Health & Medicine

Can Computers Predict who Develops Mental Illness?

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One of the surest signs that a person is in the early stages of schizophrenia, psychiatrists have long known, is that he or she begins to speak in short, clipped sentences and jump abruptly from one conversation topic to another.

This summer, a group of researchers from Columbia, the New York State Psychiatric Institute, and IBM's Thomas J. Watson Research Center published a study suggesting that computers may be able to help clinicians detect these early indicators of mental illness. In the study, an automated speech-analysis program that the researchers developed predicted with 100 percent accuracy which of thirty-four teens and young adults would go on to develop schizophrenia over a two-and-a-half-year period, based on its analysis of transcripts of the subjects speaking with clinicians.

"The computer was programmed to look for the same troubling diagnostic clues that psychiatrists are trained to spot, like breaks in the flow of meaning between sentences and the absence of clauses used to tie phrases together smoothly," says Cheryl Corcoran '05PH, a Columbia assistant professor of psychiatry and a coauthor of the paper. "Whereas clinicians would sometimes miss subtle signs that a person's speech was becoming disjointed, the computer never did — and every one of the subjects it identified as speaking oddly went on to have a psychotic episode."

Corcoran and her colleagues are now planning a larger follow-up study; their initial trial with thirty-four subjects, five of whom developed schizophrenia, was merely a pilot. They say that if their speech-analysis program proves useful in predicting the onset of schizophrenia among a larger cohort of study subjects, their method could one day be incorporated into mental-health screening procedures, complementing psychiatrists' face-to-face clinical observations. This would be especially useful in screening the 1 percent of Americans aged fourteen to twenty-seven who, like the subjects in the new study, are considered at risk for psychosis — meaning they have

already shown signs of serious emotional distress, erratic behavior, or paranoia.

“About 20 percent of these young people will eventually develop full-blown psychosis, and identifying them early has proved an elusive goal,” Corcoran says. “Early identification could lead to intervention and support that could delay, mitigate, or even prevent the onset of serious mental illness.”



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