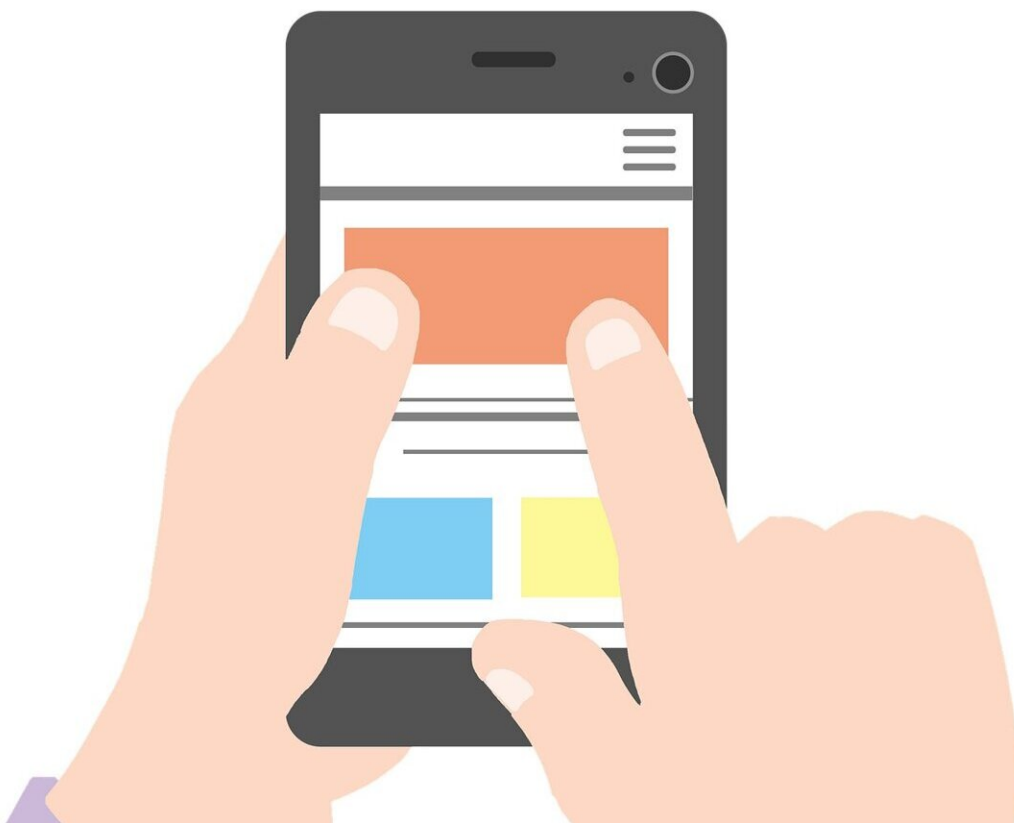


# Creepy apps cause emotional stress: The normalization of affective discomfort in app use

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Credit: Pixabay/CC0 Public Domain

We know that apps collect all sorts of data about us, and that makes us feel uncomfortable. In a new study researchers from the University of

Copenhagen have measured how uncomfortable and "creeped out" using apps can make us feel. Industry and policy initiatives are called for.

You would think that feeling chronically uneasy about products would spur a movement away from them. However, this is not the case for apps use. Even though surveys show users feel [emotional stress](#) due to the fact that apps collect personal data, we just continue our use.

"It seems that people accept this uneasy feeling almost as a part of the user experience. Somehow, we have been trained to live with being uncomfortable. But you may ask how it can be defensible to treat people and their [emotional states](#) so terribly," says Irina Shklovski, Professor at the Department of Computer Science (DIKU), University of Copenhagen. She is author of a scientific article on the subject, selected as Best Paper at the SIGCHI conference 2022, an international conference on Human Factors in Computing Science.

The true novelty of the underlying study is that Irina Shklovski and American colleagues have created a tool for measuring the degree of discomfort felt by tech users.

"I think most of us have tried feeling uneasy when downloading apps, but most often you can't really put your finger on what the problem might be. So, we decided to create a way of measuring the degree of discomfort," Irina Shklovski says.

## **Accept license agreement? Sure!**

The researchers broke down the problem into three issues. To be creepy, an app needs to a) violate the boundaries of the user; b) do so unexpectedly; and c) possess ambiguity of threat. High scores in all three categories would amount to one very creepy app.

"Notably, we are talking about emotional response here. Even in a situation where objectively everything is fine, for instance if a technical solution guarding against misuse of personal data is in place, the user may still feel discomfort," Irina Shklovski says.

Now having a score for creepiness, the researchers can examine how various modifications may change the experience of users.

In the study, 751 participants were divided into cohorts which would rate their experience under different regimes. All regimes would feature a fictitious app, "Remember Music". Just like several real-world apps, Remember Music will be able to recognize a tune or song which you might hear randomly, for example as you walk down the street: oh, I know this song, but which is it? The app will tell you.

"Just like in the real world, the participants would have to agree to a [license agreement](#), and again just like in the real world they would click accept without thinking twice," says Irina Shklovski.

## **User control doesn't help**

In one regime, the app would collect your location. In another regime, it would soon start to make suggestions on more music from the identified artists. In yet another regime, the app would post on Facebook what you are listening to. Further, some participants were granted control of what the app was doing: they could approve or deny having their music habits displayed at Facebook.

"We had expected the group with control to feel more comfortable, but surprisingly they didn't," Irina Shklovski comments, noting that this is a major discovery:

"Lawyers and organizations working to improve data privacy are often

focused on improving user control. While this may be desirable for other reasons, sadly our research show that the emotional stress to users will not be relieved."

## A blow to an often-heard dogma

As part of the experiment, participants would rate themselves on digital literacy.

"We normally assume people who have a high degree of [digital literacy](#) to be more critical towards the apps, but again surprisingly, the opposite is true. The more you see yourself as digitally literate, the higher the likeliness of you continuing using an app which is invasive," says Irina Shklovski.

And again, this discovery delivers a blow to an often-heard dogma:

"Industry and public bodies will argue that this is a question of [personal data](#) hygiene. In other words, that as users become more digitally aware they will favor less intrusive apps over the more intrusive. Based on the data from our study, we can say that trying to shift responsibility to the user in this way will not work. That horse has bolted. If we want things to get better, we need developers and policy makers to change the scene," Irina Shklovski concludes.

The research was published in *CHI Conference on Human Factors in Computing Systems*.

**More information:** John S. Seberger et al, Still Creepy After All These Years:The Normalization of Affective Discomfort in App Use, *CHI Conference on Human Factors in Computing Systems* (2022). [DOI: 10.1145/3491102.3502112](https://doi.org/10.1145/3491102.3502112)

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