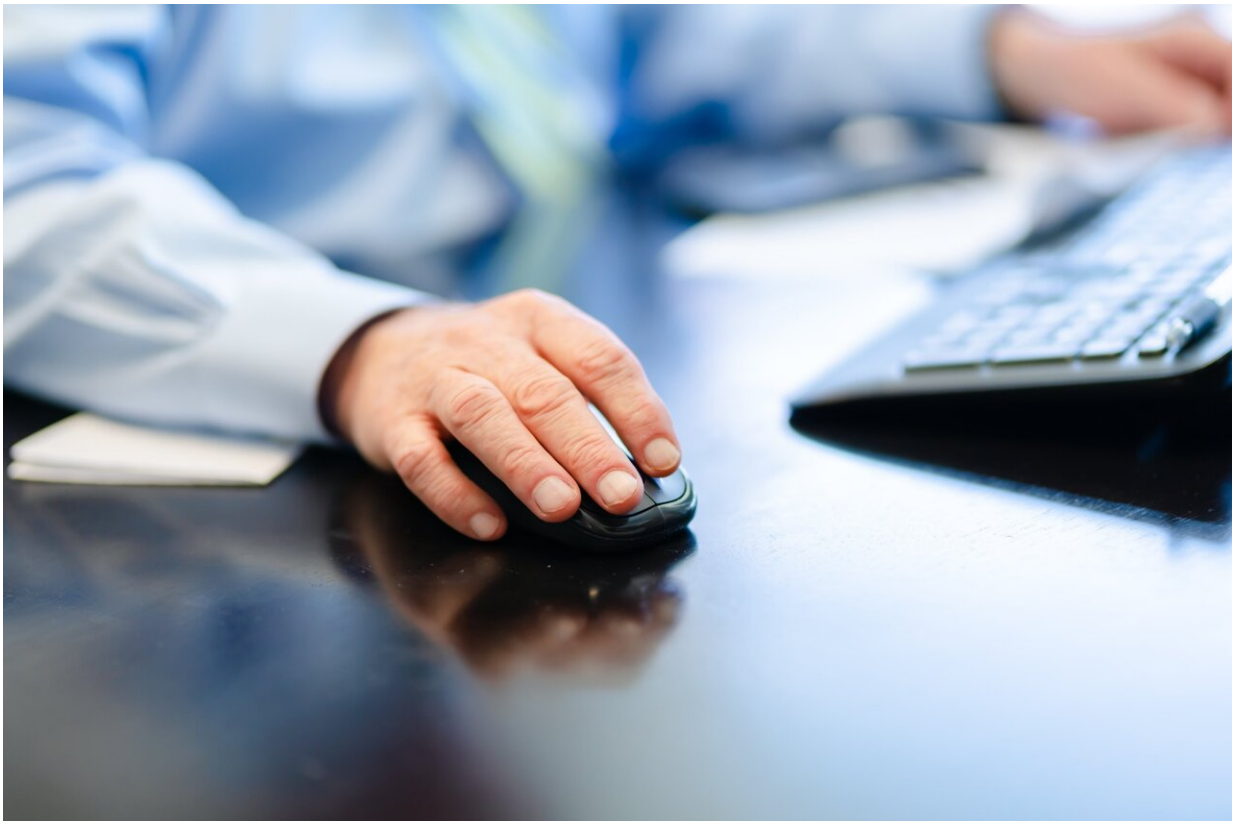# Swiss researchers use typing, mouse clicks to detect office stress

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Credit: Unsplash/CC0 Public Domain

The way people type and use their computer mouse can be better stress indicators than their heart rate, Swiss researchers said on Tuesday, adding their model could help prevent chronic stress.

Researchers at the Swiss Federal Institute of Technology in Zurich (ETHZ) said they had used new data and machine learning to develop a fresh model for detecting stress levels at work, based solely on the way people type or use their mouse.

"How we type on our keyboard and move our mouse seems to be a better predictor of how stressed we feel in an office environment than our heart rate," mathematician and study author Mara Nagelin said.

For the study, the ETHZ researchers observed 90 participants in the lab performing close-to-reality office tasks, like planning appointments or recording and analyzing data.

They recorded the participants' mouse and keyboard behavior as well as their heart rates, and regularly asked the participants how stressed they felt.

While some participants were allowed to work undisturbed, half the group were repeatedly interrupted with chat messages and were also asked to take part in a job interview.

They determined that stressed people type and move their mouse differently from relaxed people.

"People who are stressed move the mouse pointer more often and less precisely and cover longer distances on the screen," Nagelin said.

The researchers also found that people who feel stressed in the office make more mistakes when typing and tend to write in fits and starts, with many brief pauses.

Relaxed people by contrast take fewer but longer pauses when typing, they found.

Not a 'monitoring tool'

The connection between stress, and keyboard and mouse behavior can be explained through so-called neuromotor noise theory.

"Increased levels of stress negatively impact our brain's ability to process information. This also affects our [motor skills](link)," psychologist and co-author Jasmine Kerr said.

The researchers said it was urgent to find reliable ways of detecting heightened stress on the job, pointing out that one in three employees in Switzerland suffer from workplace stress.

"Those affected often don't realize that their physical and [mental resources](link) are dwindling until it's too late," the researchers said.

They are currently testing their model with data from Swiss employees who have agreed to have their mouse and keyboard behaviors, and their [heart rate](link), recorded while they work using an app.

ETHZ said the results were expected by the end of the year.

The researchers acknowledged that the data they were gathering was sensitive, adding that they were working with employees and ethicists to ensure it was handled responsibly.

"The only way people will accept and use our technology is if we can guarantee that we will anonymise and protect their data," Kerr said.

"We want to help workers to identify stress early not create a monitoring tool for companies."