

READING PASSAGE 3

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

Yawning

how and why we yawn still presents problems for researchers in an area which has only recently been opened up to study.

When Robert R. Provine began studying yawning in the 1960s, it was difficult for him to convince research students of the merits of 'yawning science'. Although it may appear quirky to some, Provine's decision to study yawning was a logical extension of his research in developmental neuroscience.

The verb *to yawn* is derived from the Old English *ganien* or *ginian*, meaning to gape or open wide. But in addition to gaping jaws, yawning has significant features that are easy to observe and analyse. Provine 'collected' yawns to study by using a variation of the contagion response*. He asked people to "think about yawning" and, once they began to yawn, to depress a button that would record from the start of the yawn to the exhalation at its end.

Provine's early discoveries can be summarized as follows: the yawn is highly stereotyped but not invariant in its duration and form. It is an excellent example of the instinctive fixed-action pattern of classical animal-behaviour study, or ethology. It is not a reflex (short-duration, rapid, proportional response to a simple stimulus), but, once started, a yawn progresses with the inevitability of a sneeze. The standard yawn runs its course over about six seconds on average, but its duration can range from about three seconds to much longer than the average. There are no half-yawns: this is an example of the typical intensity of fixed-action patterns and a reason why you cannot stifle yawns. Just like a cough, yawns can come in bouts with a highly variable inter-yawn interval, which is generally about 68 seconds but rarely more than 70. There is no relation between yawn frequency and duration: producers of short or long yawns do not compensate by yawning more or less often. Furthermore, Provine's hypotheses about the form and function of yawning can be tested by three informative yawn variants which can be used to look at the roles of the nose, the mouth and the jaws.

i The closed-nose yawn

Subjects are asked to pinch their nose closed when they feel themselves start to yawn. Most subjects report being able to perform perfectly normal closed-nose yawns. This indicates that the inhalation at the onset of a yawn, and the exhalation at its end, need not involve the nostrils — the mouth provides a sufficient airway.

*contagion response: the well-known tendency for yawns to trigger yawns in observers.

ii The clenched-teeth yawn

Subjects are asked to clench their teeth when they feel themselves start to yawn but allow themselves to inhale normally through their open lips and clenched teeth. This variant gives one the sensation of being stuck mid-yawn. This shows that gaping of the jaws is an essential component of the fixed-action pattern of the yawn, and unless it is accomplished, the programme will not run to completion. The yawn is also shown to be more than a deep breath, because, unlike normal breathing, inhalation and exhalation cannot be performed so well through the clenched teeth as through the nose.

iii The nose yawn

This variant tests the adequacy of the nasal airway to sustain a yawn. Unlike normal breathing, which can be performed equally well through mouth or nose, yawning is impossible via nasal inhalation alone. As with the clenched-teeth yawn, the nose yawn provides the unfulfilling sensation of being stuck in mid-yawn. Exhalation, on the other hand, can be accomplished equally well through nose or mouth. Through this methodology Provine demonstrated that inhalation through the oral airway and the gaping of jaws are necessary for normal yawns. The motor programme for yawning will not run to completion without feedback that these parts of the programme have been accomplished.

But yawning is a powerful, generalised movement that involves much more than airway manoeuvres and jaw-gaping. When yawning you also stretch your facial muscles, tilt your head back, narrow or close your eyes, produce tears, salivate, open the Eustachian tubes of your middle ear and perform many other, yet unspecified, cardiovascular and respiratory acts. Perhaps the yawn shares components with other behaviour. For example, is the yawn a kind of 'slow sneeze', or is the sneeze a 'fast yawn'? Both share common respiratory and other features including jaw gaping, eye closing and head tilting.

Yawning and stretching share properties and may be performed together as parts of a global motor complex. Studies by J. I. P. de Vries *et al.* in the early 1980s, charting movement in the developing foetus using ultrasound, observed a link between yawning and stretching. The most extraordinary demonstration of the yawn-stretch linkage occurs in many people paralysed on one side of their body because of brain damage caused by a stroke: the prominent British neurologist Sir Francis Walshe noted in 1923 that when these people yawn, they are startled and mystified to observe that their otherwise paralysed arm rises and flexes automatically in what neurologists term an 'associated response'. Yawning apparently activates undamaged, unconsciously controlled connections between the brain and the motor system, causing the paralysed limb to move. It is not known whether the associated response is a positive prognosis for recovery, nor whether yawning is therapeutic for prevention of muscular deterioration.

Provine speculated that, in general, yawning may have many functions, and selecting a single function from the available options may be an unrealistic goal. Yawning appears to be associated with a change of behavioural state, switching from one activity to another. Yawning is also a reminder that ancient and unconscious behaviour linking us to the animal world lurks beneath the veneer of culture, rationality and language.

Questions 27-32

Complete the summary below using the list of words and phrases **A–K**.

Write the correct letter **A–K** in boxes 27-32 on your answer sheet.

Provine's early findings on yawns

Through his observations of yawns, Provine was able to confirm that **27** _____ do not exist.

Just like a **28** _____, yawns cannot be interrupted after they have begun. This is because yawns occur as a **29** _____ rather than a stimulus–response, as was previously thought.

In measuring the time taken to yawn, Provine found that a typical yawn lasts about **30** _____. He also found that it is common for people to yawn a number of times in quick succession, with the yawns usually being around **31** _____ apart. When studying whether length and rate were connected, Provine concluded that people who yawn less do not necessarily produce **32** _____ to make up for this.

A form and function

B long yawns

C 3 seconds

D fixed-action pattern

E 68 seconds

F short yawns

G reflex

H sneeze

I short duration

J 6 seconds

K half-yawns

Questions 33 – 37

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

Write the correct letter in boxes 33–37 on your answer sheet.

- 33** What did Provine conclude from his closed-nose yawn experiment?
- A** Ending a yawn requires use of the nostrils
 - B** You can yawn without breathing through your nose
 - C** Breathing through the nose produces a silent yawn
 - D** The role of the nose in yawning needs further investigation
- 34** Provine's clenched-teeth yawn experiment shows that
- A** yawning is unconnected with fatigue
 - B** a yawn is the equivalent of a deep intake of breath
 - C** you have to be able to open your mouth wide to yawn
 - D** breathing with the teeth together is as efficient as through the nose
- 35** The nose-yawn experiment was used to test whether yawning
- A** can be stopped after it has started
 - B** is the result of motor programming
 - C** involves both inhalation and exhalation
 - D** can be accomplished only through the nose
- 36** In people paralysed on one side because of brain damage
- A** yawning may involve only one side of the face
 - B** the yawning response indicates that recovery is likely
 - C** movement in the paralysed arm is stimulated by yawning
 - D** yawning can be used as an exercise to prevent muscle wasting
- 37** In the last paragraph, the writer concludes that
- A** yawning is a sign of boredom
 - B** we yawn in spite of the development of our species
 - C** yawning is a more passive activity than we imagine
 - D** we are stimulated to yawn when our brain activity is low

Questions 38 – 40

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

In boxes 38–40 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 |

38 Research students were initially reluctant to appreciate the value of Provine's studies.

39 When fetuses yawn and stretch, they are learning how to control movement.

40 According to Provine, referring to only one function is probably inadequate to explain why people yawn.

一、Summary (27 – 32)

题号	答案	关键定位句 (原文)	解释
27	K half-yawns	“ There are no half-yawns : this is an example of the typical intensity of fixed-action patterns ...” — 第 3 段	明确指出 half-yawns 不存在。
28	H sneeze	“... but, once started, a yawn progresses with the inevitability of a sneeze .” — 第 3 段	打哈欠一旦开始就像喷嚏一样无法中断，因此用 sneeze 做类比。
29	D fixed-action pattern	“It is an excellent example of the instinctive fixed-action pattern of classical animal-behaviour study ...” — 第 3 段	说明哈欠属于固定动作模式，而非简单刺激-反应。
30	J 6 seconds	“The standard yawn runs its course about six seconds on average ...” — 第 3 段	“about six seconds” 即典型持续时间。
31	E 68 seconds	“... with a highly variable inter-yawn interval, which is generally about 68 seconds ...” — 第 3 段	一连串哈欠之间大约 68 秒。
32	B long yawns	“There is no relation between yawn frequency and duration: producers of short or long yawns do not compensate by yawning more or less often.” — 第 3 段	低频哈欠者并不会用“更长的哈欠”来补偿。

二、Multiple Choice (33 – 37)

题号	答案	关键定位句 (原文)	解释
33	B	“Most subjects report being able to perform perfectly normal closed-nose yawns. This indicates that the inhalation at the onset of a yawn ... need not involve the nostrils. ” — 第 4 段	证明无需用鼻子呼吸也能完整打哈欠。
34	C	“... this shows that gaping of the jaws is an essential component of the fixed-action pattern of the yawn ...” — 第 5 段	嘴必须张得足够大才能完成哈欠。
35	D	“This variant tests the adequacy of the nasal airway to sustain a yawn. ... Yawning is impossible via nasal inhalation alone. ” — 第 6 段	nose-yawn 实验正是用来检验“仅靠鼻子能否完成哈欠”。
36	C	“... when these people yawn, they are startled to observe that their otherwise paralysed arm risers and flexes automatically ...” — 第 8 段	打哈欠会激活瘫痪的手臂发生运动。
37	B	“Yawning is also a reminder that ancient and unconscious behaviour linking us to the animal world lurks beneath the veneer of culture, rationality and language. ” — 第 9 段	结论强调：即便人类进化、高度文明，哈欠这种原始本能仍然存在。

三、Yes / No / Not Given (38 – 40)

题号	答案	关键定位句 (原文)	解释
38	YES	“... it was difficult for him to convince research students of the merits of ‘yawning science’. ” — 第 1 段	学生最初并不认可其研究价值。
39	NOT GIVEN	第 8 段提到胎儿打哈欠并伸展之间存在联系，但 未说明这是为了学习控制动作。	文中缺乏支持或否定该说法的信息。
40	YES	“Provine speculated that ... yawning may have many functions, and selecting a single function ... may be an unrealistic goal. ” — 第 9 段	Provine 认为单一功能不足以解释打哈欠。