ARTIFICIAL INTELLIGENCE AND YOU

Artificially intelligent technologies have the potential to transform mental health care. What does that mean for your practice?

BY **HANNAH CALKINS**

magine a robot capable of having a conversation with a human user. But not just any kind of conversation: Imagine that the robot inquires about the user's thoughts, behavior and mood. Imagine that the robot listens to the user's answers and asks probing follow-up questions. Perhaps the robot challenges a thought that the user shares, or suggests reframing it, or expresses empathy with the user. Imagine, in other words, a robot that behaves a lot like a therapist.

This may sound like a futuristic scenario (and possibly a dystopian one, depending on your perspective). But this technology has existed since the mid-1960s, when Joseph Weizenbaum created a convincing computer simulation of a psychotherapist called "The Doctor." Today, similar technologies are becoming increasingly advanced—and increasingly available at low or no cost on commercial markets. Depending on their purpose, these technologies use various applications of artificial intelligence—such as machine learning and natural language processing—to analyze, screen or even perform cognitive behavioral therapy techniques with users. They may take the form of "virtual humans" that look and sound like professionals, or of "chatbots" (sometimes called *conversational agents*) personified as cute nonhuman characters. While some of these tools are meant to be administered to patients by providers, others are primarily designed for consumers to use on their own mobile devices.

As a practicing psychologist, you may be bemused to learn of the emergence of these unusual entities into the highly personal, complex world of mental and behavioral health care. You may have concerns about user safety and confidentiality. You may question the scientific validity of technologies claiming to perform the skills and tasks you were trained to do. At the same time, you may also be intrigued by this technology's potential—or you may fear that one day it will become sophisticated enough to put you out of work.

But no matter your feelings on the rise of artificial intelligence in mental health care, from a business perspective it makes sense to learn more about it, even if you decide not to engage with it directly.

"In the last five or six years, artificial intelligence [AI] has had a significant impact on the field of psychology," said David D. Luxton, PhD, a psychologist and expert in behavioral health technologies and their ethics. "Our profession needs to pay attention to what is happening, and what is coming."

CHATBOTS AND VIRTUAL HUMANS: EXAMPLES

One of the most popular iterations of artificially intelligent mental health technology today is the "chatbot" therapy app. These apps feature artificially intelligent "coaches" that users communicate with via instant messaging or texting. Some examples are "Tess," which is described as a coach that helps people build resilience through conversation; "Wysa," characterized as a cute talking penguin that does the same; and "Woebot," a "charming robot friend who is ready to listen, 24/7." Many of these chatbot apps can be downloaded to your phone from its app store.

Athena Robinson, PhD, is the chief clinical officer at Woebot Labs. She is a private practitioner and researcher who spent 10 years on the psychiatry faculty at the Stanford University School of Medicine before she was recruited to "oversee the theoretical foundation and integration of treatment skills" into the Woebot app.

"I would describe Woebot as a personal coach that offers intelligent mood-tracking," she said. "Through conversation, its goal is to help people learn empirically supported skills, like thought-challenging, and to have a forum in which to practice those skills any time they are in need."

According to Robinson, apps such as Woebot are a response to a global mental health crisis. Woebot, for instance, brings relief to people who are in need of care but who can't afford or are otherwise unable to see a provider, she said. At least one study has already shown that

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Woebot is effective in reducing depression. (That study, as well as more information about the app, is available on Woebot Labs' website, **www.woebot.io**.)

But the app, which Robinson says is compliant with both the Health Insurance and Portability Act (HIPAA) and the General Data Protection Regulation (GDPR), also works well as a complement to in-person therapy.

"Woebot can be used as an early intervention before someone sees a counselor; it can be used as a step down from higher levels of care; and it can be used alongside therapy" as a point of discussion with a counselor or as "homework" in between sessions, Robinson said.

A different set of AI technologies is designed to guide users through specific processes, or to screen users for specific risks. These kinds of tools are often computer-based, administered by providers, and feature interactive, highly realistic human simulations that read and analyze users' verbal and non-verbal responses. Good examples of these "virtual human" tools can be found at the University of Southern California's Institute for Creative Technology, such as its "SimCoach," which helps military personnel and their families engage with the mental health care system. Another example is the tool and character "AiME," developed by the tech company Textpert (AiME stands for for *artificial intelligence mental evaluation*).

"Think of AiME as a blood test or MRI for mental health," said Ray Christian, Textpert founder and CEO.

AiME, a chic brunette with an English accent, asks users interactive questions, observes their responses, and then determines their risk for depression, anxiety and addiction. She does this by analyzing users' speech content, vocal tonality and facial expressions—"the same three key inputs that a mental health professional observes in person," said Christian.

AiME's evaluation takes about five minutes, and her report results are sent directly to the treating physician or mental health professional. Christian says that AiME is HIPAA-compliant, and never sees users' personal data (other than their faces and voices).

"The tool is designed for repeat use so the practitioner can track mental health trends over
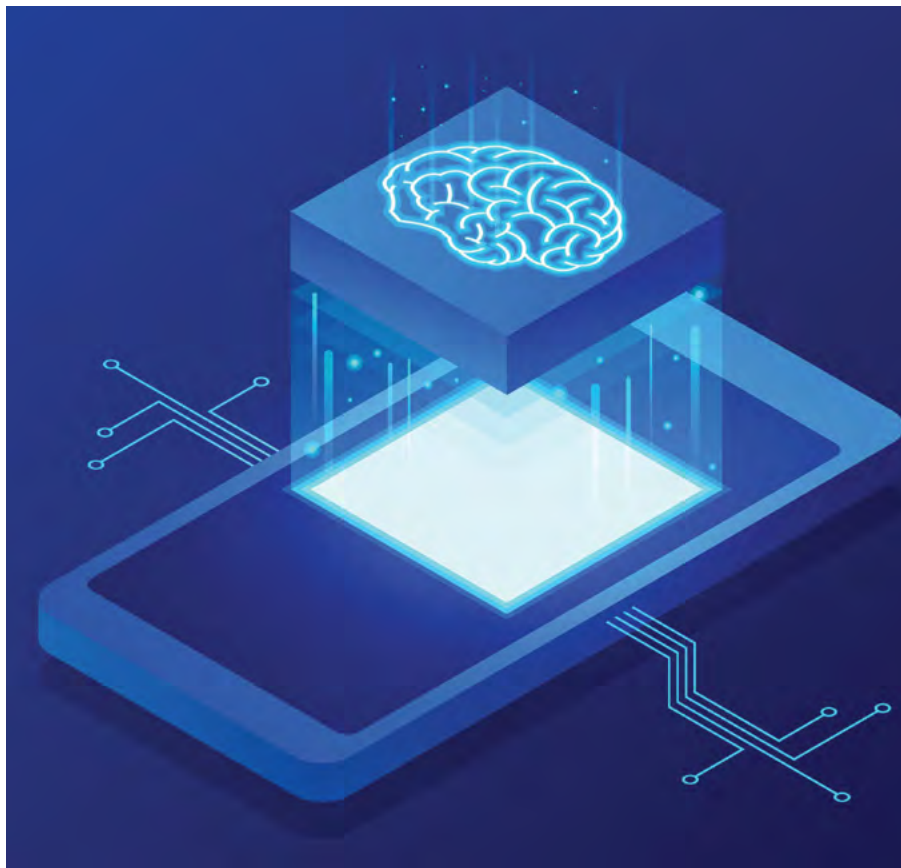
time," Christian said. (More information about the science behind AiME can be found on the Textpert website, **www.textpert.ai**.)

CONCERNS, LIMITATIONS AND A NEED FOR GUIDELINES

Luxton, who is an associate professor at the University of Washington and the founder of Olympia, Washington-based behavioral health technology consulting and research company Luxton Labs, LLC, predicts that AI technologies like AiME and Woebot will only become more prevalent in mental health care as time goes on.

Considering this, you may have questions regarding the ethics, privacy and security of these technologies. These concerns are legitimate given that, so far, these technologies lack regulation or formal professional guidelines.

"Especially for advanced uses of AI, I would be hesitant to incorporate [them into my

practice] without more specific guidelines, training and markers for competency on using these technologies," said JoAnna Romero Cartaya, PhD, a licensed psychologist in Iowa who uses an array of non-AI technological tools in her practice.

Luxton shares this concern. He's an advocate for the development of guidelines for the ethical use and design of artificially intelligent mental health tools, and has proposed recommendations himself in his work. But since those guidelines haven't been formally adopted by mental health care professional organizations, psychologists interested in AI need to make sure the technology they're using is safe and secure.

"One of the first issues that comes to mind is privacy," he said. "This technology can collect very sensitive information about people, and thus must be compliant with state, federal and international laws, as well as ethical guidelines, to assure that our profession does not lose public trust."

Another concern of great significance, according to Luxton, is crisis response. A responsibly designed tool should effectively respond or intervene if a user discloses that they are suicidal or violent, for example. Both Woebot and AiME have these safeguards, but other technologies may have poorly designed response mechanisms or lack them altogether.

Other concerns about AI in mental health care are just as important but may be more difficult to address. While the biggest advantages of AI are extreme efficiency, memory, precision and—some would argue—objectivity, psychologists might point out that AI systems in other industries have been found to be biased. Others, such as Cartaya, have questions about cultural competency and accessibility.

"I wonder how this technology takes into account aspects of diversity, including rural and urban populations, different age groups, and multicultural and LGBTQ perspectives," as well as the clients' language choices or gender pronouns, she said.

Additionally, she noted that tools such as AiME, which "read" users' faces and voices, may be unable to correctly assess patients with neurodevelopmental or neurological disorders, which can impact facial expression, voice intonation and word choices.

HELPFUL TOOLS— OR COMPETITORS?

Luxton says that some AI mental health tools are simply "better than humans at tracking clients, communicating with clients, and customizing an approach with clients," and it's possible that, in some cases, they may even apply ethical principles more reliably and consistently than a human provider would.

But Cartaya's concerns highlight the fact that no matter how efficient, consistent and precise these machines may be, they fall short of offering a human provider's nuanced judgment, empathy and experience.

So while Luxton cautions that "emerging artificial intelligence applications do pose a long-term threat to traditional jobs in our profession," that threat likely is a long way off.

"The moment AI replaces a mental health professional is the same moment all our jobs are in jeopardy," said Christian. "In the near- and medium-term future, AI is a tool that will enhance treatment and improve the lives of psychologists."

Similarly, Robinson says that Woebot, at least, is not an app intended to diminish the roles of mental health providers. "I'm a clinician—I understand that there is something wonderful about the relationship every psychologist develops with the individual who comes to see them," she said. "That relationship is special and unique, and cannot be replaced."

The bottom line is that, when developed in collaboration with human care providers, artificially intelligent mental health technology has a great deal of positive potential—but it's imperative that psychologists are involved in its design and application.

"Sometimes we're too late, and the technology is already in the marketplace and could be causing harm," said Luxton. "We need to recognize emerging issues and guide the development of the technology in a practical and ethical way." •

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