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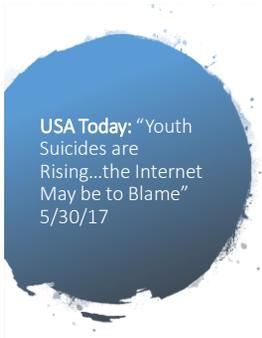
► A recent study (November, 2019) published in JAMA Pediatrics scanned the brains of children 3 to 5 years old and found those who used screens more than the recommended one hour a day without parental involvement had lower levels of development in the brain's white matter -- an area key to the development of language, literacy and cognitive skills.

► "This is the first study to document associations between higher screen use and lower measures of brain structure and skills in preschool-aged kids," said lead author Dr. John Hutton, a pediatrician and clinical researcher at Cincinnati Children's Hospital.

► "This is important because the brain is developing the most rapidly in the first five years," Hutton said. "That's when brains are very plastic and soaking up everything, forming these strong connections that last for life."

2019 JAMA STUDY: LOWER BRAIN DEVELOPMENT IN PRE-SCHOOL KIDS WHO HAD INCREASED SCREEN TIME

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USA Today: "Youth Suicides are Rising...the Internet May be to Blame"

5/30/17

The CDC found the suicide rate for children age 10 to 14 doubled from 2007 to 2014--at the same time social media usage surged.

Suicide overtook motor vehicle accidents as a cause of death in that age group, the report showed.

Teens' use of electronic devices for at least five hours daily more than doubled (from 8 percent in 2009 to 19 percent in 2013). These teens were 70 percent more likely to have suicidal thoughts or actions than those who reported one hour of daily use.

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Millennial Madness and the "Failure to Launch" Epidemic

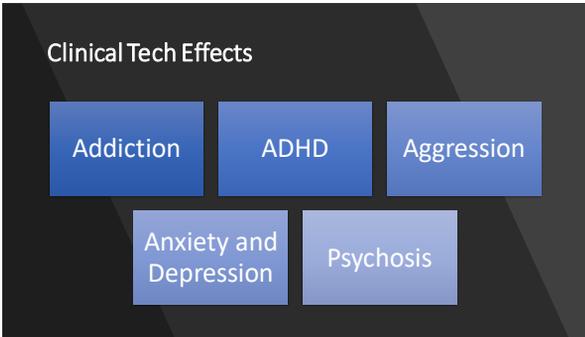
- "Deaths of Despair" (suicide, overdose, alcoholism) for 18-34-year olds are at epidemic levels. Suicides amongst Millennials have increased by 35% in the past decade.
- Since 2013 Millennials have seen a 47% increase in major depression diagnosis.
- Millennials are the "Loneliest Generation". A recent study found that 22% of Millennials "had no friends".
- Several studies have shown that Screen time has led to an increase in depression, isolation and despair.
- 23% of Millennials are Still Living With their Parents (Up from 13.5% in 2005)
- Study: Millennials on track to be the "Most Obese Generation in History" (attributed to sedentary screen lifestyles and fast food habits)



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Digital Drugs

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Dr. Peter Whybrow, Director of Neuroscience at UCLA, calls electronic screens and video games "electronic cocaine"

Commander Dr. Andrew Doan, MD and Ph.D. in neuroscience and the head of Addiction research for the U.S. Navy/Pentagon calls interactive screens digital "pharmakeia" (Greek for drug).

Chinese researchers call video games "electronic heroin"

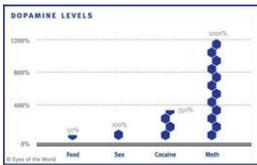
Chasing the Feel-Good High

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Dopamine is the "feel good" neurotransmitter that's the most critical in the addiction process.

How dopaminergic (how dopamine activating) a substance or behavior is correlates with the addictive potential of that substance or behavior

Dopaminergic substances or behaviors increase dopamine levels so that the dopamine-reward pathway is activated, telling the individual to repeat what they just did in order to get that feel-good dopamine reward again and again.



- Food: 50% Dopaminergic
- Sex: 100% Dopaminergic
- Video games: 100% Dopaminergic
- Cocaine: 350% Dopaminergic

Video Games Raise Dopamine

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Digital
Drugs?

The New York Times

- Are Teenagers Replacing Drugs With Smartphones?
- By MATT RICHEL MARCH 13, 2017

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The New York Times

"People are carrying around a portable dopamine pump, and kids have basically been carrying it round for the last 10 years."

Dr. David Greenfield, Assistant Clinical Professor of Psychiatry, University of Connecticut School of Medicine

"Teens can get literally high when playing these games...Interactive Media act as an alternative reinforcer to drugs."

Dr. Nora Volkow, Director of NIDA (National Institute of Drug Abuse)

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Tech Anxiety: Nomophobia: "Oh no! I don't have my phone anxiety!"

- **Nomophobia** is the irrational fear of being without your mobile phone or being unable to use your phone for some reason, such as the absence of a signal or running out of minutes or battery power. The word **nomophobia** is a neologism made up of no + mobile + phone + phobia.
- Psychology Department in Rio De Janeiro's Federal University started the "Delete Institute" in 2013.
- Method: Support group and exercises.
- Exercises: Watching a movie without checking phone



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Video Games are Not Addictive by Chance

- Dr. Doan:

"Video gaming is a multi-billion dollar industry. Video game companies will hire the best neurobiologists and neuroscientists to hook up electrodes to the test gamer. If they don't elicit a blood pressure of 180 over 140 within a couple of minutes of game play, they go back and tweak the game to get that maximum addicting and arousing response."

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2011 Indiana Univ. School of Medicine Video Game Brain Imaging Study

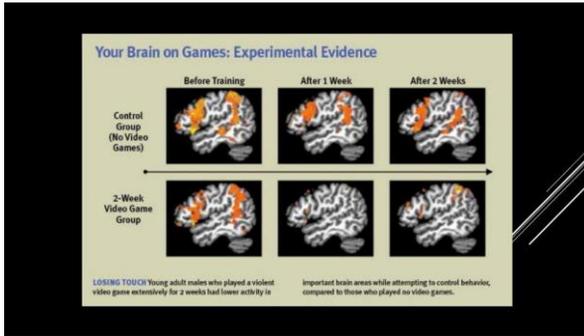
- 22 males aged 18-29 with no/low past video gaming experience
- Randomly broken into two groups of 11
- Experimental Group asked to play violent video games for 10 hours in one week
- Control group played no video games

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Dr. Wang's Indiana University Study

- Dr. Wang: "For the first time, we have found that a sample of randomly assigned young adults showed less activation in certain frontal brain regions following a week of playing violent video games at home. The affected brain regions are important for controlling emotion and aggressive behavior."
- The frontal brain regions are also the same brain regions that are affected by drug addiction; for the first time, researchers showed a *direct* relationship between playing violent video games and a subsequent change in those brain regions associated with executive functioning.

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Digital Morphine and The Military

At the University of Washington, researchers found that burn victims who played a video game called Snow World required NO morphine.

Subsequent MRI research showed that brain centers related to pain were more activated by the game than by actual morphine.

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Screens and the H-P-A Axis

Research has shown screens to be hyper-arousing and effect the "H-P-A Axis" (Hypothalamus-Pituitary-Adrenal Axis) which leads to "fight or flight response". Blood pressure goes up, pupils dilate, palms get sweaty.

Hour after hour of hyper-aroused time can lead to a "dysregulation effect" where children can't calm down and re "wired and tired". Dr. Dunckley has called this "Electronic Screen Syndrome" and can look like ADHD, moodiness and aggressive behavior.

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Gambling and Dr. Shaffer's "Syndrome Model" of Addiction

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ADHD SCREEN EFFECTS

In a 2010 study published in the journal *Pediatrics* by Dr. Dimitri Christakis at the University of Washington found that children who spent more than two hours a day in front of a screen—computer or television—were twice as likely to have attention problems.

A 2004 study by Dr. Christakis published in *Pediatrics* found that for every hour of television watched by children between the ages one and age three, there is a ten percent higher chance of developing an attention problem that could be diagnosed as ADHD by age 7.

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Game Transfer Phenomenon (GTP)

- Game Transfer Phenomena (GTP) comprises sensory perceptions, spontaneous mental processes and behaviours in direct relation to video game content.
- Reality testing remains intact, meaning that gamers know that the manifestations are not real. However, sometimes the vividness of the sensory intrusions (e.g. hearing sounds as coming from nowhere or seeing images overlaying objects) and game-related objects that evoke emotions has resulted in impulsive responses (e.g. involuntary actions). These appear to happen during episodic moments of dissociation where gamers feel as being in the game or believe for moments that the game elements are real.
- The "Tetris Effect"

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Video Games and Aggression

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Iowa State University Distinguished Professor of Psychology Dr. Craig Anderson, in the most comprehensive meta-study review ever conducted in this area, exhaustively analyzed 130 research studies with over 130,000 participants worldwide.

Published in 2010 in the APA Journal *Psychological Bulletin*, the study concluded that violent games are "not just a correlation, but a *causal* risk factor for increased aggressive thoughts and behavior".



Violent Video Games and Real Life Violence

Daniel Petric killed mother, shot father because they took Halo 3 video game, prosecutors say

December 15th 2008, *Cleveland Plain Dealer*



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Adam Lanza and the Newtown Massacre

Lanza's descent to madness and murder: Sandy Hook shooter notched up 83,000 online kills including 22,000 'head shots' using violent games to train himself for his massacre

By [DANIEL BATES](#) and [HELEN POW](#)
December 1, 2013

The Face of Evil?



Or



Video Game Psychosis

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DIGITAL EXTREMISM: EXTREMIST GROUPS TARGET AND BRAINWASH VULNERABLE TEENS ONLINE WITH HATEFUL IDEOLOGY

- Study: Young gamers increasingly targeted by extremist groups
- Extremist groups like the Ku Klux Klan and ISIS are targeting lonely, alienated teens for recruitment into their organizations via gaming, Facebook or YouTube platforms. The FBI and the Pentagon have both begun monitoring various sites that are being used for such recruitment purposes.



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Social Media: The Big Disconnect

We're the most digitally and social media connected society ever—1.23 billion are on Facebook—yet depression and mental health diagnosis are skyrocketing.

According to WHO, by 2020 depression will be second to heart disease as leading cause of disability.

Numerous studies link "hypertasking" (over 120 daily texts) and "hypernetworking" (over 3 daily hrs social media) with behavioral and psychological problems

"Facebook Depression": more "friends" = greater depression rates. The "Comparison effect".

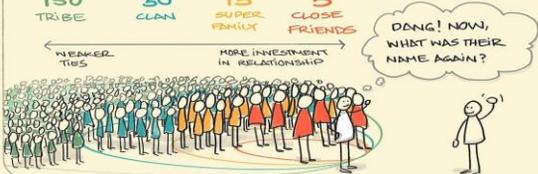
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DUNBAR'S NUMBER : 150

TYPICAL NUMBER OF PEOPLE WE CAN KEEP TRACK OF AND CONSIDER PART OF OUR ONGOING SOCIAL NETWORK

150	50	15	5
TRIBE	CLAN	SUPER FAMILY	CLOSE FRIENDS

← WEAKER TIES MORE INVESTMENT IN RELATIONSHIP →



sketchplanations

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Dr. Stephen Ilardi and Depression

- "We were never designed for the sedentary, indoor, sleep-deprived, socially-isolated, fast-food-laden, frenetic pace of modern life."
—Stephen Ilardi, PhD
- TLC ELEMENTS
- [Omega-3 Fatty Acid Supplements](#)
- [Anti-Rumination Strategies](#)
- [Exercise](#)
- [Light Exposure](#)
- [Social Support](#)
- [Sleep Hygiene](#)

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Facebook's Sean Parker:

"We've created a Monster" NY POST 11/9/17



- "Facebook literally changes your relationship with society, with each other. God only knows what it's doing to our children's brains."
- Facebook is designed to exploit "a vulnerability in human psychology" to get its users addicted.
- "The inventors, creators — it's me, it's Mark [Zuckerberg], it's Kevin Systrom on Instagram, it's all of these people — understood this consciously," he said. "And we did it anyway."

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Facebook's Sean Parker on "Facebook Addiction"

Parker: "Facebook uses likes and shares to create a 'social-validation feedback loop' that keeps users coming back.

"We need to sort of give you a little dopamine hit every once in a while, because someone liked or commented on a photo or a post or whatever," Parker said. "And that's going to get you to contribute more content, and that's going to get you ... more likes and comments."

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60 Minutes : Brain Hacking (4/9/17)

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Former Google product manager Tristan Harris: "Silicon Valley is intentionally engineering your phone, apps and social media to get you hooked"

"There's a whole playbook of techniques that get used to get you using the product for as long as possible...every time I check my phone, I'm playing the slot machine to see, 'What did I get?' This is one way to hijack people's minds and create a habit, to form a habit."

Screen Addiction Diagnosis

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- Dr. Kimberly Young's "Internet Addiction Test" Assessment Tool
- Screen Usage is adversely impacting the persons life (professionally, socially, physically, academically, etc.)
- Engage is screen usage for longer than anticipated
- Sleep deprivation
- Personal Hygiene suffers
- Lack of enjoyment or involvement in activities that had been pleasurable
- Aggression or Mood Dysregulation when devices are taken away

The Solution

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- Prevention: Delay portable electronic Devices until at least age 10.
- Parents: Practice what you preach. Watch and moderate your own tech habits.
- No screens at the dinner table (and, yes, have the whole family eat—and talk—together).
- One day a week: Digital Fast. Smell the roses.
- Talk to your children early and often about tech concerns.
- Foster balanced, resilient, empathic and emotionally strong children.
- Nurture healthy hobbies: Sports, art, music...nature activities...the Scouts! But also let your children be BORED!

TECH ADDICTION TREATMENT

- Digital Detox for 4 to 6 weeks to recalibrate Adrenal system
- Similar to Eating Disorder Protocols (can't really be screen-abstinent in 21st Century America)
- Develop Healthy Self-Concept before you can Develop a Healthy Relationship with the Screen; often times the gamer's or social media devotee's identity is inextricably tied in to their screen identities.
- Nurture alternative non-screen experiences.
- Nature immersion protocols
- Learning to identify "digital vegetables" vs. "digital candy" as part of healthy re-entry plan.

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National Institute for Digital Health and Wellness www.nidhw.org

- Provides education, prevention and treatment resources for schools, families and therapists.
- Provides Therapist Training and Certification to be Clinically Certified in Treating Tech Addiction
- An affiliate of the National Institute of Science, Law and Public Policy (NISLAPP) in Washington, D.C.

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