

How food preferences are linked to cognition and brain health, and why a balanced diet is superior

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From the crispy crunch of fresh veggies to the creamy indulgence of decadent desserts, we all have different food preferences. Our palates develop uniquely, shaped by genetics, culture and personal experiences.

Food preferences play a significant role in shaping our dietary habits. Highly palatable foods rich in sugars, fats and salts often appeal to people's tastebuds and provide immediate satisfaction. However, these foods are typically high in calories and low in essential nutrients, leading to weight gain, and a higher risk of physical and [mental health conditions](#).

Now we have discovered that the food you choose to eat isn't just linked to your physical and mental health, but also to your cognitive function, [brain structure](#) and genetics.

A widespread preference for fast food is likely contributing to an increase in obesity worldwide. According to the World Health Organization (WHO), in 2022 one in eight people worldwide were obese. [This rate has doubled](#) since 1990.

Obesity isn't just linked with [an increased risk of diseases](#) including type 2 diabetes and cardiovascular disease, but also with a [30-70% higher risk of mental health disorders](#).

Benefits of a healthy, balanced diet

Our new collaborative study from Fudan University in China and the University of Cambridge in the UK, [published in *Nature Mental Health*](#), used a large sample of 181,990 participants from the UK Biobank to examine how food choices are associated with cognitive function, mental health, metabolism, brain imaging and genetics.

We examined the consumption of vegetables, fruit, fish, meat, cheese, cereal, red wine, spirits and bread. We found that 57% of participants had [food preferences](#) for a healthy [balanced diet](#). This included a balanced mix of all the foods we examined, with no excessive amounts in any category.

We further showed that those with a healthy balanced diet had better brain health, cognitive function and mental health than others. We compared the balanced diet to three other diet groups—[low-carb](#) (18%), vegetarian (6%) and high protein/low fiber (19%).

We found that people who ate a more balanced diet had better fluid intelligence (the ability to solve new problems), processing speed, memory and executive functions (a set of mental skills that include flexible thinking and self-control) than the other diets. This also corresponded to better brain health—with higher gray matter volumes (the outermost layer of the brain) and better structured neurons (brain cells), which are key markers of brain health.

Perhaps surprisingly, the vegetarian diet did not fare as well as a balanced diet. One reason for this may be that many vegetarians don't get enough protein. Two healthy, balanced diets for the brain are the Mediterranean and [Mind](#) (Mediterranean intervention for neurodegenerative delay) diets.

These promote fish (especially those oily fish), dark leafy vegetables and fresh fruits, grains, nuts, seeds, as well as some meat, such as chicken. But these diets also limit red meat, fats and sugars.

In fact, research has shown that the Mediterranean diet can alter our brains and cognition. One study showed that people showed [improved cognition](#) after only 10 weeks on this diet.

Another study showed that following the Mediterranean diet was associated with [lower levels of a harmful peptide known as beta-amyloid](#) in the brain. Beta-amyloid, together with tau protein, are measures of the [brain damage that occurs](#) in Alzheimer's disease.

Previous studies have also shown that [Japanese diets](#), including rice, fish

and shellfish, miso, pickles and fruits, protect against brain shrinkage.

We also discovered that there were some genes that may be contributing to the association between dietary patterns and brain health, cognitive function and mental health. This may mean that our genes partly determine what we like to eat, which in turn determines our brain function.

However, our [food choice priorities](#) are also affected by a number of factors, including price, allergies, convenience and what our friends and family eat.

Some people opt for going on diets, which may lead to [weight loss](#), but involve cutting out entire food groups that are important for the brain. While there's some evidence that ketogenic diets (low carb), for example, have beneficial effects on the [immune system and mental health](#), it does seem that balanced diets, such as the Mediterranean diet, is best for overall brain health and cognition.

Ways forward

It is clear that adopting a healthy balanced diet and doing exercise can be good for our brains. But for many people, this is easier said than done, especially if their current food preferences are for very sweet or high fat foods.

However, food preferences aren't destiny. For example, if you reduce your sugar and fat intake slowly and maintain it at a very low level over a number of months, you will actually begin to prefer that type of food.

Establishing healthy food preferences and an active lifestyle early in childhood is vital. Other important techniques are to eat slowly, pay attention to what you eat and enjoy it, rather than finishing a sandwich

on the go or while looking at your mobile screen.

It takes time for your brain to register that you are full. For example, it has been shown that consumers [generally eat more when watching television](#), listening to music, or in the presence of others, because the distraction decreases our reliance on internal satiety signals.

Social support from friends has also been shown to [encourage adherence to healthy eating habits](#), as has [cognitive behavioral therapy](#). Distraction [is another excellent technique](#)—literally anything you like to do (that isn't eating) could help.

One interesting survey study found that how you set your priorities affects your food choices. If you are keen to remain healthy and to have a physically fit appearance, [you will choose healthy foods](#).

We live in tough economic times. Socioeconomic status shouldn't limit dietary choices, though this seems to currently be the case. Clearly, governments have an important duty to prioritize affordable healthy eating options. This will help many of us [choose a healthy diet](#) for either health reasons, reduced food prices, or both.

Now that we know that the food we eat can actually affect our brains and how well we perform cognitively, having a healthy balanced diet is more important than ever.

More information: Ruohan Zhang et al, Associations of dietary patterns with brain health from behavioral, neuroimaging, biochemical and genetic analyses, *Nature Mental Health* (2024). [DOI: 10.1038/s44220-024-00226-0](#)

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