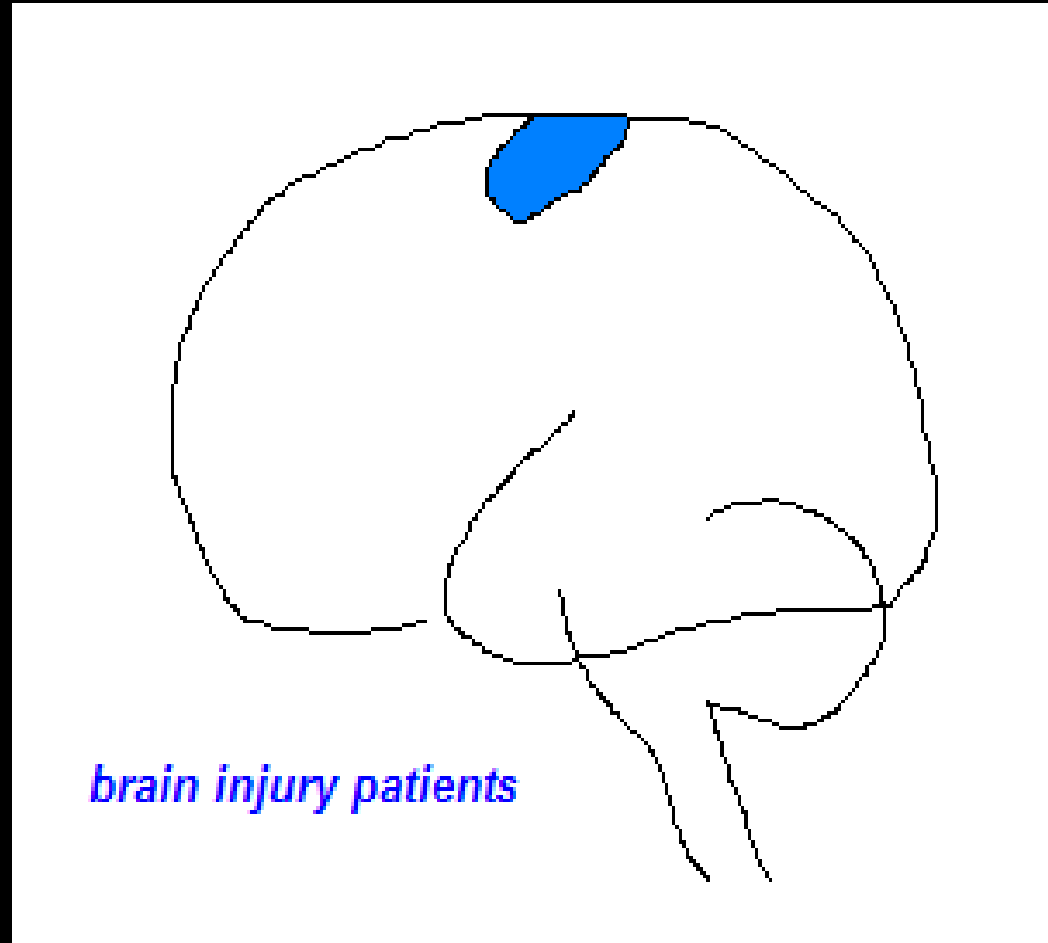
Addiction is a *BRAIN* disease

- **The brain's a *HARD* organ**
- **No good tests for brain diseases**
- **People with brain diseases start out at a disadvantage**



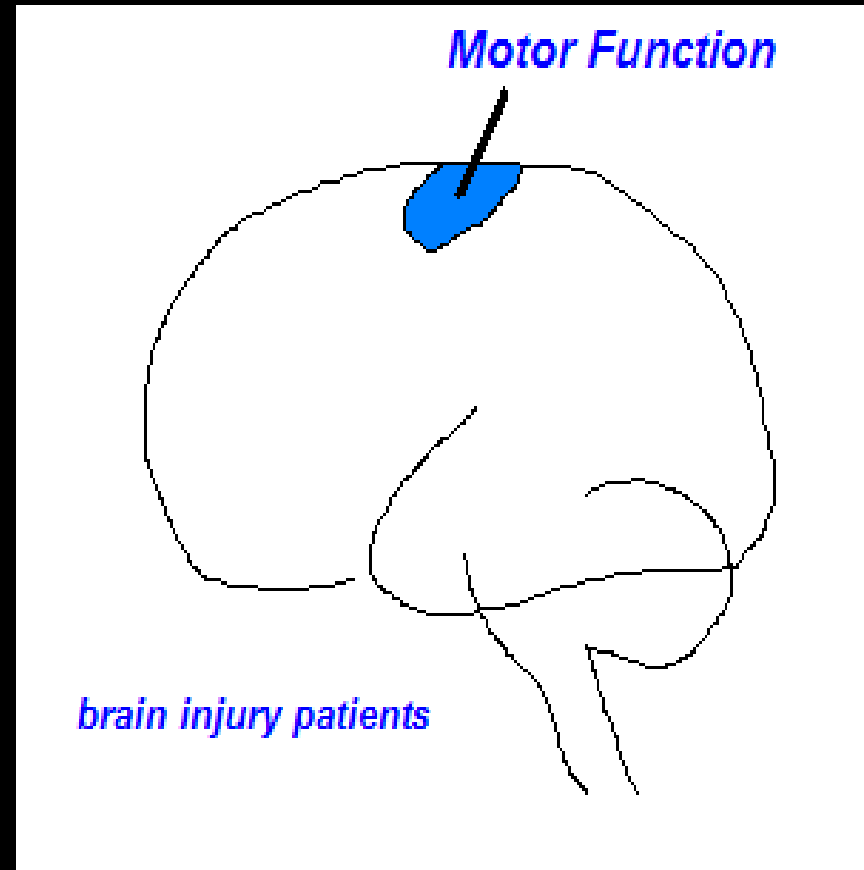
The Brain Localizes Functions

- ***Learned this from brain injury patients***
- ***Vast majority die***
- ***Some live***

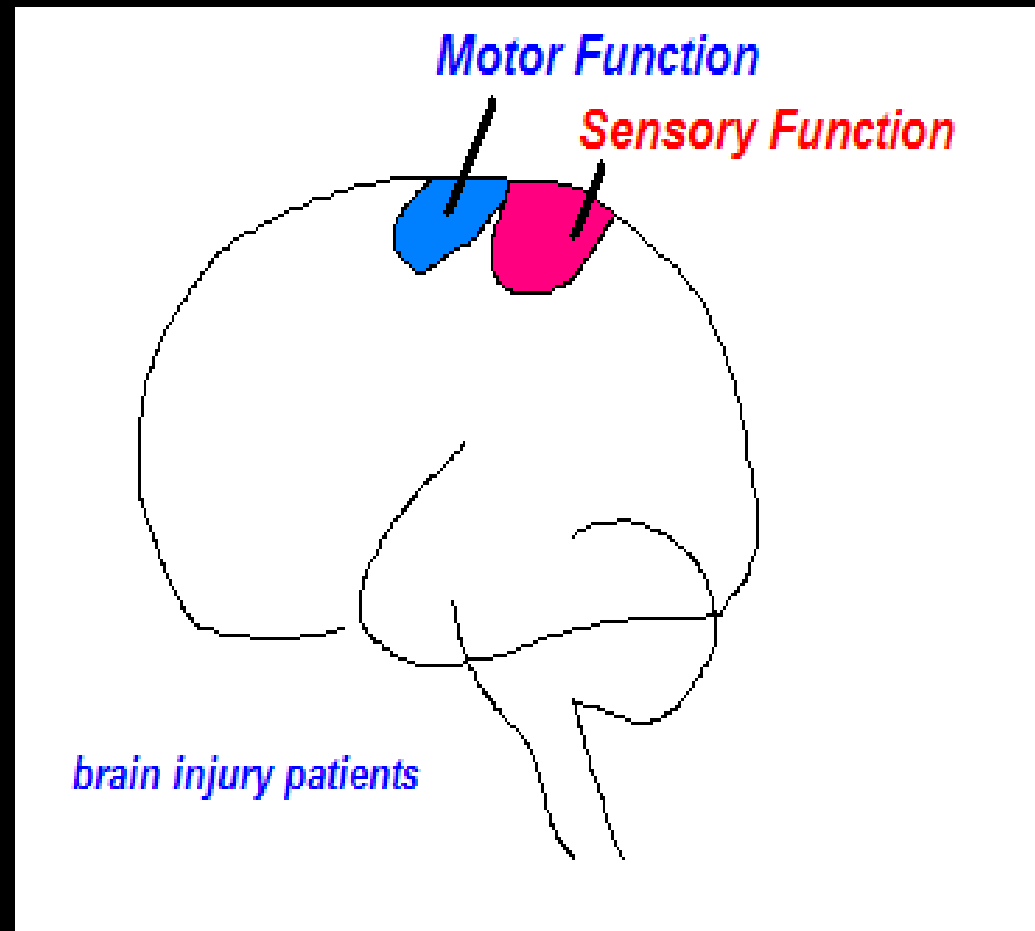


The Brain Localizes Functions

- ***These folks are very helpful to neurological research***
- ***CAT Scans***

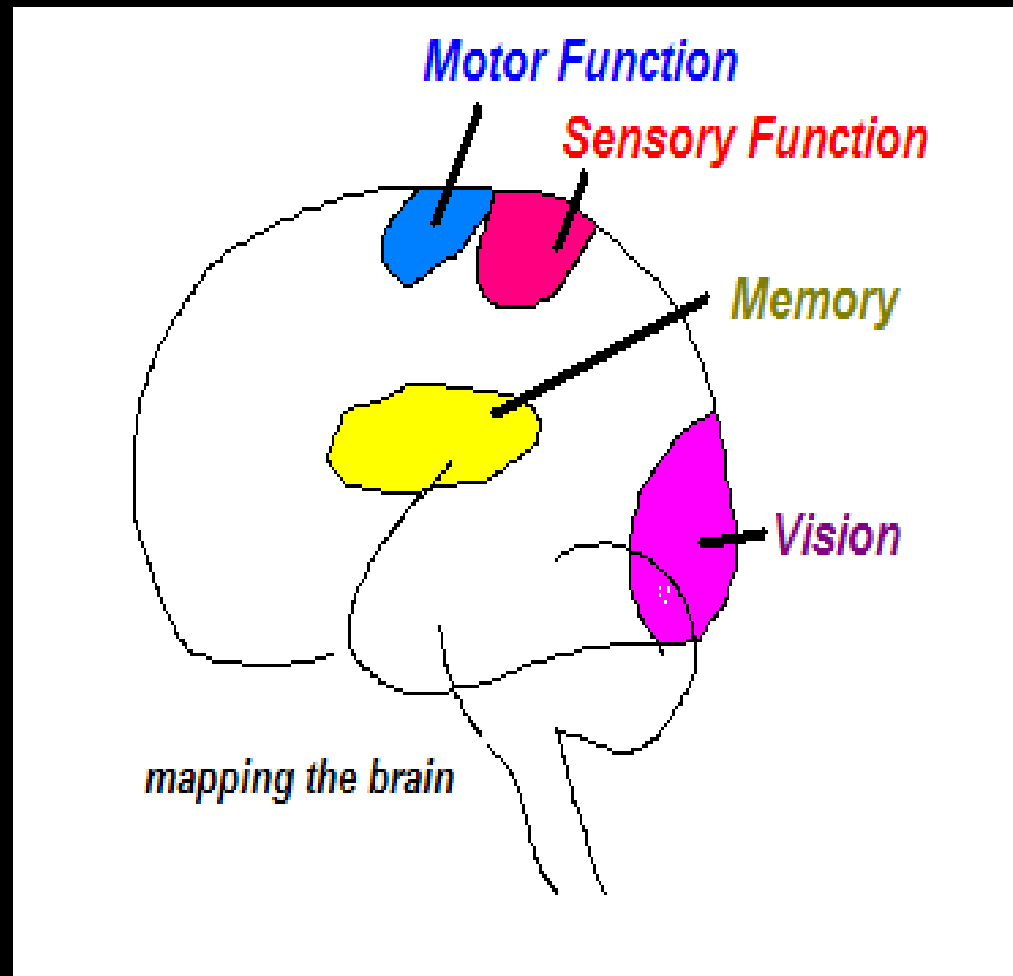


The Brain Localizes Functions

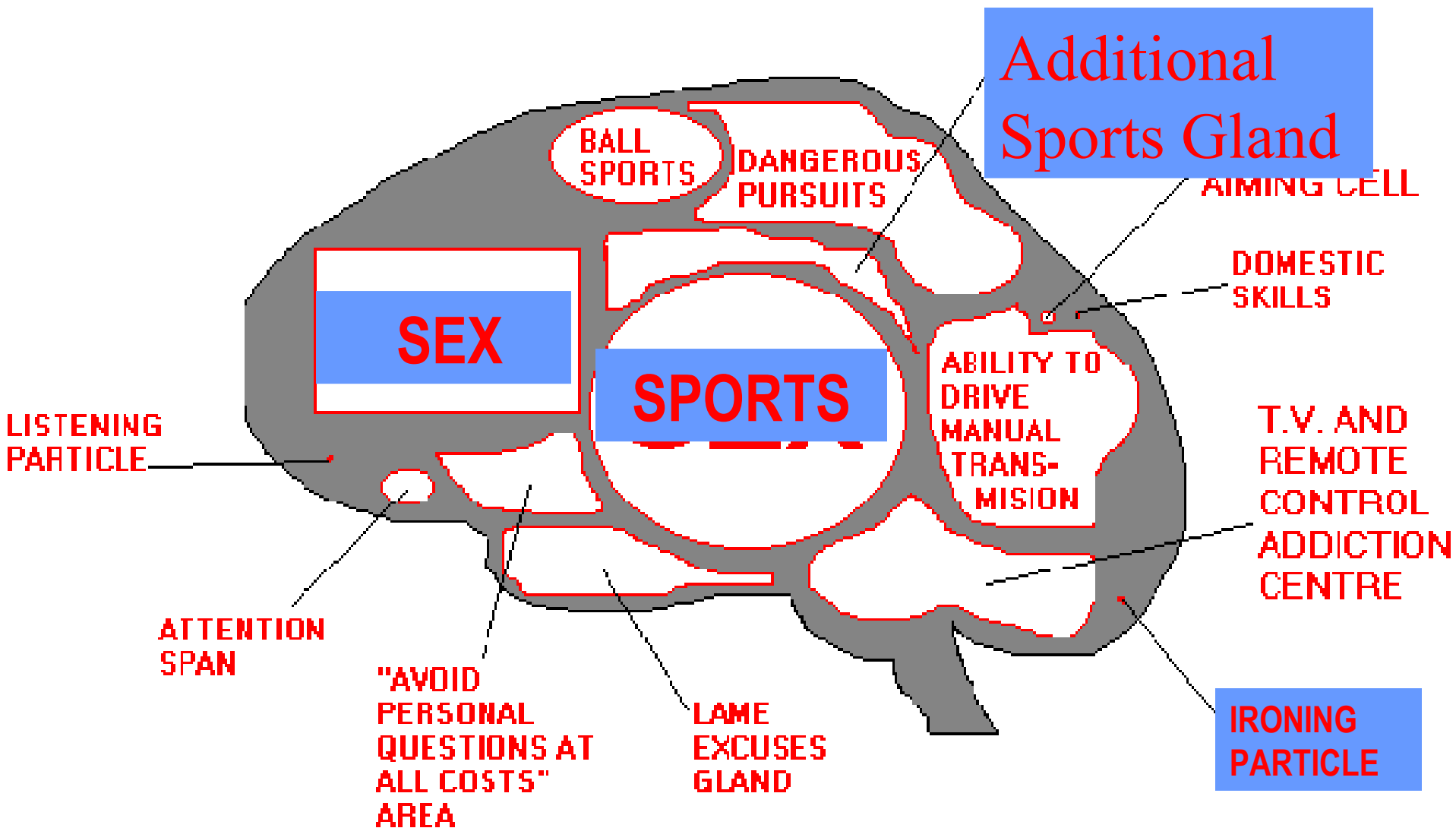


Mapping the Brain

- **Correlating symptoms of impairment with observed lesions on neuroimaging studies**

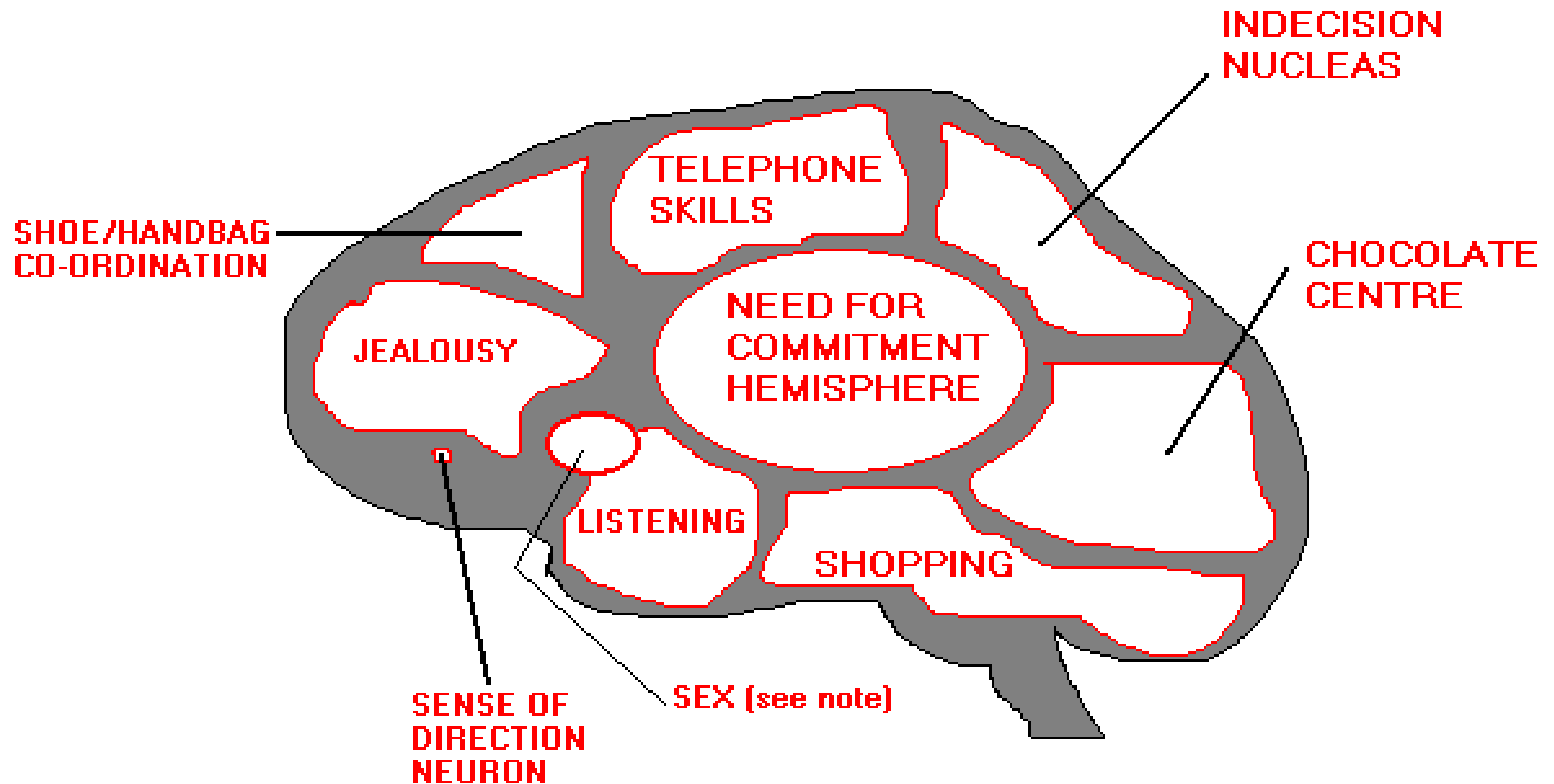


THE MALE BRAIN



FOOTNOTE: the "Listening to children cry in the middle of the night" gland is not shown due to its small and underdeveloped nature. Best viewed under a microscope.

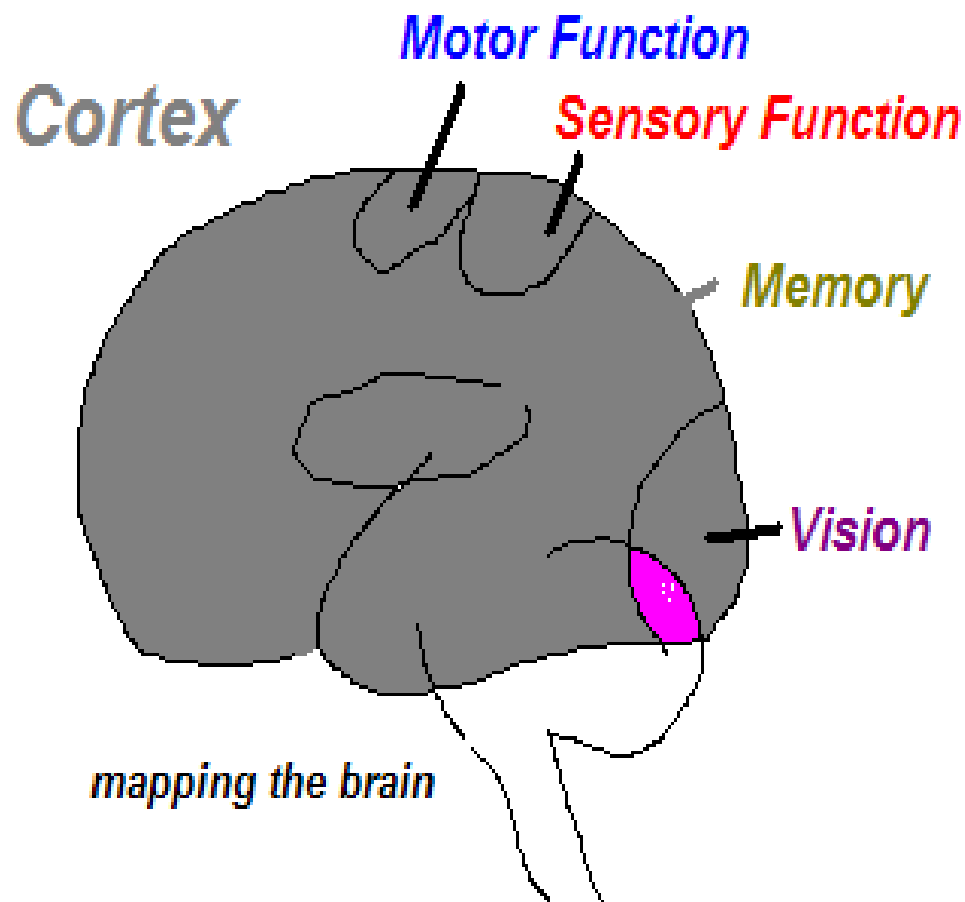
THE FEMALE BRAIN



FOOTNOTE: Note how closely connected the small sex cell is to the listening gland.

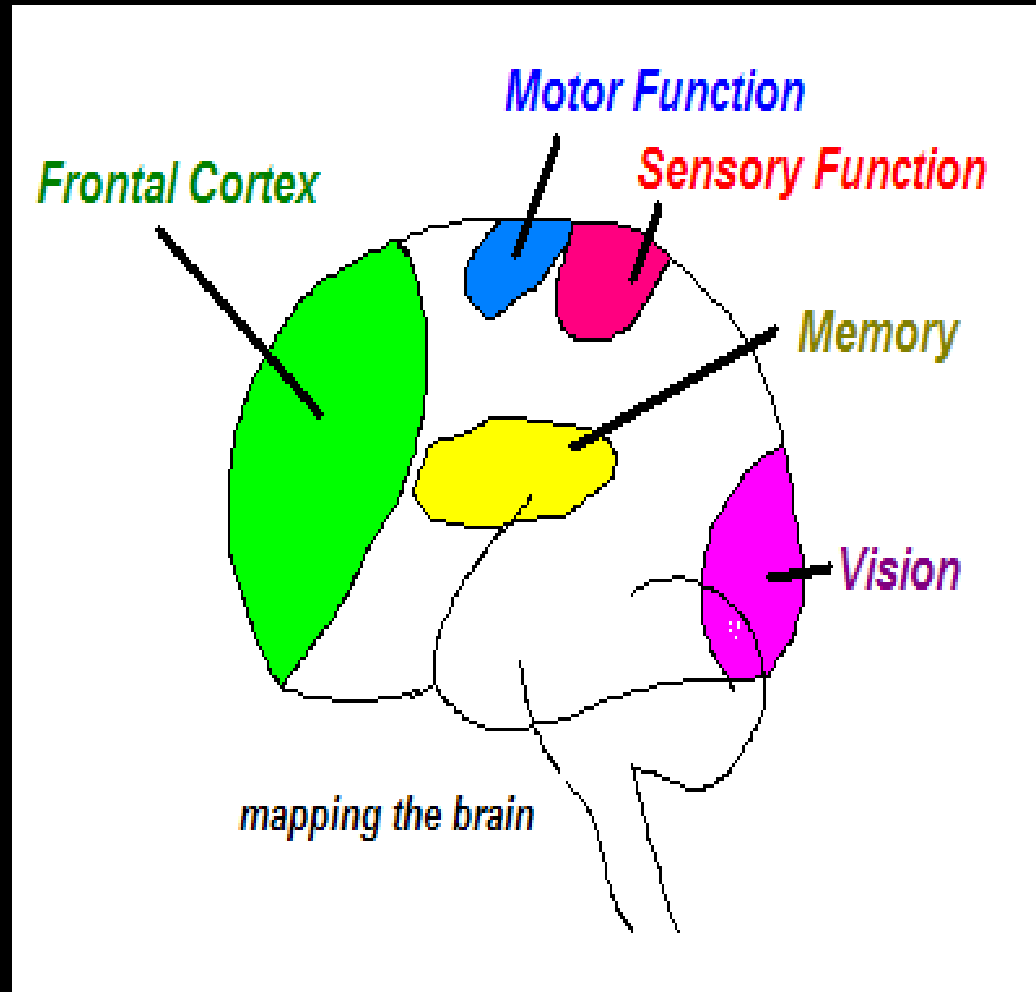
The Cortex

- **The Cortex handles the brain's executive functions**



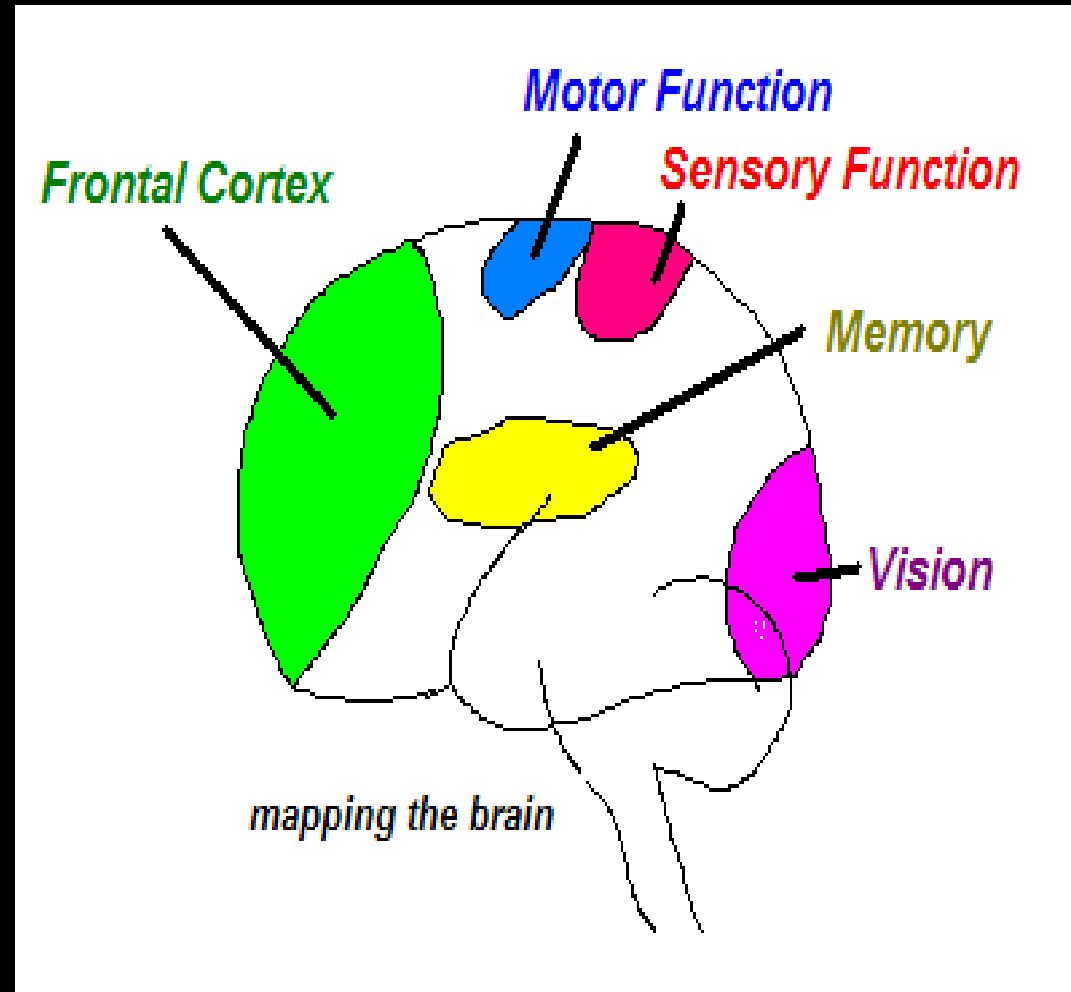
The Frontal Cortex

- **Confers semantic content onto objects in the world**
- **Emotional meaning**
- **Seat of the Self and Personality**
- **Love, Morality, Decency, Responsibility, Spirituality**
- **Conscious**



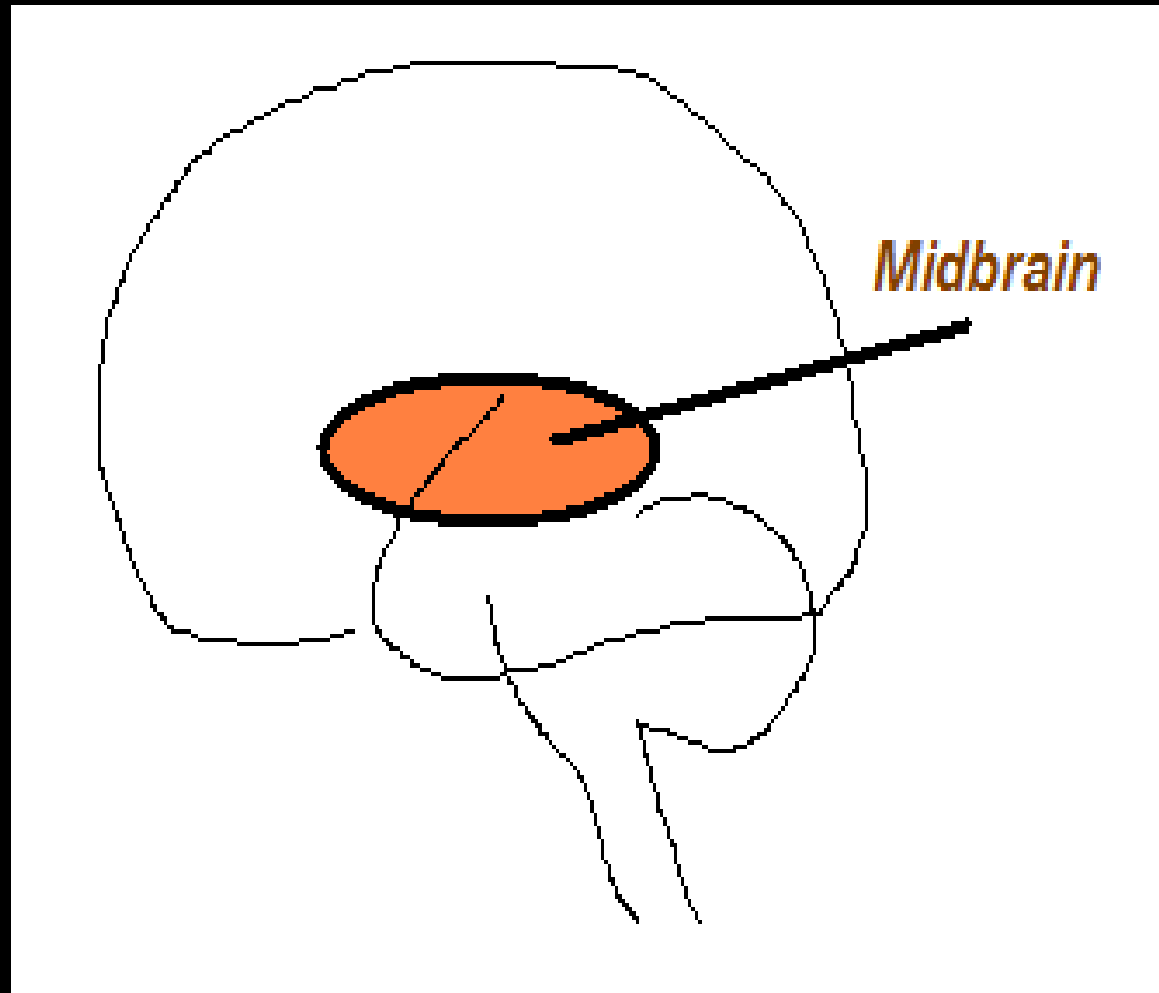
The Frontal Cortex: **Defective in addiction?**

- **Where drugs work?**
- **Addict personality?**
- **Sociopathy?**
- **Self-centeredness?**
- **Character defects?**
- **Immorality?**
- **Weak will?**
- **Poor socialization?**
- **Bad parenting?**



***But drugs don't work in the
Frontal Cortex . . .***

- ***Drugs work in
the Midbrain***

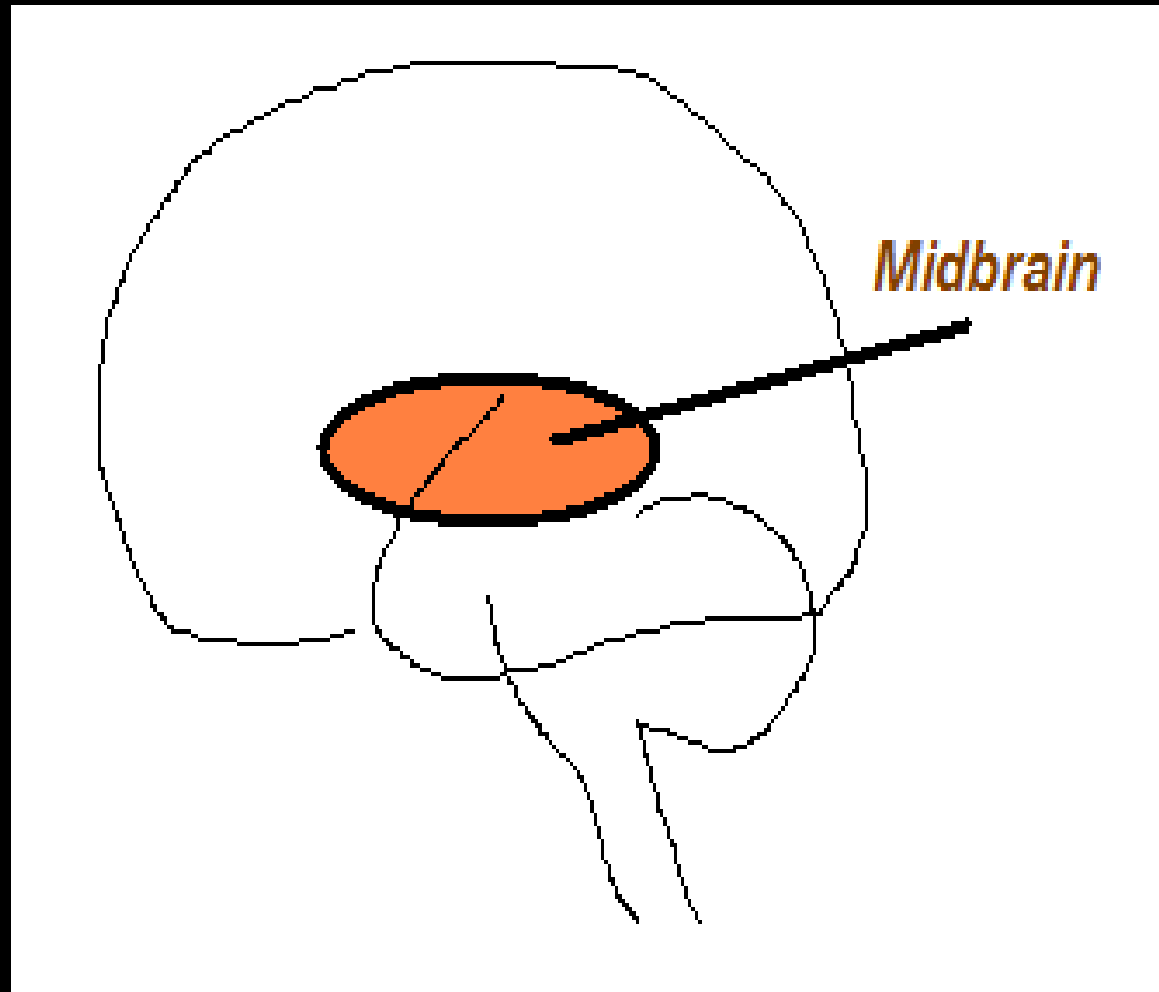


The midbrain is a scary, spooky, fascinating place . . .

What does it handle?

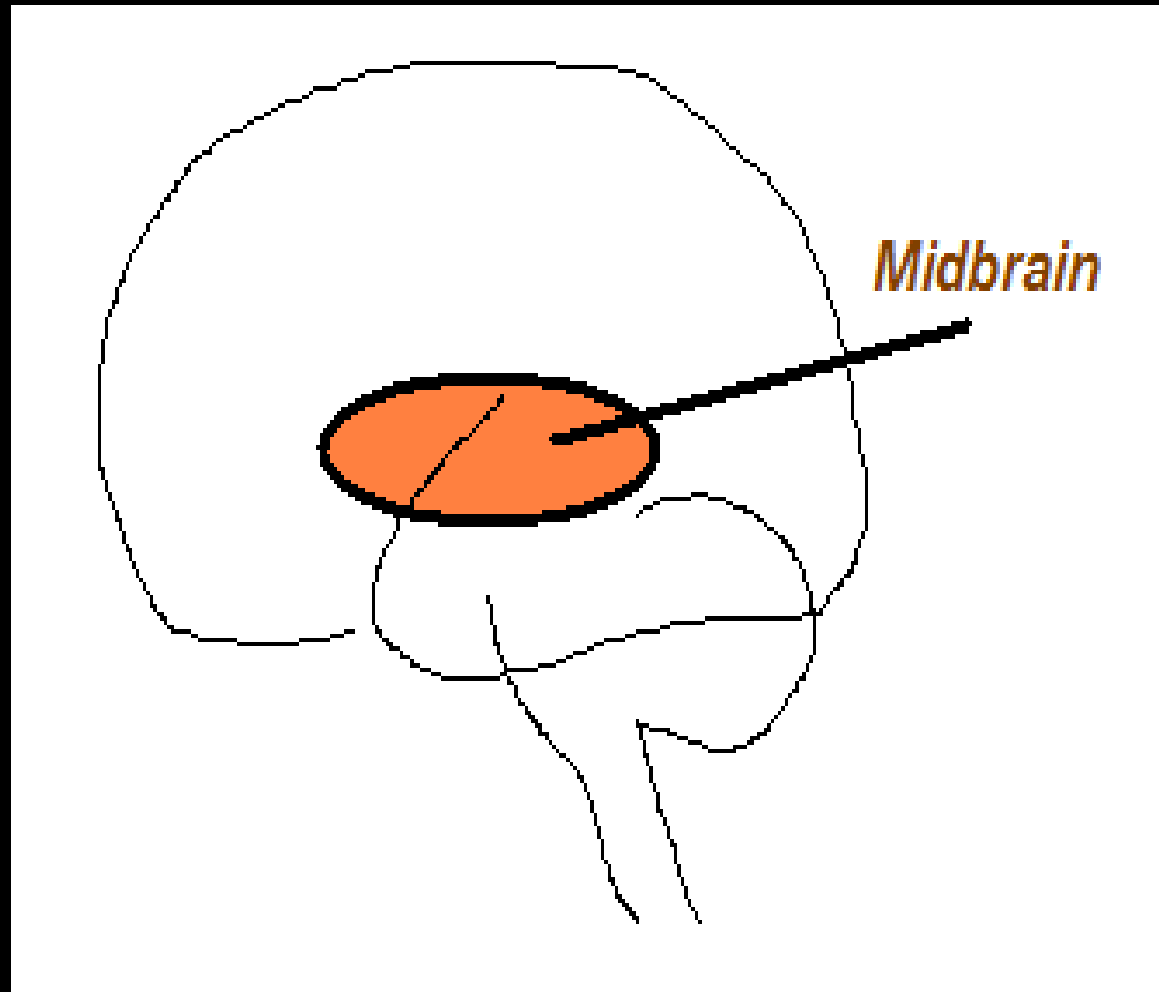
- Love?***
- Morality?***
- Decency?***
- Responsibility?***
- Spirituality?***
- Free Will?***
- Conscious Thought?***

NO . . . the midbrain is a way-station for incoming sensory information on the way to the cortex . . .



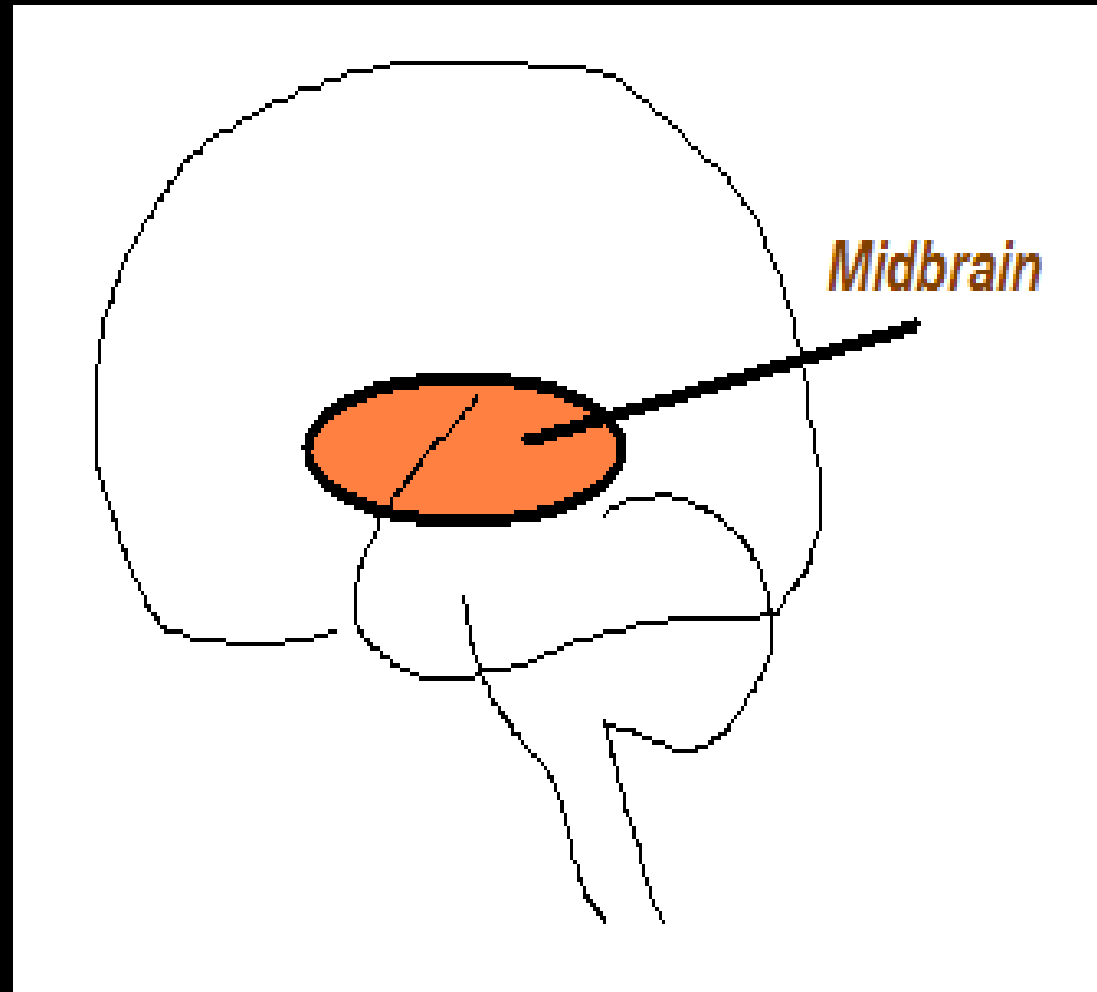
*The Midbrain is the **SURVIVAL** brain*

- **Not conscious**
- **What handles the next thirty seconds**
- **A life-or-death processing station for arriving sensory information**



***The Midbrain is your SURVIVAL brain
It handles:***

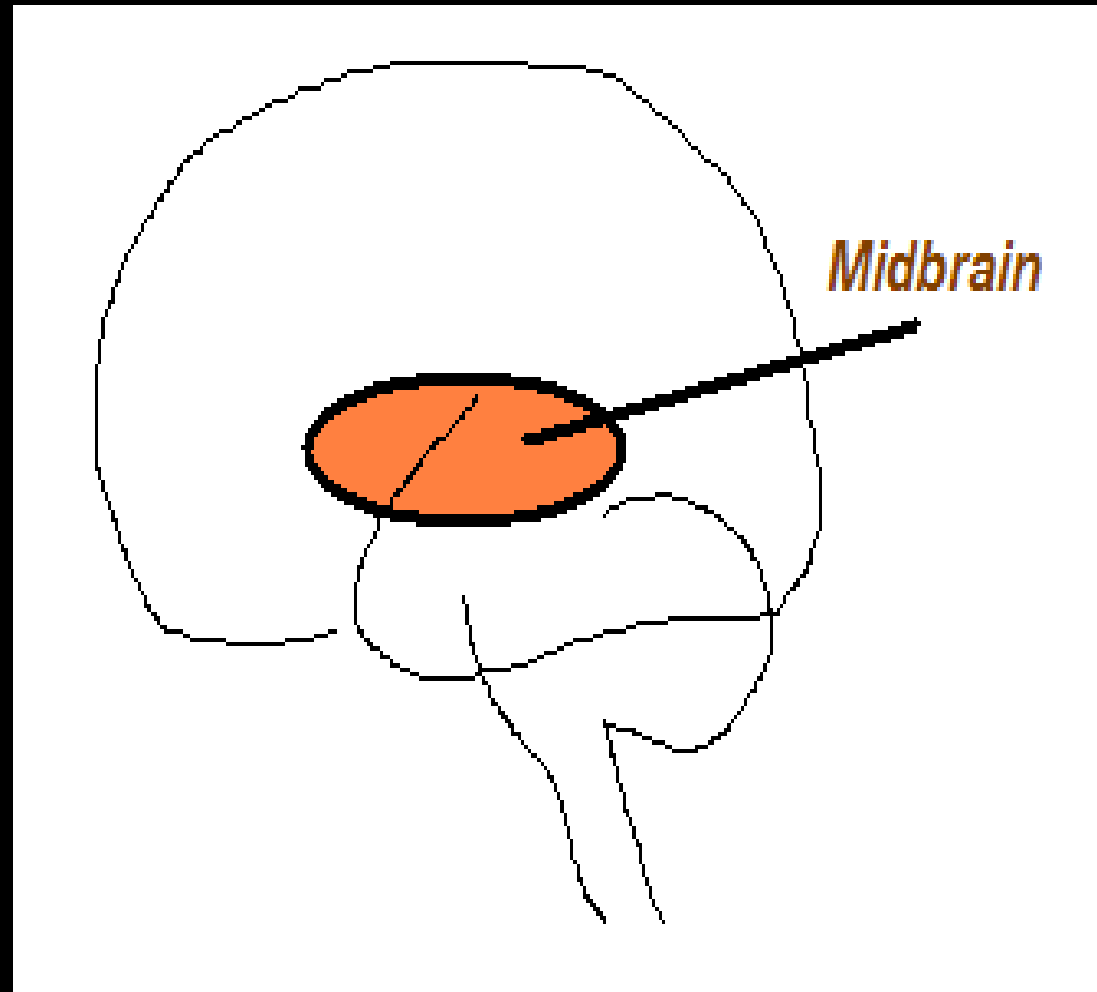
- ***EAT!***



The Midbrain is your SURVIVAL brain

It handles:

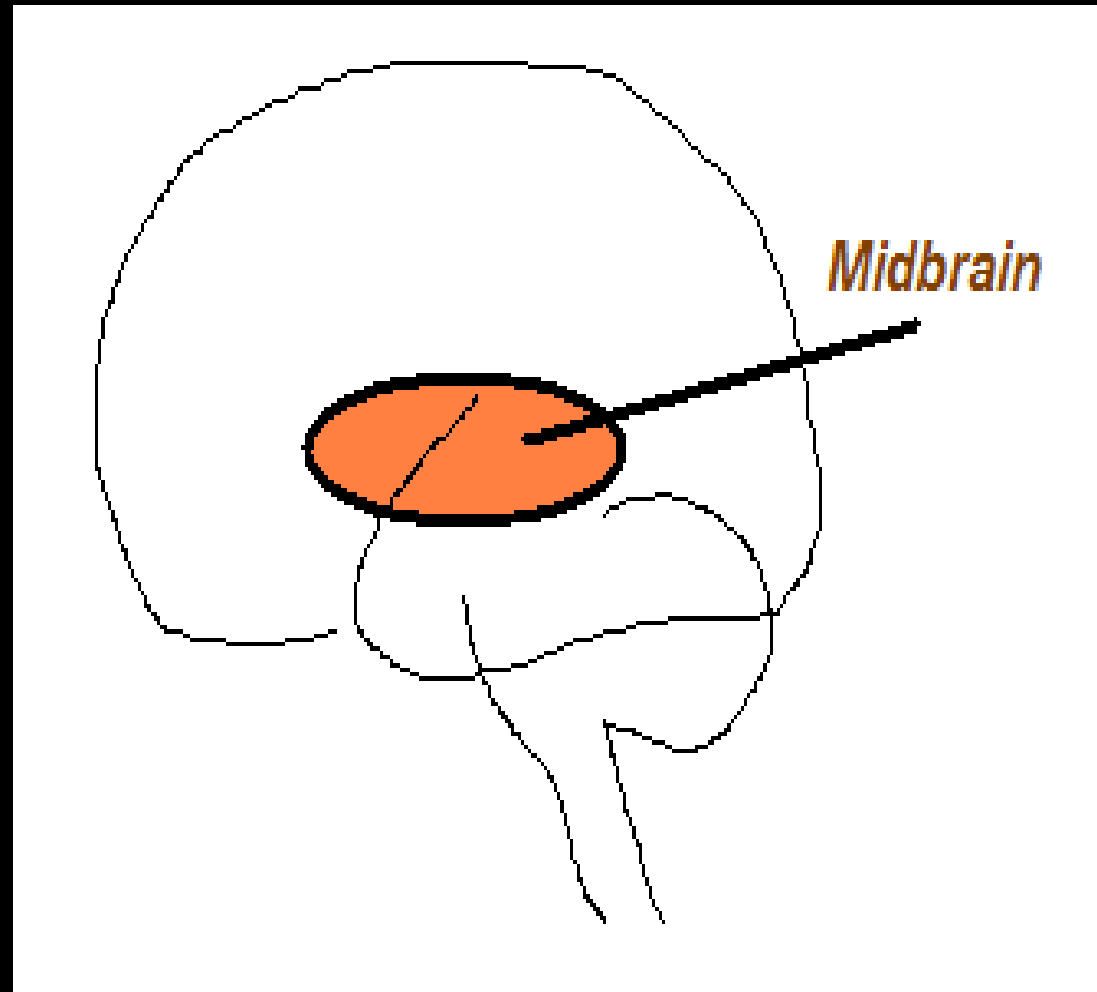
- ***EAT!***
- ***KILL! (defend)***



The Midbrain is your SURVIVAL brain

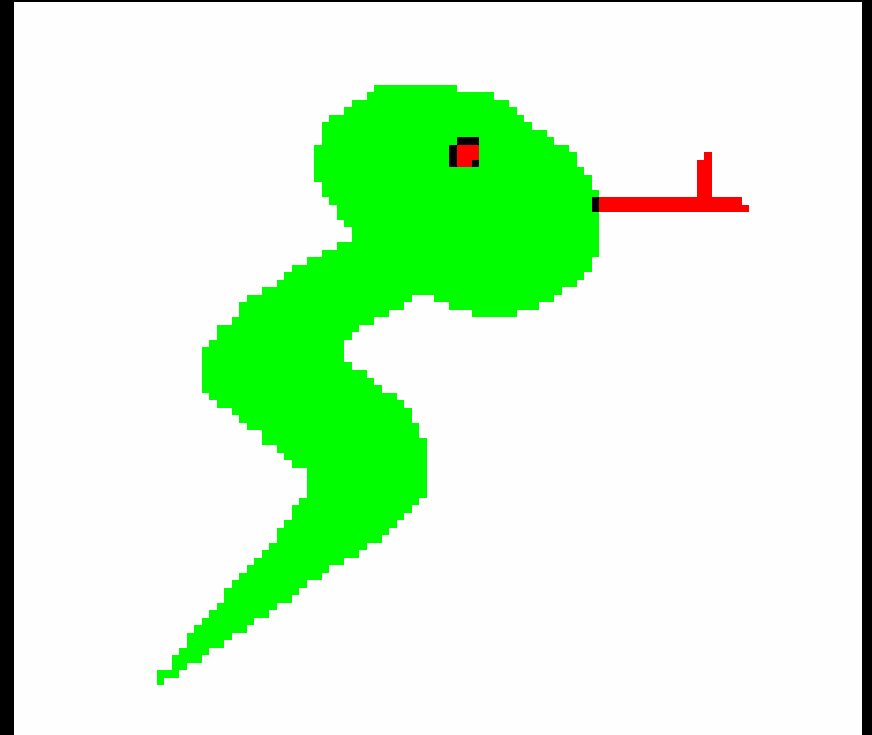
It handles:

- ***EAT!***
- ***KILL! (defend)***
- ***F _ _ _ !***



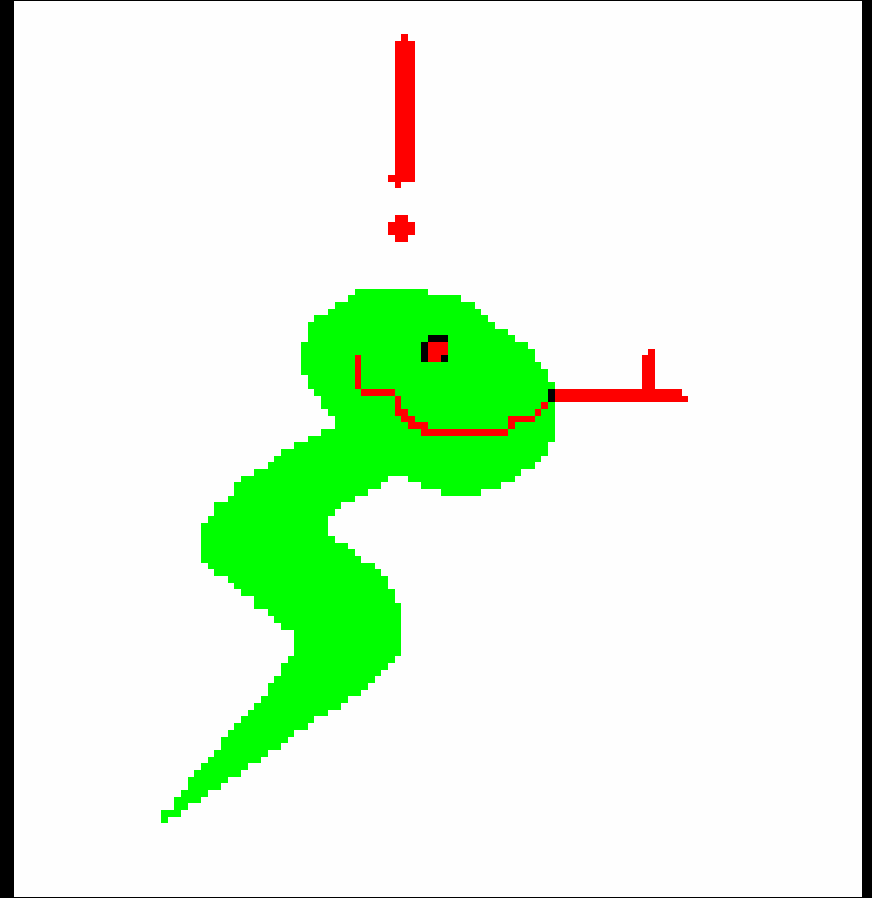
Midbrain = **SNAKEBRAIN**

- **EAT!**
- **KILL! (defend)**
- **F _ _ _ !**



Midbrain = **SNAKEBRAIN**

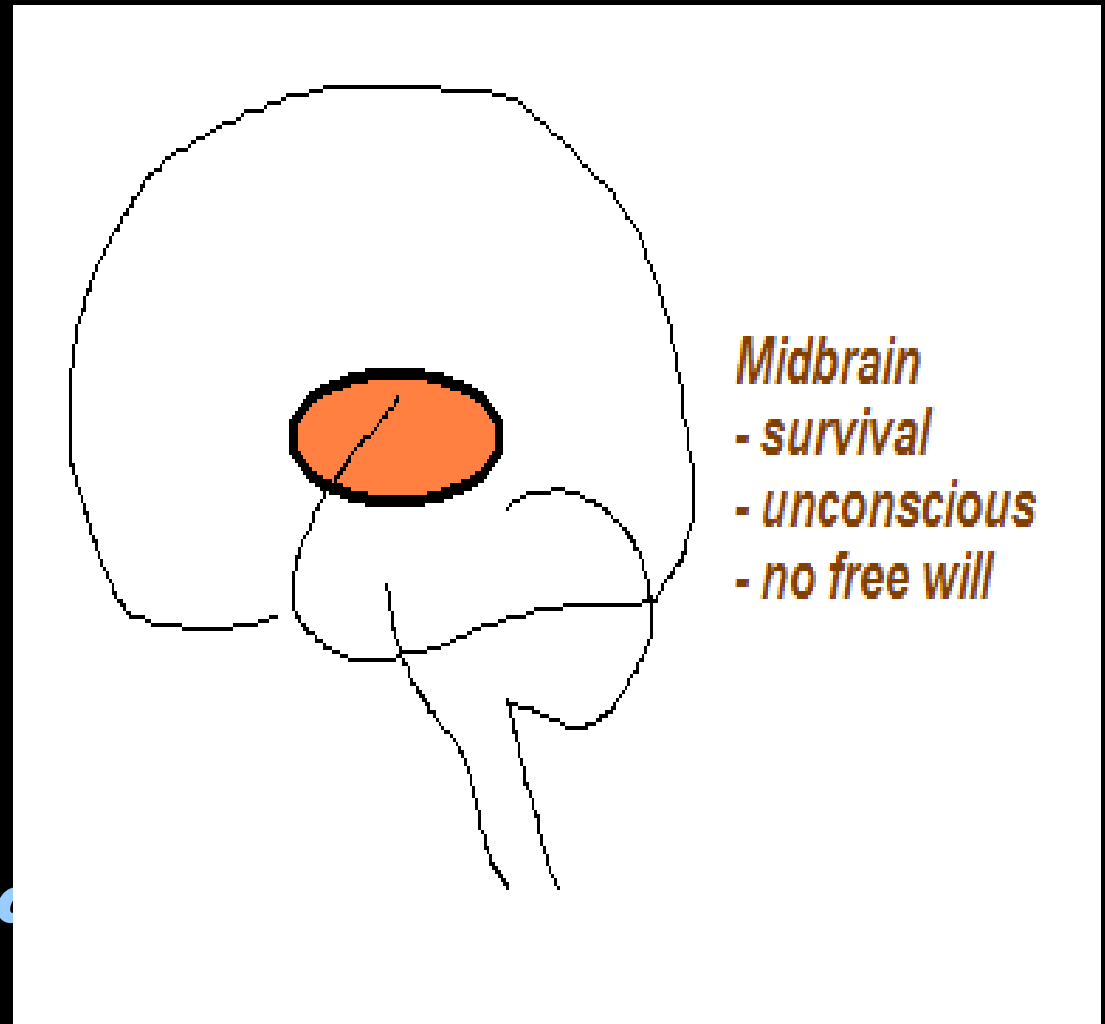
- **EAT!**
- **KILL! (defend)**
- **F _ _ _ !**



Drugs work in the Midbrain

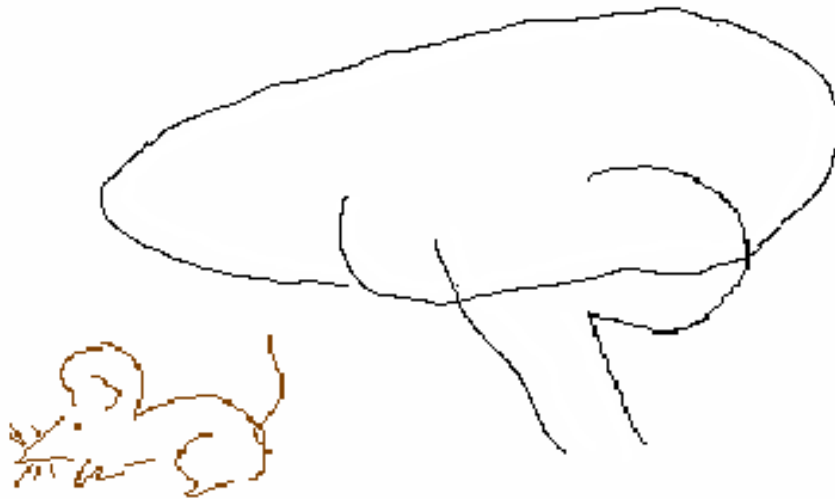
- ***NOT in the Cortex***

***(and don't take my word
for it . . .)***



Where do mice self-administer drugs?

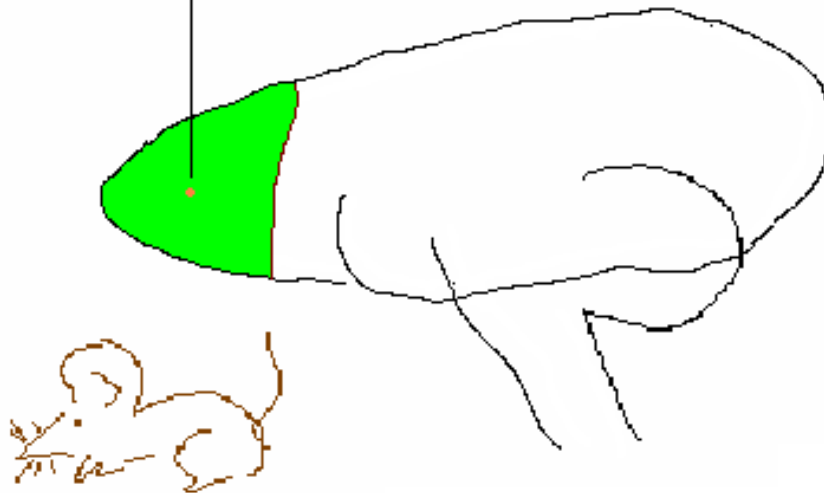
Olds rodent experiments



Olds experiments:

Olds rodent experiments

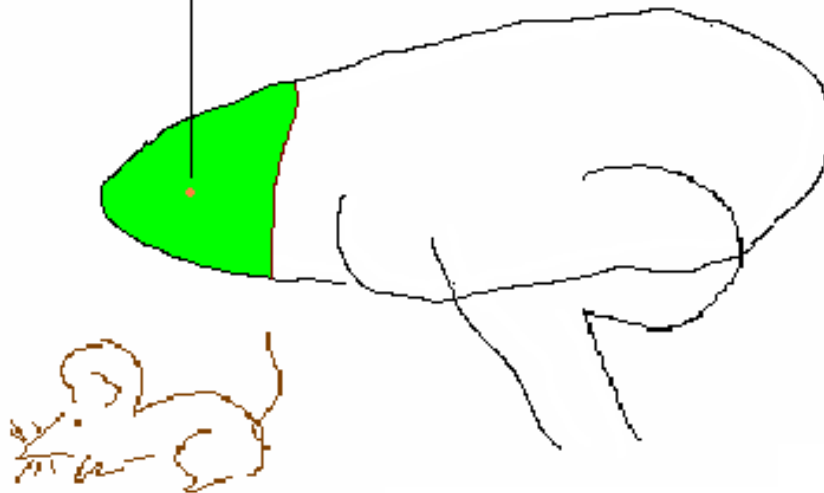
← COCAINE



Olds experiments:

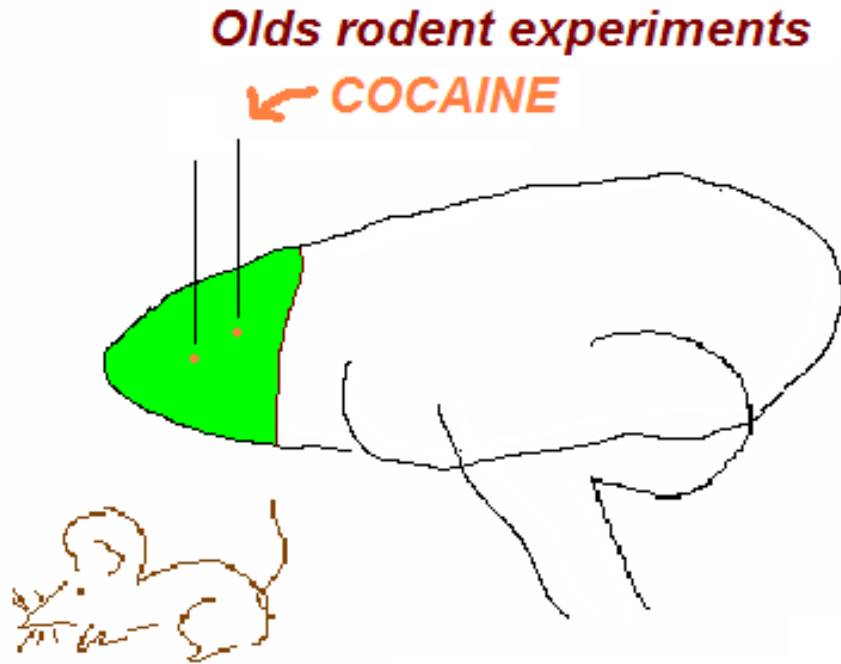
Olds rodent experiments

← COCAINE

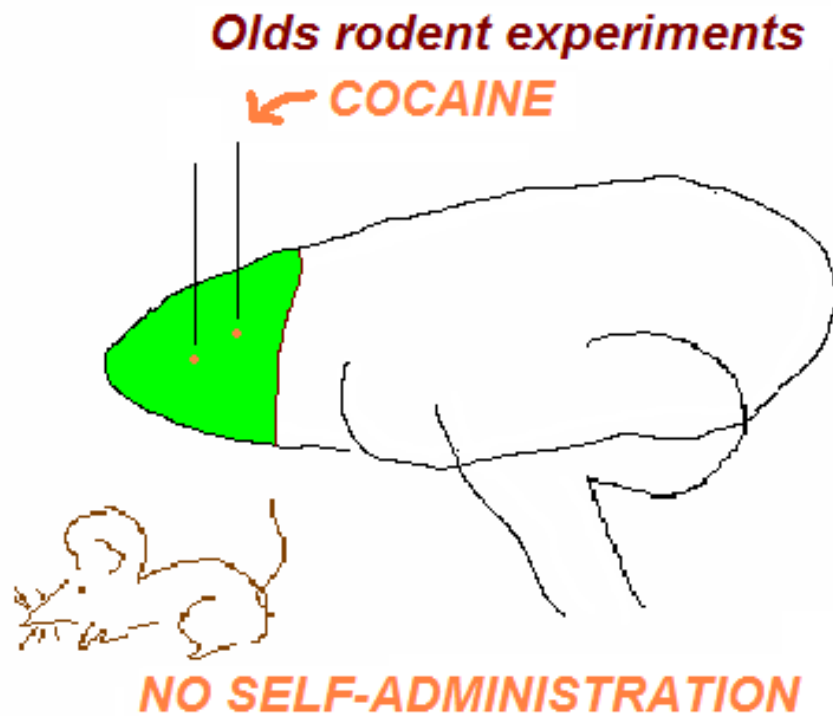


NO SELF-ADMINISTRATION

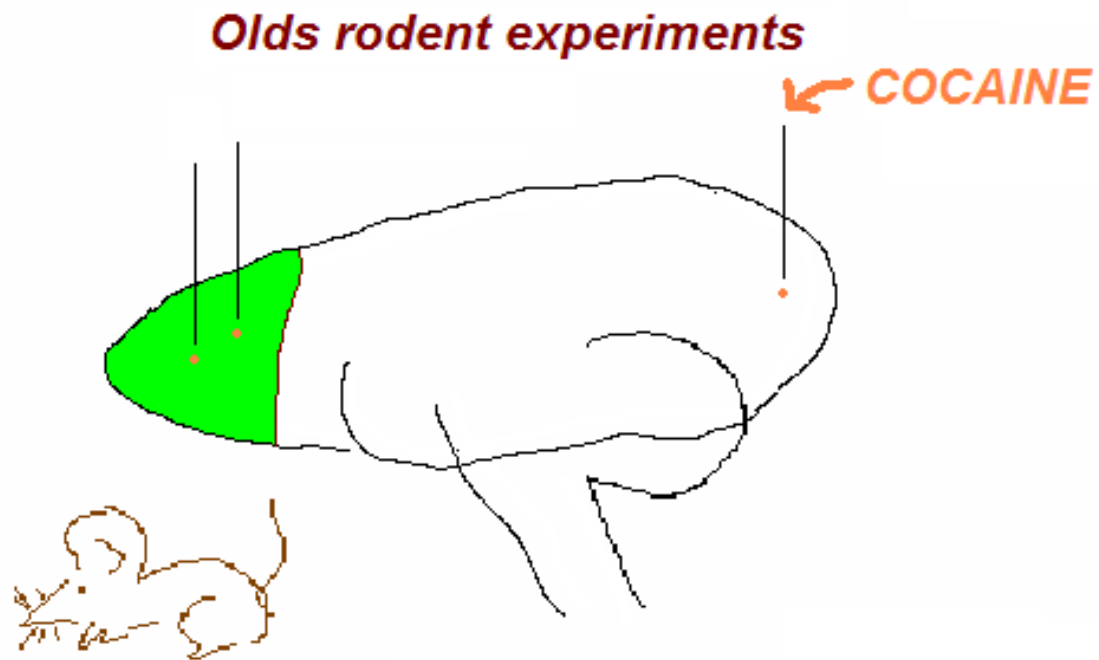
Olds experiments:



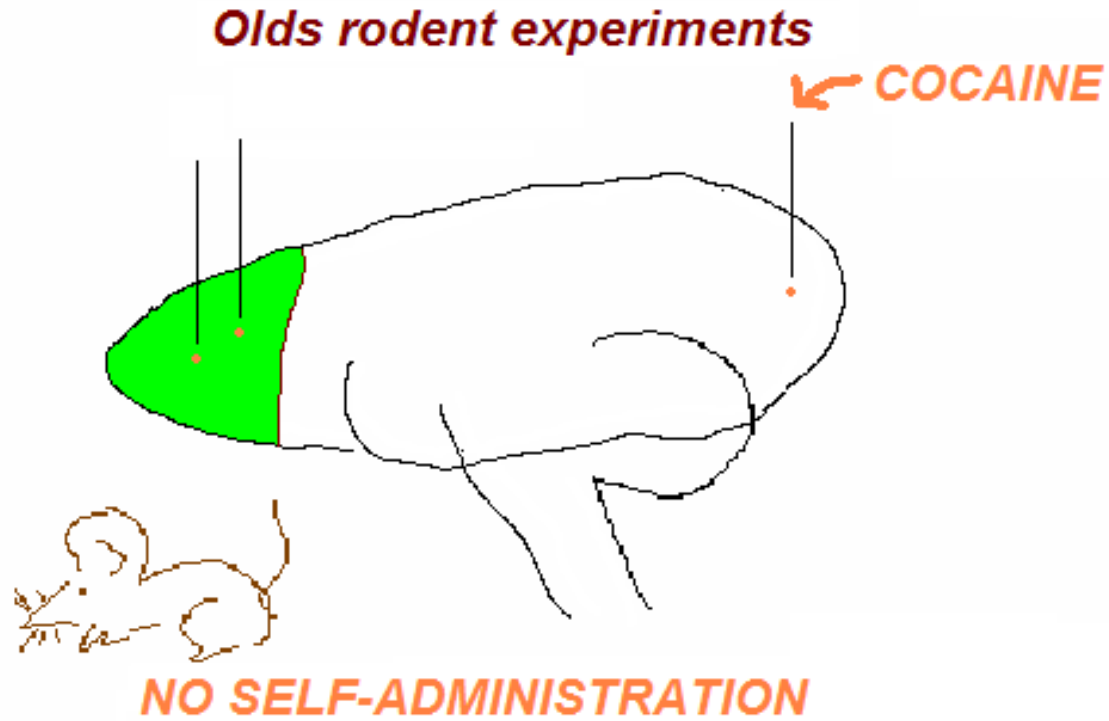
Olds experiments:



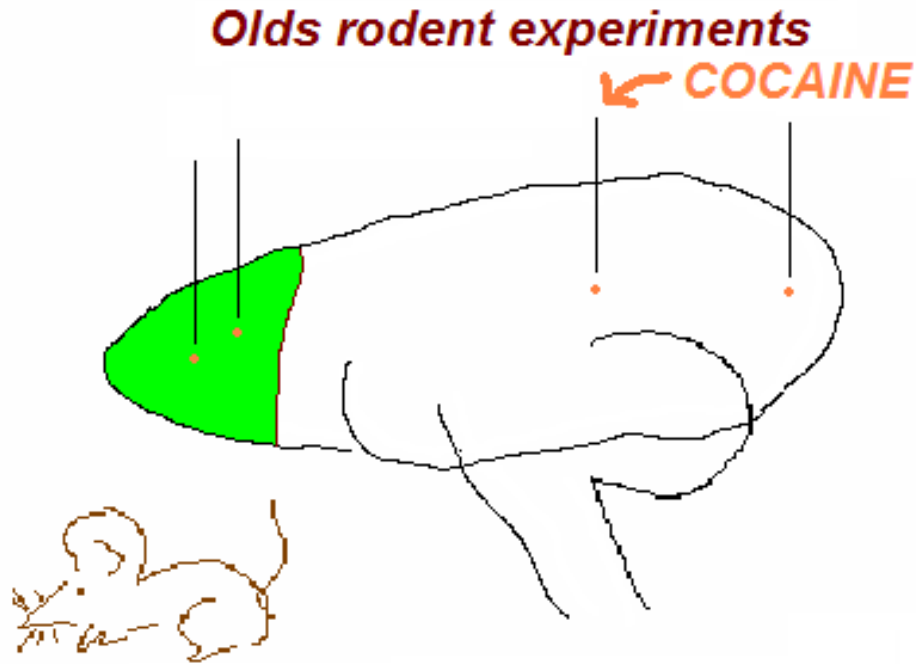
Olds experiments:



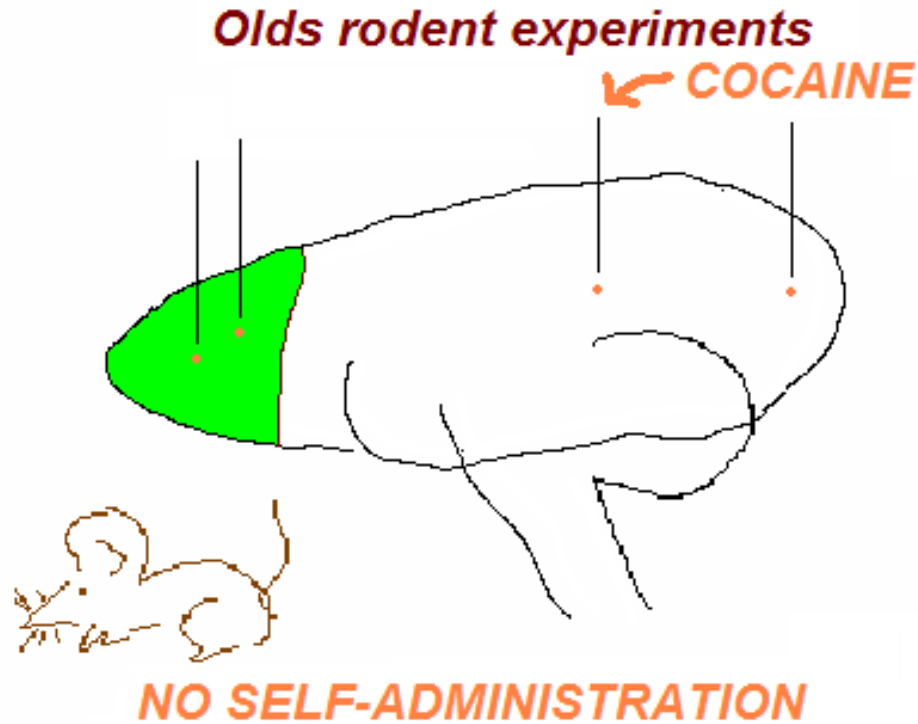
Olds experiments:



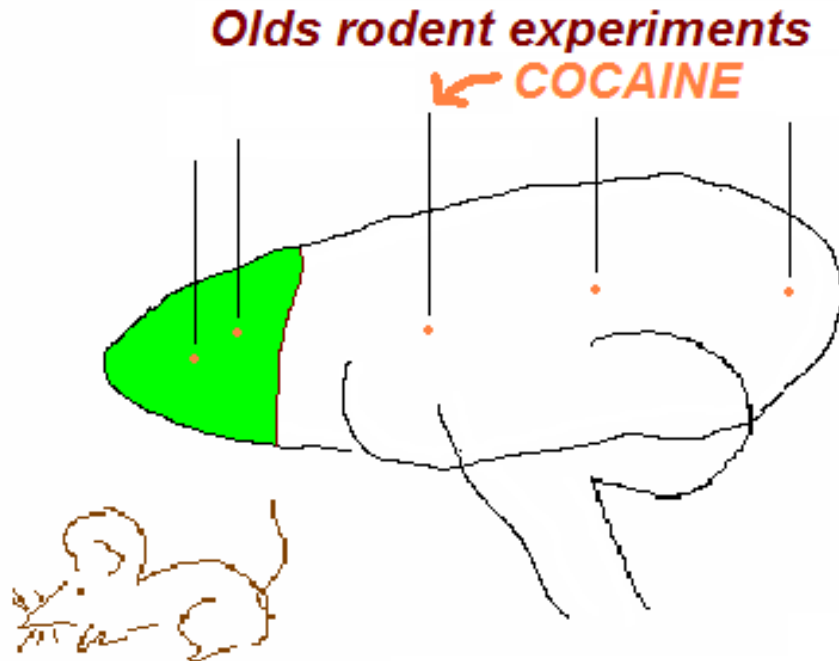
Olds experiments:



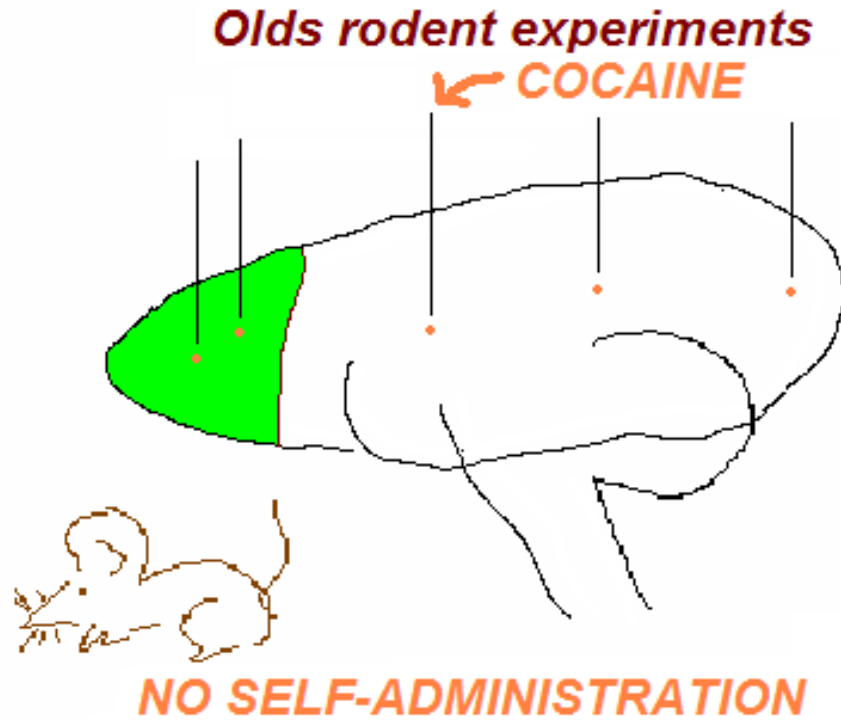
Olds experiments:



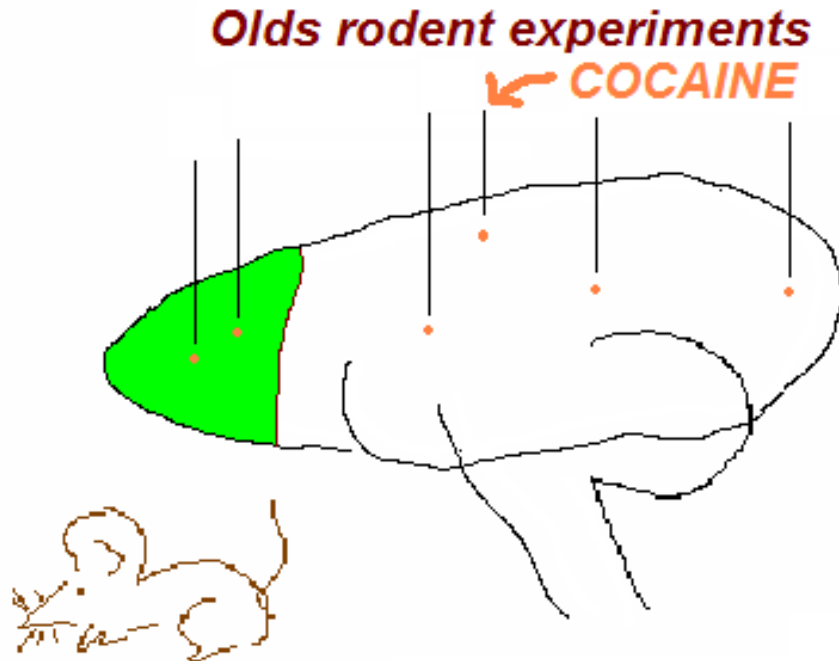
Olds experiments:



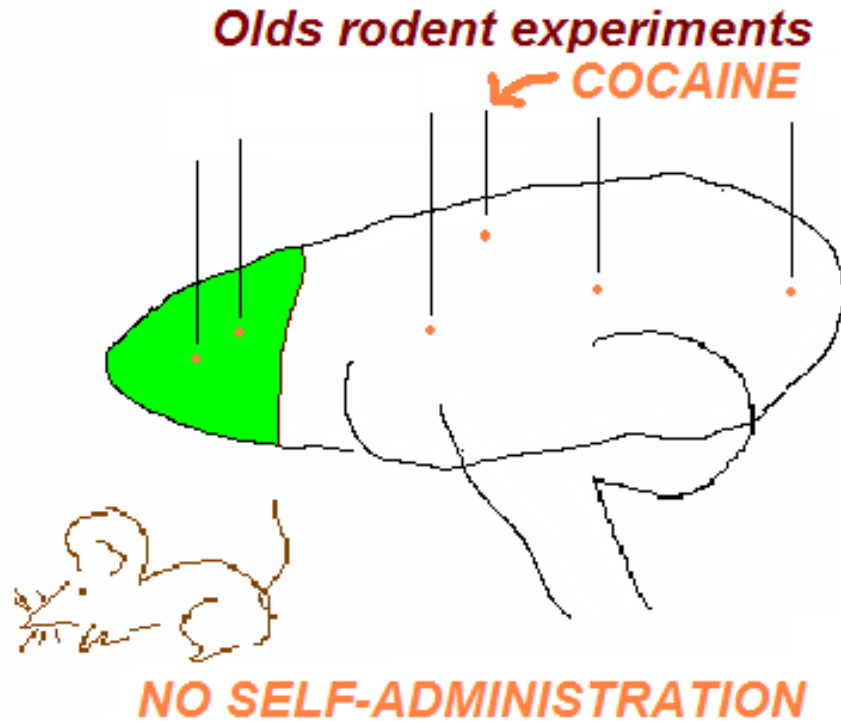
Olds experiments:



Olds experiments:

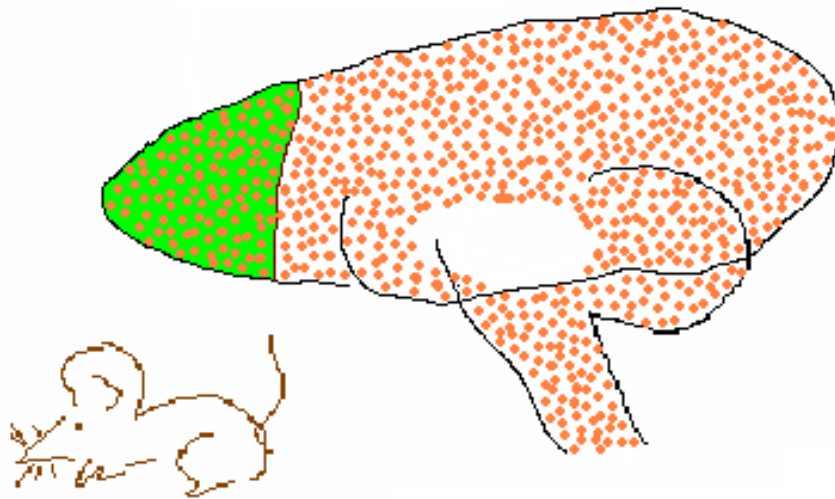


Olds experiments:



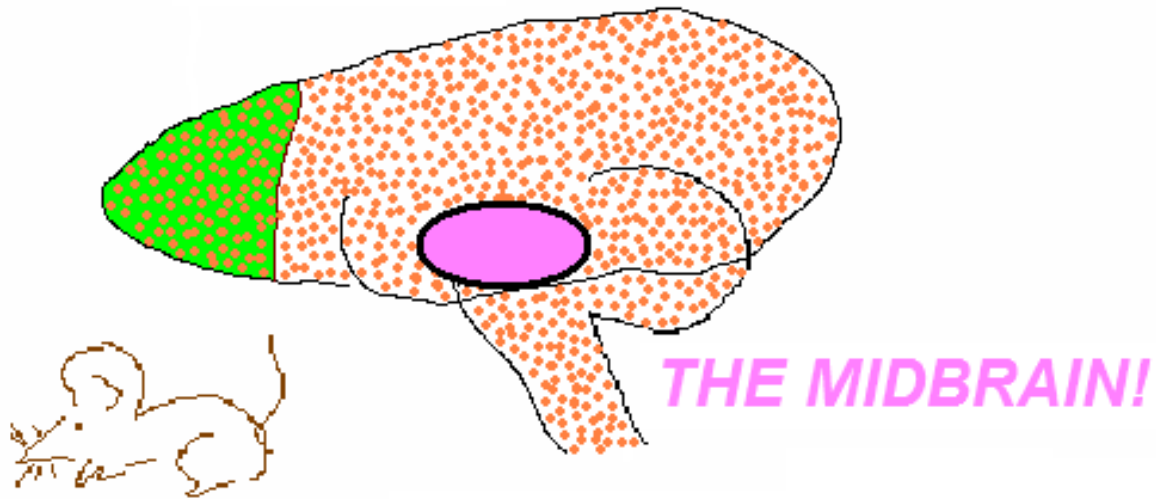
Olds experiments:

Olds rodent experiments

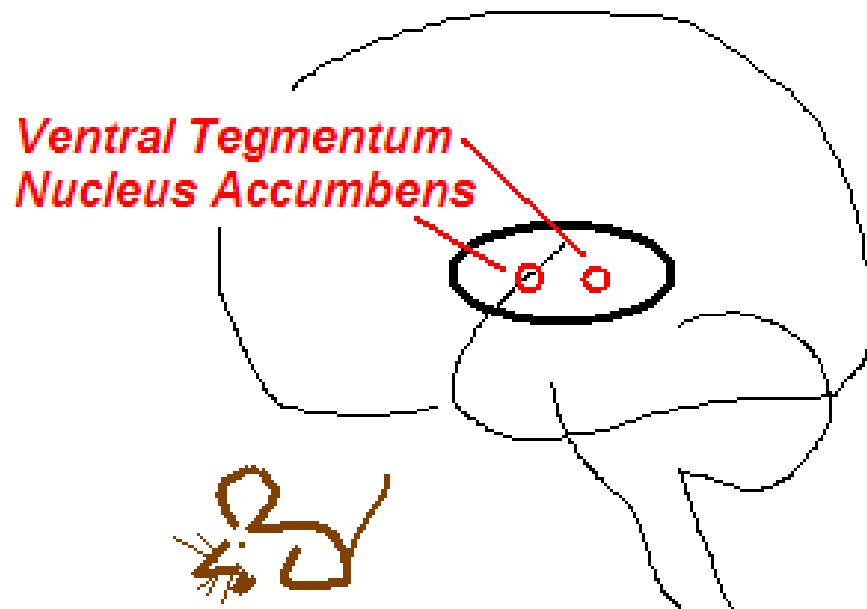


Olds experiments:

Olds rodent experiments

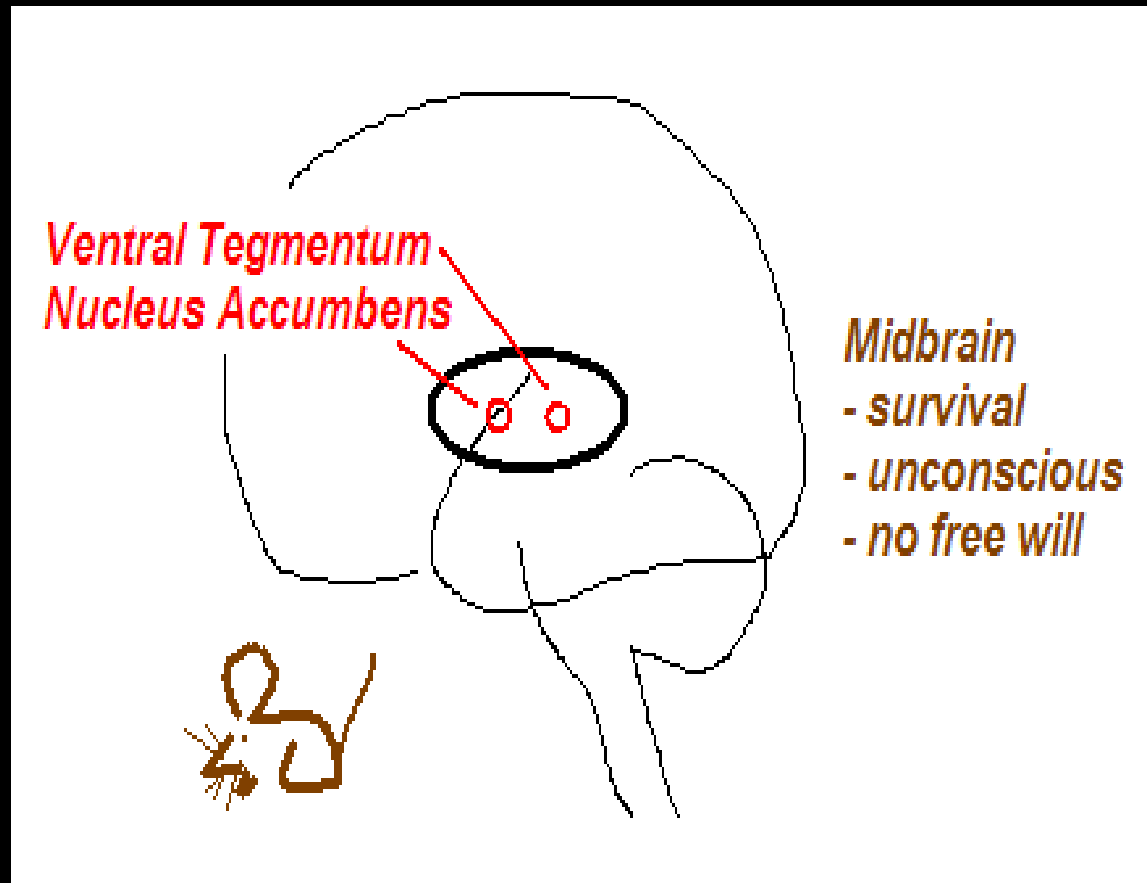


The “Reward Centers” of the Midbrain



Mice preferentially self-administer cocaine ONLY to the Reward Centers of the Midbrain

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



Mice can get addicted to drugs!

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"*



**Mice studies separate
correlation from causation**

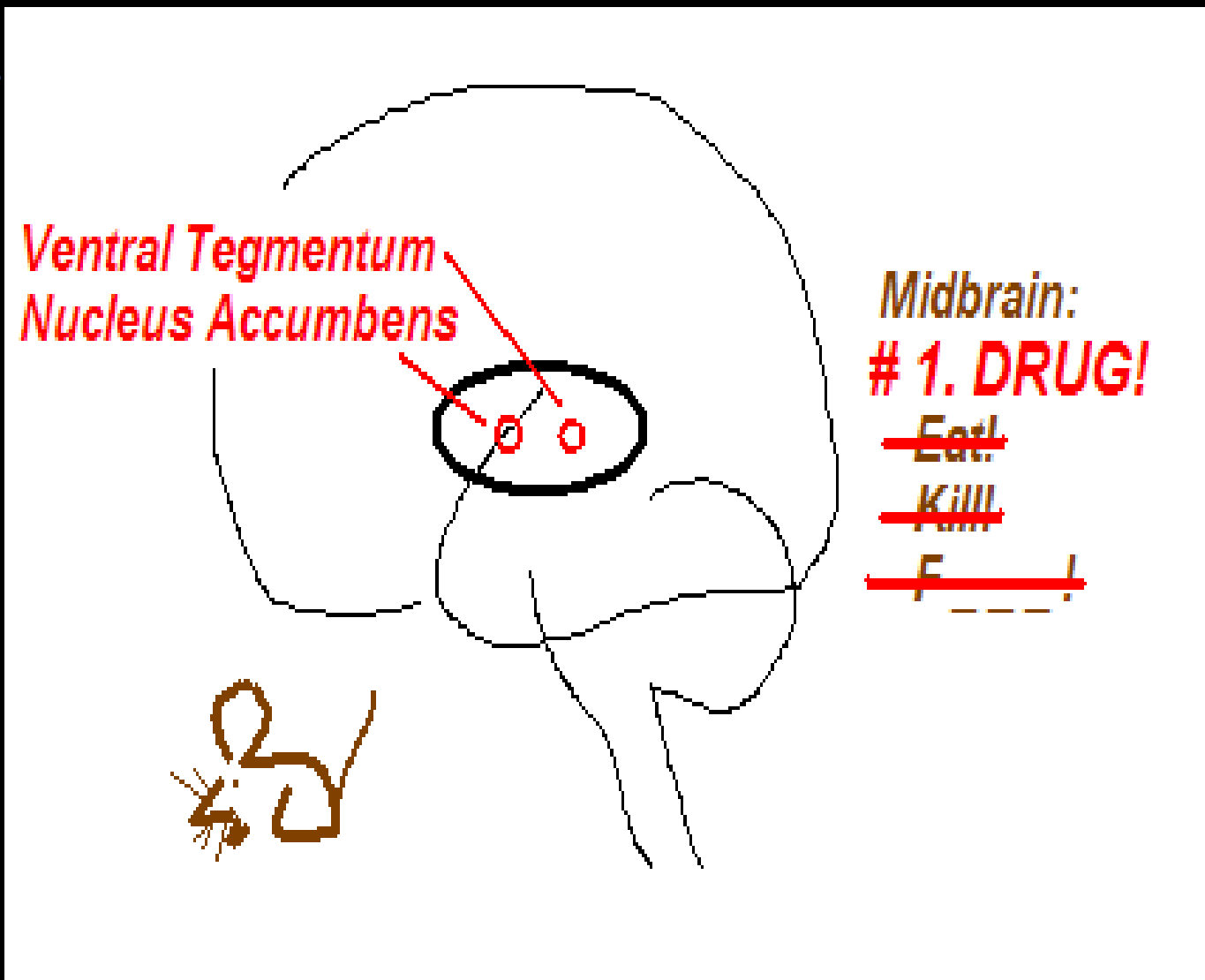
**Addiction can exist where “behavioral”
variables do not apply**

**Moral, personality, and social learning variables can
sometimes *go along* with addiction**

But they cannot *cause* addiction

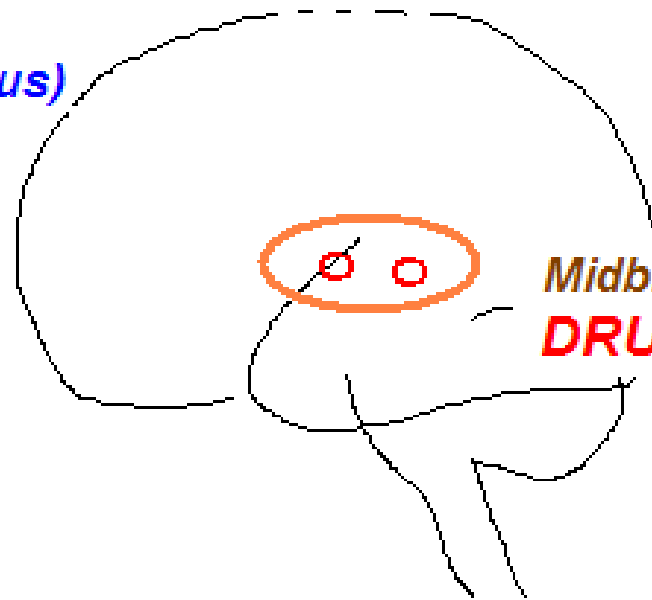
What happened in the Olds experiments?

- Somehow the drug hijacked the midbrain survival system
- All survival imperatives are now solved by the drug



The Drug becomes Survival at the level of the unconscious . . .

**Cortex
(conscious)**



**Midbrain (unconscious)
DRUG = SURVIVAL**

SILKWORTH'S ALLERGY

***The addicted brain is
quantitatively different
from the normal brain***

(it's not just a beer anymore . . .

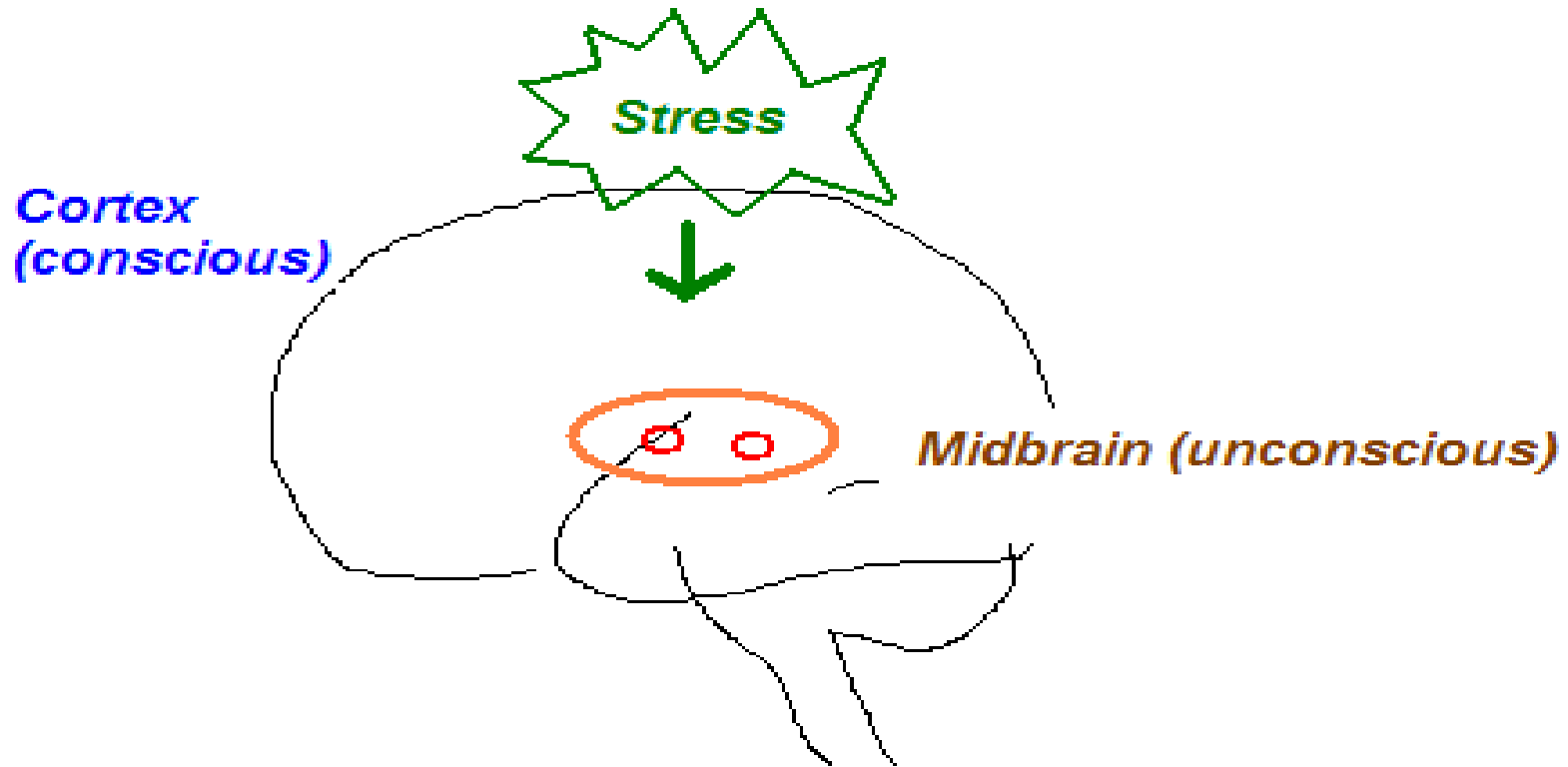
. . . it's the main way of coping with life)

What causes that change?

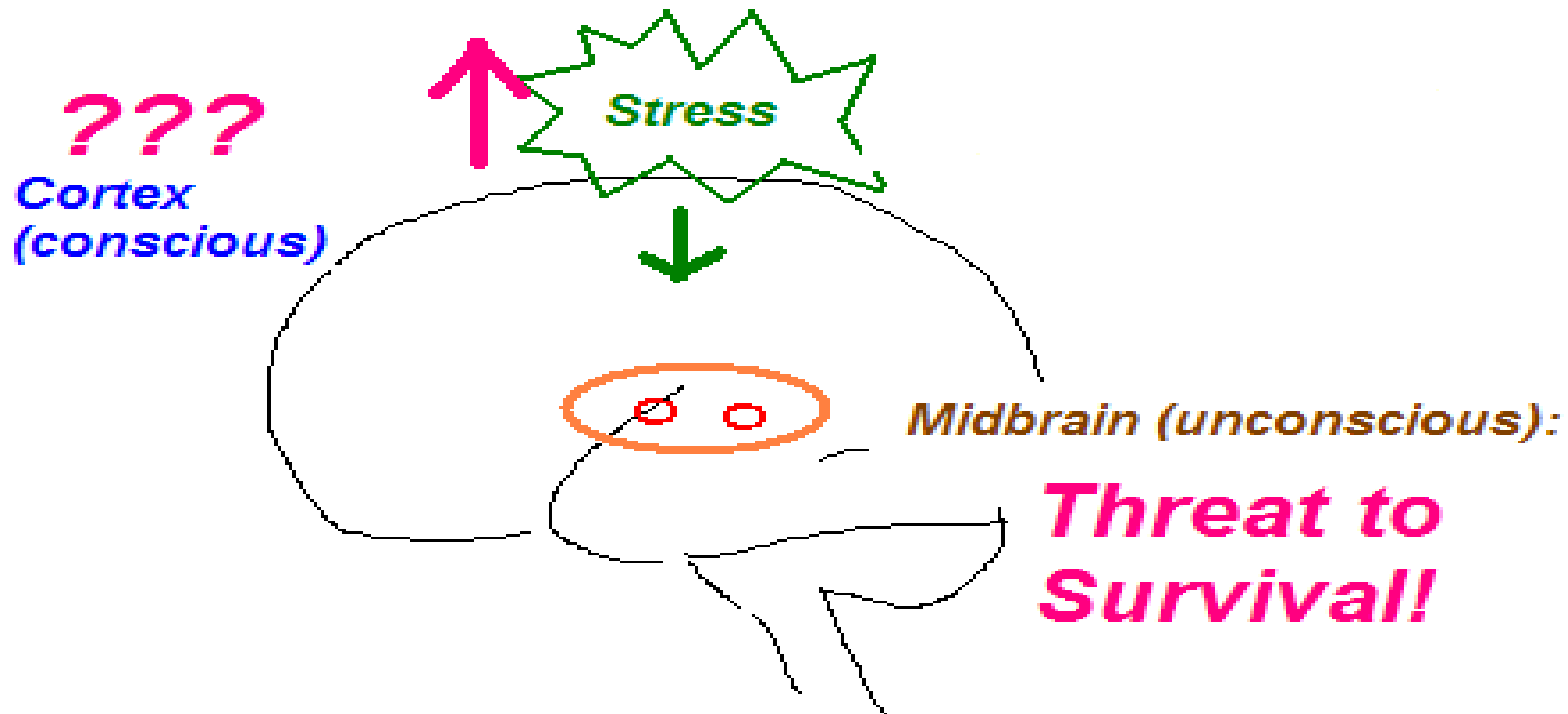
**What makes the addicted brain
fundamentally different from the
normal brain?**

(You're not going to like this . . .)

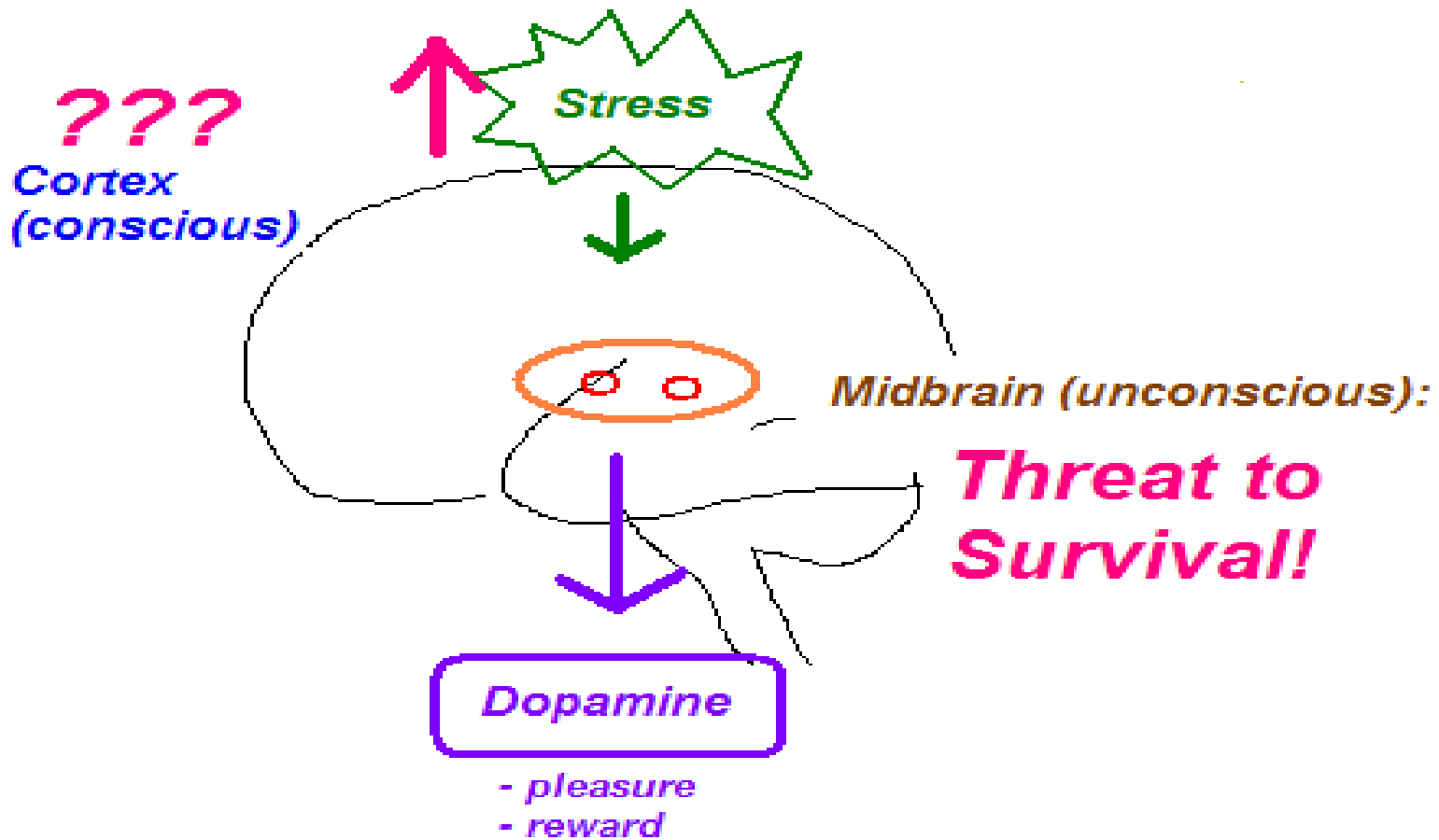
STRESS : the causal agent in addiction



Stress changes the physiology of the midbrain . . .



DOPAMINE mediates the experience of pleasure



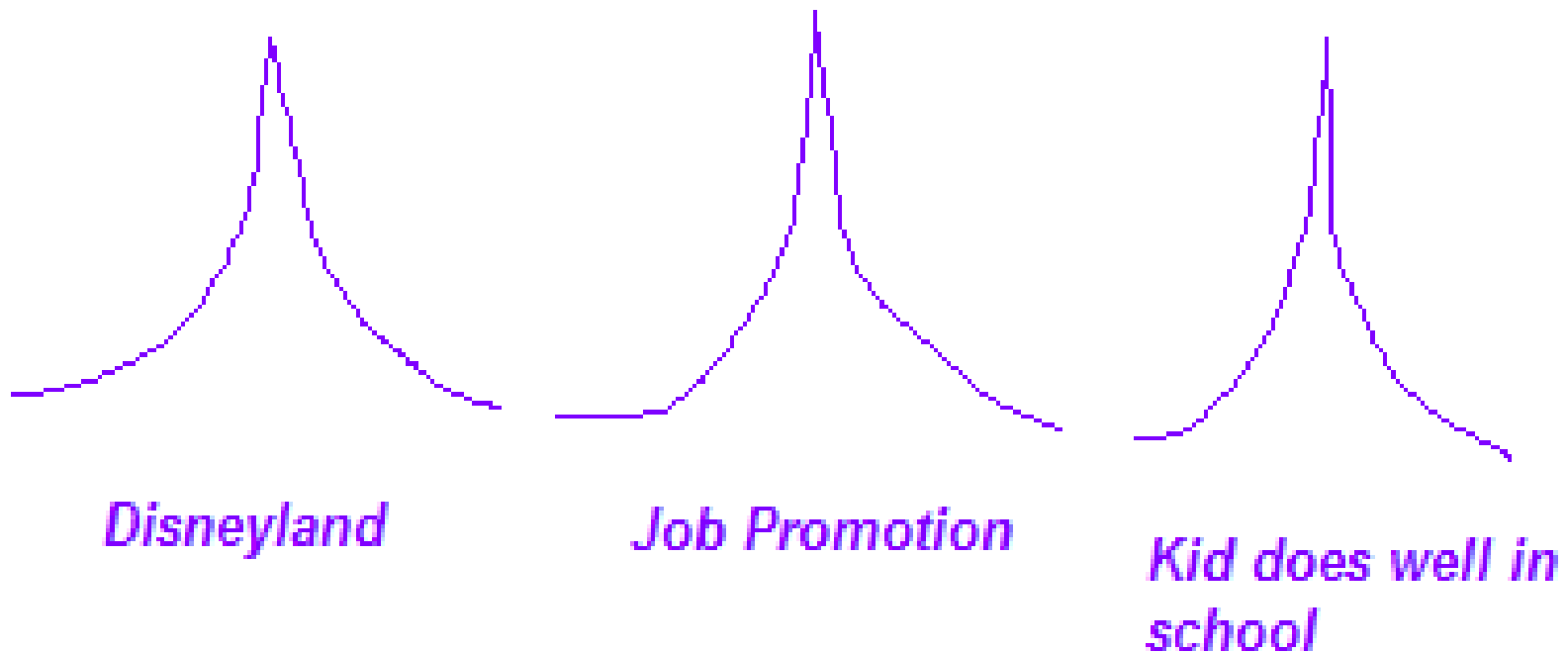
Brain Perceptual Systems:

- 1. Vision**
- 2. Hearing**
- 3. Touch**
- 4. Smell**
- 5. Taste**

Brain Perceptual Systems (all of them):

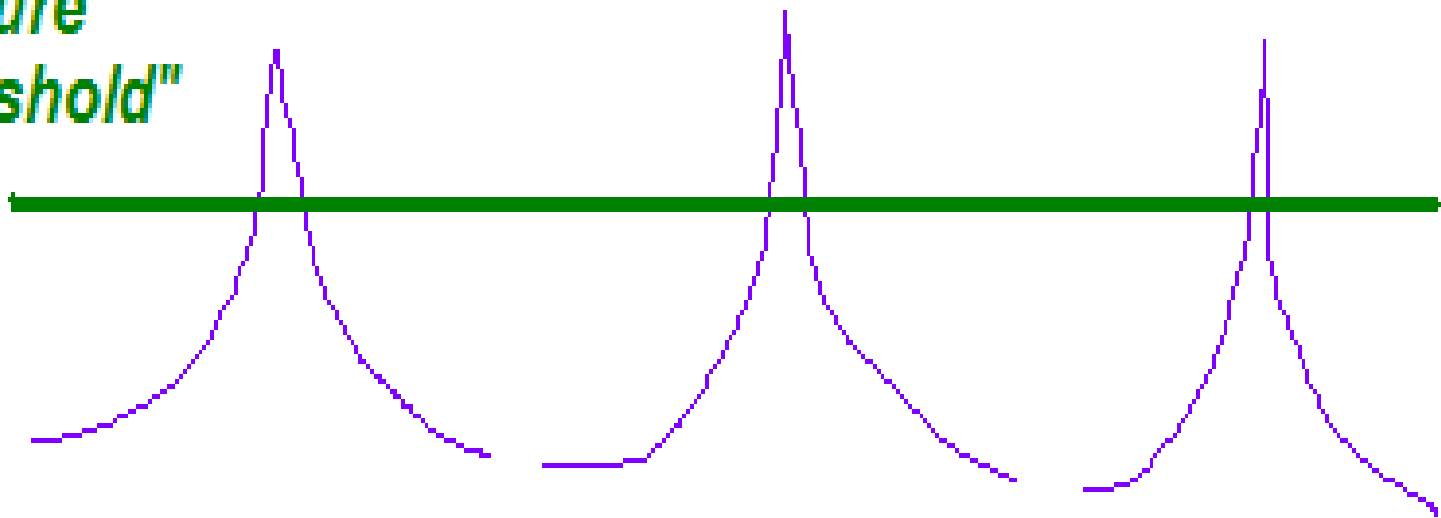
- 1. Vision**
- 2. Hearing**
- 3. Touch**
- 4. Smell**
- 5. Taste**
- 6. Linear Acceleration**
- 7. Angular Acceleration**
- 8. Gravity (Proprioception)**
- 9. Blood pO₂ and pCO₂**
- 10. Pleasure**

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



The Brain has a Hedonic "Set Point"

*Pleasure
"Threshold"*

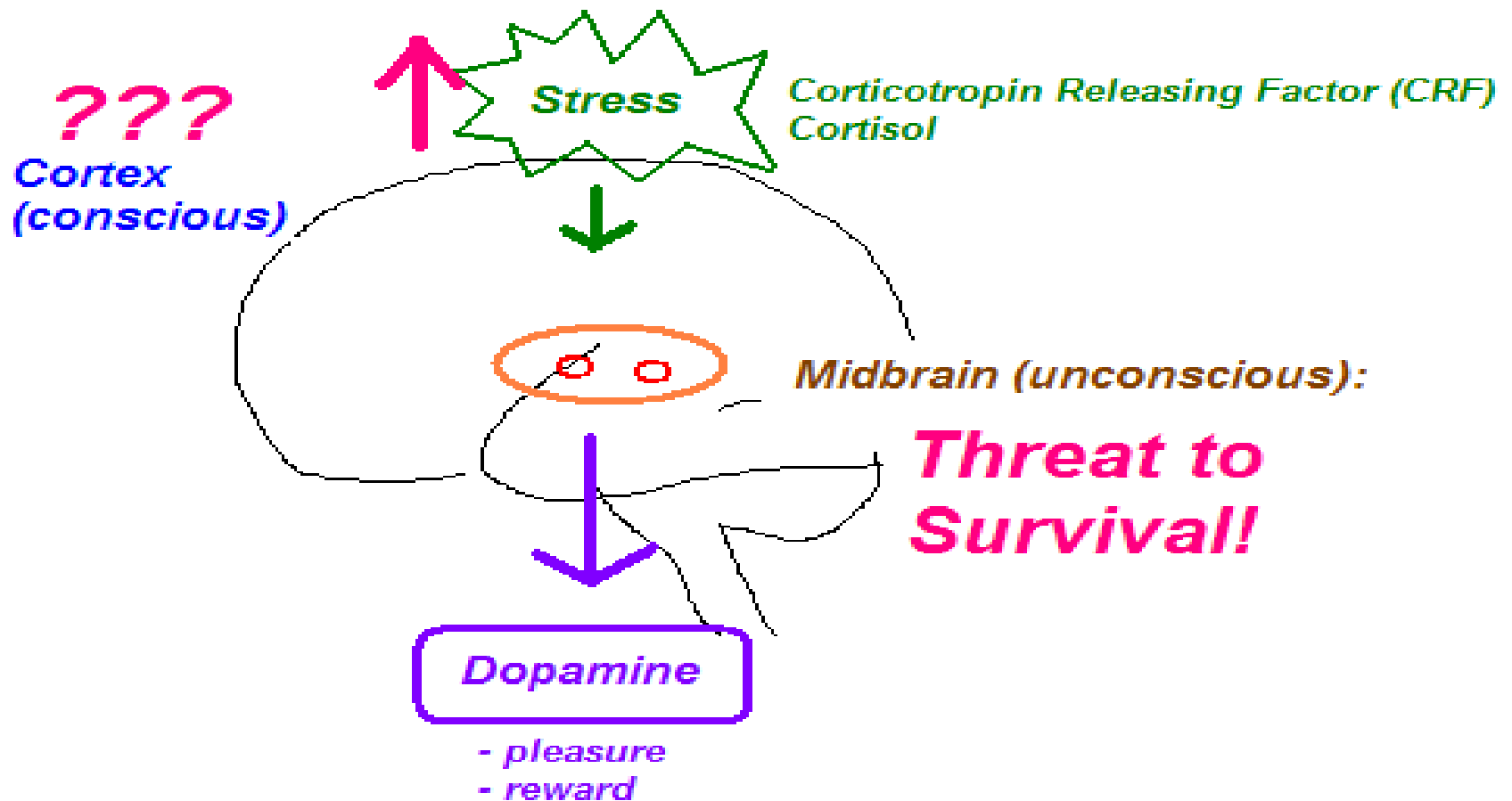


Disneyland

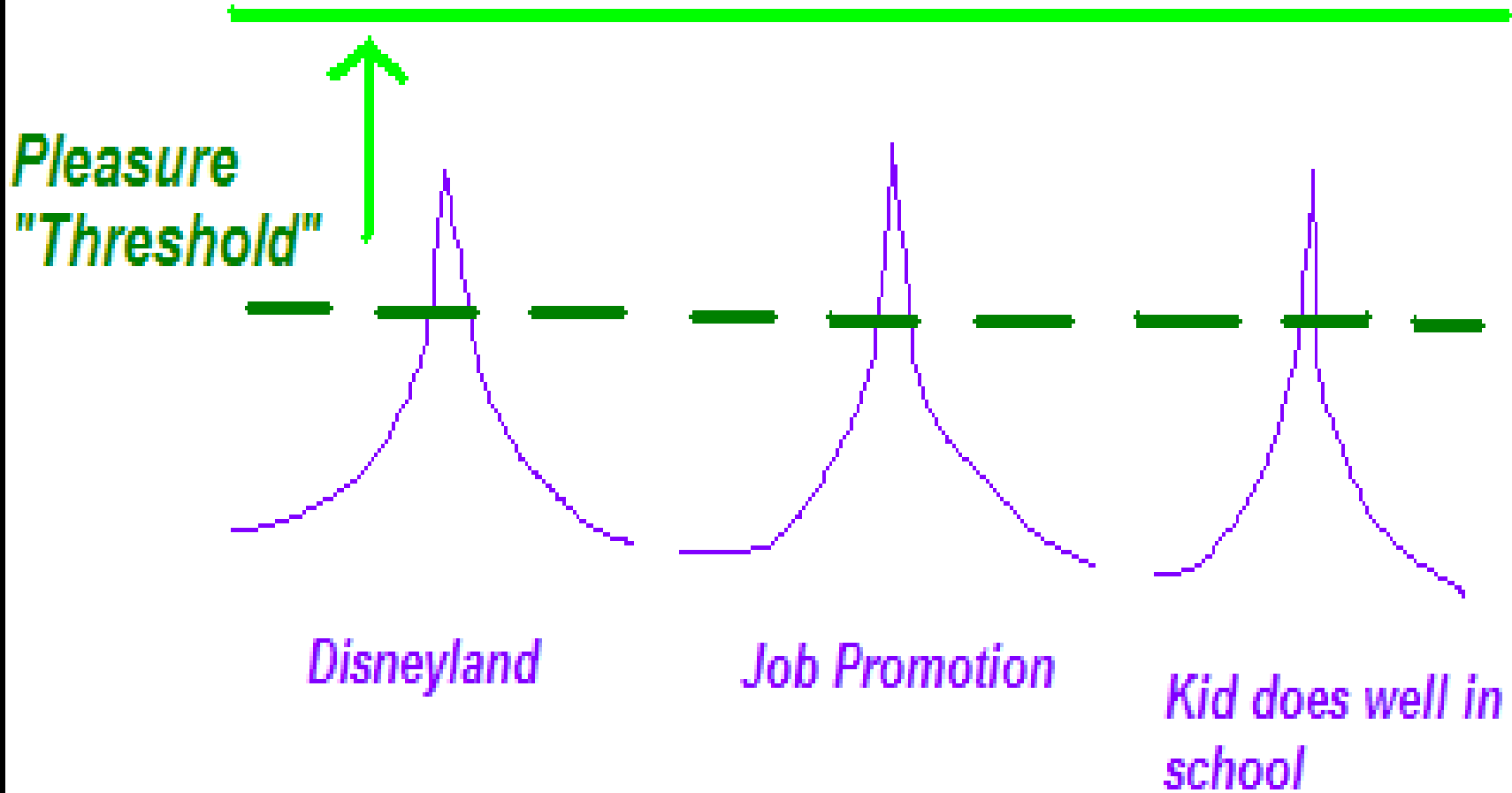
Job Promotion

*Kid does well in
school*

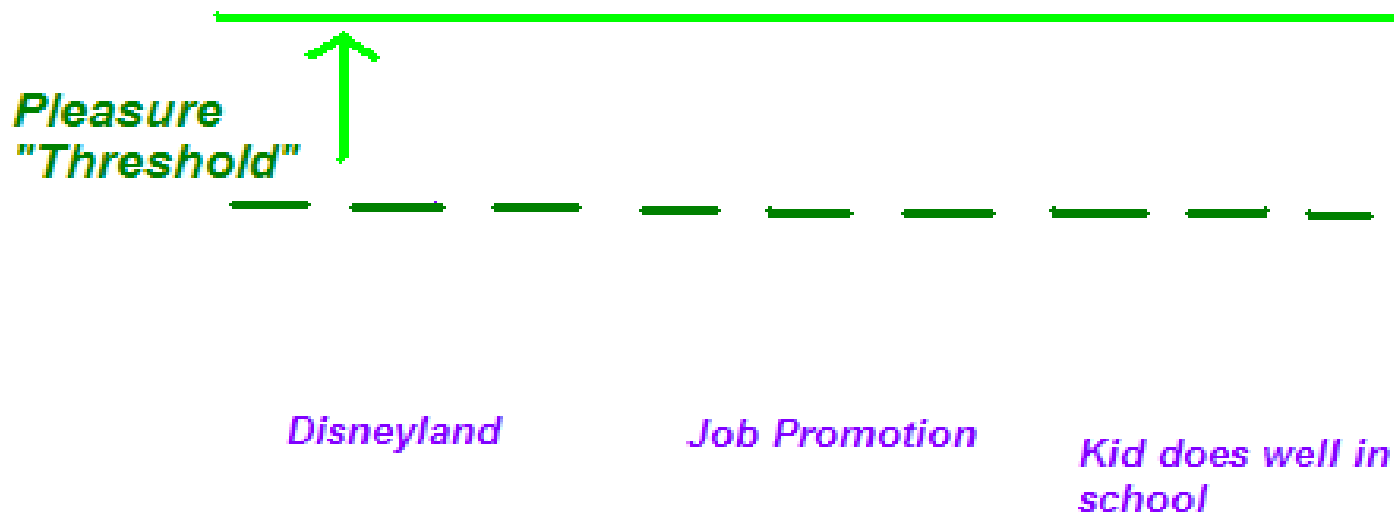
The Dopamine System changes in conditions of severe, chronic stress



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



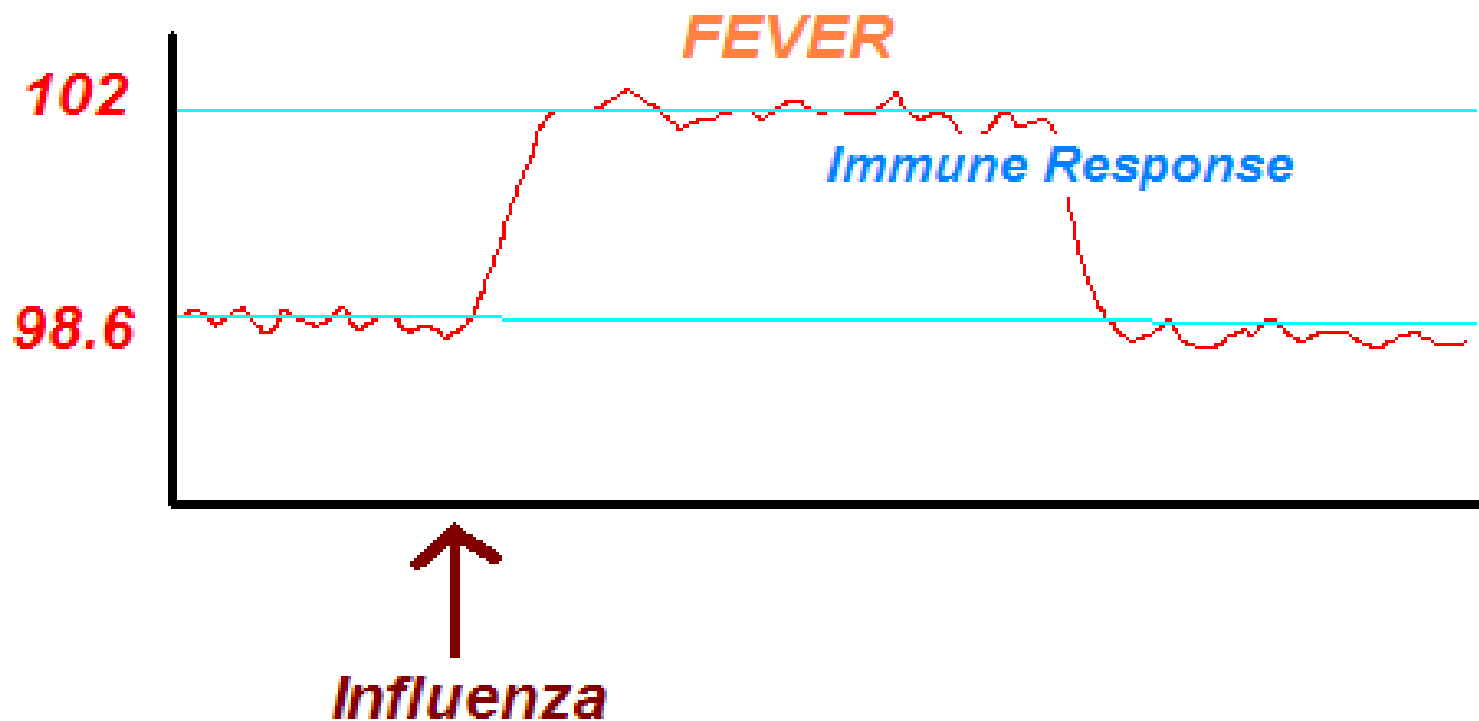
Change in Hedonic Set Point: Old pleasures don't show up



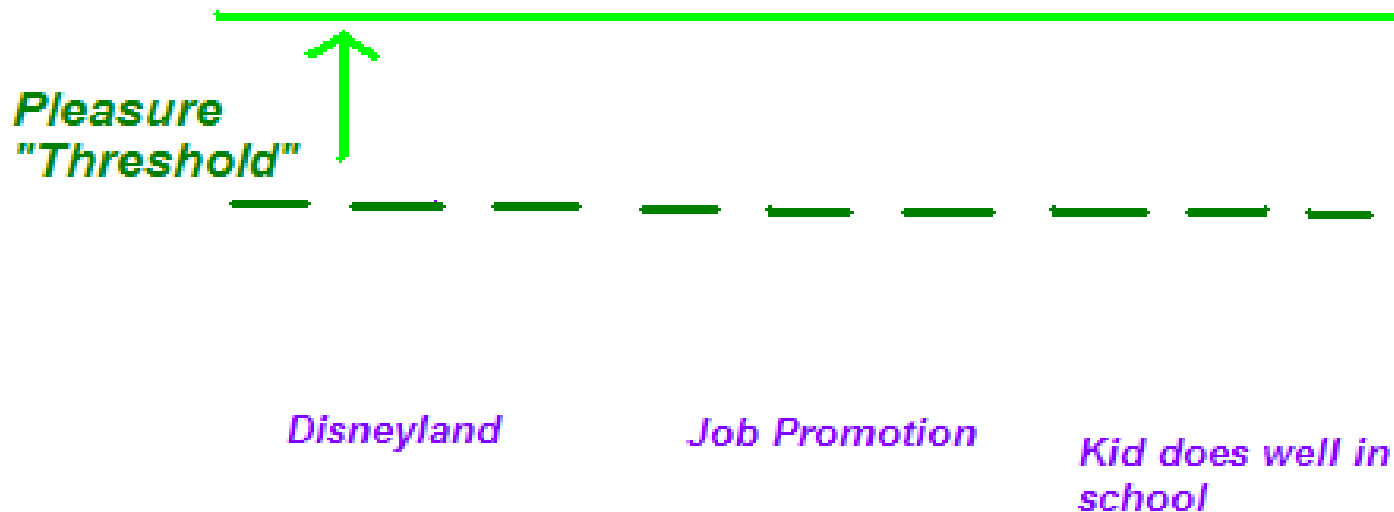
Anhedonia: Pleasure “deafness”

- ***The patient is no longer able to derive normal pleasure from those things that have been pleasurable in the past***

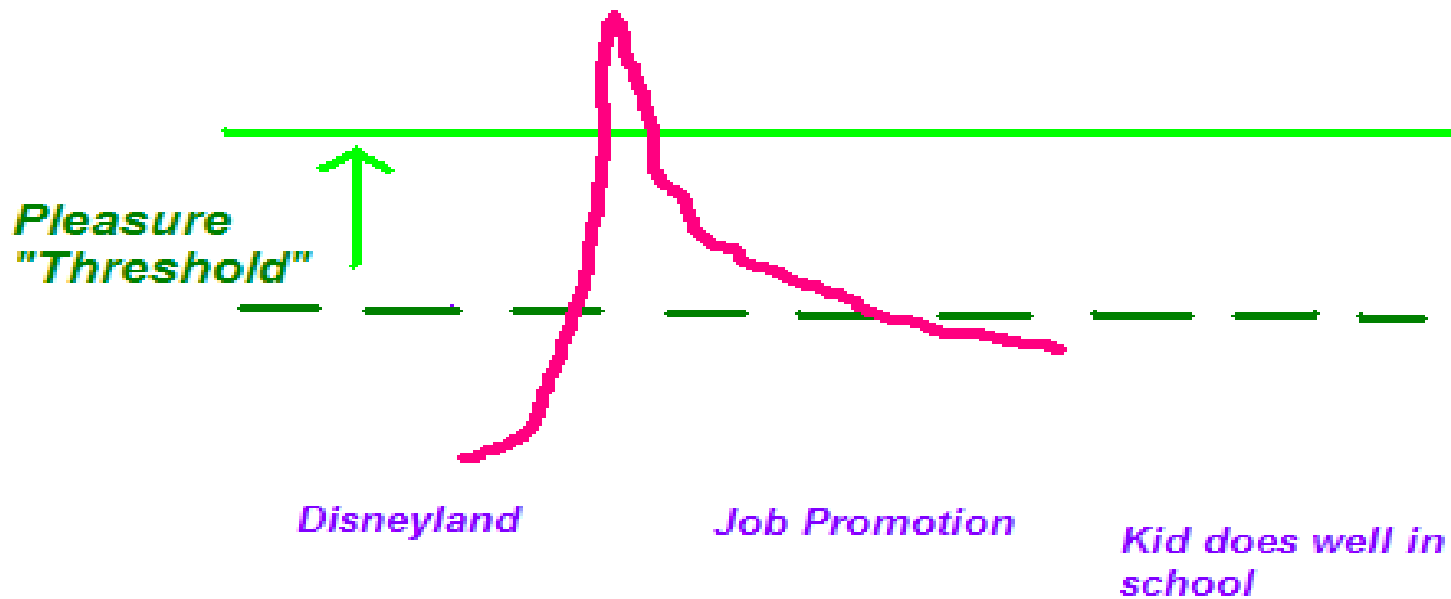
Another “set point” in the brain . . .



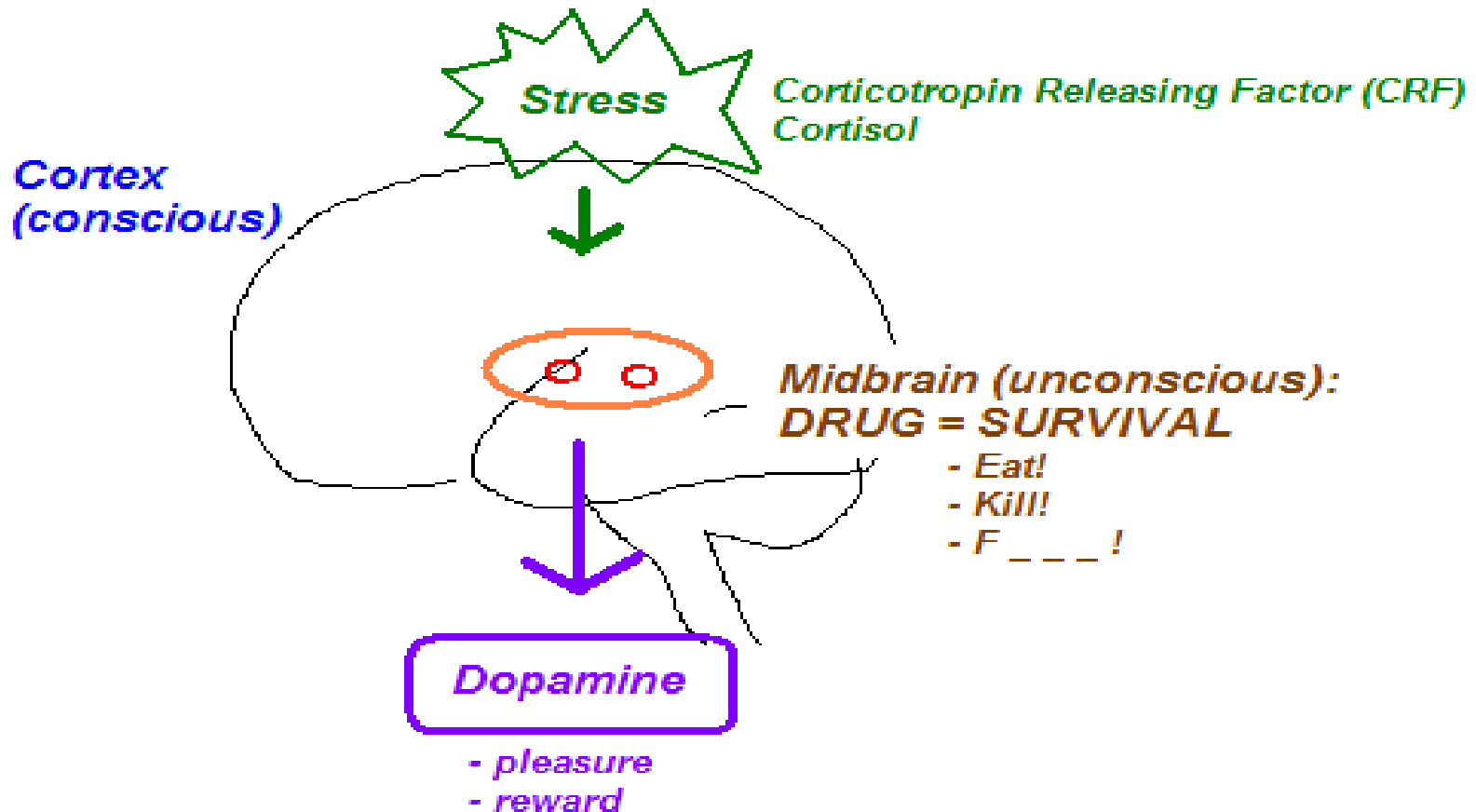
Change in Hedonic Set Point: Old pleasures don't show up



What **DOES** the midbrain recognize?



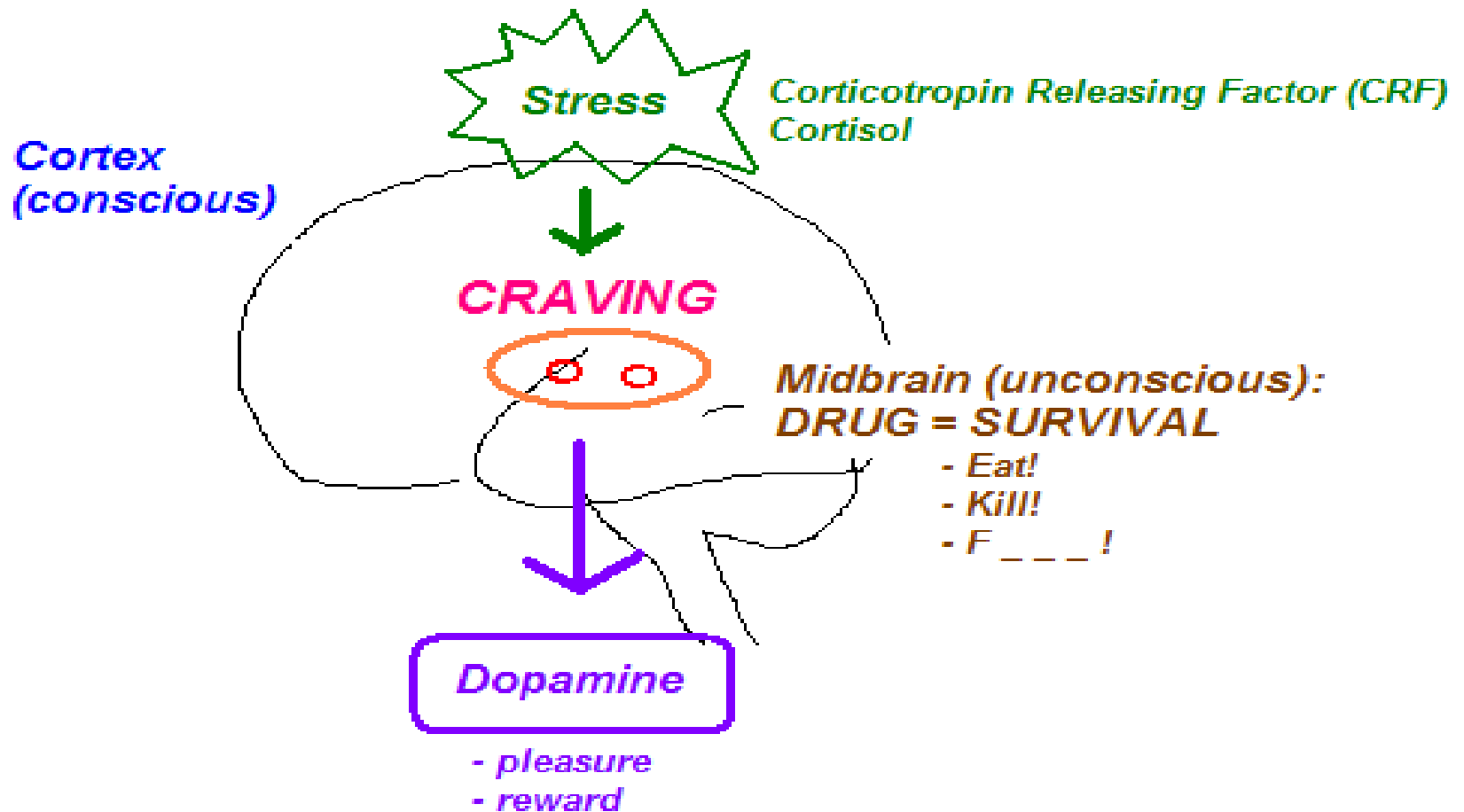
The Dopamine surge causes the drug to be tagged as the new, #1 coping mechanism for all incoming stressors ...

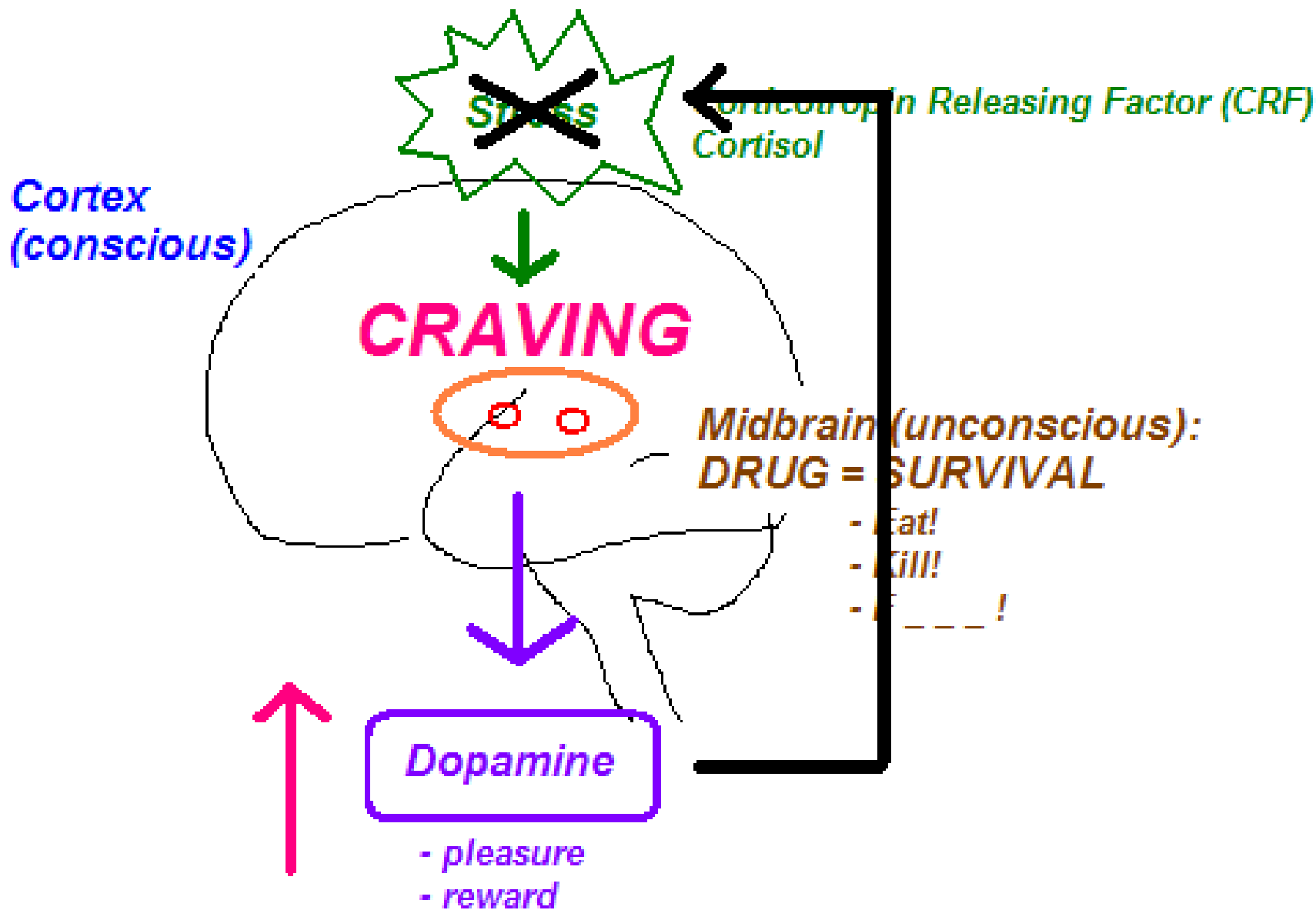


***Now that the midbrain has found
what secures survival ...***

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

Stress = Craving

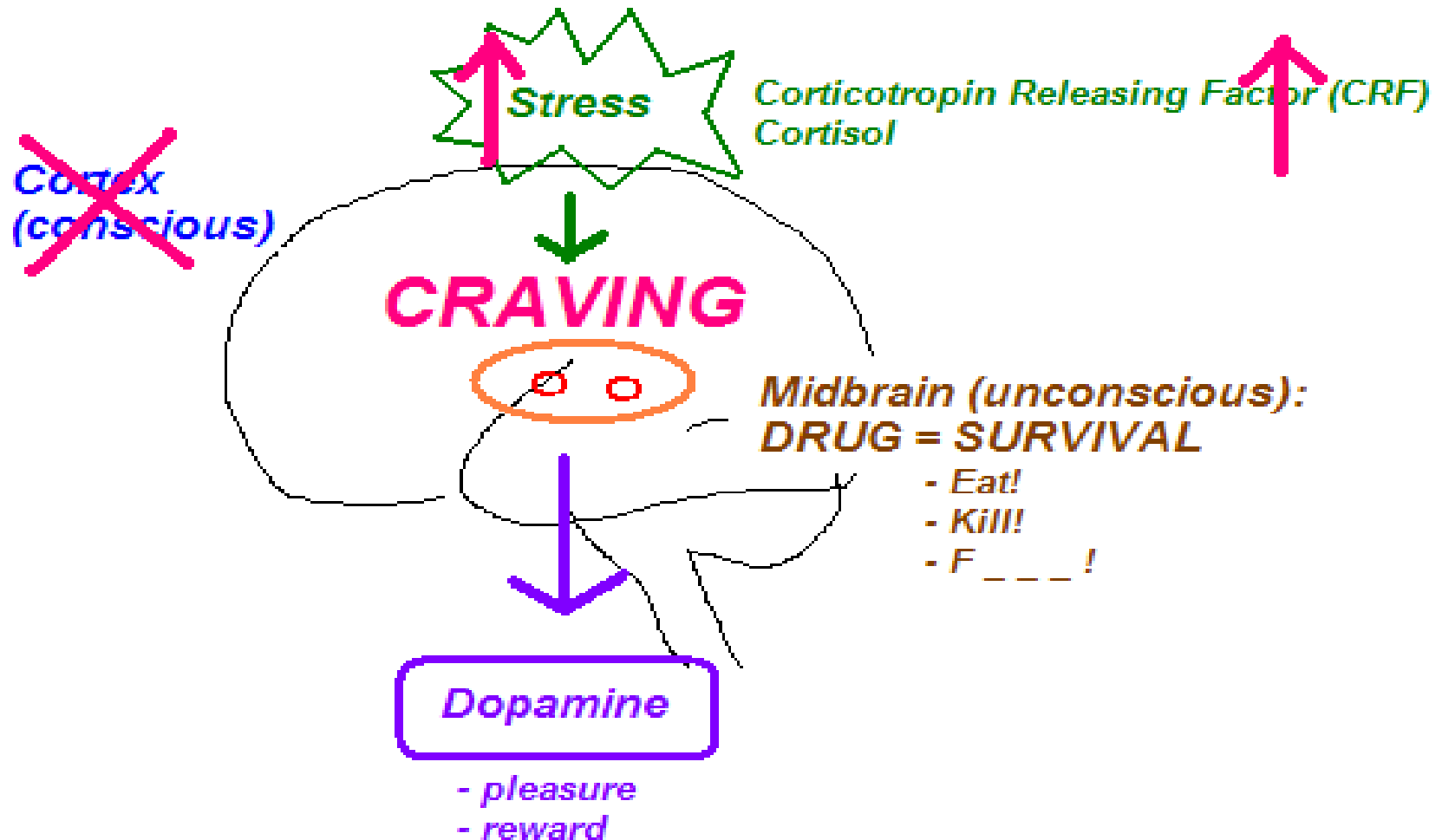




Horvath's Dilemma:

- **Fails to take into account **CRAVING****
- **The addict cannot choose to not crave**
- **You don't actually have to have drug use for the defective physiology of addiction to be active**
- **Measures addiction by external *behavior* alone**
- **Ignores the inner world and the true *suffering* of the addict**

And the Frontal Cortex?



***It's not that the addict doesn't
have "values" . . .***

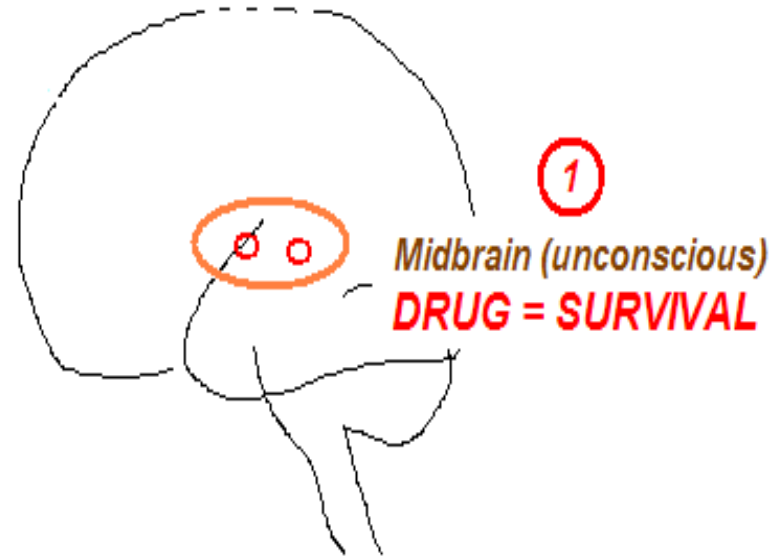
***It's that in the midst of survival panic
the addict cannot draw upon those values
to guide their behavior . . .***

The midbrain now reigns . . .

And conscious thought becomes constricted.

Addiction Part One:

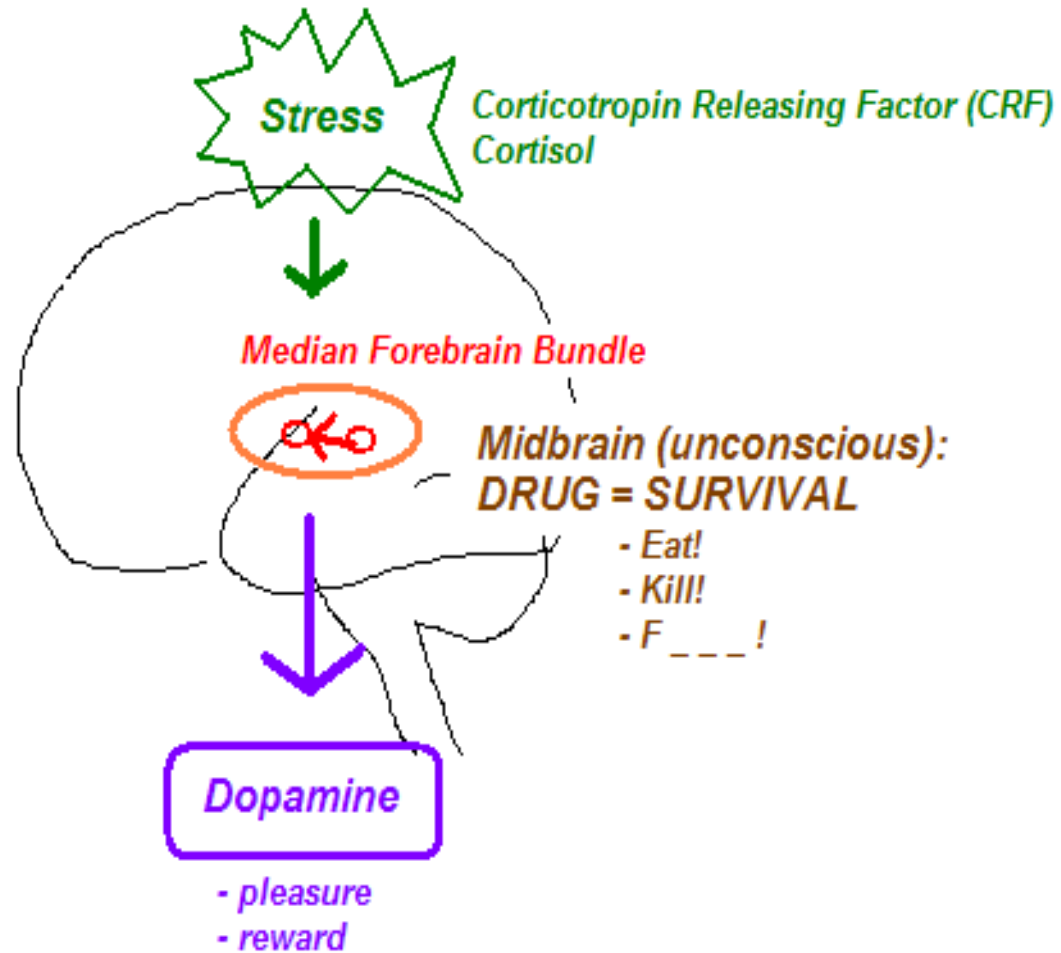
- **misperception of the hedonic aspects of the drug**
- And**
- **attribution of survival salience to the drug on the level of the unconscious**



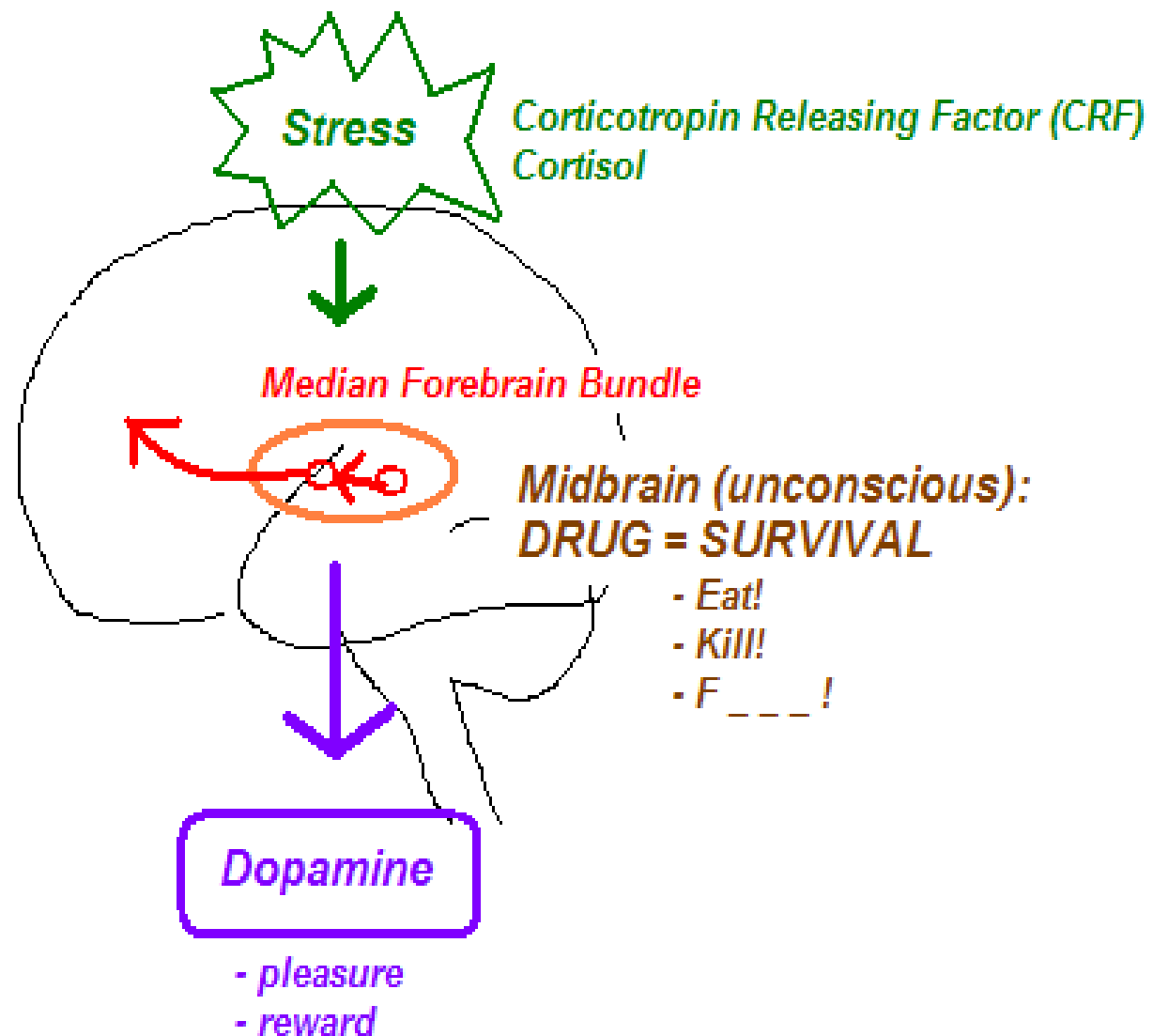
THEN . . .

- ***Then comes the second part of addiction . . .***
- ***After the midbrain misperceives the hedonic/survival saliency of the drug, that aberrant perception is then delivered via the Median Forebrain Bundle . . .***

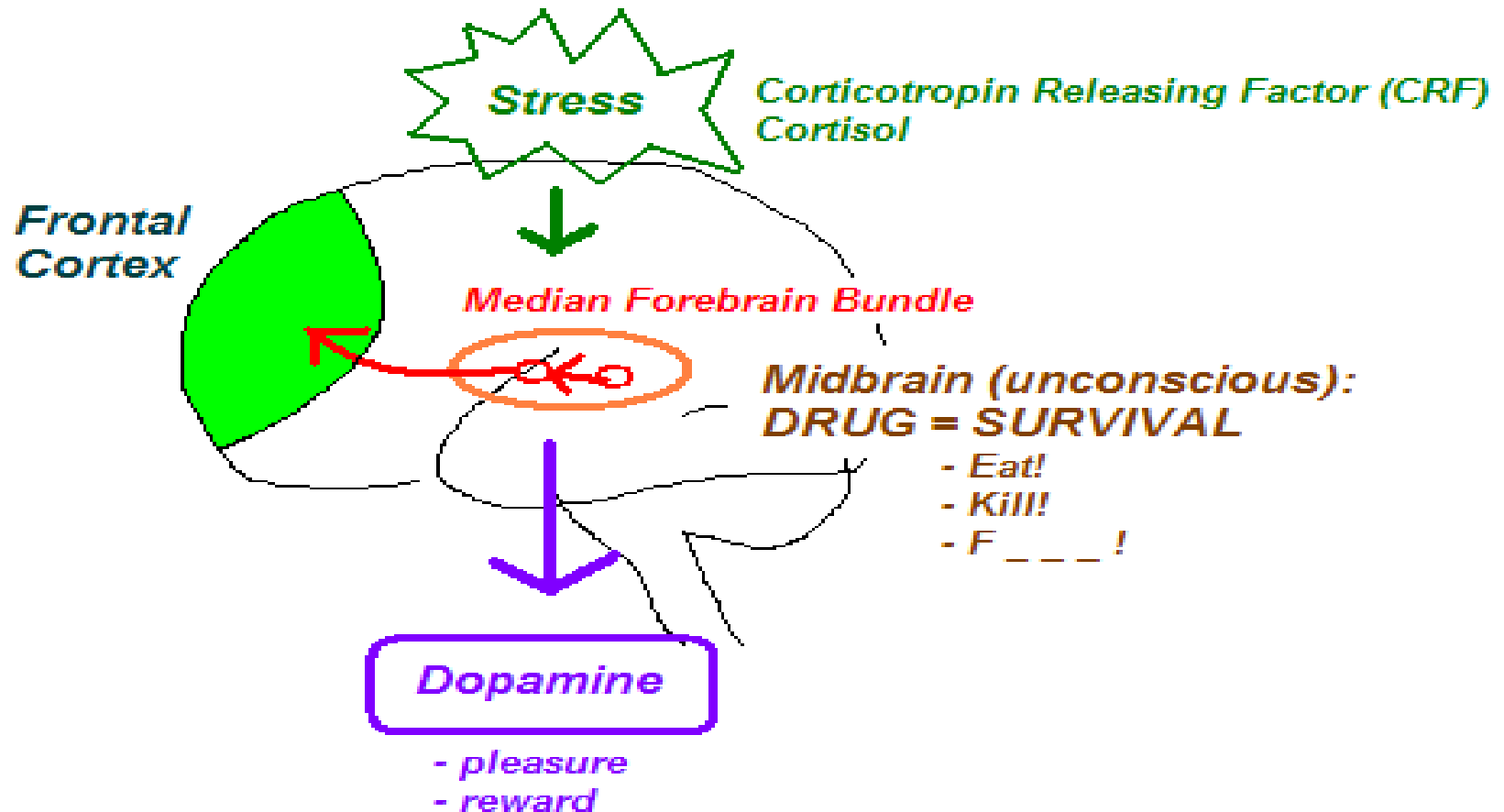
Median Forebrain Bundle: **carries the aberrant perception up...**



And the next stop?



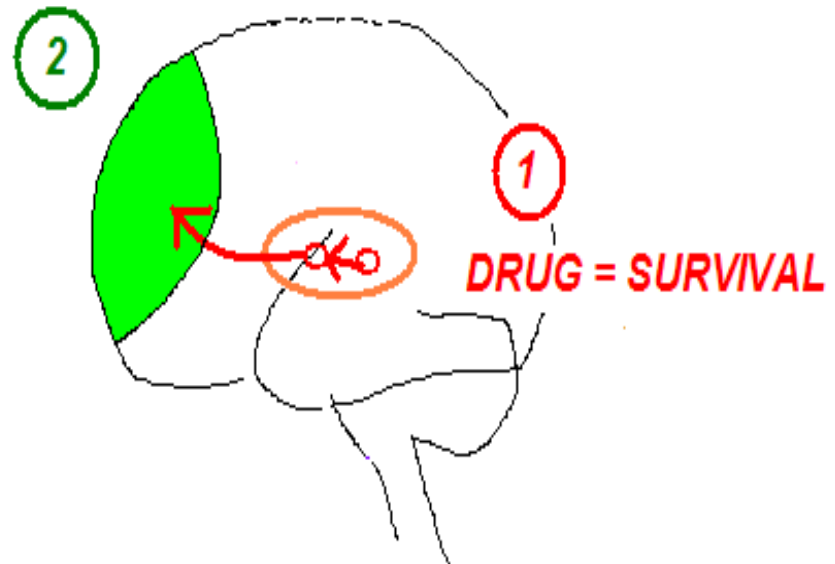
MFB delivers aberrant perception of drug's hedonic/survival salience to the Frontal Cortex . . .



Addiction Part Two:

- **The drug takes on personal meaning**
- **The addict develops an emotional relationship with the drug**
- **The addict derives their sense of self through the drug**

DRUG = EMOTIONAL MEANING

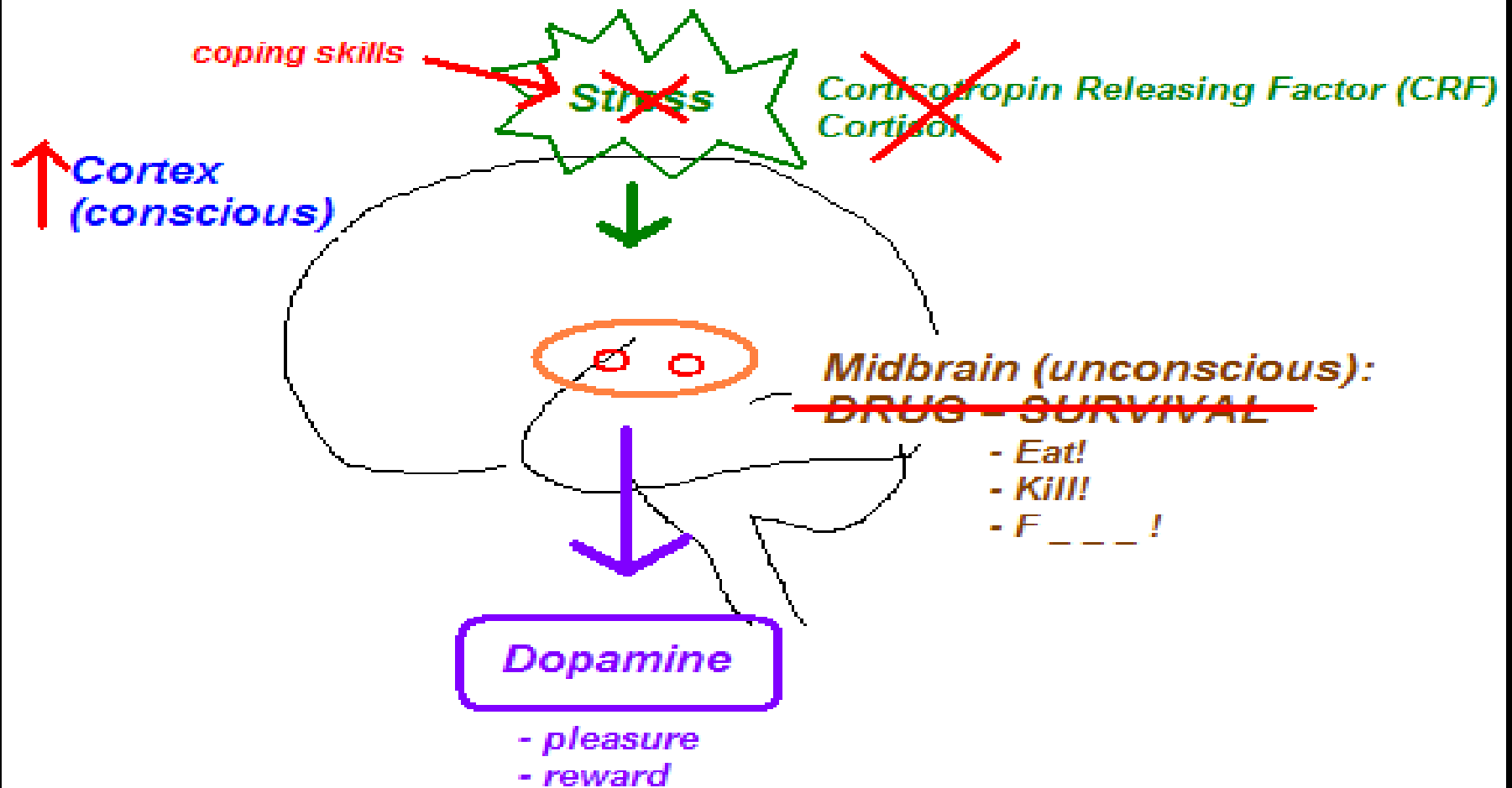


The Two Tasks of Addiction Treatment:

1. To give the addict workable, credible tools to proactively manage stress and decrease craving

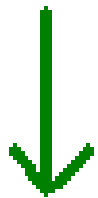
2. For each individual addict, find the thing which is more emotionally meaningful than the drug - and displace the drug with it

With the installation of coping mechanisms (A.A.), the Cortex comes back “on-line” and Free Will returns...

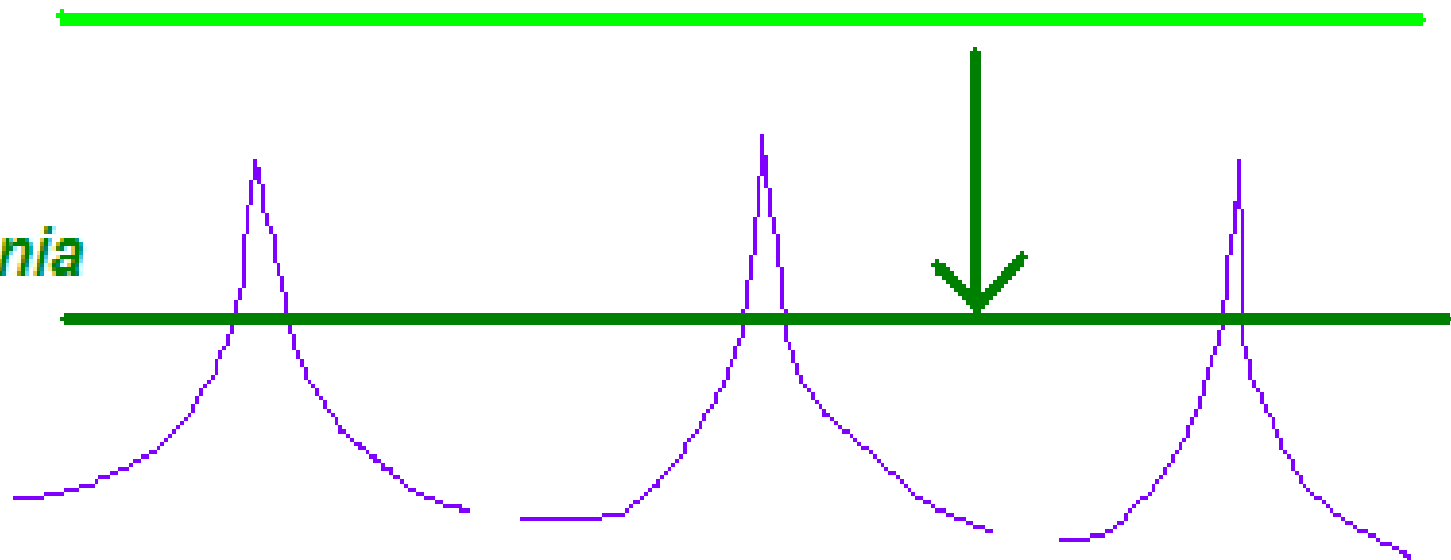


Then . . .

Anhedonia



Hedonia

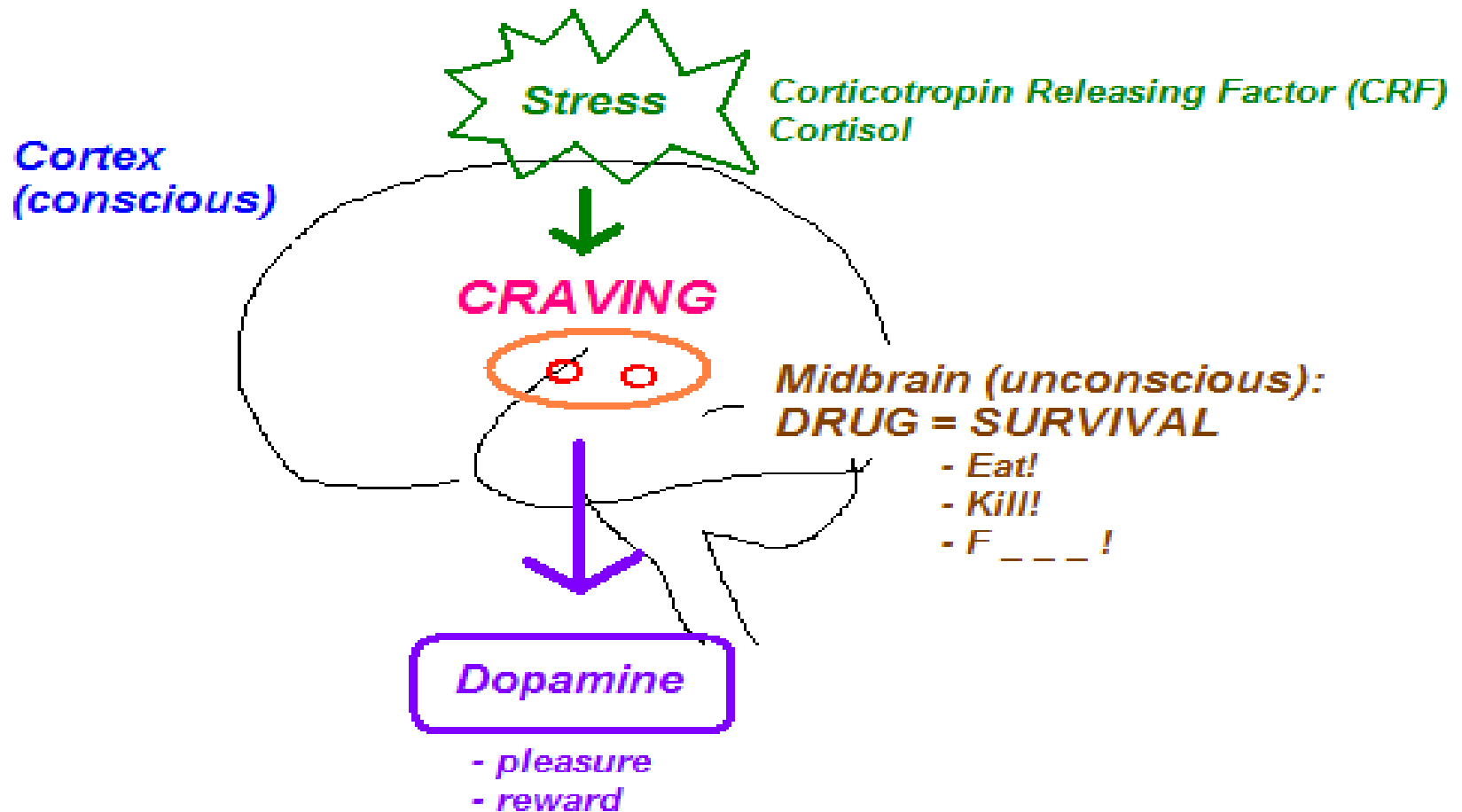


Disneyland

Job Promotion

Kid does well in school

The Dopamine Hypothesis of Addiction



Dopamine-Releasing Chemicals

- **Alcohol & Sedative/Hypnotics**
- **Opiates/Opioids**
- **Cocaine**
- **Amphetamines**
- **Entactogens (MDMA)**
- **Entheogens/Hallucinogens**
- **Cannabinoids**
- **Inhalants**
- **Nicotine**
- **Caffeine**
- **Steroids**

Dopamine-Releasing Behaviors

- **Food (Bulimia & Binge Eating)**
- **Sex**
- **Relationships**
- **Other People**
(“Codependency,” Control)
- **Gambling**
- **Cults**
- **Performance**
(“Work-aholism”)
- **Collection/Accumulation**
(“Shop-aholism”)
- **Rage/Violence**
- **Media/Entertainment**

The Full Spectrum of Addiction

- **Alcohol & Sedative/Hypnotics**
- **Opiates/Opioids**
- **Cocaine**
- **Amphetamines**
- **Entactogens (MDMA)**
- **Entheogens/Hallucinogens**
- **Cannabinoids**
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- **Collection/Accumulation**
(“Shop-aholism”)
- **Rage/Violence**
- **Media/Entertainment**

Definition of Addiction:

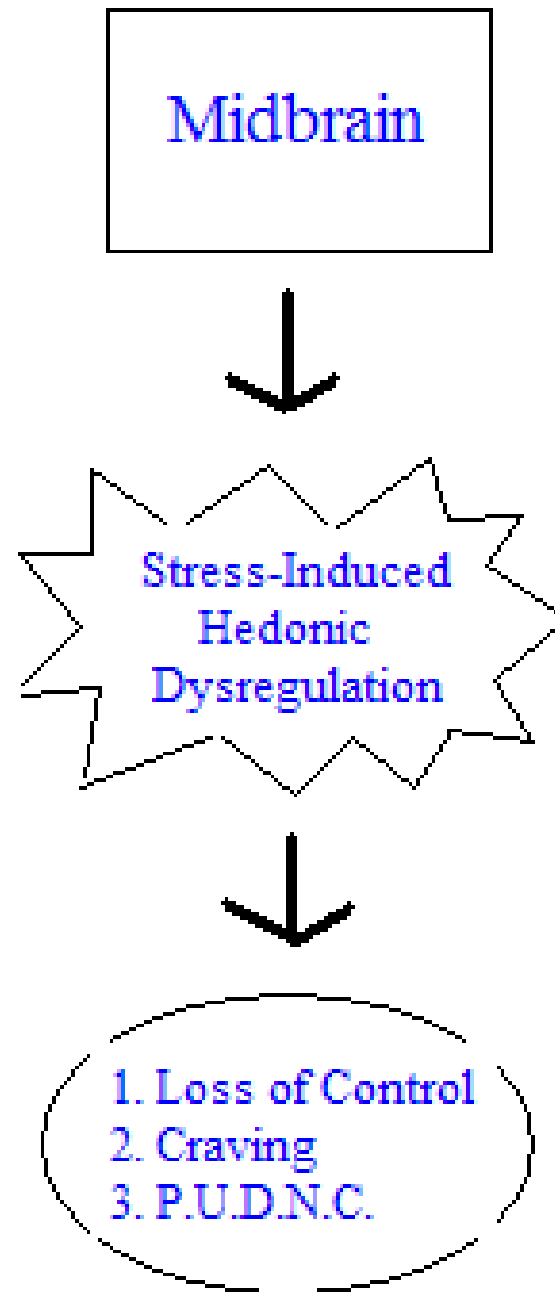
Addiction is a dysregulation of the midbrain dopamine (pleasure) system due to unmanaged stress resulting in symptoms of decreased functioning, specifically:

1. Loss of control

2. Craving

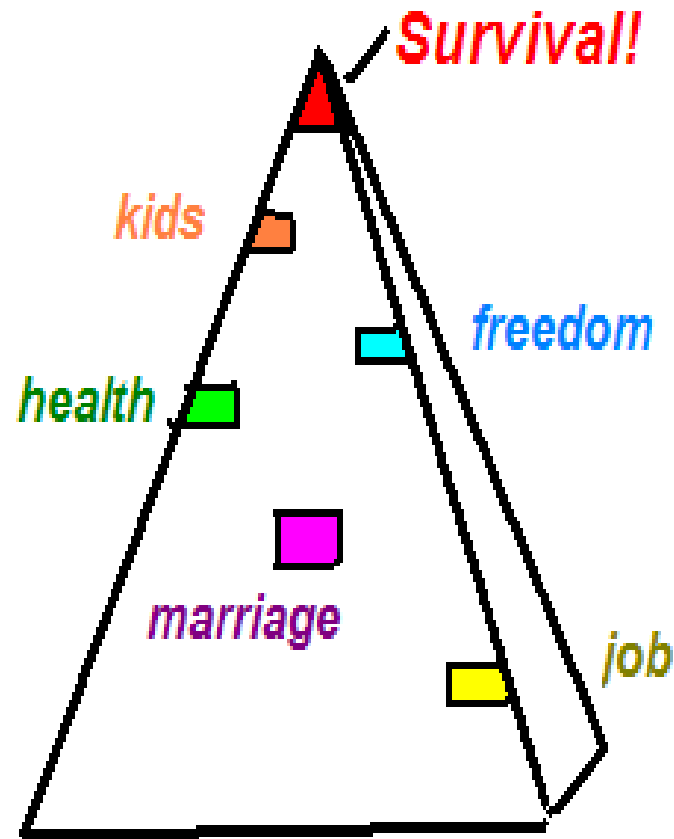
3. Persistent drug use despite negative consequences

***Addiction
fits the
“Disease
Model!”***



Punishment won't stop drug use because the drug is survival

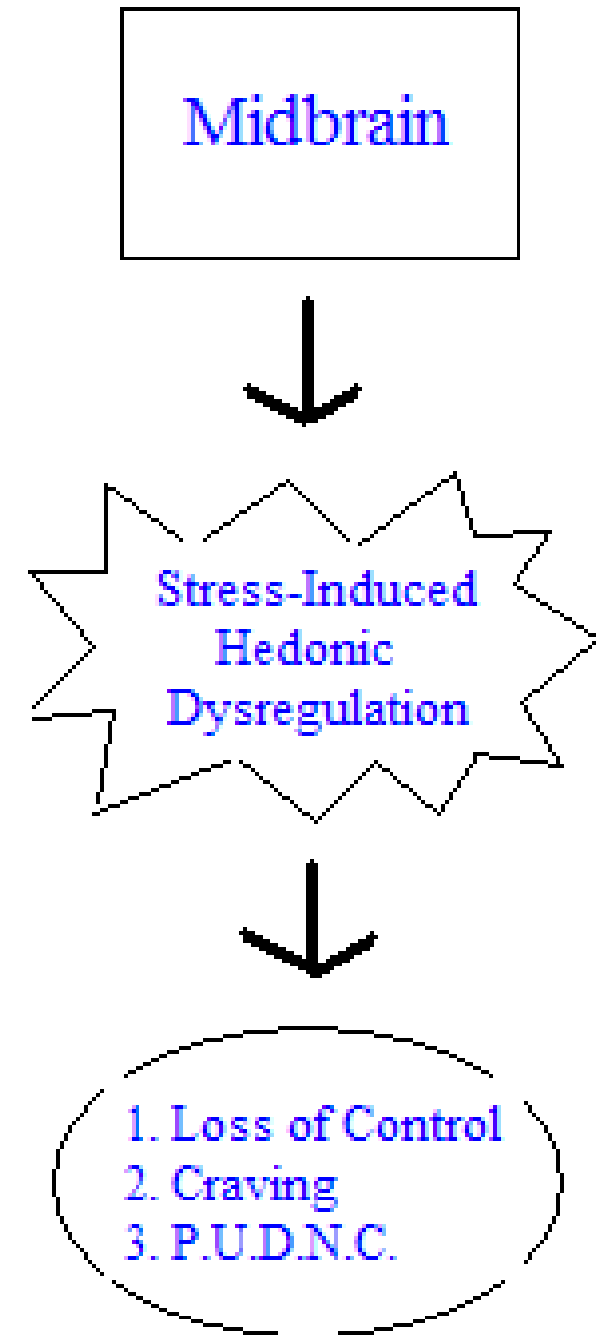
- ***Nothing's higher than survival***
- ***No threat matches loss of survival***
- ***The addict must first secure survival before attending to anything else***
- ***And the survival imperative exists at the level of the unconscious***



Is Addiction Really a “Disease?”

Our actions show what we really believe ...

Something very important happened when we were finally able to call addiction a “disease” . . .



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*
- *Cannot discriminate against addicts without violating equal protection laws*
- *Physicians have a duty to defend addicted patients from those with agendas that would do them harm*
- **Addiction has parity**

So the punishment **IS** the problem . . .

(treatment fails because it's punitive)

The Parity Test

- A way to check for the justness of treatment approaches
- Take out the word “addiction” and put in the word “appendicitis”
- Does your approach still make sense?
- No? The approach is disparate (discriminatory)
- Yes? The approach is just

“Willingness” Requirement?

- “We can’t help anyone who isn’t willing.”
- “We need to see some signs that the person is willing before we can start treatment (like abstinence).”
- “Patients need to hit bottom.”
- “They can either take what we have to offer or hit the road.”

**What if we took
punishment out of the treatment?**

(Is there a group of addicts we don't punish?)

PILOTS!





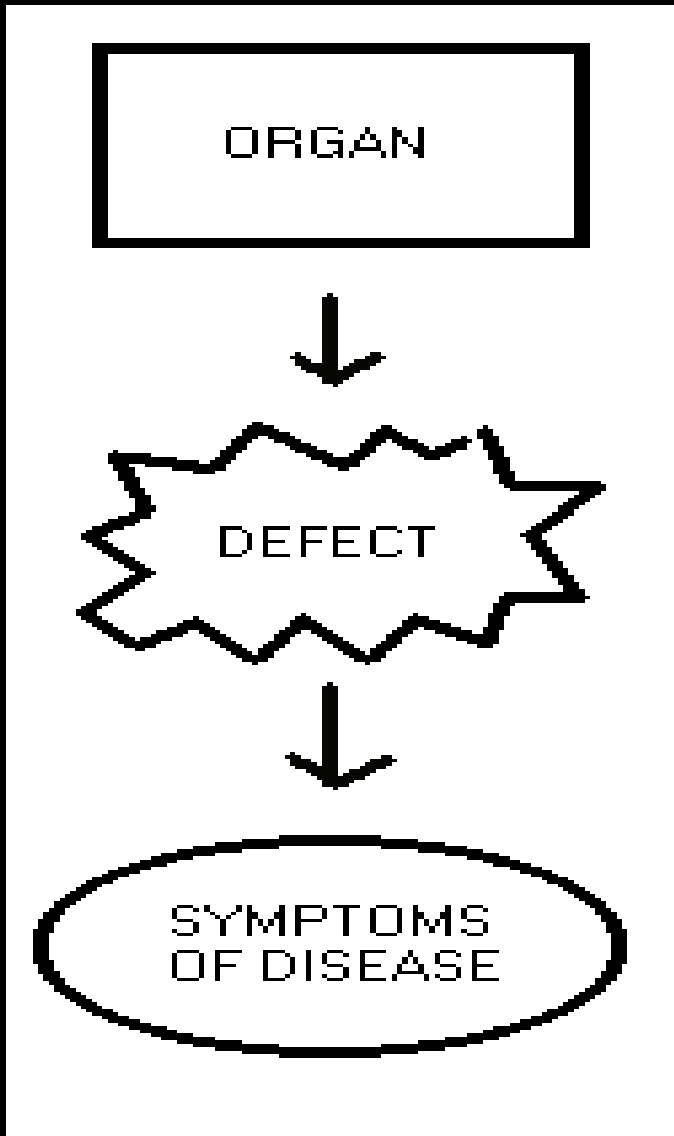
***U.S. Navy
Sober Living House?***



What's so special about pilots?

- ***They love to fly***
(flying holds irrational emotional meaning)
- ***They are not punished***
(full treatment parity and equal protection)
- ***They are treated as capable***
(rapid return to duty under monitoring)
(not allowed to linger in the sick role)
(experienced in the ways and fun of “taking personal responsibility”)

The “Disease Model” is a good model, BUT...



- *It's MATERIALIST*
- *It only suggests PHYSICAL solutions (pills and surgeries)*
- *It cannot address MEANING*
- *It strips the patient of POWER*
- *It appears to absolve the patient of RESPONSIBILITY*
- *It encourages the patient to seek refuge in the SICK ROLE*
- *It drives a health care system that is technology-based, expert-delivered and expensive*

The “Keep ‘em Flying!” Approach

- **Risk management > Zero-tolerance**
- **Inpatient Treatment**
- **Rapid Return to Duty**
- **Extended Aftercare/Sober Living**
- **Testing, Testing, Testing!**
- **Peer-supported, Societal encouragement**
- **Capabilities emphasized over Infirmities**
- **Not allowed to take refuge in the sick role**
- **Helped to “take personal responsibility”**

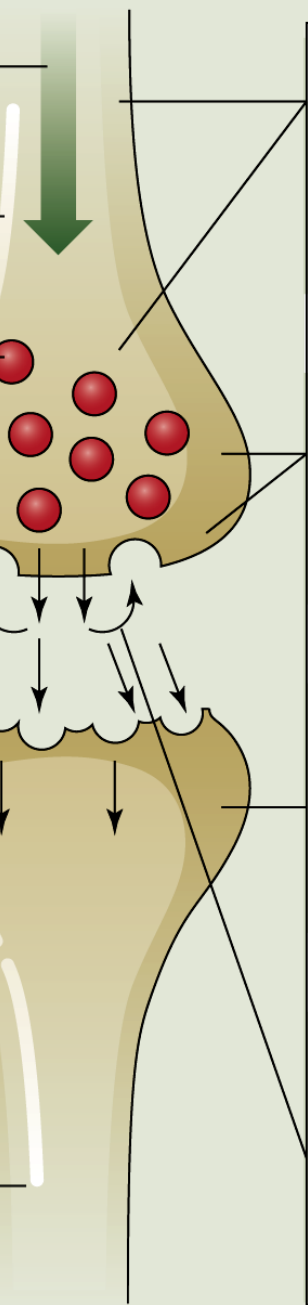
Treatment Outcome Variance in Pilots Treated for Alcoholism:

“The United States Navy enjoys a 95-97% return to flying status rate in its pilots treated for alcoholism.”

- Joseph A. Pursch, M.D.

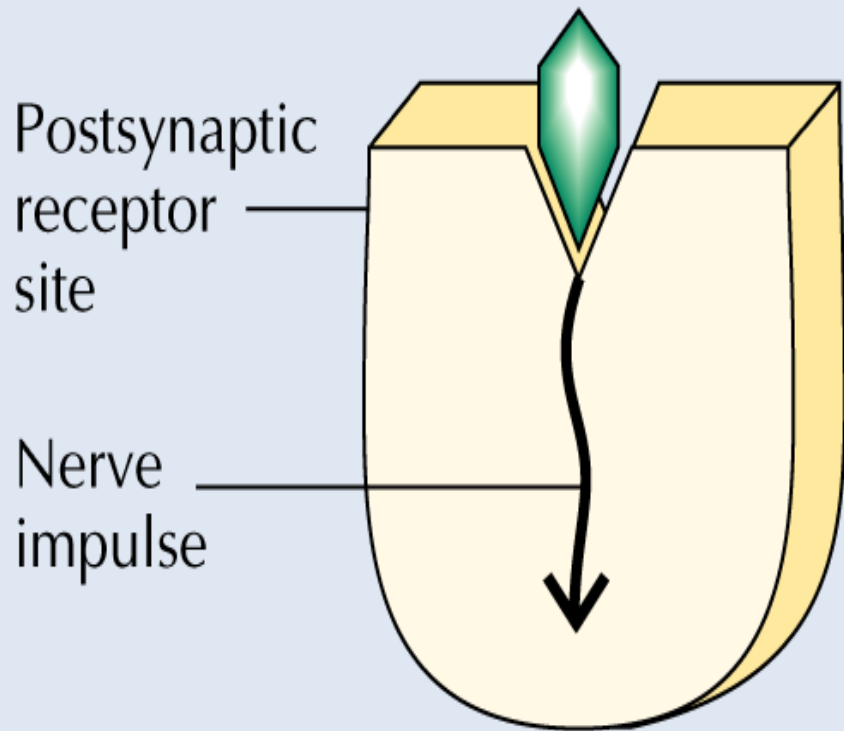
“Since the inception of its impaired pilot program in conjunction with the FAA and ALPA EAPs, UAL has an 87% return to flight status rate in pilots treated for alcohol problems.”

- Stanley Mohler, M.D.



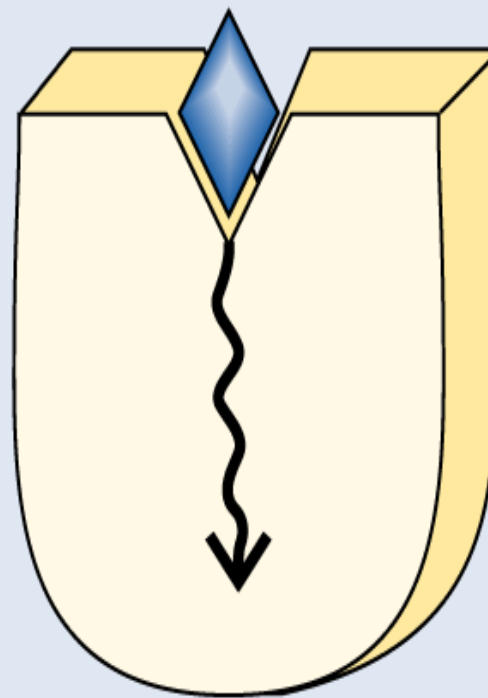
How neurotransmitters work	Agonist drugs (mimics neurotransmitter effects)	Antagonist drugs (blocks neurotransmitter effects)
(Step 1) Production		
(1) Neurotransmitter is produced.	Drug serves as a precursor for neurotransmitter synthesis (e.g., L-DOPA is used to make dopamine).	Drug blocks production.
(Step 2) Storage and release		
(2) Neurotransmitter is stored in vesicle. When impulse arrives, neurotransmitter is released.	Drug increases the release of neurotransmitter (e.g., black widow spider venom increases acetylcholine release).	Drug blocks neurotransmitter storage and/or release.
(Step 3) Reception		
(3) Neurotransmitter binds to postsynaptic receptors and activates them.	Drug attaches to receptors and activates them (e.g., Nicotine activates acetylcholine receptors and morphine activates endorphin receptors).	Drug blocks neurotransmitter by filling receptor space but doesn't activate the neuron (e.g., drugs for schizophrenia block dopamine).
(Step 4) Inactivation		
(4) Excess neurotransmitter is deactivated by reuptake or enzymatic breakdown.	Drug blocks inactivation of neurotransmitter leaving more in the synapse to stimulate receptors (e.g., cocaine and nicotine block reuptake of dopamine and norepinephrine).	

Normal
Neurotransmitter
Activation



(a)

Agonistic
Drug "Mimics"
Neurotransmitter



(b)

Questions?

References available on request

Please contact:

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Please also see: www.addictiondoctor.com

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