The Neuroscience of Process Addictions

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Vice is a monster of so frightful mien
As to be hated needs but to be seen
Yet seen too oft, familiar, with her face,
We first endure, then pity, then embrace.

"The views expressed are those of the author and do not reflect the official policy of the Department of the Army, the Department of Defense, or the U.S. Government."

An Addiction Hits Close to Home

https://www.youtube.com/watch?v=r26Gvb8RpkU&ab_channel=WafflesXP

The Plan for Today

What is a process addiction and how does it compare to substance addiction?

How bad is the on problem?

Emphasis on porn addiction

<u>The neuroscience:</u>

Dopamine

Triune Brain Theory

Polyvagal Theory

The Role of Trauma – Big T and Little t – ACE literature

The impact of excessive process addiction on the brain and body

Treatment

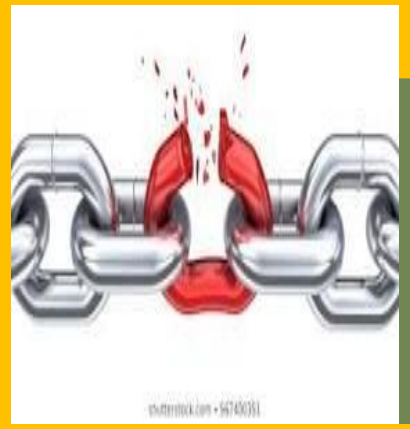
We will end with exploring the new field of HeartMath-Neurocardiology as one adjunctive therapy

Definition of Addiction

Adam Slater (2018)
Irresistible

In Rome being **“addicted”** meant that you had just been sentenced to slavery.

If you owed someone money and couldn’t repay, a judge would sentence you to work as a slave until you could repay the debt.



Addiction later evolved to describe any bond that was difficult to break.

What is a process addiction?

- Process addiction, also called behavioral addiction, is characterized by an overwhelming impulse to engage in a certain behavior despite negative consequences.
- While involved in the behavior, the individual experiences an elevated mood often followed by a sense of shame or guilt once the behavior ends.

"a cluster of cognitive, behavioral, and physiological symptoms indicating that the individual continues using the substance despite significant substance-related problems" (DSM 5 p. 483)

"pathological pattern of behavior" (ibid)

Social and spiritual aspects?

Currently substance and gambling (sex, exercise, shopping, etc.)

"It hurts you, but you keep doing it"

Substance and Addictive Disorders in the DSM-5

"It hurts you, but you keep doing it."

1) Larger amounts than intended
2) Desire / unsuccessful efforts to stop
3) Great deal of time obtaining, using, and recovering
4) Craving – strong desire to use
5) *Failure to fulfill obligations due to use*
6) Continued use despite persistent/recurrent problems
7) *Activities given up due to use*
8) Use in situations which could be hazardous
9) Continued use despite physical/psychological problems
10) Tolerance – takes more for same result
11) Withdrawal – physical/psychological

Diagnostic Criteria

Addiction is a **primary**, chronic disease of brain reward, motivation, memory and related circuitry characterized by

1. inability to consistently abstain
2. impairment in behavioral control
3. craving
4. diminished recognition of significant problems with one's behaviors and interpersonal relationships,

and a

5. dysfunctional emotional response

ASAM Board of Directors. Definition of Addiction (Long Version). Chevy Chase, MD: American Society of Addiction Medicine; April 12, 2011.

ASAM Definition of Addiction (2011)

Common Process Addictions

Shopping	Gambling	Sexual activity
Pornography	Eating disorders	Internet use
Exercise	Work	Chaos

The Full Spectrum of "Intoxication"

- Alcohol & Sedative/Hypnotics
- Opiates/Opioids
- Cocaine
- Amphetamines
- Entactogens (MDMA)
- Entheogens/Hallucinogens
- Dissociants (PCP, Ketamine)
- Cannabinoids
- Inhalants
- Nicotine
- Caffeine
- Anabolic-Androgenic Steroids
- Food (Bulimia & Binge Eating)
- Sex
- Relationships
- Other People ("Codependency," Control)
- Gambling
- Cults
- Performance ("Work-aholism")
- Collection/Accumulation ("Shop-aholism")
- Rage/Violence
- Media/Entertainment

Dr. McCauley notes that the full spectrum of addictions includes both substance and process "intoxications."

Prevalence

A total of 94 studies with 237,657 participants from 40 different countries (mean age 25.02 years; 57.41% females).

The overall prevalence of behavioral addiction irrespective of addiction type (after correcting for publication bias) was 11.1% (95% *CI*: 5.4 to 16.8%).

10.6% for internet addiction
30.7% for smartphone addiction
5.3% for gaming addiction
15.1% for social media addiction
21% for food addiction
9.4% for sex addiction
7% for exercise addiction
7.2% for gambling addiction
7.2% for shopping addiction

Alimoradi Z, Lotfi A, Lin CY, Griffiths MD, Pakpour AH. Estimation of Behavioral Addiction Prevalence During COVID-19 Pandemic: A Systematic Review and Meta-analysis. Curr Addict Rep. 2022;9(4):486-517. doi: 10.1007/s40429-022-00435-6. Epub 2022 Sep 12. PMID: 36118286; PMCID: PMC9465150.

Lifetime Estimates of Substance Use in Behavioral Addictions

Clinical samples of other behavioral addictions suggest that co-occurrence with substance use disorders is common. These findings suggest that behavioral addictions may share a common pathophysiology with substance use disorders.

CO-OCCURRENCE

Behavioral Addictions	Lifetime Estimates of Substance Use Disorder
Pathological Gambling	35% – 63%
Kleptomania	23% – 50%
Pathologic Skin Picking	38%
Compulsive Sexual Behavior	64%
Internet Addiction	38%
Compulsive Buying	21% – 46%

Open in a separate window

Source: Grant JE. Impulse Control Disorders: A Clinician's Guide to Understanding and Treating Behavioral Addictions New York, NY: Norton Press,2008.

Sadly, many these days would go left, me thinks…

Similarities between Chemical/Substance Addictions and Behavioral Addictions

- Cause chemical reactions in the brain
- Are a tool to escape or avoid pain
- Produce a tolerance
- Have psychological withdrawal symptoms
- Can have devastating biopsychosocial consequences

Chemical Addictions

- Substances directly impact the brain and/or nervous system

Behavioral Addictions

- Activities that impact the pleasure centers
  - Adrenaline rush
  - Dopamine rush
  - Endorphin rush
  - Oxytocin

- No actual substance needed
- The addiction is to the process, the ritual
- Role of tech
- Process addictions can be much more invisible
- Abstinence may not be possible nor desirable
  - Emphasis is on healthy use
  - Healthy and unhealthy use intertwined

Differences between Chemical/Substance Addictions and Behavioral Addictions

Gambling Addiction

In a 12-month period at least 4 are present:

a. Needs to gamble with **increasing amounts** of money in order to achieve the desired excitement.

b. Is **restless or irritable** when attempting to cut down or stop gambling.

c. Has made **repeated unsuccessful efforts to control**, cut back, or stop gambling.

d. Is often **preoccupied** with gambling (e.g., having persistent thoughts of reliving past gambling experiences, handicapping or planning the next venture, thinking of ways to get money with which to gamble).

e. Often gambles **when feeling distressed** (e.g., helpless, guilty, anxious, depressed).

f. After losing money gambling, often **returns another day to get even** ("chasing" one's losses).

g. **Lies** to conceal the extent of involvement with gambling.

h. Has **jeopardized or lost a significant relationship**, job, or educational or career opportunity because of gambling.

i. **Relies on others to provide money** to relieve desperate financial situations caused by gambling.

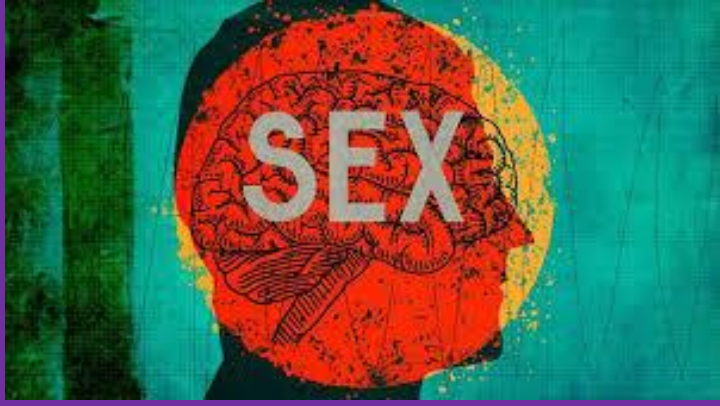
Gaming Addiction

Internet Gaming Disorder listed as a 'Condition for Further Study' in DSM 5

In the last 12 months:

a. **Preoccupation** with internet gaming
b. **Withdrawal** symptoms when gaming is taken away or not possible (sadness, anxiety, irritability)
c. **Tolerance**, the need to spend more time gaming to satisfy the urge
d. **Inability to reduce** playing, unsuccessful attempts to quit gaming
e. **Giving up other activities**, loss of interest in previously enjoyed activities due to gaming
f. Continuing to game **despite problems**
g. **Deceiving family members or others** about the amount of time spent on gaming
h. The use of gaming to **relieve negative moods**, such as guilt or hopelessness
i. **Risk, having jeopardized** or lost a job or relationship due to gaming

Sex Addiction



Sex Addiction not listed in DSM 5

In the last 12 months:

a. **Preoccupation** with sexual "acting out"
b. **Withdrawal** symptoms when sex is not possible (sadness, anxiety, irritability)
c. **Tolerance**, the need for increased amount or intensity to satisfy the urge
d. **Inability to reduce** sexual acting out behavior, unsuccessful attempts to quit
e. **Giving up other activities**, loss of interest in previously enjoyed activities due to sexual acting out
f. Continuing **despite increasing problems** (particularly legal problems)
g. **Deceiving family members or others** about the amount of time, money spent
h. The use of sex to **relieve negative moods**, such as guilt or hopelessness
i. **Risk, having jeopardized** or lost a job, freedom, reputation or relationship due to sex

3 criteria in the past year:

a. **Tolerance**, defined as consuming increasing amounts to achieve the same effects or experiencing diminished effects with continued use of the same amounts;
b. **Withdrawal** symptoms when the substance is not consumed or using the substance to avoid withdrawal symptoms;
c. Using **larger amounts** or over a longer period than intended;
d. A **persistent desire or unsuccessful efforts to cut down**;
e. **Increased time effort** to obtain or use or recover from effects;
f. **Reduction of social, occupational, or recreational activities**
g. **Use** of the substance **despite** a persistent physical or psychological **problem** caused or exacerbated by the addiction

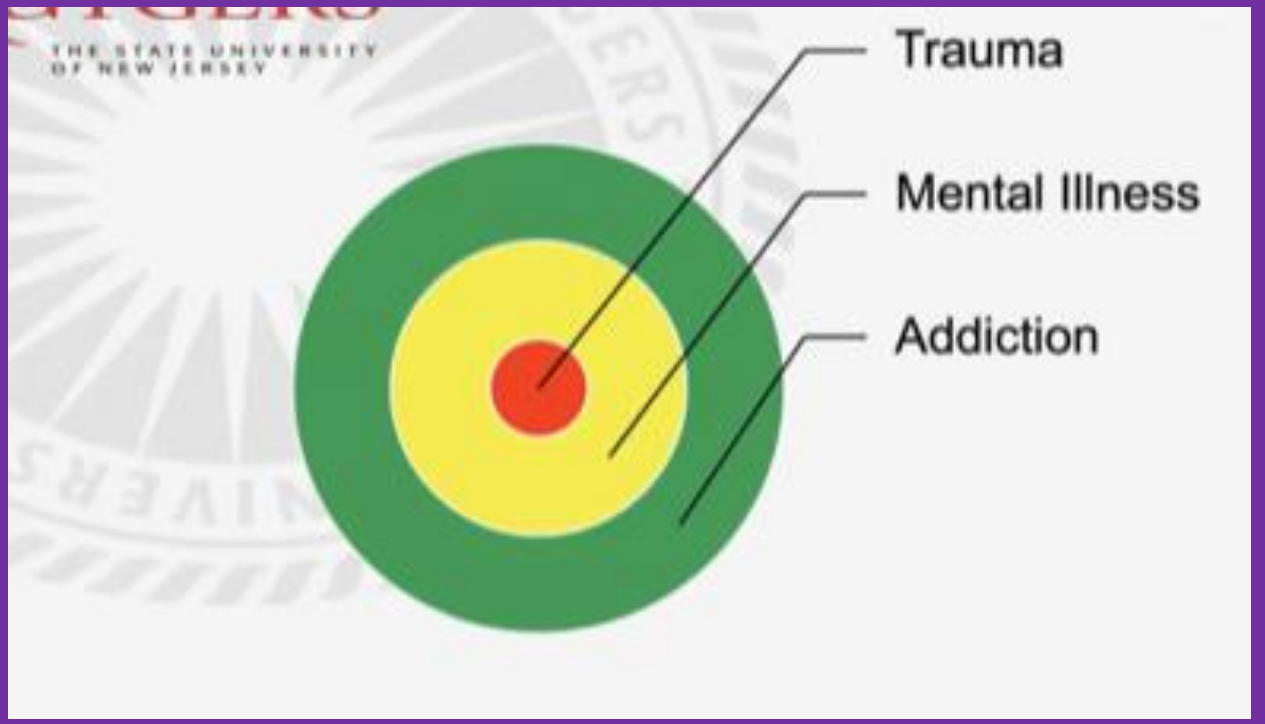
Food Addictions

3 criteria in the past year:

a. **Tolerance**, defined as requiring increased spending to achieve the same effects or experiencing diminished effects with continued use of the same amounts;
b. **Withdrawal** symptoms when abstaining or buying to avoid withdrawal symptoms;
c. Buying **larger amounts** or over a longer period than intended;
d. A **persistent desire or unsuccessful efforts to cut down**
e. **Increased time effort** to obtain or recover from its effects;
f. **Reduction of social, occupational, or recreational activities** because of buying;
g. **Continued buying despite** a persistent physical or psychological **problem** caused or exacerbated by the behavior

Compulsive Shopping

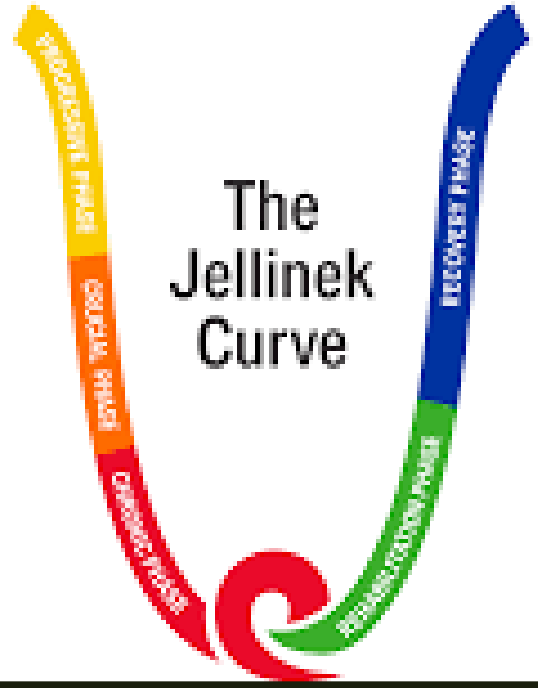
Trauma, Mental Illness, and Addiction. Which comes first?



Trauma is almost always at the core of serious addiction which leads way to mental illness and then addiction to mask it.

The Jellenik Curve

The Jellenik Curve as simplified by Dr. Dawn Elise Snipes, is a scientific predictor of addiction created by biostatistician and physiologist E. Morton Jellinek. Since its creation, the Jellenik Curve has been adapted several times over, including notably by Max Glatt.



PROGRESSIVE PHASE
Use turns for relief and tolerance develops

CRUCIAL PHASE
Use increases and problems emerge

CHRONIC PHASE
Problems mount and control disappears

REHABILITATION PHASE
Abstinence begins and help sought

RECOVERY PHASE
Life improved and hope restored

Jellenik Curve

- Recreational Use
- Occasional Use for Relief
- Increasing craving
- Increased triggers (stimulus generalization)
- Unable to discuss the problem
- Efforts to control fail (increased time and energy)
- Continued use despite negative consequences
  - Stop using see the original problems plus the addiction-created problems
  - Use again

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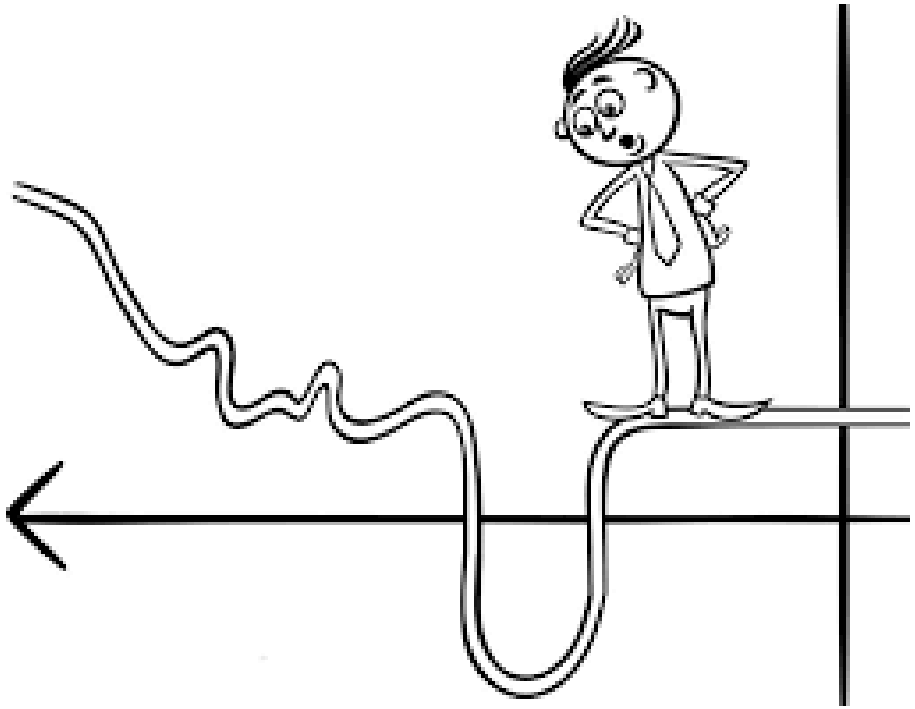


Jellenik Curve

- Makes the decision to change
- Seeks to understand and address the reasons for
  - The original distress
  - Distress created from the addiction
- Addresses physical issues maintaining the distress
- Develops healthy coping skills
- Improves self esteem
- Rebuilds healthy support network

Jellenik Curve, cont.

The Four C's of Addiction

- Wilson (2014) notes that all addictions, regardless of their differences, result in an established set of **"core brain changes"** which, in turn, present as recognized signs, symptoms, and behaviors such as those listed in the **Four C's:**

1. ***Craving and Preoccupation*** with obtaining, engaging in or recovering from the use of the substance or behaviors in question.

2. ***Loss of Control*** in using the substance or of engaging in the behavior and noted by increasing frequency or duration, larger amounts or intensity, and/or increasing the risk and behavior in an effort to obtain the desired effect.

3. ***Negative Consequences*** in physical, social, occupational, financial, or psychological areas.

4. ***Compulsive*** *in nature*

In the words of Stephen Arterburn, world renowned expert on sexual addiction:

"I don't know of know of any plague to ever reach into the homes and families all over the world and create as much damage or heartaches than the struggle of lust, affair, pornography, perversion, and sexual addiction. It seems that everywhere I look, it gets worse and worse. The Internet exploded the problem, and now cell phones transport pornography more portably than the computer and facilitates affairs with greater accessibility and secrecy" (cited in Roberts, 2008, p.9).

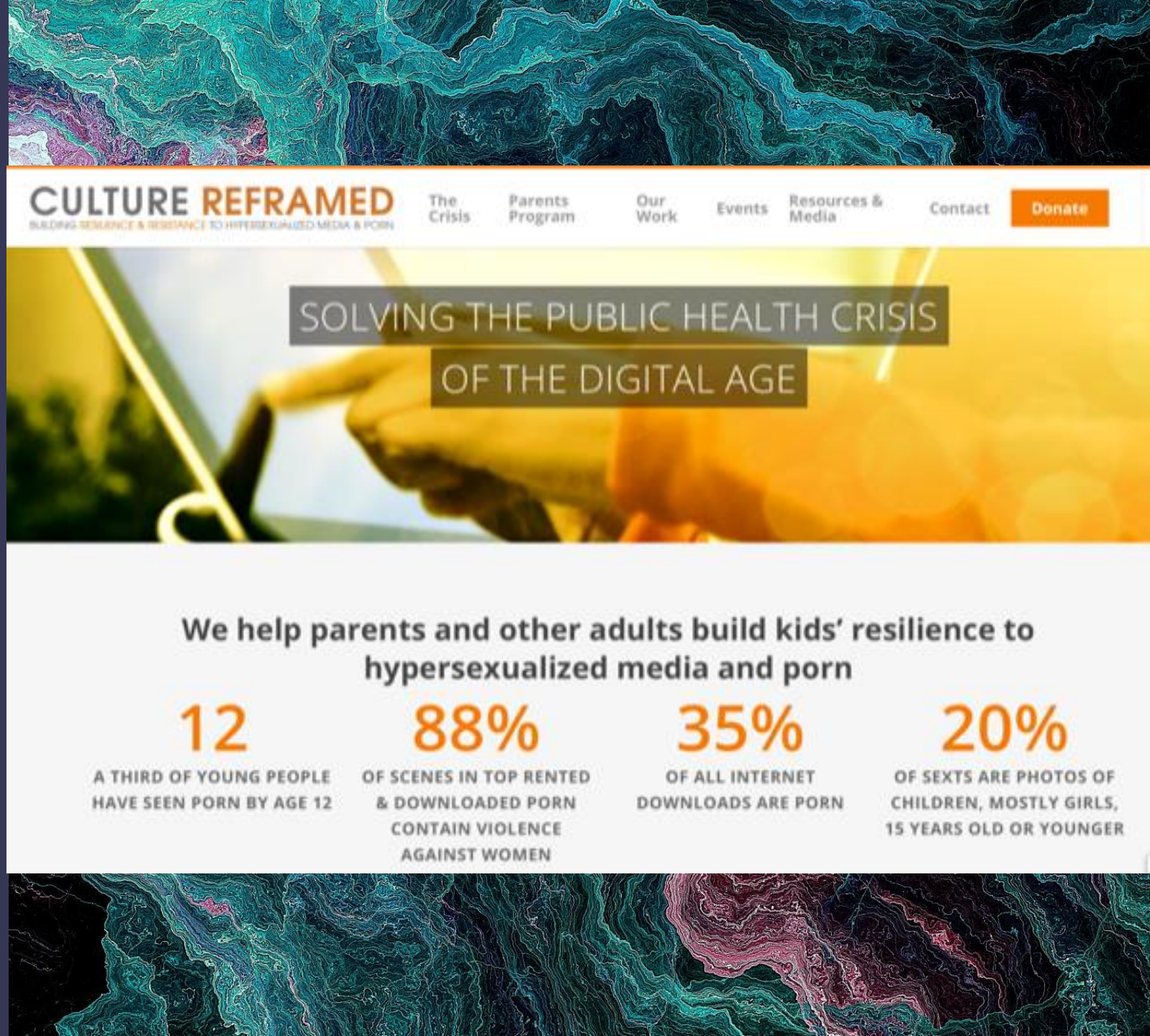
The Toll of Porn Addiction

- I have seen boys as young as 11 attempt to rape children as young as 3 after getting steamed up on porn.
- I have seen normal adolescent sexuality be hijacked and rewritten from something wonderful to something perverse.
- I have seen men go to jail and lose their careers.
- I have seen countless marriages fail – the toll is enormous and is mounting every day.
- The Utah state legislature has wisely declared pornography a national epidemic that is ripping the fabric of our society (Barta, 2018).

So how  is it?

- **40 million** American people regularly visit porn sites (Webroot, 2019).
- **35%** of all internet downloads are related to pornography (Webroot, 2019).
- **34% of internet users** have experienced unwanted exposure to pornographic content through ads, pop up ads, misdirected links or emails (Webroot, 2019).
- The societal costs of pornography are staggering. The financial cost to business productivity in the U.S. alone is estimated at **$16.9 Billion annually**; but the human toll, particularly among our youth and in our families, is far greater (Weebroot, 2019).
- **One-third** of porn viewers are women (Webroot, 2019).
- Between 2008 and 2011, exposure to porn among boys under the age of 13 jumped from **14% to 49%.** Boys' daily use more than doubled. (Sun et al. 2016)
- In a 2007 University of Alberta study, 429 students ages 13 and 14 from 17 schools across Alberta, Canada were surveyed about how often they accessed sexually explicit media content: **90% of boys** and **70% of girls** reported accessing sexually explicit media on at least one occasion (Betkowski, 2007).

Dr. Gail Dines founder of Culture Reframed and the leading expert on the perils of the porn industry reports:



The Question of Shame and Moral Failure

- Although a descent into addiction can lead to **moral issues** (e.g., lying to cover, sexual acting out, etc.) it is generally not moral failure that first sets pornography addiction into motion. This is essential to know as **shaming only makes matters worse.**

- **Dr. Ted Roberts,** who served in Vietnam as a fighter pilot, then became pastor, and subsequently distinguished himself as an expert in the treatment of sexual addictions writes, "**Guilt** is about what we have done, but **shame** is about who we are. With guilt we can always get a fresh start. With shame we are caught in a **noose, because the problem stays with us**…The critical issue to remember about shame is that it causes incredible pain" (Roberts, 2008, p 73 – 74).

Dr. Kevin McCauley who is a recovering addict and former Navy flight surgeon who lost his career to addiction and went to prison and is now an amazing voice for those who have been taken prisoner by addiction.

Please click the link below to listen:
https://www.youtube.com/watch?v=PEtWvjMA934&ab_channel=BeaPartoftheConversation

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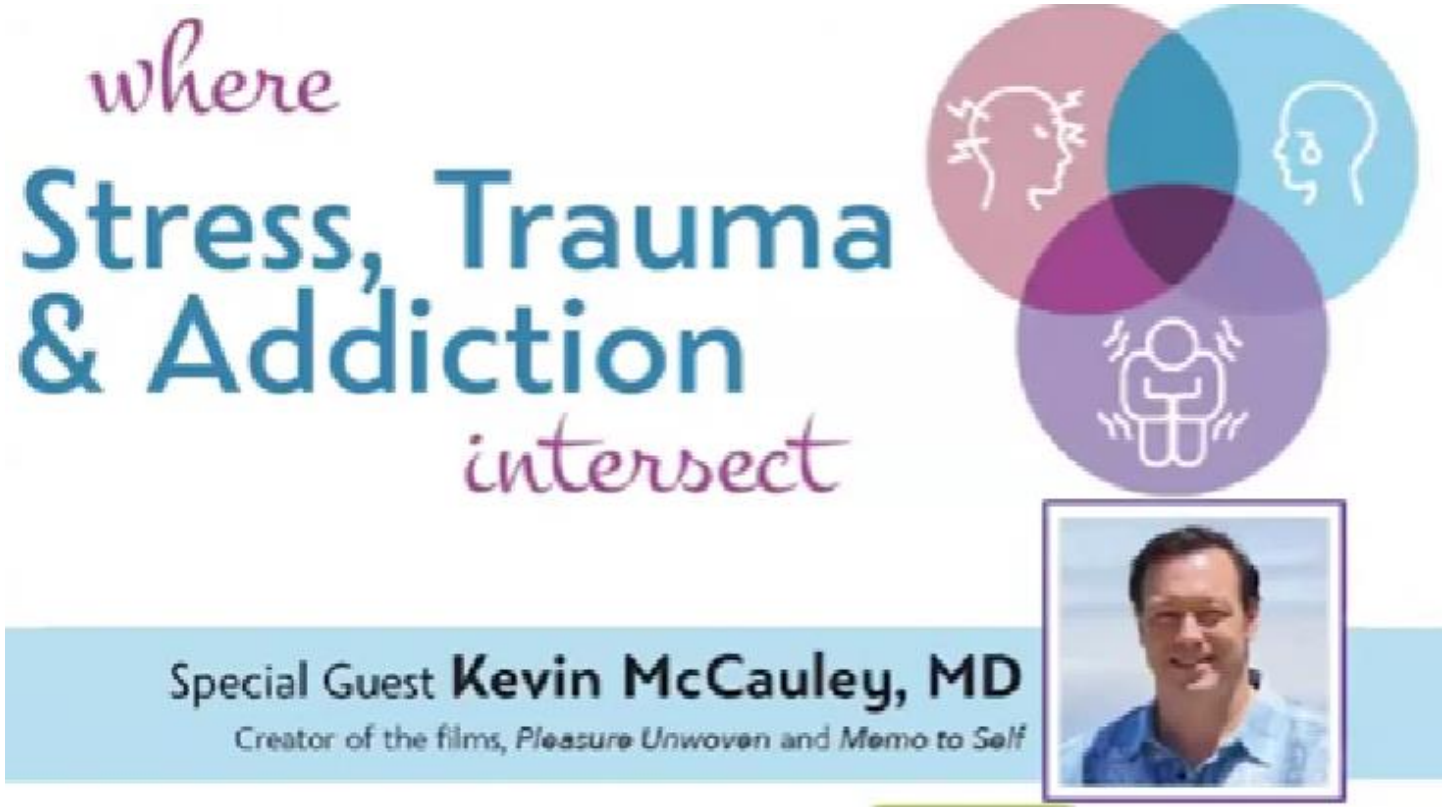
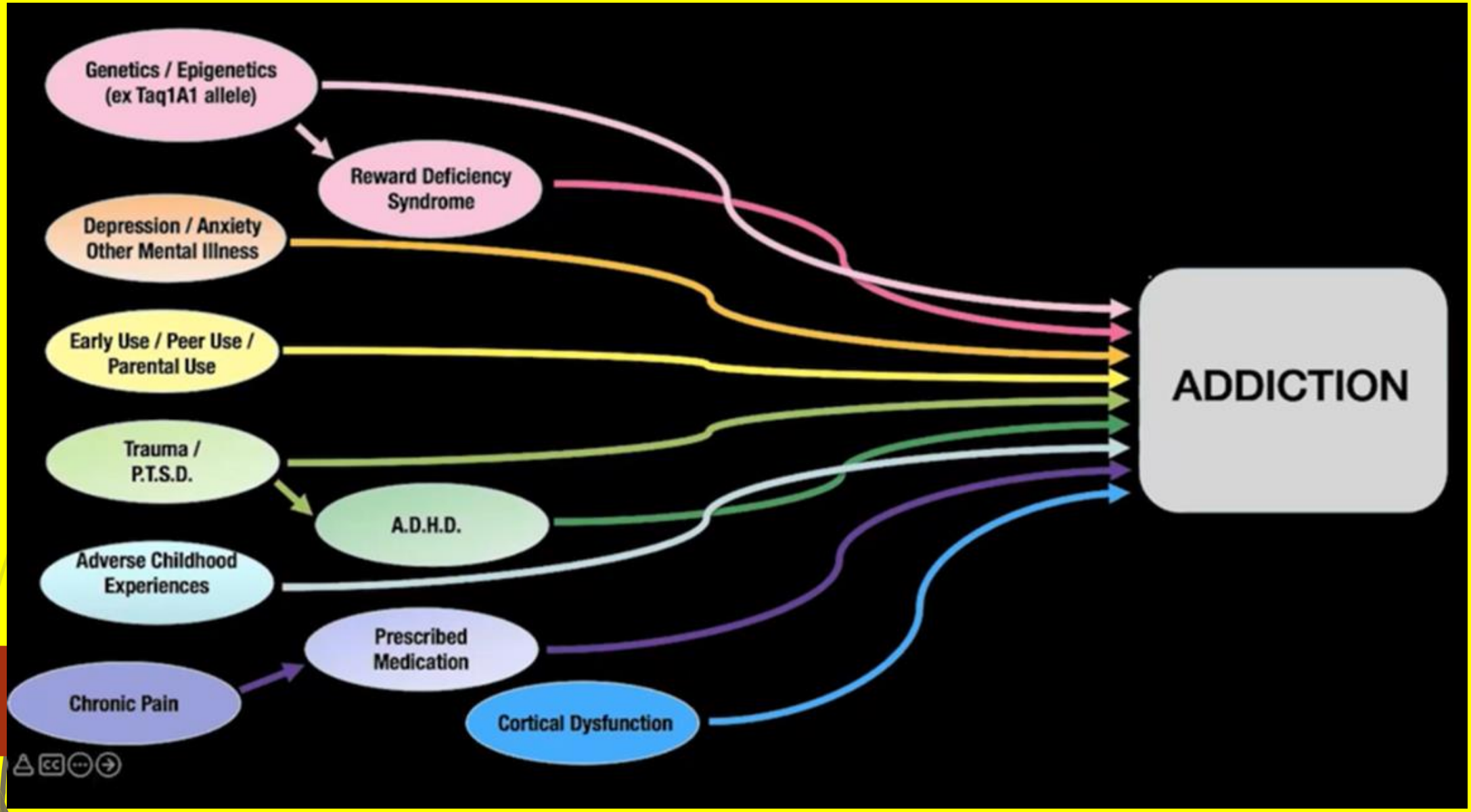
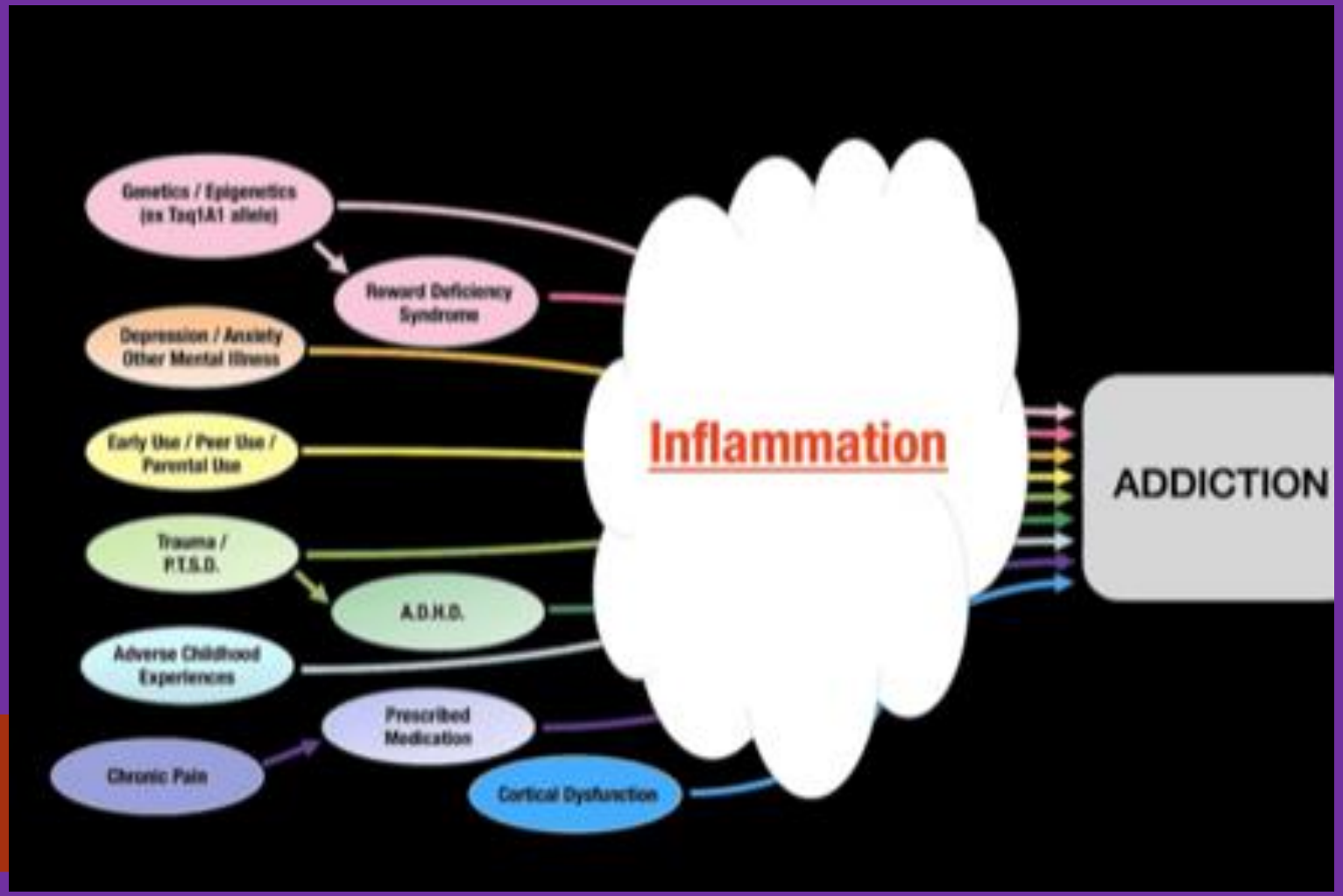




Dr. McCauley's model encompasses several pathways that can lead to addiction:

All addiction pathways lead to inflammation in the brain and body



Dr. McCauley's model is brilliantly integrative

GENES - not the cause of addiction, but a powerful mediator
genetics / epigenetics

1. Addiction is a disorder of **PLEASURE** - a hedonic dysfunction / broken "pleasure sense"
   DOPAMINE – reward expectancy
   (value / probability in the future)
2. Addiction is a disorder of **CHOICE** - a volitional disorder
   (impaired decision making + loss of insight)
3. Addiction is caused by **STRESS**

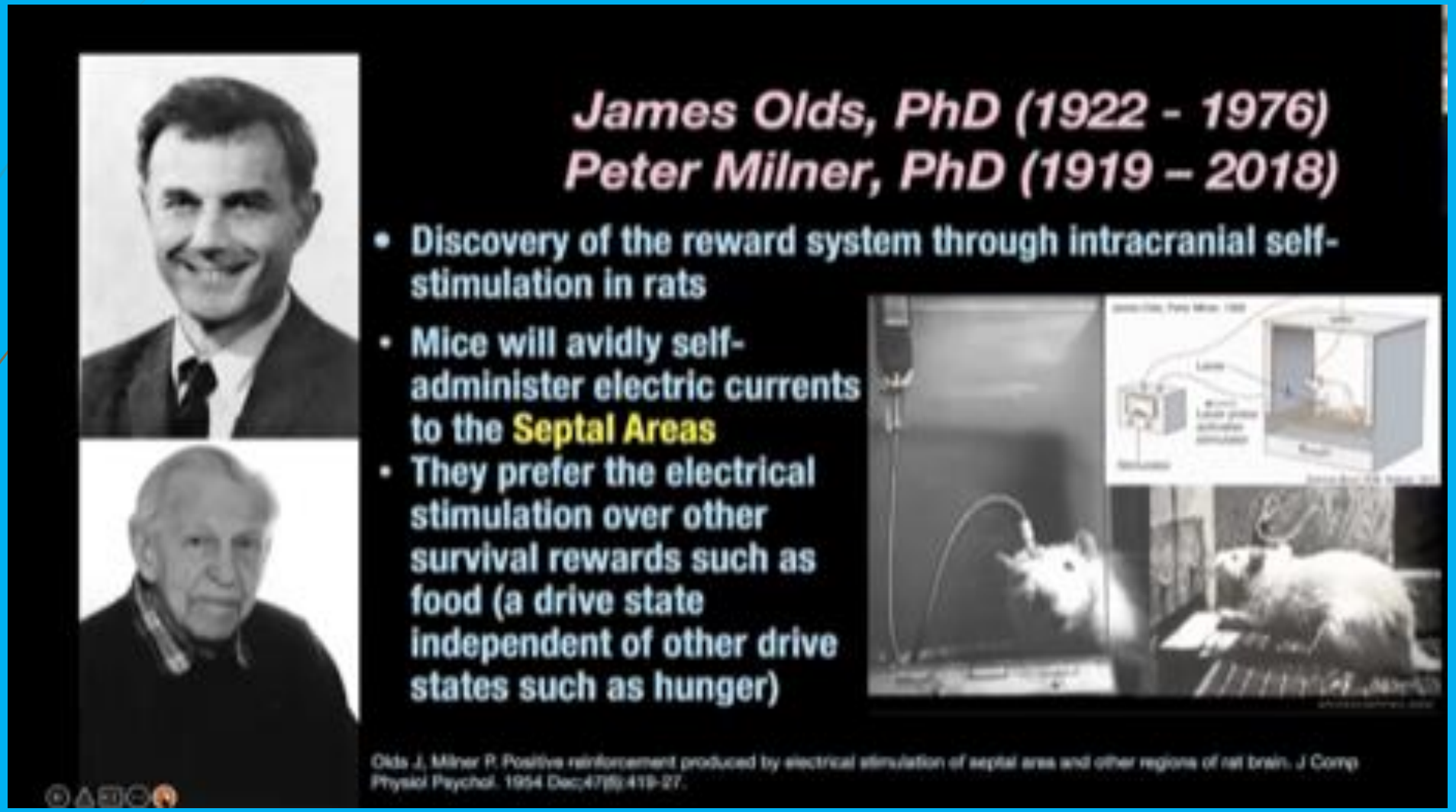
chronic	trauma/PTSD
severe	ACEs
repetitive	MDD/GAD/Bipolar d/o
poorly managed	ADHD
early in life	
inherited	

Today, we will focus on the following causes:

- Lack of connected living (Hari, 2015)
- Trauma (Barta, 2018)
- It started off as just plain fun
- Some blend of the above (emphasis mine)

Connection is a Big Deal – The Rats Know

Research by Olds and Milner showed in mice analogue studies isolated mice prefer high stimulating over low stimulating rewards such as survival rewards like food



Connection is a Big Deal – The Rats Know

In the 1960's, psychologist**, B.F. Skinner**, conducted a series of studies involving rat behavior in what became known as Skinner Boxes.

- Skinner's rats became hopelessly addicted.
- Skinner concluded that the power of the addiction was solely in the drug itself.

Dr. Bruce Alexander – There is something more to this! Rat Park experiments (Alexander, 1979, 2010)

- Rat Park rodents never became addicted, in fact, most of them never even touched the morphine water at all.

In the Words of Johann Hari (2015)

"Addiction is about bonding.

If you can't do it with people, you will do it with a substance.

Now that might be gambling, that might be media, that might be cocaine, that might be cannabis.

You will bond to something because that is our nature.

That's what we want as human beings."

The Role of Trauma

Dr. Michael Barta, in his excellent book on sexual addictions**, TINSA – Trauma Induced Sexual Addiction,** along with several other writers, believe that the understanding of behavioral addictions has long been hindered by the disorder's poorly understood cause. He notes and describes:

Behavioral addictions are typically triggered by early trauma

Excessive demands on dopaminergic pathways and poor self-regulation worsen addiction

There is a relationship between the brain, the nervous system, and addiction

The Role of Trauma
Adverse Childhood Experiences (ACE)

- In the mid-1980's, **Dr. Vincent Felitti** was commissioned by Kaiser Permanente to explore the issues of obesity, as nothing this hospital group was doing helped put a dent in improving this epidemic.

- His research led him to explore the impact of what he called the **Adverse Childhood Experiences (ACE) Study** (Felitti et al., 2014).

The Role of Trauma
Adverse Childhood Experiences (ACE)

The experts in the field divide trauma into two categories:

- Big T trauma: Traumas that are associated with horrific single events such as natural disasters, terrorism, and war.

- Little t trauma: Trauma that are smaller in nature such as bullying, neglect, and betrayal.

The long-term consequences of “little t” traumas are tremendous and often lead to an inability or impaired ability to access appropriate responses to threatening events and can lead to chronic hyperarousal, intense anxiety, panic, mood instability, poor emotional/behavioral regulation, feelings of powerlessness, helplessness, shame, and even immobility. Of all little t traumas, relational trauma is particularly devastating.

The Role of TRAUMA Adverse Childhood Experiences (ACE)

The ten reference categories experienced during childhood or adolescence are as below, with their prevalence in parentheses (Felitti and Anda, 2009):

Abuse

- Emotional – recurrent threats, humiliation (11%)
- Physical - beating, not spanking (28%)
- Contact sexual abuse (28% women, 16% men; 22% overall)

Household dysfunction

- Mother treated violently (13%)
- Household member was alcoholic or drug user (27%)
- Household member was imprisoned (6%)
- Household member was chronically depressed, suicidal, mentally ill, or in psychiatric hospital (17%)
- Not raised by both biological parents (23%)

Neglect

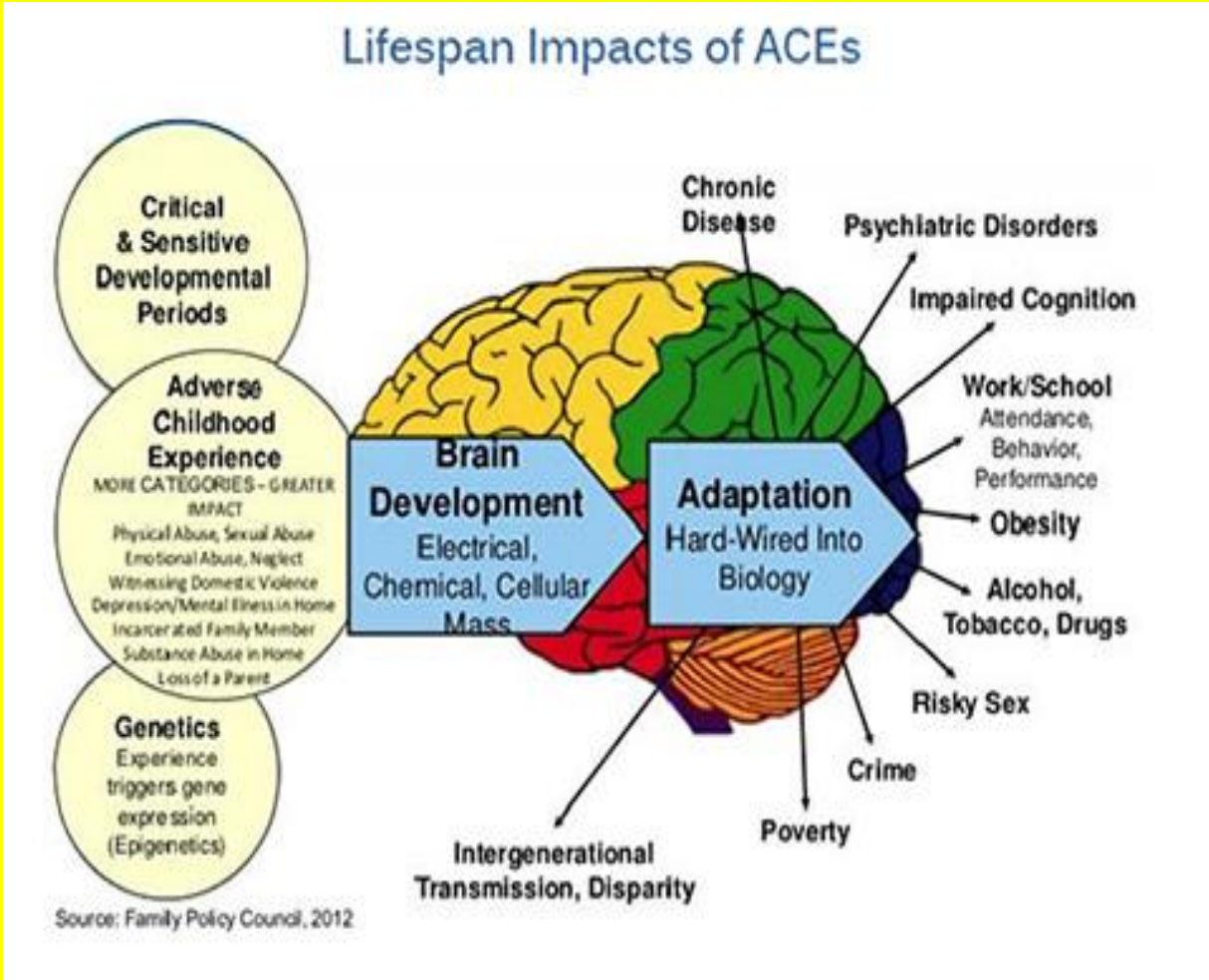
- Physical (10%)
- Emotional (15%)

The Role of TRAUMA

Adverse Childhood Experiences (ACE)

The results indicated that for every Adverse Childhood Experience (ACE) we have in childhood our difficulties as adults increase exponentially (Felitti et al., 2014; Felitti 2004; Felitti and Anda, 2009).

- If we have had four ACEs, we are four times more likely to attempt suicide as an adult.
- If we have had six ACEs, we are five times more likely to become depressed as an adult
- If we have had seven ACEs, we are a terrifying 3,100 percent more likely to attempt suicide as an adult



The Role of 

Adverse Childhood Experiences (ACE)

Examples of small **“t traumas”** that can pave the way to pornography addiction as noted by Barta (2015):

- They were not attuned to by their caregiver
- They were invalidated for the child they were
- They were not recognized emotionally
- They were rejected
- They were subjected to parental separation or divorce
- They were made to feel inadequate
- They were made to feel responsible or making the family feel good
- They were sexually abused
- They were punished for being authentic
- They were controlled by anger
- They were made to feel responsible for regulating the feelings and emotions of others
- They were not taught how to deal with their own emotions and/or were punished when trying to do so
- They were made to feel unsafe
- They were inappropriately disciplined/punished – kicked, slapped, or violently shaken
- They experienced the loss of a pet, young love, or friendship

Big T Trauma and Little t Trauma

- In my personal experience as a pediatric psychologist, far more of my patients have been subjected to "little t" traumas and I agree with Barta that these experiences have a tremendous impact on how children view themselves, their relationships, and their place in the world.
- Moreover, the long-term consequences of these traumas are tremendous and often lead to a total inability or impaired ability to access appropriate responses to threatening events and can lead to chronic hyperarousal, intense anxiety, panic, mood instability, poor emotional/behavioral regulation, feelings of powerlessness, helplessness, shame, and even immobility.
- Of all traumas, relational (or loss of connection) trauma is particularly devastating.
- The implications here are enormous. Specifically, in order to promote safe and healthy emotional regulation, we must be able to pinpoint where in the lifespan people hurt us physically, emotionally, mentally, or spiritually, whether intentionally or accidentally.
- If we can resolve our developmental wounds, we can move on and experience a more fulfilling life.

ACE Scores and Outcomes

As Dr. Felitti in a 2009 lecture points out, studies reveal many shocking long-term horrible outcomes when we are exposed to ACEs and this raises exponentially according to how many of them, we have been exposed to.

The results indicate that for every category of traumatic experience we have had as a child, we are dramatically more likely to be depressed as an adult.

If we have ACE scores of  we are:

- 260% more likely to have chronic obstructive pulmonary disease than someone with a score of 0
- 240% more likely to contract hepatitis, 460% more likely to experience depression
- 1,220% more likely to attempt suicide

If we have ACE scores of  we are:

- Five times more likely to become depressed as an adult.

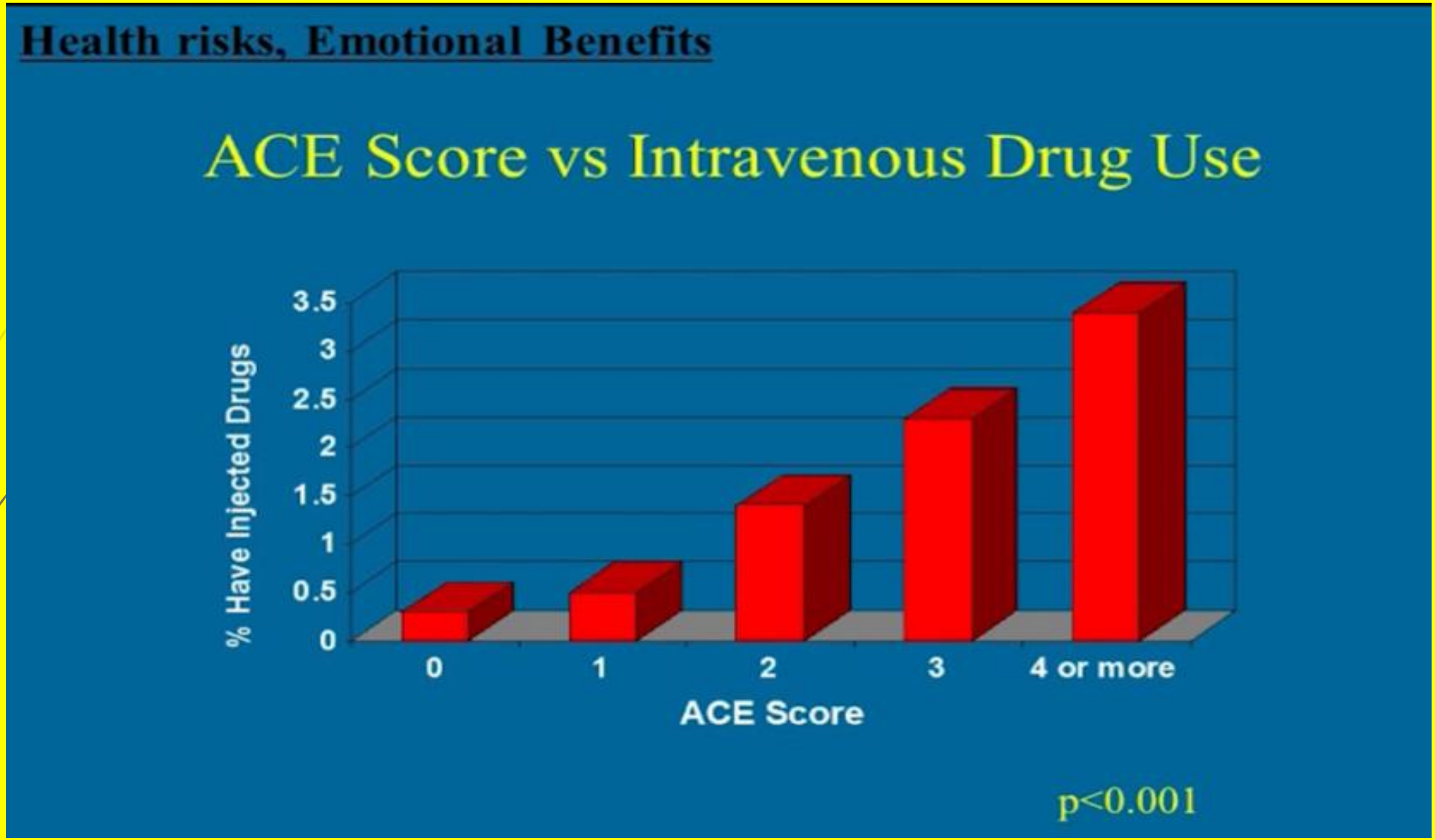
If we have ACE scores of  we are:

- 3,100 percent more likely to attempt suicide as an adult (Felitti et al., 2014; Felitti 2004; Felitti and Anda, 2009; Felitti et al., 1998).

Dr. Felitti offered the following graphs which nicely detail the dramatic impact that ACEs have on our society:

Dr Vincent Felitti (2009) https://www.youtube.com/watch?v=KEFfThbAYnQ (Accessed February 17, 2020)

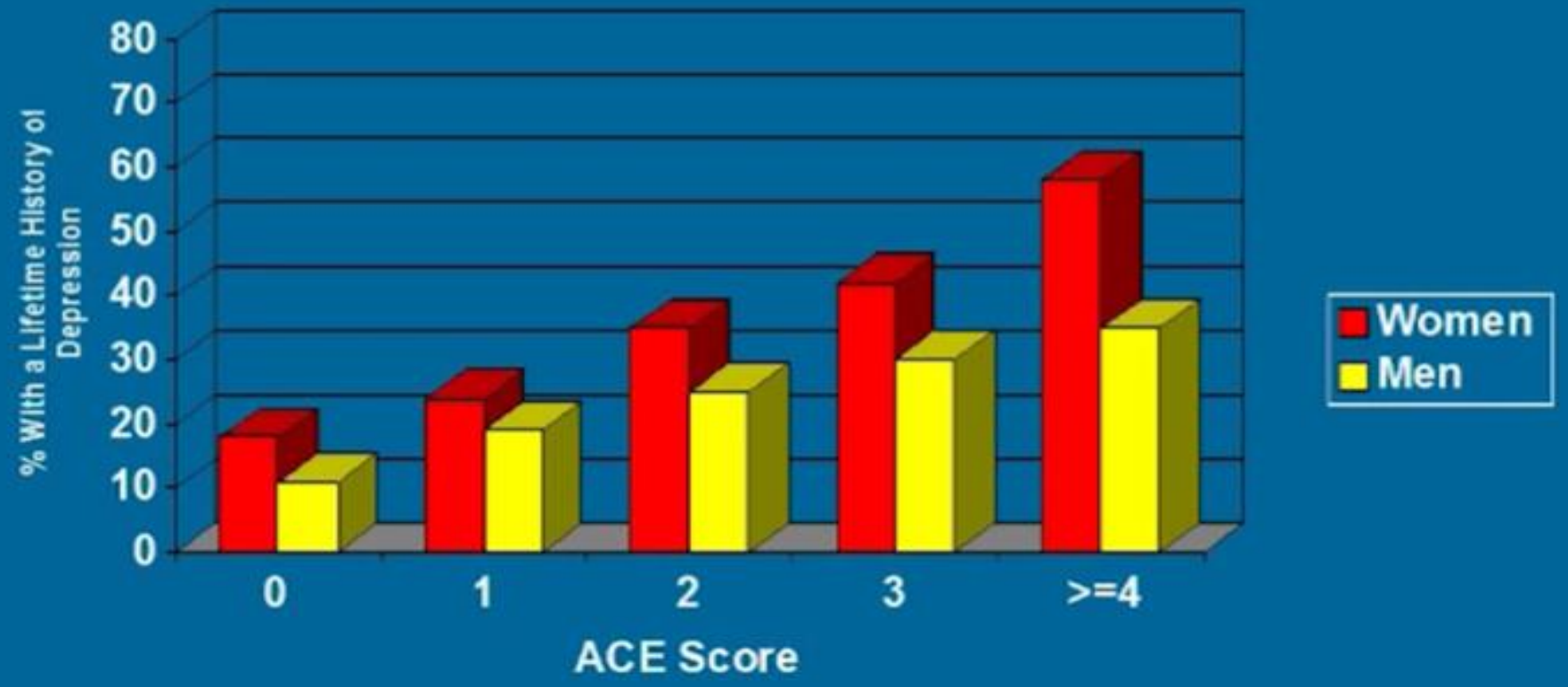
Health risks, Emotional Benefits



Dr Vincent Felitti (2009) https://www.youtube.com/watch?v=KEFfThbAYnQ (Accessed February 17, 2020)

Damaged well-being

Childhood Experiences Underlie Chronic Depression



Dr Vincent Felitti (2009) https://www.youtube.com/watch?v=KEFfThbAYnQ (Accessed February 17, 2020)

Dr Vincent Felitti (2009) https://www.youtube.com/watch?v=KEFfThbAYnQ (Accessed February 17, 2020)

ACEs Increase the Likelihood of Heart Disease*

• Emotional abuse	1.7x
• Physical abuse	1.5x
• Sexual abuse	1.4x
• Domestic violence	1.4x
• Mental illness	1.4x
• Substance abuse	1.3x
• Household criminal	1.7x
• Emotional neglect	1.3x
• Physical neglect	1.4x

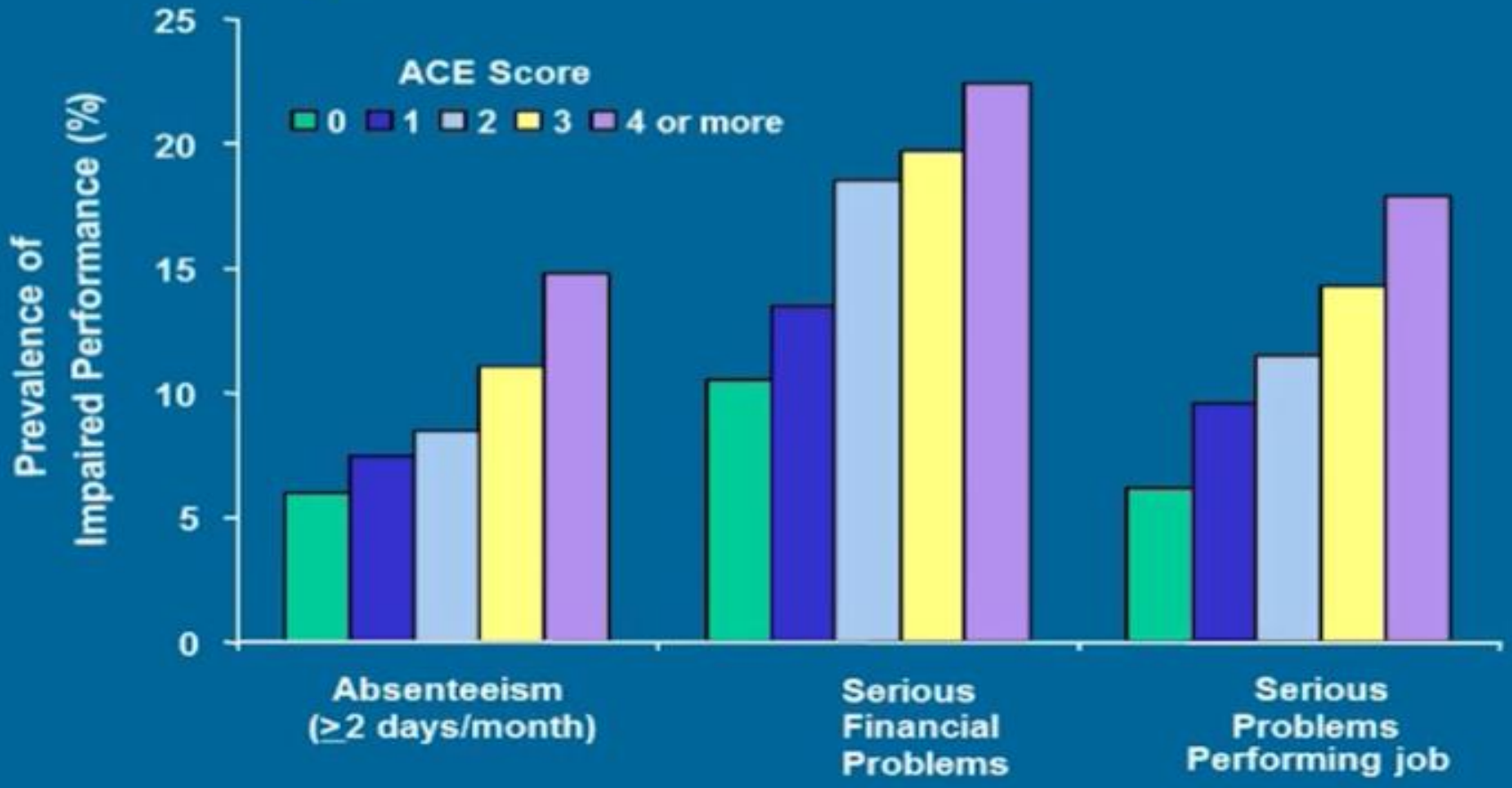
*After correction for age, race, education, and conventional risk factors like smoking & diabetes.

Circulation, Sept. 2004

Dr Vincent Felitti (2009) https://www.youtube.com/watch?v=KEFfThbAYnQ (Accessed February 17, 2020)

Social malfunction:

ACE Score and Indicators of Impaired Worker Performance



Dr Vincent Felitti (2009) https://www.youtube.com/watch?v=KEFfThbAYnQ (Accessed February 17, 2020)

The Role of TRAUMA

Adverse Childhood Experiences (ACE)

- Most important to normal development is **"social engagement"** which is the ability to know, understand, regulate, and express emotions in the present moment. Even though everyone is born with a social engagement system (i.e., a neurological system that promotes human connection), we know that early trauma can disrupt its normal development.

- Anda et al (2018) note, "Early adverse experiences may disrupt the ability to form **long-term attachments in adulthood.** The unsuccessful search for attachment my lead to sexual relations with multiple partners with resultant promiscuity and other issues related to sexuality" (e.g., pornography addiction, emphasis mine).

- As a result of adverse developmental trauma, the ensuing loss of connection with our inner self, our bodies, others, and the world around us, we are **predisposed to engage in addictive behaviors** to relieve the emotional dysregulation that torments US.

It’s just Fun!

- Many young people accidentally discover pornography, many others are introduced to it by another person, usually a peer or a sibling.
- And indeed, they find it tantalizing and fun.
- They are not seeking to avoid pain nor are they necessarily suffering from a loss of connection to good living.
- So, what starts off innocently enough, ends up changing their neurology and they “accidentally” become hopelessly addicted

The Neuroscience of Addiction

- The Role of **Dopamine**
  - Sensitization
  - Desensitization
- **Hypofrontality** – Not a good thing
- The Marriage of **Triune Brain therapy** and **Polyvagal Theory**

How the Brain Gets Hijacked by Process Addictions?

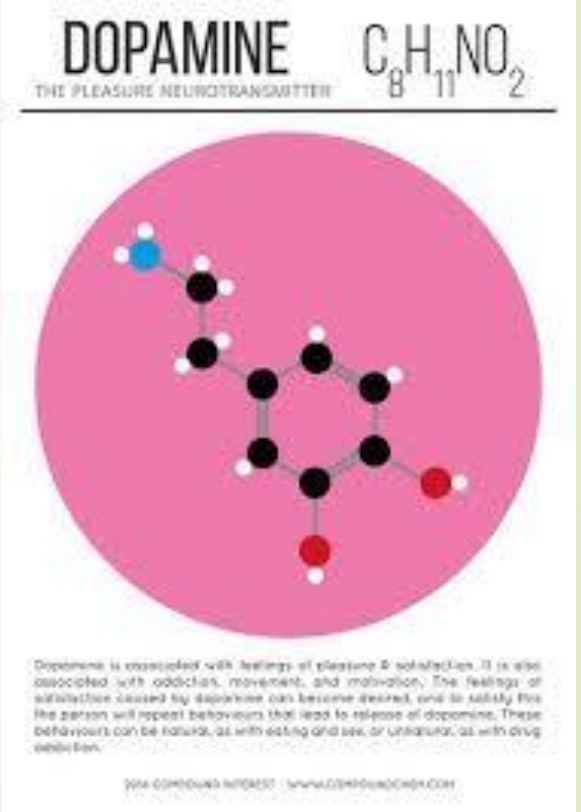
Dopamine - guilty as charged

How the Brain Gets Hooked by Process Addictions?

- As Kardaras(2016) stated in his book, *Glow Kids*, in order to fully understand addiction, we need to understand the brain's reward system and the impact of dopamine on that reward pathway.

- Specifically, how much dopamine is activated by a substance or behavior is correlated directly with the addictive potential of that substance or behavior.

- **Dopamine,** as many of us know, is the "feel-good" neurotransmitter that is the most critical and important part of the addiction process. Dopamine was discovered in 1958 by Arvid Carlsson and Niles-Ake Hillarp at the National Heart Institute of Sweden.



Functions of Dopamine

➡ Dr. Susan Weinschenk (2009) noted that **dopamine** is created in various parts of the brain and is critical in several brain functions to include:

- Thinking
- Moving
- Sleeping
- Mood
- Attention
- Motivation
- Seeking and reward

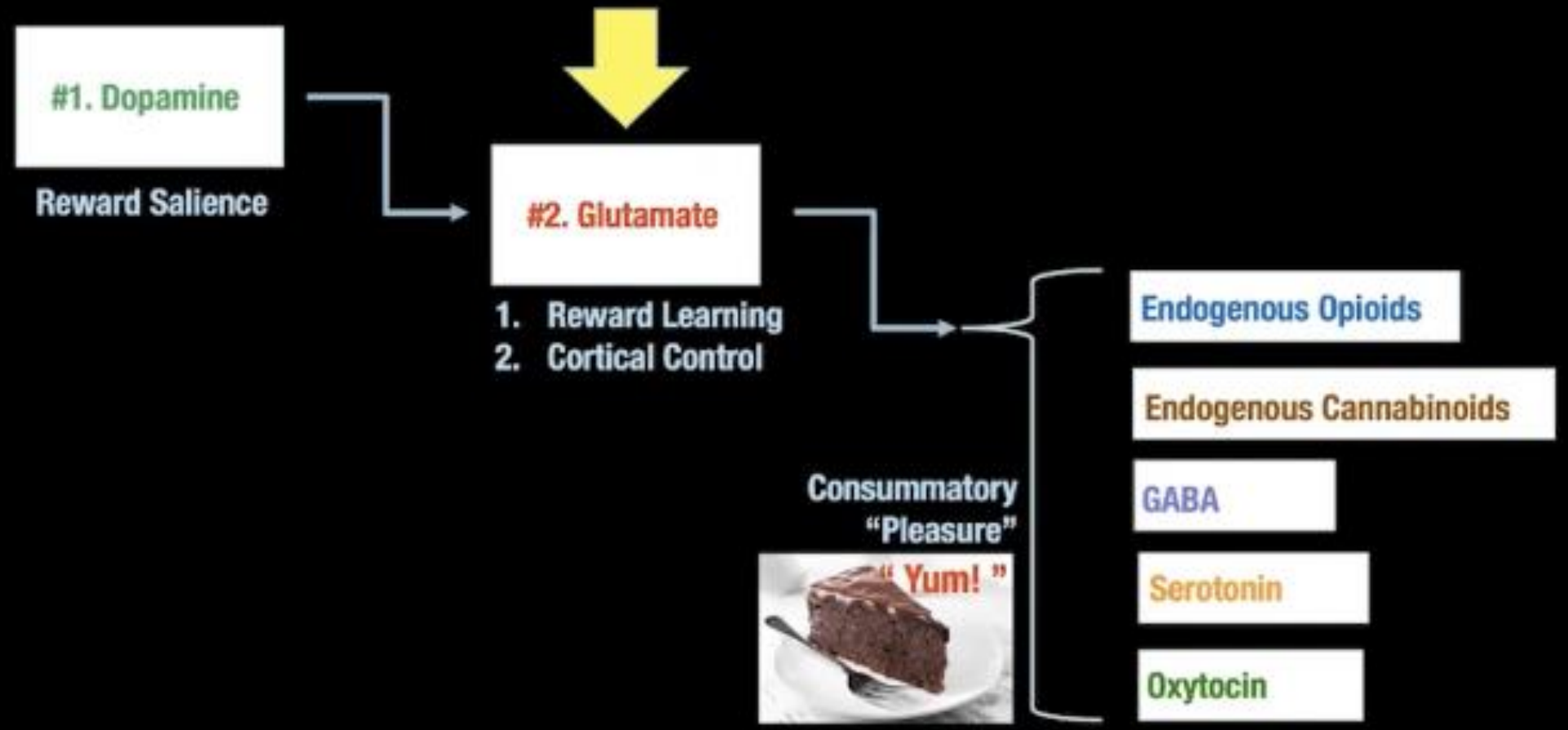
Inspired to watch because of Dopamine

Dr. McCauley notes that dopamine not only helps to encode things/processes that are enjoyable but also things that not necessarily enjoyable.

The "Ns" of Dopamine

Dopamine encodes for things that are:	meaning	example
Novel	first exposure	magnification of learning of new & relevant experiences
Noxious	aversive stimuli	re-experiencing of traumatic events
Neutral	valence-independent stimuli	association with otherwise unrelated sensory & emotional cues, cunning/baffling/powerful nature of cue-induced relapse
Nearby	proximal, imminent	near in space and/or time; fantasy and fictive imagining; failure of delay discounting; craving
Numerated	number, amplitude, counts	social media "likes," hoarding (collection/accumulation addiction)
"N-Joyable"	rewarding stimuli	the core component of a hedonic (pleasurable) experience
Near-misses	reward prediction error	illusion of "better than expected" value, mis-remebering past intoxication episodes, chasing losses
"N-centive"	incentive, motivational drive	wanting > liking

The "Brain Reward Cascade" (Blum)

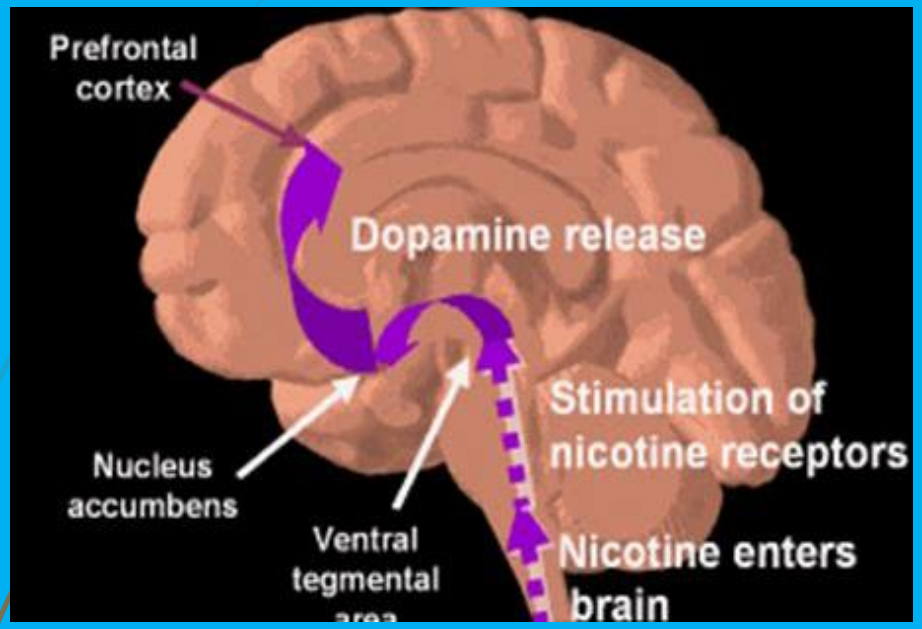


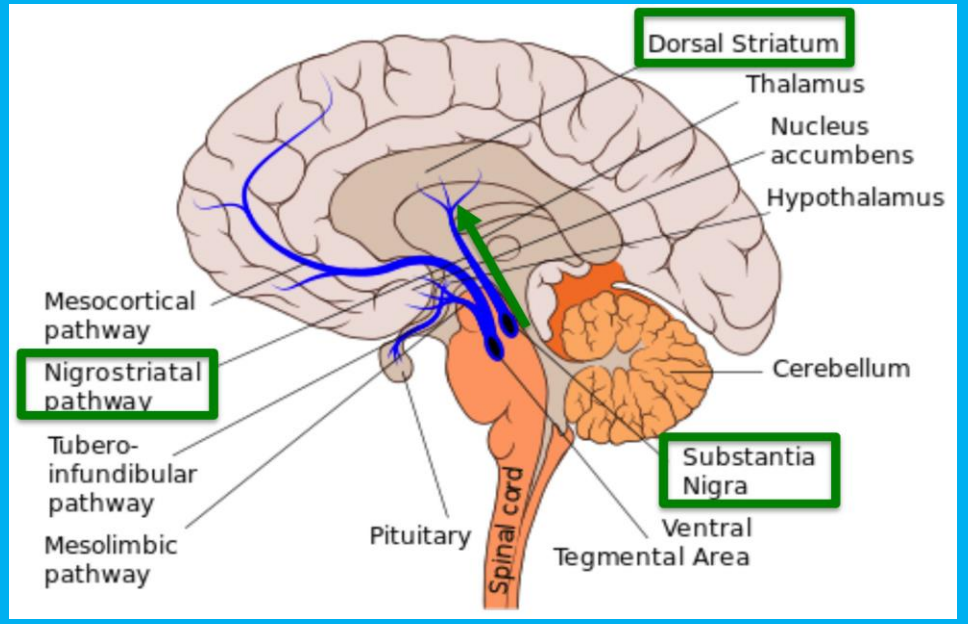
Adapted from:
Blum K, Febo M, Badgaiyan RD. Fifty years in the development of a glutaminergic-dopaminergic optimization complex (KB220) to balance brain reward circuitry in reward deficiency syndrome: a pictorial. *Austin Addict Sci*, 2016;1(2).

Dr. McCauley notes that dopamine creates reward salience, glutamate facilitates learning, and several other neurotransmitters create consummatory pleasure.

Two Main Dopamine Reward Pathways

Mesocorticolimbic for motivation and reward
Nigrostriatal for movement





The Mesocorticolimbic Pathway transports dopamine from the VTA to the nucleus accumbens, amygdala, and prefrontal cortex. The nucleus accumbens is found in the ventral medial portion of the striatum and is believed to play a role in reward, motivation, desire, and even the placebo effect.

The Nigrostriatal Pathway travels from the substantia nigra to the striatum. The nigrostriatal pathway is important for facilitating movement.

Dopamine is both a neuromodulator and neurotransmitter

- According to Stanford neuroscientist Dr. Andrew Huberman, dopamine is both a neuromodulator and a neurotransmitter. The main difference between neurotransmitter and neuromodulator is that a neurotransmitter is a chemical messenger released by a neuron to affect either one or two post-synaptic neurons or another specific effector organ whereas a neuromodulator is a chemical messenger released by a neuron to affect a group of neurons or effector organs with a specific receptor.

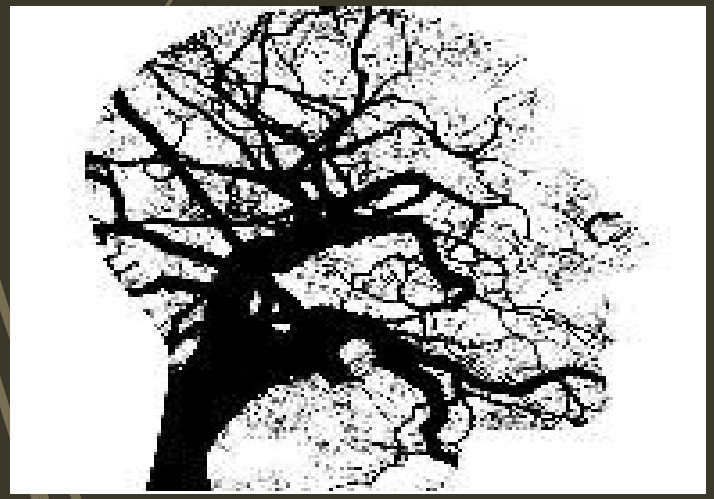
- Furthermore, a neurotransmitter directly affects the postsynaptic partner to produce a quick, rapid effect while a neuromodulator indirectly affects the post-synaptic partner, especially through a second messenger to produce a slow but long-lasting effect. Dopamine can be released locally or volumetrically (a large dump). When it is released volumetrically, it affects many neurons. Very concerning, dopamine can ultimately affect gene expression according to Dr. Lieberman.

Click here to listen to Dr. Hubererman's excellent lecture on dopamine: https://www.youtube.com/watch?v=QmOF0crdyRU&t=2s&ab_channel=AndrewHuberman

More on Dopamine

- When an individual performs an action that is satisfying to a need or fulfills a desire, dopamine is released into the nucleus accumbens, a cluster of nerve cells beneath the cerebral hemispheres that are specifically associated with reward and pleasure. This is also known as the brain's "pleasure center."
- Natural dopaminergic activities, such as eating and sex, usually come after effort and delay and serve a survival function.
- These are called the "natural rewards" as contrasted with addictive chemicals/behaviors (which can highjack the same circuity).
- Addictive drugs and behaviors, such as gambling and video gaming, actually offer a short-circuit to this process which only ends up flooding the nucleus accumbens with dopamine and does not serve any biological function.

Dopamine vs Endogenous Opioids



- Although **dopamine** has been referred to as the **"pleasure molecule,"** it is in actuality more about seeking and searching for pleasure, rather than pleasure itself. Dopamine is more involved in drive and motivation to seek.
- The "final reward" or what we experience as feelings of pleasure, Wilson (2014) writes, involve the release of **endogenous opioids**.
- You can think of dopamine as **"wanting"** and opioids as **"liking."**
- As psychologist Dr. Weinschenk explains, "Dopamine causes us to want, desire, seek out and, search; however, the dopamine system is stronger than the opioid system and we hence seek more than we are as satisfied…" (Weinschenk, 2009).
- "Addicts want it more but gradually like it less. Addiction might be thought of as *"wanting gone amok."* (Wilson, 2014).

Click here to listen to Gary Wilson's outstanding lecture: https://www.youtube.com/watch?v=ZLtSoWrEplM&ab_channel=Reach10

Bought the BMW but still wanting the Ducati Diavel

Dopamine and DeltaFosB “Keep doing it!”

- Highly salient activities, in this case addiction, lead to the accumulation of DeltaFosB, a protein that activates the genes involved with addiction. The molecular changes it potentiates are almost identical for both sexual conditioning and chronic drug use. Specifically, DeltaFosB rewires the brain to crave IT whatever IT is.

- In a sense, dopamine is like the foreman on a construction site barking orders and DeltaFosB is the worker on the site. Dopamine is yelling, “This activity is really important, and you should do it again and again.”

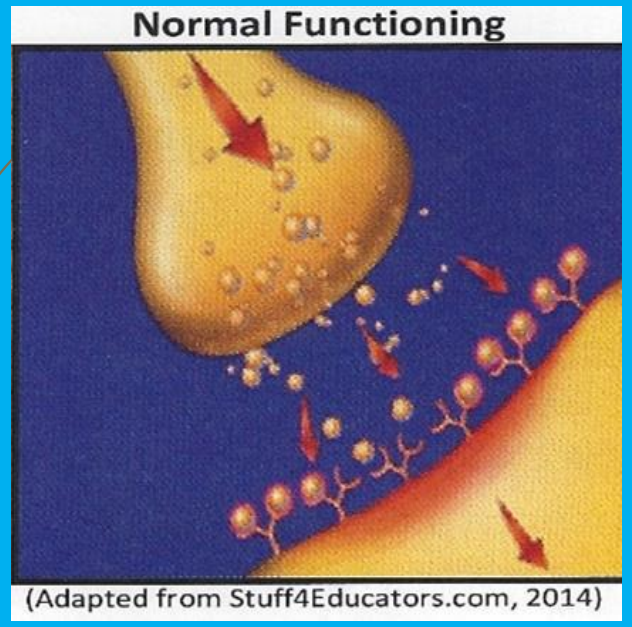
- DeltaFosB is responsible for ensuring that you remember and repeat the activity.

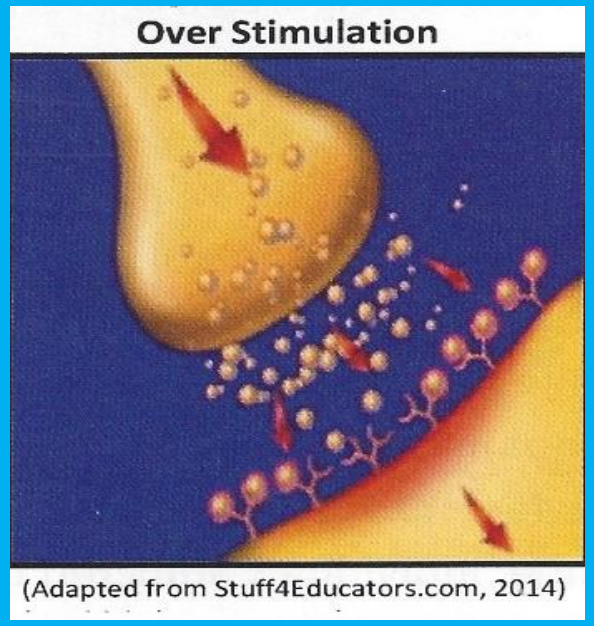
- This repeated process produces what is called sensitization which is based on the principle, “Nerve cells that fire together wire together” as noted by Canadian researcher Donald Hebb in 1949. Repeated activity strengthens cell connections.

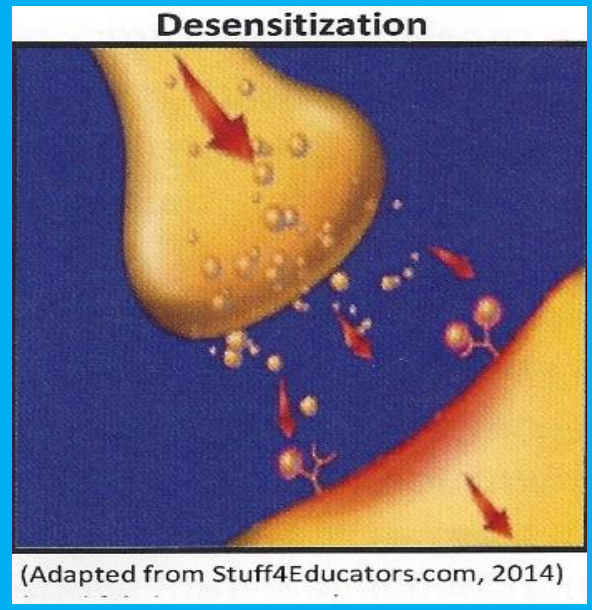
Dopamine and CREB – “Slow it Down, Silver!”

- As the brain recognizes that it needs a rest, it will kick out **CREB** in an effort to slow things down (Wilson, 2014).
- In essence, **DeltaFosB** acts like the gas pedal and **CREB** functions as the brakes.
- CREB specifically inhibits dopamine and endogenous opioids in an effort to take the joy out of the binging/addictive behavior or substance so that you can give it a rest.
- This numbed pleasure response that is induced by CREB is often identified as **desensitization** which leads to **tolerance** - the need of increasingly higher doses to achieve the same effect. Tolerance is a key factor in addiction.

DOPAMINERGIC DOWNREGULATION AT THE SYNAPTIC LEVEL







So, we see that chronic overstimulation can lead to two opposite effects:

01

Increased dopamine activity (wanting/seeking it more) –

sensitization via **DeltaFosB**

02

Decreased dopamine and opioid activity (liking it/enjoying it less) – **desensitization** via **CREB**

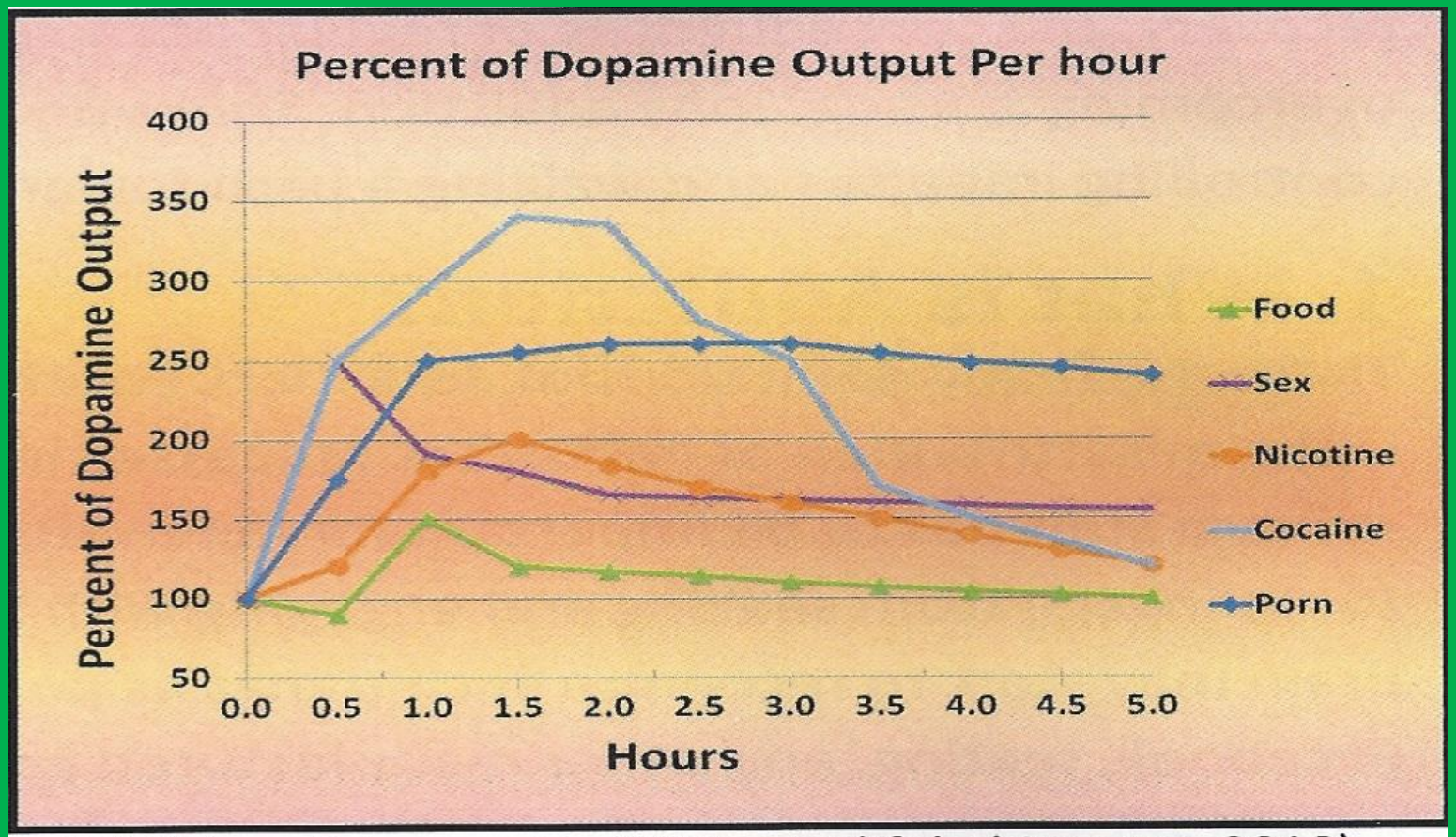
Factoids about Dopamine Increases (Koepp et al.,1998; Guangbheng et al., 2012)

- Chocolate – 50% increase
- Sex – 100% increase
- Snorting cocaine – 350%
- Crystal meth – 1,200%
- Video gaming – 100%

What Cranks Us Up?

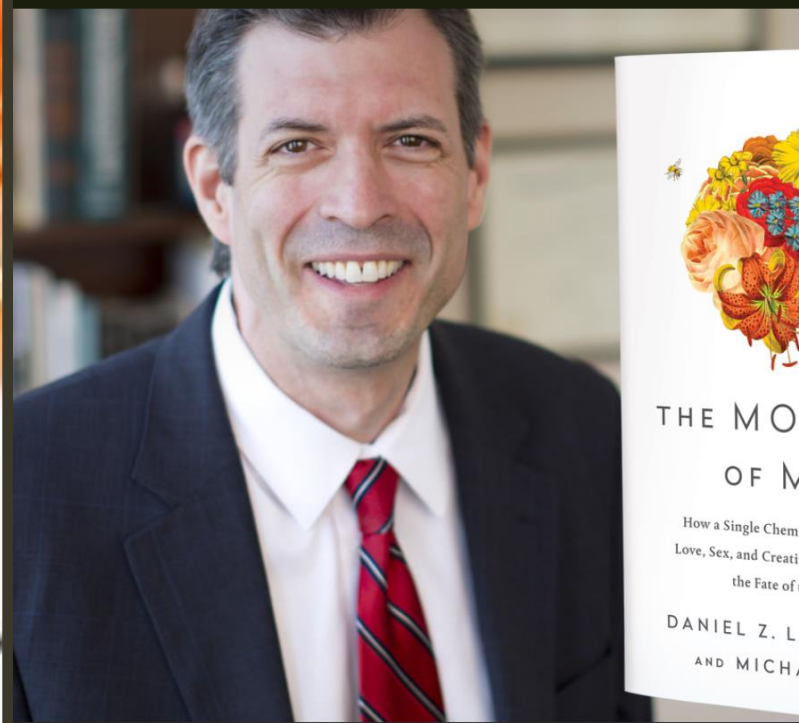
Summary of dopamine increases:

- Food – 150% increase
- Nicotine – 200% increase
- Snorting cocaine – 350% increase
- Sexual intimacy – 250% increase
- Pornography – 250% increases and stays elevated for longer – even when compared to cocaine

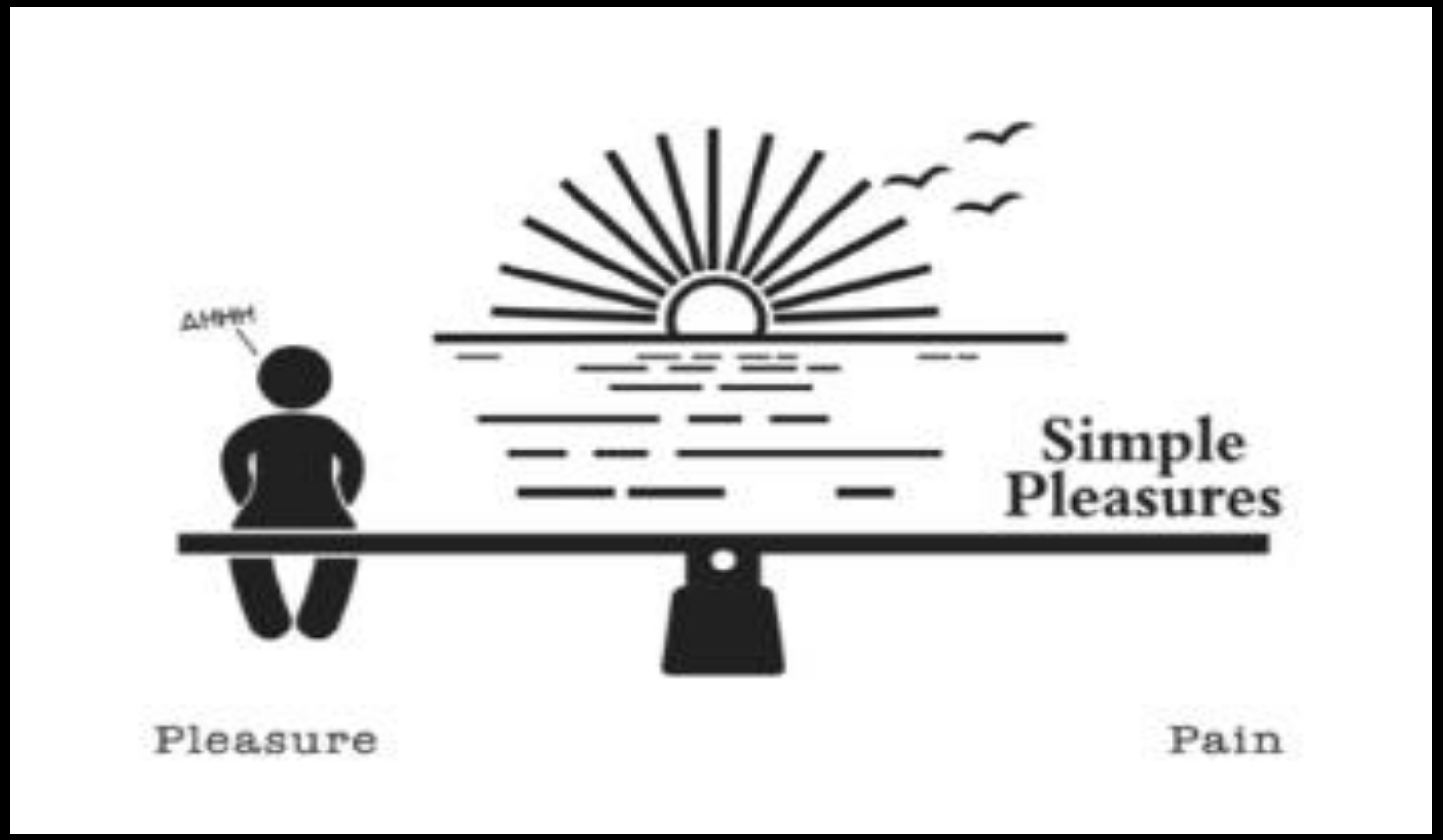


(Di Chiara & Imperato, 1988; newlifehabits.com, 2010)

The next few slides are from groundbreaking work of Dr. Anna Lembke and Dr. Daniel Lieberman and give us additional insights into how dopamine impacts the addiction process.

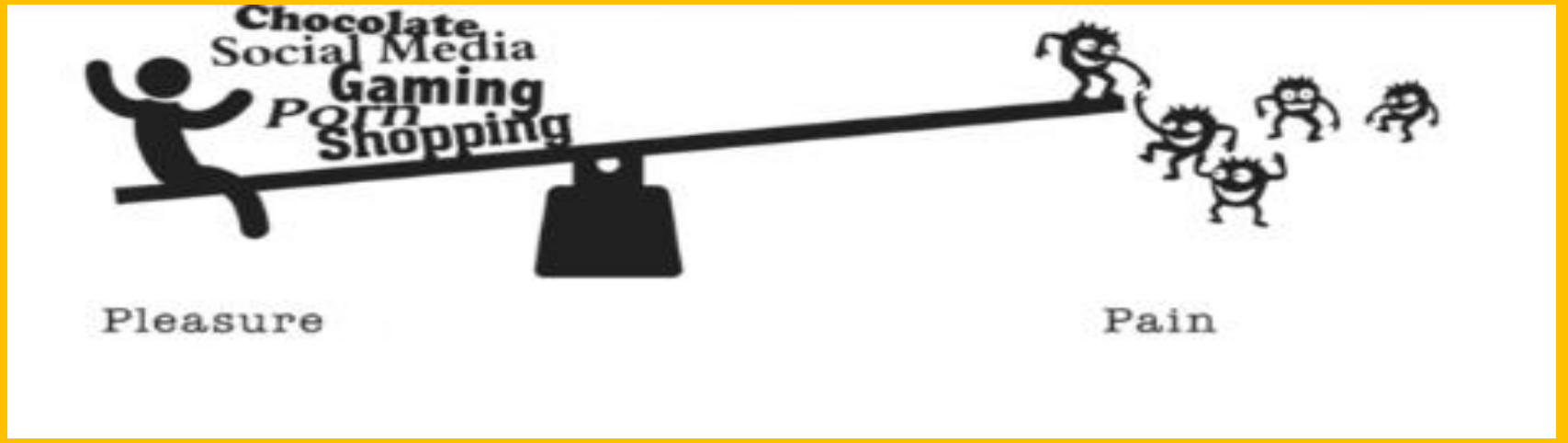


Pleasure and Pain Nicely in Balance



- According to Stanford Psychiatrist, Dr. Anna Lembke, dopamine which acts on **pleasure** neurocircuits, and **pain** are related and help create a homeostatic balance in the brain and body.

The following slides are based on Anna Lembke(2021) *Dopamine Nation* book.
Click here to watch her excellent YouTube video:
https://www.youtube.com/watch?v=5Pu82wZRZwo&ab_channel=AndreaSamadi

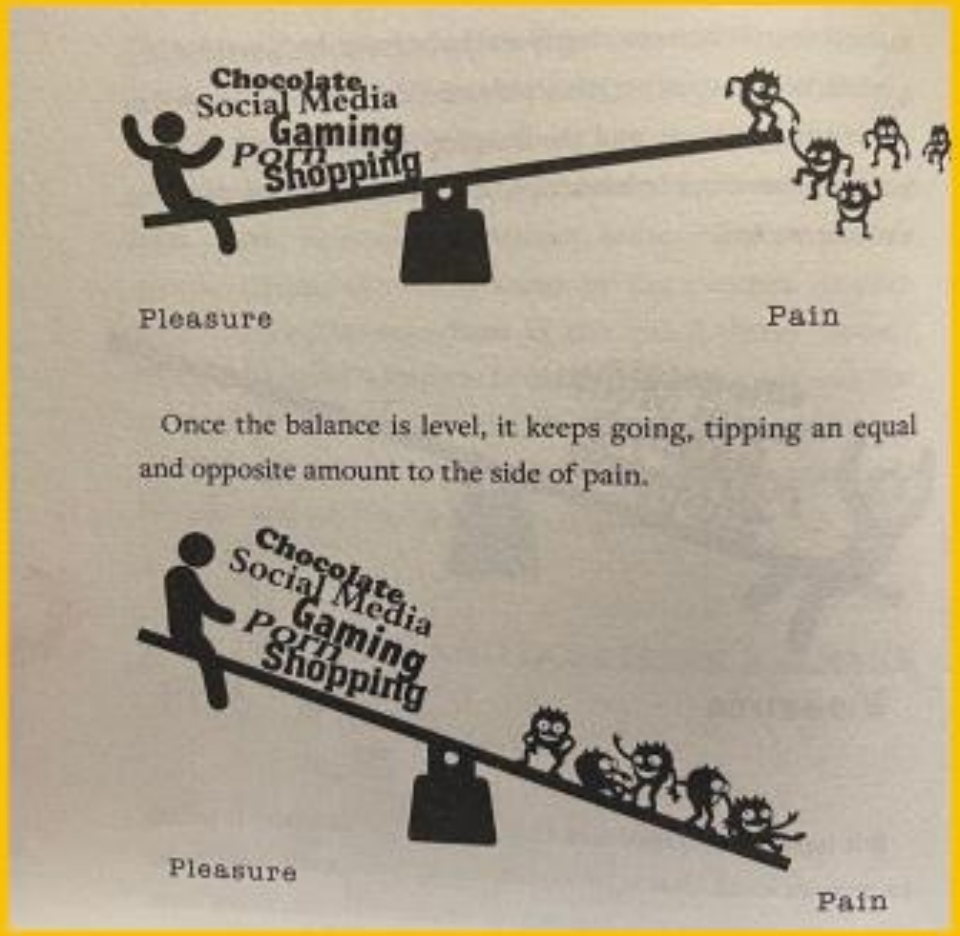


Our brain down-regulates our dopamine to bring us back to homeostasis (gremlins jumping on the lever).

As we actively seek pleasure, pain gremlins begin to jump on the teeter totter to try to restore homeostasis balance.

Anna Lembke (2021)
https://www.youtube.com/watch?v=5Pu82wZRZwo&ab_channel=AndreaSamadi

Pleasure – Pain Shift



Pain circuits activate in order to move toward homeostasis or balance

Then the balance is more on the "pain" side which is where we want more to feel "normal" again.

Anna Lembke, 2021, https://www.youtube.com/watch?v=5Pu82wZRZwo&ab_channel=AndreaSamadi

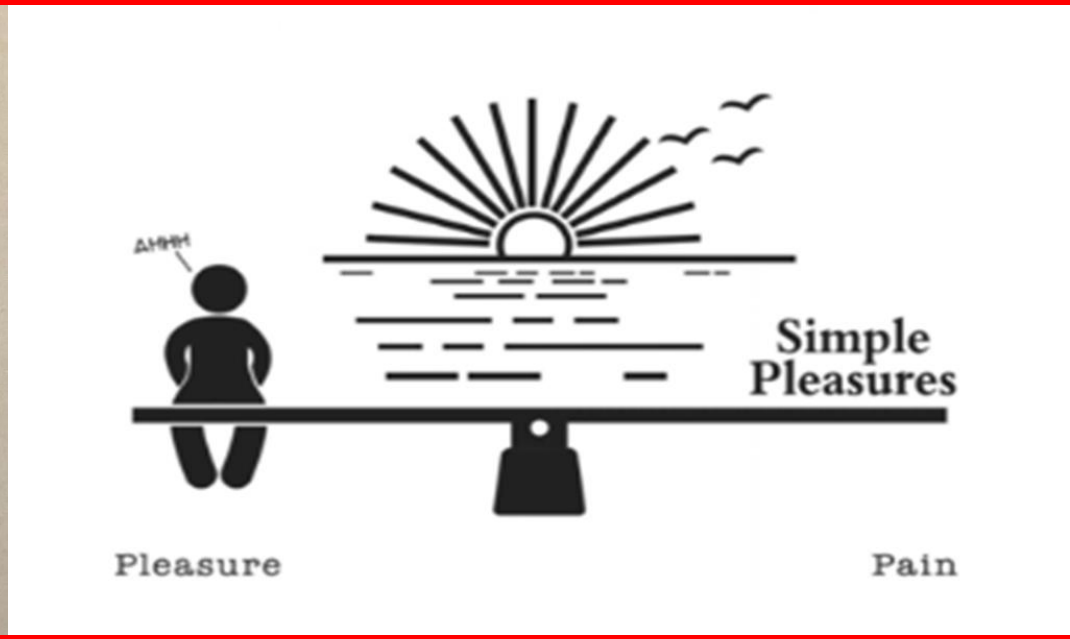
Pleasure and pain out of balance

This is a dopamine-deficit state, where we are walking around unhappy.

Dopamine Nation "It's harder for us to experience pleasure and more likely we will experience pain."

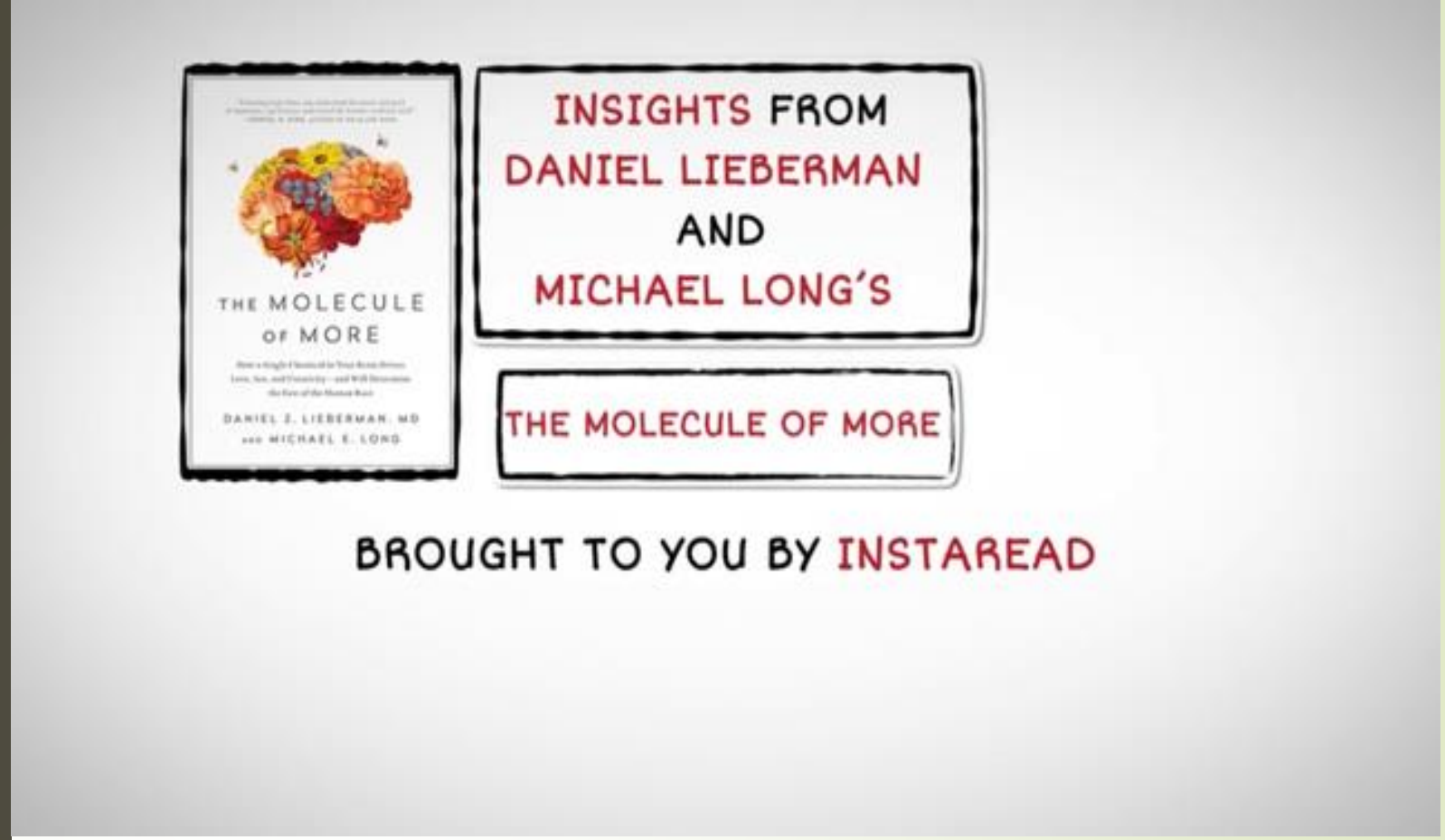
Anna Lembke (2021)
https://www.youtube.com/watch?v=5Pu82wZRZwo&ab_channel=AndreaSamadi

Dr. Lembke recommends a 30-day dopamine fast in order to rebalance the dopaminergic circuits in the brain.



Anna Lembke (2021)

The following slides are taken largely from Dr. Daniel Lieberman's excellent book, *The Molecule of More*



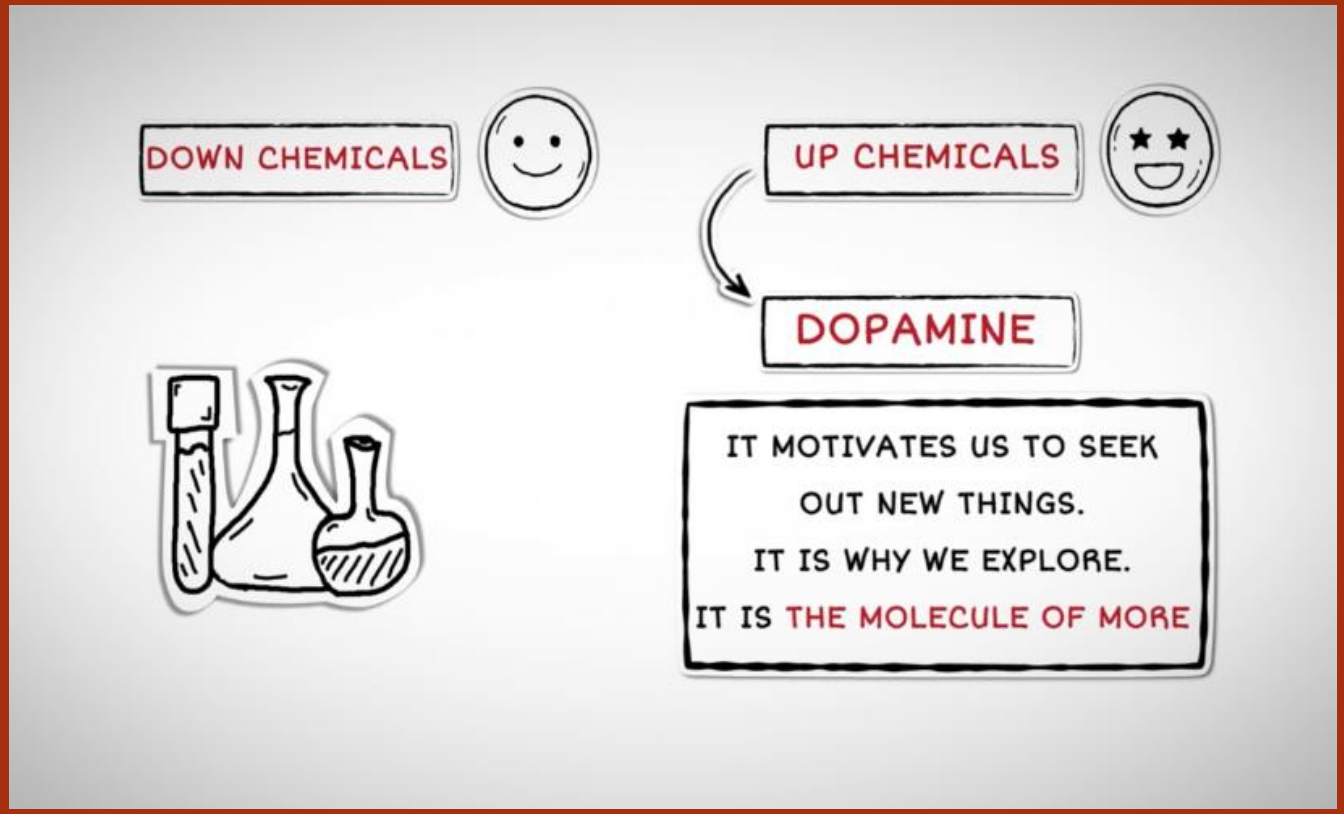
The Molecule of More

Click here to listen to Dr. Lieberman:
https://www.youtube.com/watch?v=TjKCzYYkKN4&ab_channel=Valuetainment

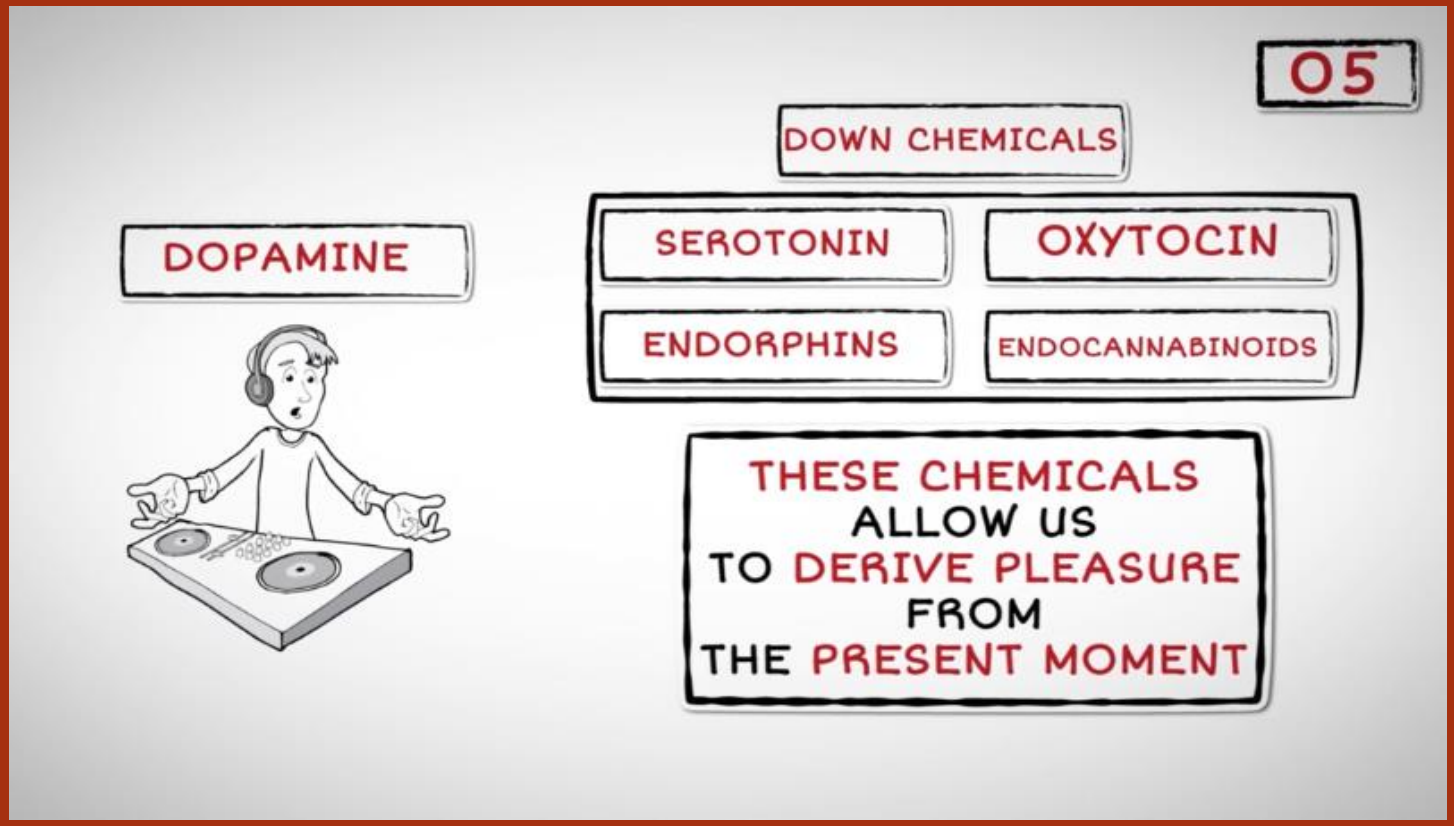
Click here to listen to animated video on Molecule of More:
https://www.youtube.com/watch?v=sPpY_nePtV8&ab_channel=Instaread

The brain has up chemicals and down chemicals

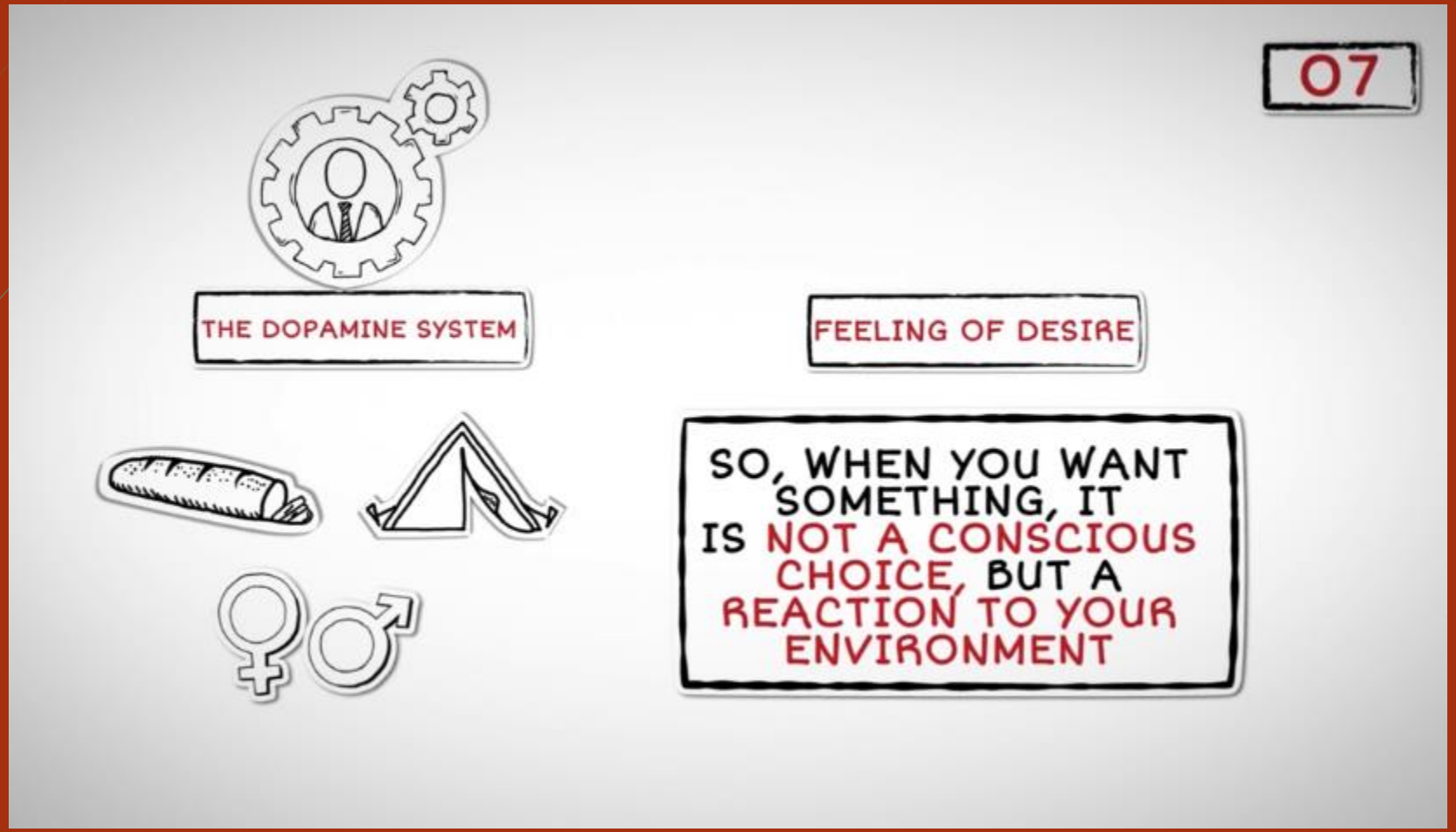
The up chemical dopamine drives us to seek new things



The Down Chemicals – designed for the here and now

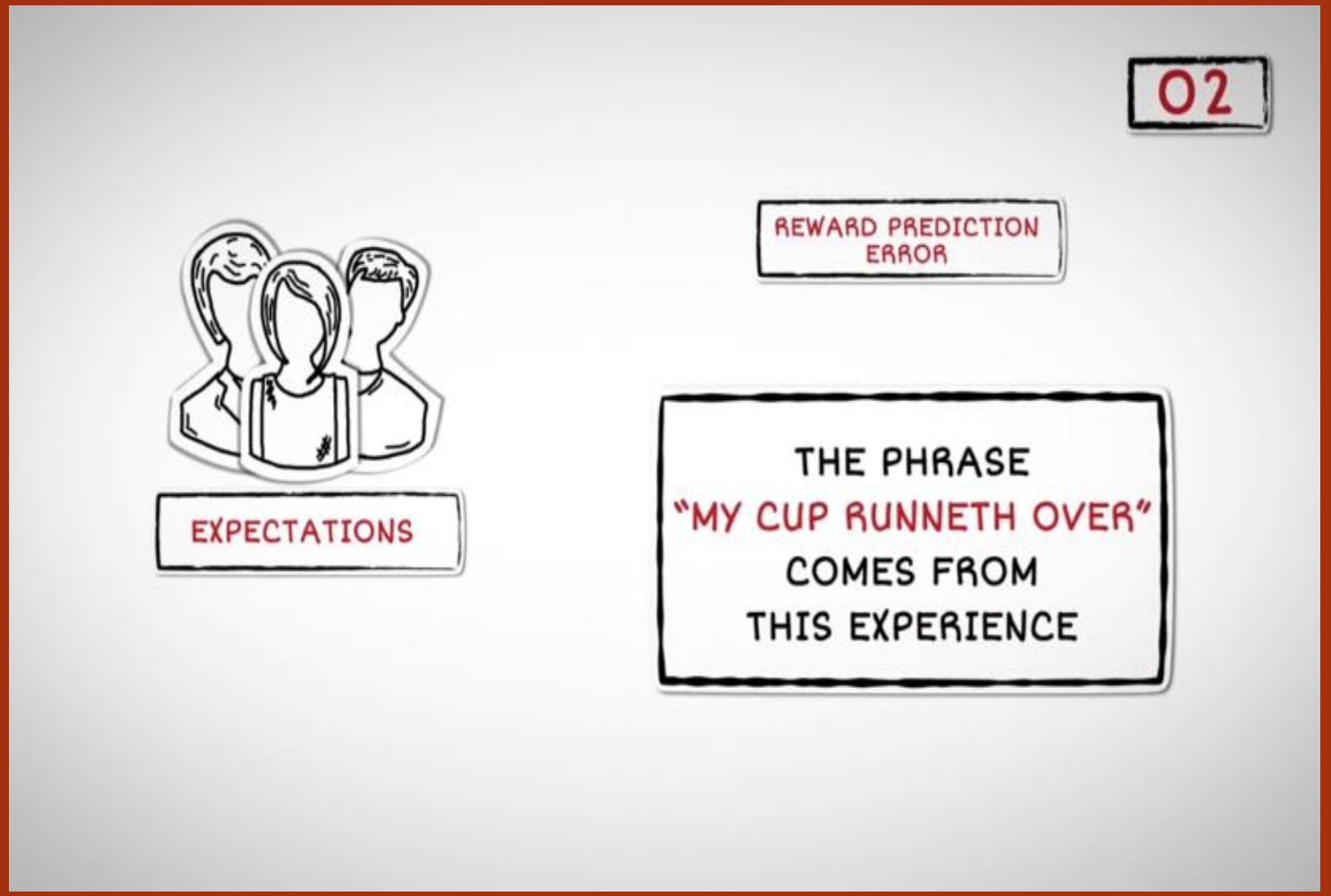


Dopamine is future-oriented and less conscious in process

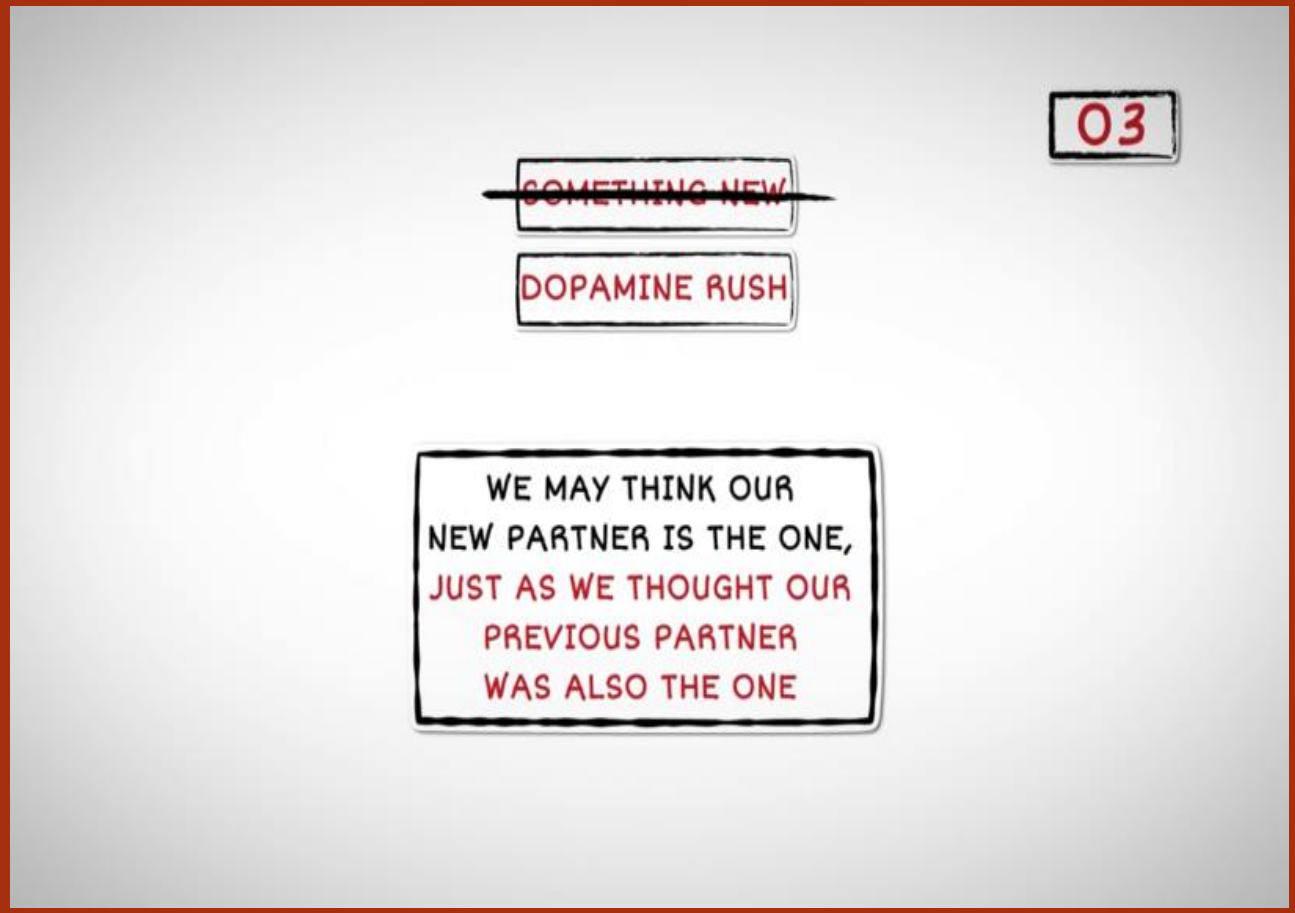


Reward Prediction Error

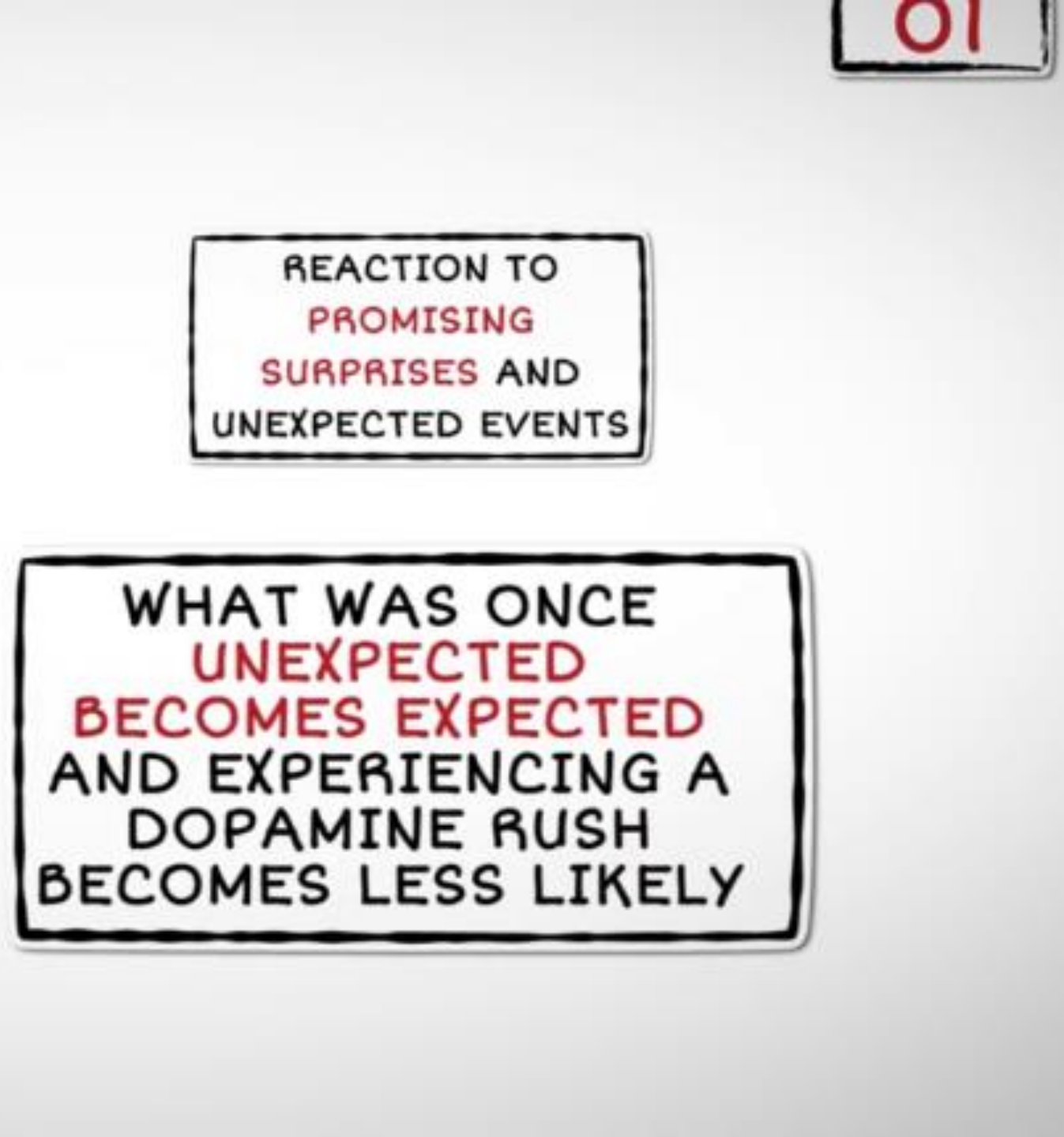
When the expected becomes unexpected which increases dopamine dramatically and compels us to continue seeking the new thing. This can become addicting.



When we get accustomed to the new thing, dopamine is decreased.

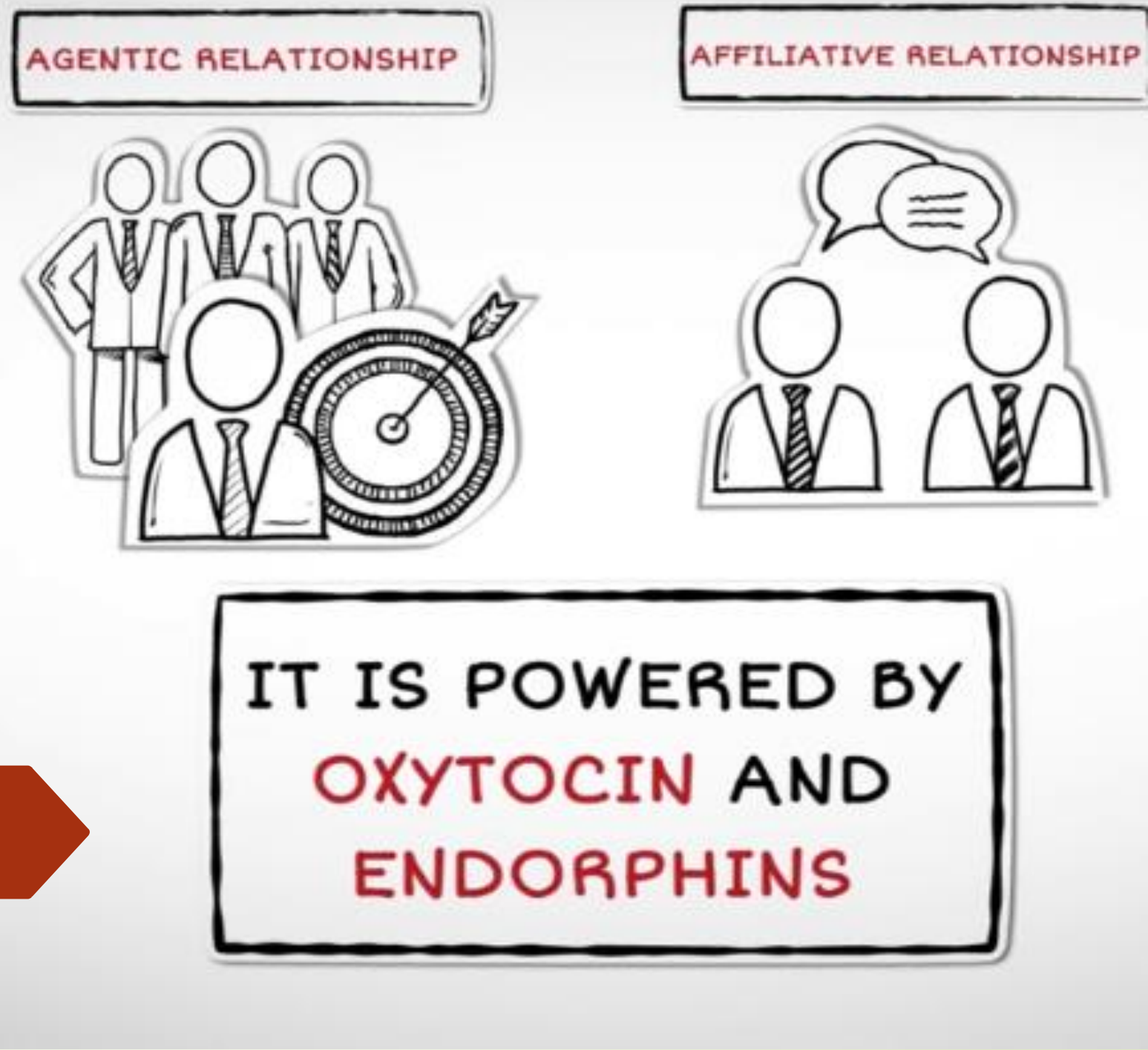


Dopamine drops when the unexpected becomes expected.

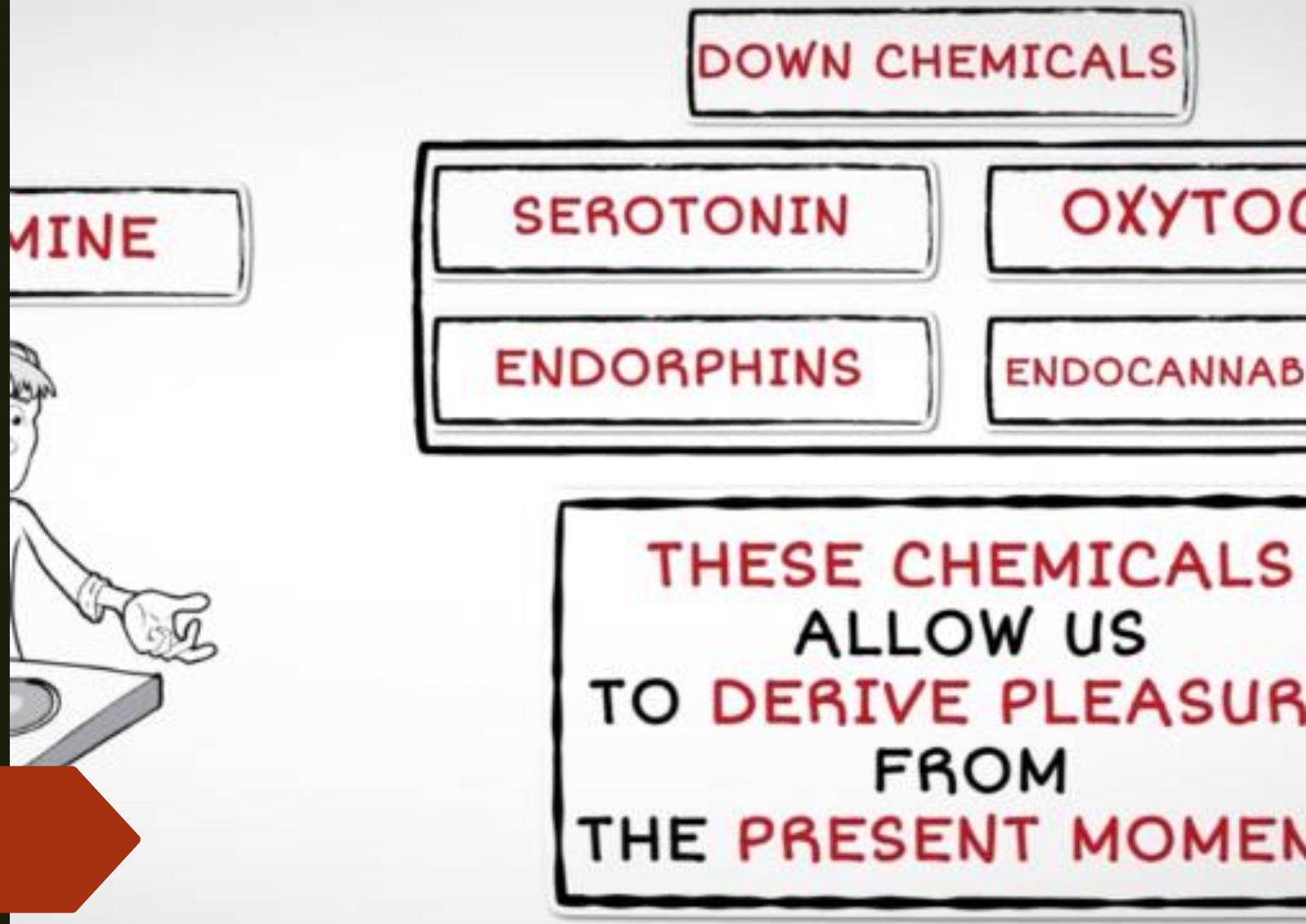


We can then possibly decide to end the cycle.

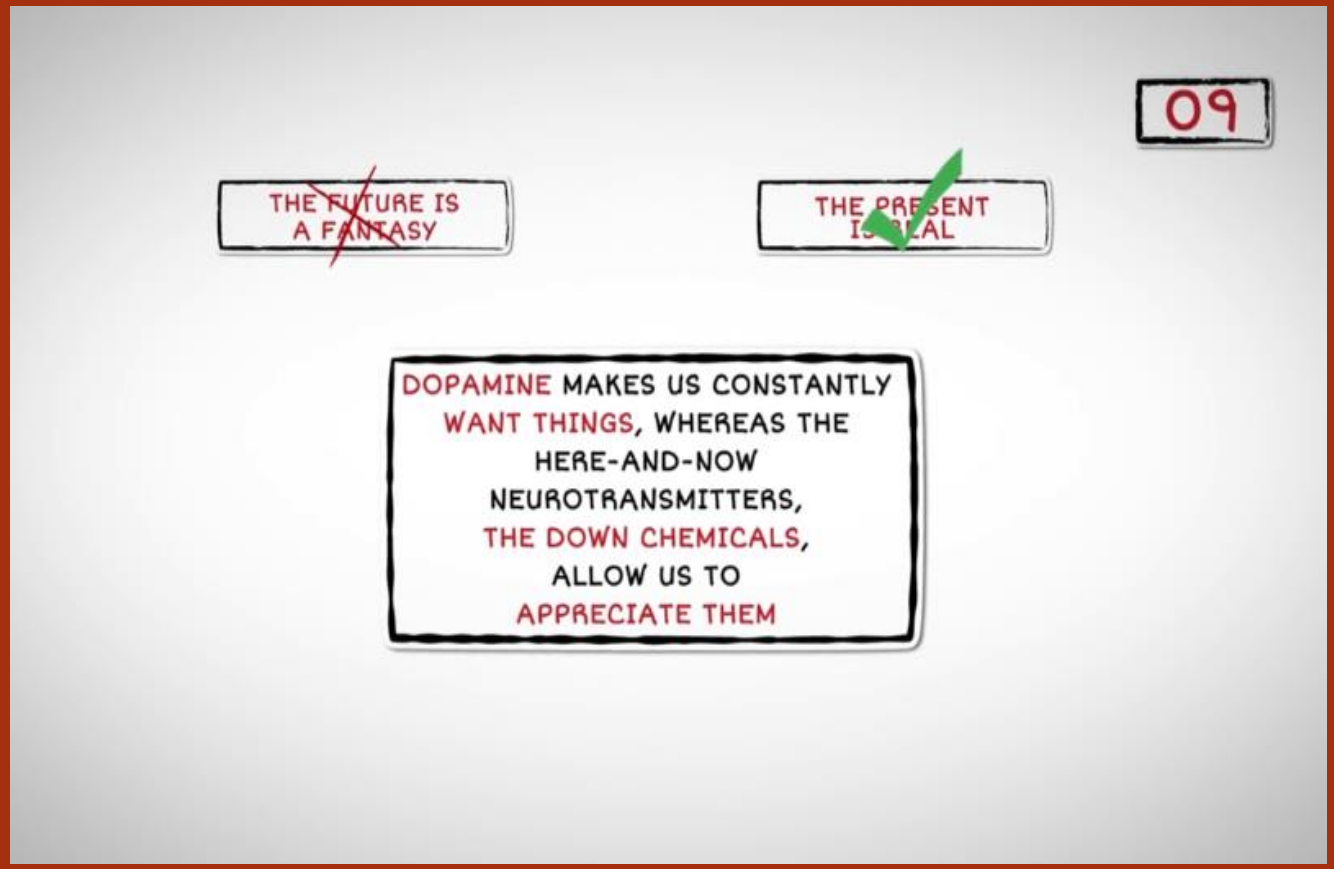
Here & Now Circuits allow us to back off the future pursuit and enjoy the present and all that it offers – relationships, peace, connection



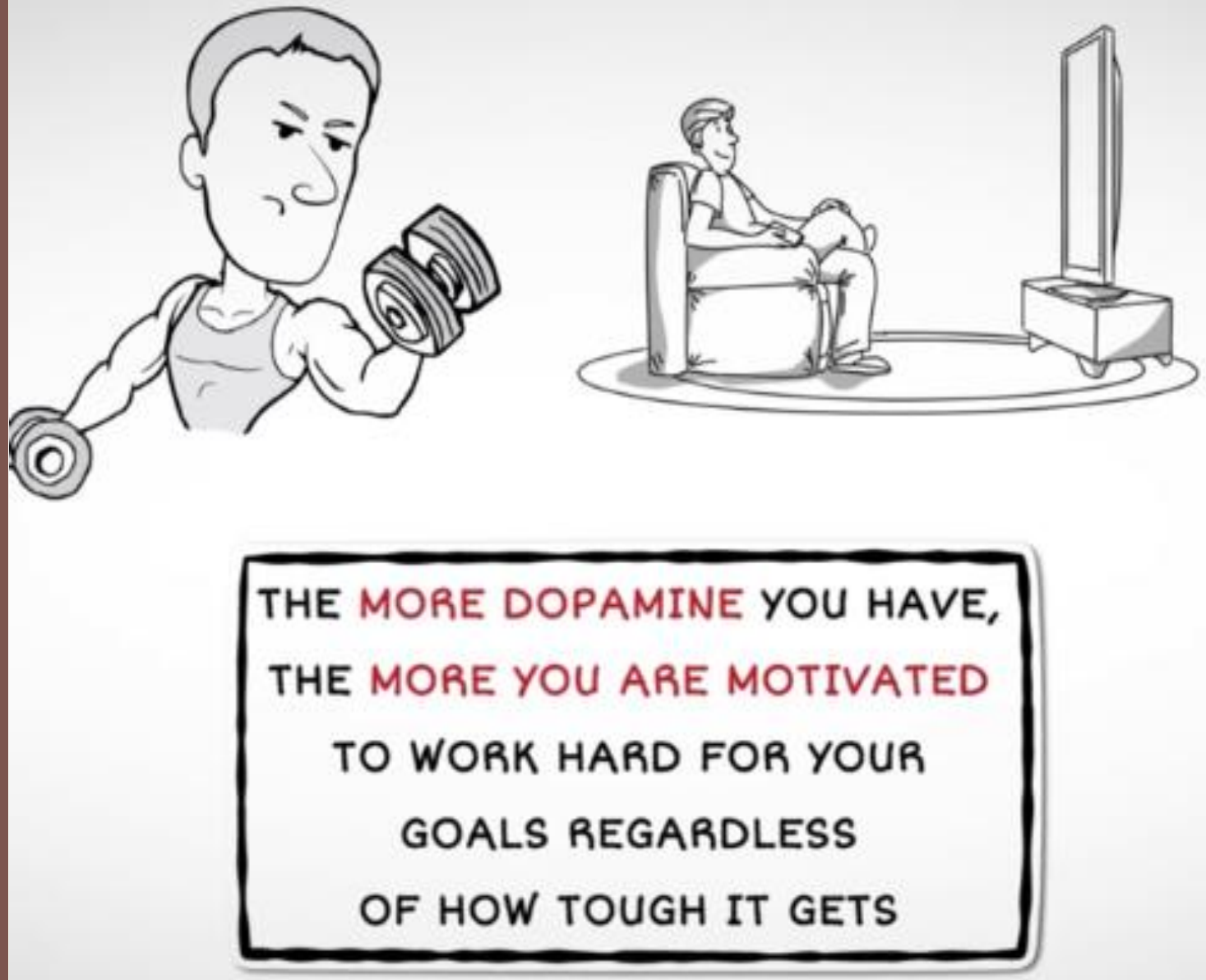
If we end the dopamine rush, we are able to enter into the here and now zone driven by the down chemicals.



Being able to shift from future craving (dopamine) to the present (here and now chemicals) is essential to mental health



Dopamine fixes us on a future target and can be a good thing if balanced

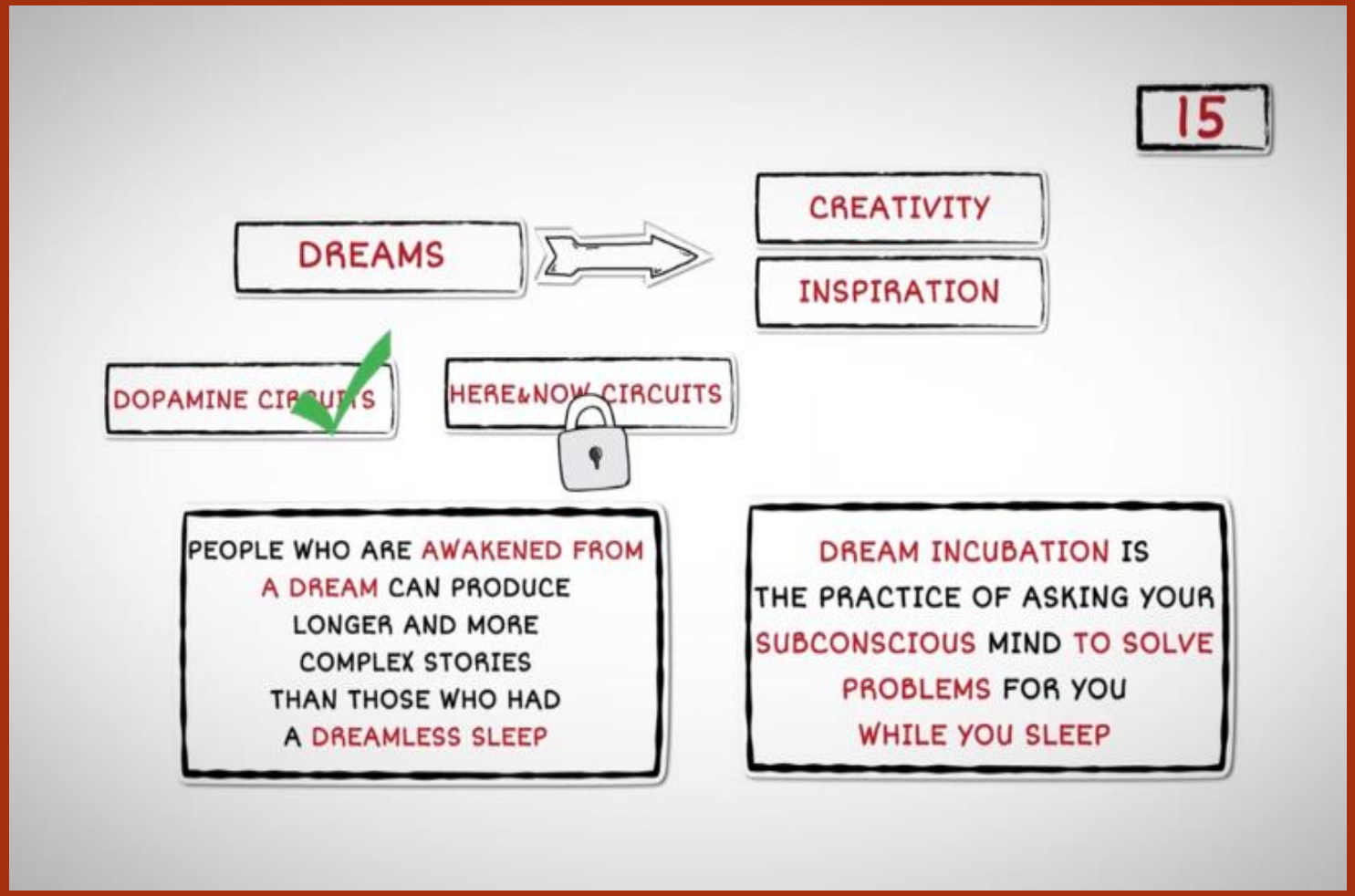


Dopamine used well: Fix on the target and ignore the distractions

CHARLES DARWIN

ONLY THE STRONGEST AND MOST ADAPTABLE ORGANISMS SURVIVE LONG ENOUGH TO REPRODUCE. OFTEN, IT IS THOSE WITH HIGH DOPAMINE WHO FIND IT EASIEST TO ADAPT

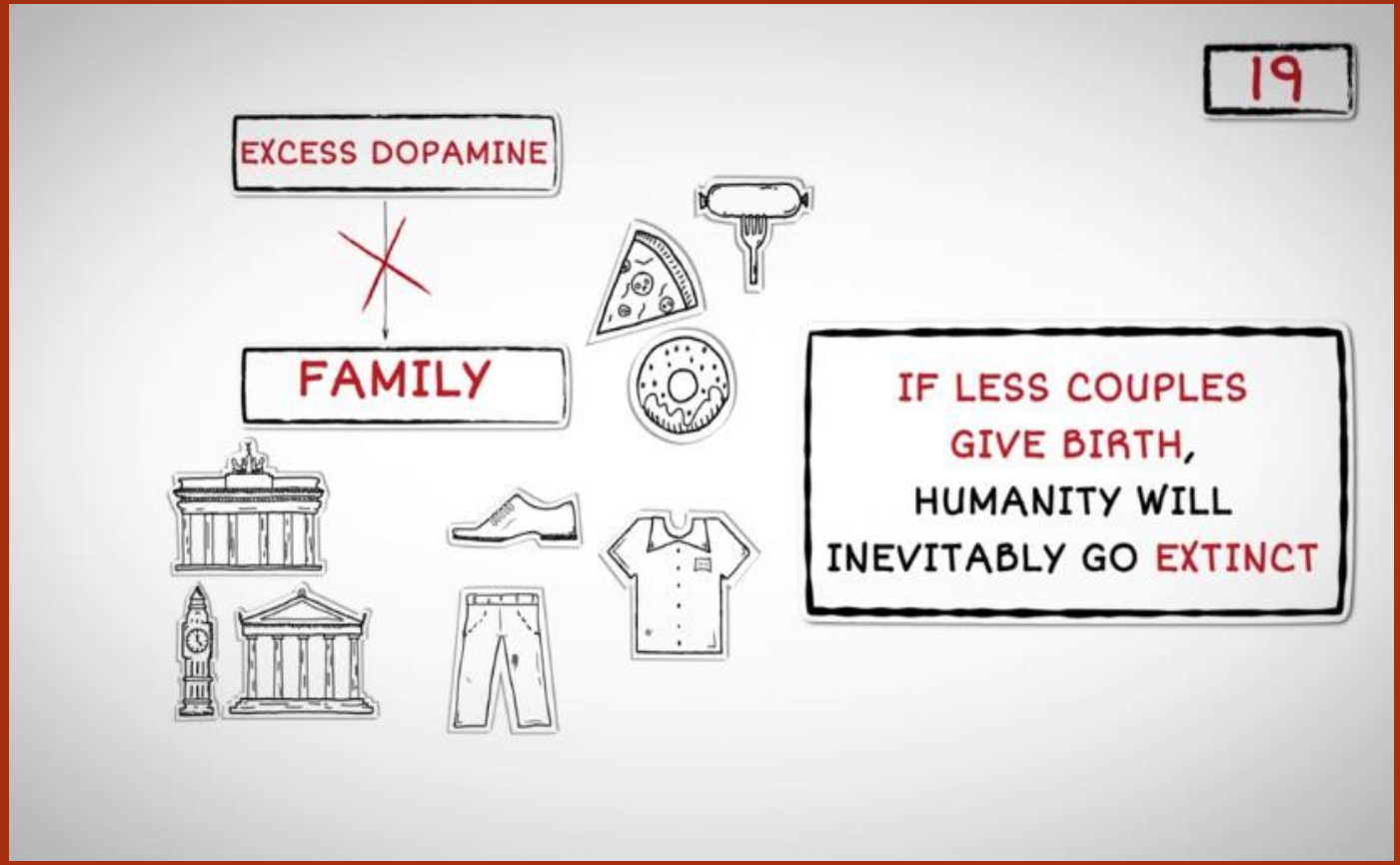
Dopamine used well:
Creativity and Inspiration



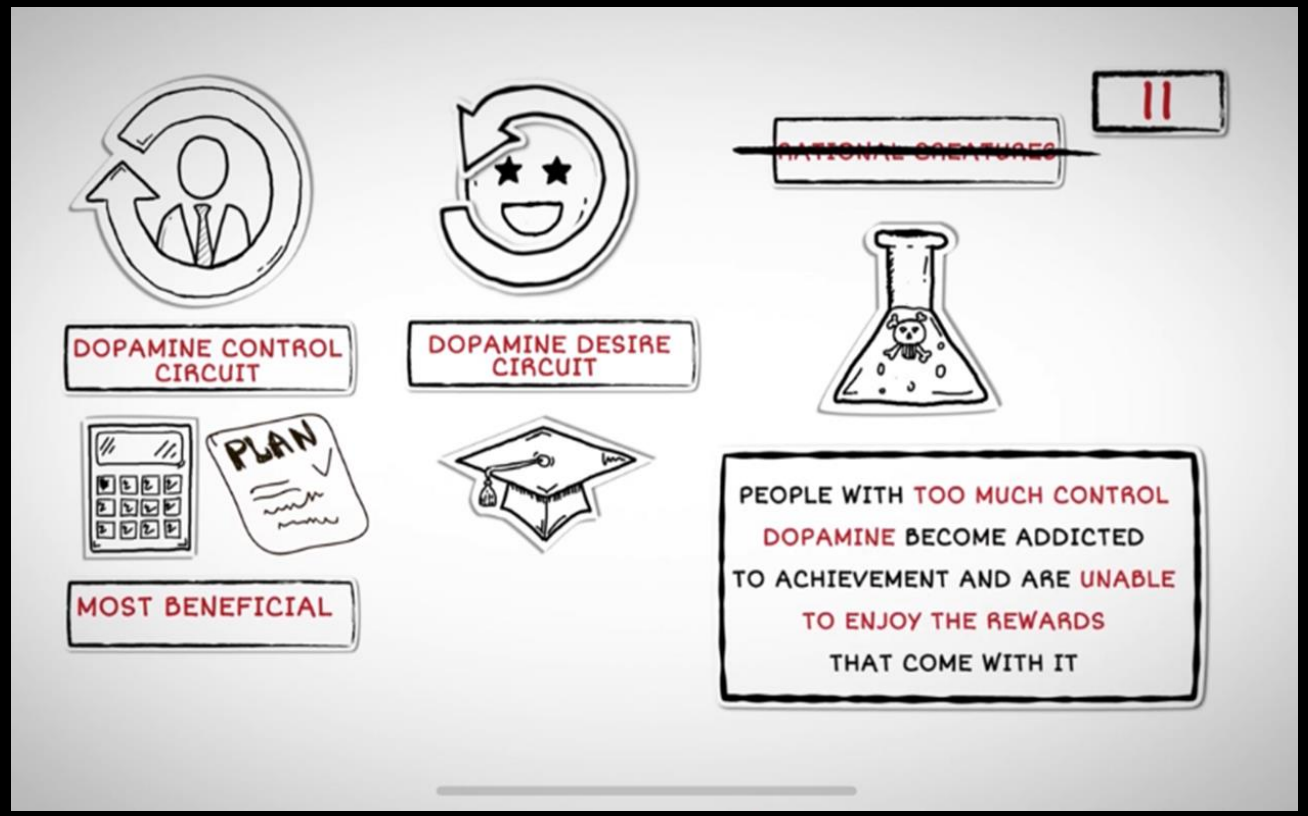
Dopamine when used poorly can lead to escalation and then ultimately addiction

Too much dopamine and too little Here & Now Chemicals are anti-family/procreation.

You get the goal but arrive there alone!



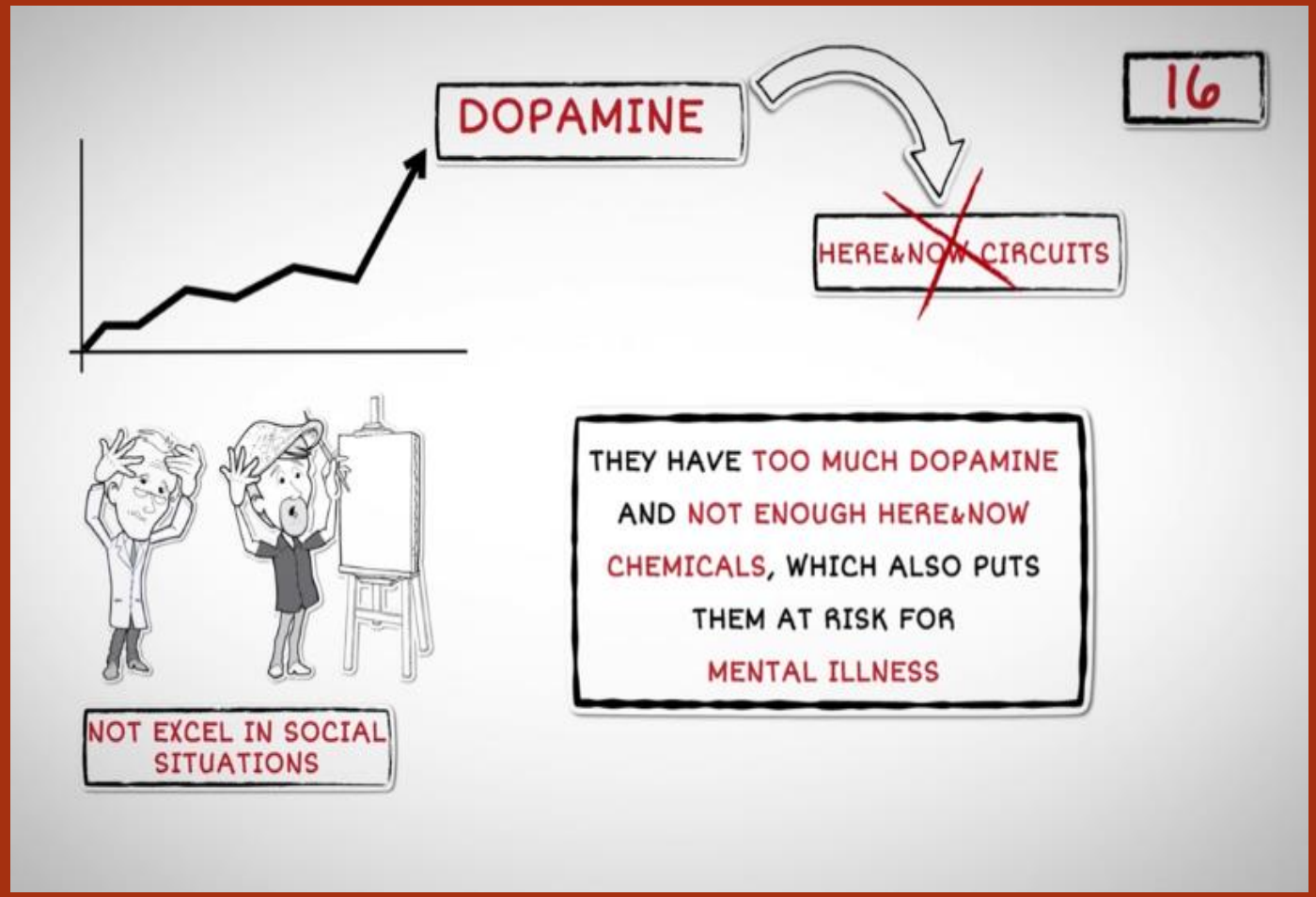
Dopaminergic Desire and Control Circuits



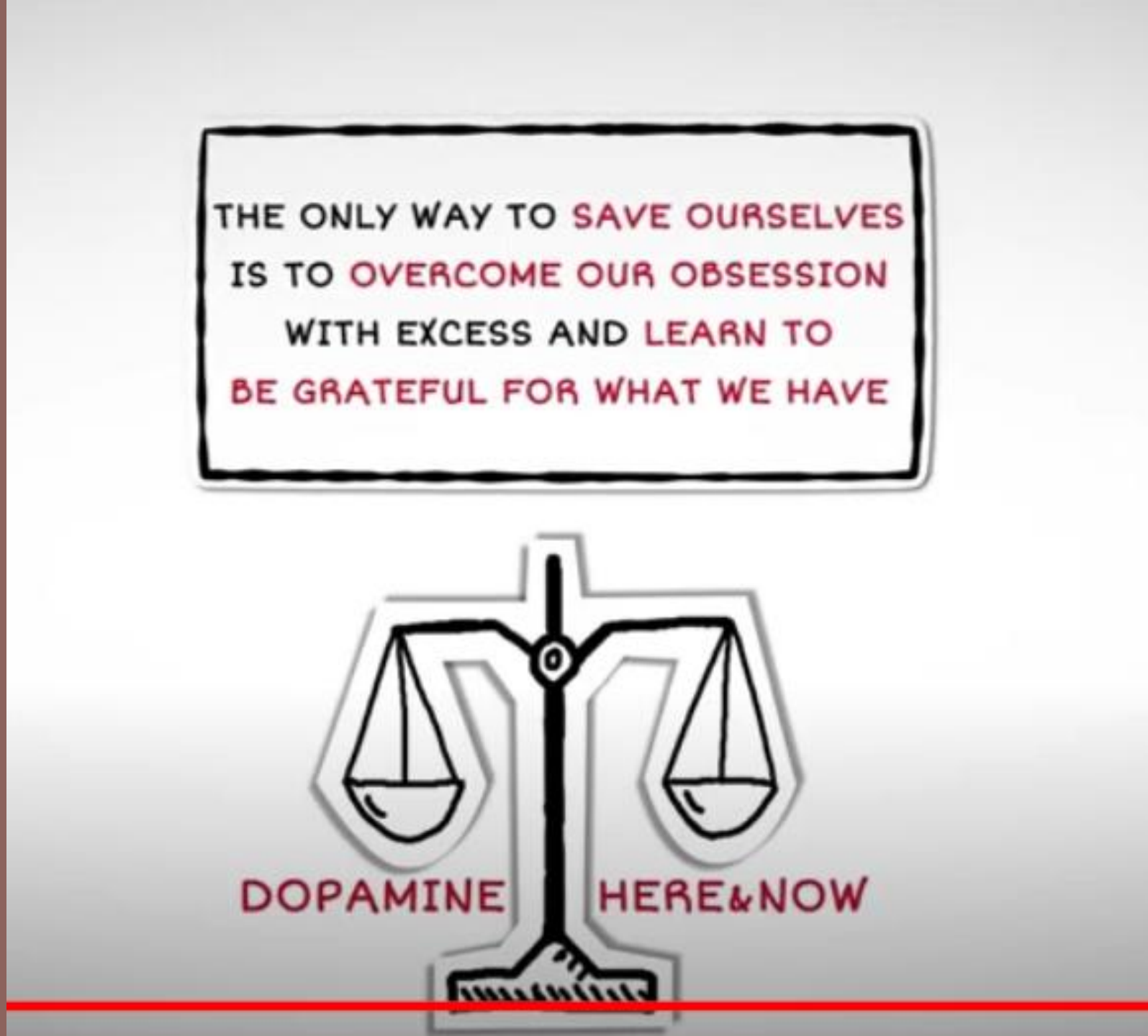
There are two main dopaminergic circuits:

- The dopamine desire circuit (meso-limbic circuit) moves us toward more immediate future targets .
- The dopamine control circuit (meso-cortical-limbic) allows us to use the prefrontal cortex to apply the brakes if needed and evaluate the cost-benefit of moving toward the desired reward.

Excess Dopaminergic Circuits and too little Here & Now Circuits cause problems for us emotionally

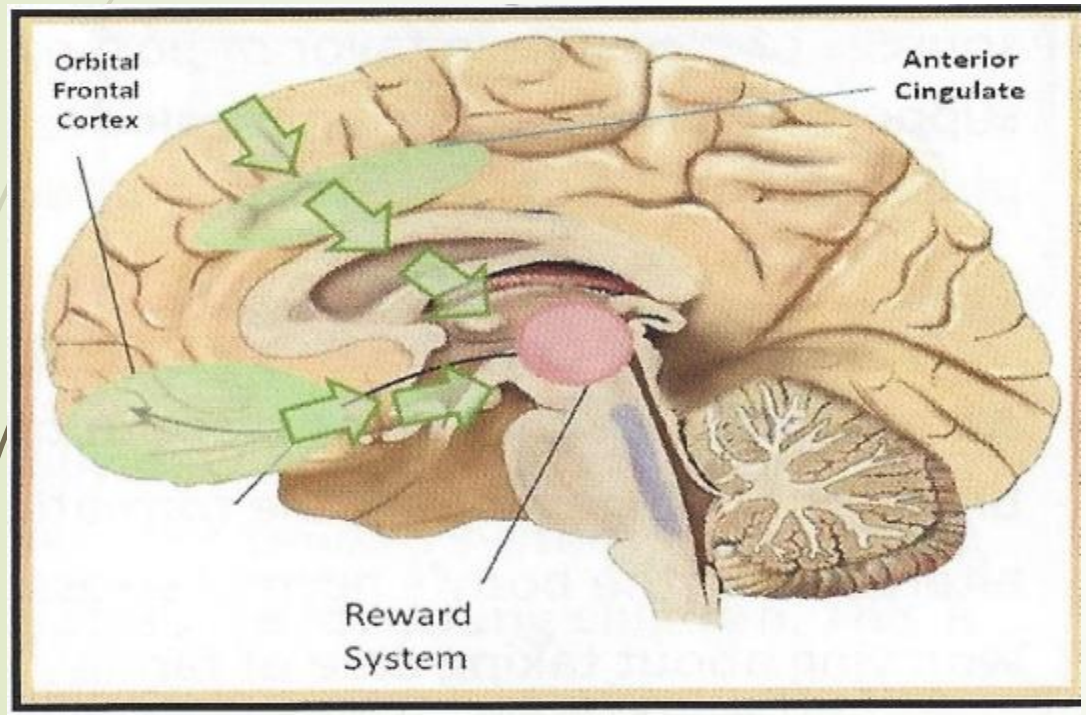


When dopamine and here and now chemicals are in balance, our lives will be balanced, and we can enjoy peace

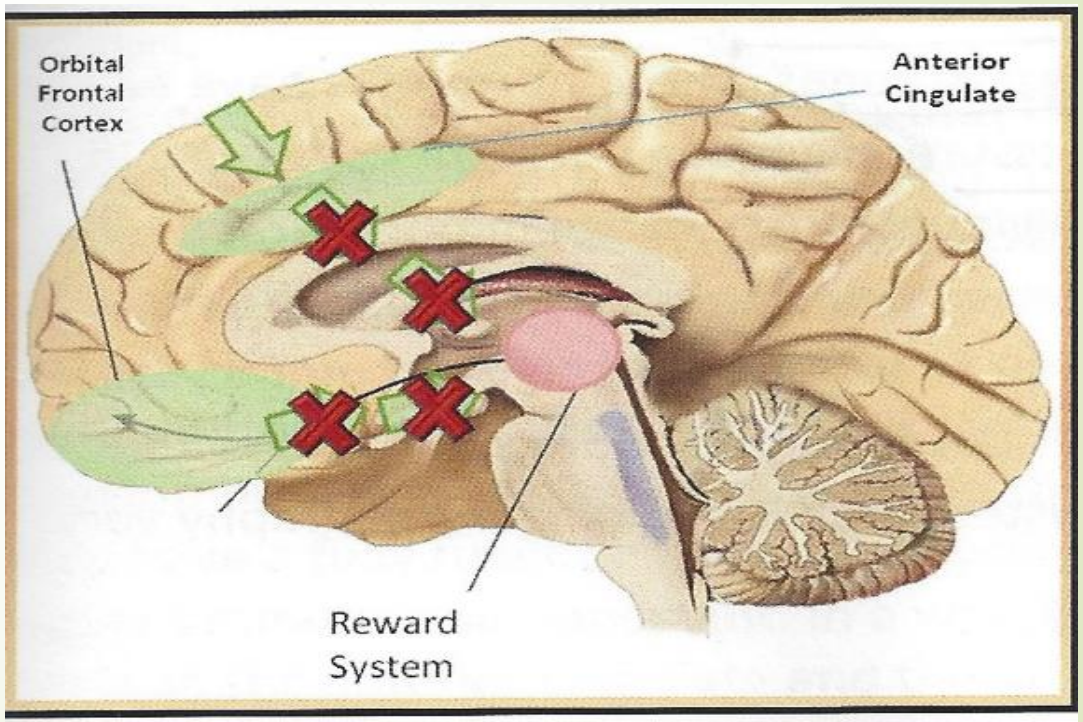


Impact of Hypofrontality – not a good thing:

Two areas of the brain, the anterior cingulate and the orbital frontal cortex, serve as a protective mechanism to override the reward system's desire for ever increasing dopamine. Sadly, hypofrontality involves the rewiring of our brain so that when an impulse to engage in a dopamine-related behavior is activated, the brain ends up shutting down its ability to override the reward system. This is the breeding ground for horrible choices and impacts on social development in a really bad way.



(Adapted from Study Blue, 2007)



(Adapted from Study Blue, 2007)

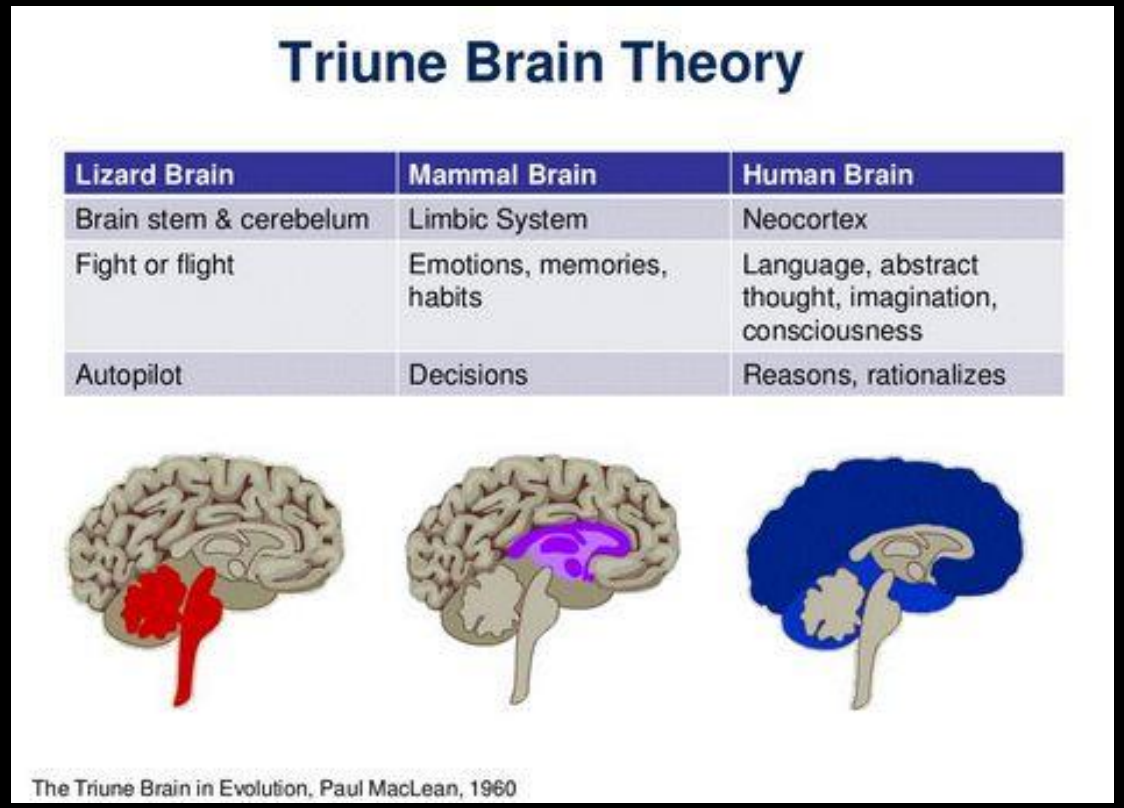
The Marriage of Triune Brain Theory and Polyvagal Theory

- Barta (2018) proposes a model that demonstrates how the brain and the nervous system work together to fuel addiction. In his model which he calls TINSA (Trauma Induced Sexual Addiction), he pairs some of the greatest minds in neurology and psychology to include:

  Dr. Stephen Porges' Polyvagal Theory

  Dr. Paul MacLean's Triune Brain Theory

Triune Brain Theory



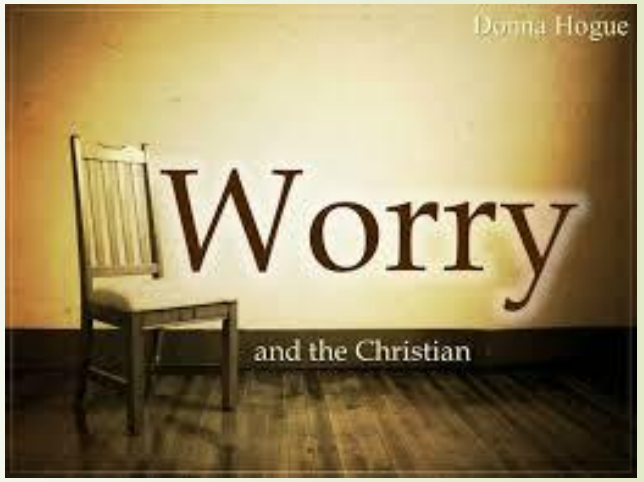
- MacLean proposed that there are three distinct formations in our brain which are used in different situations for everyday survival purposes. These specific structures developed sequentially on top of each other at different times during the evolution of the brain for the purposes of giving the organism the ability to survive during that period of time. Even though the brain became more advanced and adaptive, the older more primitive structures of the brain still play a very important role in thought, process, and behavior.

Triune Brain Theory

- For my Christian friends who might worry about this model contradicting sensitivities about creationism – not to worry.

- As explained by **Dr. Andy Doan, M.D.** Ph.D., Christian ophthalmology surgeon and neuroscience researcher, by personal communication and paraphrased by me, “God is very efficient, and He included in our more developed brain substructures that He already designed for lower life forms/animals.”

- “No need to re-do what was already perfect and efficient”.



Triune Brain Theory

The Reptilian Brain (or Reptilian Complex)

- As the name suggests, this is the most primitive brain and it developed about 500 million years ago in fish and later reptiles.
- Its roles include sensation, instinctual reaction, breathing, temperature regulation.
- TINSA hypothesizes that the reptilian complex promotes certain survival functions as well, most specifically, immobilization or freeze.
- We often see lizards, for example, freeze in the face of danger such as a lunch-starved predator in an instinctive reaction that can be life-saving (sadly for the lizard, it doesn't always work, and he sometimes ends up being snack anyway). We also see this in humans in the face of terrifying situations.
- Like our lizard friends, it sometimes works, and other times gets us killed.

Triune Brain Theory

The Mammalian Brain (or Limbic System)

- Later, about 150 million years ago, the limbic system first appeared in small animals.
- This system developed as animals were able to move more freely about as they were now equipped with extremities.
- As such, it often became necessary to either fight off or flee from would-be predators.
- In addition, the capacity to have memory and emotions developed. This enabled the animal to control the body's response to danger and to remember that danger as well as the ability to be vigilant and scan the surrounding environment for potential dangers.
- Like animals, we often revert to this neurological system when we act instinctively.

Triune Brain Theory

The Frontal Lobe (or Neocortex)

- According to MacLean (1990), the frontal lobe came on board only about 2 or 3 million years ago.
- As in the reptilian brain and the limbic system, the purpose of this brain formation is to react to and protect us from danger.
- But unlike or more primitive neighbors, this system reacts consciously. Very importantly, there was a need to develop a system that made possible more "civilized" responses to threats and at the same time one that offered the possibility to *connect* to others for safety.
- Therefore, the frontal lobe allows us to access a new way of surviving based on socialization. This makes it possible for us to use analysis, logic and decision-making, and this is what specifically separates us from other lower-ordered animals that rely on instincts alone for survival.

Triune Brain Theory

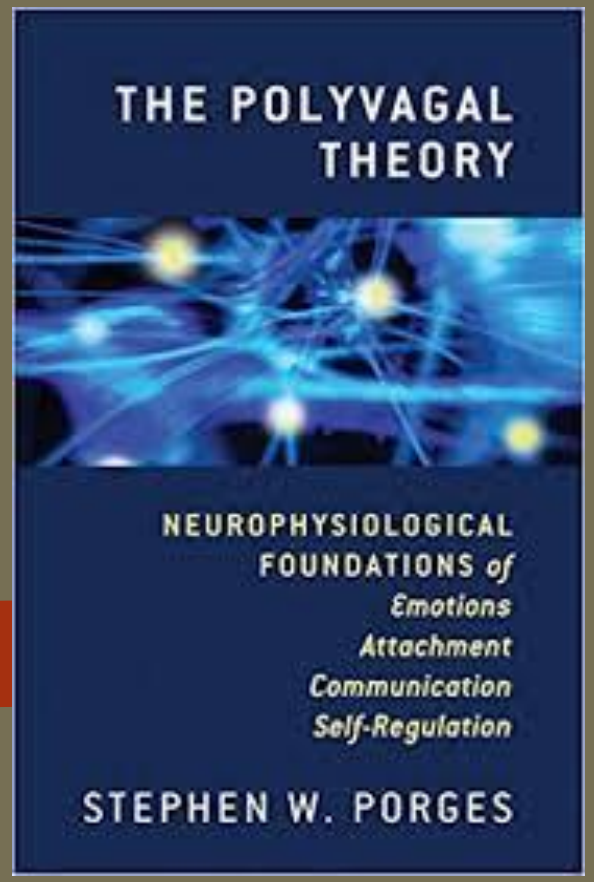
To bring it home:

To bring it home, on topside we have the **cortical brain** consisting of the **frontal lobe** which is the most recently developed portion of the brain, i.e., the conscious, thinking brain.

At the bottom, we have **our subcortical, unconscious brain,** which is made up of the **reptilian and limbic complexes** and is directed largely by raw instinct and emotions which often results in immediate knee-jerk reactions that happen in a split second.

According to Barta (2018), addicts to include pornography addicts, live much more in their **unconscious, emotional, and instinctual brains** than in their **frontal lobe or social engagement system.**

As such, when **the limbic and reptilian brain take charge,** the conscious brain switches off as the higher order brain is essentially **hijacked,** and we end up not thinking and instead just reacting. As a result, consequences are not weighed very heavily, if at all.



Polyvagal Theory

- In order to move forward in our understanding of what his happening to us as we progress toward addiction, we must understand **Steven Porges' Polyvagal Theory** and then integrate this knowledge with **Paul MacLean's Triune Brain Theory.**

- So, first a little anatomy.

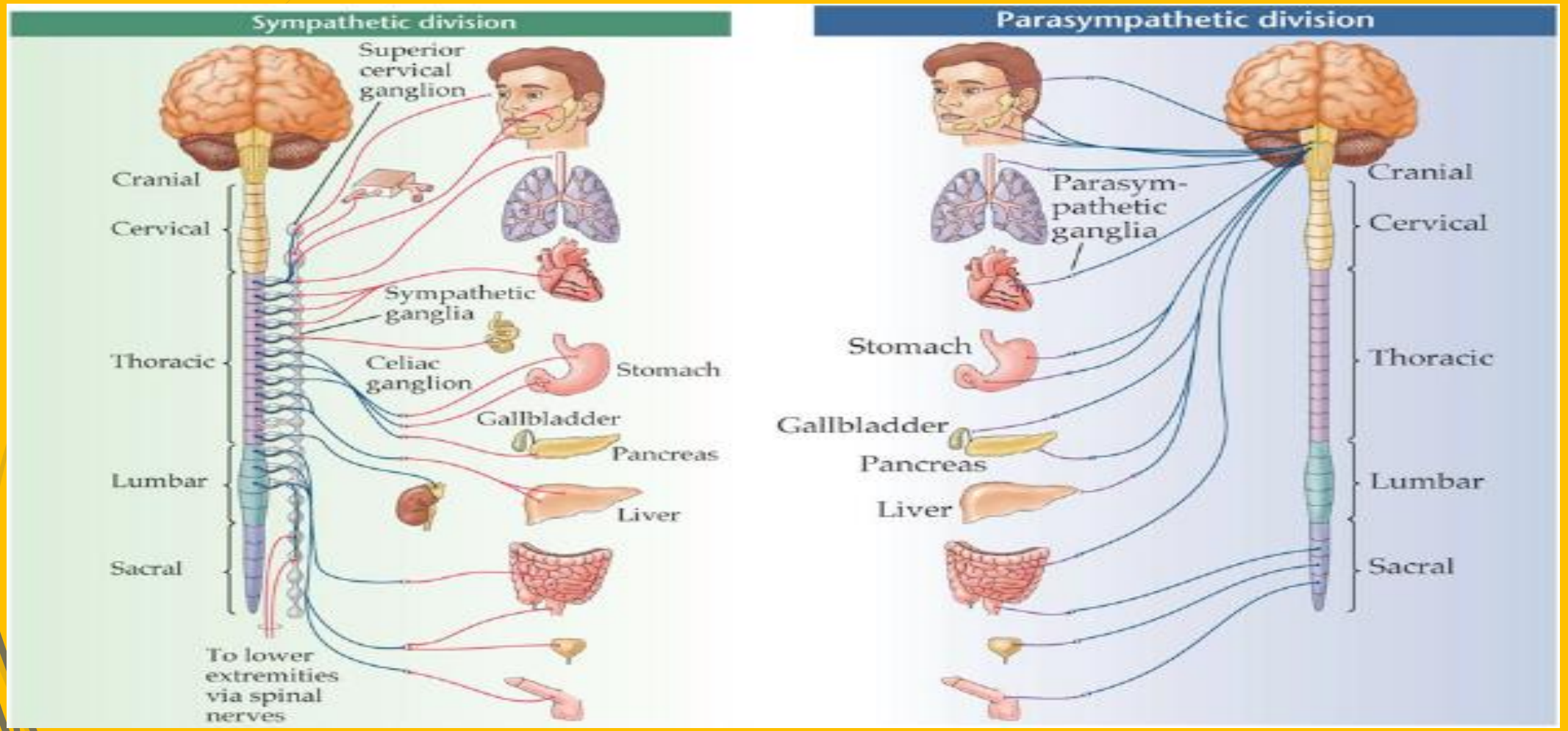
- The Autonomic Nervous System is a control system that acts largely unconsciously and regulates bodily functions such as heart rate, digestion, respiratory rate, pupillary response, urination, and even sexual arousal. It has two main subdivisions:

  Sympathetic

  Parasympathetic

Polyvagal Theory

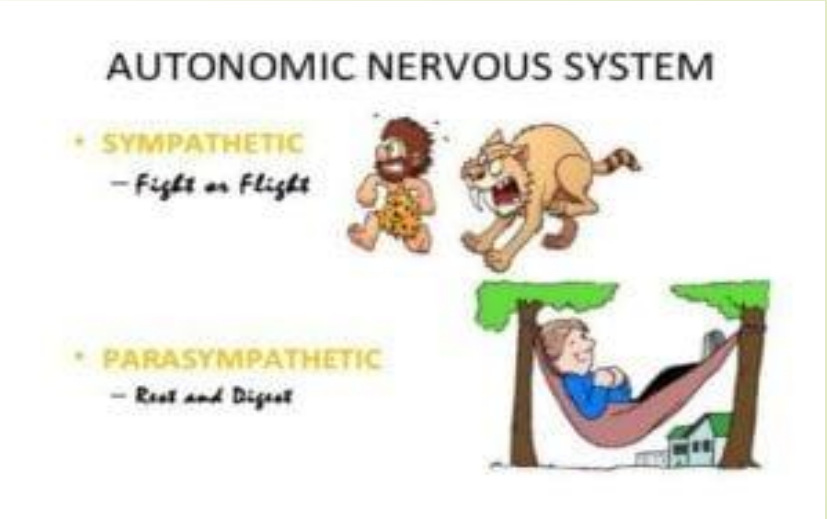
Autonomic Nervous System



Polyvagal Theory

Autonomic Nervous System

- **Sympathetic Division:** Prepares the body for stressful or emergency situations – fight or flight. Thus, the sympathetic division increases heart rate and the force of heart contractions and widens (dilates) the airways to make breathing easier. It causes the body to release stored energy. Muscular strength is increased. This division also causes palms to sweat, pupils to dilate, and hair to stand on end. It slows body processes that are less important in emergencies, such as digestion and urination (Merck Manual).



- **Parasympathetic Division:** Generally, the parasympathetic division conserves and restores calm/homeostasis. It slows the heart rate and decreases blood pressure. It stimulates the digestive tract to process food and eliminate waste. Energy from the processed food is used to restore and build tissues (Merck Manual).

Polyvagal Theory Autonomic Nervous System

- **Steven Porges** discovered that the parasympathetic division of the Autonomic Nervous System consists of two branches which lead to two different responses.

- The main nerve in the parasympathetic nervous system is the **10th cranial nerve, aka vagus nerve,** which is the longest of the 12 cranial nerves and has huge implications for our well-being and health.

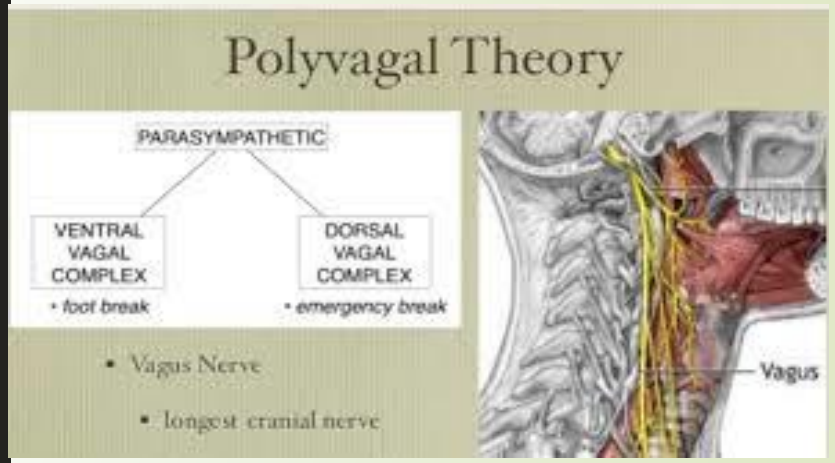
- The vagus nerve has two very distinct branches:

  Dorsal vagal nerve

  Ventral vagal nerve

Polyvagal Theory
Autonomic Nervous System

- **Dorsal Vagal Nerve**: Barta (2018) notes that the most primitive form of defense occurs when the unmyelinated dorsal vagal nerve is activated. When activated, the dorsal vagal nerve promotes shutdown, freeze, and collapse. An example of this shutdown is when a gazelle, for example, is being stalked by a lion and when trapped with no possible way to flee, drops down and appears to be deader than a doornail. This not a conscious process but is, rather, a very primitive and unconscious one.
- **Ventral Vagal Nerve:** Barta (2018) writes that the second response of our parasympathetic nervous system (the first being freeze and collapse as noted above) is responsible for our ability to engage socially and to handle social relationships. According to Barta, the social engagement system is controlled by our ventral vagus nerve which is a very smart myelinated nerve with a rapid response time. As such, it allows us to "know" if we are safe enough so we can calm our defenses through a process of "neuroception" which is roughly translated as the brain's ability to sense safety. This serves not only bonding needs but allows us to shift out of sympathetic arousal and move into parasympathetic calm or to downshift from activation to calm.



The Marriage of MacLean's Triune Brain Theory with Porges' Polyvagal Theory

Through the marriage of MacLean's Triune Brain Theory with Porges' Polyvagal Theory, we can:

Explain the how each part of the triune brain is correlated with the three responses of the autonomic nervous system (Barta, 2018).

The Marriage of MacLean's Triune Brain Theory with Porges' Polyvagal Theory

Sympathetic
Limbic System (Mammalian Brain)
Developed **150** million years ago
Fight or Flight
Unconscious

Social Engagement (Parasympathetic – Ventral Vagal)
Frontal Lobe (Neocortex)
Developed **2 to 3** million years ago
Present/Safe/Aware
Conscious

Parasympathetic (Dorsal Vagal)
Reptilian Brain (Reptilian Complex)
Developed **500** million years ago
Freeze
Unconscious

In

- Process addictions, particularly porn addiction, serve to dangerously pull us out of the **neocortex** (wise thinking and conscious state) and into our **reptilian brain** (reflexive and unconscious state).

- At the same, this behavioral addiction shuts down much needed **parasympathetic calmness** and **safety** as well as **connection** and **social engagement.**

- It artificially fires up **sympathetic arousal** which impacts on our **health emotionally, physically, and spiritually.**

The chart below adapted by Dr. Rothschild nicely demonstrates the shifting in body sensations, physiological symptoms, and emotions as we move between autonomic states (Rothschild, 2017).

AUTONOMIC NERVOUS SYSTEM: PRECISION REGULATION
** WHAT TO LOOK FOR **

"Normal" Life

Threat to Life

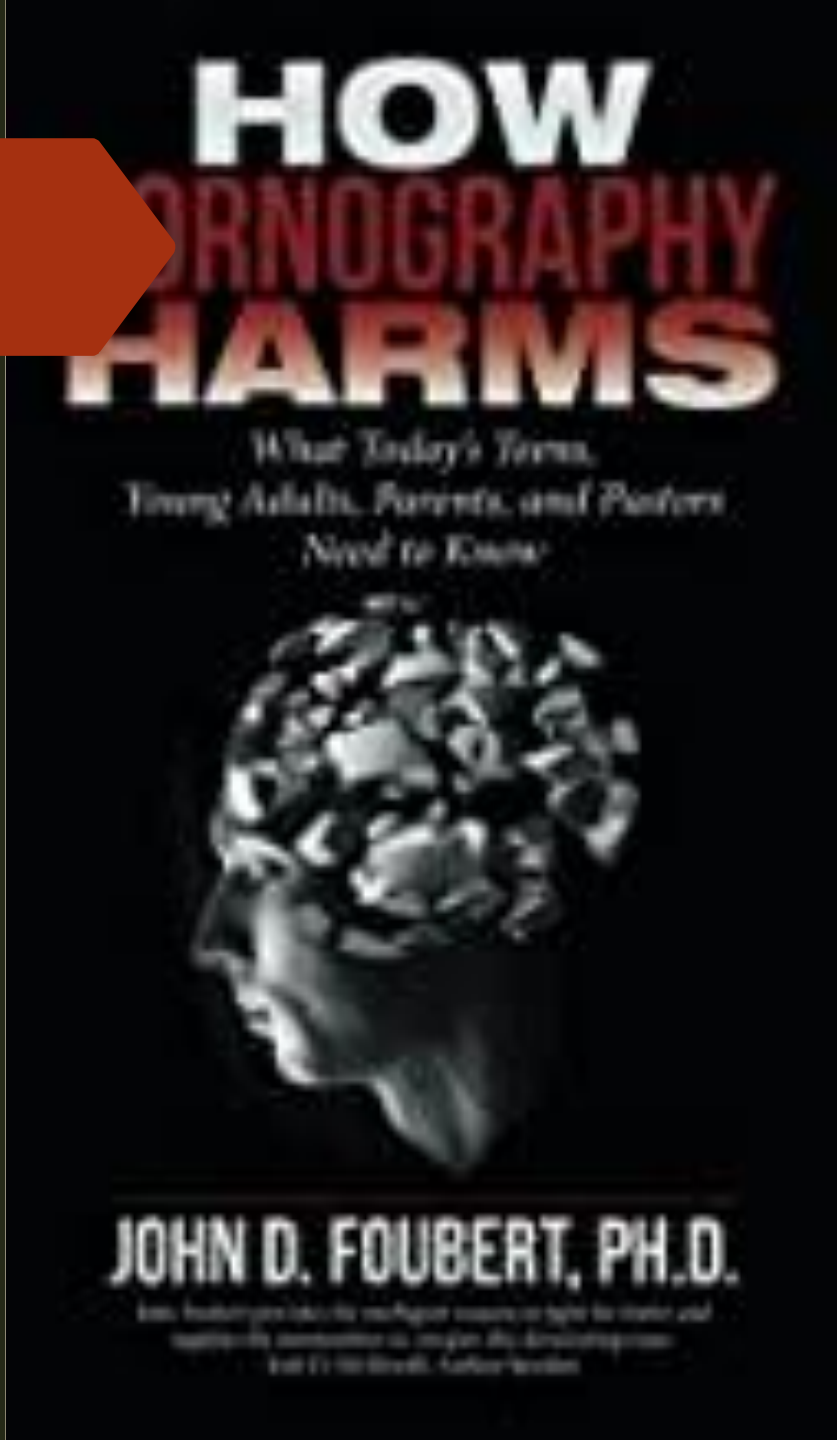
		LETHARGIC Parasympathetic I (PNS I)	CALM Parasympathetic II (PNS II) *Ventral Vagus*	ACTIVE/ALERT Sympathetic I (SNS I)	FLIGHT/FIGHT Sympathetic II (SNS II)	HYPER FREEZE Sympathetic III (SNS III)	HYPO FREEZE Parasympathetic III (PNS III) *Dorsal Vagus* Collapse
PRIMARY STATE		**Apathy, Depression**	**Safe, Clear Thinking, Social Engagement**	**Alert, Ready to Act**	**React to Danger**	**Await Opportunity to Escape**	**Prepare for Death**
AROUSAL		**Too Low**	**Low**	**Moderate**	**High**	**Extreme Overload**	**Excessive Overwhelm Induces Hypoarousal**
MUSCLES		Slack	Relaxed/toned	Toned	Tense	Rigid (deer in the headlights)	Flaccid
RESPIRATION		Shallow	Easy, often into belly	Increasing rate	Fast, often in upper chest	Hyperventilation	Hypo-ventilation
HEART RATE		Slow	Resting	Quicker or more forceful	Quick and/or forceful	Tachycardia (very fast)	Bradycardia (*very* slow)
BLOOD PRESSURE		Likely low	Normal	On the rise	Elevated	Significantly high	Significantly low
PUPILS, EYES, EYE LIDS		Pupils smaller, lids may be heavy	Pupils smaller, eyes moist, eye lids relaxed	Pupils widening, eyes less moist, eye lids toned	Pupils very dilated, eyes dry, eye lids tensed/raised	Pupils very small or dilated, eyes very dry, lids very tense	Lids drooping, eyes closed or open and fixed
SKIN TONE		Variable	Rosy hue, despite skin color (blood flows to skin)	Less rosy hue, despite skin color (blood flows to skin)	Pale hue, despite skin color (blood flow to muscles)	May be pale and/or flushed	Noticeably pale
HUMIDITY	Skin	Dry	Dry	Increased sweat	Increased sweat, may be cold	Cold sweat	Cold sweat
	Mouth	Variable	Moist	Less moist	Dry	Dry	Dry
HANDS & FEET (TEMPERATURE)		May be warm or cool	Warm	Cool	Cold	Extremes of cold & hot	Cold
DIGESTION		Variable	Increase	Decrease	Stops	Evacuate bowel & bladder	Stopped
EMOTIONS (LIKELY)		Grief, sadness, shame, disgust	Calm, pleasure, love, sexual arousal, "good" grief	Anger, shame, disgust, anxiety, excitement, sexual climax	Rage, fear	Terror, may be dissociation	May be too dissociated to feel anything
CONTACT WITH SELF & OTHERS		Withdrawn	Probable	Possible	Limited	Not likely	Impossible
FRONTAL CORTEX		May or may not be accessible	Should be accessible	Should be accessible	May or may not be accessible	Likely inaccessible	Inaccessible
INTEGRATION		Not likely	Likely	Likely	Not likely	Impossible	Impossible
RECOMMENDED INTERVENTION		**Activate, Gently Increase Energy**	**Continue Therapy Direction**	**Continue Therapy Direction**	**Put on Brakes**	***Slam on Brakes***	***Medical Emergency CALL PARAMEDICS***

The Autonomic Nervous System Precision Regulation Chart is Available for purchase on Amazon for $8.99 (a very high recommend): Babette Rothschild (2017) https://www.amazon.com/Autonomic-Nervous-System-Table-Laminated/dp/039371280X/ref=sr_1_15?dchild=1&keywords=deb+dana&qid=1590326813&s=books&sr=1-15

Part Three – The Impact of Process Addictions

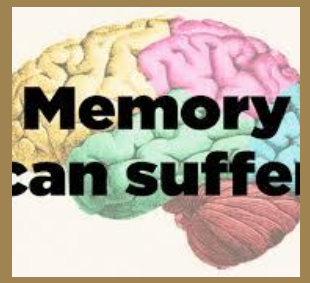
In his compelling book, *How Pornography Harms*, Professor and **Dr. John Foubert**, an interdisciplinary scholar who has studied sexual violence since 1993 and the harms of pornography since 2006, reminds us of how, in contrast to a mountain of data available, the tobacco industry icons testified before Congress in 1994 that they believed that cigarettes were not addictive or harmful.

In a very similar way, Dr. Foubert notes that there are powerful voices today that try to convince us that pornography isn't harmful either (Atwood et al., 2014). He adds that there are over **100 studies** that demonstrate that **pornography harms** people, often horribly and sometimes irrevocably (Malamuth et al., 2000; Peter et al., 2016).



The Impact of Process Addiction on the Brain

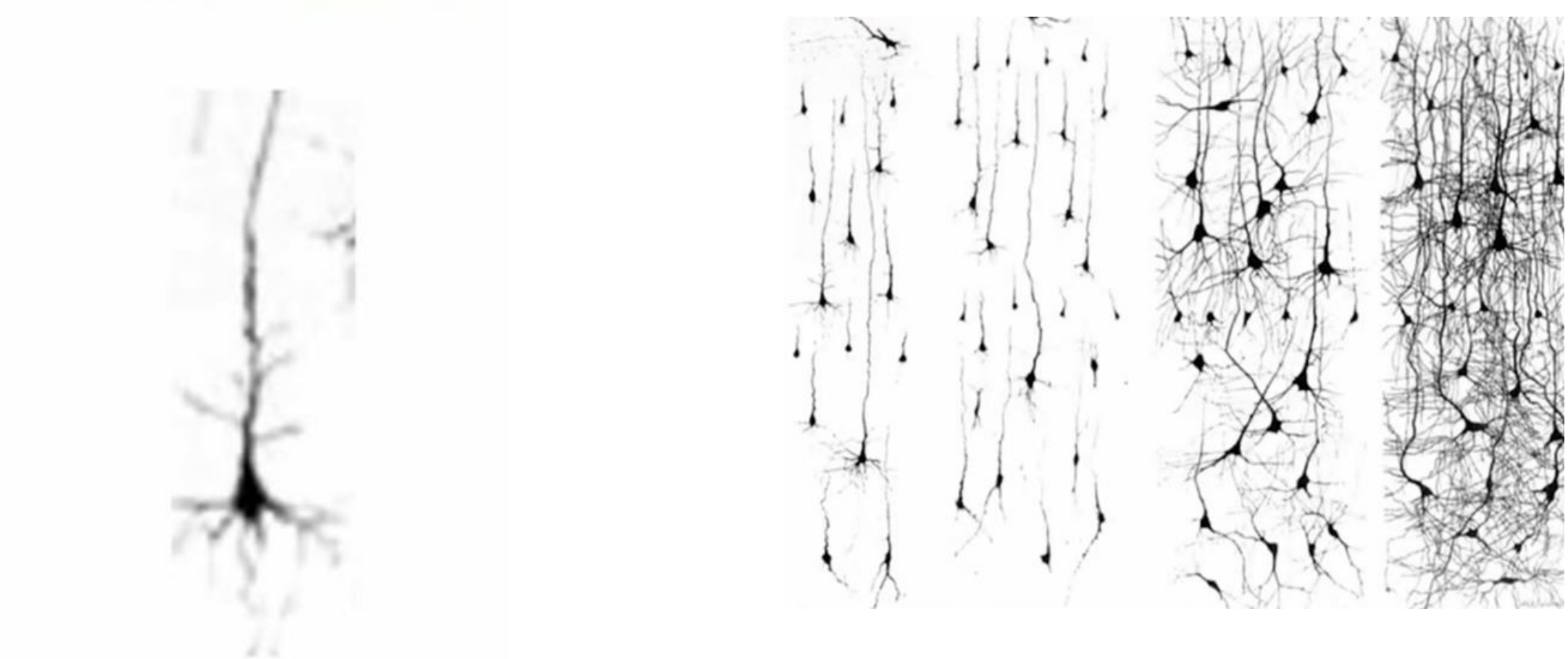
Dr. Donald Hilton, who has authored many studies on the addictive nature of pornography, referenced research that shows that the more people watch pornography, the more their **brains actually shrink.**. This is also true with electronic media addiction.



Research has also demonstrated that watching pornography **slows down the working memory (Laier et al., 2013).**

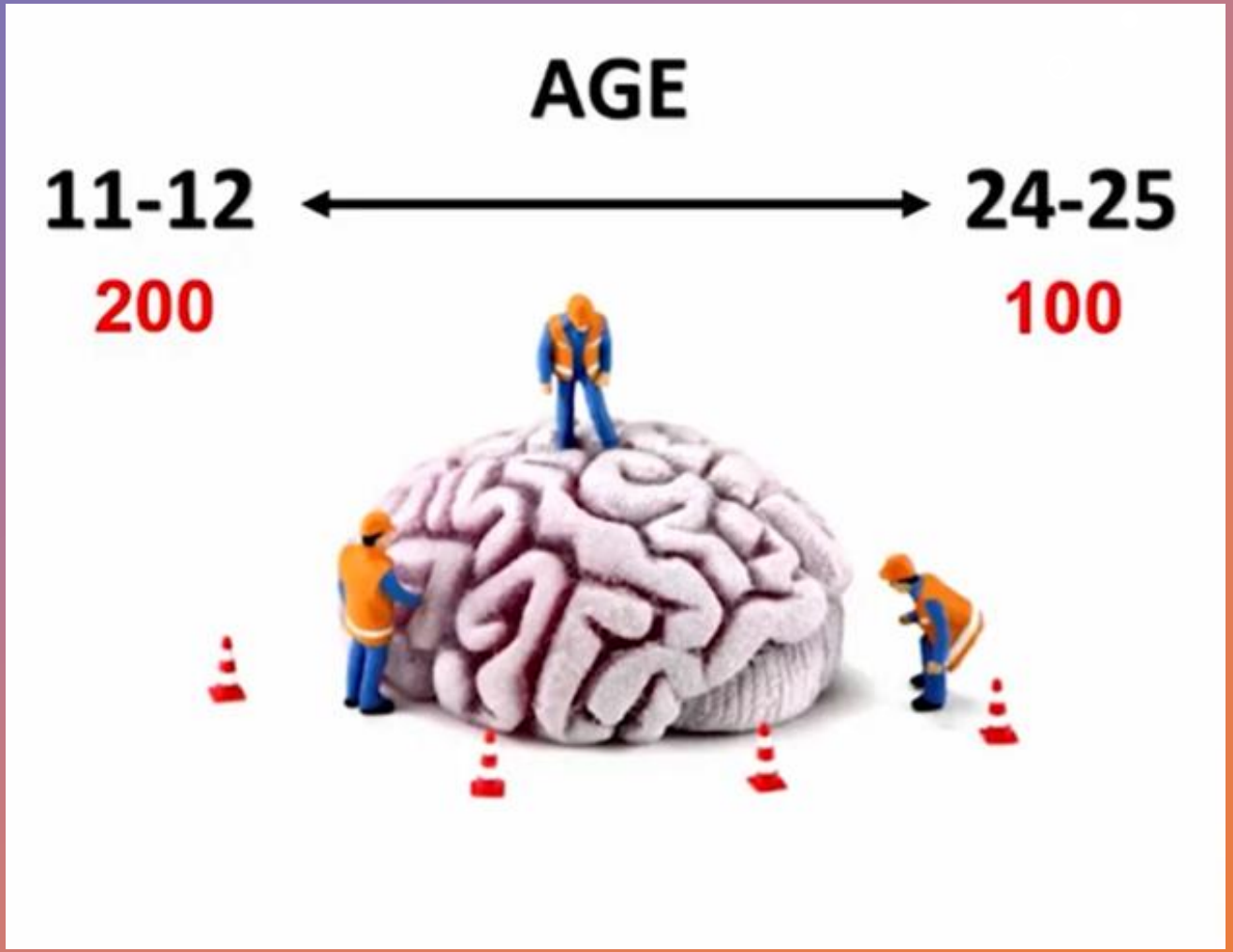
Kuhn and Gallinat (2014) found **decreased gray matter** in the brain areas that are responsible for decision making and motivation in process addiction and specifically porn seekers.

The infant neuron and its dendritic tree shown on the left is quite simple and you can see how its dendritic three increases in complexity across the lifespan.

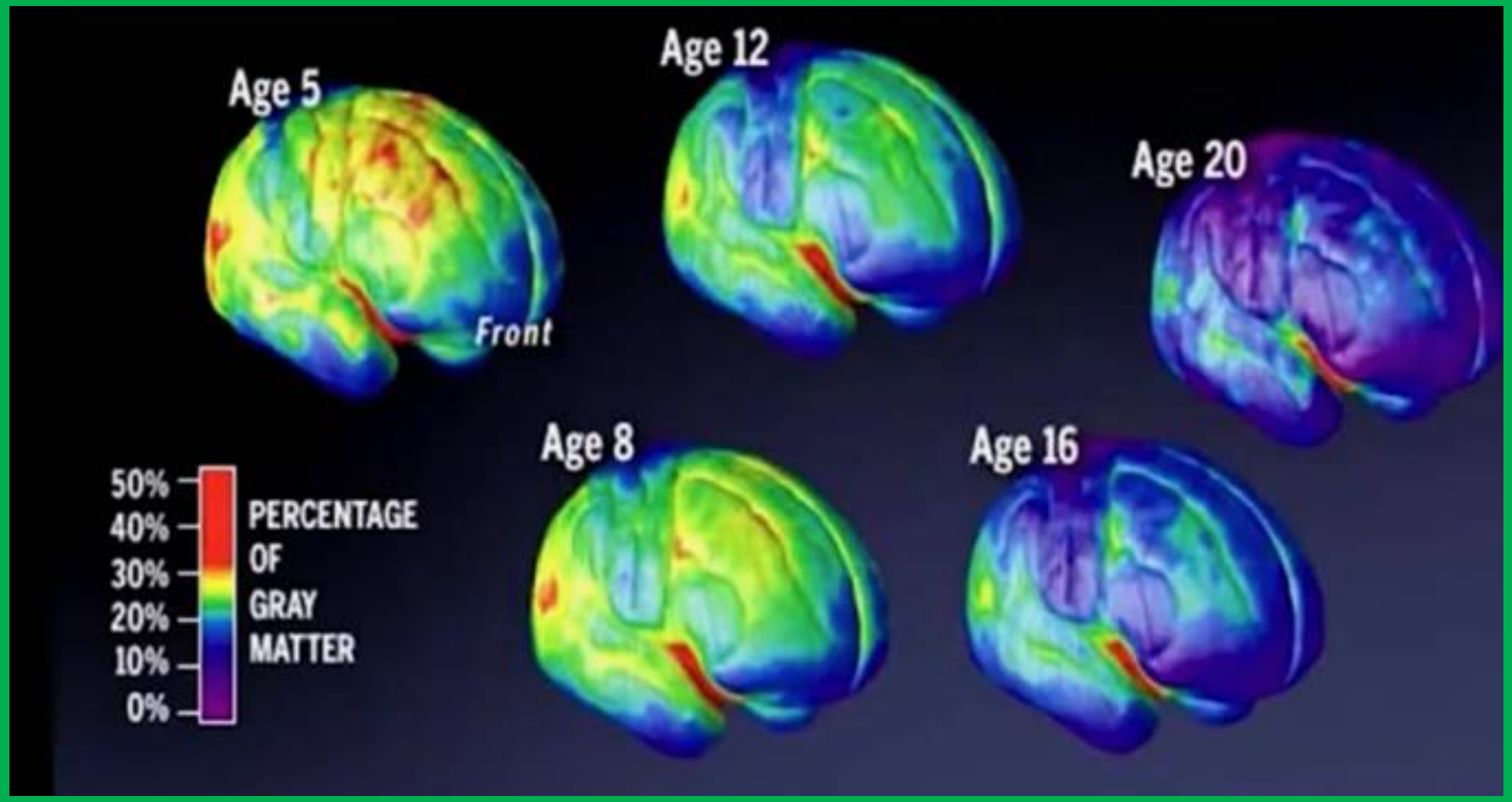


The Second Phase of Brain Growth

The second phase of brain growth starts at about 12 and continues to age 25. During this time, the brain prunes out little-used/unneeded neurons and the brain thus decreases from 200 billion to 100 billion neurons. During this time, pathways that are used myelinate to increase efficiency. So, ensure that a teen is learning and doing good things during this time as this will wire into what becomes the adult brain.



As the brain develops gray matter or unmyelinated neurons become myelinated to become white matter. This slide nicely how much growth occurs across childhood into early adulthood. THC and other drugs arrest this growth process.



Excessive dopamine flow triggered by THX addiction causes dendritic growth on the neuron which results in permanent changes in the brain. This explains why craving is an everlasting consequence that must be respected throughout the lifetime.

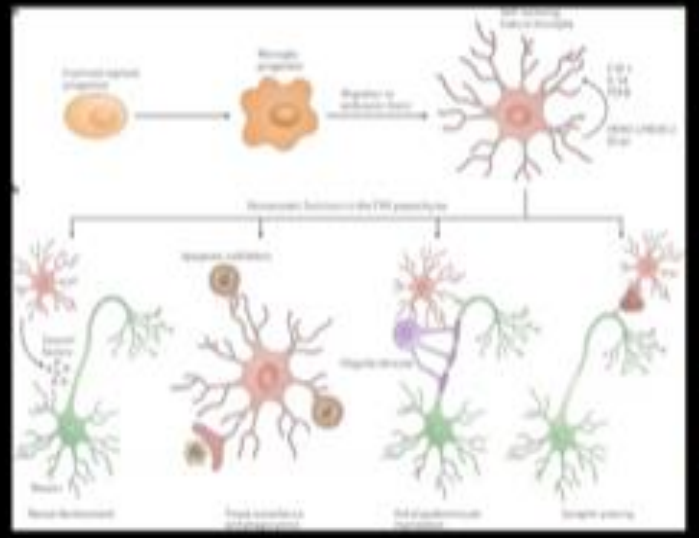
The Impact of Pornography on the Brain

It is frightening that you don’t even have to be “addicted” to porn but rather merely using it begins to change the brain in fundamentally negative ways. So, if you ever thought that pornography was making you **dumber**, you were absolutely right.

The Impact of Process Addiction on the Brain

Process and substance addiction impact certain glial cells (astrocytes and microglia) which are supportive cells in the brain. This has tremendous impact on the health of the brain and leads to inflammation.

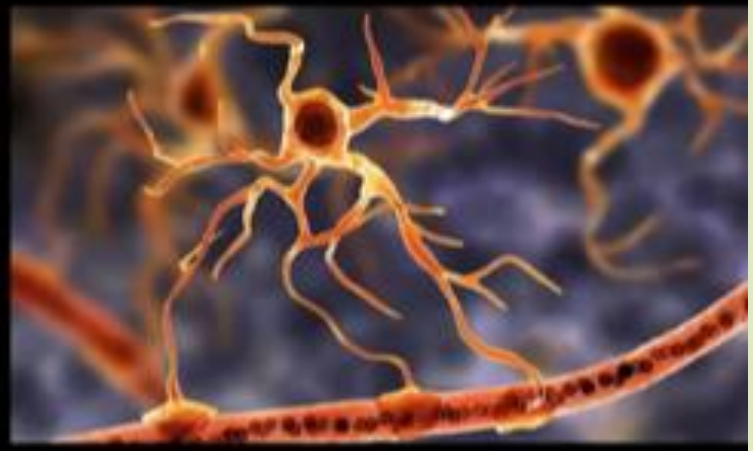
Microglia



- The resident immune cells of the CNS (the macrophages of the brain)
- Actively survey a specific brain tissue microenvironment for Pathogen Associated Molecular Patters (PAMPs) given off by pathogens, toxins and drugs
- Also detect Danger-Associated Molecular Patterns (DAMPs) released from damaged or dying brain cells
- Receive cytokine signals from other microglia
- Assist neuronal synapse remodeling (plasticity, pruning) critical for normal development and beyond

Astrocytes

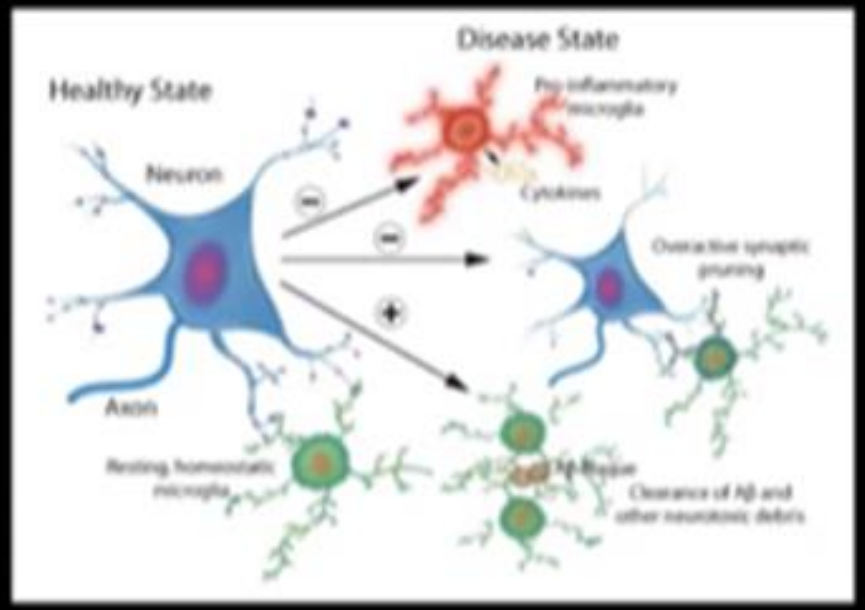
- Traditionally seen as support cells for neurons
- Connect synapses to blood vessels and make contact with hundreds of synapses and across different populations of neurons
- Integrate signals from many synapses at once
- Critical for glutamate regulation (express glutamate transporters)
- Also express cytokines for inflammatory signaling



The Impact of Process Addiction on the Brain

In **Reactive Microgliosis** resting microglia become overactivated. These supportive glial cells are like a killer cell in the body but are located in the brain. Normally, they would devour a threatening pathogen and then destroy themselves (apoptosis) but in this overactivated state, they don't commit suicide and keep on going – similar to a rogue cop on the wrong mission.

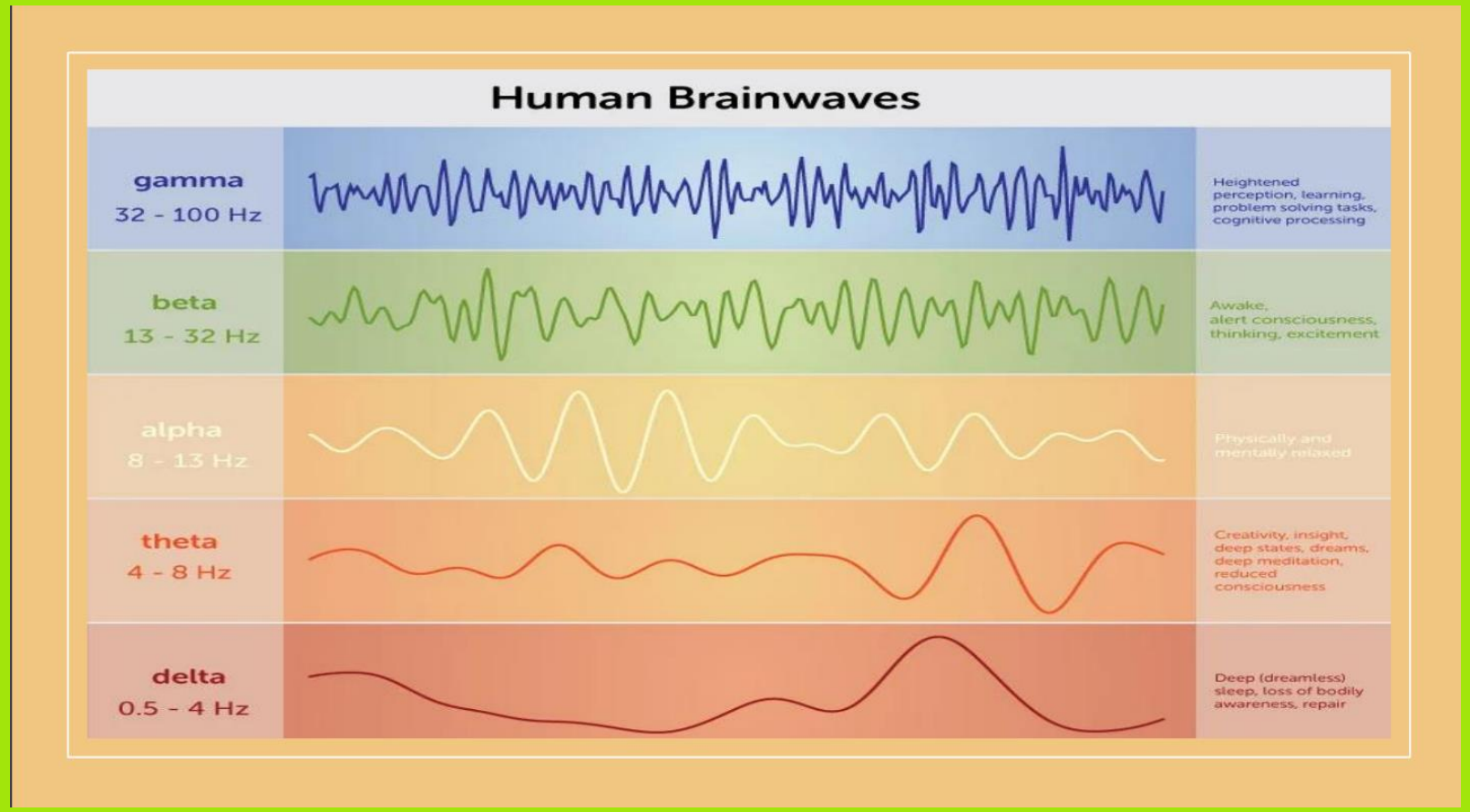
Reactive Microgliosis: response to pathogen/injury



- Resting microglia: injury to brain > Reactive Microgliosis
- Microglia respond rapidly to stress and trauma
- Shift from ramified (resting) state to ameoboid (activated) state
- Microglia are very fast-moving cells (fastest in the brain: entire brain parenchyma scanned by microglia every few hours)
- Become macrophages > phagocytize pathogens and debris
- Antigen-presenting cell to T lymphocytes

The Impact of Pornography on Sleep

- In her excellent video noted below, Dr. Trish Leigh states that as porn is consumed, the brain becomes overstimulated and moves us to beta wave which is a higher frequency of brain wave. Note that when we go to sleep, we must move down from beta, to alpha, to theta, then ultimately delta. Going to bed with an artificial beta wave-induced brain due to porn-seeking makes it very difficult to fall asleep.



The Impact of Pornography on Sleep

- In addition, as we know, porn consumption drives dopamine which keeps us seeking, but after the dopamine dump, oxytocin ensues which is a bonding hormone and we bond not to a person which is the it's purpose, but to the porn itself. Porn, in and of itself, does not have any oxytocin so it gives nothing back to us. We are hence very alone and never more so. Finally, the last in the sequence is the production of prolactin which helps us relax our muscles to go to sleep. Sadly, this is externally produced rather than internally so we are ever reliant to use porn to relax rather than learning to do this internally.
- The sequence:
  - Consume porn
  - Dopamine release to keep us seeking
  - Oxytocin release which bonds us to porn rather than people
  - Prolactin release which promotes muscle relaxation so we can eventually sleep
  - This is externally signaled rather than internally

Click here to listen to listen to Dr. Trish Leigh: https://youtu.be/9y38gDvSko8

Impact of Excessive Addiction on the Body

- Excessive electronic media ause can trigger **Metabolic Syndrome**. Metabolic syndrome is a combination of the following (Dunckley, 2015):
  - High blood pressure
  - Midsection weight gain (spare tire)
  - Abnormal cholesterol levels
  - High fasting blood sugar

- **Metabolic Syndrome** is a serious condition and, if left unchecked, can promote:
  - Diabetes
  - Heart disease
  - Stroke

Psycho-neuro-immunology

- A way to understand how stress and trauma cause mental illness through the immune system (the immune system is the stress
- Adler & Cohen (1975): conditioned rats to drink saccharin water & Cytoxan (an immunosuppressant drug that tastes bad); later when they drank saccharin water the rats died of infection (immunosuppression in the absence of Cytoxan)
- Visintainer (1983): inescapable tail shock associated with decreased lymphocyte proliferation and decreased tumor rejection
- Also: lower antibody response to psychotic individuals given pertussis vaccination
- The Immune-Brain(-Gut) Loop: immune system is in constant communication with the brain (and the digestive system)
- CNS neurons terminate in thymus and spleen near clusters of lymphocytes and macrophages

Dr. McCauley notes that stress impacts the immune system which is well-supported in the literature.

Immunology 101: We have two immune systems that protect us.

Two Parts of the Immune System

INNATE IMMUNE RESPONSE

- Present at birth
- Non-specific: just kills everything
- "Feverishly fast" (works in minutes)
- NO memory – reacts same way each time it encounters a specific threat
- Also includes barrier protection
  - physical – epithelium, cilia
  - chemical – low pH (stomach), lysosomes (tears)

ADAPTIVE IMMUNE RESPONSE

- Has to be "learned," gains "maturity"
- Highly specific for each invader
- Takes weeks to respond fully
- Cells are activated and differentiate into needed forms
- Immunologic "memory" – once an adapted cell "learns" an enemy it will remember it and undergo massive proliferation

In the words of Dr. Andrew Doan:

- *"I had pain from my clicking finger all the way up to my forearm. And my cortisol levels were shot - through my hypothalamic-adrenal-pituitary axis (HPA), so I was getting fat because I had all of this cortisol floating around. I didn't exercise, so I was retaining more body fat. And then finally my HPA axis was all dysregulated so I was more prone to infection - I had pimples all over my face, I had stretch marks beginning. And then, finally, I got an infection in my armpit!*

- *So, in addition to the carpel tunnel, I had this armpit infection that was streaking down my arm. And on top of that, because my blood pressure was going up because of the gaming adrenaline rush - my blood pressure was high, my cholesterol was high. And because my blood pressure was high, and I was sitting all of the time, I had hemorrhoids the size of walnuts. - I mean, literally! I was a young man - I was pissed off. Why do I have hemorrhoids like some pregnant women do? We're talking about bloody, painful hemorrhoids…So I'm convinced that if people are addicted to this thing, **it's going to ruin their lives**. It almost ruined mine - and it almost ruined my son and almost destroyed his confidence and his opportunities"* (Kardaras, 2016).

Excessive Addiction Promotes Hyperarousal

- **Blood Flow Shifts**: When a person is under stress, blood flow to the brain is shunted away from the higher regions of the brain, i.e., the cortex, and directed to the more primitive parts of the brain, i.e., the limbic or old brain in an effort to promote survival.

- **Elevated Cortisol**: Chronically elevated cortisol is associated with obesity, diabetes, hormone imbalance, metabolic syndrome, and high blood pressure as previously noted (Pervanidou et al., 2011).

- **Oxidative Stress**: When the cell's natural defenses are overwhelmed due to excessive stress, the **antioxidants** or scavengers are depleted, and oxidative stress or excessive free radicals develop. Free radicals **cause inflammation, tissue damage, and decreased efficiency.**

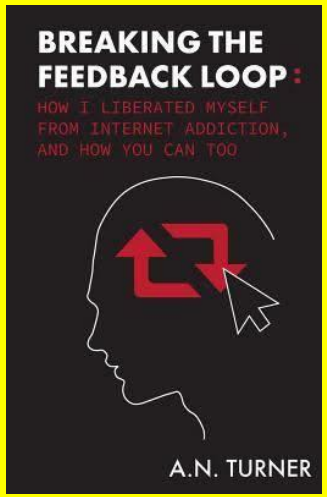
Dopamine correlates with cortisol

Dr. McCauley notes that as dopamine is excessively elevated, so is the stress hormone cortisol. Left unchecked, this will cause inflammation in the body and brain.

The Impact of Electronic Media and Porn on Mood

A.N. Turner (2017) writes of his own struggle with depression secondary to media/porn overconsumption,

*"My relationship with the Internet was not alleviating feelings of loneliness; it was amplifying my loneliness, bringing me to a state of frustrated depression. I felt boxed in, unable to breathe, trapped in an inescapable thought bubble of my own f*ed up, addictive desires. I conditioned myself to need constant stimulation. I couldn't read, talk, study, or play the piano – all things that I love – because it all seemed too slow, too one-note…I was always tired, yet always racing in a mad frenzy. I couldn't focus. I was anxious. I was unable to engage in solitude. My thoughts were a jumble."*



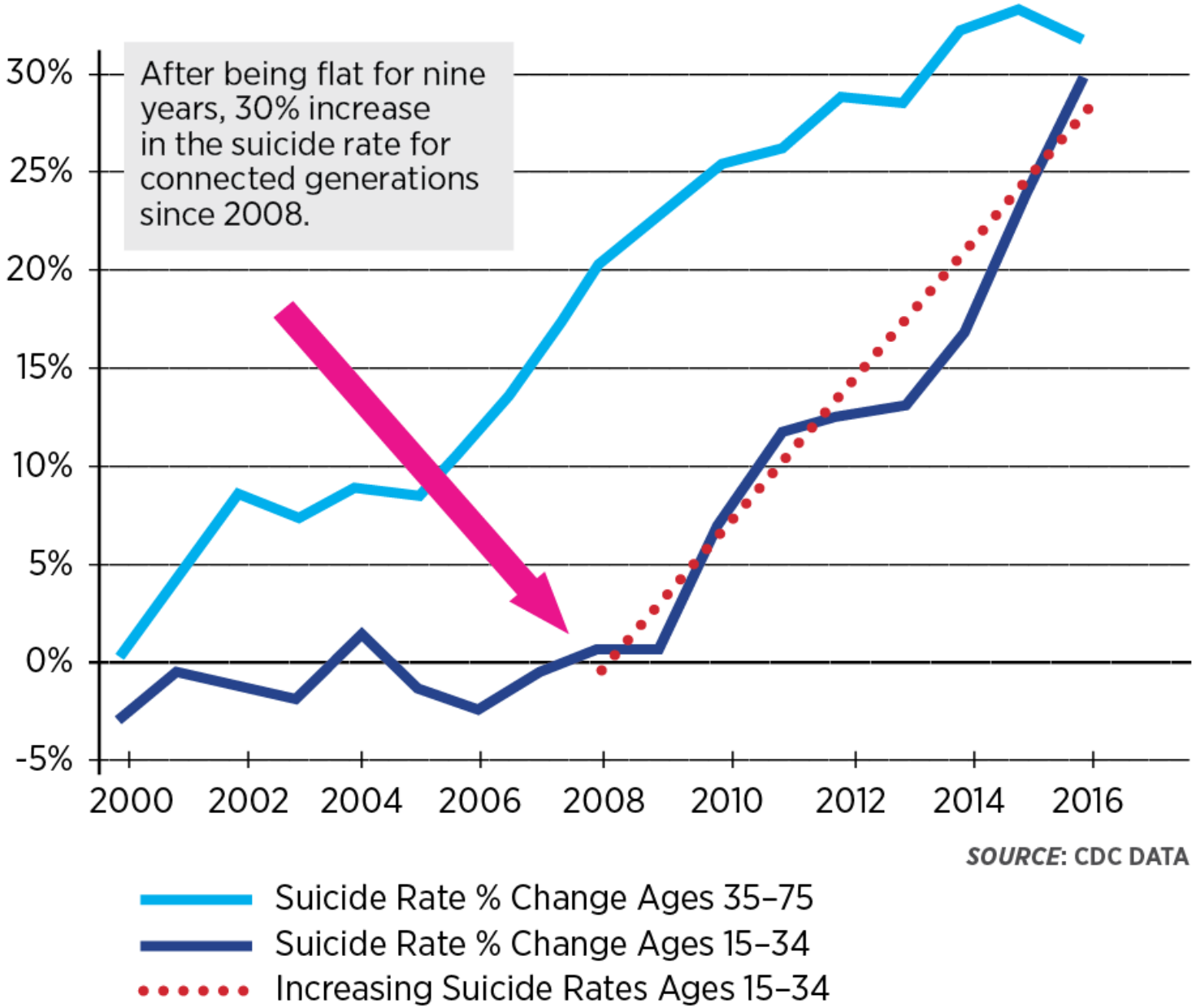
Excessive Pornography and Mood

- We are, on a surface level, the most connected society that has ever walked the planet.
- Each second, we send over **7,500 tweets, 1,394 Instagram photos, and over two million emails** and view over **119,000 YouTube videos** (Internet Live Stats, website, www.internetlivestats.com).
- Americans send **69,000 texts a second,** which translates to over six billion texts sent out in the US daily. Paradoxically, the more **connected** we think we are with the façade of the Internet, the more **disconnected** and depressed we actually become.
- As Johann Hari (2015) said in a Ted Talk, "We are the most disconnected society that has ever been, surely."

Excessive Media and Mood

- A 2018 study conducted by **Blue Cross and Blue Shield** revealed that that the highest rate of growth in depression has occurred in the youngest and the most digitally connected age bracket (see chart below).

U.S. Suicide Rates % Change: Comparison of Most Digitally Connected Generations vs. Less Connected 2000–2016.



Excessive Pornography and Mood

The connection between general media consumption to include gaming and social media and depression is well-established by Kardaras (2016)

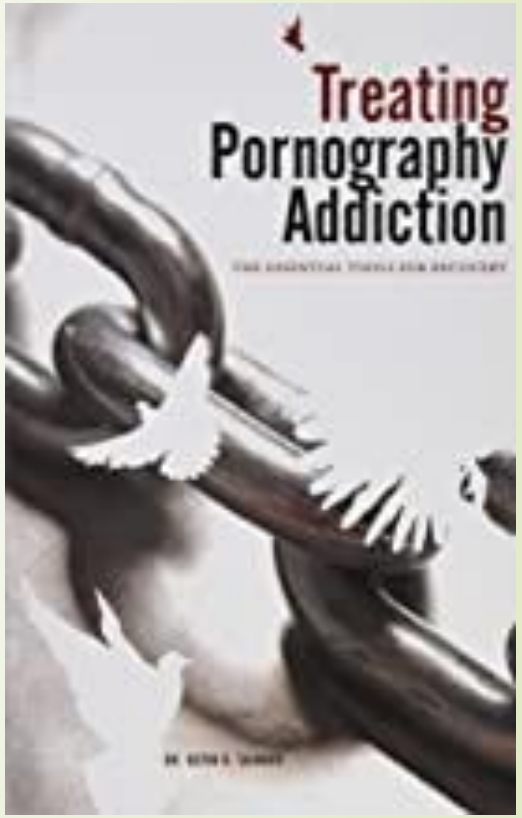
- A 2012 Missouri State University study of 216 students revealed that 30 percent of Internet users showed signs of depression and that the depressed kids were more intense web users.
- A 2014 study looked at 2,293 seventh-graders and found that Internet addiction led to increased depression, hostility, and anxiety.
- A 2014 study conducted in Pakistan with 300 graduate students found a positive correlation between Internet addiction and depression and anxiety.
- A 2006 Korean study involving 1,573 high school students found a correlation between Internet addiction, depression, and thoughts of suicide.
- Recently, the term Facebook Depression has emerged – namely, the more “friends” one has on Facebook, the higher the likelihood of depressive symptoms (Kardaras, 2016).

Excessive Pornography and Depression

Dr. David Skinner, a sexual addiction expert, wrote about a non-peer-reviewed online study in his blog comprised of 450 subjects, mostly men.

- He found that individuals who viewed pornography three to five times per week and/or daily scored much higher on a standard measurement for depression and included it as a part of a free online survey found at growthclimate.com.

- The individuals who viewed pornography three to five times per week scored on average nearly 15 on the depression survey and those who viewed it daily scored on average 21 compared to the general population score of 6.5.



Excessive Pornography and Depression

Dr. Gail Dines concluded that studies indicate that porn users experience:

- higher incidence of depressive symptoms
- lower degrees of social integration
- decreased emotional bonding with caregivers
- increased conduct problems
- higher levels of delinquent behavior

https://www.culturereframed.org/

- Dr. Dines is professor emerita of sociology and women's studies at Wheelock College in Boston.

The Impact of Pornography on Sexual Aggression and Violence

In the chilling words of Ted Bundy, serial murderer:

"I think people need to recognize that those of us who have been influenced by … pornographic violence are not some kind of inherent monsters. We are your sons and we are your husbands … Any pornography can reach out and snatch a kid out of any house today."

"I've lived in prison for a long time … and I've met a lot of men who were motivated to commit violence just like me. And without exception every one of them was deeply involved in pornography -- deeply influenced by an addiction. There is no question about it. The FBI's own study shows that the most common interest among serial killers is pornography." (Dobson interview, 1989).

Click here to view the terrifying Dr. Dobson – Ted Bundy interview:
https://www.youtube.com/watch?v=08dpnn0cd10

The Impact of Pornography on Sexual Aggression and Violence

In the words of **Jeffrey Dahmer, serial killer** who drugged and killed 17 men and boys as related in a confession to the FBI in 1992:

- *"heavy drinking, pornography, and masturbation"* -- admitting while in the U.S. Army he found graphic porn in Germany and spent thousands of dollars on it. He admitted to killing as often as once a week. (APB News, 2000).

Click here to view the "Inside the Mind of Jeffrey Dahmer: Serial Killer's Chilling Jailhouse Interview by Leslie Stahl:

https://www.youtube.com/watch?v=iWjYsxaBjBI&ab_channel=InsideEdition

The Impact of Pornography on Sexual Aggression and Violence

- In his book, ***How Pornography Harms,*** **Dr. Foubert (2017)** notes that there are over 100 studies which show that pornography is correlated with and is the cause of a wide range of violent behaviors and about 50 studies that show a strong relationship between pornography and sexual violence (Peter et al., 2016 & Malamuth, 2000).

- **Kingston et al. (2009)** write that researchers have also found that pornography use specifically increases the likelihood that a man will commit acts of sexual violence against women, especially if the man in question has additional risk factors such as impulsivity and if the pornography use is frequent.

The Impact of Pornography on Sexual Aggression and Violence

Owens et al (2012) and Sun et al. (2016) reported that research findings consistently link the viewing of violent pornography to increased tendencies for **sexually aggressive behavior**

Stanley et al. (2016) reported that there is a clear association between regular viewing of online pornography and perpetration of **sexual coercion and abuse by boys.**

Stanley et al. (2016) found that both regularly watching pornography and sending or receiving sexual images or messages were associated with increased probability of being a **perpetrator of sexual coercion.**

Dr. Walther DeKeseredy (2016) reported that among divorced people he studied, 30% of the women stated their belief that their husband's pornography use was integral to the **sexual abuse they suffered in their marriage.**

The Impact of Pornography on Sexual Aggression and Violence

- Dr. Mary Ann Layden found evidence of increased violent acts towards women by males who consume pornography.

- If men are hostile in attitude toward women, are promiscuous sexually, and are frequent consumers of pornography, they are much more prone to be both physically and sexually aggressive toward women.

- Pornography teaches, gives permission, and eventually triggers attitudes and behaviors that are destructive to both the user and to others. The damage is evident regardless of sex or of age. In her own words, “Pornography is a widely influential and very toxic teacher” (Layden, 2010).

The Impact of Pornography on Sexual Aggression and Violence

The verdict is in!

- **Wright et al. (2016)** conducted an excellent and exhaustive meta-analysis of 22 studies from 7 different countries and concluded:

"The accumulated data leave little doubt that, on the average, individuals who consume pornography more frequently are more likely to hold ***attitudes conducive to sexual aggression*** *and engage in* ***actual acts of sexual aggression*** *than individuals who do not consume pornography or who consume pornography less frequently."*

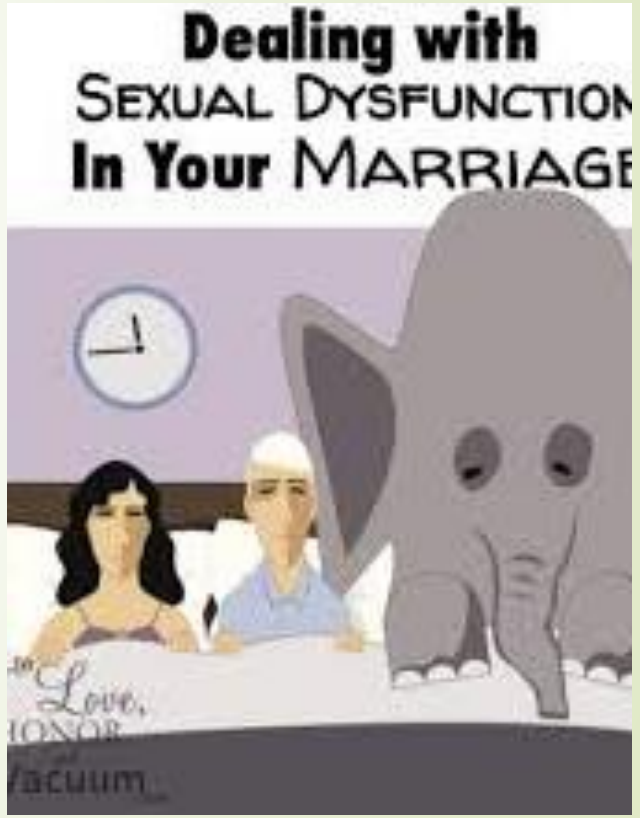
The Impact of Pornography on Sexuality

Unreliable erections during sexual encounters:

- Between 1948 and 2002, the historical rates for ED in men under 40 were consistently around **2% to 3%** and did not go up very much until age 40. (de Boer, B. et al., 2004). However, as noted by Wilson (2017), at least six studies have found ED rates of about **14% to 33%** in young men, which constitutes a staggering **1000% increase** in just the last 15 years (Park, 2016).

- In fact, adolescents are suffering disproportionately as noted by in a Canadian study which showed that problems in sexual functioning are sadly higher in adolescent males than in adult males. In a two-year period **78.6% of males aged 16-21** reported a sexual problem during partnered sexual activity (O'Sullivan et. al., 2016):

  - Erectile dysfunction - **45%**
  - Low sexual desire - **46%**
  - Difficulty climaxing – **24%**



The Impact of Pornography on Sexuality

Scary and alarming porn fetish tastes:

- Gary Wilson (2017) writes that once upon a time, men could trust their penises to tell them everything they needed to know about their sexual preferences and orientation. However, our brains are very plastic (or able to change with experience). As such, our brains change with experience with or without our conscious participation.
- Wilson notes, that as a function of porn involvement, porn users often move from one genre to another and will often arrive in places that they find very disturbing and/or confusing.
- As a result, a previously defined heterosexual boy might ultimately find himself enjoying homosexual pornography and then begin to question his sexuality.
- Additionally, many men end up viewing child pornography as they have habituated to everything else. As has been said, "I did it all and then got bored (habituated) with it all and thus (child porn) was the final taboo that excited me.

The Impact of Pornography on Sexuality

Scary and alarming porn fetish tastes - continued:

- Downing et al. (2016) conducted a study that found that it is now quite common to find men who view porn that is inconsistent with their sexuality. Specifically, they reported that heterosexual-identified men in the study reported viewing porn containing male same-sex behavior (20.7%) and gay-identified men reported viewing heterosexual behavior in porn (55%).

- Wilson (2017) notes that it is very sad that porn users are ignorant of how common it is to escalate; often leaving porn users in the end, feeling very anxious, demoralized, and hopeless. He adds that it can be especially distressing to escalate through porn fetishes that ultimately cast doubt on one's sexual orientation.

Occularization – the Over-Visualizing of the Mind

Much of the content of the following five slides is from the excellent YouTube channel, Academy of Ideas. Please click the link below to watch this excellent video:
https://www.youtube.com/watch?v=cwqbu0slcc0&ab_channel=AcademyofIdeas

Over-stimulated by the visual system

We have lost connection with the world around us by excessive reliance on the visual system – no longer do we adequately allow our bodies to experience the world around us in 3D using all of the five senses.

In [an] ocularcentric [or sight-centred] society, not only does the individual become a passive receptor of images coming from the media; relationships between people also come increasingly to be mediated, even produced, by images.

Giovanni Stanghellini and Louis Sass The Bracketing of Presence

Sight is usurping touch. Images are deposing bodies. Virtuality is replacing reality. . . And now the fear of being contaminated by the COVID virus has further reinforced the tendencies toward decorporealization, dematerialization, and social isolation, at least in terms of body-to-body relationships.

Giovanni Stanghellini and Louis Sass The Bracketing of Presence

The other becomes an image for me – and I an image for the other.

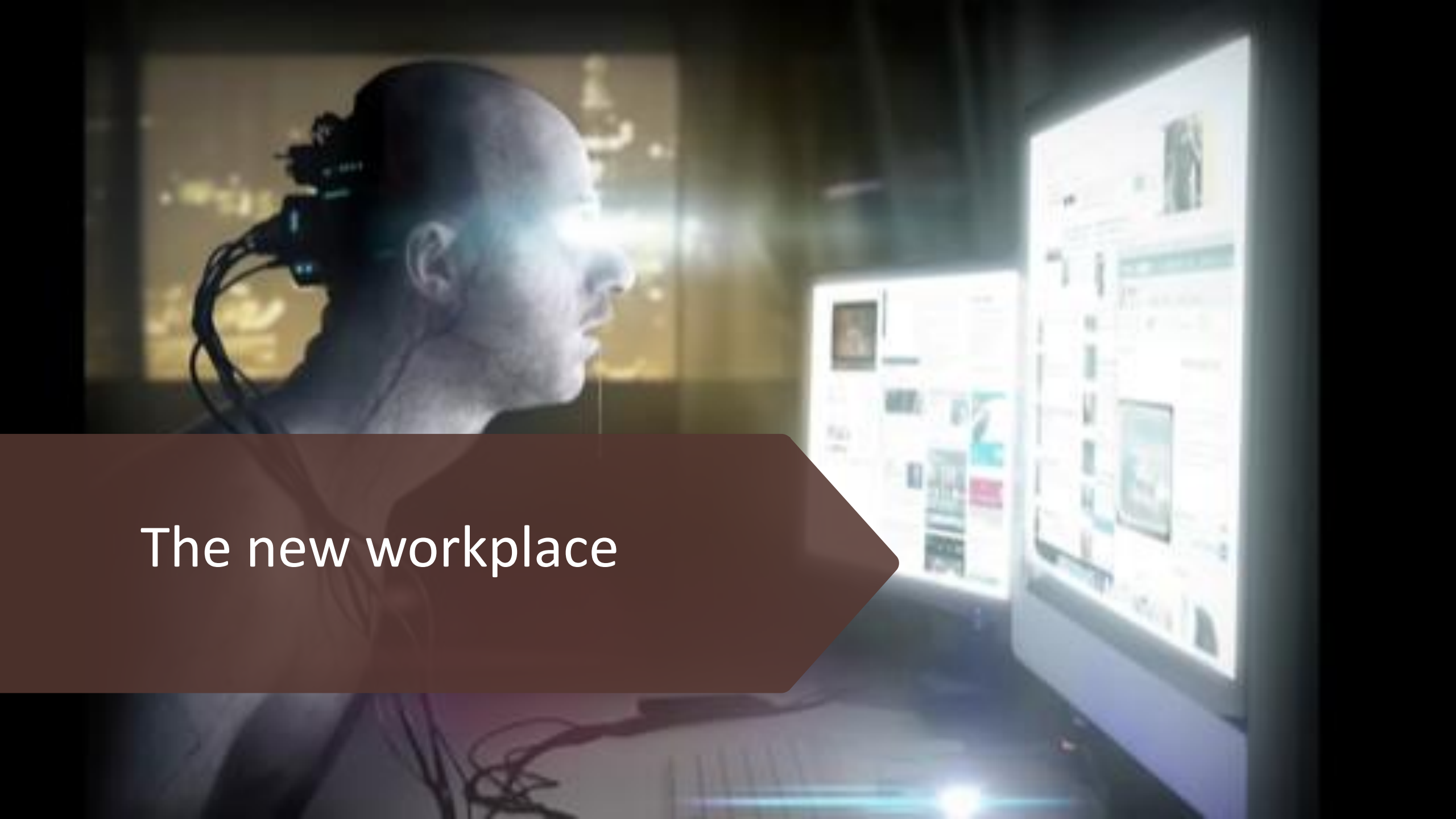
Giovanni Stanghellini and Louis Sass The Bracketing of Presence

We no longer experience the “real thing.”

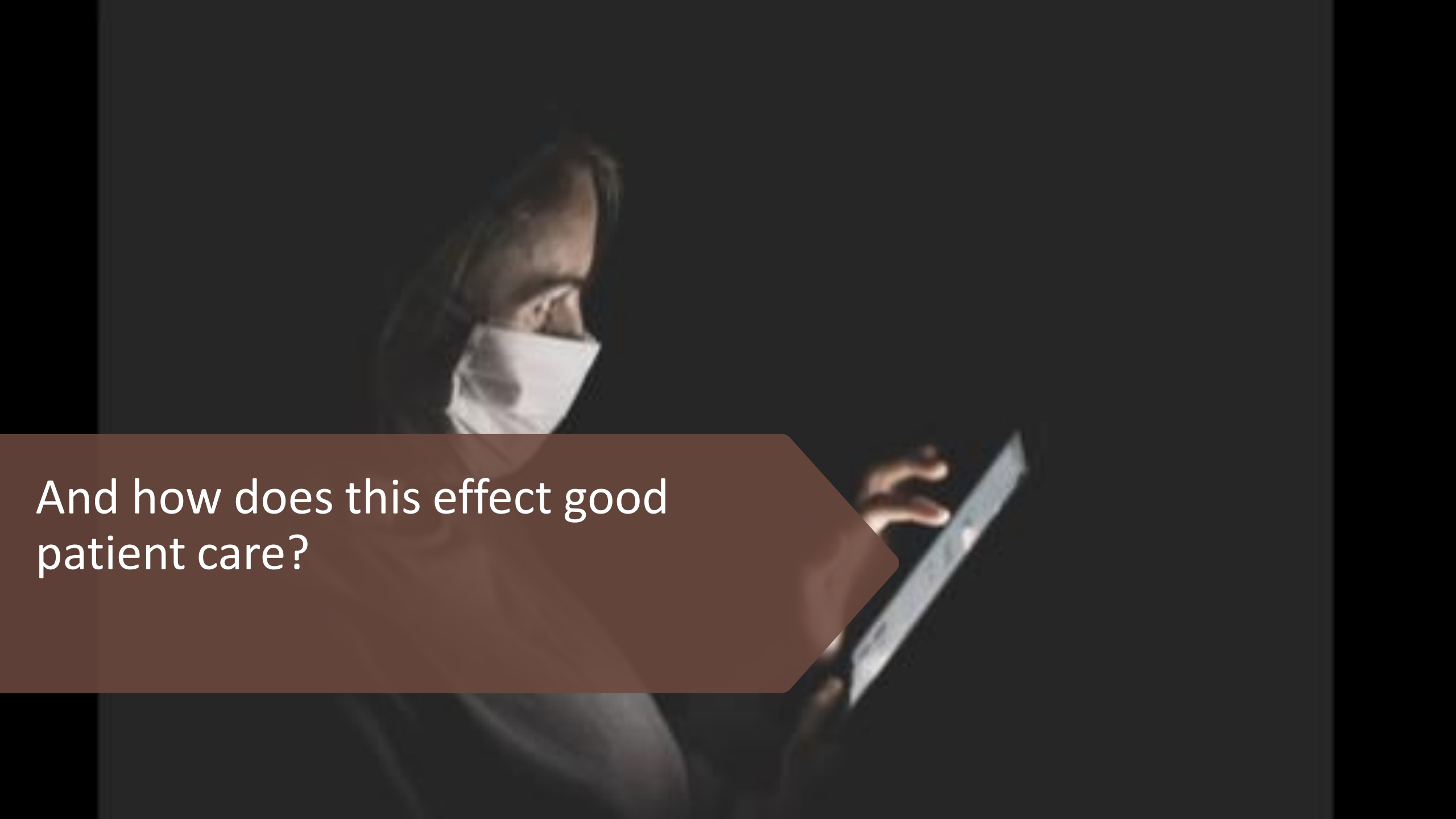
We become disembodied from ourselves

In such a society, the more embodied, participatory, and "immersed" kinds of visual experience are replaced by passive forms of "seeing": a disembodied witnessing of mere images and representations.

Giovanni Stanghellini and Louis Sass The Bracketing of Presence



The new workplace


And how does this effect good patient care?

The Way Out

- The good news is that there is a way out if you want it bad enough and if you are willing to do the hard work.
- Let's start with what does not work. Most important is **shame**. Telling yourself or another person who is struggling with pornography addiction that you or they are a moral failure or a bad person, will not help you or them heal and, in fact, it can very often make matters far worse.
- I have seen behaviorally addicted people in my practice who have attempted suicide by hanging and/or by handguns because they were so wracked with guilt and shame, and they tragically felt that the only escape was death.
- So be compassionate and kind to others and to yourself. You and they can heal.

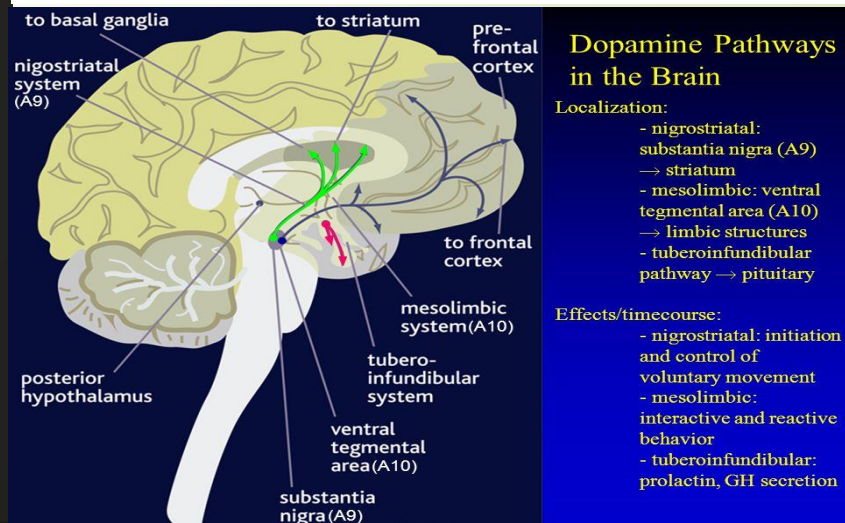
Medication

There are no medications currently approved for the treatment of behavioral addictions, but some medications that have shown promise in treating substance use disorders have also shown promise in treating behavioral addictions.

Naltrexone, a mu-opioid receptor antagonist approved by the US Food and Drug Administration for the treatment of alcoholism and opioid dependence, has shown efficacy in controlled clinical trials for the treatment of pathological gambling and kleptomania, and promise in uncontrolled studies of compulsive buying, compulsive sexual behavior, internet addiction, and pathologic skin picking.

These findings suggest that mu-opioid receptors play a similar role in behavioral addictions as they do in substance use disorders, possibly through modulation of the dopaminergic mesolimbic pathway. In contrast, the short-acting mu-opioid receptor antagonist naloxone exacerbates symptoms in obsessive-compulsive disorder.

Grant JE, Potenza MN, Weinstein A, Gorelick DA. Introduction to behavioral addictions. Am J Drug Alcohol Abuse. 2010 Sep;36(5):233-41. doi: 10.3109/00952990.2010.491884. PMID: 20560821 PMCID: PMC3164585.



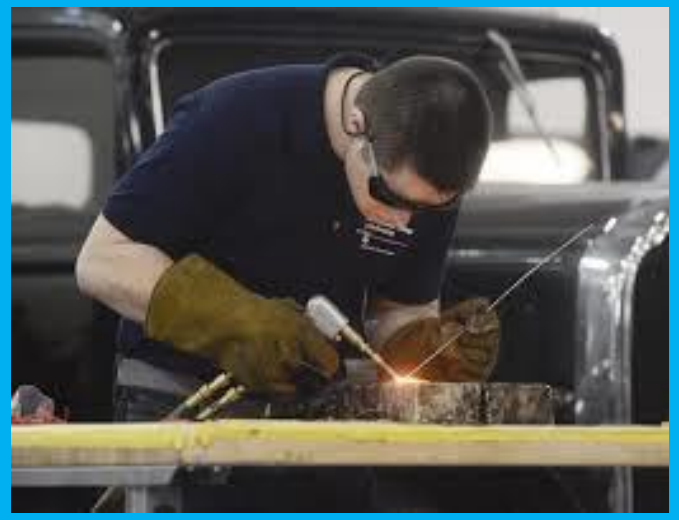
The Way Out

The Five Strategies:

- Get connected to healthy living (Hari, 2018)
- Make a U-Turn on the Superhighway (Fradd, 2017; Skinner, 2005)
- Seek online help
- Learn healthy self-regulation skills
- Accountability

Strategy One: Johann Hari's 8 Point Model for Connected Living

- One: Connection to Meaningful Work:
  - A lack of control and little connection between effort and reward are highly predictive of depression and suicide in the workplace (Marmot et al., 2002).
  - Gallup study found that twice as many people in 2011 to 2012 hated their jobs as love their jobs (Marmot et al., 2002).
  - Takeaway: Ensure you are connected to meaningful and fulfilling work both at the workplace and at home. For teens and many young adults, the workplace is school so attention must be given to making this a successful and meaningful endeavor.



Click here to listen to the amazing Johann Hari, one of my heroes:
https://www.youtube.com/watch?v=647AxVPpIGU&ab_channel=PoliticsandProse

Strategy One: Johann Hari's 8 Point Model for Connected Living – continued:

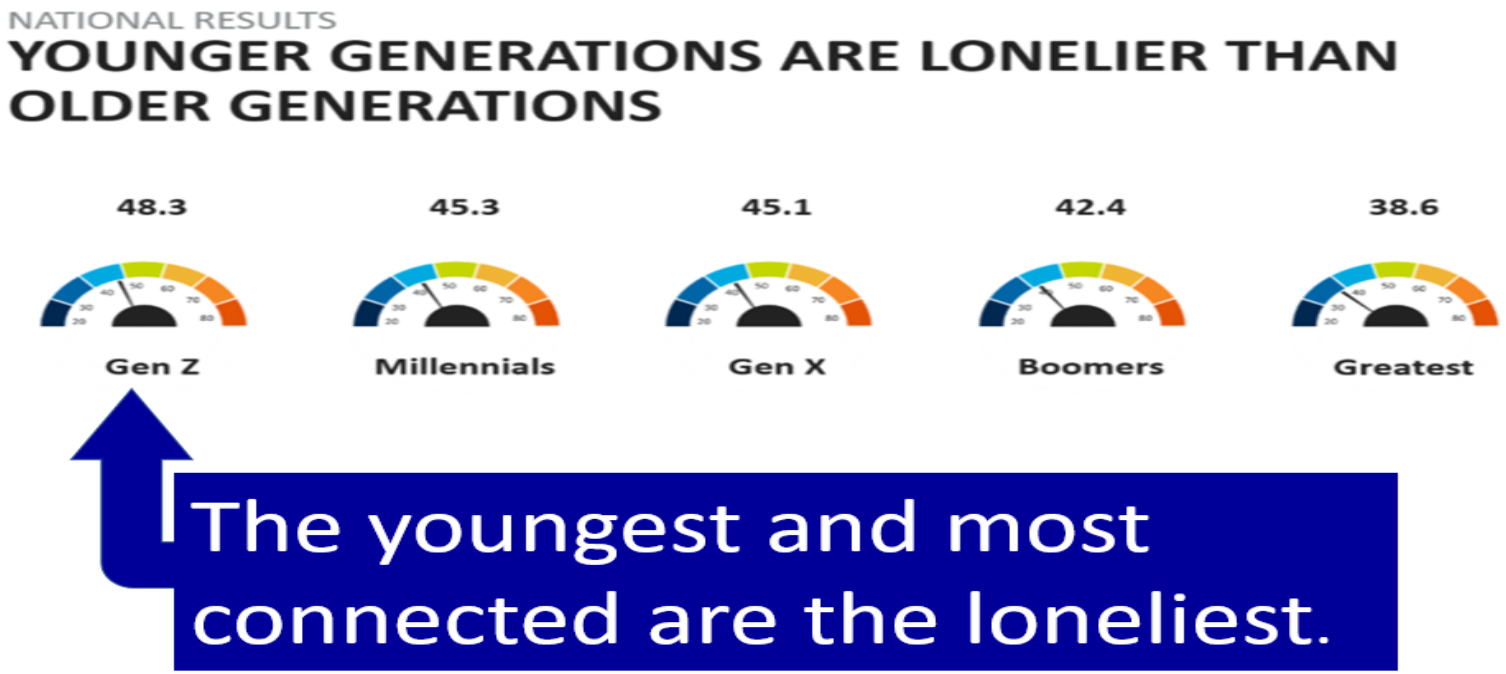
- Two: Connection to Meaningful People:
  - Pinker (2015) followed both isolated and highly connected people over nine years and found that isolated people were two to three times more likely to die during lonely periods.
  - Cacioppo (2006, 2008, 2010), a neuroscience researcher, studied the impact that loneliness has on health. He and his colleagues determined that loneliness causes cortisol levels to go through the roof.

Strategy One: Johann Hari's 8 Point Model for Connected Living

Two: Connection to Meaningful People - continued:

Shared with permission – Peter Ryan, CAPT, USN (R)

2018 CIGNA Study



Strategy One: Johann Hari's 8 Point Model for Connected Living

Two: Connection to Meaningful People - continued:

- Cacioppo (2013) reported a rather shocking meta-analysis study of over 100,000 participants which found increased risks of dying early due to living with the following:
  - Air pollution: 5% increased risk of dying early
  - Obesity: 20% risk of dying early
  - Alcoholism: 30% risk of dying early
  - Loneliness: 45% risk of dying early
- Takeaway: Ensure that you are connected with family and good friends in 3D, face-to-face relationships.

Strategy One: Johann Hari's 8 Point Model for Connected Living

- Three – Connection to Meaningful Values:
  - Overvaluing money and possessions leads to higher scores of depression (Belk, 1983). Kasser's (2002) research specifically determined that the more materialistic you are the more likely you are to score higher on measures of depression.
  - Takeaway: It is a powerful thing to contemplate your values and what makes you and your family unique. Knowing your values helps build a firm foundation on which to heal.
- Four – Disconnection from Childhood Trauma:
  - As noted earlier, the Kaiser Study of Adverse Childhood Experiences (ACEs) indicated that for every category of trauma experienced as a child, he/she was dramatically more likely to be depressed as an adult (Felitti et al., 2014; Felitti, 2004).
  - Takeaway: Seek a competent trauma therapist to address unresolved childhood trauma less you be tempted to continue consuming pornography or another addiction to self-medicate the pain.

Strategy One: Johann Hari's 8 Point Model for Connected Living

- Five – Connection to Status and Respect:
  - Like our primate cousins, low ranking individuals show changes in the brain, specifically the pituitary and adrenal glands (Sapolsky, 1992; 2002).
  - As Twenge (2006) in her book *Generation Me* astutely pointed out, self-esteem is not based on air, but on mastery and real-world competence.
  - Takeaway: Build self-respect and confidence based on competence.

Strategy One: Johann Hari's 8 Point Model for Connected Living

- Six: Connection to the Natural World:
  - Bonobos in the wild can become sad or depressed, but there is a limit to how far they will go. In captivity, they become extremely depressed and often self-injure and/or rock compulsively (interview with Isabel Behncke cited in Hari, 2018).
  - **"Nature Deficit Disorder"** - Humans are hard-wired for a genuine nature connection (Louv, 2005).
  - Louv (2005) stated that many psychological problems in kids today are related to an erosion of their connection with nature and immersion into the digital world.
  - Takeaway: Get yourself outside exercising and/or enjoying the beauty of the outdoors!

Strategy One: Johann Hari's 8 Point Model for Connected Living

- Seven – Connection to a Hopeful and Secure Future:
  - As Native Americans were stripped of their identities, they lost their connection to the future, they became increasingly depressed, and then often resorted to alcohol which often culminated in addiction (Hari, 2018).
  - Takeaway: Many of us are in the same boat and have lost sight of a secure future. We need to find a way to foster competence and hope.
- Eight – Connection to Faith (emphasis mine):
  - Observational studies suggest that people who have regular spiritual practices tend to live longer (Strawbridge et al., 1997).
  - Religious commitment may improve stress control by affording better coping mechanisms, richer social support, and the strength of personal values and worldview (Koenig et al., 1997).
  - Takeaway: Consider pursuing faith in something beyond yourself.

Strategy Two: Make a U-Turn on the Superhighway

- Matt Fradd (2017) writes that that there are essential elements to making a U-turn on what he calls the "superhighway" to of behavioral addictions, and in particular, viewing porn in any one instance.

- First, referencing Dr. Kevin Skinner's (2005) excellent book, *Treating Pornography Addiction,* we must be mindful of the "activation sequence" or the events which he calls mile-markers that lead up to viewing porn.

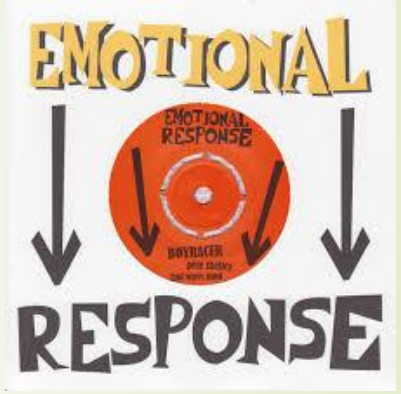
Strategy Two: Make a U-Turn on the Superhighway

Mile-marker one – The trigger or stimulus:

- These are the things that initiate the activation sequence and if we can understand and appreciate these triggers, the fight against the temptation is much more likely to be won.
- Obvious triggers might include, seeing McDonald's Golden Arches, getting a Victoria's Secret catalogue or listening to provocative music and less obvious triggers might include being rejected or having a tough day at the office or at school.
- So, we must be aware of the sights, sounds, and/or events that fire us up. To make that critical decision to not take the on-ramp to the superhighway,
- Fradd notes, we must turn on the thinking brain or prefrontal cortex or "wise mind" to take charge over the more primitive parts of the brain.
- One of the easiest ways to turn on the prefrontal cortex or wise mind is to say out loud or even yell and label what is happening for example: **"Caution - This is a trigger!"**

Strategy Two: Make a U-Turn on the Superhighway

- Mile-marker two – The emotional response:
  - After the trigger, it is essential that we become aware of the emotional response that always follows. This could be a sense of excitement, curiosity or anticipation.
  - Emotions can be very powerful and persuasive so head's up, they can hijack us faster than anything



- Mile-marker three – The first thought:
  - At almost lightning speed and seemingly simultaneously after the emotional comes, that first thought appears which might be, "I wanna do some porn" or "nobody has to know."
  - We can use our thinking brain to speak the truth: "I am stressed and frustrated and my typical go-to is to run to porn to make it go away."

Strategy Two: Make a U-Turn on the Superhighway

- Mile-marker four – The chemical release:
  - As discussed earlier, dopamine, is a very powerful force and drives seeking behaviors, in particular. We love the feel of it more than just about anything.
  - Dopamine tells us, “Remember where you got your last fix the last hundred times, and this is where you must go to get that amazing feeling again!” Those chemicals begin to be released in anticipation of the feeding fest.

- Mile-marker five – The body language:
  - At this point, our body begins to change in that heart rate increases, palms become cold or sweaty, eyes dilate, there can be a certain tingling feeling in the groin, butterflies are felt in the stomach, and/or our muscles tense up.
  - Once again, it is imperative that we activate our wise/thinking part of the brain to stop the progression: “My body us ramping up and I need to take evasive action to shut this down or suffer the consequences!”

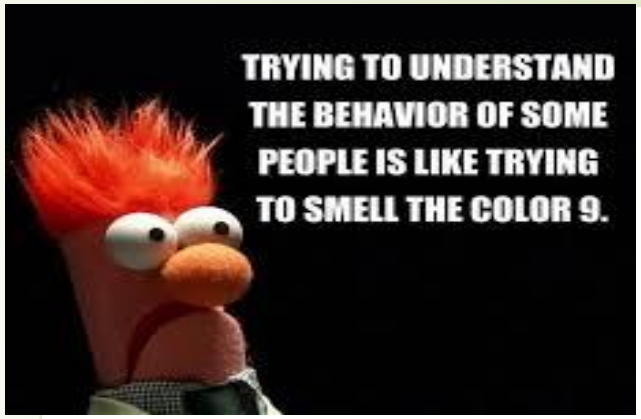
Strategy Two: Make a U-Turn on the Superhighway

Mile-marker six – The battle:

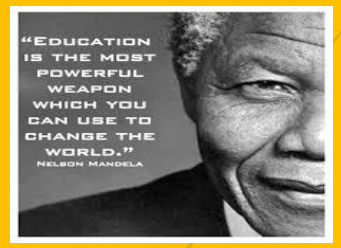
- At this point we are in a fierce battle of **pros and cons** that bounce through our minds at rapid fire pace. This is the brain's back-up safety mechanism to throw on the emergency brakes to keep us from taking the plunge into the abyss.
- Remember how the Orbital Frontal Cortex and the Anterior Cingulate function to control the more primitive drives and/or behaviors and the more that we engage in pornography the more we degrade this protective system. **Hypofrontality** sets in.
- Whatever process wins will determine the final step – behavior.

Mile-marker seven – The behavior:

- Sadly, if nothing was done during the progression in mile-markers one to seven, we will step by default to the gallows and consume porn.



Strategy Two: Make a U-Turn on the Superhighway



Educate yourself:

- We need to learn as much as we can about the impact of addiction in our lives – how it damages our brains, our bodies, and our relationships. Much of this has already been covered in the previous pages of this presentation so, again, congratulations, you are on your way.
- The more we are acutely aware of this information as we fuse it into consciousness, the easier it will be to short-circuit the activation sequence.

Write down exit strategies:

- Certainly, it is one thing to take a thoughts captive that put us at risk for porn seeking but it is altogether another to know what do next. So, well before we get sucked into another activation sequence, we need to write down what we plan to do.
- Fradd (2017) recommends using strong action words such as: "**Get up," "Get out of here," "Take a walk," or "Go for a nice run."** Finally, we need to not only write them down but additionally, we need to rehearse them by reading them out loud at least once a day, if not more. Like in the military, overlearning in garrison saves lives in battle.
- My son who was a Marine told me that he hated the training and thought that it was an unnecessary waste of time, but once he found himself in Fallujah, Iraq in combat situations, it all made sense, and it helped to keep him alive.

Strategy Three – Seek Online Help

There are many excellent online resources. A cautionary note is that we must be careful about being online as this is the conduit for accessing porn. Research the options and find the one that best suits you and your unique needs. Some are faith-based and others, not.

No Fap (nofap.com):

This site offers a secular and comprehensive community-based pornography recovery program which helps porn struggling people connect with a very supportive community of co-strugglers who are determined to escape the bondage of compulsive sexual addictions. It is widely known in the US and internationally.

Website: https://nofap.com/

LifeStar (Lifestarnetwork.com):

As noted on their website, "The LifeStar Program and its Network of Therapists are dedicated to bringing hope, healing, and recovery to individuals, families, and spouses affected by unwanted compulsive sexual behaviors and the powerful grips of sex addiction.

Website: https://lifestarnetwork.com/

The Porn Effect (theporneffect.com):

This is a Catholic site for teens and younger adults which makes an effort to expose the reality behind what is the destructive fantasy of porn and provides a five-step plan to find freedom from it.

Strategy Three – Seek Online Help

Culture Reframed (culturereframed.org):

Founded by Gail Dines, the world's leading opponent against the pornography industry, this website offers extensive education about the topic as well as excellent tutorials for parents seeking to help their teens deal with media and pornography.

Website: https://www.culturereframed.org/

Addo Recovery (addorecovery.com):

This site offers online addiction therapy programs as well as individual online and in-person therapy. It also specializes in betrayal trauma. It is nonsectarian and offers many personal testimonies of those who have struggled

Website: https://www.addorecovery.com/

Real Battle Ministries (realbattle.org):

WE CARE + WE EDUCATE + WE ADVOCATE

Cofounded by Andrew Doan, MD, PhD – Medical Doctor & Neuroscientist and Julie Doan, RN – Mother & Family Advocate, **Real Battle Ministries** is a first-class, science and spiritually-based supportive website with the following mission: **Educate, Encourage, and Support** parents and children wishing to limit digital media. This site offers numerous links to scholarly articles and additional resources for treatment and support. It is the best supportive website I have reviewed.

Website: http://www.realbattle.org/

Strategy Three – Seek Online Help

Beggars Daughter (beggarsdaughter.com):

This website offers women, particularly Christian women, who are struggling with porn addiction very helpful resources and support.

Website: https://beggarsdaughter.com/

Your Brian on Pron Animated Series:

An excellent animated series exploring the Neuroscience behind Porn Addiction and how to overcome it. Based on works of Gary Wilson.

Website: https://youtu.be/i6gk4lW1hPo

Dr. Trish Leigh:

PORN BRAIN REWIRE gives you the knowledge, tools, and expert support to succeed in leaving porn behind for good. This comprehensive program is filled with science-based strategies, techniques, and tools so you can build a life of dignity and integrity for lasting success. Your brain rewire is an incredible, personal experience.

Website: https://www.youtube.com/watch?v=csxGGuOVH6o&ab_channel=Dr.TrishLeigh

Strategy Three – Learn Healthy Self-Regulation Skills

As noted earlier, people who are addicted often live in a state of sympathetic arousal and they often seek pornography to quell that state, one that makes them feel as though they are in "neurological hell" within their bodies.

Although porn seeking will bring some immediate relief, in the end, this backfires and only makes that internal activation worse as previously argued. Therefore, we need to learn healthy strategies to restore neurological peace. Although we may already know many of these strategies, we too often don't exercise them on a regular basis.

Mindfulness is a type of meditation which allows us to focus on being intensely aware of what we are sensing and feeling in the moment, without interpretation or judgment. Practicing mindfulness involves breathing methods, guided imagery, and other practices to relax the body and mind and help reduce stress.

The Mayo Clinic offers a brief but very helpful set of mindfulness skills which I find very helpful and encourage you to give them a try. They are briefly described below:

Strategy Three – Learn Healthy Self-Regulation Skills

Pay attention: It's hard to slow down and notice things in a busy world. Try to take the time to experience your environment with all your senses — touch, sound, sight, smell and taste. For example, when you eat a favorite food, take the time to smell, taste and truly enjoy it.

Live in the moment: Try to intentionally bring an open, accepting and discerning attention to everything you do. Find joy in simple pleasures.

Accept yourself: Treat yourself the way you would treat a good friend.

Focus on your breathing: When you have negative thoughts, try to sit down, take a deep breath and close your eyes. Focus on your breath as it moves in and out of your body. Sitting and breathing for even just a minute can help. Slowing down our breathing and taking in our breath more deeply into our abdomen (called abdominal breathing) are most important. This helps to promote a balance of oxygen and carbon dioxide – the brain needs both in balance to promote healthy functioning and to restore us to bring on parasympathetic calm.

Strategy Three – Learn Healthy Self-Regulation Skills

Body scan meditation: Lie on your back with your legs extended and arms at your sides, palms facing up. Focus your attention slowly and deliberately on each part of your body, in order, from toe to head or head to toe. Be aware of any sensations, emotions or thoughts associated with each part of your body.

Sitting meditation: Sit comfortably with your back straight, feet flat on the floor and hands in your lap. Breathing through your nose, focus on your breath moving in and out of your body. If physical sensations or thoughts interrupt your meditation, note the experience and then return your focus to your breath.

Walking meditation: Find a quiet place 10 to 20 feet in length and begin to walk slowly. Focus on the experience of walking, being aware of the sensations of standing and the subtle movements that keep your balance. When you reach the end of your path, turn and continue walking, maintaining awareness of your sensations (Mayo Clinic, accessed October 20, 2019).

Strategy Four – Accountability

**No man is an island, entire of itself;
every man is a piece of the continent,
a part of the main.**

- John Donne

As the above 17th century quote from the famous **English poet John Donne** suggests, we are not in this alone and so we would do well to recognize that our struggle to free ourselves from pornography cannot be won alone.

I strongly encourage you to find an **accountability partner** or group. I would not recommend that this individual be your love partner or spouse as this places the person you most care about in a very difficult if not untenable and/or unhealthy position.

You might also seek **online accountability** sources, some of which are noted earlier or groups/individuals in your community or your place of worship.

Strategy Four – Accountability

Covenant Eyes (covenanteyes.com):

Matt Fradd (2017) writes, and I agree, that this is absolutely the best filtering and accountability software on the market today. With Covenant Eyes you can use the filter component which filters out bad sites and/or the accountability component which sends out a report to your designated accountability partner. You and/or your accountability partner will receive a weekly report of which sites that were blocked, when the visit was attempted, and what search terms were used to get there.

Net Nanny (netnanny.com):

Net Nanny is a highly powerful platform for parents to control what their children are seeing and doing on the web. It doesn't just manage the time kids spend on the web. It also helps prevent cyberbullying, monitors cell phone activity, masks profanity, and blocks access to pornography. How intensely you choose to use it is up to you. Its suite of tools is accessible on most operating systems, either via web browser or mobile app

Accountable2You (accountable2you.com):

Accountable2You is Internet accountability software with an emphasis on real-time habit management. It can send out instant text alerts to your accountability partners. The software is easy to install on any number of devices. It's compatible with Apple, Windows, and Android operating systems.

Residential Treatment

If **in-home interventions** do not improve your situation, then a referral to a professional specifically experienced in media/pornography addiction is appropriate and, in more extreme cases, **residential treatment** specifically tailored to address media/pornography addiction should be considered and among the best are:

reSTART

reSTART cofounded Dr. Hilarie Cash, PhD, Chief Clinical Director and Cosette Rae

ReSTART specializes in behavioral addictions, Internet gaming disorder, video game addiction treatment, gambling, virtual reality, augmented reality, and excessive screentime and social media use. reSTART offers **in-depth residential intervention for youth 13-18** experiencing video game addiction, Internet gaming disorder, social media addiction, excessive screentime use, and often associated problems

LaunchHouse
Wellness Center
NYC • Hamptons

Launch House founded by Dr. Kardaras:

Launch House offers full mental health services for adults and adolescents, including the attendant mental health and screen addiction issues that many young people face today. In addition, **residential "digital detox" services** are available for those who are overworked, overstressed, or have developed an over-dependence on screens and technology.

In Closing

- I realize that when you are a hammer, everything can seem as a nail. Being a clinical psychologist, I have watched the evolution of process addictions, most specifically pornography addiction, facilitate the devolution of the mind, body, and soul of many of us and cannot fail to talk about what might be uncomfortable for us and for you. The nail in the coffin for far too many of our men, sons, fathers, and ever increasingly, women, daughters, and mothers is the process addiction of pornography.

- It is the elephant in the room and its invasion must not be ignored. I urge you to save your own mind, body, and soul or, if you are not afflicted with pornography or another behavioral addiction, please reach out and help to save the mind, body, and soul of another. Together and connected, we can do this!

- Should you have any feedback, questions or concerns, please feel free to reach out to me via email at Jeffrey.hansenphd@comcast.net or visit my website: https://www.jeffreyhansenphd.com/ .

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