

Phone apps could monitor teen angst

By LINDSEY TANNER
Associated Press

Rising suicide rates and depression in U.S. teens and young adults have prompted researchers to ask a provocative question: Could the same devices that some people blame for contributing to tech-age angst also be used to detect it?

The idea has sparked a race to develop apps that warn of impending mental health crises. Call it smartphone psychiatry or child psychology 2.0.

Studies have linked heavy smartphone use with worsening teen mental health. But as teens scroll through Instagram and Snapchat, tap out texts or watch YouTube videos, they also leave digital footprints that might offer clues to their psychological well-being.

Changes in typing speed, voice tone, word choice and how often kids stay home could signal trouble, according to preliminary studies.

There might be as many as 1,000 smartphone "biomarkers" for depression, said Dr. Thomas Insel, former head of the National Institute of Mental Health and now a leader in the smartphone psychiatry movement.

Researchers are testing experimental apps that use artificial intelligence to try to predict depression episodes or potential self-harm.

"We are tracking the equivalent of a heartbeat for the human brain," said Dr. Alex Leow, an app developer and associate professor of psychiatry and bioengineering at the University of Illinois' Chicago campus.

At least, that's the goal. There are technical and ethical kinks to work out — including privacy issues and making sure kids grant permission to be monitored

so closely. Developers say proven, commercially available mood-detecting apps are likely years — but not decades — away.

"People often feel that these things are creepy," because of the tech industry's surreptitious tracking of online habits for commercial purposes, said University of Oregon psychologist Nick Allen.

Using smartphones as mental illness detectors would require informed consent from users to install an app, "and they could withdraw permission at any time," said Allen, one of the creators of an app that is being tested on young people who have attempted suicide.

"The biggest hurdle at the moment," Allen said, "is to learn about what's the signal and what's the noise — what is in this enormous amount of data that people accumulate on their phones that is indicative of a mental health crisis."

Depression affects about 3 million U.S. teens, and rates have climbed in the past decade. Last year, 13 percent of 12- to 17-year-olds had depression, up from 8 percent in 2010, U.S. government data show. One in 10 college-aged Americans is affected.

Suicide has risen to the second leading cause of death for ages 10 to 34. Rates among teen girls doubled from 2007 to 2015, climbing to 5 per 100,000. And among boys, rates jumped 30 percent, to 14 in 100,000.

A recent study suggested a parallel rise in smartphone use likely contributed.

People with mental illness typically get treatment "when they're in crisis and very late in the course of an illness. We want to have a method to identify the earliest signs," in an objective way, Insel said.

If smartphones prove to

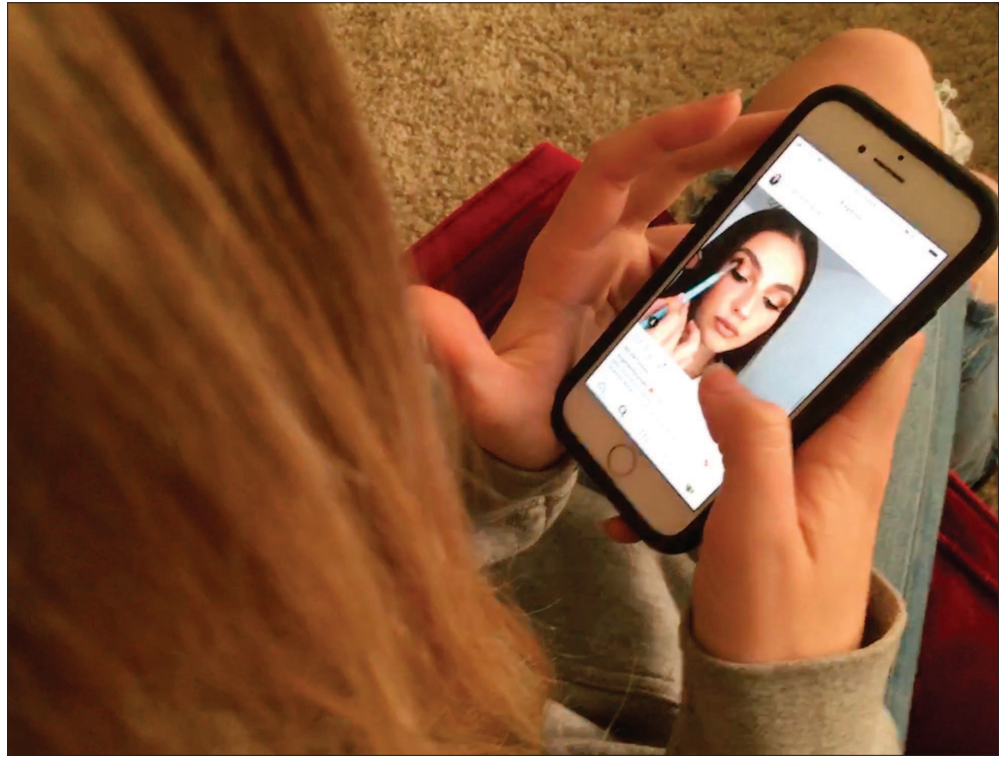


Laurel Foster holds her phone on Nov. 1, 2018, in San Francisco. Foster is among teens involved in Stanford University research testing whether smartphones can be used to help detect depression and potential self-harm.

be accurate mood predictors, developers say the ultimate goal would be to use them to offer real-time help, perhaps with automated text messages and links to help lines, or digital alerts to parents, doctors or first responders.

Facebook is already doing just that with what it calls "proactive detection." Last year, after a live-streamed suicide, Facebook trained its AI systems to flag certain words or phrases in online posts that could indicate imminent self-harm. Friends' comments expressing concern about the user's well-being are part of the equation.

"In the last year, we've helped first responders quickly reach around 3,500 people globally who needed help," Facebook CEO Mark Zuckerberg announced in November. Facebook has not disclosed outcomes of those cases.



Laurel Foster looks at Instagram in San Francisco on Nov. 1, 2018. App developers say as teens scroll through Instagram and Snapchat, tap out texts, or hole up in their rooms watching YouTube, they're leaving enormous digital footprints that may offer clues to their psyches. Studies are underway to find out.

FRIDAY AFTERNOON & EVENING

	12 PM	12:30	1 PM	1:30	2 PM	2:30	3 PM	3:30	4 PM	4:30	5 PM	5:30	6 PM	6:30	7 PM	7:30	8 PM	8:30	9 PM	9:30	10 PM	10:30	11 PM	11:30
FOX	11	Outback	Divorce Court	Steve!	Judge Mathis	The People's Court	Paid	Mom	Last Man St.	Last Man St.	Modern Family	Modern Family	2 Broke	2 Broke	Last Man St.	CoolKids	Hell's Kitchen "Poor Trev" (N)	First at Ten (N)	35 Dateline	:35 M.Molly				
KPTV	3	News	Nature	W. Williams	Truth	Truth	People's Court	Judy	Judy	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)
CBS	19	Fun-n-Ask	Bold & B.	The Talk (N)	Let's Make a Deal	Dr. Phil	Dr. Phil	Judge Judy	Judge Judy	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)
KOIN	19	Local 6 B & B	The Talk (N)	The Talk (N)	The 700 Club	Dr. Phil	Dr. Phil	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)
NBC	25	TMZ	Paid	Days of Our Lives	W. Williams Tamar Braxton	Daily Mail TV	Daily Mail TV	Ellen Jesse Tyler Ferguson	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)
KNDU	6																							
KGW	8	News	Paid	Days Our Lives	Dr. Oz (N)	Ellen (N)	Ellen (N)	KGW News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)
ABC	42	GMA Day (N)	General Hospital	The Doctors	The Rachael Ray Show	The Dr. Oz Show (N)	The Dr. Oz Show (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)
KWVE	4																							
KATU	5	GMA Day (N)	Gener. Hosp.	Afternoon Live	Million?	Million?	KATU News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)	News (N)
PBS	31	Amanpour & Company	Project Smoke	Quilt in a Day	Class-Stretch	Let's Go	Nature Cat	Ready Jet Go!	Wild Kratts	Odd Squad	Arthur	Business (N)	PBS NewsHour (N)	World News	Asia Insight	W.Week (N)	Firing (N)	Boom Bust Boom	The Truth About Alcohol	Amanpour & Company (N)				
KTNW	13																							
OPB	59	Paint This	O'Connell	Ciao Italia	Mickela Mallozzi	Nature Cat	Ready Jet Go!	Arthur	Arthur	Odd Squad	Odd Squad	Wild Kratts	Wild Kratts	Places (N)	Business (N)	PBS NewsHour (N)	800 Words	Inspector Lynley "For the Sake of Elena"	The Truth About Alcohol	Maigret "Maigret Sets a Trap"				

JANUARY 4, 2019

	12 PM	12:30	1 PM	1:30	2 PM	2:30	3 PM	3:30	4 PM	4:30	5 PM	5:30	6 PM	6:30	7 PM	7:30	8 PM	8:30	9 PM	9:30	10 PM	10:30	11 PM	11:30
A&E	52	Live PD	Live PD	Live PD	Live PD	Live PD	Live PD	Live PD	Live PD	Live PD	Live PD	Live PD	Live PD	Live PD	Live PD	Live PD	Live PD	Live PD	Live PD	Live PD	Live PD	Live PD	Live PD	Live PD
AMC	60	Outbreak	:55	*** Deep Impact	Elijah Wood.	:25	*** The Day After Tomorrow	*** Cast Away ('00, Dra) Tom Hanks.	*** The Green Mile ('99, Dra) Tom Hanks.															
ANPL	24	Dr. Dee: Alaska	R. Mountain Vet	R. Mountain Vet	Pit Bull Parole	R. Mountain Vet	R. Mountain Vet	R. Mountain Vet	R. Mountain Vet	R. Mountain Vet	R. Mountain Vet	R. Mountain Vet	R. Mountain Vet	R. Mountain Vet	R. Mountain Vet	R. Mountain Vet	R. Mountain Vet	R. Mountain Vet	R. Mountain Vet	R. Mountain Vet	R. Mountain Vet	R. Mountain Vet	R. Mountain Vet	R. Mountain Vet
CMT	42	Home I.	Home I.	Home I.	Home I.	LastMan	LastMan	LastMan	LastMan	LastMan	LastMan	LastMan	LastMan	LastMan	LastMan	LastMan	LastMan	LastMan	LastMan	LastMan	LastMan	LastMan	LastMan	LastMan
CNBC	72	Closing Bell				Money	Options	Mad Money	Shark Tank	Deal or No Deal	Shark Tank	Shark Tank	Shark Tank	Shark Tank	Shark Tank	Shark Tank	Shark Tank	Shark Tank	Shark Tank	Shark Tank	Shark Tank	Shark Tank	Shark Tank	Shark Tank
CNN	68	CNN Newsroom	The Lead	The Situation	The Situation	OutFront	A. Cooper 360	A. Cooper 360	CNN Tonight	CNN Tonight	A. Cooper 360	A. Cooper 360	CNN Tonight	CNN Tonight	A. Cooper 360	A. Cooper 360	CNN Tonight	CNN Tonight	A. Cooper 360	A. Cooper 360	CNN Tonight	CNN Tonight	CNN Tonight	CNN Tonight
DISC	51	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
DISN	26	Puppy	Puppy	Bunk'd	Bunk'd	TBA	BigCity	Gravity	Bunk'd	Bunk'd	Bunk'd	Bunk'd	Bunk'd	Bunk'd	Andi M.	Andi M.	Andi M.	Andi M.	CoopCmi	Raven's.	Raven's.	CoopCmi	Andi M.	CoopCmi
ESPN	33	The Jump (L)	High Noon	Highly?	Horn	Interrupt	SportsCent. (N)	Countdown (L)	NBA Basketball	Washington vs Miami (L)	NBA Basketball	Oklahoma vs Portland (L)	SportsCent. (N)	SportsCent. (N)	UFC Archival	NBA Basketball								
ESPN2	34	NFL Live	Talk	C. Football (L)	Horn	Interrupt	NCAA Basketball	SMU/Tul. (L)	NCAA Gymnastics (L)	SportsCent. (N)	SportsCent. (N)	SportsCent. (N)	SportsCent. (N)	SportsCent. (N)	SportsCent. (N)	SportsCent. (N)	SportsCent. (N)	SportsCent. (N)	SportsCent. (N)	SportsCent. (N)	SportsCent. (N)	SportsCent. (N)	SportsCent. (N)	
FNC	66	Shepard Smith	Your World	The Five	Special Report	The Story	Tucker Carlson	Hannity	Ingraham Angle	Fox News	The Five	Hannity	Ingraham Angle	Fox News	The Five	Hannity	Ingraham Angle	Fox News	The Five	Hannity	Ingraham Angle	Fox News	The Five	
FOOD	61	Giada	Giada	Pioneer	Pioneer	Diners	Diners	Diners	Diners	Diners	Diners	Diners	Diners	Diners	Diners	Diners	Diners	Diners	Diners	Diners	Diners	Diners	Diners	Diners
FREE	32	A Cinderella...	Middle	Middle	Middle	Middle	Middle	Middle	Middle	Middle	Middle	Middle	Middle	Middle	Middle	Middle	Middle	Middle	Middle	Middle	Middle	Middle	Middle	Middle
FX	65	Mother	Mother	Mother	Mother	Mike&M.	Mike&M.	Mike&M.	Mike&M.	Mike&M.	Mike&M.	Mike&M.	Mike&M.	Mike&M.	Mike&M.	Mike&M.	Mike&M.	Mike&M.	Mike&M.	Mike&M.	Mike&M.	Mike&M.	Mike&M.	Mike&M.
GOLF	88	PGA Golf	PGA Golf	PGA Golf	PGA Golf	PGA Golf	PGA Golf	PGA Golf	PGA Golf	PGA Golf	PGA Golf	PGA Golf	PGA Golf	PGA Golf	PGA Golf	PGA Golf	PGA Golf	PGA Golf	PGA Golf	PGA Golf	PGA Golf	PGA Golf	PGA Golf	PGA Golf
GSN	76	The Chase	Reaction	Am.Says	Am.Says	Am.Says	Am.Says	Am.Says	Am.Says	Am.Says	Am.Says	Am.Says	Am.Says	Am.Says	Am.Says	Am.Says	Am.Says	Am.Says	Am.Says	Am.Says	Am.Says	Am.Says	Am.Says	Am.Says
HALL	87	Home and Family	Home and Family	Home and Family	Home and Family	Home and Family	Home and Family	Home and Family	Home and Family	Home and Family	Home and Family	Home and Family	Home and Family	Home and Family	Home and Family	Home and Family	Home and Family	Home and Family	Home and Family	Home and Family	Home and Family	Home and Family	Home and Family	Home and Family
HGTV	62	Fixer Upper	Fixer Upper	Fixer Upper	Fixer Upper	Fixer Upper	Fixer Upper	Fixer Upper	Fixer Upper	Fixer Upper	Fixer Upper	Fixer Upper	Fixer Upper	Fixer Upper	Fixer Upper	Fixer Upper	Fixer Upper	Fixer Upper	Fixer Upper	Fixer Upper	Fixer Upper	Fixer Upper	Fixer Upper	Fixer Upper
HIST	50	Ancient Aliens	Ancient Aliens	Ancient Aliens	Ancient Aliens	Ancient Aliens	Ancient Aliens	Ancient Aliens	Ancient Aliens	Ancient Aliens	Ancient Aliens	Ancient Aliens	Ancient Aliens	Ancient Aliens	Ancient Aliens	Ancient Aliens	Ancient Aliens	Ancient Aliens	Ancient Aliens	Ancient Aliens	Ancient Aliens	Ancient Aliens	Ancient Aliens	Ancient Aliens
LIFE	29	Her Worst Nightmare	My Husband's Double Life	My Husband's Double Life	My Husband's Double Life	My Husband's Double Life	My Husband's Double Life	My Husband's Double Life	My Husband's Double Life	My Husband's Double Life	My Husband's Double Life	My Husband's Double Life	My Husband's Double Life	My Husband's Double Life	My Husband's Double Life	My Husband's Double Life	My Husband's Double Life	My Husband's Double Life	My Husband's Double Life	My Husband's Double Life	My Husband's Double Life	My Husband's Double Life	My Husband's Double Life	My Husband's Double Life
NICK	27	TopWing	PAW	PAW	PAW	Sponge	Sponge	Sponge	Sponge	TMNT	Loud H.	Loud H.	Loud H.	Loud H.	Loud H.	Loud H.	Loud H.	Loud H.	Loud H.	Loud H.	Loud H.	Loud H.	Loud H.	Loud H.
ROOT	37	Paid	Paid	The Dan Patrick Show (N)	Xterra	Offense	Journal	Motocross X-Fighters	Crashed Ice	Cliff Diving	WPT Poker	WPT Poker	WPT Poker	WPT Poker	WPT Poker	WPT Poker	WPT Poker	WPT Poker	WPT Poker	WPT Poker	WPT Poker	WPT Poker	WPT Poker	
SPIKE	42	Bar Rescue	Bar Rescue	Bar Rescue	Bar Rescue	Bar Rescue	Bar Rescue	Bar Rescue	Bar Rescue	Bar Rescue	Bar Rescue	Bar Rescue	Bar Rescue	Bar Rescue	Bar Rescue	Bar Rescue	Bar Rescue	Bar Rescue	Bar Rescue	Bar Rescue	Bar Rescue	Bar Rescue	Bar Rescue	Bar Rescue
SYFY	67	The Vatican Tapes	I, Frankenstein	I, Frankenstein	I, Frankenstein	I, Frankenstein	I, Frankenstein	I, Frankenstein	I, Frankenstein	I, Frankenstein	I, Frankenstein	I, Frankenstein	I, Frankenstein	I, Frankenstein	I, Frankenstein	I, Frankenstein	I, Frankenstein	I, Frankenstein	I, Frankenstein	I, Frankenstein	I, Frankenstein	I, Frankenstein	I, Frankenstein	I, Frankenstein
TBS	59	Friends	Friends	Friends	Friends	Friends	Friends	Friends	Friends	Friends	Friends	Friends	Friends	Friends	Friends	Friends	Friends	Friends	Friends	Friends	Friends	Friends	Friends	Friends
TCM	56	Life & Tim...	*** The Train Robbers	*** Hearts of the West	*** The Caine Mutiny	*** The Caine Mutiny	*** The Caine Mutiny	*** The Caine Mutiny	*** The Caine Mutiny	*** The Caine Mutiny	*** The Caine Mutiny	*** The Caine Mutiny	*** The Caine Mutiny	*** The Caine Mutiny	*** The Caine Mutiny	*** The Caine Mutiny	*** The Caine Mutiny	*** The Caine Mutiny	*** The Caine Mutiny	*** The Caine Mutiny	*** The Caine Mutiny	*** The Caine Mutiny	*** The Caine Mutiny	*** The Caine Mutiny
TLC	49	90 Day Fiancé	"Truth or Lie"	90 Day Fiancé	90 Day Fiancé	90 Day Fiancé	90 Day Fiancé	90 Day Fiancé	90 Day Fiancé	90 Day Fiancé	90 Day Fiancé	90 Day Fiancé	90 Day Fiancé	90 Day Fiancé	90 Day Fiancé	90 Day Fiancé	90 Day Fiancé	90 Day Fiancé	90 Day Fiancé	90 Day Fiancé	90 Day Fiancé	90 Day Fiancé	90 Day Fiancé	90 Day Fiancé
TNT	57	Supernatural	Bones	Bones	Bones	Bones	Bones	Bones	Bones	Bones	Bones	Bones	Bones	Bones	Bones	Bones	Bones	Bones	Bones	Bones	Bones	Bones	Bones	Bones
UNI	21	Notic.	Vecinos	LIKE, La Ley	Como dice	En Tierras S	Gordo y flaca	Primer impacto	P.Luche	Notic.	Rosa	Jesus	Mi Marido Tiene	Amar a Muerte	Impacto	Notic.	Notic.	Notic.	Notic.	Notic.	Notic.	Notic.	Notic.	Notic.
USA	58	Law&O: SVU	Law&O: SVU	Law&O: SVU	Law&O: SVU	Law&O: SVU	Law&O: SVU	Law&O: SVU	Law&O: SVU	Law&O: SVU	Law&O: SVU	Law&O: SVU	Law&O: SVU	Law&O: SVU	Law&O: SVU	Law&O: SVU	Law&O: SVU	Law&O: SVU	Law&O: SVU	Law&O: SVU	Law&O: SVU	Law&O: SVU	Law&O: SVU	Law&O: SVU
WE	118	Law&Order: CI	Law&Order: CI	Law&Order: CI	Law&Order: CI	Criminal Minds	Criminal Minds	Criminal Minds	Criminal Minds	Criminal														