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Harold Herzog

Western Carolina University

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What's the Deal With Vegetarians Who Hate Vegetables?

New research helps explain why so few vegetarians are "super tasters."

Posted Jun 19, 2018

One of the great things about being both a psychologist and the father of [twins](#) is that you get to do experiments on your kids. Our daughters Betsy and Katie are fraternal twins. Like non-twin siblings, they share 50% of their genes. Unlike identical twins, they don't look alike. They have different personalities, and they also have very different relationships with food.

Betsy is an adventurous eater. She has scarfed down whale meat in Japan ("greasy and generally yucky"), crickets in Mexico, and red hot chili peppers in the food stalls of Bangkok. Katie, on the other hand, was a finicky eater even as an infant. And when she was 13, she announced that she had become a vegetarian. I was not concerned as I figured her vegetarianism was just a passing phase. I was wrong. She did not eat meat for the next 17 years. The problem, however, was that she did not like vegetables and refused to eat the leafy green "cruciferous" veggies that are good for you, like spinach, brussels sprouts, kale, cabbage, Romaine lettuce. Her go-to foods tended to be bland and white—mashed potatoes, rice, and, most of all, mac and cheese.

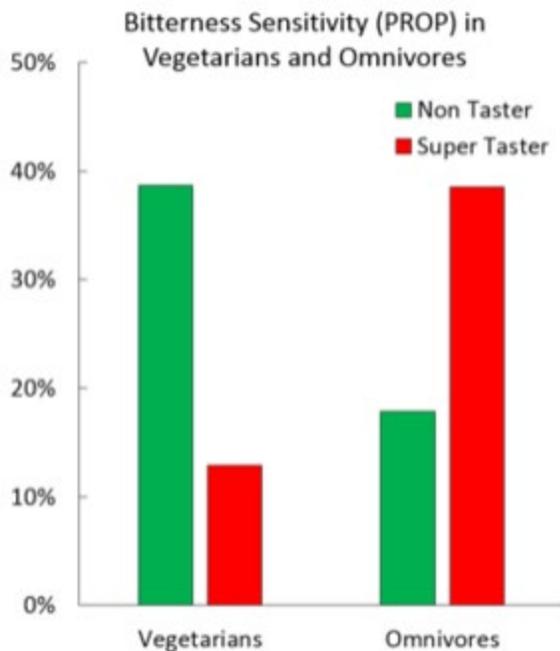
Experimenting On Your Own Children

Why would two kids raised by the same parents and exposed to exactly the same food environments have such different food preferences? I decided to answer this question by giving them a taste test. I was interested in their sensitivity to a chemical called *6-Ti-propylthiouricil* which is, fortunately, abbreviated as PROP. The test involves placing a strip of paper impregnated with PROP or a related chemical called PTC on your tongue. Roughly 25% of people taste nothing ("nontasters"), 50% taste the paper as mildly bitter ("medium tasters"), and 25% experience extreme bitterness. They are the "supertasters." (When I did these tests in my biological psychology courses, several students would always rush out of the room to wash their mouths out with water.) Many studies have now shown that sensitivity to PTC and PROP is highly related to the ability to taste a family of bitter compounds found in cruciferous vegetables called glucosinolates.

When Betsy put the test strip in her mouth, she did not taste a thing. But Katie yowled, complained bitterly, and rinsed her mouth out. As I expected, she was a supertaster. No wonder she hated vegetables.

The Unlikely Vegetarians

Because cruciferous vegetables taste bitter to supertasters, you would think supertasters would be less likely to become vegetarians than nontasters. And this is exactly what a research team headed by Dr. Danny Clicerri of the [Italian Taste Project](#) recently [reported in the journal *Food Quality and Preference*](#). The investigators were interested in attitudes and beliefs about food in vegetarians, flexitarians, and omnivores. As part of their study, each participant was given a PROP sensitivity test. The investigators found that only 13% of the 31 vegetarians in the study were supertasters compared to 39% of the 39 omnivores. Conversely, the vegetarians were twice as likely as the meat eaters to be nontasters. Further, the vegetarians rated PROP as much more bitter than did the omnivores.



Because of her [high sensitivity](#) to PROP, Katie was an unlikely candidate for vegetarianism. But she is not alone in being a vegetarian who does not like vegetables. I sent out a message on [Facebook](#) asking for vegetarians who did not like veggies. The message hit a chord. Here are a few typical responses from them.

“I’ve been a vegetarian since 1978...However, as a child I was a highly restrictive eater – eating only baked beans, canned spaghetti, and French toast to the point that my mother was worried about the possibility that I was going to be malnourished.”

“I didn’t like veggies as a kid. I was an extremely finicky eater. My parents complained about it. I eat very diverse foods now.”

“I always joke that I am the only vegetarian who doesn’t like vegetables very much. I live on salads now. As a kid, I think I disliked most vegetables. A lot of this goes back to my childhood and worry about

my weight, but I am super fussy about vegetables.”

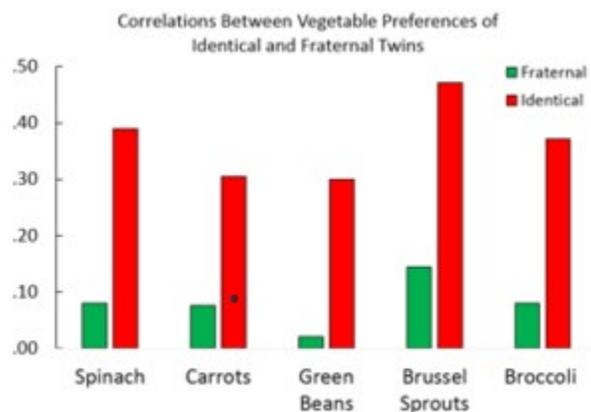
“I disliked a lot of vegetables, but not all. I like potatoes and few others. My list of those I hated was long though. And I love most of them now.”

Vegetarianism and the Biology of Taste

As indicated by the Facebook messages, some supertaster vegetarians overcome their dislike of cruciferous vegetables. But the low prevalence of supertasters that Dr. Ciceri and his colleagues found among vegetarians suggests that [genetics](#) may make it more difficult for some people than others to give up meat.

How strong is the evidence that sensitivity to bitterness in vegetables is governed by a toss of the genetic dice? The answer is very strong.

- Identical twins are much more similar than fraternal twins in their preferences for vegetables. Indeed, about 50% of the differences in how much kids like veggies is attributable to genetic factors. (Surprisingly, behavior genetics studies have found that that family environments have surprisingly little impact on food preferences.)
- Supertaster kids are more likely to be described as finicky eaters by their parents.
- Sensitivity to bitterness is closely related to the number of taste cells (papilla) on your tongue. Supertasters have a much higher density of these cells than do medium tasters or nontasters.



- In recent years a lot has been discovered about the genetics of sensitivity to bitterness. The gene which has been the focus of most studies is designated TAS2R38, and it is located on Chromosome 7. It comes in two forms: AVI (“nontasters”) and PAV (“taster”). People who inherited AVI forms from both their mom and their dad (AVI/AVI) usually cannot taste PROP at all, while people with the PAV/PAV genotype are usually supertasters. (AVI/PAV folks tend fall into the medium PROP taster category.)
- [Several studies](#) have found that AVI/AVI people consume substantially more vegetables of all kinds than PAV/PAV people.

Is There a “Vegetarian Gene?”

No.

A gene is essentially a set of instructions for the manufacture of proteins. There is no gene “for vegetarianism” just like there is no gene “for [intelligence](#)” or “for [homosexuality](#).” Further, virtually all complex human traits are a product of our environments and the interactions of hundreds, if not thousands, of genes.

But while there is no vegetarian gene, or for that matter, no meat-loving gene, it is certainly possible that genetic factors play a role in the ease or difficulty people have giving up meat. As I have described in [this post](#), fewer than 4% of Americans are true vegetarians or vegans, and about 85% of them eventually revert back to eating animals. For some people, giving up meat may be more of an uphill battle than for others. This was illustrated by one of my Facebook respondents who wrote, *“I attempted to be a vegetarian for moral reasons in middle school but ended up passing out and subsequently giving up after three days because there wasn’t anything for me to eat. I hate vegetables.”*

Dr. Clicerì’s new study suggests that giving up meat may be a particularly difficult struggle for vegetarians who are biologically predisposed to find vegetables extremely bitter. Yet many of them, eventually overcome their aversion to the green stuff. As one long-term vegetarian told me, *“I love vegetables now, but I had to train myself.”*

And I suspect many vegetarians would agree with Katherine Hepburn’s character in the movie *The African Queen* when she told Humphrey Bogart’s character, *“Nature, Mr. Allnut, is what we are put into this world to rise above.”*

* * *

Post script: Katie’s [diet](#) has changed a bit in recent years. On the advice of her doctor, she occasionally eats a little meat, though she recently told me, “I still find it disgusting.” And while she does eat green vegetables, her favorite foods remain mashed potatoes and mac and cheese.

References

Clicerì, D., Spinelli, S., Dinnella, C., Prescott, J., & Monteleone, E. (2018). The influence of psychological traits, beliefs and taste responsiveness on implicit attitudes toward plant-and animal-based dishes among vegetarians, flexitarians and omnivores. *Food Quality and Preference*, 68, 276-291.

Smith, A. D., Fildes, A., Cooke, L., Herle, M., Shakeshaft, N., Plomin, R., & Llewellyn, C. (2016). Genetic and environmental influences on food preferences in adolescence. *American Journal of Clinical Nutrition*, 104(2), 446-453.

Sandell, M., Hoppu, U., Mikkilä, V., Mononen, N., Kähönen, M., Männistö, S., ... & Raitakari, O. T. (2014). Genetic variation in the hTAS2R38 taste receptor and food consumption among Finnish adults. *Genes & Nutrition*, 9(6), 433.

Duffy, V. B., Hayes, J. E., Davidson, A. C., Kidd, J. R., Kidd, K. K., & Bartoshuk, L. M. (2010). Vegetable intake in college-aged adults is explained by oral sensory phenotypes and TAS2R38 genotype. *Chemosensory Perception*, 3(3-4), 137-148.