

READING PASSAGE 3

You should spend about 20 minutes on Questions 27–40, which are based on Reading Passage 3.

Music and the emotions

Neuroscientist Jonah Lehrer considers the emotional power of music

Why does music make us feel? On the one hand, music is a purely abstract art form, devoid of language or explicit ideas. And yet, even though music says little, it still manages to touch us deeply. When listening to our favourite songs, our body betrays all the symptoms of emotional arousal. The pupils in our eyes dilate, our pulse and blood pressure rise, the electrical conductance of our skin is lowered, and the cerebellum, a brain region associated with bodily movement, becomes strangely active. Blood is even re-directed to the muscles in our legs. In other words, sound stirs us at our biological roots.

A recent paper in *Nature Neuroscience* by a research team in Montreal, Canada, marks an important step in revealing the precise underpinnings of 'the potent pleasurable stimulus' that is music. Although the study involves plenty of fancy technology, including functional magnetic resonance imaging (fMRI) and ligand-based positron emission tomography (PET) scanning, the experiment itself was rather straightforward. After screening 217 individuals who responded to advertisements requesting people who experience 'chills' to instrumental music, the scientists narrowed down the subject pool to ten. They then asked the subjects to bring in their playlist of favourite songs – virtually every genre was represented, from techno to tango – and played them the music while their brain activity was monitored. Because the scientists were combining methodologies (PET and fMRI), they were able to obtain an impressively exact and detailed portrait of music in the brain. The first thing they discovered is that music triggers the production of dopamine – a chemical with a key role in setting people's moods – by the neurons (nerve cells) in both the dorsal and ventral regions of the brain. As these two regions have long been linked with the experience of pleasure, this finding isn't particularly surprising.

What is rather more significant is the finding that the dopamine neurons in the caudate – a region of the brain involved in learning stimulus-response associations, and in anticipating food and other 'reward' stimuli – were at their most active around 15 seconds before the participants' favourite moments in the music. The researchers call this the 'anticipatory phase' and argue that the purpose of this activity is to help us predict the arrival of our favourite part. The question, of course, is what all these dopamine neurons are up to. Why are they so active in the period preceding the acoustic climax? After all, we typically associate surges of dopamine with pleasure, with the processing of actual rewards. And yet, this cluster of cells is most active when the 'chills' have yet to arrive, when the melodic pattern is still unresolved.

A and other B A & B

1 One way to answer the question is to look at the music and not the neurons. While music can often seem (at least to the outsider) like a labyrinth of intricate patterns, it turns out that the most important part of every song or symphony is when the patterns break down, when the sound becomes unpredictable. If the music is too obvious, it is annoyingly boring, like an alarm clock. Numerous studies, after all, have demonstrated that dopamine neurons quickly adapt to predictable rewards. If we know what's going to happen next, then we don't get excited. This is why composers often introduce a key note in the beginning of a song, spend most of the rest of the piece in the studious avoidance of the pattern, and then finally repeat it only at the end. The longer we are denied the pattern we expect, the greater the emotional release when the pattern returns, safe and sound.

To demonstrate this psychological principle, the musicologist Leonard Meyer, in his classic book *Emotion and Meaning in Music* (1956), analysed the 5th movement of Beethoven's String Quartet in C-sharp minor, Op. 131. Meyer wanted to show how music is defined by its flirtation with – but not submission to – our expectations of order. Meyer dissected 50 measures (bars) of the masterpiece, showing how Beethoven begins with the clear statement of a rhythmic and harmonic pattern and then, in an ingenious tonal dance, carefully holds off repeating it. What Beethoven does instead is suggest variations of the pattern. He wants to preserve an element of uncertainty in his music, making our brains beg for the one chord he refuses to give us. Beethoven saves that chord for the end.

According to Meyer, it is the suspenseful tension of music, arising out of our unfulfilled expectations, that is the source of the music's feeling. While earlier theories of music focused on the way a sound can refer to the real world of images and experiences – its 'connotative' meaning – Meyer argued that the emotions we find in music come from the unfolding events of the music itself. This 'embodied meaning' arises from the patterns the symphony invokes and then ignores. It is this uncertainty that triggers the surge of dopamine in the caudate, as we struggle to figure out what will happen next. We can predict some of the notes, but we can't predict them all, and that is what keeps us listening, waiting expectantly for our reward, for the pattern to be completed.

Test 7

Questions 27–31

Complete the summary below.

Choose **NO MORE THAN TWO WORDS** from the passage for each answer.

Write your answers in boxes 27–31 on your answer sheet.

The Montreal Study

Participants, who were recruited for the study through advertisements, had their brain activity monitored while listening to their favourite music. It was noted that the music stimulated the brain's neurons to release a substance called **27 dopamine** in two of the parts of the brain which are associated with feeling **28 pleasure**.

Researchers also observed that the neurons in the area of the brain called the **29 caudate** were particularly active just before the participants' favourite moments in the music – the period known as the **30 anticipatory phase**. Activity in this part of the brain is associated with the expectation of 'reward' stimuli such as **31 food**.

精读题 + 预测填空 + 检查答案

乱序



Questions 32–36

Choose the correct letter, **A**, **B**, **C** or **D**.

Write the correct letter in boxes 32–36 on your answer sheet.

- 32 What point does the writer emphasise in the first paragraph?
- A how dramatically our reactions to music can vary
 B how intense our physical responses to music can be
 C how little we know about the way that music affects us
 D how much music can tell us about how our brains operate
- 33 What view of the Montreal study does the writer express in the second paragraph?
- A Its aims were innovative.
 B The approach was too simplistic.
 C It produced some remarkably precise data.
 D The technology used was unnecessarily complex.
- 34 What does the writer find interesting about the results of the Montreal study?
- A the timing of participants' neural responses to the music
 B the impact of the music on participants' emotional state
 C the section of participants' brains which was activated by the music
 D the type of music which had the strongest effect on participants' brains
- 35 Why does the writer refer to Meyer's work on music and emotion?
- A to propose an original theory about the subject
 B to offer support for the findings of the Montreal study
 C to recommend the need for further research into the subject
 D to present a view which opposes that of the Montreal researchers
- 36 According to Leonard Meyer, what causes the listener's emotional response to music?
- A the way that the music evokes poignant memories in the listener
 B the association of certain musical chords with certain feelings
 C the listener's sympathy with the composer's intentions
 D the internal structure of the musical composition

会事记①
 ↓
 题
 ↓
 定位点

Test 7

Questions 37–40

Complete each sentence with the correct ending, A–F, below.

Write the correct letter, A–F, in boxes 37–40 on your answer sheet.

- 37 The Montreal researchers discovered that
- 38 Many studies have demonstrated that
- 39 Meyer's analysis of Beethoven's music shows that
- 40 Earlier theories of music suggested that

~~A~~ our response to music depends on our initial emotional state.

~~B~~ neuron activity decreases if outcomes become predictable.

~~C~~ emotive music can bring to mind actual pictures and events.

~~D~~ experiences in our past can influence our emotional reaction to music.

~~E~~ emotive music delays giving listeners what they expect to hear.

~~F~~ neuron activity increases prior to key points in a musical piece.

38: B/E

READING PASSAGE 3

You should spend about 20 minutes on Questions 27–40, which are based on Reading Passage 3 below.

Environmental practices of big businesses

The environmental practices of big businesses are shaped by a fundamental fact that for many of us offends our sense of justice. Depending on the circumstances, a business may maximize the amount of money it makes, at least in the short term, by damaging the environment and hurting people. That is still the case today for fishermen in an unmanaged fishery without quotas, and for international logging companies with short-term leases on tropical rainforest land in places with corrupt officials and unsophisticated landowners. When government regulation is effective, and when the public is environmentally aware, environmentally clean big businesses may out-compete dirty ones, but the reverse is likely to be true if government regulation is ineffective and if the public doesn't care.

It is easy for the rest of us to blame a business for helping itself by hurting other people. But blaming alone is unlikely to produce change. It ignores the fact that businesses are not charities but profit-making companies, and that publicly owned companies with shareholders are under obligation to those shareholders to maximize profits, provided that they do so by legal means. US laws make a company's directors legally liable for something termed 'breach of fiduciary responsibility' if they knowingly manage a company in a way that reduces profits. The car manufacturer Henry Ford was in fact successfully sued by shareholders in 1919 for raising the minimum wage of his workers to \$5 per day: the courts declared that, while Ford's humanitarian sentiments about his employees were nice, his business existed to make profits for its stockholders.

Our blaming of businesses also ignores the ultimate responsibility of the public for creating the conditions that let a business profit through destructive environmental policies. In the long run, it is the public, either directly or through its politicians, that has the power to make such destructive policies unprofitable and illegal, and to make sustainable environmental policies profitable.

The public can do that by suing businesses for harming them, as happened after the Exxon Valdez disaster, in which over 40,000 m³ of oil were spilled off the coast of Alaska. The public may also make their opinion felt by preferring to buy sustainably harvested products; by making employees of companies with poor track records feel ashamed of their company and complain to their own management; by preferring their governments to award valuable contracts to businesses with a good environmental track record; and by pressing their governments to pass and enforce laws and regulations requiring good environmental practices.

In turn, big businesses can exert powerful pressure on any suppliers that might ignore public or government pressure. For instance, after the US public became concerned about the spread of a disease known as BSE, which was transmitted to humans through infected meat, the US government's Food and Drug Administration introduced rules demanding that the meat industry abandon practices associated with the risk of the disease spreading. But for five years the meat packers refused to follow these, claiming that they would be too expensive to obey. However, when a major fast-food company then made the same demands after customer purchases of its hamburgers plummeted, the meat industry complied within weeks. The public's task is therefore to identify which links in the supply chain are sensitive to public pressure: for instance, fast-food chains or jewelry stores, but not meat packers or gold miners.

Some readers may be disappointed or outraged that I place the ultimate responsibility for business practices harming the public on the public itself. I also believe that the public must accept the necessity for higher prices for products to cover the added costs, if any, of sound environmental practices. My views may seem to ignore the belief that businesses should act in accordance with moral principles even if this leads to a reduction in their profits. But I think we have to recognize that, throughout human history, in all politically complex human societies, government regulation has arisen precisely because it was found that not only did moral principles need to be made explicit, they also needed to be enforced.

To me, the conclusion that the public has the ultimate responsibility for the behavior of even the biggest businesses is empowering and hopeful, rather than disappointing. My conclusion is not a moralistic one about who is right or wrong, admirable or selfish, a good guy or a bad guy. In the past, businesses have changed when the public came to expect and require different behavior, to reward businesses for behavior that the public wanted, and to make things difficult for businesses practicing behaviors that the public didn't want. I predict that in the future, just as in the past, changes in public attitudes will be essential for changes in businesses' environmental practices.

Test 4

Questions 27–31

Complete the summary using the list of words, A–J, below.

Write the correct letter, A–J, in boxes 27–31 on your answer sheet.

Big businesses

Many big businesses **today** are prepared to harm people and the environment in order to **make money**, and they appear to have **no** 27 **Lack of** 28 by governments **and lack of** public 29 can lead to environmental problems **such as** 30 **or** the destruction of 31

- | | | |
|-------------------|--------------------------|--------------------------|
| A funding | B trees | C rare species |
| D moral standards | C control | D involvement |
| G flooding | E overfishing | I worker support |

积极适应 + 限制修复 + 检查答案.

Questions 32–34

Choose the correct letter, A, B, C or D.

Write the correct letter in boxes 32–34 on your answer sheet.

32 The main idea of the third paragraph is that environmental damage

- A requires political action if it is to be stopped.
B is the result of ignorance on the part of the public.
C could be prevented by the action of ordinary people.
D can only be stopped by educating business leaders.

33 In the fourth paragraph, the writer describes ways in which the public can

- A reduce their own individual impact on the environment.
B learn more about the impact of business on the environment.
C raise awareness of the effects of specific environmental disasters.
D influence the environmental policies of businesses and governments.

34 What pressure was exerted by big business in the case of the disease BSE?

- A Meat packers stopped supplying hamburgers to fast-food chains.
B A fast-food company forced their meat suppliers to follow the law.
C Meat packers persuaded the government to reduce their expenses.
D A fast-food company encouraged the government to introduce legislation.

Test 4

审题记②

Questions 35–39

Do the following statements agree with the claims of the writer in Reading Passage 3?

In boxes 35–39 on your answer sheet, write

- YES** if the statement agrees with the claims of the writer
NO if the statement contradicts the claims of the writer
NOT GIVEN if it is impossible to say what the writer thinks about this

Yes

Not Given

No

Yes

Not Given

- 35 The public should be prepared to fund good environmental practices.
36 There is a contrast between the moral principles of different businesses.
37 It is important to make a clear distinction between acceptable and unacceptable behaviour.
38 The public have successfully influenced businesses in the past.
39 In the future, businesses will show more concern for the environment.

Question 40

Choose the correct letter, A, B, C or D.

Write the correct letter in box 40 on your answer sheet.

- 40 What would be the best subheading for this passage?
- A Will the world survive the threat caused by big businesses?
B How can big businesses be encouraged to be less driven by profit?
C What environmental dangers are caused by the greed of businesses?
D Are big businesses to blame for the damage they cause the environment?