平　成　31　年　度

医　学　科

外　国　語(英語)

注意事項

1. 問題は 1 頁から 9 頁に掲載されています。
2. 解答に用いる言語(日本語あるいは英語)は各設問の指示に従って選びなさい。
   ただし，記号で答えるように求められている場合は記号で答えなさい。
3. 解答は解答用紙に記入しなさい。

<パート1>　　(配点率 40 %)

次の英文を読んで，設問に日本語あるいは記号で答えなさい。

How neuroscience is unlocking the mysteries of the teenage brain

By Lucy Foulkes

How would you describe an average teenager? For most people, the following characteristics might come to mind: moody, impulsive, risk taking, likely to [1]*succumb to peer pressure.

While it's clear that adolescence is a period of life that is rife with stereotypes, there is some truth to the clichés. Many neuroscience studies have now established that there are significant changes happening in the brain in adolescence. And the things that teenagers are often derided for — like their risk taking and vulnerability to peer pressure — are actually rooted in changes occurring in the brain. There's just one problem with this: plenty of teenagers don't fit the stereotypes.

We all know from personal experience that the way teenagers think and act can vary widely depending on which teenager you're talking about. But despite this, the vast majority of studies to date have focused on averages: what happens on average to the brain during adolescence, or how adolescents behave and feel on average.

Relying on averages in this way has an important statistical benefit: researchers are more likely to be able to detect a genuine effect if they average their findings across lots of participants. But the obvious cost is that these general findings don't apply to everyone.

In a recent paper, my colleagues and I argue that ①this needs to change. From now on, adolescent brain research needs to give more attention to these important variations between teenagers — what is known in the field as

"individual differences".

Besides documenting that all teenagers are different, we also need to start understanding why this is the case. Studies already investigating this have shown that genetics, nutrition, parenting and mental illness all affect the way our brain develops and the way we behave in adolescence. And in our latest paper, we looked at three other factors that might affect brain development: socioeconomic status, relationships with peers, and culture.

Socioeconomic status is a measure of a person's social and financial standing in society, and is often gauged by their parents' education level and the overall family income. Research has already found that your brain develops differently across adolescence depending on your socioeconomic status. But what we don't fully understand yet is why. It might be, for example, that being brought up in a lower income environment is more stressful or is linked to different types of nutrition, and that these in turn affect brain development, but more studies need to be conducted on this topic.

The kind of relationships that adolescents have with their classmates also affects brain activity. Adolescents with a history of being bullied, for example, show different patterns of brain activation to certain social information — their brains appear to be more sensitive to the experience of being left out. By the same token, having lots of friends and a history of being liked by classmates also affects brain activation, and may make you less [(2)]*susceptible to developing mental health problems.

Across the world, adolescents also grow up in vastly different cultures, which affects many aspects of their lives — from how many years they spend studying, to when they get married and even how much time they spend with their families.

Recently, scientists have become interested in how this might [(3)]*mirror differences in adolescents' brains. We already know that adults from different cultures show interesting differences in their brain activity and brain structure,

and this is now starting to be investigated in adolescents.

The reason why most adolescent brain research hasn't look at individual differences yet is partly because the field is only about 20 years old, and new research areas need to start with the basics — the averages — before they attempt to understand the nuance.

There are also practical reasons. Brain imaging technology to date has not been good enough to map exactly how specific factors like peer relationships might affect brain development. Then there is also the fact that to have enough power to detect (4)*reliable findings, large sample sizes are needed.

This means hundreds, sometimes thousands, of teenagers. At the moment a brain scan costs about £500 per hour, so sample sizes are very often limited by cost. One way to resolve this issue is for scientists to share their data with each other, and this is now starting to happen.

Recognising that all adolescents are different has ② really important implications for things like education or advertising. If, for example, the way in which adolescents learn is dependent on their specific pattern of brain development, then educational strategies that are based on averages will only have limited use.

Similarly, advertising campaigns for things like sexual health, if based on the studies that are averaged across participants, will work for some adolescents but not others.

The sooner we understand the difference between adolescents, the sooner we can integrate this information into schools and policy. This is important, because after all, there's no such thing as an average teenager, and we need to remember this as we continue to refine our understanding of the adolescent brain.

Source (with changes)

https://www.independent.co.uk/news/science/brain-connections-intelligence-mapping-technique-find-understand-human-a8142686.html

Note

neuroscience：神経科学

設問 1　＊印のついた語句は，本文の文脈ではそれぞれどのような意味で使われているか，最も近いものを選んで記号で答えなさい。

1. *succumb to

(a) look to

(b) tend to

(c) yield to

(d) respond to

2. *susceptible

(a) strong

(b) flexible

(c) tolerant

(d) vulnerable

3. *mirror

(a) detect

(b) adjust

(c) reflect

(d) narrow

4. *reliable

(a) well-founded

(b) well-intentioned

(c) well-balanced

(d) well-accumulated

設問 2　下線部①について，著者はなぜこのように考えているのか，本文の内容にしたがって説明しなさい。

設問 3　下線部②が述べている重要な意味とは何か，本文の内容にしたがって説明しなさい。

設問 4　本文の内容と合致するものを 3 つ選んで記号で答えなさい。

(a) Adolescent brain research has a long history.

(b) Significant changes occur in the brain in adolescence.

(c) Adolescents growing up in the same culture follow a similar brain development.

(d) The author's research team examined factors such as genetics in their latest paper.

(e) Researchers should not share their data to protect the teenagers' personal information.

(f) It is not yet clear why adolescent brains develop differently depending on their socioeconomic status.

(g) Adolescents who had an experience of being bullied may be more sensitive to the experience of being left out by their friends.

<パート 2 >　　(配点率 30 %)

Read the passage, then follow the instructions below.

How Forgiveness Benefits Your Health: Forgiving Wrongdoers Can Expand Physical Fitness

Research has shown time and time again that our minds and bodies are linked: stress and depression can breed (①), while a positive outlook on life can provide us with an increased amount of energy. Willpower and (②) can make us run faster and longer.

A new study (③) the link between mind and body; it shows that holding a grudge may not (④) only on your mind but also upon your physical person. Published in *Social Psychological & Personality Science*, the research states that the act of forgiveness—(⑤) someone who has done you wrong—can not only metaphorically lift a (⑥) off your shoulders, but it can do so physically, as well.

The authors of the study, from Erasmus University's Rotterdam School of Management in the Netherlands, had 46 undergraduate students participate in two experiments. The first involved half of the students writing about "a time when they were seriously offended by another person, and (⑦) forgave them." The other half of students were asked to write about a similar incident, but one in which they never forgave the person and continued to view them negatively.

After each writing exercise, the students in both groups walked to a certain point in a nearby hill and were asked to estimate its slant. Interestingly, those who had written about their experience of forgiving someone estimated the hill to be less (⑧) than those who were still thinking about their negative feelings towards someone they hadn't forgiven.

In the second experiment, 160 undergraduate students from Erasmus University and National University of Singapore were divided into three groups. The first wrote about an experience in which they were (⑨) by another person but forgave them; the second wrote about a similar (⑩) but one in which they didn't forgive the person; and the third wrote about a "recent interpersonal interaction" that didn't necessarily involve harming or forgiveness. They were then tested in a physical fitness task in which they were measured by the height of their jumps. The researchers found that the students who had written about forgiveness jumped higher on average than those who (⑪) on the negative feelings involved with not forgiving someone. However, the jumping difference between those who forgave and those who simply wrote about a neutral interpersonal interaction was minimal: proving that it was the act of holding a grudge that was "weighing" people down.

"The benefits of forgiveness may go beyond the constructive consequences that have been (⑫) in the psychological and health domains," the researchers write. "Our research shows that forgivers perceive a less daunting world, and perform better on challenging physical tasks."

More research will need to be completed before researchers fully understand what causes lack of forgiveness to be a burden of sorts, or a limitation holding someone back. But it might have something to do with power, the authors point out: "Victims who are unable to (⑬) with their offenders often feel a sense of (⑭), " they write. Forgiving, on the other hand, provides a person with a greater sense of self-worth and power, which is often manifested into enhanced physical ability. Another possibility is that holding a grudge "can increase over-thinking, which may decrease the availability of cognitive resources such as glucose that can otherwise be used to cope with physical (⑮) such as jumping or climbing a hill."

According to the Mayo Clinic, forgiveness brings with it (⑯) of health benefits, including improved relationships, (⑰) anxiety and stress, lower

blood pressure, a lowered risk of depression, and stronger immune and heart health. Letting go of (⑱) emotions can often have a remarkable impact on the body.

"A state of unforgiveness is like carrying a heavy burden — a burden that victims bring with them when they navigate the (⑲) world," the authors write. "Forgiveness can (⑳) this burden."

Source (with changes)
https://www.medicaldaily.com/how-forgiveness-benefits-your-health-forgiving-wrongdoers-can-expand-physical-fitness-316902

設問 1 **Use the following words to complete the text.**

burden	decreased	determination	challenges
established	explains	fatigue	focused
harmed	lighten	negative	pardoning
physical	plenty	powerlessness	reconcile
situation	steep	ultimately	weigh

設問 2 **Answer the following questions in English.**

1. According to the article, there are many benefits that can be gained from forgiving someone who has wronged you. What three benefits do you think are most valuable?

2. How did the researchers do the second experiment?

<パート 3 > (配点率 30 %)

Read the following paragraph and then write an essay on the topic below.

Your essay should be written in your own words and:

1. be a minimum of 150 words in English,
2. be written using paragraph form,
3. have a minimum of three paragraphs,
4. have a clear introduction, body and conclusion,
5. leave a one-line space between each paragraph.

Do not double-space your essay; write on every line.
In your essay, your ideas should be clearly expressed.

"How you manage, spend, and invest your money can have a profound impact on your life, yet very few schools teach these important skills. Too many people make it all the way to adulthood without ever learning basic money management; skills like creating a budget, investing for the future, or even how credit cards work are startlingly rare skills."

Source (with changes)
https://lifehacker.com/how-to-manage-your-money-for-those-who-never-learned-g-1703892260

Topic

Write about how you currently manage your money: Are you a spender or a saver? Give examples of your money managing habits, e. g. how do you spend your pocket money?