

# Intriguing food reflex discovered with a smartphone

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Psychologist Hilmar Zech found that overweight people are actually more attracted to food pictures after eating than before. He did so using an old research method that he revamped for use on smartphones. Zech will defend his Ph.D. on 30 April.

Addiction, phobia, and intuitive behavior: psychologists have discovered much about them with the Approach Avoidance Task. Hilmar Zech has successfully modernized this old research method.

"Participants sit behind a computer and can move a joystick towards or away from themselves. They must quickly react to images appearing on the screen: they can either bring them closer or remove them." This method has revealed much about unconscious behavior, which cannot be elucidated with questionnaires, for instance.

"For example, if you show erotic stimuli and someone pushes the joystick slightly too late away from themselves, you know from the [reaction time](#) that the actual reflex was different," says Zech.

The method has taught psychologists a lot about addictions, phobias, and intuitions. However, this could only be done behind computers in the research environment of psychology departments, familiar to many students who occasionally earned some money as [test subjects](#).

"This has real drawbacks. For instance, someone's reaction to food varies throughout the day. You would want to test people at different times, before and after eating. This is difficult in this setting."

Zech taught himself programming, and took on the challenge at the Leiden Unit of Social, Economic, and Organizational Psychology to make the method applicable to a smartphone. "It required a completely different program, where you can measure responses not with a joystick, but with the movement of your phone."

Participants can move their phone towards or away from themselves in response to images they see. "In addition to reaction time, we can even measure more than with the joystick: we measure the force with which the phone is moved. That force provides extra information about the

intensity of the response, on top of reaction time."

After the app was validated and proven reliable, Zech and his supervisors Lotte van Dillen and Wilco van Dijk made an intriguing discovery. "We showed people food images in their own environment, before and after eating. We expected that before eating, they would show more approach behavior towards images of food than after. That was true, but only for people with a healthy weight. People with overweight or obesity sometimes even showed the opposite: they exhibited stronger approach behavior towards food after eating."

According to Zech, this outcome could mean two things: "Perhaps people restrained themselves from eating too much during the meal and still have a strong desire for food. Or maybe they weren't thinking much about food before eating, but were still half-focused on their work. After eating, they might have been primed and respond more strongly to food images."

This is something other researchers can start to explore. Is Zech perhaps planning to retire quietly from the revenues of his handy app? He says, "I didn't apply for a patent. I'd rather have researchers be able to use the application for free." Besides his work as a postdoc at TU Dresden he continues to refine the app. "Researchers still need some assistance from me to set up the app properly. I want to ensure that everyone can customize everything to their needs, without my help, and store all data on their own server."

Provided by Leiden University

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