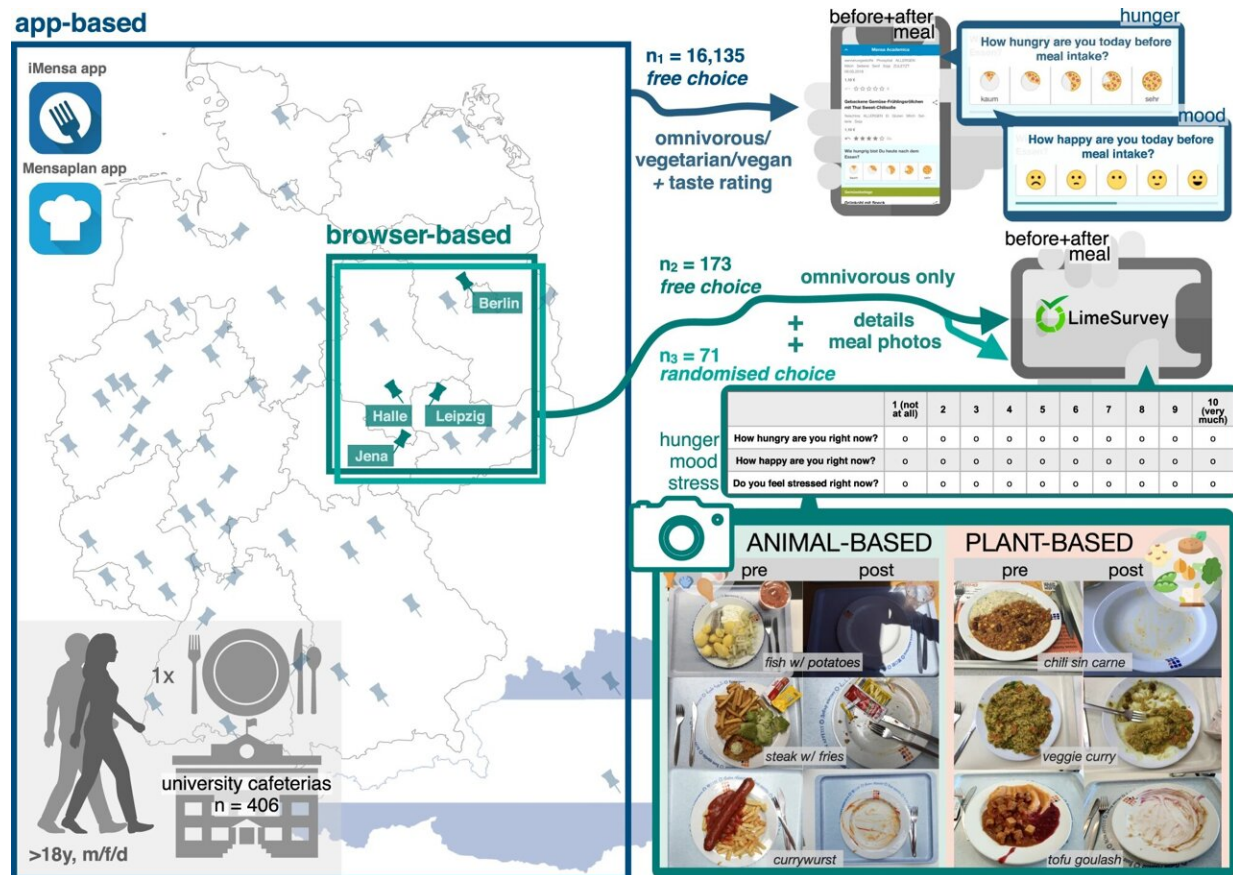


# Effects of single plant-based vs. animal-based meals on satiety and mood

March 6 2023, by Bettina Hennebach



Overview of the study design. Study design: Adults (m, f, d) consuming a single meal in university cafeterias rated hunger and mood (and stress) using Likert scales before and after that meal with smartphones or mobile devices, in an app study ( $n_1 = 16,135$ , five-point scales, in dark blue) or in a more detailed web-based survey (omnivorous diet habits only, ten-point scales,  $n_2 = 173$ : free choice (in petrol),  $n_3 = 71$ : randomized choice (in turquoise)). Photos show exemplanary pre- and post-meal plates for both meal categories (in petrol). Credit: *npj Science*

*of Food* (2023). DOI: 10.1038/s41538-022-00176-w

What influence do plant-based meals have on mood and on feeling full compared to animal-based meals? Neuroscientists at MPI CBS in Leipzig investigated this in three smartphone-based studies in over 400 university cafeterias across Germany and have now published their findings in *npj Science of Food*.

Current studies show that avoiding [animal products](#) such as meat and milk can reduce agricultural climate greenhouse gas emissions by 80%. However, the physiological and [psychological factors](#) of eating plant-based foods are largely unclear. What actually happens in our bodies after a plant-based meal compared to an animal-based meal? And who is most likely to choose which dish in the cafeteria?

"Since [dietary fiber](#) is associated with improved signaling between the gut and the brain, we hypothesized that a plant-based meal would induce a higher feeling of satiety and mood compared to an animal-based meal," says Evelyn Medawar, who does research on food decision-making at the Max Planck Institute for Human Cognitive and Brain Sciences in Leipzig, Germany.

In three large-scale smartphone-based studies, a total of more than 16,300 adults participated in over 400 university cafeterias across Germany. Using the iMensa app, the participants not only rated the dishes for taste, but also used emojis to vote on their mood and feeling of hunger before and after meal intake.

The results show that—as expected—meal intake generally led to higher satiety and better mood—but regardless of whether it was vegetarian, vegan or meat.

"Individuals who chose a plant-based meal reported a slightly better mood before the meal and a smaller increase in mood after the meal compared to individuals who chose an animal-based meal," Medawar explains. "Protein content also influenced post-meal satiety, although only slightly, while gender and taste rating had a strong effect on satiety and mood in general."

Thus, more women and diverse individuals consumed plant-based dishes overall. For very poorly tasting dishes, post-meal hunger increased and mood decreased significantly. Whereas for very tasty dishes, hunger decreased significantly and mood increased moderately. In addition, plant-based dishes were more often eaten alone rather than in company, which may also have led to a lack of increase in mood through social interaction.

"Overall, however, we did not find profound effects of plant-based versus animal-based meals on satiety and [mood](#)," Evelyn Medawar summarized. The study data showed that of the meals chosen in the cafeterias, 55% were animal-based and 45% were vegetarian or vegan. The demand for plant-based dishes in German canteens is therefore very high. However, the palatability and [protein content](#) of plant-based dishes should be further improved.

**More information:** Evelyn Medawar et al, Effects of single plant-based vs. animal-based meals on satiety and mood in real-world smartphone-embedded studies, *npj Science of Food* (2023). [DOI: 10.1038/s41538-022-00176-w](https://doi.org/10.1038/s41538-022-00176-w)

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