

The big idea: can what you eat change your mind?

Level 3: Advanced

1 Warmer

a. Discuss the following questions in pairs.

- How do you think the food you eat influences your health and well-being?
- Can you think of any personal experiences where food has affected your mood or energy levels?
- In today's world, we often hear about 'superfoods'. What do you think these are? What makes them healthy in your opinion?

2 Key words

a. Match the words below with their definitions. Then find and highlight them in the article to read them in context

- | | | |
|-----------------------|-------|--|
| 1. a pick-me-up | _____ | a. to strengthen or support something, often so it becomes more effective |
| 2. antidepressants | _____ | b. to avoid someone or something |
| 3. brighter | _____ | c. a feeling of being sick |
| 4. dodgy leftovers | _____ | d. food from a previous meal that hasn't been eaten and is past its best quality or likely to make you ill |
| 5. expenditure | _____ | e. a solution or approach that is meant to work for everyone, although it often doesn't |
| 6. gut | _____ | f. to stop a feeling of thirst |
| 7. microbiome | _____ | g. the part of the human body where food is processed |
| 8. nausea | _____ | h. the act of using up resources such as money, energy or time |
| 9. one-size-fits-all | _____ | i. food or drink that contains yeast or bacteria that is good for your digestive system |
| 10. probiotics | _____ | j. essential; extremely important |
| 11. to quench | _____ | k. something that makes you feel better or happier, especially when you're tired or feeling low |
| 12. to reinforce | _____ | l. a collection of single-cell organisms, such as bacteria, that live in the human body |
| 13. to steer clear of | _____ | m. describes foods that contains chemical additives or ingredients which make them unhealthy |
| 14. ultra-processed | _____ | n. medications that are used to treat depression and other mental health conditions |
| 15. vital | _____ | o. more intelligent or quicker to understand things |

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b. Complete the sentences with words from the previous activity.

1. I wouldn't eat those _____ – they've been sitting in the fridge for over a week!
2. A good workout can increase your body's energy _____ and help you lose weight.
3. Eating too much fatty food can upset your _____ and lead to digestive problems.
4. The strong smell of fish gave Sasha a wave of _____ and made her feel slightly ill.
5. Healthy eating isn't a(n) _____ concept; everyone's body is different.
6. A glass of cold water will _____ your thirst on a hot day.
7. Positive feedback can _____ good behaviour in young children.
8. I plan to _____ street food for a while after getting food poisoning in India.
9. The government is considering whether to raise taxes on _____ snacks such as crisps and high-calorie biscuits.
10. After a long day, a hot cup of tea is the perfect _____.
11. Eating _____, such as yoghurt, can be beneficial for your gut health.
12. Engineers carried out _____ work on the motorway after the accident.
13. Research suggests that regularly completing word puzzles can make you _____ and can help develop your brainpower.
14. Some people find that _____ help them manage their symptoms, while others explore therapy.
15. Scientists are still researching the role of the _____ in human health, particularly how it affects digestion and immunity.

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From designer drinks to dodgy leftovers, our brain responds to food in surprising ways

Camilla Nord

6 January, 2025

- 1 Probiotic drinks, brain-boosting superfoods, gut-healthy snack bars: we're constantly bombarded with information about what and what not to eat. Some foods move between "healthy" and "unhealthy" depending on who you ask. For instance, if a gut-healthy snack bar is ultra-processed, does that cancel out its benefits? It's easy to feel that every food choice has immediate, direct consequences for your health and, increasingly, for your brain. Does broccoli make you brighter? Can a pickle really act as a pick-me-up?
- 2 There is some scientific truth to this. You may have heard that people with poorer mental health, such as those experiencing depression or anxiety, have a different balance of bacteria in their gut. How is this possible? It's because your gut sends signals to your brain via the vagus nerve, your immune system, and other pathways, passing on information about how things are going down there. And so, the theory goes, a less-diverse microbiome might be the cause of a depressed or anxious brain. So, could eating gut-friendly foods improve mental health?
- 3 Maybe. But the bacterial world inside us is far more complex. It is affected by many factors other than the snack you just ate, including your genes, your history of taking certain medications, and even your social interactions – every day, throughout your life. A person with poor mental health might have a less diverse microbiome because they've eaten a limited diet, had fewer social interactions, or taken antidepressants. While probiotics can improve microbiome health, whether this significantly impacts mental health for most people remains unclear.
- 4 And, in any case, the brain is far from being merely a passive receiver. Signals from the gut are filtered and changed by the brain itself. What matters most to the brain is survival. Signals from the body are incorporated in your brain's broader representation of the world – the world around you, and the world inside you – so that it can monitor and adjust your behaviour in order to help you survive. In the case of food, two types of information are absolutely vital for survival: does something you eat contain energy your body can use? And does it contain something that might make you ill?
- 5 When you take a sip of a sugary drink, your brain processes the sensory information – the taste, bubbles on the tongue, and so on. But it doesn't stop there. Once you've swallowed, your digestive system tells the deep reward structures of the brain, via the vagus nerve, that what you've consumed has calories. You also register that it's hydrating. These signals reinforce your behaviour: they tell your brain to pursue that particular drink again in future.
- 6 This is an ancient form of reward-based learning. It keeps us alive. It helps us find foods that satisfy us and drinks that quench our thirst. It also happens unconsciously: your brain is constantly influencing your food and drink choices based on its experience with rewards in the past. Not only that, but different brains can be more or less sensitive to food-related signals from the body. This means people adjust their energy intake (via eating) or expenditure (via exercise) to different degrees.
- 7 So much for the things you like, what about the things you hate? As with rewards, we differ in our sensitivity to signals from the body, such as nausea. Just as our brain learns from internal signals what it needs to keep us alive (things that contain calories and fat, for example) it also learns what to avoid in order to keep safe from illness.
- 8 That's why, once something has made you sick, your brain learns strongly and rapidly to steer clear of it. It seems likely that once we have a disgusting experience with something, it is much more difficult to "un-learn" than other sorts of experiences. In other words, disgust may be more powerful than other emotions. However, disgust can bring about phobias, food avoidance, and some types of post-traumatic stress. Sometimes, your brain needs signals from the gut in order to ensure you stay healthy, but sometimes it might be useful if their effects weren't so obviously felt.
- 9 So can what you eat change your mind? To some extent, yes. The most extraordinary property of the gut/brain is that it adjusts to signals from inside you. Dodgy leftovers, or a specially formulated drink that affects your microbiome one way or another, might indeed have an effect. Precisely how food influences your mood and wellbeing, however, depends critically on your particular brain: there's no one-size-fits-all answer, so don't bank on any strong claims. What we know for sure is that, whatever's on the menu, your brain really is listening to its gut.

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3 Comprehension check

a. Are these sentences True (T) or False (F) according to the article? Correct any that are false.

1. Probiotics have a clear and guaranteed effect on mental health, according to the text. _____
2. The vagus nerve helps the gut communicate with the brain. _____
3. Genes and social interactions have been shown to have little effect on one's microbiome. _____
4. The brain receives different signals from the gut but isn't able to distinguish between them. _____
5. Sugary drinks send signals to the brain about their calorific content. _____
6. Reward-based learning is a modern adaptation of human behaviour. _____
7. Different individuals have different sensitivities to food-related signals. _____
8. Disgust is considered a powerful emotion that can influence food avoidance. _____
9. The brain only learns from positive food experiences and not from the negative ones. _____
10. The brain can adapt based on signals from the gut to ensure survival. _____

4 Key language

a. Find the verbs in the text and match them with a preposition from the box.

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- | | | | |
|------------|-------|---------------|-------|
| 1. bank | _____ | 4. cancel | _____ |
| 2. bombard | _____ | 5. take a sip | _____ |
| 3. bring | _____ | 6. pass | _____ |

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b. Read the definitions and then complete the examples with the correct form of the phrasal verbs from the previous activity.

1. to make the effect of something less significant or important

The benefits of exercising regularly can be _____ by a poor diet high in sugar and processed foods.

2. to rely on or depend on something happening

You can't _____ the weather being good this weekend – the forecast is for some sunny intervals.

3. to send information to something or someone else

I'll _____ the updated schedule to the rest of the team this week.

4. to cause something to happen

It is hoped that the new government policies will _____ positive changes in the healthcare system.

5. to be attacked by a large amount of something, such as information or questions

Greg felt _____ questions about his previous experience during the job interview.

6. to drink in small amounts or to drink little by little

He paused and _____ the cold water from the bottle before he continued talking.

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5 Discussion

a. Discuss these questions.

- What role does the microbiome play in mental health, and how does it influence the brain's behaviour towards food?
- Do you think focusing on gut health is the most effective way to improve mental health, or are there other factors that play a bigger role?
- The text mentions that our brains learn to avoid foods that have made us feel ill. Can you think of any examples from your own experience where you've avoided a certain food after a bad experience?

6 In your own words

a. Write an advertisement (about 150-250 words) to explain, in an interesting way, why people should pay attention to their gut health and how it relates to physical and mental well-being. Include:

- information about how the gut communicates with the brain (e.g. via the vagus nerve and the immune system).
- tips on foods that can support both gut health and physical and mental well-being.

b. Share your advertisements with your class.