UVM App Calms, Studies Panic Attacks During COVID

University of Vermont

For the nearly 36 million Americans who experience panic attacks, the coronavirus pandemic is a potentially significant trigger.

> *A new app developed by faculty at the University of Vermont, PanicMechanic, may be part of a solution. The app adapts biofeedback-like monitoring so it can be used on a mobile phone. The app can work at any time and in any location, the first technology to do so for panic.*

PanicMechanic is meant to be used as a supplement to professional clinical care.

“The challenge with panic attacks is that they’re episodic,” said one of the app’s developers, Ellen McGinnis, an assistant professor at the University of Vermont’s Center for Children, Youth and Families and a trained clinical psychologist. “That means they’re not only difficult to treat in a traditional therapy setting, because a panic attack is hard to induce, but also that the one intervention that does seem to work for people—biofeedback—isn’t available when it’s needed.”

PanicMechanic uses the camera on a cell phone to measure the body's panic response, using an approach like photoplethysmography, an optical measurement of arterial volume used to determine heart rate.

"Activating the app, then holding your finger against the flash can give you an objective measure of your reaction to stress," said Ryan McGinnis, assistant professor of Electrical and Biomedical Engineering at the University of Vermont, and a co-developer of the app.

The concept is grounded both in decades of research showing that enabling panic sufferers to observe their body's reaction to stress reduces panic, and in Ellen McGinnis's clinical practice.

"I've used a low-tech version of this technique with a dozen patients," she said. "It was effective in helping patients manage, take control of and overcome their panic."

The explanation? Intervening with objective information targets a driving dynamic of panic, she said.
"Panic takes hold and you feel like you're out of control of your body. By showing someone their patterns of physiological arousal, it helps them gain a sense of mastery over their panic response."

The app also works because it gives the panic sufferer something to do during an episode.

The app also asks a variety of questions. These also occupy the sufferer and help provide data on behavior and triggers with the attack that may be avoided in the future.

It also predicts how long the panic attack will last, based on past attacks, helping alleviate one of the more frightening aspects of an attack.

PanicMechanic employs machine learning to make sure the data gathered by the user on heart is accurate. In a study that will be published later in 2020, Ellen and Ryan McGinnis and their collaborators demonstrate that app-obtained data was as accurate as that obtained in a lab.

The team that developed PanicMechanic includes Steve DiCristofaro of Synbrix Software, LLC., in addition to Ellen and Ryan McGinnis. The University of Vermont's Innovations office filed a patent application on the system in 2018 and has entered in to an exclusive option agreement with the pair of inventors to allow them to test the feasibility of commercializing their app by releasing it on the Apple App store prior to committing to an exclusive licensing agreement.

The PanicMechanic app is currently available in the Apple App store and is scheduled to be available for Android devices before the end of 2020.

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