IELTS Proficiency

Topic: Health

The Changing Science of Stress

For most of human history, stress was understood simply as a bodily reaction to danger. Early humans faced threats that were immediate and concrete: dangerous animals, extreme weather, or a sudden shortage of food. In such situations, the body produced a rapid cascade of physiological changes that helped the individual either confront the threat or escape from it. Although today's environments look very different, the biological machinery that creates this stress response has changed surprisingly little. Modern research is gradually explaining how this system works, how it evolved, and why it sometimes causes problems in twenty-first-century life.

A major step in this explanation came from early work in endocrinology in the twentieth century. Researchers noticed that when animals encountered a threat, their adrenal glands released hormones such as adrenaline. This activation formed part of what became known as the fight-or-flight response. Heart rate and blood pressure rose, blood flow was directed towards the muscles and vital organs, and breathing became more rapid so that more oxygen could circulate in the body. For a long time, this reaction was seen as the central biological mechanism that enabled organisms to survive dangerous events.

The Hungarian-born scientist Hans Selye broadened this picture in the 1930s. Working with laboratory animals, he observed that many different kinds of stressor — including cold, physical injury, and other harmful conditions — produced a similar pattern of physiological changes. From these findings he proposed the General Adaptation Syndrome, a three-stage pattern the body follows when exposed to sustained stress. In the alarm stage, the body reacts rapidly to a new stressor; in the resistance stage, it attempts to adapt and maintain function while the stress continues; and in the exhaustion stage, prolonged or repeated stress increases the risk of illness and breakdown.

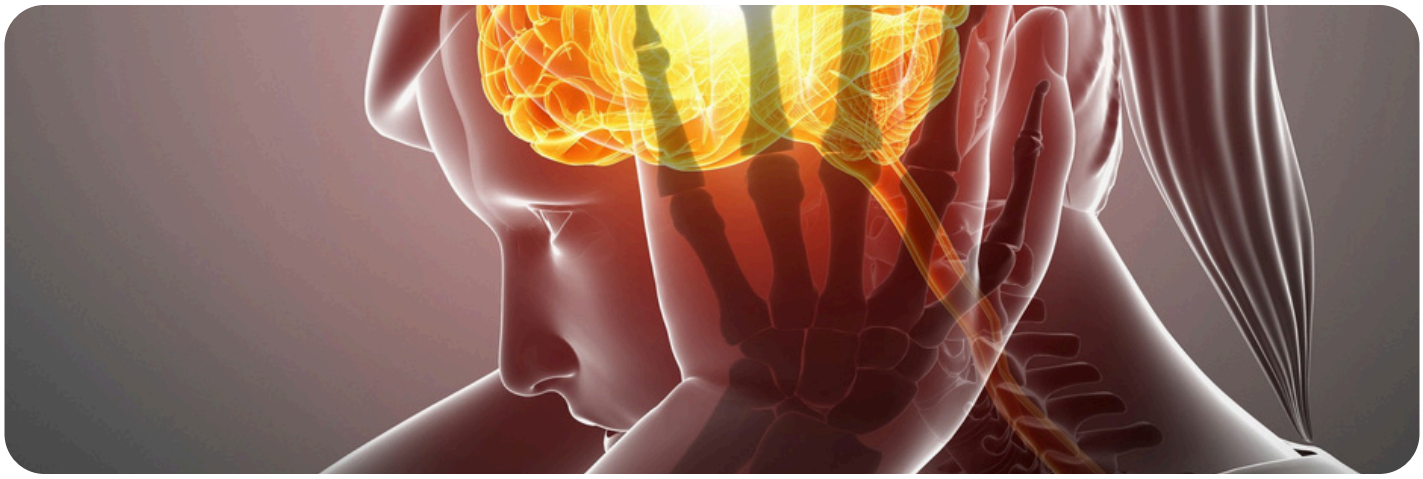
Later advances in neuroscience and physiology refined the understanding of where stress begins. Scientists now know that the brain plays a central role, particularly structures such as the amygdala, which help detect threat and emotional significance. When the amygdala judges a situation as dangerous, it signals the hypothalamus, which activates two major systems: the sympathetic nervous system and the hypothalamic–pituitary–adrenal (HPA) axis. Through these pathways, the body releases stress mediators, including adrenaline and the hormone cortisol. Cortisol helps regulate metabolism, blood pressure, and energy availability, preparing the body to respond to a challenge.

However, the same mechanisms that protect us in the short term can become harmful when activated too often. Researchers describe the idea of allostatic load as the “wear and tear” that accumulates in the body and brain when stress mediators are repeatedly activated or when the system does not switch off efficiently. Over time, this burden can affect several systems, including the cardiovascular and immune systems. Chronic stress is associated with increased vulnerability to heart disease and reduced resistance to infections. Long-term elevation or disruption of cortisol rhythms is also linked with changes in brain regions involved in mood and memory.

This leads to a central paradox of modern stress: our biological response system evolved to deal with short, acute crises, but many contemporary stressors are long-lasting, psychological, and difficult to escape. Deadlines, financial worries, and social evaluation often activate the same stress pathways as physical threat, yet the body may remain in a heightened state of arousal for extended periods. A system that is highly effective for a brief emergency can therefore become problematic when repeatedly engaged by everyday pressures.

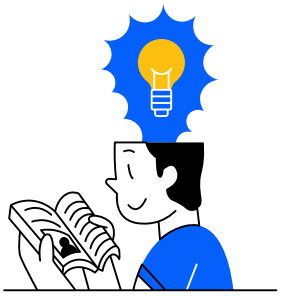
Despite this, scientists emphasise that the stress response is not inherently negative. In fact, a moderate level of activation can be beneficial. Research suggests that performance tends to improve as arousal rises from low to moderate levels, and then decline again when it becomes excessive. Too little stress can leave people unfocused, while too much can overwhelm attention and memory. Somewhere in the middle, stress can sharpen focus and support effective performance in specific tasks.

Recent studies have also highlighted the importance of how people interpret stressful situations. When individuals see an upcoming event as a manageable challenge, their biological stress reactions tend to be lower and more controlled than when they view the same event as an uncontrollable threat. This insight has influenced psychological approaches such as cognitive-behavioural therapy, which teaches techniques like cognitive reframing: deliberately re-examining and re-interpreting unhelpful thoughts in order to reduce distress and build resilience.



Other lifestyle and social factors have been shown to moderate the effects of stress biology. Large studies indicate that people with richer networks of social ties are, on average, less susceptible to certain infections, suggesting that strong relationships can buffer some of the physiological costs of stress. Sleep quality is another key factor: disrupted sleep can disturb hormonal regulation, including the daily rhythm of cortisol, while healthy sleep helps maintain more stable stress responses. Regular physical activity has also been linked with better long-term regulation of cortisol and improved capacity to cope with both acute and chronic stress.

Although there is still much to learn, one conclusion is widely accepted: understanding the biology of stress is essential for protecting both mental and physical health. By recognising how the stress response is triggered, how it helps us adapt, and how chronic activation can cause harm, individuals and societies can make more informed decisions. Evidence-based strategies — from psychological interventions and social support to sleep hygiene and physical activity — do not remove stress from life, but they can reduce allostatic load and support healthier adaptation. In this way, the changing science of stress offers not only an explanation of our reactions, but also practical guidance for living with pressure in a demanding world.



Glossary

cascade (n/v — cascading) — a series of events that happen one after another in a rapid sequence. The news triggered a cascade of reactions.

encounter (v — encounter n) — to face or experience something, often unexpected or challenging. We often encounter stress in daily life.

mobilise (v — mobilisation) — to gather or direct resources for action. The body mobilises energy during stress.

sustained (adj — sustain/sustainability) — continuing for a long period. Sustained stress can be harmful to the body.

vulnerability (n — vulnerable) — the state of being easily harmed or affected. Chronic stress increases vulnerability to illness.

disruption (n — disrupt/disruptive) — a disturbance that interrupts normal activity. Stress can cause disruption to hormonal rhythms.

arousal (n — aroused/arousing) — a state of heightened alertness or activation. Moderate arousal can improve performance.

overwhelm (v — overwhelming/overwhelmed) — to affect someone so strongly that they cannot function effectively. Too much stress can overwhelm memory.

interpret (v — interpretation/interpretive) — to understand or explain the meaning of something. People interpret stressors differently.

reframe (v — reframing) — to view or think about something in a new or different way. Therapy helps individuals reframe stressful thoughts.

resilience (n — resilient/resiliently) — the ability to recover quickly from difficulty. Reframing strengthens emotional resilience.

susceptible (adj — susceptibility) — likely to be influenced or harmed by something. Lack of sleep makes people more susceptible to illness.

regulation (n — regulate/regulatory) — the control or adjustment of processes or behaviour. Healthy sleep supports hormonal regulation.

accumulate (v — accumulation/accumulative) — to build up gradually over time. Stress responses can accumulate and cause long-term issues.

adaptation (n — adapt/adaptive) — the process of adjusting to new conditions. Stress can support adaptation when managed well.

Fill-in-the-Blank Vocabulary Task (10 items)

Use the words from the glossary. One word per blank.

1. Chronic stress can increase a person's _____ to infections.
2. When a stressor appears, the body quickly begins to _____ energy for action.
3. If pressure continues for too long, the effects can _____ and lead to health problems.
4. Good sleep supports the _____ of cortisol.
5. Many stress-related problems come from _____ activation of biological systems.
6. Therapy often teaches people to _____ negative thoughts.
7. Excessive stress may _____ a person and limit clear thinking.
8. A moderate level of _____ can improve performance.
9. People with strong social support networks are less _____ to stress-related illness.
10. Effective coping strategies help build long-term _____.

Answer Key:
1 vulnerability | 2 mobilise | 3 accumulate | 4 regulation | 5 sustained | 6 reframe | 7 overwhelm | 8 arousal | 9 susceptible | 10 resilience

Multiple-Choice Questions

1. What does “overwhelm” mean?

A. To motivate someone
B. To affect someone so strongly that functioning becomes difficult
C. To help someone think clearly
D. To remove a problem completely

2. Which situation shows someone being overwhelmed?

A. Enjoying a peaceful walk
B. Struggling to concentrate during a stressful meeting
C. Reading a short article
D. Relaxing after work

3. What is “resilience”?

A. The ability to avoid all stress
B. The ability to recover quickly from difficulty
C. A type of physical strength
D. A method of stress measurement

4. Which person shows resilience?

A. Someone who gives up after a mistake
B. Someone who quickly returns to normal after a setback
C. Someone who refuses advice
D. Someone who avoids challenges

5. If someone is “susceptible to illness,” they are…

A. unlikely to be affected
B. resistant to all infections
C. likely to be harmed
D. certain to stay healthy

6. Which factor increases susceptibility to illness?

A. Chronic stress
B. Regular exercise
C. Healthy sleep
D. Nutritious food

7. To "reframe" a thought means to...

A. ignore it
B. look at it differently
C. memorise it
D. deny it

8. Which example shows reframing?

A. Seeing a mistake as proof you are bad at something
B. Treating a challenge as an opportunity to grow
C. Avoiding all difficult tasks
D. Forgetting about a problem entirely

9. What does "accumulate" mean?

A. to build up over time
B. to disappear suddenly
C. to decrease steadily
D. to remain the same

10. Which situation illustrates accumulation?

A. A one-time argument
B. Years of pressure gradually affecting health
C. A sudden loud noise
D. A single stressful exam

Answers:
1B, 2B, 3B, 4B, 5C, 6A, 7A, 8B, 9A, 10B

IELTS Speaking Questions: Topic – Climate Change

Part 2 – Individual Long Turn (1–2 minutes)

Describe a situation when you managed stress effectively.
You should say:

- what the situation was
- why it was stressful
- what you did to cope
- and explain what you learned from this experience.

Part 3 – Discussion (4–5 minutes)

1. Why do people today experience more long-term stress?
2. How can schools and workplaces help people develop resilience?
3. Does modern technology increase or reduce stress in society?
4. How does chronic stress affect a country's productivity?
5. Should governments invest more in national stress-management programmes?

Notes