Internet Gaming Disorder and Internet Use Disorder:
Is that real?

By Emily Brunner, MD, FASAM

Conflicts of Interest and "off-label" medication

- I am employed at Sage Prairie as an addiction medicine physician, and I am working there at developing an internet game treatment program

- I do not make any dollars or rubles from nonclinical sources

- I will discuss "off-label" use of medication briefly

What led me to interest in this problem?

- ► Having kids

- ► Cora Sleepover- Age 10; 6 girls and 6 ipads

- ► Concerns from other parents

  - ► Rarely do I receive questions about drug use from other parents; in contrast I receive questions about when to buy a phone and the internet use of children all the time

- ► Anecdotally I also noticed worse outcomes in my young adult patients who have trouble looking at me in the eyes because they are in "phone position"

Reviewing the scope of problem
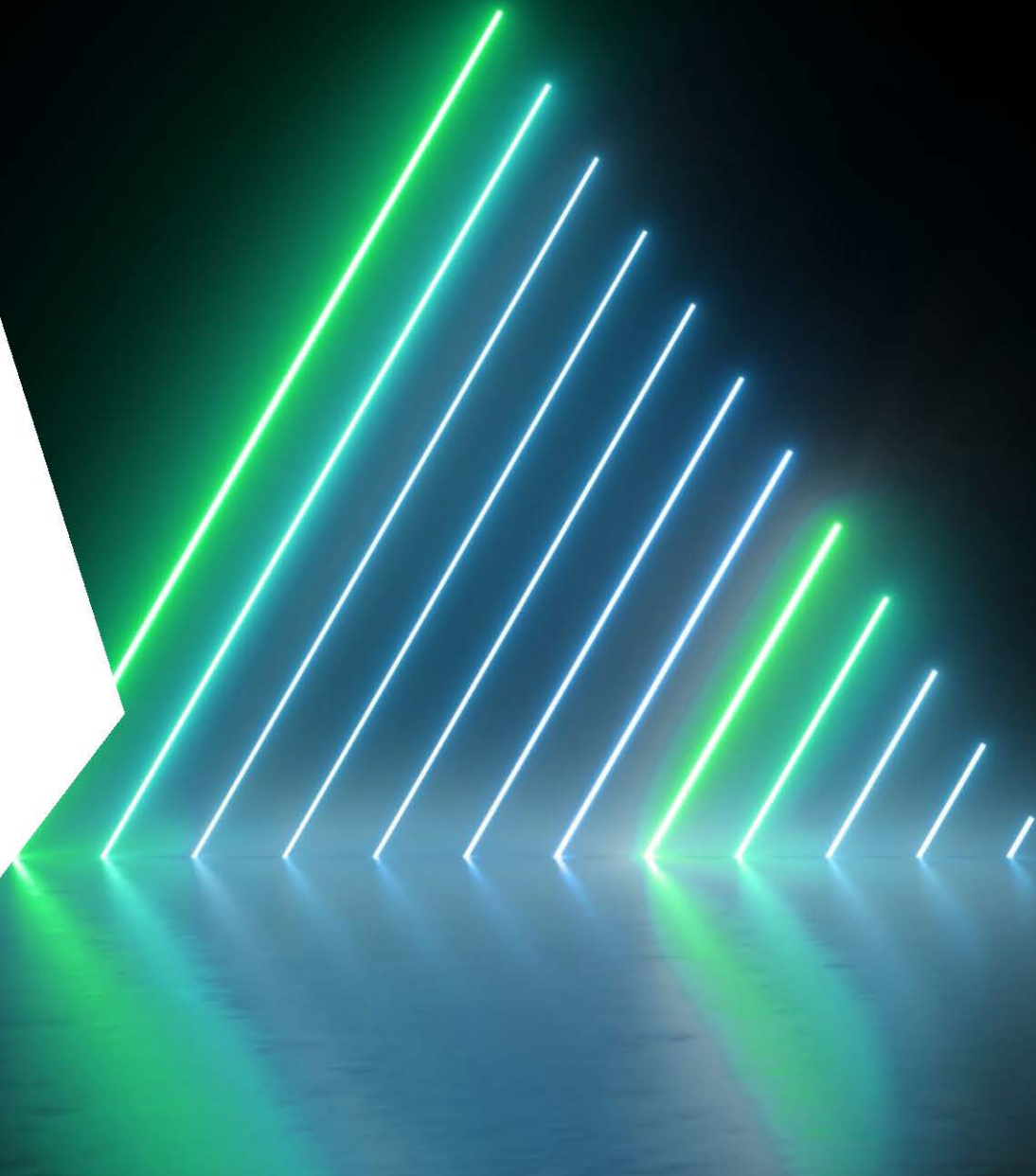
What do the experts say?

- DSM V does not include "internet addiction"; finalized in 2013
- The only behavioral addiction characterized in the DSM V is gambling use disorder
- Internet Gaming Disorder was included as a proposed diagnosis under investigation
- Of note: this condition does not include issues with internet in general or social media)
- In late 2017, it was announced the WHO is adding video gaming disorder as an official diagnosis in ICD11
- "Treatment" is already common in China and South Korea, but is not predicated on strong theoretical underpinnings

Internet Gaming Disorder: per DSM V

- Under the proposed criteria, a diagnosis of internet gaming disorder would require experiencing five or more of these symptoms within a year. The condition can include gaming on the internet, or on any electronic device, although most people who develop clinically significant gaming problems play primarily on the internet.

- Preoccupation with gaming

- Withdrawal symptoms when gaming is taken away or not possible (sadness, anxiety, irritability)

- Tolerance, the need to spend more time gaming to satisfy the urge

- Inability to reduce playing, unsuccessful attempts to quit gaming

- Giving up other activities, loss of interest in previously enjoyed activities due to gaming

- Continuing to game despite problems

- Deceiving family members or others about the amount of time spent on gaming

- The use of gaming to relieve negative moods, such as guilt or hopelessness

- Risk, having jeopardized or lost a job or relationship due to gaming

Isn't internet use just normal?

▶ In modern society, it is unreasonable to expect anyone to completely abstain from use of the internet; participation in work, school, and a social life require use of the internet and an online presence

▶ We do NOT want to pathologize normal behavior

▶ For many marginalized populations, the internet can connect them with people that they can relate with

▶ Time-based definitions of the diagnosis are not subtle enough to categorize having a use disorder, esp when extensive use is now very common

How many people are affected?

- ▶ Per Business Insider in 2018, video gaming generates 119.6 billion in revenue

- ▶ Per Microsoft, there are over 2 billion gamers around the world (and the population is growing)

- ▶ Total direct employment in 2016 exceeded 65,000 employees

- ▶ Added 11.7 billion dollars to US GDP in 2015

Summary of AAP recommendations re: Screens

- For children under 18 months, avoid screen-based media except video chatting.

- For children 18 months to 24 months, parents should choose high-quality programming and watch with their children.

- For children 2 to 5, limit screen time to one hour per day of high-quality programming.

- For children 6 and up, establish consistent limits on the time spent using media and the types of media.

Per the CEO of Netflix

▶ "I am more scared of Youtube and Fortnite more than HBO and Disney"

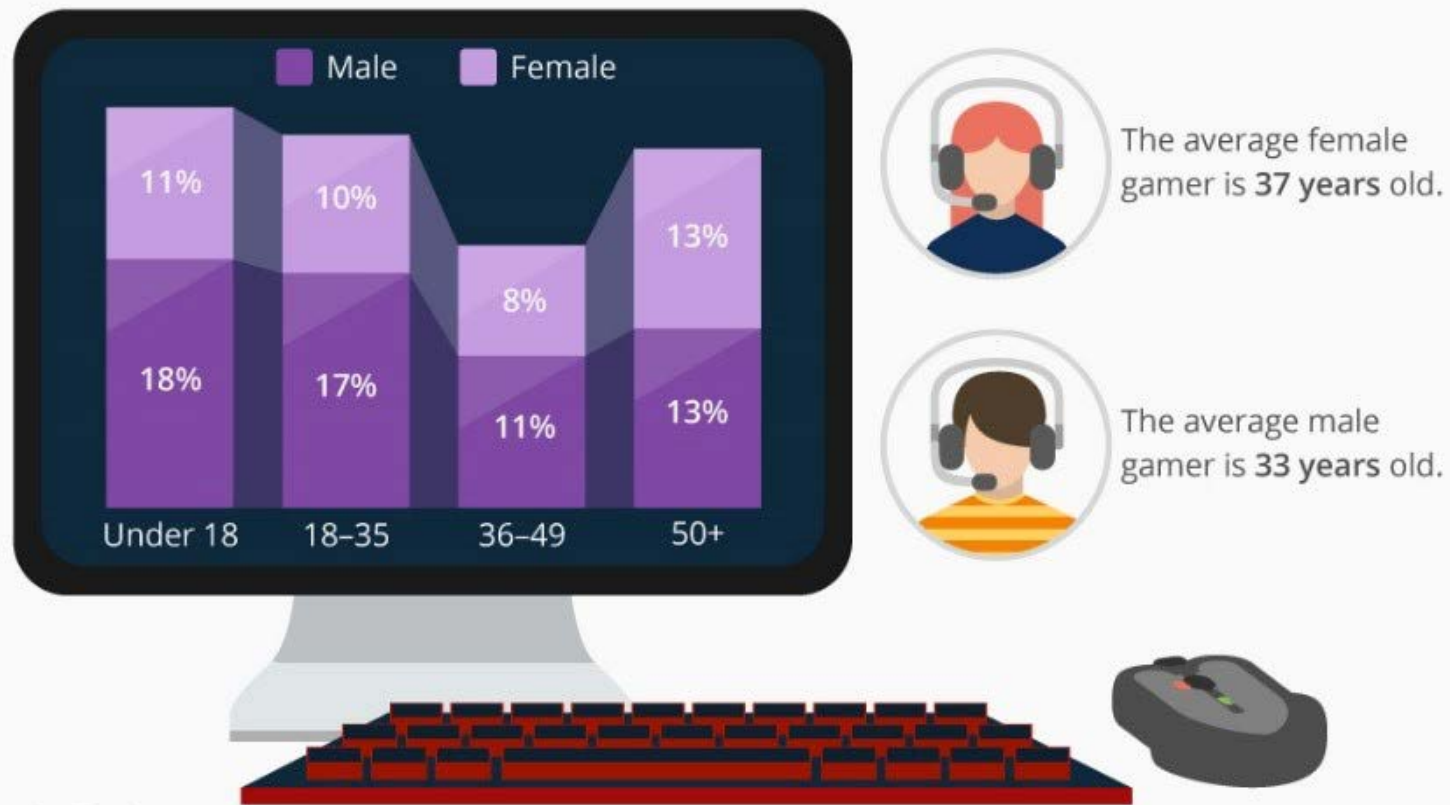▶ Is our future "Fortnite and Chill?"

▶ Is that bad?

NETFLIX

The industry itself uses terminology that acknowledges gaming is like gambling

▶ Being a "whale" carries a different weight for each company. Fifth planet games, developer of social games for both casual and hardcore audiences, starts classifying its players as whales when they spend $100 or more a month. That's a big jump from whales on Facebook, for instance, where social gamers could drop $25 per month to meet the same qualification.

▶ 5th Planet chief executive Robert Winkler revealed at the Game Developers Conference Online in 2012 that with its game Clash of the Dragons, 40 percent of revenue came from 2 percent of players who spent $1,000 or more. Ninety percent came from those who spent $100 or more, and the top whale had spent $6,700.

▶ "We've found that most players are more willing to spend money to help out their fellow gamers than to try to defeat them," he said. "As an example, players who take part in our 'guilds,' or groups of players who come together to accomplish communal missions, are 8.5 times more likely to monetize than players who do not belong to a guild, and the ARPU [average revenue per user] of players in our guilds is 53 times higher than other players."

  ▶ Details from "What it means to be a whale" by Stephanie Carmichael in Venturebeat

Roughly 160 million American adults play internet-based games, one recent study estimates.

Gaming Is Not a Question of Age or Gender

Age and gender breakdown of people playing computer and video games in the U.S. in 2017

Male Female

	Under 18	18–35	36–49	50+
Female	11%	10%	8%	13%
Male	18%	17%	11%	13%

The average female gamer is **37 years** old.

The average male gamer is **33 years** old.

@StatistaCharts   Source: Entertainment Software Association

statista

Gender Disparity

- Heteronormative gender roles the norm

- Gamergate

- Hyper-sexualized depiction of women

- Often choose a male avatar

  - Strategy to handle harassment

- Male characters 4 times as likely

  to be portrayed on cover as females

  (Burgess MC 2007)

- Issues with gaming disorder often

  Are not identified

Prevalence

- Varies in studies in Different countries
- Also has often been measured via different (and sometimes nonvalidated) tools, and is often based on self-reported symptoms
- The inconsistency in definition has led to a lack of clarity regarding the scope of the issue
  - Clarification of diagnostic criteria is of paramount importance

It's not all bad, there have been positive effects noted with use of video games

▶ EndeavorRx is a video game that has been approved to be a prescription treatment for ADHD

  ▶ Children aged 8-12

  ▶ Approved June, 2020

Per APA:

- A study published in *American Journal of Psychiatry* in March 2017 sought to examine the validity and reliability of the criteria for internet gaming disorder, compare it to research on gambling addiction and problem gaming, and estimate its impact on physical, social and mental health. The study found that among those who played games, most did not report any symptoms of internet gaming disorder and the percentage of people that might qualify for internet gaming disorder is extremely small.

- The research involved several studies of adults in the U.S., United Kingdom, Canada and Germany. They found more than 86 percent of young adults ages 18 to 24 and more than 65 percent of all adults had recently played online games. The percentages of men and women who recently played was roughly equal. However, the research is mixed on whether those who met the criteria for internet gaming disorder had poorer emotional, physical and mental health than those who did not meet the criteria.

- The researchers found that 0.3 to 1.0 percent of the general population might qualify for a potential diagnosis of internet gaming disorder. The authors suggest there is an important distinction between passionate engagement (someone enthusiastic and focused on gaming) and pathology (someone with an illness/addiction). Whether the person is distressed with his/her gaming may be the key factor distinguishing the two.

Let's consider the broader structural issues with the internet

- **"If you are not the customer, then you are the product"**

- "There are only two industries that call their customers 'users': illegal drugs and software"

   -Edward Tufte

- It is fascinating how many of the engineers behind video games and software systems discuss specifically a goal of "dopamine hits". For those of us who work in addiction, this gets our attention.

  - Of note, this term is often thrown around without underlying truth, but appears to truly apply in these situations. For one thing, psychologists are employed to specifically make these systems more addictive, and hard to leave

Stanford Center for Persuasive Technology

- A class on how to make technology irresistible, and specifically how to manipulate human behavior manipulating technology

  - "Persuasion is intuitive, but thinking about it systematically is not" –B.J. Fogg

- Led by B.J. Fogg, PhD and founded in 1998

  - In an interview with the MIT Technology Review in 2010, he is quoted as saying, "the web is not about information, it's about influence"

  - As of 2010, Fogg had identified 15 categories of target behaviors, characterized by type and frequency. Is the behavior new or familiar? Do you want to increase it, decrease it, or stop it altogether? Do you want the change to happen once, many times, or for a lifetime? (try it at- www.behaviorwizard.org)

- Specifically encourages the "Move fast and break things" ethos, in Silicon Valley

- Trained many of the key designers of the systems at Facebook, Google and Instagram

- Tristan Harris, one of his students, has now created the center for Humane Technology, actively involved in highlighting these issues

Manipulation in action (AKA: gamification)

▶ There is a whole field called "growth hacking", which involves teams of people working on how to grow their user base, using whatever means necessary

▶ One key feature of this field is it is done WITHOUT the users understanding or awareness

▶ Perform scientific a/b testing on users to perfect algorithms

   ▶ E.g.: A is news from reputable news sources and B is emotional content created by your uncle about same topic (Algorithm will tilt towards B to keep you involved)

▶ End-result: per MIT, Fake news propagates 6 times faster than real news

   ▶ TRUTH IS BORING

Coronavirus has been a horrific example of this

- Real-time disaster is being fueled by misinformation, propagated by social media and internet algorithms
  - As of this lecture, >195,000 US citizens have died or coronavirus
- People are blowing up cell phone towers because of theories of 5G causing coronavirus
- Simple infection control measures have become politically toxic
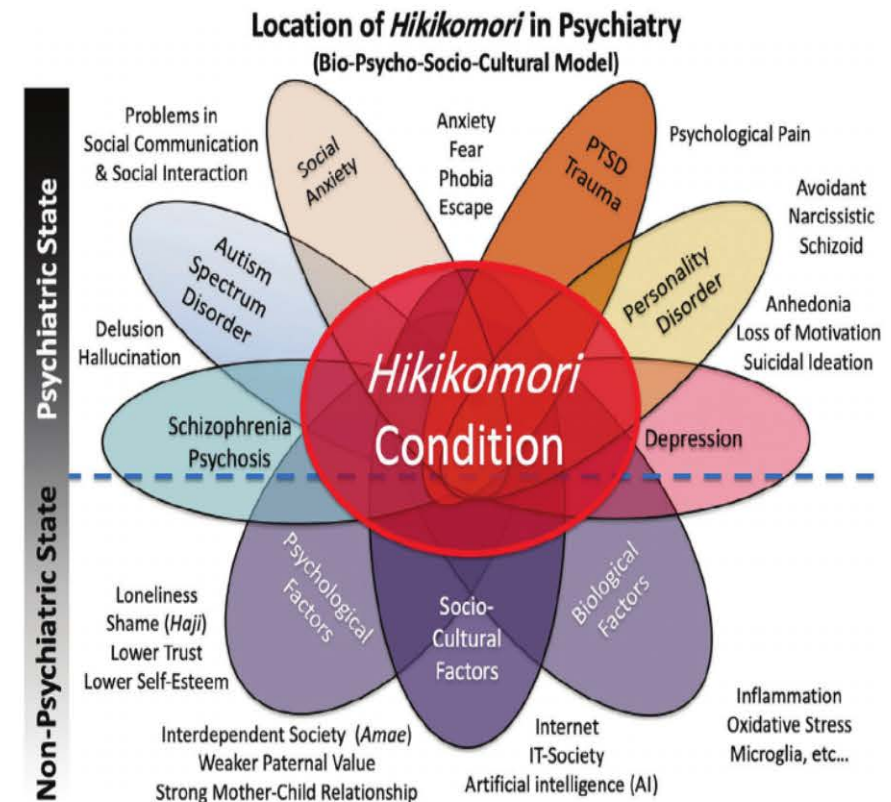
Facebook and emotional contagion

- In 2014, an experiment of 689,003 unknowing users on facebook randomized people to receive either more positive or more negative items in their news feed; of note they did find a (small but in aggregate powerful) trend of positive posts leading to more positive posts and the same with negative (Kramer et al 2014)

- Of note, neutral posts resulted in "reduced words produced" than either positive or negative posts

- Experiment took place over 1 week in January, 2012

- This study was controversial as users were not informed of this experimentation, and after backlash Facebook became less transparent re: their research, but did not stop

We compare our insides to other people's outsides (FOMO)

Hikokomari: Japanese cultural phenomenon

▶ Being isolated for over 6 months, even if leaving the house, but then not interacting with anyone

▶ Some psychiatrists consider this syndrome to be a precursor to suicide

▶ Nearly 1.2 million people are identified this way; 1 in 60 of Japanese age 15 to 64

▶ Often associated with extreme family shame, and condition is hidden

▶ 3 types: associated with: depression; schizophrenia;

Autism spectrum disorder

Location of *Hikikomori* in Psychiatry
(Bio-Psycho-Socio-Cultural Model)

Psychiatric State

Non-Psychiatric State

Problems in Social Communication & Social Interaction

Social Anxiety

Anxiety Fear Phobia Escape

PTSD Trauma

Psychological Pain

Avoidant Narcissistic Schizoid

Autism Spectrum Disorder

Personality Disorder

Anhedonia Loss of Motivation Suicidal Ideation

Delusion Hallucination

Schizophrenia Psychosis

Hikikomori Condition

Depression

Psychological Factors

Socio-Cultural Factors

Biological Factors

Loneliness Shame (*Haji*) Lower Trust Lower Self-Esteem

Interdependent Society (*Amae*) Weaker Paternal Value Strong Mother-Child Relationship

Internet IT-Society Artificial intelligence (AI)

Inflammation Oxidative Stress Microglia, etc...

Honjuk: A similar phenomenon in South Korea (hon- alone, jok- tribe)

► In 2016, there were 5 million single householders (28% of households) in South Korea

  ► Per Korean statistical information services

  ► Significant change towards individualism in a traditionally collective society

► Per world bank date, there has been a dramatic drop in the country's fertility rate -- from 6.1 births per woman in 1960 to just 1.2 in 2015
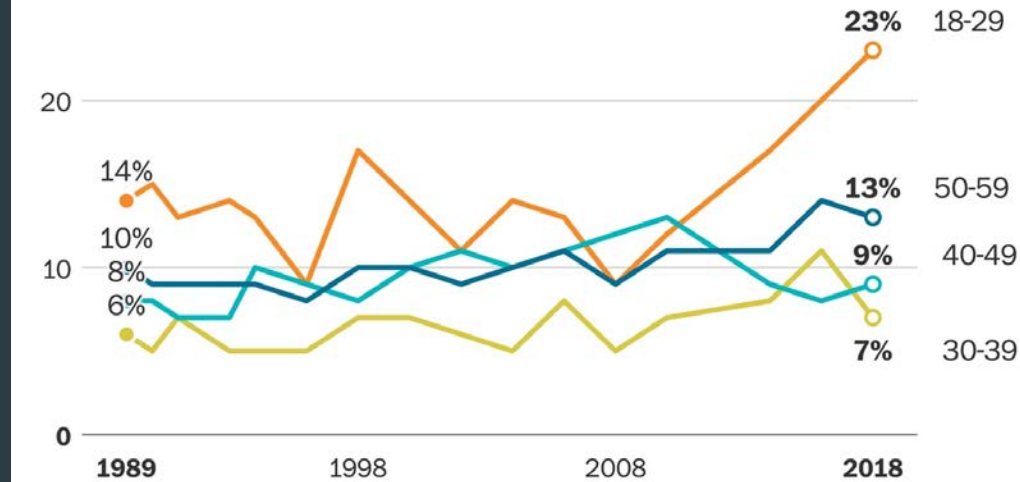
Of note
Single households per US Census in 2019. . .
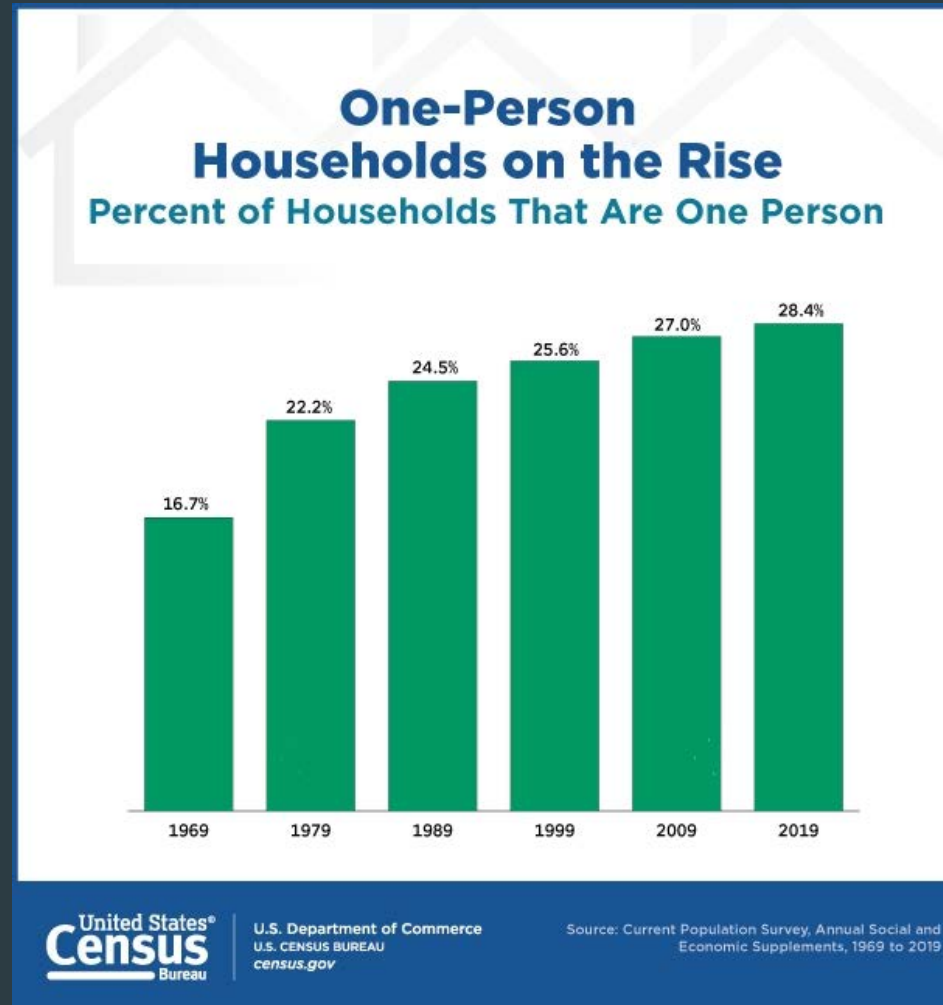
Other powerful changes in social structure and culture have rapidly occured

Lack of sex is driven mainly by the young
Percent reporting no sex in the past year, by age

23% 18-29
14%
13% 50-59
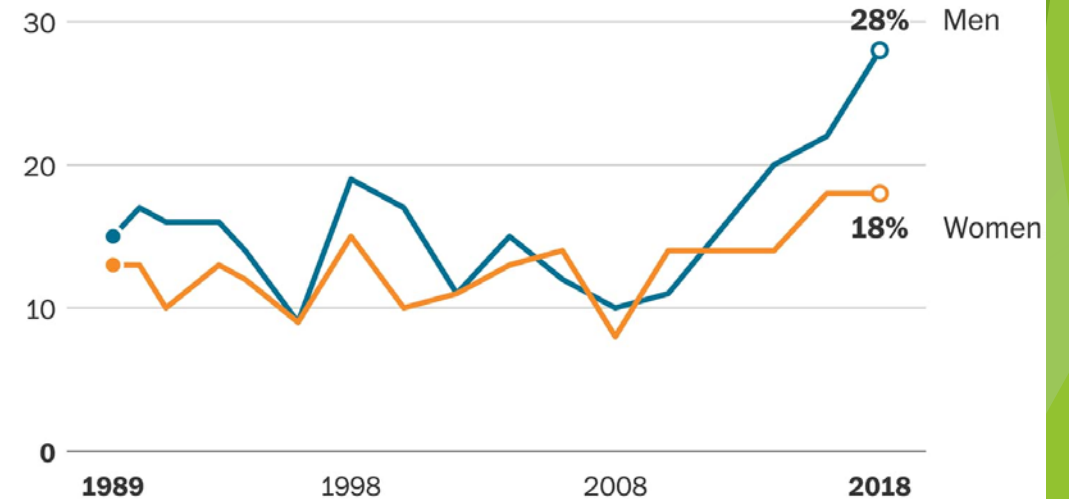10%
8%
9% 40-49
6%
7% 30-39

1989   1998   2008   2018

Note: Rates of no sex among adults over age 60 have consistently hovered around 50 percent and are not shown here.

Source: General Social Survey   THE WASHINGTON POST

Young men driving the decline in sex
Share of men and women between ages 18 and 30 reporting no sex in the past year

28% Men
18% Women

1989   1998   2008   2018

Source: General Social Survey   THE WASHINGTON POST

Incels (Part of the "manosphere")

- Per the "Urban Dictionary":

- "Abbreviated term for the compound 'Involuntary Celibate'. In Darwinian terms a person deemed 'least fit to reproduce', manifested in social terms as someone unable to copulate due to the absence of even a single willing partner. More typically male than female. Hangs around on internet forums generally blaming females for this undesirable condition. "

- Of note, multiple male "incels" have been radicalized online and committed mass murder

  - Elliot Rodger killed 6 people in a stabbing spree in Isla Vista California in 2014

    - Son of a Hollywood film-maker, who wrote a 141 page document regarding his frustration over remaining a virgin, and twisted this into a deep loathing of women

    - "I will punish all females for the crime of depriving me of sex," he said in the video, posted to YouTube while he was at Starbucks. "They have starved me of sex for my entire youth, and gave that pleasure to other men."

  - Chris Harper-Mercer, also involuntary celibate and on the autism spectrum when he murdered nine people before turning the gun on himself at Oregon's Umpqua Community College in 201

  - Alek Minassian: committed mass murder in by plowing a van into a crowd of people in Toronto and posting on facebook a call for "incel rebellion" in 2018

Filter bubbles

- We are all being reshaped by hidden algorithms

- You may think of a google search as showing objective reality, it is NOT

- It is shaped by the goal of keeping you on your computer and maximizing engagement with the product to sell ads (same applies to Instagram, facebook, tiktok,etc)

- Thus, we are shown items the algorithm expects we would like to see and over time we teach our computer to essentially radicalize us

- If the model of you that has been created predicts you don't click on news, the algorithm will place websites containing news lower in your search results, because the goal is to maximize screen time

  - This occurs also with political "filters"

  - One person's panther search shows all about the cats, another the football team

- The end result of this is that we no longer share in a set of objective facts with resulting difficulties in relating to each other

- BUT- the result of this is also more and more time spent staring at our screens

- It is also hidden and kept proprietary, thus we cannot have an open social conversation about the issue

Of note, In 2017 facebook pitched targeting vulnerable teens to advertisers

- According to the report, the selling point of this 2017 document is that Facebook's algorithms can determine, and allow advertisers to pinpoint, "moments when young people need a confidence boost." If that phrase isn't clear enough, Facebook's document offers a litany of teen emotional states that the company claims it can estimate based on how teens use the service, including "worthless," "insecure," "defeated," "anxious," "silly," "useless," "stupid," "overwhelmed," "stressed," and "a failure."

- *The Australian* says that the documents also reveal a particular interest in helping advertisers target moments in which young users are interested in "looking good and body confidence" or "working out and losing weight." Another section describes how image-recognition tools are used on both Facebook and Instagram (a wholly owned Facebook subsidiary) to reveal to advertisers "how people visually represent moments such as meal times."

Machkovech, S 2017 in Ars Technica

Social media use correlates with depression

▶ Issues with sleep predispose to depression for adolescents, and at this time 60% of teenagers use their phone in the hour before bed.

▶ A 2017 study of over half a million eighth through 12th graders found that the number exhibiting high levels of depressive symptoms increased by 33 percent between 2010 and 2015. In the same period, the suicide rate for girls in that age group increased by 65 percent.

   ▶ Social media in many studies found to be more dangerous for girls

▶ Smart phones are ubiquitous; they were introduced in 2007, by 2015, 92% of young adults and teenagers had them.

Various subheadings of problematic behavior

- Internet shopping (Amazon, Zulily)
- Social Media Use
- Pornography
  - In 2015 per psychology today, 4% of the web contains pornography, and 10-15% of internet searches are for pornography (Ogas and Gaddam 2012)
  - "The internet is for porn"; Song by Avenue Q
- Online Gambling
  - A specific kind of Gambling Disorder, which is in the DSMV

Neuroanatomy of internet use

- Just like with substance use disorders, the reward system of the brain is hijacked and because less responsive to "natural" rewards like food and achievement

- Each new level or completed mission (or "like" on Instagram) provides a small hit of dopamine in the brain

- Social Media is set up with intermittent variable rewards (operant conditioning model)

  - Operant conditioning can result in dramatic changes in behavior, this is how B.F. Skinner taught pigeons to play ping-pong

  - Per experiments with mice, these are the most reinforcing, and would result in the most compulsive lever pressing of any reward schedule

  - You never know when you will obtain "likes", so you compulsively keep trying

Cognitive strategies that reduce barrier to ongoing obsessive use

- FTP games: Instead of buying a game outright and owning the content, which you can play as much as you want, these games are initially free but then offer in-app purchases of "extras" required to do well in the game
  - Also known as "free-to-start"
  - "Fortnite" is best-known example
- Commonly use fake currency (such as "gems"), which offers a dissociative effect on spending; "it's not real money"
- Hire psychologists with the goal of perfecting "persuasive design" focused on "user experience"
  - Prototype is B.J. Fogg, a neuroscientist at Stanford who has done both consulting and trained many other "user experience" experts; founder and director of the "Behavior Design Lab"

Part of the issue is what you are NOT doing,
esp for adolescents and children
(Brain is a use-dependent organ)

What interventions can help?

No one is talking about prohibition of the internet, this is an issue of scope

- ▶ E.g., the vast majority of people who drink alcohol do not have alcohol use disorder and drink recreationally
- ▶ At some point, alcohol use begins to interfere with normal functioning and issues develop with other areas of life (physical health, work, relationships and mental health)
- ▶ The vast majority of people who use the internet do so without harm

Treatments of internet gaming disorder: a systematic review of the evidence (Zajac 2020)

▶ 22 studies were included in this review with 7 evaluating medications, 8 evaluating cognitive-behavioral therapy, and 7 evaluating other non-medication approaches.

▶ In summary, the research on medications for IGD is inconclusive. Bupropion shows some promise but remains in initial stages of evaluation. There was no evaluation of naltrexone in these studies (established treatment for gambling disorder).

▶ Current evidence shows mixed outcomes for cognitive-behavioral therapy Additional research is needed on these approaches.

▶ In general, weaknesses in the designs of the reviewed studies, including lack of appropriate control groups, nonrandom assignment to treatment conditions, and small sample sizes, prevent strong conclusions about the efficacy of treatments for IGD.

Modeling

- OF NOTE, the most powerful thing we do is MODEL BEHAVIOR

- As I create this, I am in a rural cabin, hunched over my screen, with my kids begging for my attention and outside roasting marshmallows

- A great thing is to find a local showing of the movie "Screenagers", I took my kids twice, and now they call me a "Scrownup"

- Physician, first heal thyself

Per the book "Pause and Reset" by Dr. Nancy Petry

► In treating adolescents struggling with video gaming use disorder, it is often helpful to focus on assisting parents in effectively setting boundaries

► The adolescent may not be able to recognize the problems obvious to outsiders, despite objectively noticing problems in their lives and functioning

► The general behavioral treatment paradigm is focused on rewarding and replacing alternative behaviors to gaming, NOT PUNISHMENT

   ► Step 1: Record: Monitor and Set Limits on Gaming

   ► Step 2: Replace: Finding healthy recreational activities

   ► Step 3: Reward: Positive reinforcement for nongaming
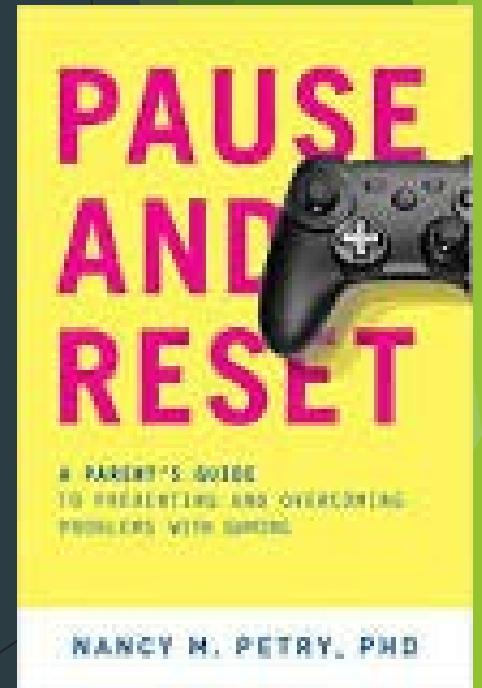
Times Change. . . So stay tuned

Thank You!!!

Please contact me with any questions at Emily.ann.Youssef@gmail.com

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