

英 語

医学部医学科

問題冊子

注意事項

- (1) 試験開始の合図があるまで、問題冊子を開かないこと。
- (2) 問題冊子は 11 ページで、解答用紙は 6 枚である。問題冊子や解答用紙に、落丁、乱丁、印刷不鮮明のものがあった場合は、ただちに監督者に申し出ること。
- (3) 受験番号は、6 枚の解答用紙のそれぞれの指定箇所に記入すること。
- (4) 問題は **1** から **3** の 3 つの大問よりなる。
- (5) 解答は解答用紙の指定箇所に記入すること。
- (6) 解答用紙は持ち帰らないこと。
- (7) 問題冊子は持ち帰ること。
- (8) 各大問には、満点に対する配点の比率(%)を表示してある。

1

次の英文を読んで、後の設問に答えなさい。(配点比率 30 %)

A team of psychologists recently asked dozens of college students to consider several morally charged situations. In one, a friend lies on his résumé to get a job; in another, survivors of a plane crash consider cannibalizing an injured boy to avoid starvation. Students who pondered these hypothetical scenarios while sitting at a dirty desk with sticky stains and a chewed-up pen rated them as more immoral than did students who sat at a clean desk. In another version of the experiment, a nearby trash can doused with novelty fart spray had a similar effect. The findings demonstrate that emotions such as disgust exert a powerful influence on moral judgments, even when they are triggered by something unrelated to the moral issue, says study co-author Jonathan Haidt, a psychologist at the University of Virginia.

Haidt is one of a growing number of researchers taking an experimental approach to investigating the nature of human morality. The field has drawn practitioners from diverse backgrounds including philosophy, psychology, and neuroscience. They don't always see eye to eye, but they are united in their belief that the scientific method will yield fresh insights into questions that have troubled philosophers for centuries.

One area of intense interest is the interplay of emotion and () in moral decision-making. Haidt argues that people rely on gut reactions to tell right from wrong and employ reason mainly when they try to justify their intuitions after the fact, not unlike an art museum visitor who is struck by the beauty of a painting but struggles to explain why. Not everyone accepts this view, but other researchers do see evidence that moral judgments are surprisingly automatic. "I think there is an emerging consensus that things happen pretty quickly and that explicit conscious reasoning is not where the action is," Haidt says.

This automaticity has led some researchers to suggest that (). Cognitive neuroscientists are already hunting for the underlying neural mechanisms. At the same time, psychologists and anthropologists are searching for evidence of universal moral principles shared by all people. Others are interested in how morality differs from culture to culture. They are using techniques that include brain imaging and online questionnaires to probe the roots of morality, and some researchers are viewing the development of moral principles through the lens of evolution.

The work is likely to yield a better understanding of our moral intuitions and where they come from, says Walter Sinnott-Armstrong, a philosopher at Dartmouth College. Philosophers, from the ancient Greeks on, have tried to answer these questions mainly through introspection, an exercise that has often amounted to seeking new arguments for a previously held conviction, says Sinnott-Armstrong, who has recently begun some experimental work of

his own. “One thing that’s fascinating about science is you don’t know where you’re going to end up.”

Two 18th century thinkers have had a huge influence on moral philosophy: David Hume, a Scotsman, who argued that passions drive moral judgments, and Immanuel Kant, a German, who countered that dispassionate ⁽²⁾ (_____) is, or ought to be, the driving force. The clash between these two philosophical titans still reverberates today. Lately, ⁽⁴⁾ (_____) seems to be gaining an edge, thanks to the work of Haidt and others.

Other evidence that emotions guide moral judgments comes from work with people who’ve suffered damage to brain regions that mediate emotion. In a 2007 paper, a team led by Michael Koenigs of the University of Iowa, and Antonio Damasio of the University of Southern California reported that people with damage to the ⁽⁵⁾ *ventromedial prefrontal cortex made abnormal judgments on hypothetical moral dilemmas that forced them to consider whether it was permissible to sacrifice the life of one person to save several others. These scenarios included variants of the so-called trolley problem, a favorite tool of morality researchers. One version puts the subject behind the wheel of a runaway trolley headed toward five track maintenance workers; the only way to save the five is to hit a switch on the dashboard that would divert the trolley to a track with just one worker. Healthy volunteers and patients with damaged brains alike tended to say ⁽⁶⁾ this was acceptable. The two groups differed, however, on a more emotionally charged version of the dilemma in which the only way to save the five is to push a large man off a footbridge to stop the runaway trolley. Although the same utilitarian logic applies — kill one to save five — healthy subjects found this option harder to stomach: only about 20% said it would be permissible. But twice as many of the brain-damaged subjects said they would push the man, suggesting that their damaged emotional circuitry made them unusually likely to pick the utilitarian option.

Jorge Moll, a neuroscientist at Labs D’Or Hospital Network, views the ventromedial prefrontal cortex as part of a network of brain regions underlying “prosocial sentiments” such as guilt and compassion. Moll and colleagues reported that this brain region is activated by viewing morally evocative photographs, such as ones of a hungry child, even when no judgment is required. In a 2006 paper, he and others reported that the same region is activated when volunteers elect to donate money to charity. Moll views prosocial sentiments as the core of morality and thinks they arose from ancient mechanisms that evolved to enable our ancestors to form social attachments and cooperative groups.

The Koenigs study contains hints that emotions aren’t the entire story, however, says coauthor Marc Hauser, a cognitive scientist at Harvard University. He points out that the lesion patients with damaged brains still made normal judgments in many situations,

particularly regarding dilemmas that didn't tug at the emotions and "easier" ones that are emotionally charged but elicit strong consensus among healthy subjects. "That rules out the strong version of the hypothesis that emotions are causally necessary for making [all] moral judgments," Hauser says.

An alternative view, championed by Joshua Greene, a cognitive neuroscientist and philosopher at Harvard, is that when people grapple with moral dilemmas like the trolley problems, emotion and cognition play a tug of war in the brain: Emotions tell us we'll feel terrible if we push the man; cognition says: Push him! Five is greater than one. Greene suspects that the judge in this conflict may be a brain region called the *anterior cingulate cortex. Previous studies have found that this region fires up when people wrestle with many types of internal conflicts, and it did so when subjects in Greene's study faced particularly difficult moral dilemmas.

In a recent study that mirrors Haidt's work with manipulating emotion, Greene and colleagues had college students evaluate moral dilemmas while grappling with an extra cognitive burden: searching for a particular number in a string of characters scrolling across a computer screen. The extra cognitive work slowed response times when students made utilitarian judgments but not emotional ones, the researchers report. Greene sees the study as evidence that (_____) is an important part of moral decision-making.

Some researchers see the trolley problems as too (_____) (7). "We don't have a lot of faith in using these esoteric examples," says Jordan Grafman, a cognitive neuroscientist at the National Institute of Mental Health. The situations are so far-fetched that Grafman and others question whether they really engage the neural mechanisms involved in everyday moral reasoning. Everyday moral reasoning is likely to involve a memory component that's missing in Greene's account, Grafman says. "More often than not, we take a situation we've experienced in the past and compare it to the new one," he says. Brain-imaging studies done with more realistic scenarios might catch some of the underlying neural mechanisms, says Grafman.

At the same time, some researchers argue that the emphasis on emotion and (_____) (2) is too simplistic, akin to placing the ghost of Hume in one network of brain regions and the ghost of Kant in another. "It's like they take 18th century categories and try to do 21st century science," says John Mikhail, a legal scholar at Georgetown University. Mikhail and others point out that before emotion and (_____) (2) can evaluate a given situation, the brain has to first answer questions such as who did what to whom, whether someone got hurt, and whether the harm was intentional.

For example, most people would condemn someone who tried to poison a friend's coffee

but accidentally stirred in sugar instead of poison. It's the bad intention that matters, not the outcome. Some cognitive scientists recently investigated how the brain makes such distinctions. When volunteers read small scenarios about intentional and unintentional harms, activity increased in the right temporoparietal junction (RTPJ), a brain region involved in finding out other people's intentions. RTPJ activity was greatest for cases like the bungled poisoning in which someone tried but failed to inflict harm, the researchers reported.

At last month's meeting of the Cognitive Neuroscience Society, Rebecca Saxe and Liane Young reported that interfering with RTPJ activity using a noninvasive method called *transcranial magnetic stimulation caused people to downplay intentions and, for example, judge the attempted poisoning less harshly because ultimately no harm was done. Such findings demonstrate that the cognitive contributions to moral judgments aren't limited to the weighing of harms that's emphasized by trolley problems, Saxe says. Understanding intentions is another crucial component, and the RTPJ findings begin to hint at the neural mechanisms involved, she says.

(Adapted from Greg Miller, "Neurobiology: The Roots of Morality," *Science* 9 May 2008, pp. 734-737.)

注)

*ventromedial prefrontal cortex : 前頭前野腹内側部

*anterior cingulate cortex : 前帯状回皮質

*right temporoparietal junction : 右側頭頭頂接合部

(以上, 脳の部位名称)

*transcranial magnetic stimulation : 経頭蓋磁気刺激(外部から磁場を与えて, 脳内の神経活動を把握する手法)

設問 1 第一段落で述べられている実験において, 下線部(1)を引き起こした原因を示す箇所を, 本文中の波線部(あ)から(お)の中から二つ選び, その記号を解答欄に書きなさい。

設問 2 本文中 4 か所にある下線部(2)の空所に入れるのに最も適した語を下から選び, その記号を解答欄に書きなさい。4 か所とも同じ語が入ります。

- (A) automaticity
- (B) intuition
- (C) brain
- (D) reason
- (E) science

設問 3 下線部(3)の空所に入れるのに最も適した選択肢を下から選び、その記号を解答欄に書きなさい。

- (A) other animals also have possibility to make a moral decision
- (B) moral judgments are made without contemplation
- (C) a man-made moral decision-making machine will be released in the near future
- (D) reflex nerves contribute to moral judgment
- (E) the human brain has built-in moral instincts

設問 4 下線部(4)の空所に入れるのに最も適した人名を本文中から選び、解答欄に英語のフルネームで書きなさい。

設問 5 下線部(5)の “the ventromedial prefrontal cortex” について間違っただことを述べている選択肢を下から二つ選び、その記号を解答欄に書きなさい。

- (A) It explains that moral judgments are influenced by emotions.
- (B) It is associated with a feeling of empathy toward others.
- (C) It helps utilitarian judgment.
- (D) It creates abnormal moral judgments.
- (E) It plays an important role in giving birth to morality.

設問 6 下線部(6)の “this” はどのようなことを示しているのか、日本語で説明しなさい。

設問 7 下線部(7)の空所に入れるのに最も適した単語を本文中から一つ選び、解答欄に英語で書きなさい。

設問 8 下線部(8)の空所に入れるのに最も適した単語を下から選び、その記号を解答欄に書きなさい。

- (A) classical
- (B) easy
- (C) artificial
- (D) immoral
- (E) common

設問 9 下線部(9)の John Mikhail の発言の意図として最もふさわしい選択肢を下から選び、その記号を解答欄に書きなさい。

- (A) Researchers should apply new frameworks.
- (B) Researchers should merge traditional philosophy and science.
- (C) Researchers should employ excellent scientists regardless of age.
- (D) Researchers should use advanced brain imaging technologies.
- (E) Researchers should use noninvasive methods.

設問10 本文全体を通じて一貫して述べられていることとして最もふさわしい選択肢を下から選び、その記号を解答欄に書きなさい。

- (A) Researchers require improvement in experimental techniques.
- (B) Moral judgment depends on cultural background.
- (C) Moral judgment is made based on emotion.
- (D) Whether the harm is intentional influence moral judgment.
- (E) Experimental techniques probe the nature of human morality.

2

次の英文を読んで、後の設問に答えなさい。(配点比率 40%)

Language at work

We see variation when we look at the way language is used in the workplace.

Next time you're in a school library, notice how the books are organized. There are sections such as BIOLOGY and HISTORY and GEOGRAPHY and RELIGION and LITERATURE and SCIENCE. It's the same in a public library — except that there are more headings there. You'll find LAW and MEDICINE, for instance, which aren't usually taught in school.

Pick a book from two of these sections — literature and science, for example — and open them somewhere in the middle. Choose a paragraph and read it. You don't have to understand *what* the writers are saying. Just notice *the way* they're saying it. You'll see differences like this:

Harry glanced into the cracked, dusty mirror and saw Ron and Hermione exchanging skeptical looks behind his back.

*Cirrus clouds are found at high altitudes, at around 6,000 metres (20,000 feet), but can be at a much lower height in cold polar regions.

The style of writing feels very different. Why?

It's because the writers are aiming to do different things.⁽¹⁾ In the first example, we're being told an exciting story, so we see words which create a dramatic atmosphere, such as "cracked" and "dusty." We see the names of the characters who are keeping the story moving along. And we see a new twist in the plot: *why* are Ron and Hermione looking at each other? It makes us want to read on.

In the second example, there are no names, no atmospheric words, no story twists. We're simply told some basic facts, briefly and accurately. In a word, it's scientific. We're given some knowledge, without any drama. We can read on if we like, but we don't feel we have to.

We can feel the difference between the two styles if we mix them up. What would you make of this?

Harry finished his cornflakes and found cirrus clouds at high altitudes, at around 6,000

metres (20,000 feet), but Hermione, who was wearing a red dress, thought they could be at a much lower height in cold polar regions.

This sounds very strange. It doesn't sound scientific any more. Why not?

It's because, when we write about science, it doesn't matter who people are, or what they're wearing, or what they had for breakfast. It's a fact that cirrus clouds exist at 6,000 metres, regardless of whether Harry found them there or not. It's a fact that they are lower in polar regions, whatever Hermione thinks. Their personal opinion is beside the point. And cirrus clouds would still exist at 6,000 metres even if she was wearing a blue dress or if Harry had eaten toast for breakfast.

In scientific language, sentences say that an activity is taking place without telling us anything about the people who are performing the activity. Scientists write like the second sentence below, not the first:

Harry found cirrus clouds at high altitudes. (We know who found them.)

Cirrus clouds are found at high altitudes. (We don't know who found them.)

This is a kind of language we call "impersonal."

Nor do we let our imagination take over, when we try to write scientifically. We won't read this sort of thing in a scientific book:

Cirrus clouds are really beautiful and they make me tingle all over whenever I see them, and they are found at high altitudes.

Science doesn't care about our feelings. One person might find clouds beautiful. Another person might not. ⁽³⁾ But it's a fact that they are found at high altitudes, and science aims to state the facts. If you want to find out about how people feel, you're better off reading a poem or a novel.

We can sum all these examples up by saying that scientific language is not like other kinds of language. It uses special words and grammar to describe and explain the nature of the universe, often with lots of technical symbols and diagrams. If you train to be a scientist, one of the first things you have to do is learn to speak and write in a scientific way. It's a bit like learning a new language.

⁽⁴⁾ The same point applies to all the other jobs in life. If you want to be a lawyer, or a doctor, or a religious minister, or a sports commentator, you have to learn a new kind of language. Every job has its special words (or “jargon”) and grammar, its own way of talking or writing. Think about all the sports commentators on radio or television, and how their style alters depending on the sports they’re describing. A football game sounds very different from a horse race or a tennis match. The speed and loudness of the commentator’s voice are very different, for a start. Even if you’re a long way from the television, you can often tell what kind of sport is on just from listening to the tone of voice.

The jobs people have bring us into contact with a new kind of language variation. We can talk about “scientific English,” “religious English,” “medical English,” and so on. These varieties are like dialects and accents, except that the language doesn’t tell us where people are from, but what job they do. They’re often called *occupational dialects*, for that reason.

⁽⁵⁾ As we grow up, we learn more and more about occupational dialects. Just by watching television, we learn about the way policemen, lawyers, doctors, and all sorts of other people speak. If we go to a church, or a mosque, or some other religious setting, we experience the very distinctive kinds of language used there. Out and about, we hear people in shops, markets, and fairgrounds using their own kind of language to sell us things. We hear announcers on trains, boats, and planes using their own kind of language to tell us things. Even by the age of 10, we’ve picked up an awful lot about the way a job can make us change ⁽⁶⁾ the way we speak or write.

You can test your knowledge of occupational dialects. Here’s a selection of sentences from people in different jobs. See if you can match the sentences with the job-names.

Test 1

- | | |
|---|--------------------|
| 1 I put it to you that you are lying. | (A) army sergeant |
| 2 Stand up straight, you horrible little man! | (B) advertiser |
| 3 Atoms combine to form units called molecules. | (C) scientist |
| 4 You are not obliged to say anything. | (D) lawyer |
| 5 These are yummy delicious. | (E) priest |
| | (F) police officer |

We can do a test like this with sets of single words, too. Which jobs do you think these words belong to? Again, match the sets with the job-names.

Test 2

- | | |
|--|------------------------|
| 1 depression, cold front, precipitation, force 5 | (A) hairdresser |
| 2 holiday, destination, check-in, ticketing | (B) disk jockey |
| 3 symptoms, diagnosis, pulse, medication | (C) weather-forecaster |
| 4 salon, blow dry, shampoo, set, trim | (D) travel agent |
| 5 amps, speakers, kit, deck, headphones | (E) doctor |
| | (F) estate agent |

(Adapted from David Crystal, 2010, *A Little Book of Language*, New Haven: Yale Univ. Press, pp. 145-149.)

注)

*cirrus clouds : 巻雲(けんうん)

設問 1 下線部(1)について、その直前にある二つの引用文が、それぞれどのように異なる目的を果たすために書かれているかを、日本語で簡潔に説明しなさい。

設問 2 下線部(2)の“impersonal”とはどういうことか、文脈に即して日本語で説明しなさい。

設問 3 下線部(3)を日本語に訳しなさい。

設問 4 下線部(4)“The same point”の示す内容を日本語で説明しなさい。

設問 5 下線部(5)“for that reason”の示す内容を日本語で説明しなさい。

設問 6 下線部(6)を日本語に訳しなさい。

設問 7 文中の“Test 1”に答えなさい。1～5の文に対応する最も適切なものを、選択肢(A)～(F)の中から選び、記号で答えること。

設問 8 文中の“Test 2”に答えなさい。1～5の語群に対応する最も適切なものを、選択肢(A)～(F)の中から選び、記号で答えること。

- 3 次の英文は「石油危機」を扱った文章です。英文をよく読んで、下線部①～④を英語に直しなさい。(配点比率 30 %)

The world's oil reserves could be exhausted by 2040

The greatest addiction of the modern world is oil. Since the first modern oil fields were discovered in Pennsylvania in the early 1860s, 私たちはすっかり石油に依存するようになってしまった。^① We need petrol to fuel cars, airplanes and ships; we need crude oil to provide energy for electricity generation and as a raw material in plastics, solvents, fabrics and detergents. It's no exaggeration to say that without it, society and industry would shudder to a halt.

しかしいつか将来、私たちは石油なしで生きることを学ばなければならないかもしれない。^② While estimates vary as to how far away that is, almost all of them agree that the world's oil reserves are finite.

The Organization of the Petroleum Exporting Countries (OPEC) tries to put a positive spin on the problem. OPEC is a cartel which represents eleven of the major oil producers, and it calculates that the world has just over a trillion barrels of oil in proven crude oil reserves. OPEC's World Energy Model puts the world's oil demands at 76 million barrels a day, which could rise to 90 million barrels by 2010. 現在の生産量でいけば、OPEC 加盟国の石油埋蔵量はあと 80 年もつ、と OPEC は信じている。^③

But given that OPEC's main role is regulating the supply of oil and maximizing gains for their members, that's exactly what you might expect them to say. Some scientists believe that the world's reserves of oil could be exhausted in four decades, and that a crisis will come far sooner than that. According to Colin Campbell, a geologist who has worked for Texaco and Amoco, 鍵は、いつ石油が尽きるかを問うことではなく、いつ石油の生産が不経済になり始めるかを問うことである。^④ He estimates that by 2010 prices will start to rise as the world's oil reserves start to decline.

(Adapted from Jessica Williams, 2007, *50 Facts That Should Change The World 2.0*, New York: Disinformation, p. 151.)