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Scientists Created AI to Analyze People's Dreams on a Massive Scale

Scientists analyzed 24,000 dream reports using AI in the largest dream analysis study to date to test the 'continuity hypothesis' — the idea that dreams are influenced by and interact with waking life.

MB   By <u>Maddie Bender</u>

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IMAGE: <u>ANDREA PIACQUADIO</u> FROM <u>PEXELS</u>

Cryptic though they may be, my dream notes make it clear to me that my experiences, priorities, and anxieties get incorporated into my dreams in some way. The theory that dreams are an extension of a person's waking life is what's known as the continuity hypothesis, but it had only been tested by studies with small sample sizes until now.

Scientists in the UK and Italy created an AI tool to analyze tens of thousands of dream reports, providing the largest dream analysis study to date. Their results, which were published Wednesday in the journal *Royal Society Open Science*, support the continuity hypothesis and provide insight into how differences in a group's lived experience affect their dreams.

"The common sayings and poetry around the work of Freud leads people to believe that most of our dreams are cryptic messages and must be interpreted," said Luca Aiello, a senior research scientist at Nokia Bell Labs and one of the paper's co-authors. "In reality, what people may not realize is that dreams are very pure representations of our psychological state in relation to what we do."

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Aiello and his collaborators applied their AI tool to dream reports collected in the DreamBank, a massive database put together by Adam Schneider and UC Santa Cruz professor emeritus G. William Domhoff. The dream reports are more thorough than my brief dream journal entries. One, from a blind person, reads: "I was at a religious retreat. We were sitting in a dining room, eating dinner. There were roses on the table, I smelled their fragrance. We had a Thanksgiving-type dinner with my favorite things (turkey, stuffing, cranberries) and

To quantify aspects of dreams, psychologists apply scales to separate reports into the characters, interactions, and emotions mentioned. Applying a scale is typically done manually, and it's often time-consuming, Aiello said.

Aiello is a computer scientist by training and saw a solution in the form of machine learning. He built a tool that uses natural language processing to parse dream reports into their most important terms. Then, it applies a common dream analysis scale and calculates metrics like the proportion of imaginary characters, aggressive interactions, or negative emotions present in a dream.

Crucially, automating this process allowed the researchers to analyze dreams at an unprecedented scale. Single dream reports—like the blind person's spring Thanksgiving dinner—offer specific glimpses into an individual's psyche, but the power of the 24,000 reports scored in aggregate let the researchers draw general conclusions, Aiello said.

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For example, they found that the blind people in the database were more likely to dream about imaginary or abstract characters than sighted people. They also used sensory language that didn't always involve sight, like how the dreamer in the earlier example said they smelled roses.

Aiello's group also compared the AI-calculated metrics of dream reports with "ground truth numbers," which had been manually analyzed by psychologists and were available from DreamBank. They found that the AI tool categorized things differently than the manual analyses at an average rate of 24 percent, which is fairly low in the context of machine learning, according to Aiello.

understand our collective and varied methods of coping.

"What you could see is how people psychologically react to global events," Aiello said. "Today it can be the COVID-19 pandemic, tomorrow it could be a financial crisis, the day after it could be global warming."

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