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SCIENCE JOURNAL

# New Insights Into Dreams and What They Say About Us

Some scientists enthuse about possible uses in therapy; Covid-fueled dreams of massive bug attacks

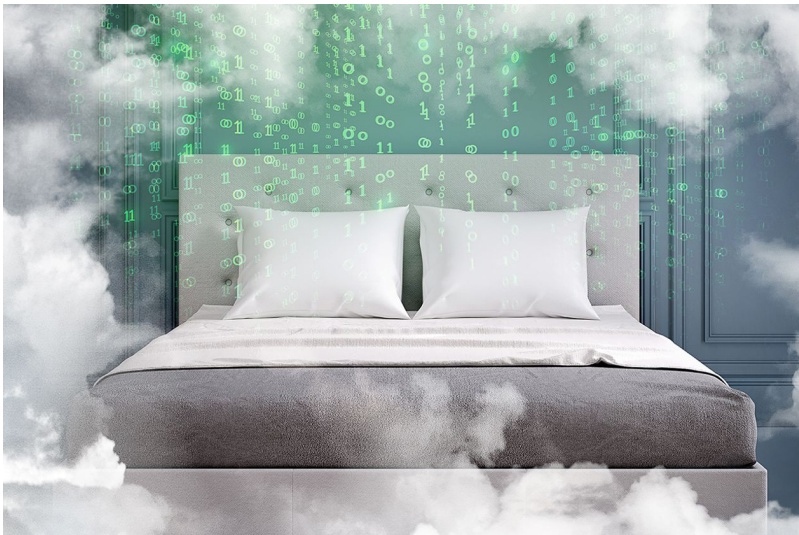


PHOTO: JOHN KUCZALA

By [Robert Lee Hotz](#)

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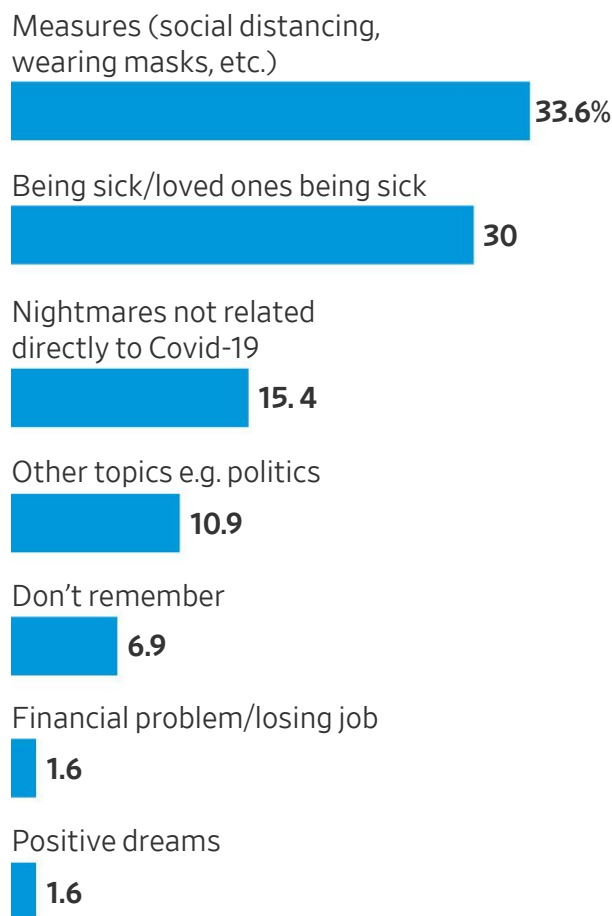
Psychologists and computer scientists are probing the Big Data of our dreams, to analyze how our collective psyche responds to the waking world. They're advancing artificial intelligence and digital databases into the realm of the unconscious, experimenting with new ways to identify those in mental distress and at the same time provoking worries about privacy.

For decades, scientists have debated whether the visions that inhabit our sleep are anything more than the neural noise of a brain at rest, even as personal dream journals and dream-sharing smartphone apps became popular bedside accessories. For many,

dream interpretation is an intensely private way to unravel relationships and explore emotional undercurrents, in a moment of introspection or in the course of psychotherapy.

In a series of new experiments, however, scientists now are collecting dream reports from thousands of people to analyze how our dreams may reflect current events. That includes the Covid-19 pandemic, which seemed to inspire many dreams of invading swarms of insects, including a grasshopper with vampire fangs. At the same time, scientists are developing new automated analytical techniques to tease out the unconscious responses we may all share across so many different dreams.

### Topics of Covid-19 dreams



Source: Dreaming and the COVID-19 Pandemic survey subset, 247 U.S. respondents, in press at Dreaming.

In the largest digital dream study so far, researchers at Cambridge University's Nokia Bell Labs in the U.K. recently created an artificial intelligence system to probe for broad patterns in the evocative stories our unconscious tells. To test the system, they used it to analyze transcripts in the largest known public collection of dream reports, called the DreamBank. Its 38,000 documented dreams range from the yearnings of a young girl coming of age to the nightmares of a Vietnam War combat veteran and stretch back well over a century.

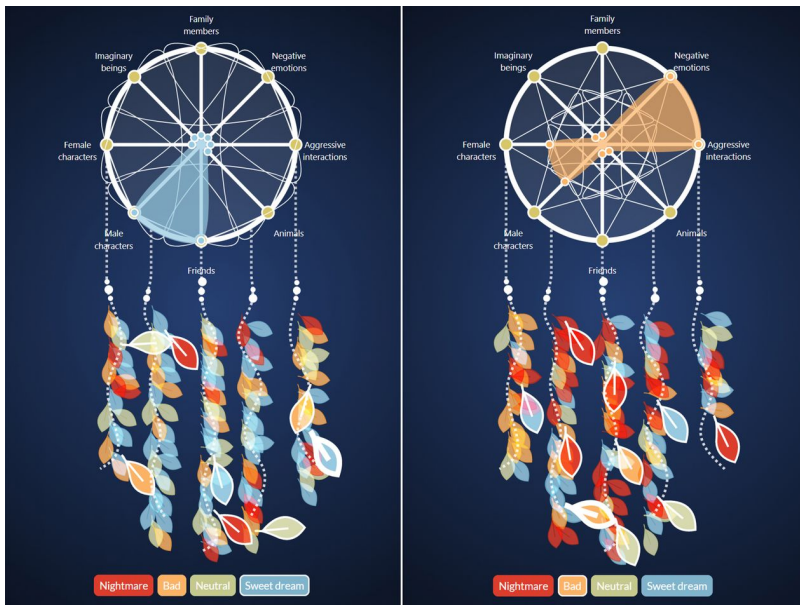
“By using automated techniques to study these reports, we can understand a lot of who we are,” says Luca Aiello, a computational social scientist at the Nokia Bell Labs social dynamics group, which conducted the project.

This AI “dreamcatcher” can automatically identify and quantify the characters, interactions and emotions of dreams by processing the natural language dreamers use to narrate their visions, which one day could help psychologists diagnose potential mental health issues among their patients, Dr. Aiello said. The dream-processing system automatically parses dream transcripts into their most important terms according to a widely accepted dream-analysis scale.

Broadly, they found that women had more friendly upbeat dreams, while men’s dreams were more aggressive and negative. Teenagers often dreamed of sex. Dreams reported by war veterans were often violent and dominated by men. Blind people tended to dream more frequently of imaginary characters, the scientists said.

The team’s initial findings, made public last month in the journal Royal Society Open Science, also support the well-established theory that our dreams reflect the situations we encounter while awake, with no deeper prophetic, mythological or religious meanings.

Our dreams reverberate from the shock of current events, such as the Black Lives Matter movement and Covid-19 pandemic, other scientists discovered from dream surveys this summer.



To help people explore the Big Data of dreams, researchers created an interactive online ‘Dreamcatcher,’ inspired by Native American designs. At their website, users can click on the ‘feathers’ below the hoops to highlight aspects of dreams the researchers analyzed, while inside the hoop, webs light up to show how various themes intersect. Above left, the chart for Izzy, who transcribed thousands of dreams from adolescence through her early womanhood. Above right, the chart for a Vietnam War veteran, who had nightmares about his intense combat experience for decades.

PHOTO: EDYTA BOGUCKA (2)

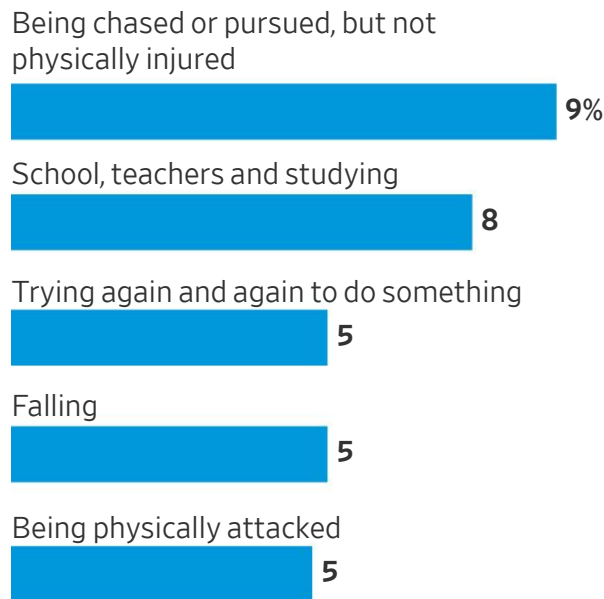
In a study of 9,000 pandemic-related dreams collected between March and July, psychologist Deirdre Barrett at Harvard Medical School encountered visions of “armies of cockroaches, masses of wriggling worms and swarms of bees....There was a woman who dreamed she saw a huge tarantula crawling into her apartment through the mail slot.”

Psychologist Kelly Bulkeley, director of the online [Sleep and Dream Database](#) in Portland, Ore., surveyed 5,000 people three weeks after the May 25 death of George Floyd at the hands of police in Minneapolis. He saw a rise in dreams about the protests and racial injustice, calling them “heart-wrenching. They are snapshots from the unconscious of fear and sadness and confusion.”

In the long run, these dream-analysis techniques may one day help to analyze the collective unconscious of social media, where true intentions, meanings and emotions so often lie below the surface of the public words and images we post, Dr. Aiello says. They may lead to algorithms that can automatically identify and help promote positive behavior online, he adds.

At best, the Dreamcatcher project “is a baby step,” says dream scientist William Domhoff at the University of California, Santa Cruz, who created the pioneering DreamBank database but was not directly involved in the AI project.

### Most frequent typical dream themes



Source: International Journal of Dream Research survey, 1,546 Italian respondents, ages 8-70 years, published April 2020

Creating large collections of dreams is crucial for scientific studies because dreaming is so subjective and intangible, Dr. Domhoff says. “That is too much uncertainty for a hard-nosed scientist.”

Up until the late 1990s or so, “it was considered a huge dream study if you had data from 500 people,” says Dr. Barrett at Harvard. “All of a sudden there were these databases of tens of thousands of dreams.”

She began examining the impact of current events on dreams by studying the post-traumatic stress nightmares of people in Kuwait after the first Gulf War. For that research, she was able to collect 83 dream reports. She also analyzed how the 9/11 terrorist attack in New York affected dreamers. She obtained about 120 dream transcripts for study. For her new study of Covid-19 dreams, she assembled more than 9,000 dream reports from about 4,000 people in more than 13 countries.

Dr. Bulkeley’s online dream archive contains 26,000 dream reports contributed by 11,000 people. Individuals can check their own dreams against those of others, and Mr. Bulkeley uses the collection, among other things, to establish baselines of normal dreaming.

While still highly experimental, the new dream studies underscore the power of data mining to assemble unexpected insights by sifting through large data sets of seemingly unrelated information.

As computer analysts become more fluent in the psychological vocabulary of dreams, several scientists are worried that data-mining algorithms and large-scale public digital dream archives could be used to look beyond mental health trends. They worry that the research poses novel questions of privacy and the potential for misuse.

“I’m concerned about using big aggregations of dream data, not for therapy or personal growth but to profile people according to their political beliefs or financial vulnerabilities or toothpaste preferences or likelihood of having an affair,” says Dr. Bulkeley.

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