# new research reveals the complex truths about stress and its effects



Recent insights into the nature of stress challenge many common misconceptions surrounding this complex physiological and psychological phenomenon. Stress, often thought of as an uncontrollable and universally harmful condition, is in fact multifaceted, with its root causes and effects varying significantly among individuals. An examination of contemporary research highlights how stress develops, manifests, and affects health, revealing nuanced truths about an experience that is central to human existence.

Stress originates in the brain, particularly involving the amygdala and hypothalamus, which trigger bodily responses governed by hormones such as cortisol. The way these brain centres respond to stress is often shaped very early in life, even during fetal development. Studies indicate that extreme maternal stress during pregnancy can lead to infants who have heightened sensitivity to stress hormones, possibly due to modifications in their DNA. Yet, the capacity to manage stress is not fixed; research has shown that psychological framing can influence stress experiences. For instance, a US study found that teenagers living with concerns about violent crime in Chicago were less affected if they actively tried not to focus on those worries.

Contrary to the belief that stress is always detrimental, it has evolved as a vital survival mechanism. The fight-or-flight response equips humans to react promptly to threats. Moreover, stress can enhance performance; in a study involving video game competitors, those who exhibited moderate increases in cortisol performed better than those with minimal or excessive hormonal responses. The key determinants of stress impact include whether it is predictable and, importantly, if it is voluntary. Activities such as conducting an orchestra, though physically stress-inducing, produce a type of exhilarating stress less likely to result in negative health outcomes.

Stress is not a condition limited to any one demographic, such as male business executives, which was an assumption rooted in early research predominantly conducted on men of higher socioeconomic status. Ground-breaking studies, including pioneering Swedish research, have demonstrated that high job demands combined with low control lead to elevated stress. This understanding has extended to recognising the stresses faced by individuals managing multiple roles and responsibilities, often with unavoidable demands, as seen in labour-intensive and tightly monitored workplaces, for example in large-scale warehouses.

The perception that stress is a distinctly modern phenomenon is also unfounded. While foundational research into stress was conducted by Hans Selye in the 1930s, concerns about the mental strain caused by technological and societal changes date back to Victorian times. George Miller Beard’s 1881 work, American Nervousness, attributed stress to a range of societal changes from scientific advancements to evolving civil liberties. Although the nature of stress today differs, with parameters such as longer life expectancy and reduced child mortality, worries about information overload are not new — the term itself was coined in 1970 by Alvin Toffler, who described the pace of societal change as overwhelming.

The causes of stress are often less about large, catastrophic events and more to do with persistent small pressures. Poet Charles Bukowski famously remarked on the cumulative burden of everyday minor tragedies, like a snapped shoelace or an unexpected bill, culminating in significant stress. The gravity of an individual’s stressors is subjective and influenced by personal circumstances such as income level, making small problems potentially overwhelming for some.

Physical activity is widely recognised for mitigating stress symptoms, but its effects are not universally positive. Intense exercise may raise cortisol levels and sustain them longer, counteracting perceived stress relief. The hormone cortisol, essential for normal bodily functions including regulating blood sugar and circadian rhythms, only becomes harmful through chronic overstimulation. Exercise that is enjoyable rather than obligatory tends to be less stressful, with milder forms such as yoga offering potential benefits. Personal variability means there is no definitive exercise prescription for stress management.

Concerning weight, stress impacts individuals differently. While some may lose weight under prolonged stress, a majority tend to gain weight, often accumulating fat around the abdomen. This is linked to elevated cortisol levels and stress-driven preferences for high-calorie, fatty, sweet, or salty foods, as seen in laboratory studies where participants under stress consumed more unhealthy snacks than their unstressed counterparts.

Stress is not exclusive to humans; it occurs across a variety of animal species including mammals, birds, fish, amphibians, and reptiles. Research on baboons in Kenya demonstrates that lower-ranked members of a troop have higher stress hormone levels. However, what distinguishes humans is the capacity for chronic anticipatory stress—the tendency to worry about future events that may never materialise. This form of stress plays a role in motivating behaviours such as studying for exams but is distinct from immediate physical threats faced by animals.

Importantly, stress is not simply a personal failing. It is often imposed by external, unavoidable circumstances and can be exacerbated by early life experiences. Moreover, stress tends to impair cognitive function, with studies showing that financial worries can reduce mental performance in poorer individuals to effects comparable with significant sleep deprivation or substantial IQ loss.

Despite the challenges posed by stress, various strategies exist to manage its impacts. While some stressors cannot be eliminated, physical activity, diet rich in anti-inflammatory foods, psychotherapy, sufficient sleep, supportive social relationships, and sensory inputs such as music and human touch have all shown benefits in reducing stress responses. Individual differences necessitate personalised approaches, underscoring the complexity of stress as a human experience.

These findings and perspectives are detailed in the book *Stress Tested: How the New Science of Stress Hormones Can Transform Your Health* by Dr Richard Mackenzie and Peter Walker, published on 24 April by Bluebird (£22). The Guardian is reporting these insights to provide a comprehensive understanding of the science behind stress and its nuanced effects on health.

Source: [Noah Wire Services](https://www.noahwire.com)

## References

* <https://www.apa.org/topics/stress/body> - This source explains how stress originates in the brain involving the hypothalamic-pituitary-adrenal (HPA) axis, including roles of the amygdala and hypothalamus, and the involvement of cortisol as the stress hormone, supporting the physiological basis of stress described in the article.
* <https://pmc.ncbi.nlm.nih.gov/articles/PMC10025564/> - This article discusses how stress responses are shaped from early life, including the impact of stressors on the brain and body, and highlights the variability in stress perception and response, corroborating the claims about early developmental influences and DNA modifications mentioned in the article.
* <https://www.health.harvard.edu/staying-healthy/understanding-the-stress-response> - This Harvard Health source discusses the dual nature of stress as both an evolutionary survival mechanism and a potential health risk when chronic, supporting the article's discussion about fight-or-flight response and the impact of chronic stress on health.
* <https://my.clevelandclinic.org/health/diseases/11874-stress> - Cleveland Clinic’s explanation of stress includes how psychological framing and perception influence stress impact and responses, which aligns with the article’s point about teenagers in Chicago reducing stress effects by cognitive strategies.
* <https://www.ncbi.nlm.nih.gov/books/NBK541120/> - This source provides an overview of physiological stress reactions involving hormones like cortisol and the nervous system, as well as the classification of stressors as acute or chronic, directly supporting the article's detailed breakdown of stress mechanisms and effects.