

# 英 語

## 注 意

1. 問題は全部で18ページである。
2. 解答用紙に氏名・受験番号を忘れずに記入すること。(ただし、マーク・シートにはあらかじめ受験番号がプリントされている。)
3. 解答はすべて解答用紙に記入すること。
4. 問題冊子の余白等は適宜利用してよいが、どのページも切り離してはいけない。
5. 解答用紙は必ず提出のこと。この問題冊子は提出する必要はない。

### マーク・シート記入上の注意

1. 解答用紙(その1)はマーク・シートになっている。HBの黒鉛筆またはシャープペンシルを用いて記入すること。
2. 解答用紙にあらかじめプリントされた受験番号を確認すること。
3. 解答する記号・番号の○を塗りつぶしなさい。○で囲んだり×をつけたりしてはいけない。

解答記入例(解答が1のとき)

1	<input checked="" type="radio"/>	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7	<input type="radio"/> 8	<input type="radio"/> 9	<input type="radio"/> 0
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4. 一度記入したマークを消す場合は、消しゴムでよく消すこと。×をつけても消したことになる。
5. 解答用紙をよごしたり、折り曲げたりしないこと。

1 次の文を読み、以下の問いに答えなさい。

A girl sits down to a plate loaded with pizza. A boy gets a few baby carrots. Immediately, both kids' brains start taking stock what's in front of them. Consciously, the kids might be thinking "Yum" or "Yuck." But their brains are also processing how much food is there — a feast, or just a nibble. And they're cataloguing whether it contains a lot of calories per bite or just a little. Different parts of the brain are responsible for handling these two questions, a new study finds. The answers they come up with could limit the diner's self-control.

Studies show that the more food there is on a plate, the more someone is likely to eat. Nutritionists call that the "portion size effect." It doesn't matter what kind of food it is. It also doesn't matter whether the diner is young or old, male or female, alone or in a group. The bigger the portion, the bigger the appetite.

Laural English is a nutritionist at Pennsylvania State University in University Park. She knows that many eating habits that kids pick up in early childhood will still be there when they are adults. So she and her colleagues <sup>A</sup> wanted to find out what happens in the brain when a child sees a large portion of food. Knowing what drives kids' eating habits might help families create healthier lifelong habits.

Calories are a measurement of the amount of energy contained in food. English and her team also wondered if it matters whether a large serving is packed with calories (such as pizza), or less energy dense (such as carrots).

"When you're sitting down to eat a meal, you don't appreciate all the different impacts or cues in front of you," notes Kathleen Keller, who helped run the study. "Size, smell, taste, the way food is presented — all have an impact on what the brain perceives and also what you eat," she says. The new study is the first to look separately at how the brain reacts to portion size and

the calories in it, she says.

The research team recruited 36 children to take part. All were aged 7 to 10. Half were boys, half were girls. Nearly all had a healthy weight. To make sure that all of them were hungry, the researchers asked the kids not to eat for two hours before the study began. When kids arrived, the researchers had them climb into a magnetic resonance imaging (MRI) machine. It looks like a giant donut standing on its side, with a bed sticking out of the center. It uses magnets and radio waves to map the flow of blood in someone's body.

Each child had to lay down on the bed with his or her head inside the donut. Staying very still was important. Moving one's head more than the thickness of a dime would ruin the scan, notes Keller. To help avoid that, she says, "We had them dance and move and get all their wiggles out before the scan." In the end, those kids aced the MRI. In fact, Keller says, "I think they accepted it better than adults do."

Brain areas that are most active will light up on the scans. These areas show where their blood flow is highest. The researchers wanted to see if the areas that lit up differed when kids viewed pictures of large amounts of food or just small portions. They also wanted to know if different brain areas lit up when the foods had been high or low in calories.

Inside the machine, the children viewed a series of 150 photos. Some pictures showed an energy-dense food, such as pizza or cookies. Others showed a low-calorie food, such as carrots or green beans. Each food was shown twice, once as a very small amount and once in a very large portion. The food pictures were mixed with images of furniture and other non-food objects. The extra pictures helped the researchers make sure that any effects they found were truly related to seeing food.

When they analyzed the scans, the researchers found that a child's brain processed information about a food's calories differently than it did about food quantity.

Seeing large amounts of food reduced activity in one brain area, compared with seeing smaller portions. That area is called the inferior frontal gyrus (JY-rus). Previous studies have linked this area to self-control. It's involved with "decision-making and getting you to stop behaviors once you start," Keller explains. If just seeing large portions of food suppresses activity in this area, that might help explain why it's so hard to stop eating from a giant bowl of popcorn or a big carton of blueberries.

The Penn State team also found that several different brain areas responded to a food's calorie content. Seeing images of high-calorie foods activated brain areas that process taste and the feeling of pleasure. That pleasure is why these foods typically seem more delicious — and tempting — than low-calorie foods. This result matched reports from previous studies in adults.

The team described its findings in the February American Journal of Clinical Nutrition.

Martin Binks is a clinical psychologist at Texas Tech University in Lubbock. He studies the brain and behavior as they relate to obesity. He was not involved in the new research, but says it's an important study. It points to how complex the eating experience is, he says. However, one study is not enough to link portion size to specific areas of the brain, he adds. It's possible that other things, such as a food's color, could have affected brain responses. "There's work to be done before drawing any firm conclusions," he says.

Kids who took part in English's study also visited the lab several times before their brain scan. On each visit, they ate a meal. The meals included different amounts of high- and low-calorie foods. The researchers tracked how much each child ate. At first, they did not see any link between eating and a brain's response to pictures of food.

But then the researchers looked at their data in a new way. They zoomed in on just the inferior frontal gyrus. That's the brain area that tended to

become less active when kids saw big servings of food.

This time, some of the kids “seemed to be protected from the portion size effect,” says Keller. These kids resisted eating too much when given large portions at meal time. Their brains also responded differently in the scanner. In these kids, seeing pictures of large portions of food did not cause activity in the brain area involved in self-control to drop as much as it did for most kids. These findings have not yet been published in a peer-reviewed journal. First, other scientists will have to review the findings and confirm that the data seem strong.

Currently, doctors and nutritionists use one-size-fits-all approaches to curbing unhealthy eating habits. Knowing why some kids overeat should make it easier to help them develop healthier habits to last their entire lives, says Keller. But if different kids have different reasons for overeating, that will have to be taken into account. Peering into their brains might help researchers develop therapies to fit each person's own needs.

Studying the brain's responses to food might also lead to new drugs to help combat obesity, says Binks.

Keller hopes that the food industry will also pay attention to her team's findings. There are lessons here, she says, for creating packaging that makes people more likely to choose healthy foods and reasonable portion sizes.

Notes:

take(taking)stock 評価する, feast ごちそう, nibble 一口,

nutritionist(s) 栄養士,

dime 10セント硬貨, wiggle(体を)くねくね動かす,

ace(d) よい成績を出した, obesity 肥満

[1] 下線部A, Bを日本語にきなさい。(解答用紙その2)

[2] 1~15の質問に対して英文の内容から判断し, 最も適切なものを一つ選び, その番号をマークきなさい。(解答用紙その1)

1. What is the best title for this passage?
  - (1) Just viewing super-size meals can promote overeating
  - (2) Kids eat more when they see little portions
  - (3) Adults lose all childhood eating habits very easily
  - (4) Portion sizes have little effect on how much children eat
  
2. When people look at the food they are served, they
  - (1) do not consider how many calories are in each bite.
  - (2) only think of how it will taste.
  - (3) consider the portion size.
  - (4) only consider how delicious the food looks.
  
3. The portion size effect is proven to be true for all
  - (1) age groups but not for certain foods.
  - (2) age groups but only for people with large appetites.
  - (3) foods and all ages.
  - (4) foods but not for certain ages.
  
4. Nutritionist English knows that many early childhood eating habits
  - (1) will not lead to healthier lifelong habits.
  - (2) can be understood by watching a child look at a large portion of food.
  - (3) can't be understood by examining a child's brain.
  - (4) will remain during adulthood.

5. Our brain senses cues related to

- (1) the appreciation of all the different impacts in front of us.
- (2) the size but not the number of calories per bite in food.
- (3) how it perceives only the color of food.
- (4) the portion, size, smell, taste and presentation of food.

6. English's research project studied

- (1) 36 overweight boys and girls.
- (2) 18 boys and 18 girls who were eight years old.
- (3) 36 hungry children.
- (4) 18 boys and 18 girls who had just eaten.

7. In MRI tests,

- (1) the body's blood flow can be mapped.
- (2) the most active brain areas light up.
- (3) the most active areas show where the blood flow is highest.
- (4) All the above.

8. In the MRI test, the children saw a series of 150 photos,

- (1) some of which were pictures of food.
- (2) all of which were pictures of food in both small and large portions.
- (3) some of which were pictures of low-calorie foods but the rest were of energy-dense food.
- (4) all of which were pictures of carrots or green beans.

9. Researchers found that a child's brain processed information

- (1) about a food's calories differently than the amount.
- (2) about a food's calories and quantity in the same way.
- (3) in many areas of the brain when the children looked at the photos.
- (4) in only the inferior frontal gyrus.

10. The area of the brain called the inferior frontal gyrus is related to how we

- (1) behave before seeing pictures of food.
- (2) control ourselves.
- (3) view smaller portions.
- (4) prepare food.

11. Reduced activity in the inferior frontal gyrus could indicate why we want to eat

- (1) small portions of any kind of food when presented with small portions of food.
- (2) large portions of any kind of food when presented with large portions of food.
- (3) large portions of popcorn but not blueberries.
- (4) large portions of blueberries but not popcorn.

12. The Penn State research team found that

- (1) the calories in a food cannot be linked with the feeling of pleasure.
- (2) high-calorie foods are not tempting.
- (3) low-calorie foods seem more delicious.
- (4) high-calorie foods seem to be more delicious.



13. Martin Binks believes that

- (1) research on a food's color is enough to form a conclusion.
- (2) more research is required to link portion size with certain areas of the brain.
- (3) improving eating habits will not require the use of drugs.
- (4) the Penn State research should not be published in a journal.

14. The children in English's study

- (1) proved there was no link between eating and a brain's response to food.
- (2) were served food each time they visited English's lab before the MRI test day.
- (3) showed the portion size effect to be true in all children.
- (4) took part in later studies with Keller and Binks.

15. Keller wants the food industry to support her team's findings by

- (1) encouraging people to choose healthy foods and reasonable portion sizes.
- (2) ignoring her team's findings.
- (3) combating obesity with drugs.
- (4) developing therapies to fit each person's needs.

2

以下のそれぞれの定義に従って、最初と最後の文字が与えられた最も適切な単語を書きなさい。ただし、1下線に1文字が入る。(解答用紙その2)

(解答例)

someone who is trained in science, especially someone whose job is to do scientific research

⇒(s \_\_\_\_\_ t)

正解(scientist)

1. a device used for producing a much larger view of very small objects so that they can be seen clearly

⇒(m \_\_\_\_\_ e)

2. a teacher especially of the highest rank at a college or university

⇒(p \_\_\_\_\_ r)

3. a piece of equipment with moving parts that does work when it is given power from electricity, gasoline, etc.

⇒(m \_\_\_\_\_ e)

4. an unexpected and usually dangerous situation that calls for immediate action

⇒(e \_\_\_\_\_ y)

5. a hard, strong material that is used for building and made by mixing cement, sand, and broken rocks with water

⇒(c \_\_\_\_\_ e)

6. the amount of money that something is worth: the price or cost of something

⇒(v \_\_\_ e)

7. a very large amount of money

⇒(f \_\_\_\_\_ e)

8. an act of traveling from one place to another

⇒(j \_\_\_\_\_ y)

9. a plan of things that will be done and the times when they will be done

⇒(s \_\_\_\_\_ e)

10. to mention (something) as a possible thing to be done, used, thought about etc.

⇒(s \_\_\_\_\_ t)

3

下線部に最も適切なものを一つ選び、その番号をマークしなさい。(解答用紙  
その1)

16. Drugs can be effective, but they can also have \_\_\_\_\_ effects.

- (1) sign
- (2) sick
- (3) side
- (4) size

17. David was busy \_\_\_\_\_ his mother in the yard.

- (1) to help
- (2) helped
- (3) helping
- (4) help

18. If Jim had gone to college when he finished high school, he \_\_\_\_\_ a senior by now.

- (1) would have been
- (2) will be
- (3) should be
- (4) will have been

19. From \_\_\_\_\_ they look, I would say that they failed.

- (1) what
- (2) the way
- (3) the point
- (4) at which

20. \_\_\_\_\_ all means, do come with us to dinner tonight.

- (1) For
- (2) To
- (3) With
- (4) By

21. In Japan, people legally come \_\_\_\_\_ age at 20.

- (1) in
- (2) of
- (3) for
- (4) with

22. I don't play tennis anymore, but I \_\_\_\_\_.

- (1) used to do
- (2) used
- (3) used to
- (4) used to doing

23. On the day that many students were \_\_\_\_\_, the teacher decided not to hold the test.

- (1) absence
- (2) absent
- (3) absentee
- (4) absently

24. Mary was sorry \_\_\_\_\_ her brother's performance, but there was no helping it.

- (1) missing
- (2) missed
- (3) to have missed
- (4) being missed

25. The contract is valid \_\_\_\_\_ one year starting tomorrow.

- (1) in
- (2) for
- (3) to
- (4) during

26. For more information \_\_\_\_\_ the product, see page 5.

- (1) regardless
- (2) regard
- (3) regards
- (4) regarding

27. All of us are familiar \_\_\_\_\_ the story.

- (1) with
- (2) to
- (3) by
- (4) for

28. The lecture was so difficult that it was \_\_\_\_\_ my head.

- (1) over
- (2) on
- (3) under
- (4) across

29. I cannot go shopping this afternoon because I have \_\_\_\_\_ homework due tomorrow.

- (1) a few
- (2) a lot of
- (3) many
- (4) few

30. This restaurant serves fresh seafood and \_\_\_\_\_ vegetables from this area.

- (1) seasons
- (2) seasonally
- (3) seasonal
- (4) seasoning

31. The student's presentation was \_\_\_\_\_ successful.

- (1) extremely
- (2) extreme
- (3) liked
- (4) like

32. You must complete and hand in all written work \_\_\_\_\_ receive a grade.

- (1) in addition to
- (2) instead of
- (3) in order to
- (4) in spite of

33. I have some free time \_\_\_\_\_ January 4.

- (1) at
- (2) on
- (3) in
- (4) during

34. I will make every effort to respond to you \_\_\_\_\_ 24 hours.

- (1) within
- (2) at
- (3) during
- (4) between

35. The \_\_\_\_\_ of hospital workers is a serious problem.

- (1) shorting
- (2) shorted
- (3) shorten
- (4) shortage



4 次の会話文を読んで、以下の問いに答えなさい。

Kim: Excuse me. Do you ( 36 ) to know where the café is?

Tom: I'm sorry. I'm ( 37 ) here.

Kim: So am I. Are you a student, too?

Tom: That's right. I ( 38 ) from Texas University.

Kim: I see. So, are you a sophomore?

Tom: I'm a junior. Are you a freshman?

Kim: Yeah. I'm supposed to meet my advisor later today. I'm a little nervous.

Tom: I'm ( 39 ) your advisor is a nice person. Don't worry.

Kim: I hope you're right. By the way, I'm Kim.

Tom: Kim, it's a pleasure to meet you. I'm Tom. Do you want to ( 40 )  
some coffee?

Kim: Great. But we'll need to find the café first.

[1] 下の選択肢1～0の中から、上の空欄36～40に最も適切なものを一つ選び、その番号をマークしなさい。ただし、同じ語句を複数回選択してはならない。(解答用紙その1)

1. familiar

6. new

2. work

7. happen

3. transferred

8. postpone

4. go

9. appointment

5. grab

0. sure

[2] 次の文で、会話文の内容と一致するものは1を、一致しないものは2をマークしなさい。(解答用紙その1)

41. Kim is looking for a café.
42. Tom is a university student.
43. Tom is a first-year student.
44. Kim is nervous about meeting Tom.
45. Kim and Tom are going to see their adviser together.

5 次の日本語の文を表す英文を、与えられた語句を用いて完成させた場合、2番目と4番目になる語句を番号で答えなさい。(解答用紙その1)

46. なぜその製品が十代の若者に非常に人気があるのか教えてください。

Could you       with teenagers?  
2番目 4番目

- ① made ② me ③ what ④ tell ⑤ so popular ⑥ the product  
 1) ②—①      2) ②—⑥      3) ②—⑤      4) ②—④

47. その運送会社は、運転手が十分に確保できないため、サービスを縮小しています。

The       .  
2番目 4番目

- ① scaling back ② its service ③ is ④ as it doesn't have  
 ⑤ courier company ⑥ enough drivers  
 1) ④—③      2) ②—⑥      3) ③—②      4) ③—④

48. もし太陽がなければ、どんな生物も生きられないでしょう。

If    ,    survive.  
2番目 4番目

- ① no ② for the sun ③ could ④ not ⑤ it were  
 ⑥ living things  
 1) ①—④      2) ④—①      3) ⑤—①      4) ④—⑥

49. 皆にとって、今日は何と深い思い出の日になったことでしょう。

What a       us!  
2番目 4番目

- ① of ② memorable day ③ for ④ this ⑤ has become ⑥ all  
 1) ④—①      2) ⑤—③      3) ②—③      4) ④—③

