Mental Health in HCI

UPenn Foundations & Frontiers
Talie Massachi
Spring 2026

Questions coming into today

Facebook Emotional Contagion Study

If you were on a review committee evaluating this study, what specific questions or concerns would you raise? What implication of this paper do you think had such a strong impact on the general public?

StudentLife Study

What do you think are the potential pros and cons of this type of research? Consider the validity of the research, the claims the researchers can make, and the potential future outcomes as a result of this work.

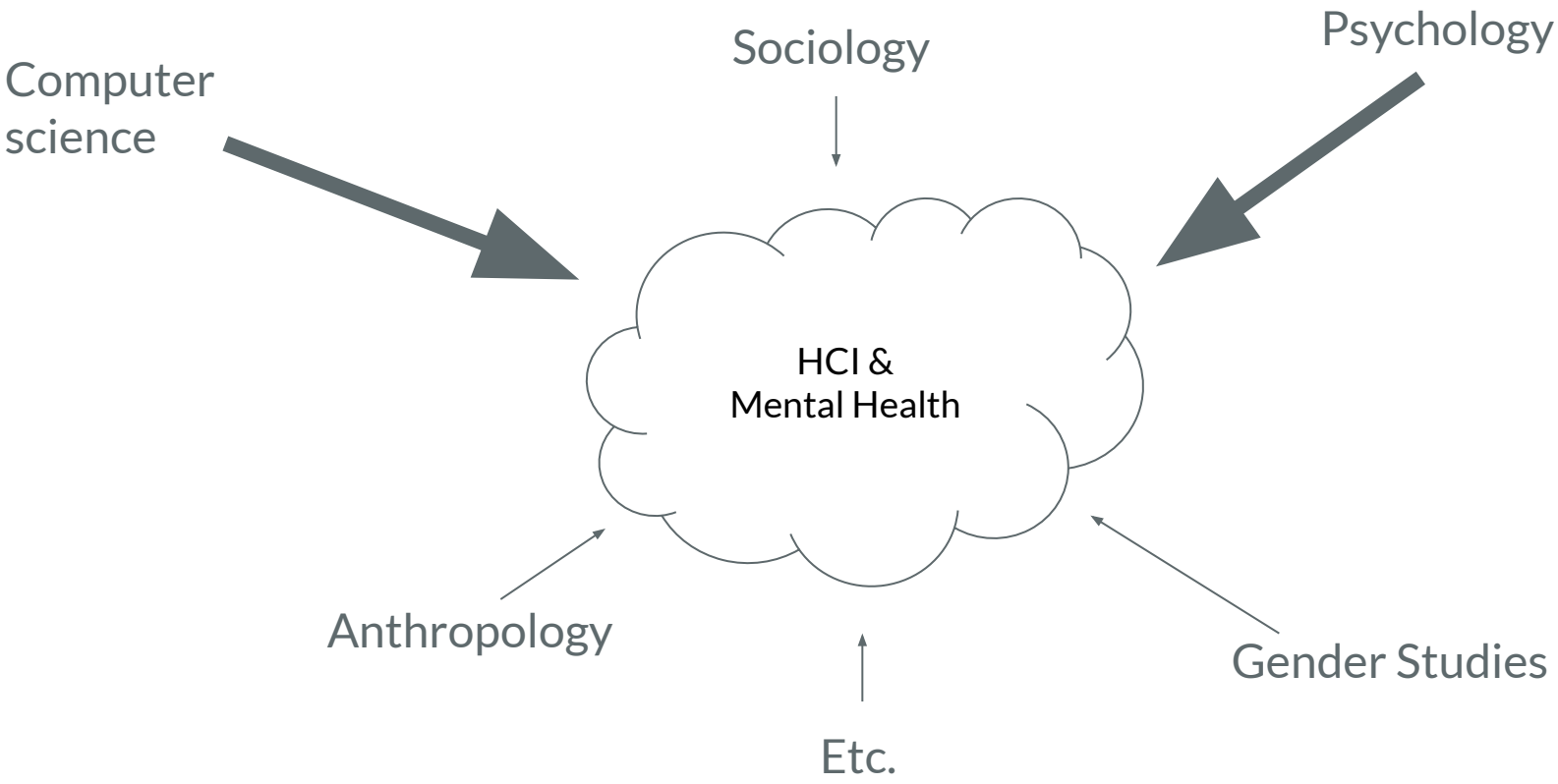
Some content warnings

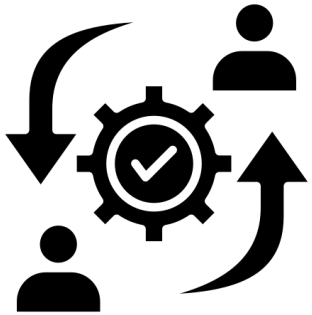
Mental health is a difficult topic to discuss, particularly from a historical perspective. Throughout history, people have held views that we now recognize as incorrect, harmful, or offensive.

Today I may mention certain views that you strongly disagree with or find upsetting. Please note that I am presenting these views as my own. I am describing perspectives that were held by authors and communities at the time.

Also of note, this talk will briefly reference some heavy topics, including violence, mental illness, sexual violence, and disordered eating.

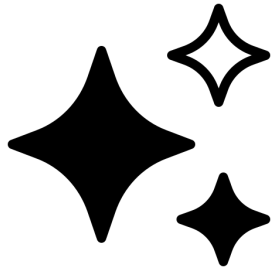
I will not be discussing these in detail, but if you find even brief mentions distressing, please feel free to step outside, take a break, or leave the talk at any time.


Computer science
Sociology
Psychology
HCI &
Mental Health
Anthropology
Etc.
Gender Studies

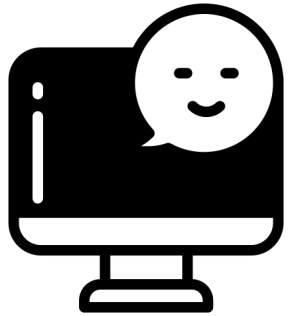


Translating traditional support

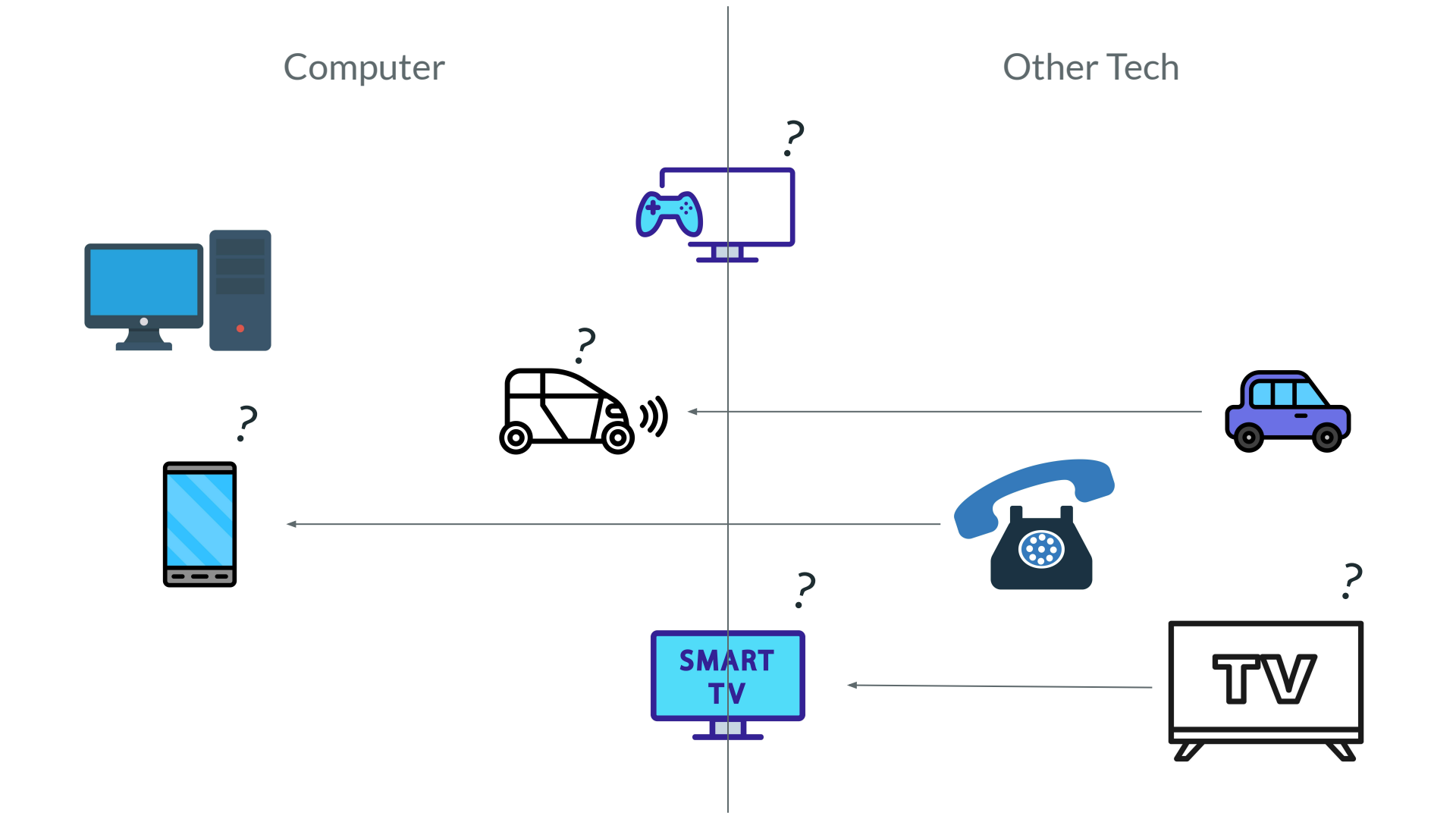
Detection and measurement

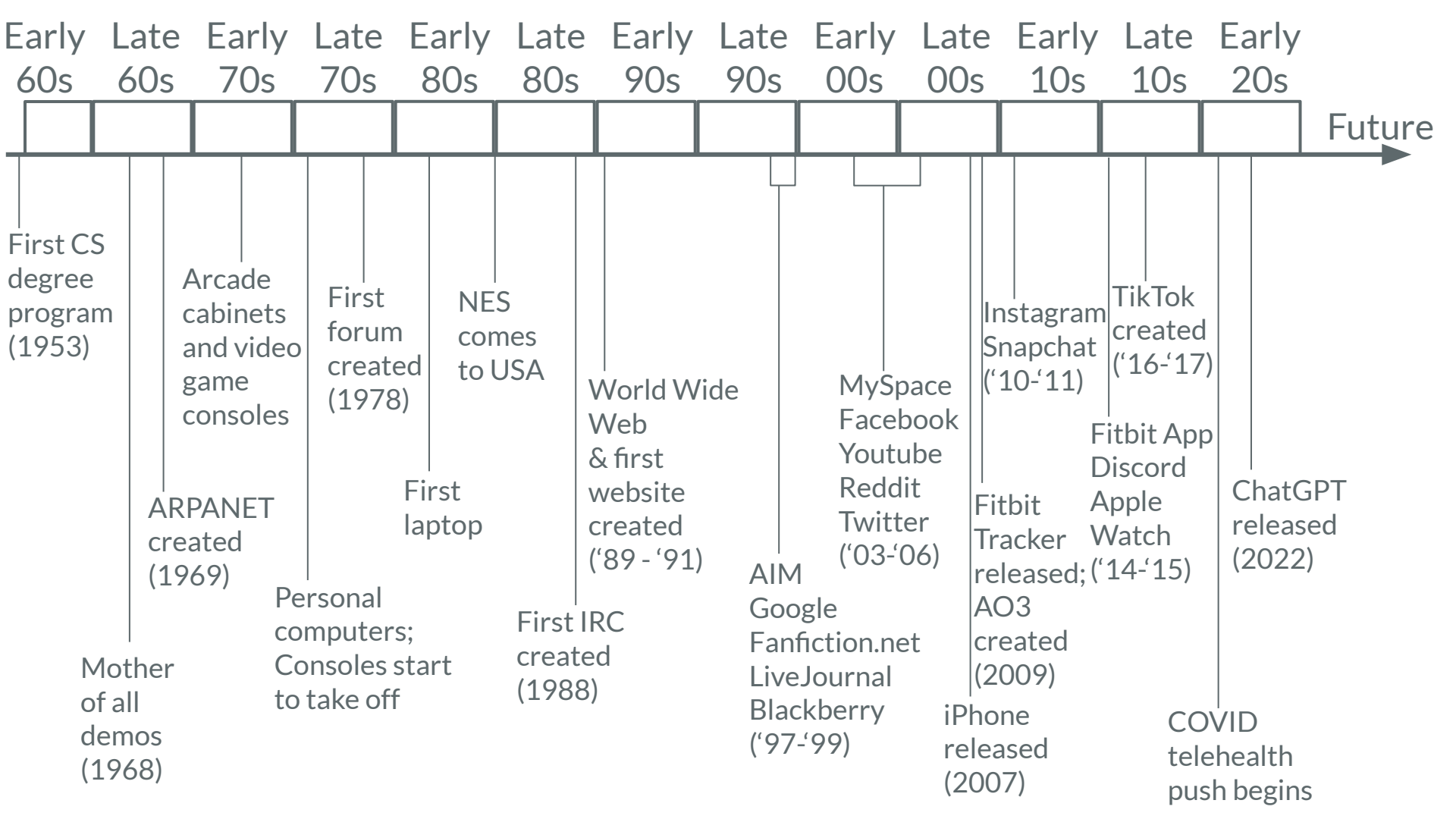


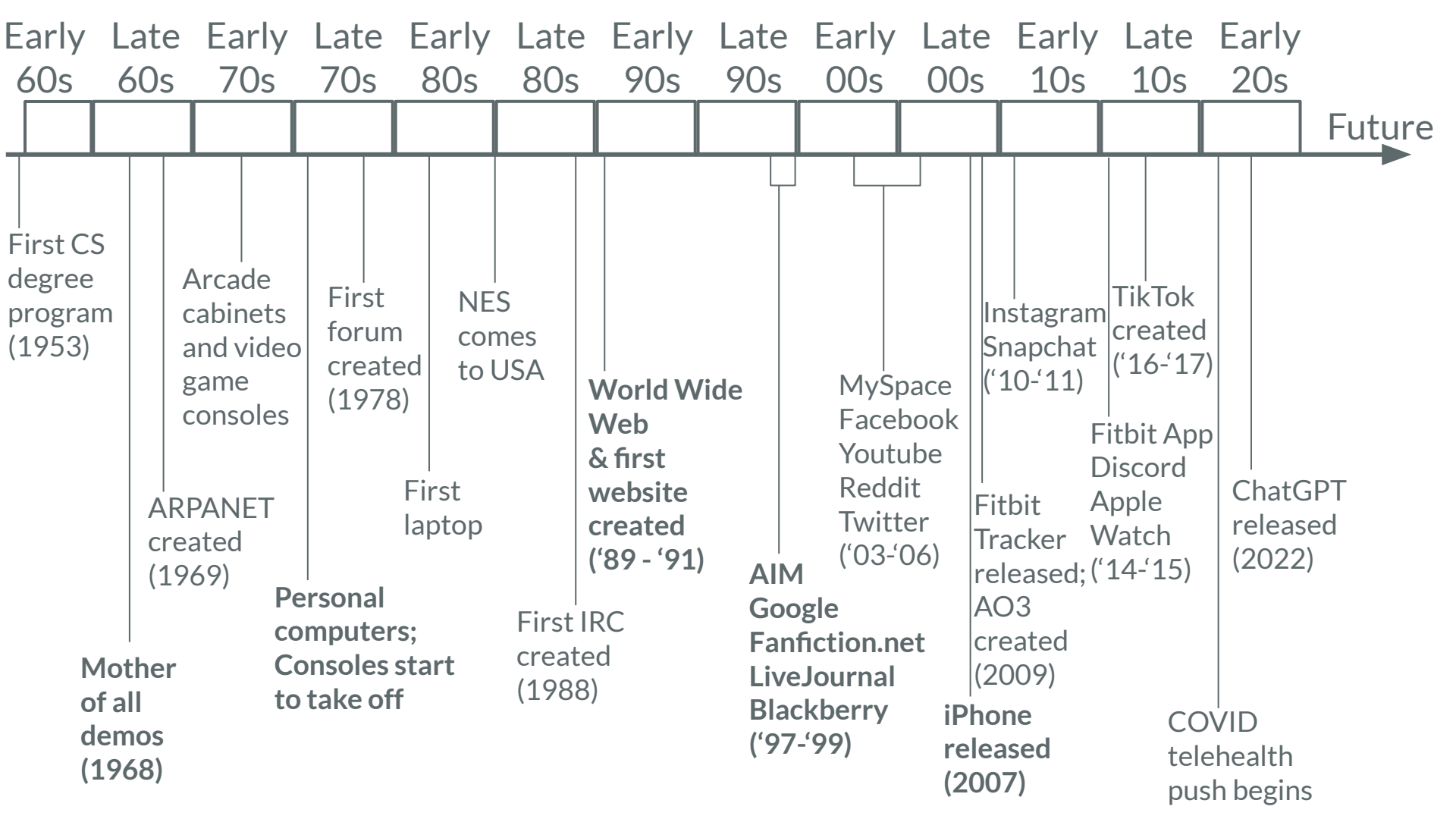
Developing novel interventions

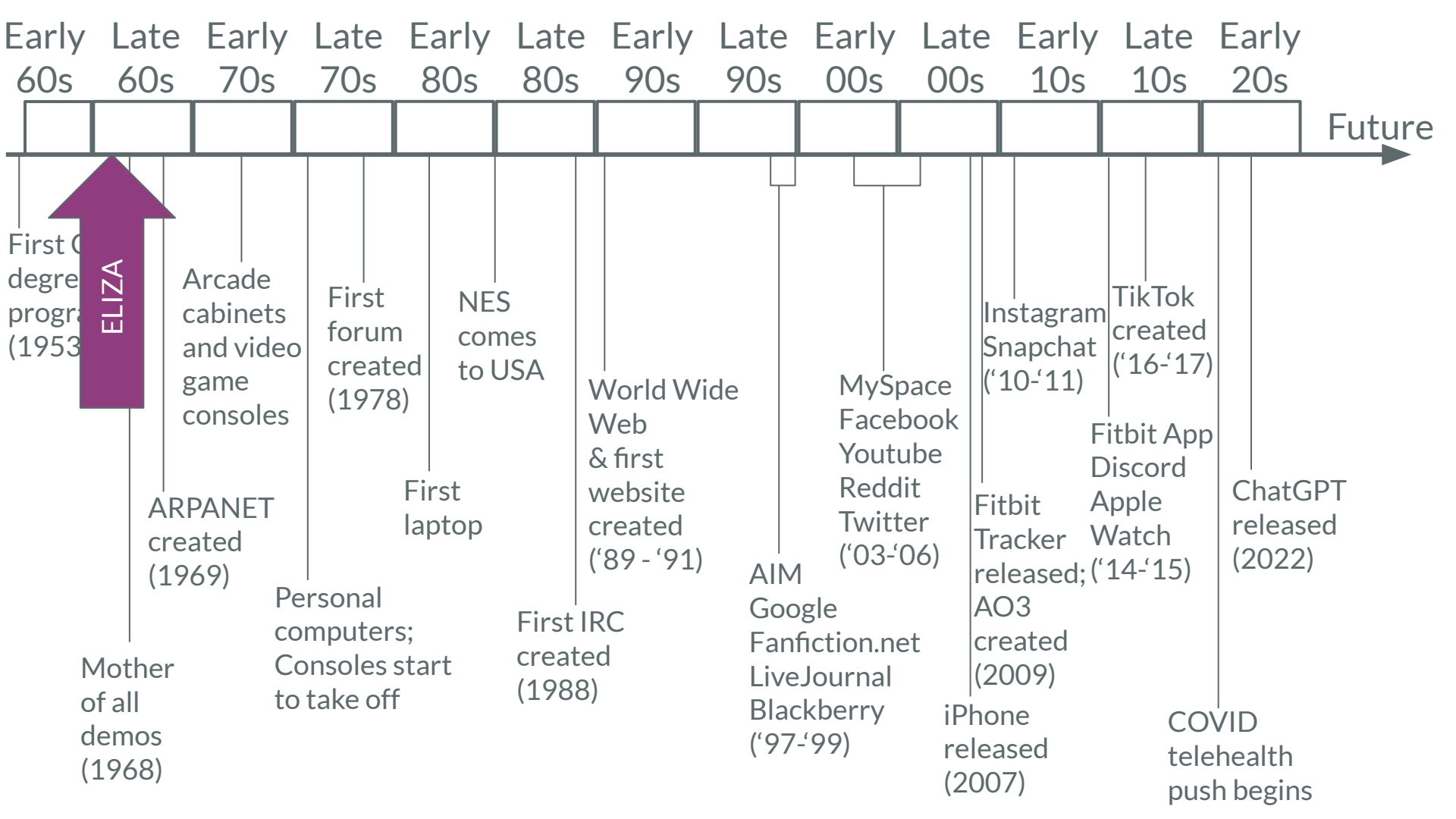


Understanding effects of regular use


Computer
Other Tech
?
?
?
?
?
?
SMART
TV
TV


Early 60s
Late 60s
Early 70s
Late 70s
Early 80s
Late 80s
Early 90s
Late 90s
Early 00s
Late 00s
Early 10s
Late 10s
Early 20s
Future
First CS degree program (1953)
Mother of all demos (1968)
ARPANET created (1969)
Arcade cabinets and video game consoles
Personal computers; Consoles start to take off
First forum created (1978)
First laptop
NES comes to USA
First IRC created (1988)
World Wide Web & first website created ('89 - '91)
AIM
Google
Fanfiction.net
LiveJournal
Blackberry
('97-'99)
MySpace
Facebook
Youtube
Reddit
Twitter
('03-'06)
iPhone released (2007)
Fitbit Tracker released; AO3 created (2009)
Instagram
Snapchat
('10-'11)
Fitbit App
Discord
Apple Watch
('14-'15)
TikTok created ('16-'17)
COVID telehealth push begins
ChatGPT released (2022)


Early 60s
Late 60s
Early 70s
Late 70s
Early 80s
Late 80s
Early 90s
Late 90s
Early 00s
Late 00s
Early 10s
Late 10s
Early 20s
Future
First CS degree program (1953)
Mother of all demos (1968)
ARPANET created (1969)
Arcade cabinets and video game consoles
Personal computers; Consoles start to take off
First forum created (1978)
First laptop
NES comes to USA
First IRC created (1988)
World Wide Web & first website created ('89 - '91)
AIM
Google
Fanfiction.net
LiveJournal
Blackberry
('97-'99)
MySpace
Facebook
Youtube
Reddit
Twitter
('03-'06)
iPhone released (2007)
Fitbit Tracker released; AO3 created (2009)
Instagram
Snapchat
('10-'11)
COVID telehealth push begins
Fitbit App
Discord
Apple Watch
('14-'15)
TikTok created ('16-'17)
ChatGPT released (2022)

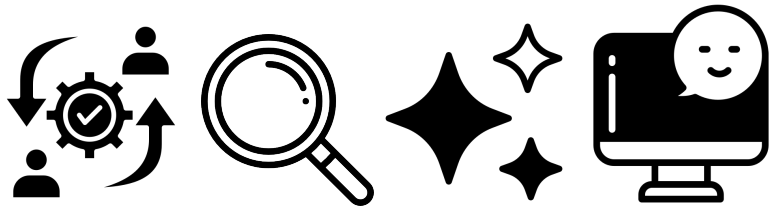

Early 60s
Late 60s
Early 70s
Late 70s
Early 80s
Late 80s
Early 90s
Late 90s
Early 00s
Late 00s
Early 10s
Late 10s
Early 20s
Future
First C degre progra (1953
ELIZA
Mother of all demos (1968)
ARPANET created (1969)
Arcade cabinets and video game consoles
Personal computers; Consoles start to take off
First forum created (1978)
First laptop
NES comes to USA
First IRC created (1988)
World Wide Web & first website created ('89 - '91)
AIM
Google
Fanfiction.net
LiveJournal
Blackberry
('97-'99)
MySpace
Facebook
Youtube
Reddit
Twitter
('03-'06)
iPhone released (2007)
Fitbit Tracker released; AO3 created (2009)
Instagram
Snapchat
('10-'11)
COVID telehealth push begins
Fitbit App
Discord
Apple Watch
('14-'15)
TikTok created ('16-'17)
ChatGPT released (2022)

Joseph Weizenbaum on ELIZA

The main points

- Using concepts from Carl Rogers' "reflective therapy" to build a chatbot

- People felt connected even with a basic program with pre-written lines parroted back to you. Including people who knew how the program worked were affected
- Weizenbaum thought this was terrifying

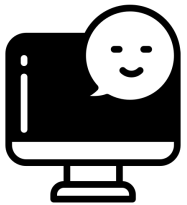


Joseph Weizenbaum on ELIZA

The main points

- Using concepts from Carl Rogers' "reflective therapy" to build a chatbot

- People felt connected even with a basic program with pre-written lines parroted back to you. Including people who knew how the program worked were affected
- Weizenbaum thought this was terrifying

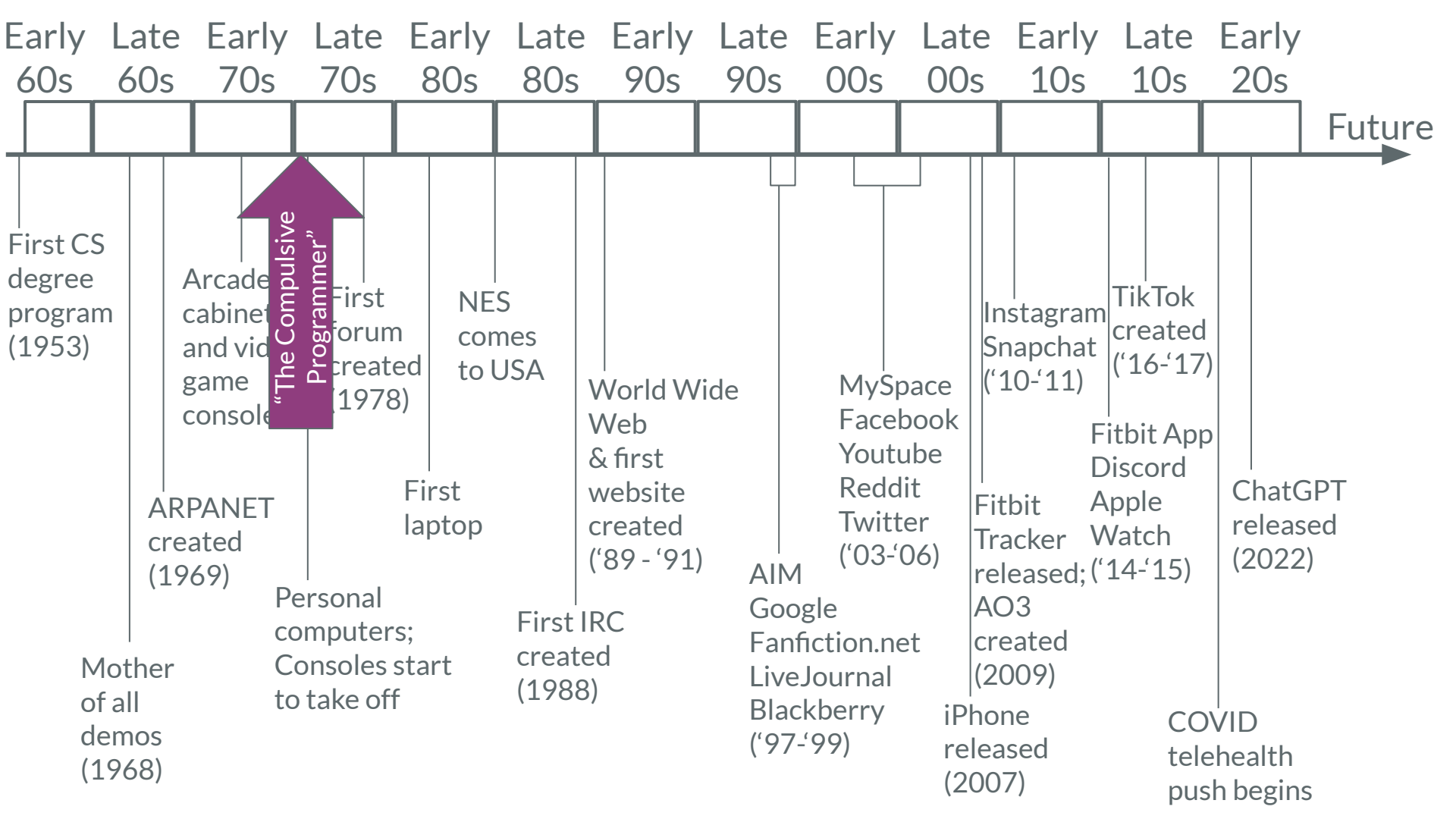


Joseph Weizenbaum on ELIZA

"With ELIZA as the basic vehicle, experiments may be set up in which the subjects find it **credible to believe** that the responses which appear on his typewriter are **generated by a human** sitting at a similar instrument in another room. How must the script be written in order to maintain the credibility of this idea over a long period of time?"

"ELIZA shows, if nothing else, **how easy it is to create and maintain the illusion of understanding**, hence perhaps of judgment deserving of credibility. A certain danger lurks there."

- Joseph Weizenbaum,
ELIZA — A Computer Program For the Study of Natural Language Communication Between Man And Machine (1966)


Early 60s
Late 60s
Early 70s
Late 70s
Early 80s
Late 80s
Early 90s
Late 90s
Early 00s
Late 00s
Early 10s
Late 10s
Early 20s
Future
First CS degree program (1953)
Mother of all demos (1968)
ARPANET created (1969)
Arcade cabinet and vid game console
"The Compulsive Programmer"
Personal computers; Consoles start to take off
First forum created (1978)
First laptop
NES comes to USA
First IRC created (1988)
World Wide Web & first website created ('89 - '91)
AIM
Google
Fanfiction.net
LiveJournal
Blackberry ('97-'99)
MySpace
Facebook
Youtube
Reddit
Twitter ('03-'06)
iPhone released (2007)
Fitbit Tracker released; AO3 created (2009)
Instagram
Snapchat ('10-'11)
COVID telehealth push begins
Fitbit App
Discord
Apple Watch ('14-'15)
TikTok created ('16-'17)
ChatGPT released (2022)

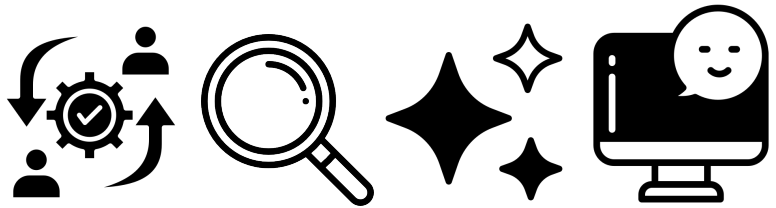
Joseph Weizenbaum on “The Compulsive Programmer”

The main points

- Some people (“young men”) are becoming obsessive over programming to a pathological degree
- This is driven by a need/desire for absolute control over a space
- Marked by the eschewing of basic living standards/hygiene/sustenance

Criticisms

- Small sample – observations of MIT students
- Vague observational study (they got much more rigorous in the 90s-00s)
- Ascribing reasoning without evidence (i.e. need for control)



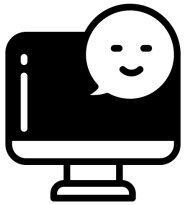
Joseph Weizenbaum on “The Compulsive Programmer”

The main points

- Some people (“young men”) are becoming obsessive over programming to a pathological degree
- This is driven by a need/desire for absolute control over a space
- Marked by the eschewing of basic living standards/hygiene/sustenance

Criticisms

- Small sample – observations of MIT students
- Vague observational study (they got much more rigorous in the 90s-00s)
- Ascribing reasoning without evidence (i.e. need for control)



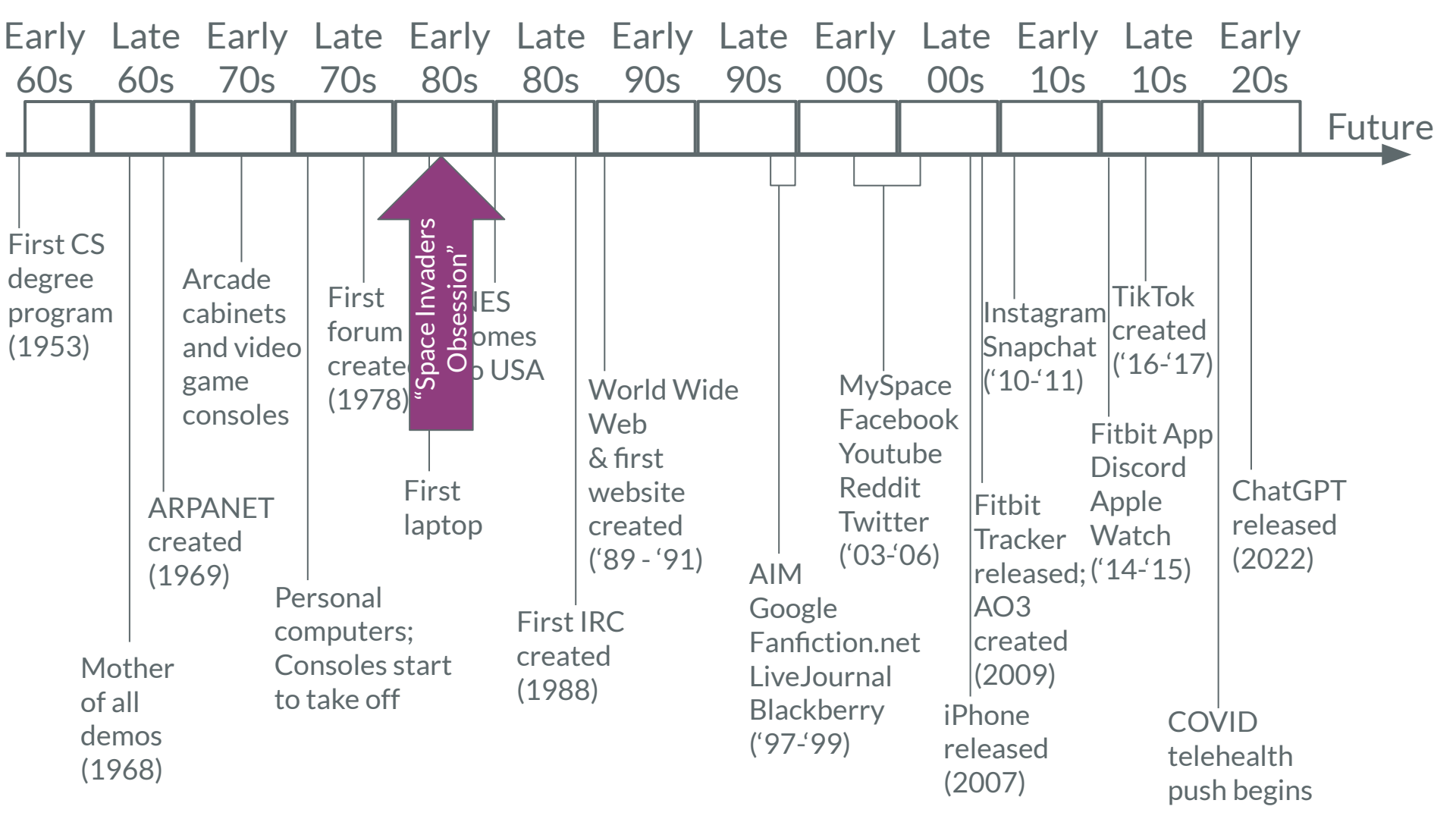
Joseph Weizenbaum on “The Compulsive Programmer”

“Wherever computer centers have become established, ... bright young men of **disheveled appearance**, often with **sunken glowing eyes**, can be seen sitting at computer consoles, their arms tensed and waiting to fire their fingers, already poised to strike, at the buttons and keys on which their attention seems to be as **riveted as a gambler**’s on the rolling dice.”

“The psychological situation **the compulsive programmer** finds himself in while so engaged is strongly determined by two apparently opposing facts: first, he knows that he can make the computer do anything he wants it to do; and second, the computer constantly displays undeniable evidence of his failures to him.”

- Joseph Weizenbaum,
Computer Power and Human Reason (1976)

With the growth of arcades and personal gaming consoles came questions about their effects


Early 60s
Late 60s
Early 70s
Late 70s
Early 80s
Late 80s
Early 90s
Late 90s
Early 00s
Late 00s
Early 10s
Late 10s
Early 20s
Future
First CS degree program (1953)
Mother of all demos (1968)
ARPANET created (1969)
Arcade cabinets and video game consoles
Personal computers; Consoles start to take off
First forum create (1978)
"Space Invaders Obsession"
First laptop
NES omes o USA
First IRC created (1988)
World Wide Web & first website created ('89 - '91)
AIM
Google
Fanfiction.net
LiveJournal
Blackberry ('97-'99)
MySpace
Facebook
Youtube
Reddit
Twitter ('03-'06)
iPhone released (2007)
Fitbit Tracker released; AO3 created (2009)
Instagram
Snapchat ('10-'11)
Fitbit App
Discord
Apple Watch ('14-'15)
TikTok created ('16-'17)
COVID telehealth push begins
ChatGPT released (2022)

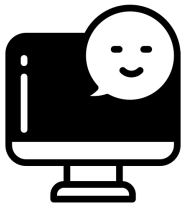
Space Invaders Obsession

The main points

- Case study of three men who played Space Invaders leading up to their weddings
- “Each quadrupled his frequency of playing the game (up to 15 times per week), and each reported fantasizing about it before falling asleep at night.”
- Stopped playing shortly after marriage
- Attributed to anger about the marriage

Criticisms

- Case study – tiny sample
- Described as “obsessional” playtime which isn’t defined according to the article
- Attributing emotional reasoning to observations without any backing or evidence

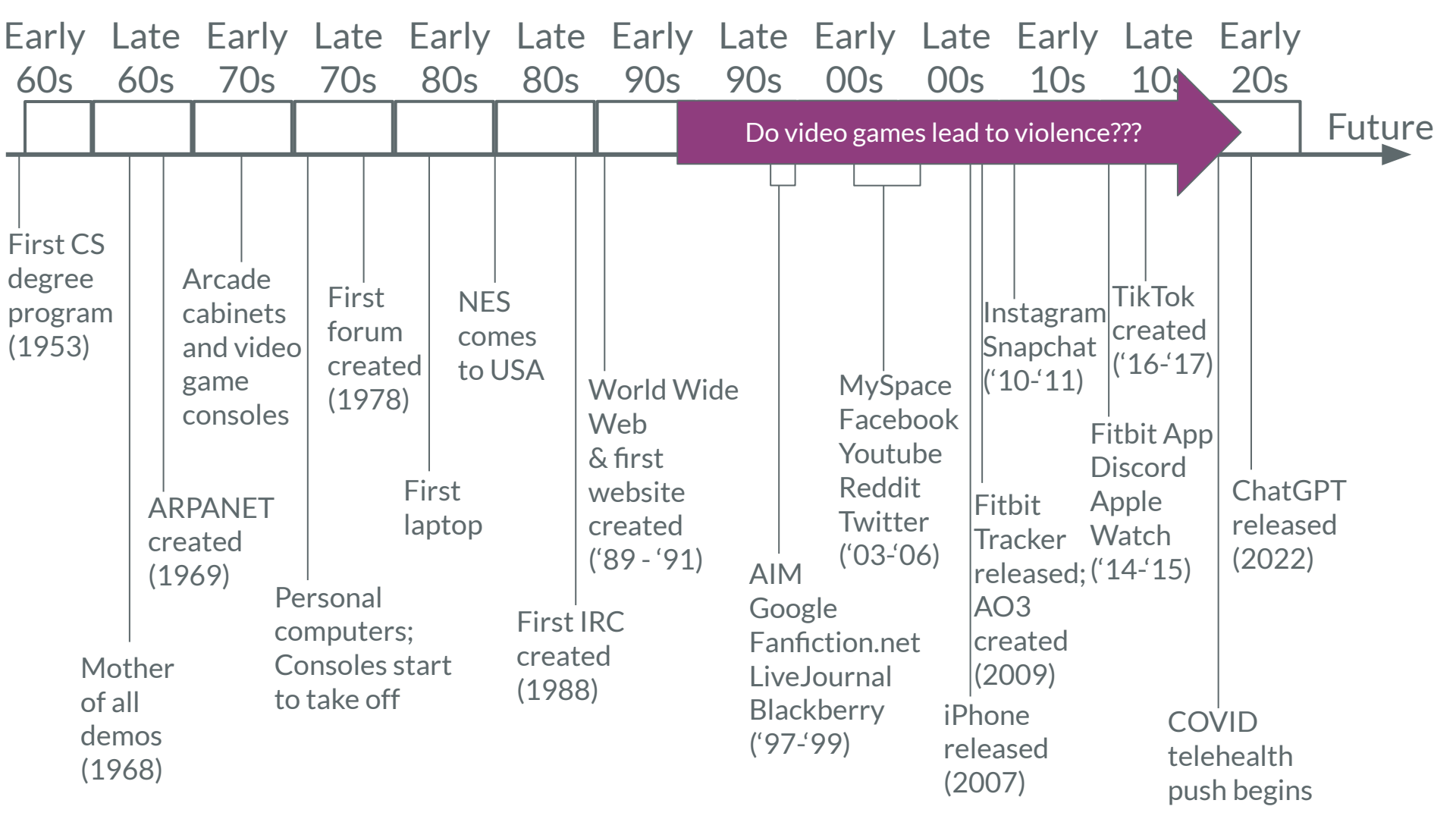


Space Invaders Obsession

“Of note have been recent reports of medical complications of playing Space Invaders. We wish to report a **psychiatric complication** of this game, which we have termed **Space Invaders obsession**. … We believe that each man's obsession with playing Space Invaders was a means of **handling his anger over the recent commitment to marriage**. The **disintegration** of invading aliens who were trying to overrun the "home base" **took on symbolic significance**. ”

- *Space Invaders Obsession*,
A Letter to The Journal of the American Medical Association, 1982

Video games and violent behavior


Early 60s
Late 60s
Early 70s
Late 70s
Early 80s
Late 80s
Early 90s
Late 90s
Early 00s
Late 00s
Early 10s
Late 10s
Early 20s
Future
Do video games lead to violence???
First CS degree program (1953)
Mother of all demos (1968)
ARPANET created (1969)
Arcade cabinets and video game consoles
Personal computers; Consoles start to take off
First forum created (1978)
First laptop
NES comes to USA
First IRC created (1988)
World Wide Web & first website created ('89 - '91)
AIM
Google
Fanfiction.net
LiveJournal
Blackberry
('97-'99)
MySpace
Facebook
Youtube
Reddit
Twitter
('03-'06)
iPhone released (2007)
Fitbit Tracker released; AO3 created (2009)
Instagram
Snapchat
('10-'11)
Fitbit App
Discord
Apple Watch
('14-'15)
TikTok created ('16-'17)
COVID telehealth push begins
ChatGPT released (2022)

Do video games teach kids to be more violent?

Yes

→ seeing violence desensitizes them to it

→ we learn from others and video games teach anti-social behavior

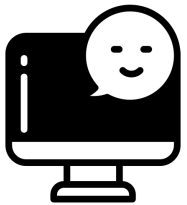
→ a number of reports on school shooters playing video games like Doom and Call of Duty

No

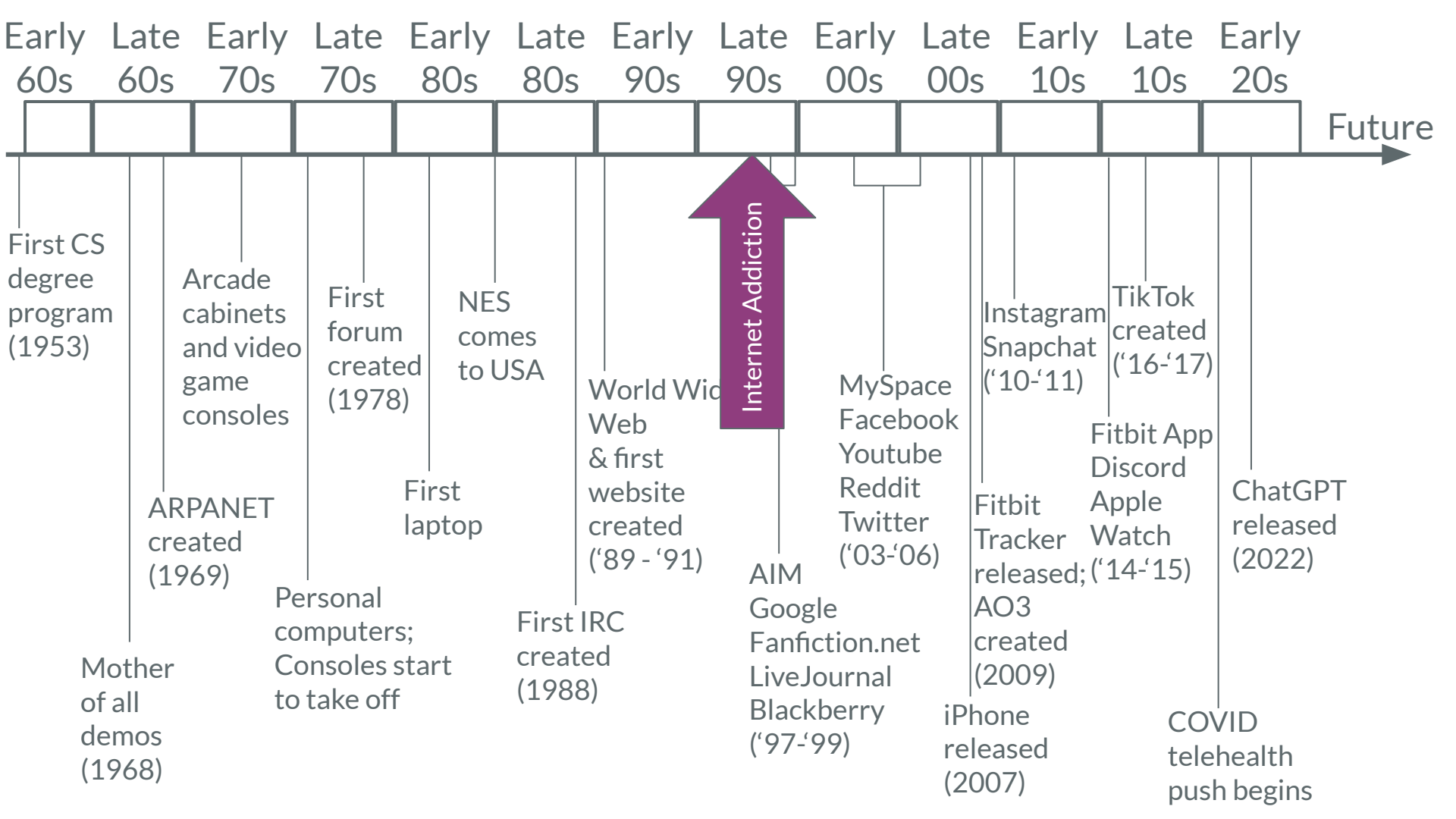
→ actually if you account for confounding variables, there is no statistically significant relationship

→ people who are already more violent are attracted to violent video games

→ Doom came out in the 90s, 20-30 years later there has been no increase in violence



With the web and the increased popularity of personal computers by the 90s “Internet Addiction” was coined as a new and scary term


Early 60s
Late 60s
Early 70s
Late 70s
Early 80s
Late 80s
Early 90s
Late 90s
Early 00s
Late 00s
Early 10s
Late 10s
Early 20s
Future
First CS degree program (1953)
Mother of all demos (1968)
ARPANET created (1969)
Arcade cabinets and video game consoles
Personal computers; Consoles start to take off
First forum created (1978)
First laptop
NES comes to USA
First IRC created (1988)
World Wid Web & first website created ('89 - '91)
Internet Addiction
AIM
Google
Fanfiction.net
LiveJournal
Blackberry ('97-'99)
MySpace
Facebook
Youtube
Reddit
Twitter ('03-'06)
iPhone released (2007)
Fitbit Tracker released; AO3 created (2009)
Instagram
Snapchat ('10-'11)
Fitbit App
Discord
Apple Watch ('14-'15)
TikTok created ('16-'17)
COVID telehealth push begins
ChatGPT released (2022)

Internet Addiction

"The current study found that some users [of the Internet] experience multiple usage-related problems and gave preliminary **support for the existence of tolerance, craving, and withdrawal** [which are necessary to claim an "addiction"]."

- Viktor Brenner,
Parameters of Internet use, abuse and addiction: the first 90 days of the Internet Usage Survey,
Psychological Reports, 1997

Internet Addiction

"In the majority of cases, dependents reported that their Internet use directly caused **moderate to severe problems in their real lives due to their inability to control use**."

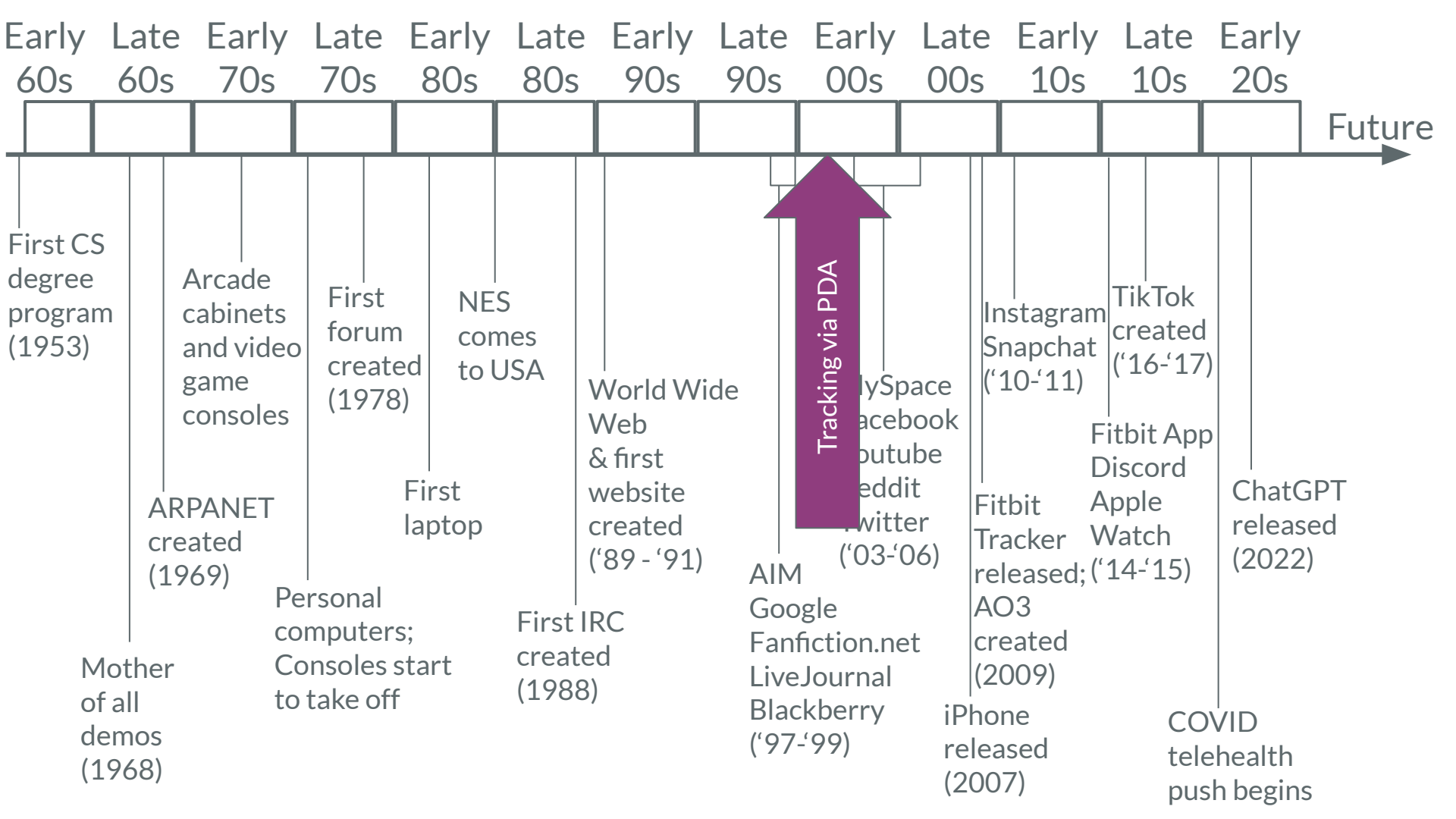
- Kimberly Young,
Internet Addiction: The Emergence of a New Clinical Disorder,
CyberPsychology & Behavior, 1998

Of note: Internet Gaming Disorder in the DSM

“Only non-gambling Internet games are included in this disorder. Use of the Internet for required activities in a business or profession is not included; nor is the disorder intended to include other recreational or social Internet use. Similarly, sexual Internet sites are excluded.”

- From the DSM-5-TR

The rise of ubicomp via PDAs

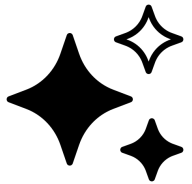

Early 60s
Late 60s
Early 70s
Late 70s
Early 80s
Late 80s
Early 90s
Late 90s
Early 00s
Late 00s
Early 10s
Late 10s
Early 20s
Future
First CS degree program (1953)
Mother of all demos (1968)
ARPANET created (1969)
Arcade cabinets and video game consoles
Personal computers; Consoles start to take off
First forum created (1978)
First laptop
NES comes to USA
First IRC created (1988)
World Wide Web & first website created ('89 - '91)
AIM
Google
Fanfiction.net
LiveJournal
Blackberry
('97-'99)
Tracking via PDA
lySpace
acebook
outube
eddit
witter
('03-'06)
iPhone released (2007)
Fitbit Tracker released; AO3 created (2009)
Instagram
Snapchat
('10-'11)
Fitbit App
Discord
Apple Watch
('14-'15)
TikTok created ('16-'17)
COVID telehealth push begins
ChatGPT released (2022)

A Context-Aware Experience Sampling Tool, Intille et al., CHI 2003

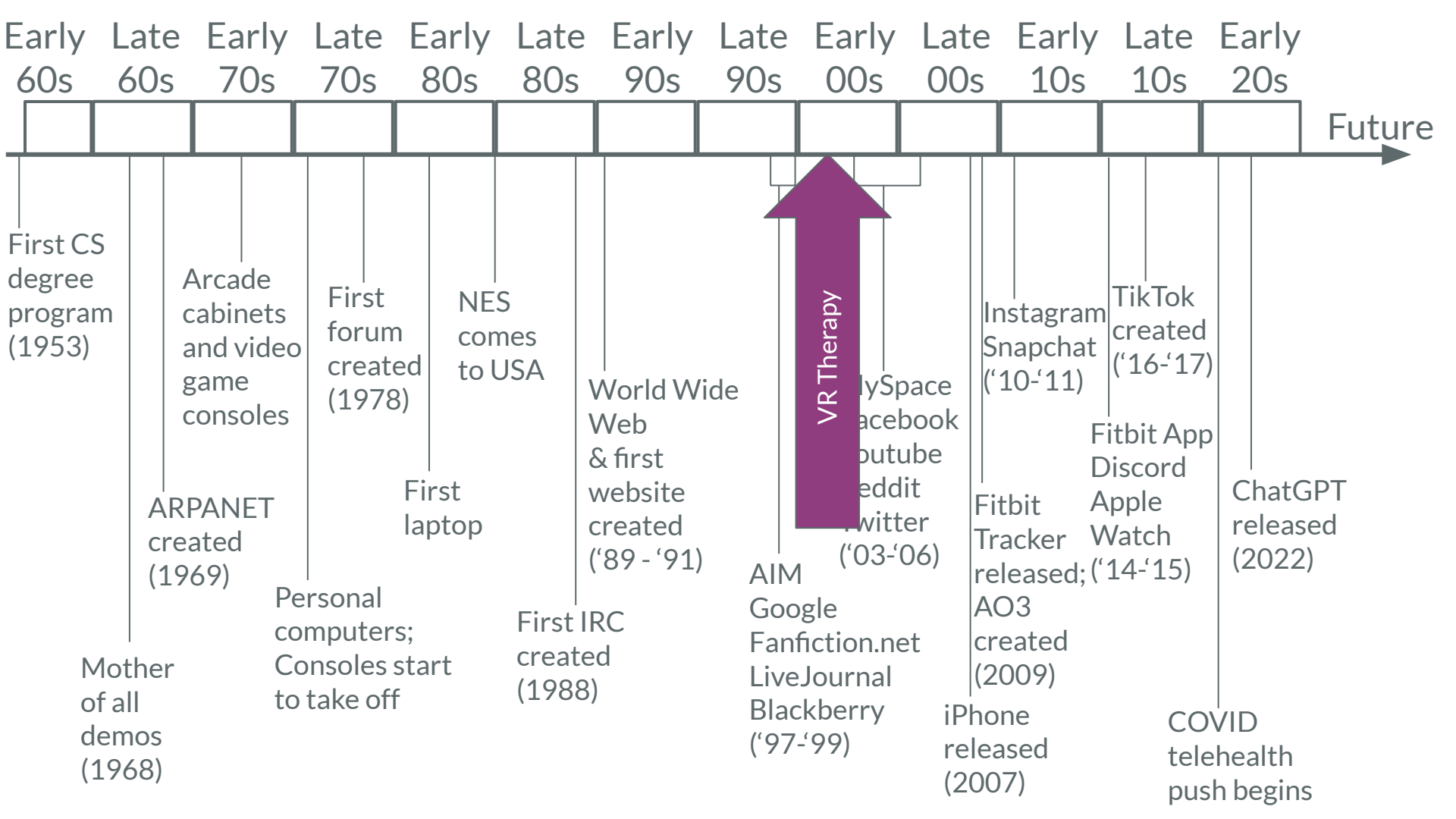
The main points

- We want to gather data in natural settings rather than the lab. Currently we rely on unreliable self-report, annoying ESM, and expensive, time-consuming field observations.
- We can use PDAs to both administer regular ESM more conveniently AND also get location data

→ gathering contextual data is **feasible** and helpful

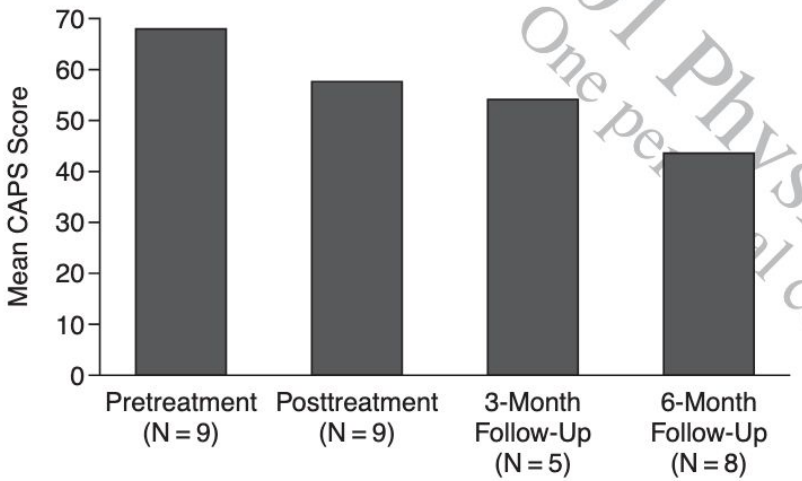


VR as Therapy


Early 60s
Late 60s
Early 70s
Late 70s
Early 80s
Late 80s
Early 90s
Late 90s
Early 00s
Late 00s
Early 10s
Late 10s
Early 20s
Future
First CS degree program (1953)
Mother of all demos (1968)
ARPANET created (1969)
Arcade cabinets and video game consoles
Personal computers; Consoles start to take off
First forum created (1978)
First laptop
NES comes to USA
First IRC created (1988)
World Wide Web & first website created ('89 - '91)
AIM
Google
Fanfiction.net
LiveJournal
Blackberry ('97-'99)
VR Therapy
ySpace
acebook
outube
eddit
witter ('03-'06)
iPhone released (2007)
Fitbit Tracker released; AO3 created (2009)
Instagram
Snapchat ('10-'11)
Fitbit App
Discord
Apple Watch ('14-'15)
TikTok created ('16-'17)
COVID telehealth push begins
ChatGPT released (2022)

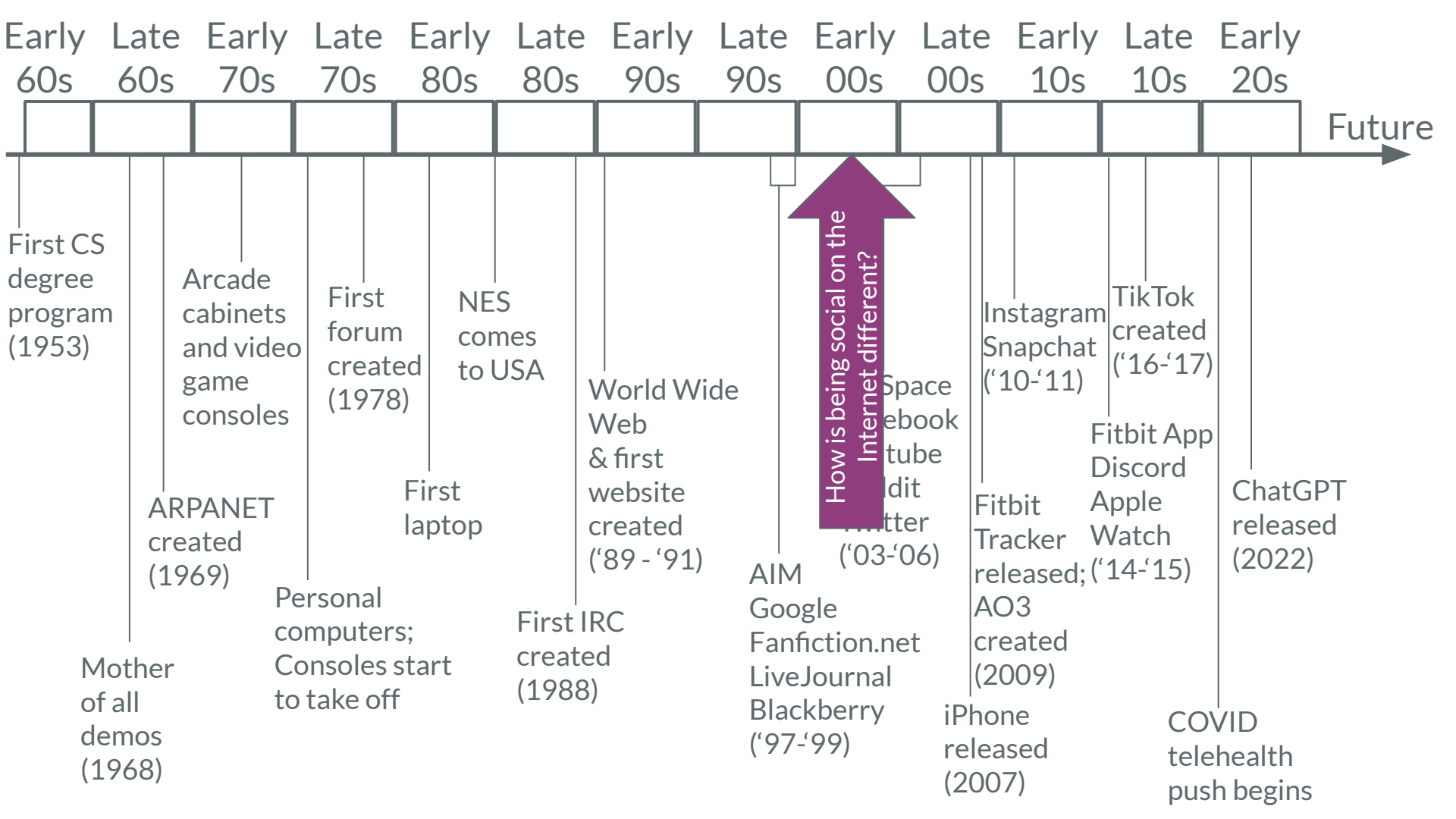
Virtual Reality Exposure Therapy for Vietnam Veterans With Posttraumatic Stress Disorder
Rothbaum et al., Journal of Clinical Psychology, 2001

Figure 1. Mean Scores on the Clinician Administered PTSD Scale (CAPS) at Pretreatment, Posttreatment, and 3- and 6-Month Follow-Up



$13,000 headset

The effect of the Internet on mental health—the start of a great debate


Early 60s
Late 60s
Early 70s
Late 70s
Early 80s
Late 80s
Early 90s
Late 90s
Early 00s
Late 00s
Early 10s
Late 10s
Early 20s
Future
First CS degree program (1953)
Mother of all demos (1968)
ARPANET created (1969)
Arcade cabinets and video game consoles
Personal computers; Consoles start to take off
First forum created (1978)
First laptop
NES comes to USA
First IRC created (1988)
World Wide Web & first website created ('89 - '91)
AIM
Google
Fanfiction.net
LiveJournal
Blackberry ('97-'99)
How is being social on the Internet different?
Space
ebook
tube
dit
tter ('03-'06)
iPhone released (2007)
Instagram
Snapchat ('10-'11)
Fitbit Tracker released; AO3 created (2009)
TikTok created ('16-'17)
Fitbit App
Discord
Apple Watch ('14-'15)
COVID telehealth push begins
ChatGPT released (2022)

Internet paradox. A social technology that reduces social involvement and psychological well-being?

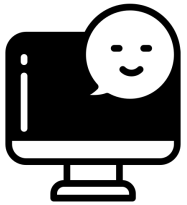
R Kraut [1], M Patterson, V Lundmark, S Kiesler, T Mukopadhyay, W Scherlis

Affiliations + expand

PMID: 9841579 DOI: 10.1037//0003-066x.53.9.1017

Abstract

The Internet could change the lives of average citizens as much as did the telephone in the early part of the 20th century and television in the 1950s and 1960s. Researchers and social critics are debating whether the Internet is improving or harming participation in community life and social relationships. This research examined the social and psychological impact of the Internet on 169 people in 73 households during their first 1 to 2 years on-line. We used longitudinal data to examine the effects of the Internet on social involvement and psychological well-being. In this sample, the Internet was used extensively for communication. Nonetheless, greater use of the Internet was associated with declines in participants' communication with family members in the household, declines in the size of their social circle, and increases in their depression and loneliness. These findings have implications for research, for public policy and for the design of technology.



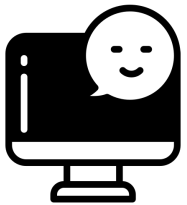
Kraut et al., *Internet Paradox* (1998) and *Revisited* (2002)

The main points

- Longitudinal study following internet users
- Found a positive correlation between internet use and depression, loneliness, stress
- Follow-up in 2002 shows some positive relationships, but maintains a relationship between internet use and stress

Criticisms

- Correlation, not causation but presented as causal



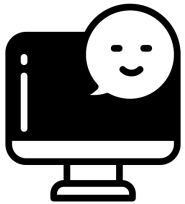
Shaw & Gant, *In Defense of the Internet* (2002)

The main points

- Lab setting
- Participants have anonymous chats and regular testing of mental health scales between chats
- Found a decrease in loneliness, depression, and an increase in social support and self-esteem

Criticisms

- Lab setting is not reflective of the real world



Article

Internet Support Groups for Depression: A 1-Year Prospective Cohort Study

Thomas K. Houston, M.D., M.P.H.

Lisa A. Cooper, M.D., M.P.H.

Daniel E. Ford, M.D., M.P.H.

Objective: This study described the characteristics of users of Internet-based depression support groups and assessed whether use predicts change in depression symptoms and social support.

Method: Users (N=103) of these groups were recruited into the study cohort and followed prospectively. Demographic characteristics, support group use, depression care, score on the Medical Outcomes Study Social Support Survey, and score on the Center for Epidemiologic Studies Depression Scale (CES-D Scale) were assessed by Internet survey at baseline, 6 months, and 12 months.

Results: Users' demographic characteristics included median age of 40 years, 78.6% women, and 56.3% unmarried. Most (86.4%) were currently depressed (CES-D Scale score >22). Over 50% of participants heavily used the support group (5 or more hours in 2 weeks), and 37.9% preferred online communication to face-to-face counseling. Social support scores were low, compared with those from other studies of primary care patients with depression. The overall follow-up rate was 81.6% at 6 or 12 months. During follow-up, 72.6% of responders still participated in the online group; 81.0% were still receiving face-to-face depression care. Heavy users of the Internet groups were more likely to have resolution of depression (CES-D Scale score ≤22) during follow-up than less frequent users, after adjustment for age, gender, employment, and baseline CES-D Scale score with logistic regression. Social support scores did not change during follow-up.

Conclusions: Users had high depression severity scores, were socially isolated, and perceived considerable benefit from the group. Internet depression support groups warrant continued research regarding supplementation of face-to-face depression care.

(Am J Psychiatry 2002; 159:2062–2068)

Weborexics: The Ethical Issues Surrounding Pro-Ana Websites

Author: Leslie Regan Shade | Authors Info & Claims

ACM SIGCAS Computers and Society, Volume 33, Issue 4 • Page 2 • https://doi.org/10.1145/968358.968361

Published: 31 December 2003 Publication History

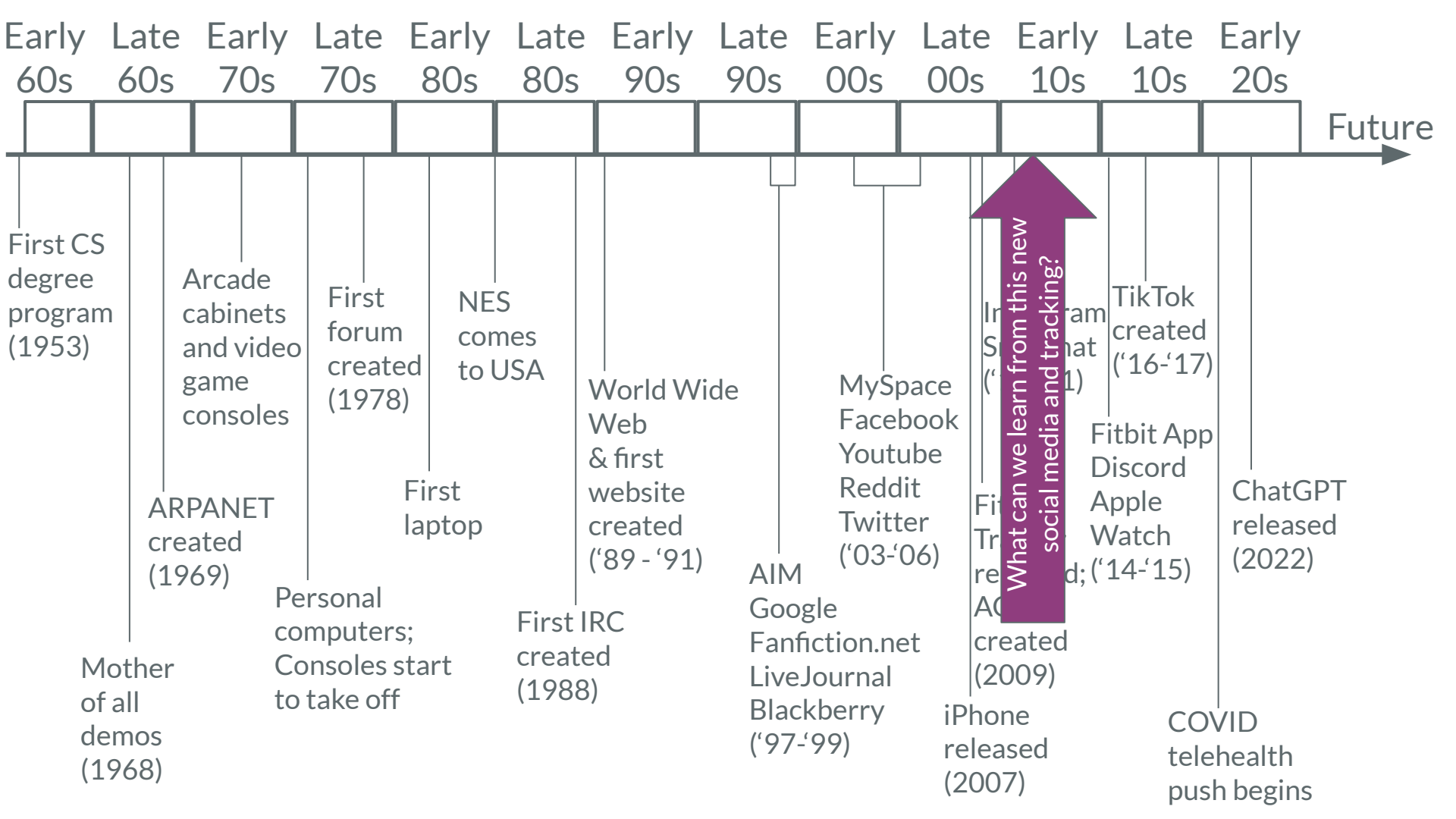
Check for updates

12 2,162

Abstract

Pro-Ana's are young women who proclaim themselves to be proudly anorexic, and they have created a vibrant community online. This article will examine the nature of the Pro-Ana sites, analyzing their discursive community, and discuss the ethical issues surrounding the sites, wherein many have been censured or shut down by commercial website hosting sites, which has raised issues of censorship versus freedom of speech.

This divide will continue to be studied through today,
but we'll come back to it in a moment


Early 60s
Late 60s
Early 70s
Late 70s
Early 80s
Late 80s
Early 90s
Late 90s
Early 00s
Late 00s
Early 10s
Late 10s
Early 20s
Future
First CS degree program (1953)
Mother of all demos (1968)
ARPANET created (1969)
Arcade cabinets and video game consoles
Personal computers; Consoles start to take off
First forum created (1978)
First laptop
NES comes to USA
First IRC created (1988)
World Wide Web & first website created ('89 - '91)
AIM
Google
Fanfiction.net
LiveJournal
Blackberry ('97-'99)
MySpace
Facebook
Youtube
Reddit
Twitter ('03-'06)
iPhone released (2007)
created (2009)
What can we learn from this new social media and tracking?
Fitbit App
Discord
Apple Watch ('14-'15)
TikTok created ('16-'17)
COVID telehealth push begins
ChatGPT released (2022)

De Choudhury et al., *Predicting depression via social media* (2013)

The main points

- Gathered Twitter data from crowdworkers who had completed psychological testing scales
- Using NLP markers (3rd person pronoun usage, references to self, etc.), usage statistics, some other data
- Able to identify users with depression with some measure of success

Criticisms

- Relied heavily on self report of symptoms and onset
- Ethically questionable
- Sampling bias (Twitter in 2013 was a particular population)

BeWell (2011) & StudentLife (2014)

- Intille → PDAs, BeWell → smartphones
  - Proof of concept that we can gather this data and it's useful
- StudentLife, an extension on BeWell that focused on *mental* well-being
  - "correlations between objective sensor data from smartphones and mental well-being and academic performance"

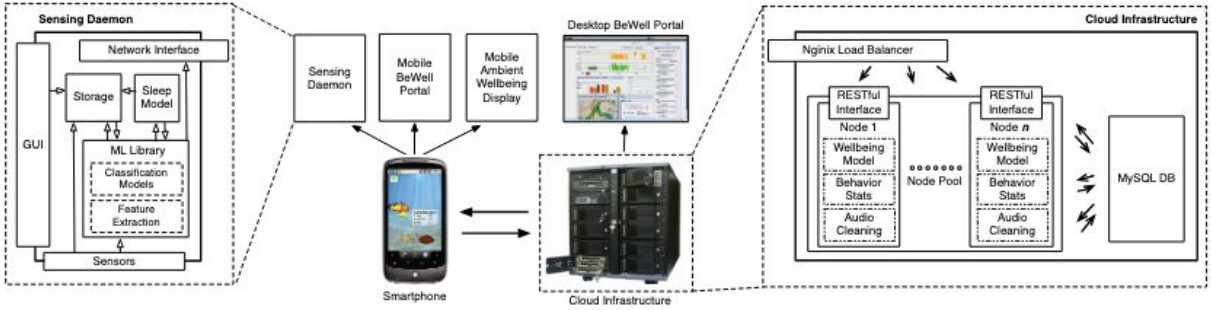
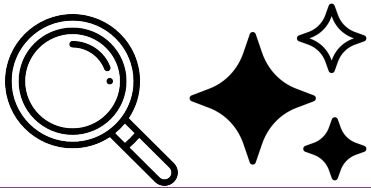


Fig. 2. BeWell implementation, including smartphone components supported by a scalable cloud system



Detecting Stress During Real-World Driving Tasks Using Physiological Sensors

Jennifer A. Healey and Rosalind W. Picard

Automatic Stress Detection in Working Environments From Smartphones' Accelerometer Data: A First Step

Enrique Garcia-Ceja, Venet Osmani, and Oscar Mayora

Under Pressure: Sensing Stress of Computer Users

Javier Hernandez[1] **Pablo Paredes**[2] **Asta Roseway**[3] **Mary Czerwinski**[3]
[1]MIT Media Lab, 75 Amherst Street, Cambridge, MA 02139, USA
[2]EECS UC Berkeley, 387 Soda Hall, Berkeley, CA 94720-1776, USA
[3]Microsoft Research, One Microsoft Way, Redmond, WA 98052-6399, USA
javierhr@mit.edu, pablo.paredes@berkeley.edu, {astar, marycz}@microsoft.com

ARTICLE OPEN

Automated analysis of free speech predicts psychosis onset in high-risk youths

Gillinder Bedi[1,2,9], Facundo Carrillo[3,9], Guillermo A Cecchi[4], Diego Fernández Slezak[3], Mariano Sigman[5], Natália B Mota[6], Sidarta Ribeiro[6], Daniel C Javitt[1,7], Mauro Copelli[8] and Cheryl M Corcoran[1,7]

Detecting Stress During Real-World Driving Tasks Using Physiological Sensors

Jennifer A. Healey and Rosalind W. Picard

Automatic Stress Detection in Working Environments From Smartphones' Accelerometer Data: A First Step

Enrique Garcia-Ceja, Venet Osmani, and Oscar Mayora

Under Pressure: Sensing Stress of Computer Users

Javier Hernandez[1] **Pablo Paredes**[2] **Asta Roseway**[3] **Mary Czerwinski**[3]
[1]MIT Media Lab, 75 Amherst Street, Cambridge, MA 02139, USA
[2]EECS UC Berkeley, 387 Soda Hall, Berkeley, CA 94720-1776, USA
[3]Microsoft Research, One Microsoft Way, Redmond, WA 98052-6399, USA
javierhr@mit.edu, pablo.paredes@berkeley.edu, {astar, marycz}@microsoft.com

ARTICLE OPEN

Automated analysis of free speech predicts psychosis onset in high-risk youths

Gillinder Bedi[1,2,9], Facundo Carrillo[3,9], Guillermo A Cecchi[4], Diego Fernández Slezak[3], Mariano Sigman[5], Natália B Mota[6], Sidarta Ribeiro[6], Daniel C Javitt[1,7], Mauro Copelli[8] and Cheryl M Corcoran[1,7]

Facebook Contagion Study, 2014

The main points

- If we can *detect* then does that mean we can *affect*?
- Manipulated user timelines on Facebook to see if it affected user emotions
- Found some evidence of changed communication patterns with timeline manipulation

Criticisms

- Ethical questions
- Extremely small effect
- Separation between emotional state and online persona

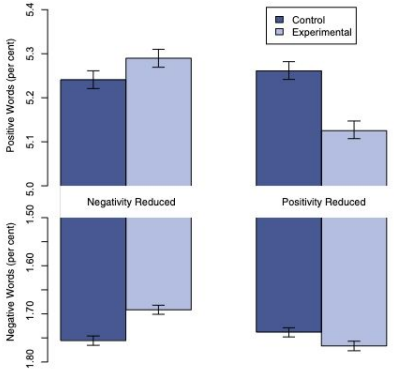
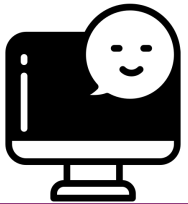
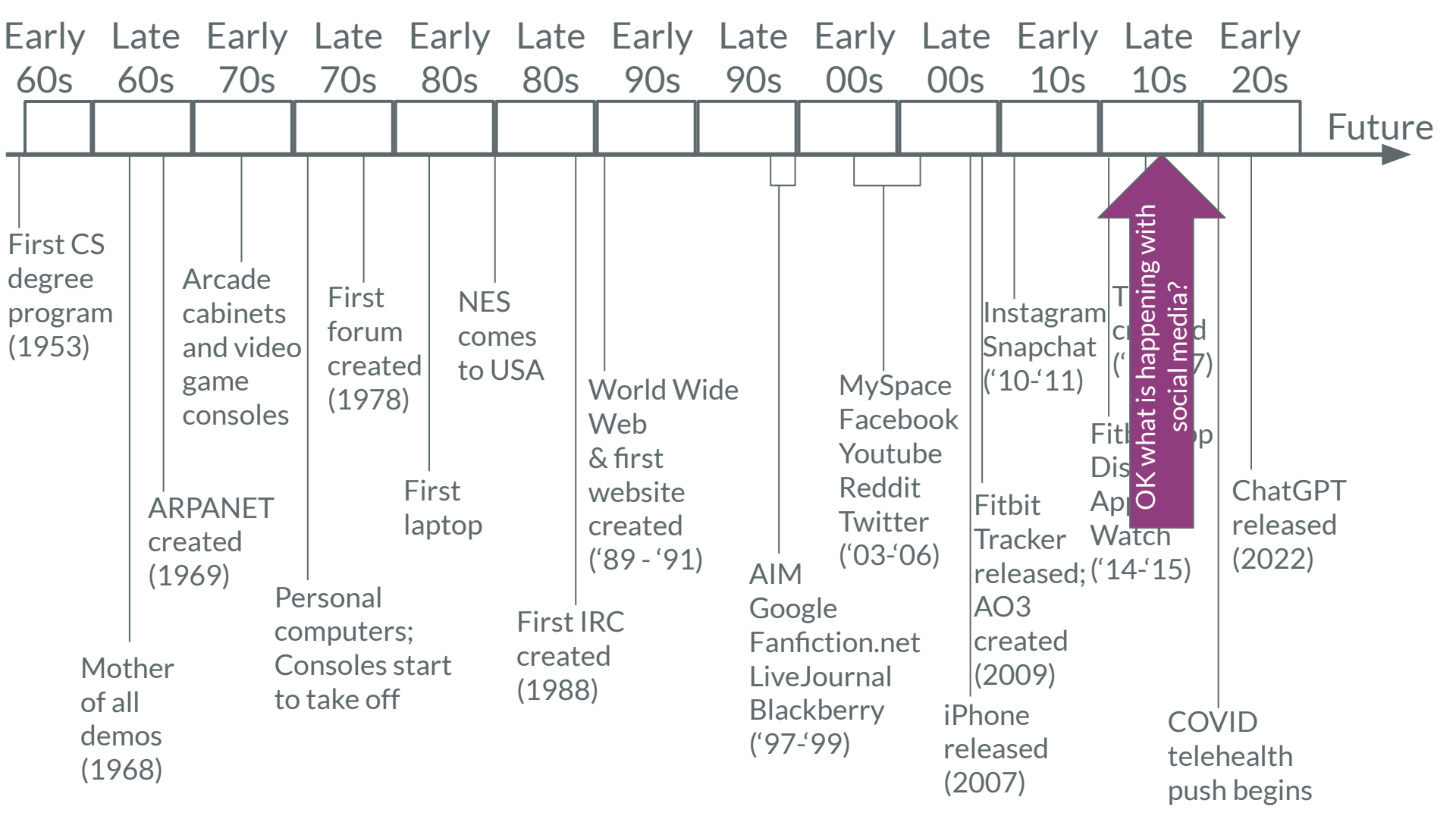


Fig. 1. Mean number of positive (*Upper*) and negative (*Lower*) emotion words (percent) generated people, by condition. Bars represent standard errors.



Back to the divide—
Is social media good or bad?


Early 60s
Late 60s
Early 70s
Late 70s
Early 80s
Late 80s
Early 90s
Late 90s
Early 00s
Late 00s
Early 10s
Late 10s
Early 20s
Future
First CS degree program (1953)
Mother of all demos (1968)
ARPANET created (1969)
Arcade cabinets and video game consoles
Personal computers; Consoles start to take off
First forum created (1978)
First laptop
NES comes to USA
First IRC created (1988)
World Wide Web & first website created ('89 - '91)
AIM
Google
Fanfiction.net
LiveJournal
Blackberry ('97-'99)
MySpace
Facebook
Youtube
Reddit
Twitter ('03-'06)
iPhone released (2007)
Fitbit Tracker released; AO3 created (2009)
Instagram
Snapchat ('10-'11)
Watch ('14-'15)
OK what is happening with social media?
COVID telehealth push begins
ChatGPT released (2022)

Social media allows for support

Mental Health Discourse on reddit: Self-Disclosure, Social Support, and Anonymity

Munmun De Choudhury
School of Interactive Computing
Georgia Institute of Technology Atlanta GA
munmund@gatech.edu

Sushovan De
Department of Computer Science
Arizona State University Tempe AZ
sushovan@asu.edu

Does Posting Facebook Status Updates Increase or Decrease Loneliness? An Online Social Networking Experiment

Fenne große Deters and **Matthias R. Mehl**

The Channel Matters: Self-disclosure, Reciprocity and Social Support in Online Cancer Support Groups

Diyi Yang, **Zheng Yao**, **Joseph Seering**, **Robert Kraut**
School of Computer Science, Carnegie Mellon University

Chirp: The Impact of Private Online Self-Disclosure on Perceived Social Support

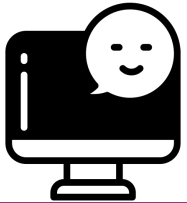
TALIE MASSACHI, Brown University, USA
JOHN ROY*, Google, USA
LAUREN CHOI*, Apple Inc., USA
GABRIELA HOEFER*, IBM, USA
SHAUN WALLACE*, University of Rhode Island, USA
JEFF HUANG, Brown University, USA

Sensitive Self-disclosures, Responses, and Social Support on Instagram: The Case of #Depression

Nazanin Andalibi
College of Computing and Informatics
Drexel University
Philadelphia, PA, USA
naz@drexel.edu

Pinar Ozturk
Stevens Institute of Technology
Hoboken, NJ, USA
pozturk@stevens.edu

Andrea Forte
College of Computing and Informatics
Drexel University
Philadelphia, PA, USA
aforte@drexel.edu



Social media and loneliness, depression, self-image

Facebook Use Predicts Declines in Subjective Well-Being in Young Adults

Ethan Kross[1]*, Philippe Verduyn[2], Emre Demiralp[1], Jiyoung Park[1], David Seungjae Lee[1], Natalie Lin[1], Holly Shablack[1], John Jonides[1], Oscar Ybarra[1]

1 Psychology Department, University of Michigan, Ann Arbor, Michigan, United States of America, **2** Psychology Department, University of Leuven, Leuven, Belgium

Exploring the Relationship Between Frequency of Instagram Use, Exposure to Idealized Images, and Psychological Well-Being in Women

Mary Sherlock and Danielle L. Wagstaff
Federation University

TECHNOLOGY | PERSONAL TECHNOLOGY

Facebook Knows Instagram Is Toxic for Teen Girls, Company Documents Show

Its own in-depth research shows a significant teen mental-health issue that Facebook plays down in public

Note: not a paper, a WSJ article

What IS social media?

The Channel Matters: Self-disclosure, Reciprocity and Social Support in Online Cancer Support Groups

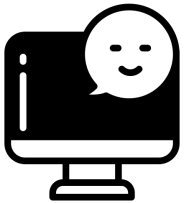
Diyi Yang, Zheng Yao, Joseph Seering, Robert Kraut
School of Computer Science, Carnegie Mellon University

Bridging the Social Distance: Offline to Online Social Support during the COVID-19 Pandemic

GABRIELA HOEFER*, Brown University, USA
TALIE MASSACHI*, Brown University, USA
NEIL G XU, Brown University, USA
NICOLE NUGENT, Alpert Medical School of Brown University, USA
JEFF HUANG, Brown University, USA

Chirp: The Impact of Private Online Self-Disclosure on Perceived Social Support

TALIE MASSACHI, Brown University, USA
JOHN ROY*, Google, USA
LAUREN CHOI*, Apple Inc., USA
GABRIELA HOEFER*, IBM, USA
SHAUN WALLACE*, University of Rhode Island, USA
JEFF HUANG, Brown University, USA



Social Sharing of Emotions on Facebook: Channel Differences, Satisfaction, and Replies

Natalya N. Bazarova
Department of Communication
Cornell University
Ithaca, NY 14853
nnb8@cornell.edu

Yoon Hyung Choi
Department of Communication
Cornell University
Ithaca, NY 14853
yc863@cornell.edu

Victoria Schwanda Sosik
Department of Information Science, Cornell University
Ithaca, NY 14853
vls48@cornell.edu

Dan Cosley
Department of Information Science
Cornell University
Ithaca, NY 14853
drc44@cornell.edu

Janis Whitlock
Bronfenbrenner Center for Translational Research, Cornell University
Ithaca, NY 14853
jlw43@cornell.edu

The cutting edge—
How does AI apply

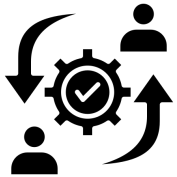
Building systems to apply current mental health practices

Therapy as an NLP Task:
Psychologists' Comparison of LLMs and Human Peers in CBT

ZAINAB IFTIKHAR, Brown University, USA
SEAN RANSOM, Louisiana State University Health Sciences, USA
AMY XIAO, Brown University, USA
NICOLE NUGENT, Brown University, USA
JEFF HUANG, Brown University, USA

The main points

- Largely CBT-based, as it's well-respected and somewhat formulaic
  - Recent forays into DBT
- First steps to how LLMs can safely be used in therapy and as support



Using machine learning for detection

Sch-net: a deep learning architecture for automatic detection of schizophrenia

Jia Fu [#1], Sen Yang [#1], Fei He [1], Ling He [2], Yuanyuan Li [3], Jing Zhang [1], Xi Xiong [4]

The main points

- We have some ideas of physical/visible connections to mental illnesses
- Computers are better at finding the fine-grained features etc. so ML for detection is the natural next step

Generating new interventions

Note: much longer author list that's too long to put here. Disclaimer I am on this paper.

Contextual AI Journaling: Integrating LLM and Time Series Behavioral Sensing Technology to Promote Self-Reflection and Well-being using the MindScape App

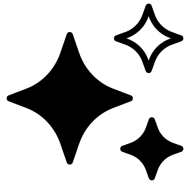
Subigya Nepal
subigya.k.nepal.gr@dartmouth.edu
Dartmouth College

Arvind Pillai
arvind.thanga.chellappa.pill-
ai.gr@dartmouth.edu

William Campbell
wpcampbell1@gmail.com
Colby College

The main points

- LLMs allow a new level of personalization
- How can we leverage this in a controlled way to support reflection



How are users currently using AI?

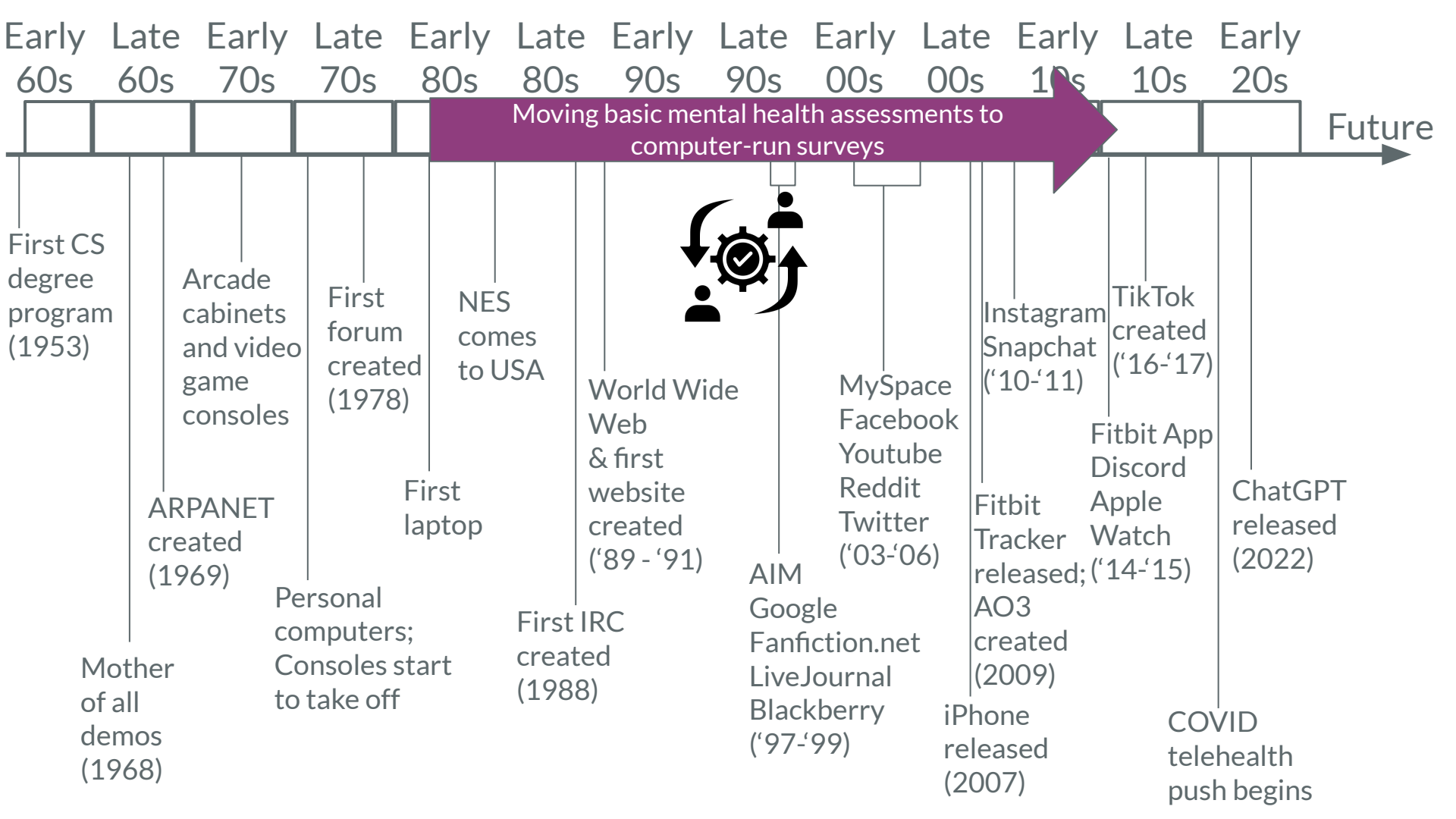
The Typing Cure: Experiences with Large Language Model Chatbots for Mental Health Support

INHWA SONG*, KAIST, Republic of Korea
SACHIN R. PENDSE*, University of California, San Francisco, USA
NEHA KUMAR, Georgia Institute of Technology, USA
MUNMUN DE CHOUDHURY, Georgia Institute of Technology, USA

The main points

- Experts have loudly been saying that using LLMs in place of therapy is dangerous, but people are doing it anyway
- Why? What are the outcomes?

Conversation/questions


Early 60s
Late 60s
Early 70s
Late 70s
Early 80s
Late 80s
Early 90s
Late 90s
Early 00s
Late 00s
Early 10s
Late 10s
Early 20s
Future
Moving basic mental health assessments to computer-run surveys
First CS degree program (1953)
Mother of all demos (1968)
ARPANET created (1969)
Arcade cabinets and video game consoles
Personal computers; Consoles start to take off
First forum created (1978)
First laptop
NES comes to USA
First IRC created (1988)
World Wide Web & first website created ('89 - '91)
AIM
Google
Fanfiction.net
LiveJournal
Blackberry ('97-'99)
MySpace
Facebook
Youtube
Reddit
Twitter ('03-'06)
iPhone released (2007)
Fitbit Tracker released; AO3 created (2009)
Instagram
Snapchat ('10-'11)
Fitbit App
Discord
Apple Watch ('14-'15)
TikTok created ('16-'17)
COVID telehealth push begins
ChatGPT released (2022)