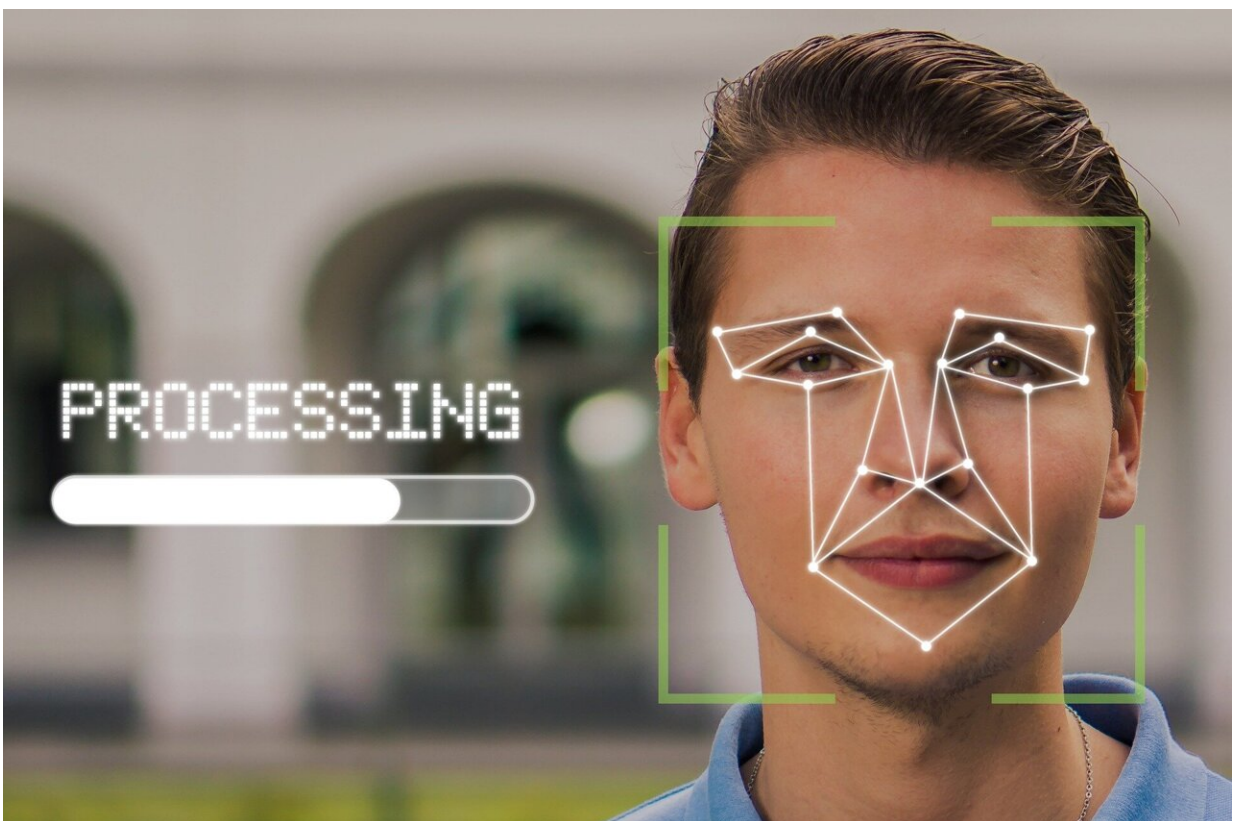


Researchers use AI to measure facial reactions to emotions to gauge risk of depression

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Repeatedly exposed to negative emotions, relationship professionals such as social workers, psychologists and psychoeducators are at high

risk of experiencing "emotional contagion," an unconscious, automatic transmission of an emotion from one individual to another.

That [contagion](#) can lead to stress and distress, as "[emotional issues](#) are among the main factors leading to burnout and even depression," according to Pierrich Plusquellec, a professor at Université de Montréal's School of Psychoeducation.

But how best to know how strong this "[emotional contagion](#)" is, and hence, how high the risk to professionals who deal with it, day in day out? The answer is by using [artificial intelligence](#), Plusquellec has found.

In a study published earlier this month in the journal *Psychological Reports*, Plusquellec and his master's [student](#) Vincent Denault describe using AI software to automatically measure people's facial expressions while they watch clips from popular films.

What they found is that the more the participants react with their faces to the emotions shown in the film clips, the greater appears to be their risk of depression, and the less able they become to show compassion.

56 students, a 30-minute video

In all, 56 psychoeducation students took part, mostly women, recruited by master's student Kaylee Smart. In the laboratory, they watched a 30-minute video of film excerpts known to elicit both positive and [negative emotions](#) (such as joy, anger, fear, sadness, disgust or surprise) or, in some cases, no emotion at all.

Those more likely to be "contaminated" by the [emotions of others](#) while watching the film clips were thought to be at greater risk of depression. The most predictive variable was overall reactivity to the film clips, regardless of the emotion conveyed.

The students' faces were filmed and analyzed by FACET (Facial Action Coding System) software, which uses AI. Before this new technique, a [measurement tool](#) called the Emotional Contagion Scale (ECC) relied on a self-administered questionnaire to produce its results.

"The problem (with ECC) is that if you're not aware of your own emotions, or if you don't have good introspection, you're going to answer incorrectly," said Plusquellec, whose other research interests include affective computing and non-verbal communication.

A previous study by Plusquellec, involving 700 youth-protection workers, found that when emotions get the better of people in such "caring" professions, their work is negatively affected. While empathy allows them to recognize emotions, sympathy (i.e., feeling what the other person is feeling) didn't always allow them the distance to support the other person properly.

"The issue of emotional contagion often flies under the radar", said Plusquellec, and "the closer you are to someone, the greater the risk." Psychoeducators' job is to establish a bond with their clients "and so they are more at risk of emotional exhaustion," he added.

To help his students prepare, and to better regulate their emotions, he looked to AI as an aid to measuring the "contagion" around them, adding the classic ECC psychometric questionnaire to help predict their risk of depression.

In the end, it turned out that the ECC "predicts very little", whereas FACET predicts both the risk of depression and empathic concern, i.e., wanting to help others, without falling into distress.

Plusquellec would like to make the FACET tool freely available online, to help those who actually help others.

"Since your facial reactivity predicts your risk of [depression](#), the tool could be used to conduct an emotional watch (on [social workers](#) and others), and enable early management," Plusquellec said.

Given that emotional contagion increases the risk of burnout, the researcher would also like to create an intervention to limit contagion, and help students learn how to better manage the emotions of others.

After all, he said, to help others you first have to help yourself.

More information: Pierrich Plusquellec et al, Facial Reactivity to Emotional Stimuli is Related to Empathic Concern, Empathic Distress, and Depressive Symptoms in Social Work Students, *Psychological Reports* (2023). [DOI: 10.1177/00332941231181027](https://doi.org/10.1177/00332941231181027)

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