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Is the Web Driving Us Mad?

The new research into the Net's negative effects. By Tony Dokoupil.

by Tony Dokoupil (/contributors/tony-dokoupil.html) | July 9, 2012 1:00 AM EDT

Before he launched the most viral video in Internet history, Jason Russell (/cheats/2012/03/17/wife-jason-russell-wasn-t-on-drugs.html) was a half-hearted Web presence. His YouTube account was dead, and his Facebook and Twitter pages were a trickle of kid pictures and home-garden updates. The Web wasn't made "to keep track of how much people like us," he thought, and when his own tech habits made him feel like "a genius, an addict, or a megalomaniac," he unplugged for days, believing, as the humorist Andy Borowitz put it in a tweet that Russell tagged as a favorite, "it's important to turn off our computers and do things in the real world."

But this past March Russell struggled to turn off anything. He forwarded a link to "Kony 2012," his deeply personal Web documentary about the African warlord Joseph Kony (/newsweek/2012/04/15/the-hunt-for-kony.html) . The idea was to use social media to make Kony famous as the first step to stopping his crimes. And it seemed to work: the film hurtled through cyberspace, clocking more than 70 million views in less than a week. But something happened to Russell in the process. The same digital tools that supported his mission seemed to tear at his psyche, exposing him to nonstop kudos and criticisms, and ending his arm's-length relationship with new media.

He slept two hours in the first four days, producing a swirl of bizarre Twitter updates. He sent a link to "I Met the Walrus," a short animated interview with John Lennon, urging followers to "start training your mind." He sent a picture of his tattoo, TIMSHEL, a biblical word about man's choice between good and evil. At one point he uploaded and commented on a digital photo of a text message from his mother. At another he compared his life to the mind-bending movie *Inception*, "a dream inside a dream."

On the eighth day of his strange, 21st-century vortex, he sent a final tweet—a quote from Martin Luther King Jr.: "If you can't fly, then run, if you can't run, then walk, if you can't walk, then crawl, but whatever you do, you have to keep moving forward"—and walked back into the real world. He took off his clothes and went to the corner of a busy intersection near his home in San Diego, where he repeatedly slapped the concrete with both palms and ranted about the devil. This too became a viral video.

Afterward Russell was diagnosed with "reactive psychosis," a form of temporary insanity. It had nothing to do with drugs or alcohol, his wife, Danica, stressed in a blog post, and everything to do

with the machine that kept Russell connected even as he was breaking apart. "Though new to us," Danica continued, "doctors say this is a common experience," given Russell's "sudden transition from relative anonymity to worldwide attention—both raves and ridicules." More than four months later, Jason is out of the hospital, his company says, but he is still in recovery. His wife took a "month of silence" on Twitter. Jason's social-media accounts remain dark.

[(/content/newsweek/2012/07/08/is-the-internet-making-us-crazy-what-the-new-research-says.img.jpg)](/content/newsweek/2012/07/08/is-the-internet-making-us-crazy-what-the-new-research-says.img.jpg)

Tony Dokoupil on how the web affects mental health.

Questions about the Internet's deleterious effects on the mind are at least as old as hyperlinks. But even among Web skeptics, the idea that a new technology might influence how we think and feel—let alone contribute to a great American crack-up—was considered silly and naive, like waving a cane at electric light or blaming the television for kids these days. Instead, the Internet was seen as just another medium, a delivery system, not a diabolical machine. It made people happier and more productive. And where was the proof otherwise?

Now, however, the proof is starting to pile up. The first good, peer-reviewed research is emerging, and the picture is much gloomier than the trumpet blasts of Web utopians have allowed. The current incarnation of the Internet—portable, social, accelerated, and all-pervasive—may be making us not just dumber or lonelier but more depressed and anxious, prone to obsessive-compulsive and attention-deficit disorders, even outright psychotic. Our digitized minds can scan like those of drug addicts, and normal people are breaking down in sad and seemingly new ways.

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In the summer of 1996, seven young researchers at MIT blurred the lines between man and computer, living simultaneously in the physical and virtual worlds. They carried keyboards in their pockets, radio-transmitters in their backpacks, and a clip-on screen in front of their eyes. They called themselves "cyborgs"—and they were freaks. But as Sherry Turkle, a psychologist at MIT, points out, "we are all cyborgs now." This life of continuous connection has come to seem normal, but that's not the same as saying that it's healthy or sustainable, as technology—to paraphrase the old line about alcohol—becomes the cause of and solution to of all life's problems.

In less than the span of a single childhood, Americans have merged with their machines, staring at a screen for at least eight hours a day, more time than we spend on any other activity including sleeping. Teens fit some seven hours of screen time into the average school day; 11, if you count time spent multitasking on several devices. When President Obama last ran for office, the iPhone had yet to be launched. Now smartphones outnumber the old models in America, and more than a third of users get online before getting out of bed.

Meanwhile, texting has become like blinking: the average person, regardless of age, sends or receives about 400 texts a month, four times the 2007 number. The average teen processes an astounding 3,700 texts a month, double the 2007 figure. And more than two thirds of these normal, everyday cyborgs, myself included, report feeling their phone vibrate when in fact nothing is happening. Researchers call it "phantom-vibration syndrome."

Photo Illustration by Justin Metz

Altogether the digital shifts of the last five years call to mind a horse that has sprinted out from underneath its rider, dragging the person who once held the reins. No one is arguing for some kind of Amish future. But the research is now making it clear that the Internet is not "just" another delivery system. It is creating a whole new mental environment, a digital state of nature where the human mind becomes a spinning instrument panel, and few people will survive unscathed.

"This is an issue as important and unprecedented as climate change," says Susan Greenfield, a pharmacology professor at Oxford University who is working on a book about how digital culture is rewiring us—and not for the better. "We could create the most wonderful world for our kids but that's not going to happen if we're in denial and people sleepwalk into these technologies and end up glassy -eyed zombies."

Does the Internet make us crazy? Not the technology itself or the content, no. But a Newsweek review of findings from more than a dozen countries finds the answers pointing in a similar direction. Peter Whybrow, the director of the Semel Institute for Neuroscience and Human Behavior at UCLA, argues that "the computer is like electronic cocaine," fueling cycles of mania followed by depressive stretches. The Internet "leads to behavior that people are conscious is not in their best interest and does leave them anxious and does make them act compulsively," says Nicholas Carr, whose book *The Shallows*, about the Web's effect on cognition, was nominated for a Pulitzer Prize. It "fosters our obsessions, dependence, and stress reactions," adds Larry Rosen, a California psychologist who has researched the Net's effect for decades. It "encourages—and even promotes—insanity."

Fear that the Internet and mobile technology contributes to addiction—not to mention the often related ADHD and OCD disorders—has persisted for decades, but for most of that time the naysayers prevailed, often puckishly. "What's next? Microwave abuse and Chapstick addiction?" wrote a peer reviewer for one of the leading psychiatric journals, rejecting a national study of problematic Internet

use in 2006. The Diagnostic and Statistical Manual of Mental Disorders has never included a category of machine-human interactions.

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But that view is suddenly on the outs. When the new DSM is released next year, Internet Addiction Disorder will be included for the first time, albeit in an appendix tagged for "further study." China, Taiwan, and Korea recently accepted the diagnosis, and began treating problematic Web use as a grave national health crisis. In those countries, where tens of millions of people (and as much as 30 percent of teens) are considered Internet-addicted, mostly to gaming, virtual reality, and social media, the story is sensational front-page news. One young couple neglected its infant to death while nourishing a virtual baby online. A young man fatally bludgeoned his mother for suggesting he log off (and then used her credit card to rack up more hours). At least 10 ultra-Web users, serviced by one -click noodle delivery, have died of blood clots from sitting too long.

Now the Korean government is funding treatment centers, and coordinating a late-night Web shutdown for young people. China, meanwhile, has launched a mothers' crusade for safe Web habits, turning to that approach after it emerged that some doctors were using electro-shock and severe beatings to treat Internet-addicted teens.

"There's just something about the medium that's addictive," says Elias Aboujaoude, a psychiatrist at Stanford University School of Medicine, where he directs the Obsessive Compulsive Disorder Clinic and Impulse Control Disorders Clinic. "I've seen plenty of patients who have no history of addictive behavior—or substance abuse of any kind—become addicted via the Internet and these other technologies."

His 2006 study of problematic Web habits (the one that was puckishly rejected) was later published, forming the basis for his recent book *Virtually You*, about the fallout expected from the Web's irresistible allure. Even among a demographic of middle-aged landline users—the average respondent was in his 40s, white, and making more than $50,000 a year—Aboujaoude found that more than one in eight showed at least one sign of an unhealthy attachment to the Net. More recent surveys that recruit people already online have found American numbers on a par with those in Asia.

The brains of Internet addicts scan a lot like the brains of drug and alcohol addicts.
(Mariette Carstens / Hollandse Hoogte-Redux)

Then there was the University of Maryland's 2010 "Unplugged" experiment that asked 200 undergrads to forgo all Web and mobile technologies for a day and to keep a diary of their feelings. "I clearly am addicted and the dependency is sickening," reported one student in the study. "Media is my drug," wrote another. At least two other schools haven't even been able to get such an experiment off the ground for lack of participants. "Most college students are not just unwilling, but functionally unable, to be without their media links to the world," the University of Maryland concluded.

That same year two psychiatrists in Taiwan made headlines with the idea of iPhone addiction disorder. They documented two cases from their own practices: one involved a high-school boy who ended up in an asylum after his iPhone usage reached 24 hours a day. The other featured a 31-year-old saleswoman who used her phone while driving. Both cases might have been laughed off if not for a 200-person Stanford study of iPhone habits released at the same time. It found that one in 10 users feels "fully addicted" to his or her phone. All but 6 percent of the sample admitted some level of compulsion, while 3 percent won't let anyone else touch their phones.

In the two years since, concern over the Web's pathological stickiness has only intensified. In April, doctors told *The Times of India* about an anecdotal uptick in "Facebook addiction." The latest details of America's Web obsession are found in Larry Rosen's new book, *iDisorder*, which, despite the hucksterish title, comes with the imprimatur of the world's largest academic publisher. His team surveyed 750 people, a spread of teens and adults who represented the Southern California census, detailing their tech habits, their feelings about those habits, and their scores on a series of standard tests of psychiatric disorders. He found that most respondents, with the exception of those over the age of 50, check text messages, email or their social network "all the time" or "every 15 minutes." More worryingly, he also found that those who spent more time online had more "compulsive personality traits."

Perhaps not that surprising: those who want the most time online feel compelled to get it. But in fact these users don't exactly *want* to be so connected. It's not quite free choice that drives most young corporate employees (45 and under) to keep their BlackBerrys in the bedroom within arms' reach, per a 2011 study; or free choice, per another 2011 study, that makes 80 percent of vacationers bring along laptops or smartphones so they can check in with work while away; or free choice that leads smartphone users to check their phones before bed, in the middle of the night, if they stir, and within minutes of waking up.

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We may appear to be choosing to use this technology, but in fact we are being dragged to it by the potential of short-term rewards. Every ping could be social, sexual, or professional opportunity, and we get a mini-reward, a squirt of dopamine, for answering the bell. "These rewards serve as jolts of energy that recharge the compulsion engine, much like the *frisson* a gambler receives as a new card hits the table," MIT media scholar Judith Donath recently told *Scientific American*. "Cumulatively, the effect is potent and hard to resist."

Recently it became possible to watch this kind of Web use rewire the brain. In 2008 Gary Small, the head of UCLA's Memory and Aging Research Center, was the first to document changes in the brain as a result of even moderate Internet use. He rounded up 24 people, half of them experienced Web users, half of them newbies, and he passed them each through a brain scanner. The difference was striking, with the Web users displaying fundamentally altered prefrontal cortexes. But the real surprise was what happened next. The novices went away for a week, and were asked to spend a total of five hours online and then return for another scan. "The naive subjects had already rewired their brains," he later wrote, musing darkly about what might happen when we spend more time online.

The brains of Internet addicts, it turns out, look like the brains of drug and alcohol addicts. In a study published in January, Chinese researchers found "abnormal white matter"—essentially extra nerve cells built for speed—in the areas charged with attention, control, and executive function. A parallel study found similar changes in the brains of videogame addicts. And both studies come on the heels of other Chinese results that link Internet addiction to "structural abnormalities in gray matter," namely shrinkage of 10 to 20 percent in the area of the brain responsible for processing of speech, memory, motor control, emotion, sensory, and other information. And worse, the shrinkage never stopped: the more time online, the more the brain showed signs of "atrophy."

While brain scans don't reveal which came first, the abuse or the brain changes, many clinicians feel their own observations confirmed. "There's little doubt we're becoming more impulsive," says Stanford's Aboujaoude, and one reason for this is technology use. He points to the rise in OCD and ADHD diagnosis, the latter of which has risen 66 percent in the last decade. "There is a cause and effect."

And don't kid yourself: the gap between an "Internet addict" and John Q. Public is thin to nonexistent. One of the early flags for addiction was spending more than 38 hours a week online. By that definition, we are all addicts now, many of us by Wednesday afternoon, Tuesday if it's a busy week. Current tests for Internet addiction are qualitative, casting an uncomfortably wide net, including people who admit that yes, they are restless, secretive, or preoccupied with the Web and that they

have repeatedly made unsuccessful efforts to cut back. But if this is unhealthy, it's clear many Americans don't want to be well.

Like addiction, the digital connection to depression and anxiety was also once a near laughable assertion. A 1998 Carnegie Mellon study found that Web use over a two-year period was linked to blue moods, loneliness, and the loss of real-world friends. But the subjects all lived in Pittsburgh, critics sneered. Besides, the Net might not bring you chicken soup, but it means the end of solitude, a global village of friends, and friends you haven't met yet. Sure enough, when Carnegie Mellon checked back in with the denizens of Steel City a few years later, they were happier than ever.

But the black crow is back on the wire. In the past five years, numerous studies have duplicated the original Carnegie Mellon findings and extended them, showing that the more a person hangs out in the global village, the worse they are likely to feel. Web use often displaces sleep, exercise, and face-to-face exchanges, all of which can upset even the chirpiest soul. But the digital impact may last not only for a day or a week, but for years down the line. A recent American study based on data from adolescent Web use in the 1990s found a connection between time online and mood disorders in young adulthood. Chinese researchers have similarly found "a direct effect" between heavy Net use and the development of full-blown depression, while scholars at Case Western Reserve University correlated heavy texting and social-media use with stress, depression, and suicidal thinking.

In response to this work, an article in the journal *Pediatrics* noted the rise of "a new phenomenon called 'Facebook depression,'?" and explained that "the intensity of the online world may trigger depression." Doctors, according to the report published by the American Academy of Pediatrics, should work digital usage questions into every annual checkup.

Rosen, the author of *iDisorder*, points to a preponderance of research showing "a link between Internet use, instant messaging, emailing, chatting, and depression among adolescents," as well as to the "strong relationships between video gaming and depression." But the problem seems to be quality as well as quantity: bad interpersonal experiences—so common online—can lead to these potential spirals of despair. For her book *Alone Together*, MIT psychologist Sherry Turkle interviewed more than 450 people, most of them in their teens and 20s, about their lives online. And while she's the author of two prior tech-positive books, and once graced the cover of *Wired* magazine, she now reveals a sad, stressed-out world of people coated in Dorito dust and locked in a dystopian relationship with their machines.

People tell her that their phones and laptops are the "place for hope" in their lives, the "place where sweetness comes from." Children describe mothers and fathers unavailable in profound ways, present and yet not there at all. "Mothers are now breastfeeding and bottle-feeding their babies as they text," she told the American Psychological Association last summer. "A mother made tense by text messages is going to be experienced as tense by the child. And that child is vulnerable to interpreting that tension as coming from within the relationship with the mother. This is something that needs to be watched very closely." She added, "Technology can make us forget important things we know about life."

This evaporation of the genuine self also occurred among the high-school- and college-age kids she interviewed. They were struggling with digital identities at an age when actual identity is in flux. "What I learned in high school," a kid named Stan told Turkle, "was profiles, profiles, profiles; how to make a me." It's a nerve-racking learning curve, a life lived entirely in public with the webcam on, every mistake recorded and shared, mocked until something more mockable comes along. "How long do I have to do this?" another teen sighed, as he prepared to reply to 100 new messages on his phone.

Last year, when MTV polled its 13- to 30-year-old viewers on their Web habits, most felt "defined" by what they put online, "exhausted" by always having to be putting it out there, and utterly unable to look away for fear of missing out. "FOMO," the network called it. "I saw the best minds of my generation destroyed by madness, starving hysterical naked," begins Allen Ginsberg's poem *Howl*, a beatnik rant that opens with people "dragging themselves" at dawn, searching for an "angry fix" of heroin. It's not hard to imagine the alternative imagery today.

The latest Net-and-depression study may be the saddest one of all. With consent of the subjects, Missouri State University tracked the real-time Web habits of 216 kids, 30 percent of whom showed signs of depression. The results, published last month, found that the depressed kids were the most intense Web users, chewing up more hours of email, chat, videogames, and file sharing. They also opened, closed, and switched browser windows more frequently, searching, one imagines, and not finding what they hoped to find.

They each sound like Doug, a Midwestern college student who maintained four avatars, keeping each virtual world open on his computer, along with his school work, email, and favorite videogames. He told Turkle that his real life is "just another window"—and "usually not my best one." Where is this headed? she wonders. That's the scariest line of inquiry of all.

Recently, scholars have begun to suggest that our digitized world may support even more extreme forms of mental illness. At Stanford, Dr. Aboujaoude is studying whether some digital selves should be counted as a legitimate, pathological "alter of sorts," like the alter egos documented in cases of multiple personality disorder (now called dissociative identity disorder in the DSM). To test his idea, he gave one of his patients, Richard, a mild-mannered human-resources executive with a ruthless Web poker habit, the official test for multiple personality disorder. The result was startling. He scored as high as patient zero. "I might as well have been ... administering the questionnaire to Sybil Dorsett!" Aboujaoude writes.

The Gold brothers—Joel, a psychiatrist at New York University, and Ian, a philosopher and psychiatrist at McGill University—are investigating technology's potential to sever people's ties with reality, fueling hallucinations, delusions, and genuine psychosis, much as it seemed to do in the case of Jason Russell, the filmmaker behind "Kony 2012." The idea is that online life is akin to life in the biggest city, stitched and sutured together by cables and modems, but no less mentally real—and taxing—than New York or Hong Kong. "The data clearly support the view that someone who lives in a big city is at higher risk of psychosis than someone in a small town," Ian Gold writes via email. "If the Internet is a kind of imaginary city," he continues. "It might have some of the same psychological impact."

A team of researchers at Tel Aviv University is following a similar path. Late last year, they published what they believe are the first documented cases of "Internet-related psychosis." The qualities of online communication are capable of generating "true psychotic phenomena," the authors conclude, before putting the medical community on warning. "The spiraling use of the Internet and its potential involvement in psychopathology are new consequences of our times."

So what do we do about it? Some would say nothing, since even the best research is tangled in the timeless conundrum of what comes first. Does the medium break normal people with its unrelenting presence, endless distractions, and threat of public ridicule for missteps? Or does it attract broken souls?

But in a way, it doesn't matter whether our digital intensity is causing mental illness, or simply encouraging it along, as long as people are suffering. Overwhelmed by the velocity of their lives, we turn to prescription drugs, which helps explain why America runs on Xanax (and why rehab admissions for benzodiazepines, the ingredient in Xanax and other anti-anxiety drugs, have tripled since the late 1990s). We also spring for the false rescue of multitasking, which saps attention even when the computer is off. And all of us, since the relationship with the Internet began, have tended to accept it as is, without much conscious thought about how we want it to be or what we want to avoid. Those days of complacency should end. The Internet is still ours to shape. Our minds are in the balance.

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