EUROCONTROL

Managing stress in ATM

SUPPORTING EUROPEAN AVIATION

FOUNDING MEMBER SESAR JOINT UNDERTAKING

NETWORK MANAGER

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ABOUT THIS GUIDE

For professionals working in safety-critical environments, stress can become a difficult challenge to cope with.

This guide is intended to help you recognise stress and identify possible mechanisms to mitigate its effects. It is structured in two parts:

- The first part presents basic scientific knowledge about stress. It is designed to help you improve your understanding of the sources of stress; it explains how stress can affect your health and performance. It will show you how to detect stress signals in yourself and in your colleagues.
- The second part gives an overview of practical strategies for stress management. Reading this part will help you gain more insight into what can be done to prevent and reduce stress, both as an individual and on an organisational level.

You may find some ideas which work for you and your organisation, and some which do not. Bear in mind that the strategies presented are not meant to be standard solutions. Rather, they represent a set of possible ways of building individual and organisational resilience to stress, serving as a starting point to be customised to your specific situation.

INTRODUCTION

The workplace of the 21st century is a fast-paced, dynamic and highly stimulating environment, bringing a large number of benefits and opportunities to those who work in it. Nevertheless, the ever-changing demands of the working world can increase levels of stress, especially for those who consistently work under pressure[1].

In particular, front-line professionals employed in aviation and space organisations have to display high levels of knowledge and expertise, as well as to put into practice specific skills requiring cognitive and interpersonal abilities. Moreover, they have to constantly adapt to an ever-changing picture of ongoing processes with restricted time constraints, all while assuming high levels of responsibility.

Although complex and demanding work has its positive side, it is also challenging. If the resulting pressure becomes excessive, it can lead to stress which has negative consequences, such as reduced well-being, and impaired health and performance at work. Individuals are well adapted to cope with short-term exposure to pressure - in fact, this can often be adjusted - but have greater difficulty in coping with prolonged intensive pressure[2].

From a regulatory point of view, stress is acknowledged as an important safety problem and is included among the essential topics for training and competence assessment on a European level[3].

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1 Health and Safety Executive (HSE), Work-related stress: a guide, https://www.hse.gov.uk/stress/assets/docs/eurostress.pdf, p. 1.

2 Health and Safety Executive (HSE), Work-related stress: a guide, https://www.hse.gov.uk/stress/assets/docs/eurostress.pdf, p. 3.

3 European Aviation Safety Agency (2017), Acceptable Means of Compliance (AMC) and Guidance Material (GM) to Part-ATS: specific requirements for providers of air traffic services (ATS), (ER) 2017/373 GM1 ATS.OR.310 https://www.easa.europa.eu/sites/default/files/dfu/Annex%20IV%20%28Part-ATS%29%20to%20ED%20Decision%202017-001-R.pdf

In this light, it is recommended to adopt stress intervention, mitigation and prevention strategies. These include:

- stress management **training** for all levels of employees;
- staff support **mechanisms**:
  - peer counselling
  - professional support from health practitioners
  - critical incident stress management programmes
- regular **risk assessment** of sources of occupational stress and its effects on individuals and operations.

The principles provided in this guide are meant to complement the prescriptive approach based on training and policy requirements.

PART 1 - BASIC SCIENTIFIC KNOWLEDGE ABOUT STRESS

1. What is stress?

"In the late 17th century, stress, according to the study of physical (mechanical) sciences of the day, was used to describe the relationship between internal forces and the external force, or load." (Lazarus & Folkman, 1984).

In 1932, Walter Cannon, observed that stress seemed to be related to an internal disturbance of homeostasis, possibly due to lack of oxygen, cold, low blood pressure or other factors. He described stress as the fight-or-flight response. Stress is seen as an acute response, a physiological reaction that occurs in response to a perceived harmful event, attack, or threat to survival.

Early models of stress saw it as a negative effect experienced when external pressure on the individual becomes excessive (Selye, 1926). Selye identified what he believed was a consistent pattern of mind-body reactions, which he called "the non-specific response of the body to any demand made upon it". This definition of stress is necessarily rather broad, but, it does incorporate two very important points:

1. stress is a physical or "body" phenomenon;
2. stress involves some "demand" placed upon an individual.

Further investigations followed. Selye noticed that the body adapts to external stressors with a biological pattern which is actually predictable, so that the internal balance, or homeostasis, is restored and maintained.

1.1 The general adaptation syndrome

The struggle of the body against stress is the main theme of what is known as the "general adaptation syndrome" (GAS).

Selye discovered that even if one's body wants to control or reduce stress, this process still has its limits. The body's supply of energy to adapt to a stressful environment is limited, and this capacity is even more compromised when the body is continuously exposed to the stressor.

Figure 1: fight or flight reaction

As Seyle points out: "Every stress leaves an indelible scar, and the organism pays for its survival after a stressful situation by becoming a little older."

In his philosophy, stress affects the human body through aging and other natural body processes which occur as we encounter various stressors in our daily lives (Selye, 1955)[4].

Overall, the "general adaptation syndrome" stress model thoroughly explains the stress response and how ageing and disease are caused by chronic exposure to stress.

[4] Selye, H., "Stress and Disease", Science, 7 Oct 1955: Vol. 122, Issue 3171, pp. 625-631. DOI: 10.1126/science.122.3171.625

The model is comprised of **three elements** or phases which describe the body's response to stress:

1. **Alarm stage**

   In this phase, the initial reaction of the body to stress is that it labels the stressor as a threat or danger to balance, which is why it immediately activates its fight or flight response system, and releases "stress" hormones such as adrenaline, noradrenaline and cortisol. These hormones enable you to do things which you do not usually do.

   For instance, when your house is on fire, your body goes into the alarm stage, and stress hormones are released (particularly adrenaline), enabling you to carry heavy objects outside the burning house.

   However, there is a catch: your blood pressure starts to rise after a minute or less, which can predispose you to damaging your brain and heart's blood vessels, putting you at risk of a stroke or heart attack. The muscles you have used might also become painful due to tissue damage.

2. **Resistance stage**

   Once the body has responded to the stressor, the stress may have been eradicated, or simply reduced. In parallel to the 'fight or flight' response, your body's defences become weaker, as it needs to allocate energy to repairing damaged muscle tissue and lowering the production of stress hormones.

   Although the body has shifted to this second phase in the stress response, it remains on guard, particularly when the stressors persist and the body is required to fight them continuously, although not to the same extent as it could during the initial response.

3. Exhaustion stage

During this phase, the stress has been persistent for a longer period. The body starts to lose its ability to combat the stressors and to reduce their harmful impact because the adaptive energy is all drained out. The exhaustion stage can be referred to as the gate towards burnout or stress overload, which can lead to health problems if not resolved immediately.

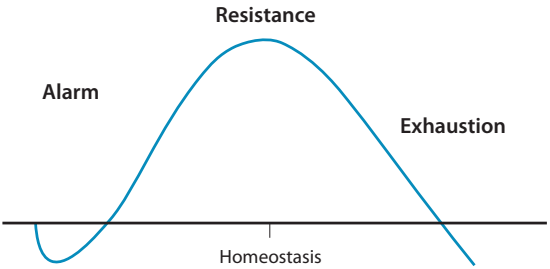

Figure 2: GAS

All in all, Selye's general adaptation syndrome model presents a clear biological explanation of how the body responds and adapts to stress. It remains relevant today, even though subsequent studies have greatly increased our understanding of stress.

1.2 Transactional models of stress

Those models describe stress as the result of a dynamic transaction between individuals and their environment. People have a perception of the demands inherent in their work and of their abilities to deal with it. Stress occurs when the perceived demand exceeds the perceived ability to respond. Perception is a highly personal thing, which goes a long way towards explaining why people experience stress differently.

The first researcher to write about transactional theory of stress and coping was Lazarus[5] with his Psychological Appraisal.

Lazarus states that stress is experienced when a person perceives that the "demands exceed the personal and social resources the individual is able to mobilise." This is called the 'transactional model of stress and coping.'

According to Lazarus and Folkman[6] (1984), "psychological stress is a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being" (Lazarus and Folkman, 1984, p. 19).

This model is useful in understanding how we can prevent the negative effects of stress, especially by improving the perceived resources and by changing coping strategies.

Knowing the model helps us better understand our reactions in a lot of situations. The idea is to work on achieving a balanced state and reducing the perceived demand.

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5 Lazarus, R. S. (1966). Psychological stress and the coping process. New York: McGraw-Hill.

6 Lazarus, S. Folkman in Stress, Apraisal and coping, New-York, Springer, 1984

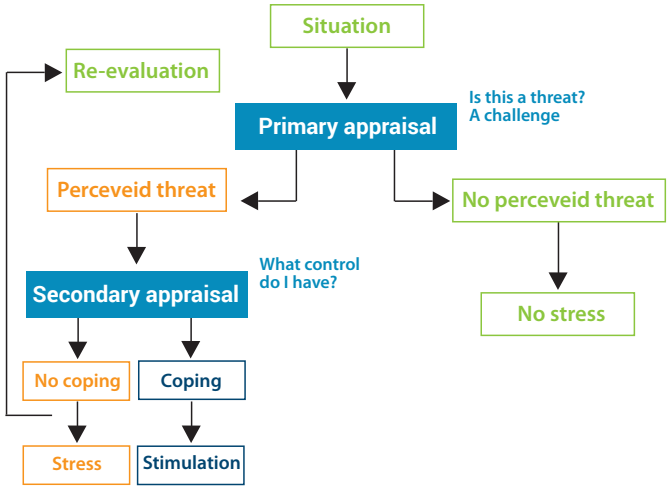


Figure 3: Adapted from Lazarus, S. Folkman in Stress, Apraisal and coping, New-York, Springer, 1984

"The interpretation of stressful events is more important than the events themselves."
Lazarus

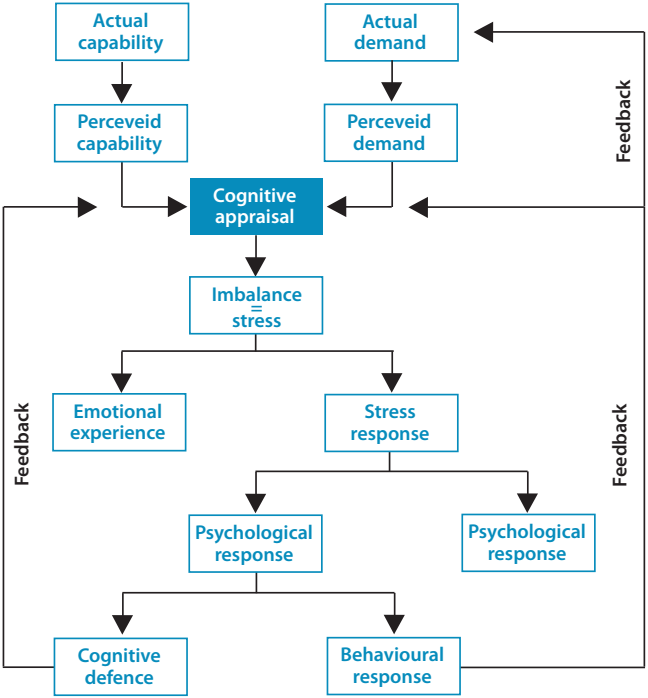


Figure 4: Transactional model of stress by Cox and Mackay (1978)[7]

[7] Mackay C., Cox, T. Burrows, G. Lazzerini (1978). An inventory for the measurement of self-reported stress and arousal. British Journal of Social and Clinical Psychology, 17, 3, 283-4

Cox and Mackay have a model of stress: the situation starts with a demand for action of some kind. The person perceives this demand. The person perceives his capability to meet the demand. The person cognitively appraises the match between perceived demand and perceived capability. Any perceived imbalance in a lack of capability to meet the demand is felt as stress. The person experiences an emotional and stress response as well as a physiological and psychological response. The psychological response includes a behavioural response and a cognitive defence; both of these feed back into the original demand and cognitive appraisal.

Psychology teaches us that stress is not caused by the situation, but by the physical or psychological reaction to a specific situation.

2. Stress at work

In a working environment, stress can be defined as **a state which is accompanied by physical, psychological or social complaints or dysfunction, and which results from individuals feeling unable to bridge the gap with the requirements or expectations placed on them**[8].

In other words, stress informs us about the inadequacy of our capabilities in certain contexts; it warns us that we might not have the resources we need to achieve the desired task or objective. People under stress classically experience a condition of imbalance between their own resources, and the demands placed on them by their environment[9].

[8] European Framework Agreement on Work-related Stress (2004)

[9] Frankenhaeuser M., Johansson G. (1986), "Stress at Work: Psychobiological and Psychosocial Aspects", Applied Psychology, 35: 287-299.doi:10.1111/j.1464-0597.1986.tb00928.x

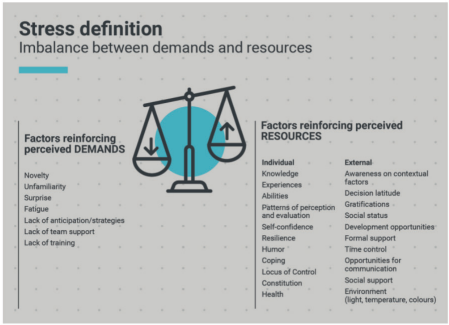
2.1 Stress is not the same for everybody

It is important to highlight that **this imbalance does not regard resources and demands as such, but rather the perceived resources and the perceived demands**.

Stress is, by definition, an extremely subjective experience. Salas's definition is enlightening:

> "Stress is a process by which certain work demands evoke an appraisal process in which perceived demands exceed resources and result in undesirable physiological, emotional, cognitive and behavioural changes." [10]

Several factors can influence the perception of demands and resources, as depicted in the figure below.



[10] Salas E., Driskell J. E., Hughes S. (1996), Introduction: The Study of Stress and Human Performance, in Stress and Human Performance, Driskell J. E. and Salas E. (eds) (Hillsdale, NJ: Erlbaum), pp. 1-45.

Novelty, unfamiliarity, lack of team support and not enough planned strategies are some factors which reduce self-confidence and reinforce perceived demands.

Conversely, **self-confidence may increase** when a person is well trained; people can leverage well-established procedures and benefits from effective teamwork, especially when the situation is familiar.

In an emergency, for instance, the high work demands imposed by the situation may not automatically lead to a person's perceiving the situation as stressful. Confidence in one's own coping resources, access to reliable information and the availability of efficient procedures, reassurance, team support and experience in handling other emergencies may influence one's perception of the ability to cope and, hence, the overall appraisal of the situation.

Therefore, the cognitive appraisal of a stressful situation closely reflects not only individual differences in terms of personality,[11] experience and skills, but also the characteristics of the work environment (team support, tools, etc.) and of the task.

2.2 Healthy and stressful environments

In work environments, the interaction among three characteristics is relevant when distinguishing between an environment that is "healthy" as opposed to "stressful"[12]:

- demand (high/low), which corresponds to the workload;
- control (high/low), which refers both to decision latitude (reflecting the flexibility which can be adopted towards policies and procedures) and to skill discretion (reflecting the level at which the skills required to accomplish a task are mastered);

[11] Chinaveh, Mahbobeh (2014). "A Comparison of Type-A and Type-B Learners in the Perception of Stress Level and Use of Coping Responses in the Campus". Procedia - Social and Behavioral Sciences. 143: 384–388. doi:10.1016/j.sbspro.2014.07.499

[12] Karasek R. A. (1979), "Job Demands, Job Decision Latitude, and Mental Strain: Implications for Job Redesign", Administrative Science Quarterly Vol. 24, No. 2 (June 1979), pp. 285-308.

- social support (high/low), which corresponds to the available support by colleagues, both peers and management[13].

In this light, stressful work environments are usually characterised by the triple combination "high demand – low control – low support", which reflects a **potentially hazardous** condition for performance and well-being.

In contrast, a combination of "low demand – low control – low support" could lower one's motivation to learn and develop new skills, resulting in greater **passivity**.

A "healthy" work environment with regard to stress, therefore, does not depend on the level of demand, but demand must be combined with high levels of **control** and **social support**.

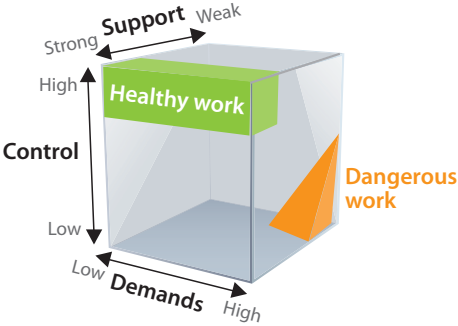


Figure 5: Predictive of health issues associated with stress

[13] Johnson J. V. (1989), "Control, collectivity and the psychosocial work environment", in S. L. Sauter, J. J. Hurrell Jr & C. L. Cooper, (eds) Job Control and Worker Health. John Wiley & Sons, Chichester.

In safety-critical domains, high demand is associated with high mental load and responsibility. Decision latitude is linked to the time available, adherence to procedures and control over the planning and execution of tasks.

In line with this, major causes of stress are not only the combination of high mental load with time pressure, but also all situations which reduce decision latitude or require a change in plans or working methods – such as the introduction of new tools, or incoming unanticipated requests.

Problems related to team communication and cooperation also play a critical role in generating, maintaining or mitigating stressful situations.

2.3 Stress and reward

When doing a job, everyone expects some reward in return for the effort put into a given task. Research has also demonstrated that we can predict stress when there is an imbalance between work demands (e.g. complexity, responsibilities, etc.) and rewards owing to either organisational or individual factors.

Siegrist's Effort Reward Imbalance Model[14] posits that failed reciprocity between high effort required at work, but low rewards received, provokes strong negative emotions and tends to induce stress reactions with adverse long-term effects on health.

Classic "rewards" in this sense include salary increases, bonuses, promotion or improved career prospects, more interesting tasks, greater job security, peer approval, and improved recognition.

In this model, effort can be caused by external pressure but can also be the result of internal pressure: motivation, the level of effort put into work, etc.

[14] Siegrist, J., "The Effort-Reward Imbalance Model", The Handbook of Stress and Health: A Guide to Research and Practice, chapter 2. 18 February 2017.

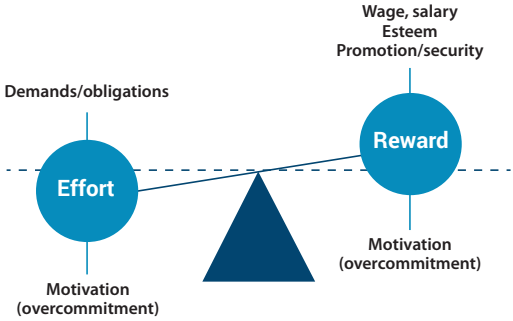


Figure 6: ERI model (Siegriest)

2.4 Stress and personality

Personality has an impact on stress response and stress consequences. Personalities can be categorised in a number of ways. Two different categorisations which have been studied in detail and which have demonstrated real differences in terms of response to stressors and stress levels are Meyer's personality types, and Rotter's "locus of control".

Meyer's type A and type B[15] personality types

Having a type A personality often means that you consider your time to be very valuable. People with a type A personality are impatient, always feel a sense of urgency, are perfectionists, do not accept failure and may also be prone to criticising themselves.

In contrast, those with type B personalities tend to be more laidback, and are perceived as being relaxed or easy-going. They spend a lot of time on creative pursuits or philosophical thought, and feel less rushed when completing tasks.

[15] Meyer, F. (1996). "Type A Behaviour: Its Diagnosis and Treatment".

We all have elements of each type in our makeup, but typically, one will dominate. Understanding which personality type best describes your personality can tell you a great deal about how likely it is that you will become stressed and, if you do, why and how you will handle it. People with **type B personality**, by definition, tend to be less stressed.

Rotter's internal/external locus of control[16]

This theory posits that people with an **internal locus of control** believe that their own actions determine the rewards which they obtain, while those with an **external locus of control** believe that their own behaviour does not matter much, and that rewards in life are generally outside their **control**. People with an **external locus of control** tend to be more **stressed** and prone to clinical depression.

2.5 Resilience

In recent years the term "resilience" has started to appear increasingly in articles in specialist journals, covering anything from psychology to management and strategy. The rise of interest in resilience – a word that arrived in the English language from Latin (the verb resaltare meaning to rebound or bounce back, to get moving again or to result from) via French – has seen its use evolve.

Nowadays, the adjective "resilient" is being used in a number of contexts with nuances of meaning, most of which boil down to the notion of adapting to circumstances in the face of an unforeseen event. "Resilience engineering", for example, is the ability of systems to return to normal operation under unexpected conditions and failures.

Psychological resilience - a concept first developed and popularised for a wide audience by the French neurologist and psychiatrist, Boris Cyrulnik - is more than an individual personality

[16] Rotter, J. B. (1966). Generalized Expectancies for Internal versus External Control of Reinforcement, Psychological Monographs: General and Applied, 80(1), 609.

trait: it is a process involving the interaction between an individual, his/her individual life experiences and current life context, and describes the journey towards a better resistance to stressors.

As a child in German-occupied France during World War II, Nazis murdered Cyrulnik's parents. A foster family took him in to protect him. In 1943, he was captured along with others during a Nazi-led operation in Bordeaux. He escaped by hiding in a synagogue and later eluded Nazi searches by disguising himself as a farm boy, under an assumed name. He stayed there until the end of the war. This survival story led him to a stellar career in psychiatry[17] [18]. Cyrulnik has shown that the quality of being able to recover successfully from injury or disaster allows people to endure crises and emerge stronger, he says – but they will not be unscathed.

Psychological resilience is defined as the capacity to adapt successfully in the presence of risk and adversity.

Research in the field of psychology for military application, delineating the factors which foster psychological resilience, is available, but we do not know whether and how well current military resilience programmes address these factors in their activities. Furthermore, little is known about the effectiveness of these programmes on developing resilience.

[17] How Your Inner Strength Can Set You Free from the Past
[18] Talking of Love: How to Overcome Trauma and Remake Your Life Story, and Resilience

3. The biological response to stress

What happens to your body when you are under stress? The stress response is an **adaptive psycho-physiological** mechanism to protect our homeostasis[19] against any kind of perceived threat[20].

When you feel threatened, your nervous system responds by releasing a flood of **stress** hormones, including adrenaline and cortisol, which prepare the body for emergency action. Your heart pounds faster, muscles tighten, blood pressure rises, breath quickens, and your senses become sharper.

We have seen the three levels of reaction to stressors (alarm reaction, resistance and exhaustion). Now we will look in greater depth at what happens on a biological level.

3.1 Alarm reaction

Try this: jump up and down 15 times, put your hand to your chest and listen to your breathing.
What you feel is exactly what the stress response triggers when activated[21]

[19] In biology, homeostasis is the state of steady internal physical and chemical conditions maintained by living systems. This dynamic state of equilibrium is the condition of optimal functioning for the organism, and includes several bodily functions such as body temperature, fluid balance, etc. Homeostasis is brought about by a natural resistance to change from optimal conditions, and equilibrium is maintained by many regulatory mechanisms.

[20] Selye H. (1936), "A Syndrome Produced by Diverse Nocuous Agents", Nature, Volume 138, p. 32.

[21] Centre for Studies on Human Stress https://humanstress.ca/stress/understand-your-stress/recognize-your-stress

In fact, when we encounter a source of stress, our body and brain react with a chain of modifications aimed at preparing us to fight against it (fight) or avoid it (flight).

The fight or flight response system activates automatically any time we identify a threat to our homeostasis, and is associated with the release of "stress" neurotransmitters, namely the catecholamines: adrenaline, noradrenaline and dopamine, and the stress hormone, cortisol.

The moment we are exposed to a stressful situation and enter the alarm reaction stage, our catecholamines activate the main systems related to survival. In particular, they increase heartbeat frequency, increase muscle tone and bring about a hyper-reaction of the sensory organs, especially the visual organs, which are immediately activated and work more intensely.

Cortisol, on the other hand, deactivates the activity of the biological systems not directly related to survival, such as the immune system and the digestive system. This mechanism is perfectly adapted to human beings facing the type of dangerous situations our ancestors used to encounter, such as the unexpected appearance of a predator.

In such situations, concentrating energy on enhancing muscle performance and vision represented the best way of surviving, regardless of whether the decision was to start a fight or to run away as fast as possible.

This can help explain some signals which we typically observe in people under stress, such as:

- an extremely careful and appraising eye, characterised by an excess of saccadic movements, as if a constant and in-depth visual scan of the environment were required;
- increased heart rate and blood pressure;
- an increase in the oxygen taken in by the lungs;
- extreme physical strength (under stress we become capable of accomplishing extreme physical efforts which would otherwise not be sustainable).

In fact, at this stage of the stress response, our biological reactions prepare the body to react to hazards, even if they are still to be fully understood and analysed.

Other signals of the alarm reaction stage are:

- movements become rigid and jerky;
- one loses fluency in speech and begins to repeat oneself;
- synkinesis - a neurological symptom in which a voluntary muscle movement causes the simultaneous involuntary contraction of other muscles;
- purposeless movements such as biting one's own lips, wandering and tics.

Hyper-excitability and the inability to dwell on a single stimulus are peculiar characteristics of this condition.

Agitation and restlessness are explained by the organism's need to resolve the state of tension which is generated in some sensory-motor regions.

Describing the biology of stress is key to understanding the **effects** of stress on **human performance**. At this stage, the effects are linked to the general increase of arousal triggered by the alarm reaction. They include:

- heightened **attention**:
  - increased vigilance
  - impairment of the intention-based attentional allocation
  - enhancement of the stimulus-driven selection
  - narrowing of attentional focus
- **sensory-motor**: perceptual tunnelling, reduced reaction times;
- **judgment**: increased use of simplification heuristics, biasing decisions towards habit, increased risk-taking behaviours;
- **teamwork**: reduced team cooperation, focus on self;
- **memory**: reduced memory capacity, reduced memory recovery

Therefore, at this stage **performance may increase or decrease, depending on task requirements and operational conditions**.

Key takeaway

The stress reaction is an archaic reaction which prepares us to fight or flee. This reaction is not ideally adapted to a safety-critical system where complex decisions have to be made while integrating large amounts of information.

Highlight

In this first phase of the stress response, the whole body is driven by the limbic system and the amygdala, which are located in the central part of the brain, and are responsible for emotion expression and regulation. The activation of the amygdala prepares the body to face the state of danger to the extent that the individual attention focuses on endogenous stimuli, such as heartbeat, temperature, sense of balance (imbalance) and breathing. It is easy to see how in ancient times the ability of the amygdala to become independent in certain situations from cortical control (the upper part of the brain, controlling superior cognitive processes) played a fundamental survival role, and this survival mechanism remains available to us today, even though in many instances the social structures we have built have rendered this mechanism superfluous.

We can say that at this stage, stress triggers neurological responses which are similar to those activated in states of anxiety and fear.

Excessively long exposure to stress results in a build-up of catecholamines which is potentially toxic to the nervous system, as this can cause damage to the corpus callosum - the structure which connects the two hemispheres of the brain and allows them to communicate - in the long-term and can potentially reduce brain volume.

How does the body protect itself against this hazard of toxic accumulation of catecholamines? It defends itself by means of the second stage in the stress response: resistance.

3.2 The resistance stage

The resistance stage is activated when the nervous system fails in the first reaction stage (the alarm reaction) to overcome the state of stress and remains exposed to it for too long. It is, therefore, a compensatory system to reduce the perception of stressful events.

In order to compensate for an excess of catecholamines, the body hyper-activates a release of endorphins, our natural opioid. These allow the body to attenuate the state of tension by soliciting the vagus nerve and the parasympathetic system, which inhibit the activity of the "fight-flight" response system.

This mechanism explains the phenomenon whereby, after passing important, dangerous or stressful tests, people sometimes perceive a general decrease in muscle tone combined with the need to sleep.

Moreover, while dopamine, which was released in the earlier stage of alarm reaction, communicates with the front part of your brain, which is associated with pleasure and reward. Endorphins make one feel comforted and reassured.

Prolonged exposure to a stress stimulus, without any solution or means of escaping, raises the state of neurological tension and induces the activation of endorphins, but this has a paradoxical effect. The endorphins' role is to lower the perception of stressor stimuli and fear by inhibiting the propensity of the individual to react against those stimuli. Reduced vigilance and slower reaction times can result.

In the long run, the mechanism is likely to become generalised and cause a cognitive and behavioural style of general passivity and surrender in the face of any stimulus of fear. This compensatory mode can even become more dysfunctional when it turns off the "fight or flight" function, as it makes the two processes of perception and response inconsistent.

The subject ends up relinquishing any kind of defence. On the physical level, phenomena such as the slowing of the heartbeat occur; while on the mental level, a kind of dissociation from the context is observed.

Key takeaway

We can prevent the negative effects of stress by improving the perceived resources and by changing our coping strategies.

3.3 Stage of exhaustion

If stress persists for a longer period, the body starts to lose its ability to fight the stressors and to reduce their harmful impact because the adaptive energy has drained away. This corresponds, on a psycho-physiological level, to the hyper-production of cortisol.

As we have seen, this hormone is also activated in the primary phase of the stress response (the alarm reaction), when the body is still active and under the effects of dopamine. In this phase, the hormone has a transient function, suspending the imminent response while waiting for the correct response to be implemented. Instead, in this third stage, as the frequency and duration of the stressors becomes excessive, the production of cortisol becomes continuous, so turning the passive defence response into a standard state.

The exhaustion stage is the gate to stress overload, depression, or even burnout, which can lead to severe health problems if not treated.

In fact, as is well known, cortisol plays a key role in regulating the immune system; excess cortisol and continued production can harm it. This explains why those who have been exposed to stress for a long time often suffer from:

- various autoimmune diseases, where the body ends up "fighting" itself
- extreme vulnerability to viral and bacterial infections.

The excessive presence of the two molecules which switch off stress-coping reactions (endorphins and cortisol) also negatively affects the functioning of different brain areas, for example the hippocampus, a structure which has the task, among others, of memorising and recognising emotional events (and stressor stimuli) in order to react appropriately.

As a result, affected people may confuse incoming information and provide the same, generalised response to all stressful situations. The hippocampus is also implicated in short-term memory, and a constant presence here of glucocorticoids can lead to the total suppression of this important cognitive function which is fundamental for all learning processing. As a result, people may tend to have difficulties in learning new information and provide the same, generalised coping responses to all situations, in an almost stereotypical way.

3.4 Conclusions

What is important to understand is that we, like any animal, are programmed to react to various situations, especially to external life-threatening factors which we may face in nature (e.g. predators). Therefore, our response to stress is an archaic yet efficient mechanism which warns us about a potential hazard and prepares our body to react (fight or flight).

In modern life, threats have evolved, but our bodies have retained the same primary biological function. One of the main problems is that such reactions are no longer well-adapted to the nature of modern stressors, from which we cannot either escape or fight. This explains why the repetitive activation of these functions may induce chronic health problems.

Wrap-up

- Stress is not the same for everybody: individuals react differently to pressure in different situations and at different stages in their working lives.
- Stress is a multifactorial concept: if we want to describe it, we have to take into account sources, effects, signals and reactions.
- Stress is not a disease: it is a vital adaptive mechanism.
- If stress is not identified and controlled, it can lead to disease and health problems.

4. What causes stress?

At the simplest level, stress is triggered by "**stressors**", which can vary enormously from individual to individual. They represent the key risk factors for stress.

In other words, a stressor is an event or situation which happens to you and triggers the release of stress neurotransmitters and hormones. Examples of stressors include major life changes. Such changes do not just include obvious negative or traumatic events, such as the death of a loved one, a divorce, or time pressure at work, but can also be linked to positive outcomes like marriage, a planned pregnancy, a promotion or a new house which, nevertheless, can generate stress-producing pressure.

Stressors vary, but there are many common situational elements. To be considered as a stressor, a situation must feature one or more of these elements[22]:

- novelty: something new, never experienced before;
- unpredictability: something you had no way of knowing would occur;

[22] Centre for Studies on Human Stress https://humanstress.ca/stress/understand-your-stress/sources-of-stress

- threat to self-confidence: something that calls your competence into question;
- threat to control: something that makes you feel as though you have little or no control over the situation.

There are many things that cause us stress in life. Some of them are due to our choices, and some have nothing to do with us, but are created by the people and situations around us. Mastering our understanding of the things that stress us personally is an important step forward in terms of stress management.

4.1 Sources, effects, signals and coping strategies

Given that stress is defined as a response emerging from the human-environment interaction, stress is a multifactor concept encompassing a very broad range of elements.

In fact, sometimes we mention stress when we are actually referring to its consequences (for example, the stress of having lost time owing to a technical failure) or to what caused the stress (an incident).

On other occasions, we use the term "stress" to describe how it affects us (our thoughts, feelings and/or physiological reactions) and so we say that we are stressed when actually it would be more accurate to say we feel frustrated, under pressure, overwhelmed or threatened.

At other times, we mention stress to indiscriminately designate inconsequential complaints or structured mental health conditions such as anxiety, post-traumatic stress disorder or even depression.

As an intrinsically multifaceted concept, stress can be identified and defined by means of these four elements:

1. sources: the causes of stress (also called stressors);
2. effects: the impact of stress on performance, health and well-being;

3. signals: the signs and symptoms of stress that we can recognise in ourselves and in others;
4. coping strategies: the response that we adopt to reduce the effects of stress.

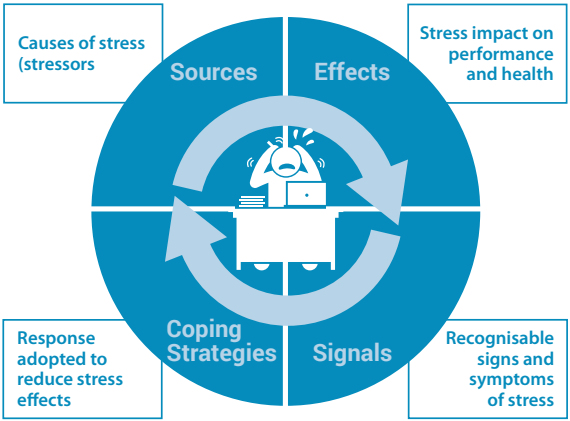


Figure 7

4.2 Personal stressors: life events and daily stressors

Holmes & Rahe[23] studies over 5,000 patients' medical records to determine whether stressful events cause illnesses. Holmes and Rahe developed the Social Readjustment Rating Scale (SRRS) for identifying major stressful life events. These 43 life events were rated consistently despite the cross-cultural differences one would expect. Still, most of those life events are experienced infrequently and are lived differently by people.

[23] Holmes TH, Rahe RH. The Social Readjustment Rating Scale. J Psychosom Res 1967; 11:213–218

Top 15 stressors in life in general

1. Death of spouse
2. Divorce
3. Marital separation
4. Jail term
5. Death of close family member
6. Personal injury or illness
7. Marriage
8. Fired at work
9. Marital reconciliation
10. Retirement
11. Change in health of family member
12. Pregnancy
13. Sex difficulties
14. Gain of new family member
15. Business readjustment

Lazarus & DeLongis, who have done extensive work in the field of stress, propose two models of repeated or chronic strains of everyday life to predict life stress. These two different models are life events and daily hassles.

In the life events model, it is argued that certain life events bring about change and force the individual to adapt, causing stress[24]. With the second model, daily hassles, Lazarus and Delongis argued, is the basis of defining stress. "Daily hassles" is a term used to identify the exasperating and stressful burdens people deal with every day and which increase their stress levels.

[24] Anita DeLongis, James C. Coyne, Gayle Dakof, SusanFolkman, and Richard S. Lazarus, "Relationship of Daily Hassles, Uplifts, and Major Life Events to Health Status" HEALTH PSYCHOLOGY,1982, 1 (2)119-136

Examples of hasskes:

- Misplacing or losing things
- Troubling throughts about your future
- Financial problems
- Arguments

Personal stressors are events or conditions which occur in a person's life and may adversely impact the health or well-being of an individual or their family.

4.3 Stressors at work

Work-related stress does not just disappear when you head home for the day. When stress persists, it can take a toll on your health and well-being.

A stressful work environment can contribute to problems such as headaches, stomach aches, sleep disturbances, short temper and difficulties concentrating.

Chronic stress can result in anxiety, insomnia, high blood pressure and a weakened immune system. It can also contribute to health conditions such as depression, obesity and heart disease.

Compounding the problem, people who experience excessive stress often deal with it in unhealthy ways such as by overeating, eating unhealthy foods, smoking cigarettes or abusing drugs and alcohol.

Often we are unaware that we are under stress, or we do not know exactly how much. We think we are coping but in reality we are not. All the while, our adrenals are trying to do their job and absorb the shock, but eventually they become worn out. Of course, other aspects of our body, mind and health suffer too, because if one thing in the body falters, it causes a chain reaction of other events.

A shortened list of the aspects of work which can cause stress in safety-critical environments is provided below (full list in Appendix A) [25] [26].

Temporal aspects	Work environment	Systems and tools	Work content (regardless of temporal aspects)	Interpersonal relationships in the work-group
Nightwork	Noise/distracters	Integration of new tools requiring change in working	No opportunities to use personal skills	Lack of opportunities to interact with colleagues
Interpersonal relationships with supervisors/ superiors	**Organisational conditions**	**Decision latitude**	**Pressure factors**	**Career development**
Low participation in decision-making	Inconsistency between tasks and procedures	Insufficient or excessive autonomy	Time pressure	Lack of career chances
Poor feedback from supervisors	Discriminatory policies	Insufficient or excessive control	Potential for financial loss	Deskilling

[25] Kasl, S. V., Cooper, C. L. (1995), Wiley series on studies in occupational stress. Stress and Health: Issues in Research Methodology. Oxford, England: John Wiley & Sons.

[26] Costa, G. (1996), Occupational stress and stress prevention in air traffic control, Working paper CONDFT/WP.6/1995 http://www.ilo.org/wcmsp5/groups/public/@ed_protect/@protrav/@safework/documents/publication/wcms_250120.pdf

4.4 ATM professional stressors[27]

- **Demand**
  - Number of aircraft under control
  - Peaks of traffic load
  - Extraneous traffic
  - Unforeseeable events
- **Operating procedures**
  - Time pressure
  - Having to bend the rules
  - Feeling of loss of control
  - Fear of consequence of errors
- **Work time**
  - Unbroken duty periods
  - Shift and night work
- **Work tools**
  - Limitation and reliability of equipment
  - VDT, R/T, and telephone quality
  - Equipment layout
- **Work environment**
  - Lighting, optical reflection
  - Noise/distracters
  - Microclimate
  - Bad posture
  - Time pressure
  - Rest and canteen facilities

[27] ibid.

- **Work organisation**
  - Role ambiguity
  - Relation with supervisors and colleagues
  - Lack of control over the work process
  - Salary
  - Public opinion

4.5 New forms of stressors

Life in the 21st century has also brought with it new stressors. We are more and more connected and increasingly addicted to screen time.

Playing computer games has been assessed as a valid psychological stressor, inducing the physiological effects of stress: heart rate and blood pressure, galvanic skin response, and cortisol levels. (Sharma et al., 2006).

Computer games can impair blood sugar control and delay digestion (Blair et al., 1991).

Screen time is associated with narrowed vasculature of the retina in children, while time spent outdoors is associated with healthy retinal vasculature (Gopinpath et al., 2011).

Screen time is also linked with metabolic syndrome (high blood pressure, blood sugar dysregulation, high lipids and obesity) in adolescents, independent of physical inactivity (Kang et al., 2010).

Finally, playing video games often goes hand in hand with increased food intake in adolescents (Chaput et al., 2011).

4.6 Active and latent stressors

Stressful situations are usually triggered by multiple stressors which are combined cumulatively. In this light, we can distinguish between active and latent stressors.

Active stressors are individual sources of stress near in time and space. Examples of active stressors include workload peaks, emergencies, accidents, unexpected failures of supporting tools, and teamwork conflicts.

Latent stressors are structural sources that are far in time and space, and pose a clear hazard in terms of stress resilience. Examples of latent stressors include poorly defined organisational structures (e.g. unclear allocation of task and duties), inconsistencies between procedures and task requirements, discriminatory policies (e.g. in decisions on dismissals or promotions), little support, or insufficient training.

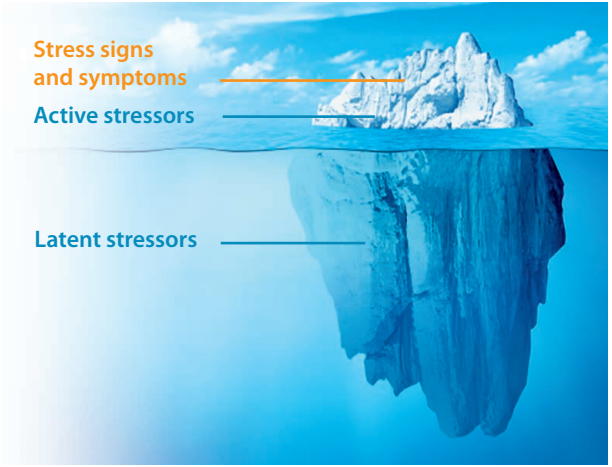
Therefore, **individuals and organisations share a common responsibility in stress prevention and management**.

Key takeaway

Enhance strategies for coping with active stressors and try to reduce latent stressors.

Stressors can be:

- **Active**, namely near in space and time with the effects on theindividual (emergencies, high workload, incidents/accidents)
- **Latent**, namely far in space and time but still able to impact on the individual reaction to active stressors (colleagues expectations, technical problems)



4.7 Acute, traumatic and chronic stress

Stress is not all-or-nothing. On the basis of the types of stressors and the duration of the exposure, it is possible to distinguish three types of stress:

- acute stress
- chronic stress
- traumatic stress.

If a stressor occurs only once and with limited duration, then it can be defined as acute stress. In working environments, acute stress is often caused by high workload.

From a psycho-physiological point of view, acute stress corresponds to an alarm reaction and its resolution (see 1.1.3.1). It is treatable and manageable. In fact, since it is short-term, it does not have enough time to cause extensive damage, as long-term stress does.

On the contrary, if the exposure to the stressor continues over time, it is possible to define stress as chronic stress. Chronic stress is long-lasting, involves several areas of life and represents an obstacle which can hinder the achievement of individual plans and projects.

From a psycho-physiological point of view, chronic stress corresponds to the stage of exhaustion (see 1.3.3).

Four situations can cause chronic stress:

- excessive and frequent exposure to stress;
- failure to accustom oneself to repeated exposure to the same kind of stressor;
- inability to shut off the stress response despite the stress having ended;
- situations which cause regulatory disturbances of the stress system[28].

Post-traumatic stress is a specific type of acute stress and follows specific stressors, namely critical incidents or accidents. A critical incident is any situation which causes the individual to experience unusually strong stress reactions perceived as disturbing or disabling.

In safety-critical domains, examples of critical incidents include:

- incidents and accidents: near incidents and accidents, events resulting in casualties, emergencies, occurrences causing damage, disasters;

[28] McEwan and Seeman (1999)

- violence and sabotage: personally experienced/witnessed violence, criminal offences, assaults or threats;
- damage: serious injuries, serious threats to survival, destruction of personal environment, casualties involving children, relatives or colleagues.

In extreme and specific cases, a specific disorder may occur: PTSD (post-traumatic stress disorder). This serious disorder develops in people who have faced a traumatic situation posing a significant threat to themselves or their relatives. It typically occurs following terrorist attacks, physical aggression, or in war situations, and can lead to suicide. A small initiator can cause a person to relive the situation, such as a smell or a sound.

Exposure can be long-term and the disorder must be treated with specialised psychotherapy. The main symptoms are:

- nightmares
- insomnia
- flashbacks
- anxiety
- situational avoidance.

	Occurrence	Duration	Effects
Acute	Once/episodic	Limited (between one day and four weeks)	■ Reduced performance ■ Sweaty palms ■ Increased heart rate ■ Trembling ■ Shortness of breath ■ Muscle tension ■ Gastrointestinal distress
Traumatic	Following exposure to a critical event	Limited	■ Helplessness ■ Anxiety ■ Insomnia ■ Depression ■ Potential post-traumatic stress disorder (PTSD) - can be long-term
Chronic	Periodic/continuous	Long-lasting	■ Anxiety ■ Burnout/depression ■ Social isolation ■ Headaches ■ Sleeping problems ■ Backaches ■ Fatigue ■ Immune system suppression ■ Long-term health problems

Key takeaway

Like physical health, mental health is not fixed. Mental health can vary from a functioning state of well-being through to severe symptoms of a mental health condition.

5. What are the effects of stress?

Stress is not a disease, but it can lead to a reduced ability to perform at work and have an impact on health and well-being[29]. Stress contributes to decreased organisational performance, decreased employee overall performance, a high error rate and poor quality of work, high staff turnover, and absenteeism due to health problems such as anxiety, work-life imbalance, depression and other forms of disorders such as frequent headaches, obesity and cardiovascular diseases[30].

5.1 What are the effects of stress?

The negative effects of stress on human performance are linked to arousal and exhaustion (see 1.1.3). They include:

- hyper-vigilance/reduced **vigilance** and reduced **attention** - for example, just after an error or an event occurring during operations, you may feel incapacitated and find it difficult to stay focused;

[29] Health and Safety Executive (HSE), Work-related Stress: A Guide https://www.hse.gov.uk/stress/assets/docs/eurostress.pdf, p. 3.

[30] Ajayi, S. (2018), Effect of Stress on Employee Performance and Job Satisfaction: A Case Study of the Nigerian Banking Industry, available at SSRN: https://ssrn.com/abstract=3160620 or http://dx.doi.org/10.2139/ssrn.3160620.

- ineffective **decision-making**:
  - stressors like time pressure and noise impair decision-making, resulting in decision-making which is hurried and unsystematic; the person does not take all the options into consideration[31]
  - prolonged stress can impair decision-making resulting in scrupulousness, indecision and procrastination
- stress influences the way you weigh up risks and rewards during decision-making. When under acute stress, people tend to give[32] higher weight to potential gains and lower weight to negative outcomes (losses).

Increase in **risk-taking** behaviour, leading to[33]:

- an increase in the number of violations, especially when frustrated by failures;
- rushed actions: due to adrenaline and alertness levels, you may tend to act very quickly even when there is no time pressure. Hurried actions increase the chance of errors.

Revert to previously learned skills:

- a return to old procedures that may no longer be applicable;
- the use non-standard phraseology when communicating;
- a return to the use of one's native language;
- looking for items in a place where they used to be but are no longer there.

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[31] Janis, I.L., Mann, L. (1977), Decision-making: a psychological analysis of conflict, choice, and commitment, New York Free Press.

[32] Mather, M. and Lighthall, N.R. (2012), Both Risk and Reward Are Processed Differently in Decisions Made under Stress, Curr Dir Psychol Sci. 2012 Feb;21(2):36-41.

[33] Regulation (EU) 2017/373.

Reduced team **cooperation**:

- stressors like time pressure and noise impair interactions in a team, resulting in hurried, unsystematic and misleading communication;
- stress can influence the way you anticipate the effects of your communication with others.

5.2 Reduced well-being and health disorders

Sometimes you may be exposed to **acute stressful situations**. In these cases, you become extremely vigilant, strong and ready to react (1.1.3.1). For this reason, you may experience short-term sleeping disorders (such as insomnia) and other complaints related to the release of cortisol, such as an increased heart rate as well as reduced gastro-intestinal activity and lower immune system defence. Feelings of anxiety and a sense of urgency are also widespread in these situations. In safety-critical environments, you may be exposed to acute stressful situations which are extremely traumatic.

On other occasions, you may be exposed to **long-term stressful situations**. If these situations persist over several months, your body may start to lose its ability to fight the stressors or to reduce their harmful impact because your adaptive energy has been drained out. In such cases, you may go through a series of disorders triggered by an excessive release of cortisol and endorphins (see 1.1.3.3). These disorders may assume the shape of structured health problems including chronic fatigue syndrome, depression, anxiety, heart attacks, strokes, hypertension, and immune system disturbances which increase susceptibility to infections.

5.2.1 Chronic fatigue syndrome

Prolonged exposure to stress may induce so-called chronic fatigue syndrome (CFS). This is characterised by extreme fatigue which cannot be explained by an underlying medical condition. The fatigue may worsen with physical or mental activity, but does not improve with rest.

The main symptoms of CFS are feeling generally unwell and extremely tired, to the extent that it becomes hard to carry out everyday activities. Other relevant symptoms are related to difficulties in concentrating, remembering and decision-making.

5.2.2 Burnout

Burnout is one of the possible pathogenic effects of chronic and post-traumatic stress. The term "burnout" refers to an experience of reduced commitment and negative attitudes towards one's own job. Burnout symptoms are described as:

- emotional exhaustion, indicating feelings of being emotionally drained by one's contact with other people, which is the central strain dimension of burnout;
- depersonalisation, referring to a negative or excessively detached response towards people close to an individual;
- reduced personal accomplishment, referring to a decline in one's own feelings of competence and achievement at work:
  - At its core, burnout emerges when the demands of a job outstrip a person's ability to cope with the stress. People in careers focused on caregiving - teachers, nurses, social workers, and physicians - report the most prevalent rates of burnout, but the condition ultimately does not discriminate between call centre representatives, professional athletes or CEOs. Over time, jobs which require too much of employees will cultivate feelings of negativity and hopelessness as people struggle to meet impossible deadlines, deal with rude customers, or cope with the emotional toll of professional caregiving.

Key takeaway

Burnout is not simply working too long or too hard - research indicates that other factors, both individual and organisational, can be just as detrimental.

Acute	traumatic	Chronic
Anxiety	Traumatic stress	Anxiety; mood disorders (including depression)
Short-term increased heart rate; reduced gastro-intestinal activity; reduced immune defence	Mid-term impact on gastro-intestinal/cardiac/immune/ hormone secretion activities	Long-term impact on gastro-intestinal/cardiac/immune/ hormone secretion activities
Sleep disorders (especially insomnia)	Sleep disorders (especially insomnia and frequent nightmares)	Sleep disorders (including insomnia, hypersomnia, frequent nightmares)
	Can also result in PTSD under specific conditions	Burnout
	Suicide	Chronic fatigue syndrome (CFS)

6. How can we recognise stress?

Detecting stress in ourselves and in others is the first stage of preventing and mitigating its effects. You can recognise stress by its signs and symptoms, from now on referred to as "signals". Stress signals can be of four types:

- physiological (concerning body structures and functions);
- cognitive (concerning content of thoughts and control over them, concentration impairment);
- behavioural (concerning habits and behaviour);
- emotional (concerning emotional reactions).

Key takeaway

Signals are easy to recognise in others - but not in yourself.

Acute stress signals are easily recognisable by most people. Common signals of acute stress are:

- over-arousal;
- a short temper;
- irritability;
- anxiety;
- tension;
- excessive competitive drive;
- an acute sense of time urgency;
- impatience.

On an interpersonal level, irritability sometimes comes across as hostility. In such cases, the workplace becomes very stressful as interpersonal relationships may rapidly deteriorate, especially when others respond aggressively to perceived hostility.

Another common signal of acute stress comes from ceaseless worry and deep-seated insecurity. In these cases, people under acute stress may see disasters around every corner and pessimistically forecast catastrophic events in every situation. Seen through the lens of acute stress, the world is a dangerous, unrewarding, punitive place where something awful is always about to happen.

Take-away message:

A lot happens in the brain following a traumatic, life threatening event. Sometimes the brain has difficulty managing the stress and can be caught in looping into a fight-or-flight reaction known as post-traumatic stress disorder.

Traumatic stress signals are mainly related to a sense of intense anxiety and fear, with shortness of breath, dizziness, sweating, nausea, and a racing heartbeat. Chronic pain and frequent headaches are also common signals of traumatic stress.

On an interpersonal level, people suffering from traumatic stress may experience feelings of mistrust (losing trust in others and thinking that the world is a dangerous place) and detachment from family and friends.

Difficulties functioning at work or in social situations, a loss of interest in once-enjoyed activities, and hopelessness about the future are also fairly common signals.

One of the most common signals of traumatic stress is being constantly alert and on guard, as well as finding it hard to repeatedly think about the trauma. In fact, intrusive thoughts, nightmares and flashbacks about the trauma often come to mind even when the person does not want them to.

Lastly, people suffering from traumatic stress often prefer to avoid talking about the traumatic event, or to be in places which remind them of the trauma.

Key takeaway

People may avoid talking about a traumatic event not because they do not care, but because they cannot face the trauma.

Chronic stress signals are mainly related to chronic fatigue and decreased energy, with frequent colds and infections, insomnia, rapid heartbeat, sweating, and digestive problems. On an interpersonal level, people may experience social withdrawal and a loss of interest in daily activities. People under chronic stress may find themselves unable to focus their attention, remember things or plan activities. Lastly, people under chronic stress frequently appear pessimistic and tend to see the negative side of situations.

Take-away message:

Do not ignore signs of stress; you risk not being able to recognise the danger.

These tables provide a detailed list of stress signals related to acute and chronic stress.

Physiological signals	
Acute stress	**Chronic stress**
■ Frequent headaches, jaw clenching or pain ■ Tremors, trembling of lips, hands ■ Neck ache, back pain, muscle spasms ■ Light headedness, faintness, dizziness ■ Hypervigilance ■ Frequent blushing, sweating ■ Cold or sweaty hands, feet ■ Dry mouth, problems swallowing ■ Constipation, diarrhea, loss of control ■ Difficulty breathing, frequent sighing ■ Chest pain, palpitations, rapid pulse ■ Frequent urination ■ Insomnia, nightmares, disturbing dreams ■ Muscles tension ■ Hyperventilation	All of the previous, plus: ■ Frequent colds, infections, herpes sores ■ Rashes, itching, hives, "goose bumps" ■ Unexplained or frequent "allergy" attacks ■ Heartburn, stomach pain, nausea ■ Diminished sexual desire or performance ■ Increased or decreased appetite ■ Constant tiredness, weakness, fatigue ■ Weight gain or loss without diet

Cognitive signals

Acute stress	Chronic stress
■ Difficulty concentrating, racing thoughts ■ Trouble learning new information ■ Forgetfulness, disorganization, confusion ■ Difficulty in making decisions ■ Feeling overloaded ■ Errors	■ Feeling overwhelmed ■ Flashbacks ■ Intrusive thoughts ■ Obsessive thoughts ■ Derealization, depersonalization

Emotional signals

Acute stress and Chronic stress
■ Excess of anxiety, worry, nervousness ■ Increased anger, frustration, hostility ■ Feelings of loneliness, helplessness or worthlessness ■ Increased frustration, irritability, edginess ■ Excessive defensiveness or suspiciousness ■ Guilt, shame

Behavioural signals	
Acute stress	**Chronic stress**
■ Gritting, grinding teeth ■ Stuttering or stammering ■ Ringing, buzzing or "popping sounds ■ Frequent crying spells ■ Little interest in appearance, punctuality ■ Nervous habits, fidgeting, feet tapping ■ Overreaction to petty annoyances ■ Rapid or mumbled speech ■ Problems in communication, sharing ■ Occasional drug use/gambling/impulsive buying	All of the previous, plus: ■ Compulsive behavior ■ Social withdrawal and isolation ■ Frequent use of over-the-counter drugs ■ Increased smoking, alcohol or drug use ■ Excessive gambling or impulse buying ■ Antisocial behaviour

7. How can we recognise stress?

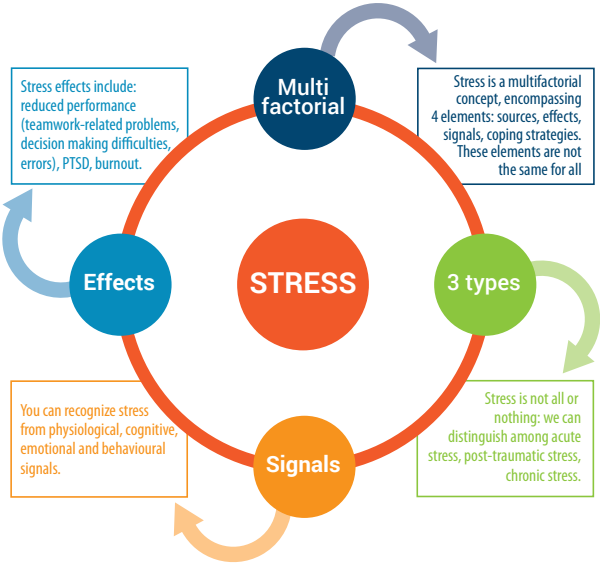


Figure 9

Key takeaway

If you believe that anxiety, depression, sadness and stress could not affect your physical health, think again.

PART 2 - STRESS MANAGEMENT STRATEGIES

1. Different types of strategies

The good thing is that there are many simple and easy things we can do to help keep stressors to a minimum.
These include:

- improving our diet;
- changing our thoughts;
- taking vitamins;
- using natural remedies;
- doing yoga or meditation;
- taking more rest;
- having fun.

Coping techniques can be thought of as falling into one of four categories:

1. avoiding stressors
2. changing your thinking
3. learning to relax
4. venting.

1.1 Avoiding stressors

Avoiding stressors is the most powerful technique for managing stress, since it actually prevents one from ever experiencing the full effect of a stressor.

Avoiding stress does not mean running away from it, however. Foresight and good planning go a long way towards helping to avoid unnecessary stress. Prioritising one's workload effectively will also help to avoid last-minute crises. Planning and time management are especially important tasks for leaders, as subordinates will often model their work behaviour on the examples set by their chain of command.

Realistic, mission-focused training and an effective physical training programme also help prevent stress overload by providing aircrew with the knowledge, skills, and physical endurance to perform under stressful conditions, such as in MOPP situations (Mission Oriented Protective Posture, protective gear used by military personnel in a toxic environment) and NVG (Night Vision Goggles) flight operations, continuous operations and combat.

If an aviator's comfort in performing mission essential tasks derives solely from garrison flight time with little realistic combat training, combat conditions and stressors will be new and unanticipated - and potentially fatal.

Finally, paying close attention to communication and coordination in the cockpit will also help avoid unnecessary stress and prevent mishaps. The stress of military operations can degrade communication, affecting the sound, rate, and content of speech, as well as the pilot's ability to comprehend communication.

Pilots under high stress may be less precise in their messages, talk faster, and misinterpret messages more easily. The ability of the crew to work together as a cohesive team is also essential, as a number of accidents have resulted from crew members' feeling that they could not talk openly or disagree with an excessively authoritative captain.

Avoiding stressors through **foresight, planning, training and communication** is essential, and we have more resources for this purpose than we think.

1.2 Changing your thinking

As discussed earlier, how one thinks about stress partly defines one's reaction to it, often creating a self-fulfilling prophecy. Pessimism and negativity will produce self-defeating behaviour and negative results. Practising positive self-talk is an important step towards accomplishing one's goals.

Keeping a focus on what is going on RIGHT NOW, TODAY also helps prevent stress overload. You cannot change the past, and you can only PLAN for the future. You cannot control the future.

Spending time obsessing about past mistakes or worrying about future potential problems is distracting and creates a potential for failing at the task at hand. This is a serious danger for aviators. While in the aircraft, the pilot's mind must be on flying and not on family, career concerns, or other issues past or future.

Recognising the choices one makes in life is also an important strategy for avoiding stress overload. Blaming failures and disappointments on others surrenders personal control and makes one's experience of life akin to being strapped down, blindfolded in the back seat of an aircraft flown by someone else. It is important to make decisions, take appropriate risks, and accept responsibility for those decisions and risks.

It is also important to recognise that sometimes one's decisions and actions will not be successful. When this happens, it is necessary to have the flexibility to accept setbacks and continue, as opposed to engaging in self-pity or obsessing about repercussions.

Life adjustments

Life has many stressors, and in response we may develop significant emotional or behavioural symptoms. The significance of our reactions to such stressors is identified by inappropriate distress or by serious impairment in social, occupational or academic functioning.

Life's stressors could be a single event such as the termination of an intimate relationship, or multiple stressors like marked business difficulties or marital problems. These stressors may be periodic (e.g. associated with seasonal crises) or continuous, such as living with a chronic alcoholic or an abusive partner.

Stressors may impact a single individual, an entire family, or a larger group or community. Some of them may accompany specific developmental events like going to a new school, moving out, getting married, sending children off to university, or retirement.

You might be feeling depressed or anxious or even experiencing mixed depression with anxiety. Other symptoms can be decreased performance at work, school and temporary changes in

social relationships. Severe symptoms could be associated with suicidal thoughts/attempts, excessive substance abuse, or physical complaints.

1.3 Learning to relax

Relaxation is an essential, albeit widely underutilised, coping technique. It is impossible to be relaxed and stressed at the same time. The idea is to find a relaxation technique that works and regularly use it.

Some examples are meditation, yoga, self-hypnosis, reading, or pleasurable hobbies (like assembling models or listening to relaxing music).

Being relaxed improves your physical well-being and sense of being in the moment, and helps you to think only about that. The main idea is to focus on just one task rather than multiple tasks: stop surfing the Internet, texting, thinking of work problems, planning holidays, etc. and simply concentrate on where you are at the present moment.

Venting

Venting is the fourth and final category of coping techniques. It involves "letting off steam" either interpersonally by talking to someone, or physically through exercise.

Verbally expressing emotions helps resolve traumas and reduces stress; you can do this with a friend, family member, religious figure, or mental health professional.

Exercise has long been recognised as a valuable way of "letting off steam." Be careful not to overdo it, however, as this may result in injuries and cause more stress.

Venting your stress is about setting your priorities straight, getting a good idea of what is important and making sure you are not focusing too much on a secondary or unimportant task.

Key takeaway

At a certain point, it becomes impossible to face stress alone. Do not hesitate to seek help.

Coping with stress not only depends on the features of the stressful event, but also on one's own perception of it. One has to look at which support tools are available as well as at the quality and quantity of social support being received. That is why stress mitigation strategies should be set up both on a **personal and an organisational level**.

Since stress is not the same for everybody, you may find some ideas which work for you and your organisation, and others which do not. So, bear in mind that such strategies are not meant to be standard solutions. Rather, they represent a set of possible ways of building individual and organisational resilience to stress, which you can select and customise depending on the situation.

Key takeaway

The important thing to remember is that no part of us or our lives can be separated, which is why it is always best to approach things with a holistic view. Even small changes can have a BIG impact.

2. Individual management

To manage your stress at an individual level, you can try to apply the personal stress management process. Below you can find a description of the process, and some supporting materials.

These materials aim to help you develop your stress management skills. In fact, these skills are learned rather than being activities we do naturally. Shifting our thinking to a more positive frame of mind, engaging in a healthy lifestyle, reducing stressors or using simple breathing exercises can all help with stress, but most people need to learn these skills and practise them.

2.1 The personal stress management process

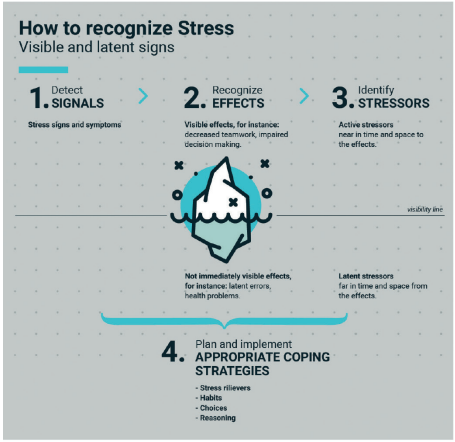
The individual stress management process is composed of four steps:

Step 1 - Detect stress signals. To manage your stress, you have to detect its signals first. Recognising them means identifying **physiological, emotional, cognitive** and **behavioural** signs and symptoms.

Step 2 - Detect the stress effects and anticipate their potential additional impact. At this point, you may find it pretty easy to recognise how stress is impacting you. As already explained, stress effects concern not only **your performance at work** but also **your health**. Bear in mind that stress effects may not be immediately visible: therefore, it is important to recognise them to prevent any additional effects in the near future.

Step 3 - Identify associated stressors. As already described, stressors can be active, namely near in space and time with the stress effects on the individual (emergencies, high workload, incidents/accidents), or latent, namely far away in space and time but still able to impact on the individual's reaction to active stressors (colleagues' expectations, technical problems).
Active stressors are easier to identify than latent stressors. Identifying your stressors is important in order to set up appropriate **mitigation strategies** and so reduce stress effects.

This figure presents the first three steps of the process, and provides an overview of visible as well as less visible stress elements.



Key takeaway

- You cannot eliminate stress from your life, but you can learn to manage it better.
- To **manage** stress, you have to detect its **signals** first.
- **Managing stress is not** an **easy** task, since:
  - the stress experience is composed of visible and less visible elements;
  - it takes time and is mentally demanding;
  - stress management skills are not innate.

Step 4 - Plan appropriate **coping strategies**. Coping with stress is a matter of habit, choice and a way of thinking.

Stress-coping strategies can be categorised as follows:

- Stress **relievers**: these are **short-term coping strategies** aimed at facing the stress situation head on while avoiding escalation. These techniques are effective when it is not possible or there is no desire to change the source of stress at that moment. Stress relievers consist of self-gratification, distraction and relaxation techniques, such as breathing exercises, meditation, and autogenic training.
- Stress-relieving **habits**: consist of skills which can be acquired and regularly implemented as long-term habits to keep stress levels under control. Ensuring the right balance between your private and professional life, maintaining a healthy lifestyle, regularly recognising stress signals and self-assessing stress levels are all good examples of such habits.
- Stress-relieving **choices**: coping strategies aimed at proactively eliminating stressors when possible.

- Stress-relieving **reasoning**: this is the ability to restructure the stress experience in the long-term and give it an alternative meaning, so transforming stress into a learning opportunity and improving resilience.

This table gives some examples for each category.

Stress relievers	Stress-relieving habits
Doing something considered pleasurable: listening to music, reading a book, getting a massage, having a bath, having a walk, watching a movie, etc.	Mentally "switching off" from work when not working (psychological detachment) and pursuing hobbies.
Breathing exercises, meditating, yoga, autogenic training, repeating a calming mantra, etc.	Recognising stress signals and effects.
Starting a hobby or a personal project.	Keeping up to date and remaining proficient through regular training .
Distracting from stress rather than dwelling on it.	Taking care of physical aspects: food, sleep and exercise.
Taking time (if possible).	Keeping workload under control.
Strengthening social bonds.	Communicating with others: expressing concerns, asking for help.

Stress-relieving choices	Stress-relieving reasoning
Thinking ahead of adverse events in less busy periods.	Cognitive restructuring.
Solving problems as soon as possible to avoid the domino effect.	Replacing negative thoughts with positive self-talks ("I've done it before").
Building contingency steps into organisational plans to cope with later events and errors.	Write your stress experience down.
Switching to more analytical strategies when time pressure is not so high..	

2.1.1 Supporting tools for stress relievers

Relaxation techniques

The relaxation response is the opposite of the stress response. By regularly practising techniques that evoke the relaxation response, you can help your body reduce the cumulative effects of stress.

Method	What is it?	Especially beneficial	May not be suitable
Breath focus	Focusing on slow, deep breathing and gently disengaging the mind from distracting thoughts and sensations.	If you have an eating disorder or tend to hold in your stomach; may help you focus on your body in healthier ways.	If you have health problems that make breathing difficult, such as respiratory ailments, heart failure, or panic attacks.
Body scan	Focusing on one part of the body or group of muscles at a time and mentally releasing any physical tension you feel there.	For increasing your awareness of the mind-body connection.	If you have had recent surgery that affects body image or other difficulties with body image.
Guided imagery	Using pleasing mental images to help you relax and focus.	When you want to reinforce a positive vision of yourself or a goal you wish to reach.	If you have intrusive thoughts that make imagery difficult; if you have difficulty with visualisation.

Method	What is it?	Especially beneficial	May not be suitable
Mindfulness-based stress reduction (MBSR)	Mindfulness-based stress reduction is a group programme that was developed by Jon Kabat-Zinn in the 1970s to treat patients struggling with life's difficulties and physical and/or mental illness (Kabat-Zinn, 2013). Although it was initially created to aid hospital patients, it has since been used effectively by a wide range of people from all walks of life. It includes training in meditation practices, and techniques from hatha yoga.	MBSR is a flexible and customisable approach. It turns the experience into a personal challenge.	If you find it too hard to commit the necessary time (8 weeks regular training, even if meditation can be carried out on a flexible basis afterwards).

Method	What is it?	Especially beneficial	May not be suitable
Stress inoculation therapy	Stress inoculation therapy (SIT) is a form of cognitive behavioural therapy (CBT) for post-traumatic stress disorder (PTSD). CBT is a commonly used form of psychotherapy (talk therapy) that can help you recognise and change incorrect and/or negative thoughts which have been influencing your behaviour. Exposure therapy and cognitive-processing therapy are other examples of such therapy.	You learn coping skills. If you have PTSD and receive stress inoculation training, your therapist will help you become more aware of the specific triggers that cue your trauma-related fear and anxiety. In addition, you'll learn a variety of coping skills which are useful in managing anxiety, such as: ■ deep breathing from your diaphragm; ■ muscle relaxation training; ■ role playing; ■ thinking about and changing negative behaviour.	This form of psychotherapy typically involves between 9 and 12 90-minute sessions which may involve one person or a therapy group. However, it is mainly carried out one-on-one with a therapist.

Method	What is it?	Especially beneficial	May not be suitable
Self-hypnosis	The term self-hypnosis is used to refer to a situation in which a person gives suggestions to himself or herself. To gain access to the powerful tools of self-hypnosis, you need to learn how to induce (or allow a self-hypnosis audio recording to induce) a relaxed, receptive, trusting, open state of consciousness through a series of suggestions given to yourself (autosuggestion).Dr Miller often refers to this as the "healing state." Next you offer yourself specific healing suggestions designed to induce your mind and body to function in a more positive way.	Hypnosis is widely used by physicians and psychologists in the treatment of physical, emotional, mental, and behavioural dysfunctions. The power of self-hypnosis can help you bring about profound change, healing and positive growth in yourself.	Only possible for people who are receptive. Requires serious and lengthy training to be completed alone.

Method	What is it?	Especially beneficial	May not be suitable
Autogenic training	Autogenic training is a therapy which trains a person to access his/her own physical relaxation process, and use it to relieve physical and emotional stress. Originating from research on hypnosis, autogenic training has been compared to yoga and meditation, which influence the body's autonomic nervous system.	The technique involves repetitions of a set of visualisations which induce a state of relaxation and is based on passive concentration of bodily perceptions (e.g. heaviness and warmth of arms, legs), which are facilitated by self-suggestions. The technique is used to alleviate many stress-induced psychosomatic disorders. *(Lehrer,Paul M., Woolfolk, Robert L., Sime, Wesley E., Principles and practice of stress management. (3rd ed.). New York: Guilford Press. 2007)*	Any individual presenting symptoms of psychosis, delusional behaviour, paranoia, and dissociation should not be treated using this approach, as it can amplify the symptoms.
Yoga, tai chi, and qi gong	Three ancient arts that combine rhythmic breathing with a series of postures or flowing movements.	At times when your mind is racing; whenever you find it especially hard to settle down and focus; if you wish to enhance flexibility and balance.	If you are not normally active or have health problems or a painful or disabling condition; if so, speak with your doctor before starting any exercise programme.

Tips for strengthening social bonds

Social ties are life-enhancing nets and significantly protect health and well-being. Some ways of grasping opportunities to expand your social circle and deepen the ties you have already made are listed below:

- If you normally wait for others to reach out, pick up the phone and propose a date.
- Find like-minded people through interesting classes and organisations.
- Offer assistance to friends, family, and neighbours, and accept it when it is offered to you.
- Share a confidence. Doing so can turn a friendly relationship into an even deeper one.
- Consider adopting a pet. Research shows that pets can have beneficial effects on your physical and emotional health.

Tips for planning what you like

Doing what you like is essential for your well-being. Make sure that you are always pursuing activities which add joy to your life. If you have a dream you have never explored, you may wish to try to follow it through and can engage to find a way to start.

If you have no idea where to turn, sign up for a class you think you might enjoy. Give yourself the opportunity to try a variety of options. Do not give up if the first one fails to captivate you or if the results of your effort do not meet your expectations.

2.1.2 Supporting tools for stress relieving habits

Stress signal detection cards

Being able to recognise when you are feeling stressed can help you quickly counteract the stress response. A good first step is to look through the list below and mark all the signals you recognise in yourself.

Physical signals	Behavioural signals
■ Physical symptoms ■ Tight neck and shoulders ■ Back pain ■ Sleep difficulties ■ Tiredness or fatigue ■ Racing heartbeat or palpitations ■ Shakiness or tremors ■ Sweating ■ Ringing in ears ■ Dizziness or fainting ■ Choking sensation ■ Difficulty swallowing ■ Stomachache ■ Indigestion ■ Diarrhea or constipation	■ Grinding of teeth ■ Inability to complete tasks ■ Overly critical attitude ■ Bossiness ■ Fidgeting ■ Overuse of alcohol ■ Emotional eating or overeating ■ Fist clenching ■ Changes in the amount of alcohol or food you consume ■ Taking up smoking or smoking more than usual ■ Increased desire to be with or withdraw from others ■ Rumination (frequent talking or brooding about stressful situations)
Cognitive signals	**Emotional signals**
■ Continual worry ■ Poor concentration ■ Trouble remembering things ■ Loss of sense of humor ■ Indecisiveness ■ Lack of creativity ■ Trouble thinking clearly	■ Crying ■ Irritability ■ Edginess ■ Anger ■ Feeling powerless to change things ■ Nervousness ■ Feeling anxious ■ Quick temper ■ Lack of meaning in life and pursuits ■ Boredom ■ Loneliness ■ Unhappiness with no clear cause ■ Depression

Self-assessment of stress

The questionnaire provided below could work as a tool for measuring your current stress level and related risk for health. You can use it to measure the degree to which situations in your life are considered as stressful. You will find 18 questions about your feelings and thoughts during the last week. For each of them, you can answer "yes" or "no" to indicate you felt a certain way.

Q1: Did I feel under pressure last week?
Q2: Did I eat, drink or smoke to relax and release pressure last week?
Q3: In the previous week, was I easily irritable and did I get upset about minor things?
Q4: Did I experience difficulties sleeping well last week?
Q5: Did I have difficulties concentrating or thinking rationally?
Q6: Did I suffer from an unexpected headache or digestive problems?
Q7: Did I have a nervous tics or problems keeping still?
Q8: Did I experience difficulties breathing at any point?
Q9: Did I feel worried without a real reason?
Q10: Did I react before thinking?
Q11: Did I experience muscle tensions (in the neck, shoulders, etc.)?
Q12: Did I take any medication to relax?
Q13: Did I feel tired or exhausted last week?
Q14: Did I get upset by certain people?
Q15: Did I feel hot or experience any heart palpitations or hot flushes?
Q16: Did I feel as though I was running late during the week?
Q17: Did I rush when eating, walking or driving?
Q18: Did I have difficulties seeing the positive side of things?

To calculate your result, add up the number of times you answered "**yes**".

A score ranging from 0 to 4 points indicates that you are fully relaxed: you are an expert in dealing with difficult situations, or your life is just going smoothly without obstacles.

A score from 5 to 10 indicates that you are exposed to a significant level of pressure: make sure that you have an escape path and a means of releasing it before it gets excessive.

A score ranging from 11 to 18 should be a warning: it seems that you are not able to cope. To prevent stress from affecting your health, you might want to consider changing your lifestyle, talking about it, and seeking help or support.

You should reduce exposure to stressful situations and apply alternative strategies to optimise coping and recovery.

Test your chronic stress

Behavioural Symptoms of Stress

Constant irritability with people	0	1	2	3
Difficulty in making decisions	0	1	2	3
Loss of sense of humour	0	1	2	3
Suppressed anger	0	1	2	3
Difficulty concentrating	0	1	2	3
Inability to finish one task before rushing into another	0	1	2	3
Feeling the target of other people's animosity	0	1	2	3
Feeling unable to cope	0	1	2	3
Wanting to cry at the smallest problem	0	1	2	3
Lack of interest in doing things after returning home from work	0	1	2	3
Waking up in the morning and feeling tired after an early night	0	1	2	3
Constant tiredness	0	1	2	3

0 = Never or rarely - **1** = Occasionally - **2** = Frequently - **3** = Always or nearly always

Scoring: *It is not the total score in each section which is important, but the number of either behavioural symptoms on which you score 2 or 3.*
If you are showing more than three symptoms with scores of 2 or 3, then it suggests you may be suffering from stress-related problems.

Self-help applications

There are currently various applications to monitor your stress level. These range from heart rate measurement applications, to applications which, by means of a subjective stress assessment, offer a range of methods at various levels (e.g. meditation exercises, peer support, etc.) to reduce stress levels. These applications allow users to keep track of mood swings and emotions experienced throughout the day and check, in the long run, which activities cause the most stress, so helping users make contingency plans to cope with subsequent stressful events.

Some examples are:

- Pacifica: https://www.thinkpacifica.com/
- Worry Box: http://telehealth.org/apps/behavioral/the-worry-box-mobile-app
- What's Up: https://play.google.com/store/apps/details?id=com.jacksontempra.apps.whatsup

2.1.3 Supporting tools for stress relieving choices

Assessment of stressors

The intensity of the body's reaction to stress depends on the extent to which we perceive a situation as dangerous, demanding or restrictive. Assessing stressors in detail can help you to change your perception of environmental demands and plan appropriate strategies for the future (e.g. creating contingency plans, eliminating the stressor if possible). To implement a stressor assessment, you can use this table:

What is the stressful aspect of the stressor?	
Is it a new situation?	
Is it unpredictable?	
Does it threaten your self-confidence?	
Do you feel that you are losing control over the situation?	

2.1.4 Supporting tools for stress relieving reasoning

The individual stress map

Stress is not the same for everybody. We each have our own "individual stress map" showing:

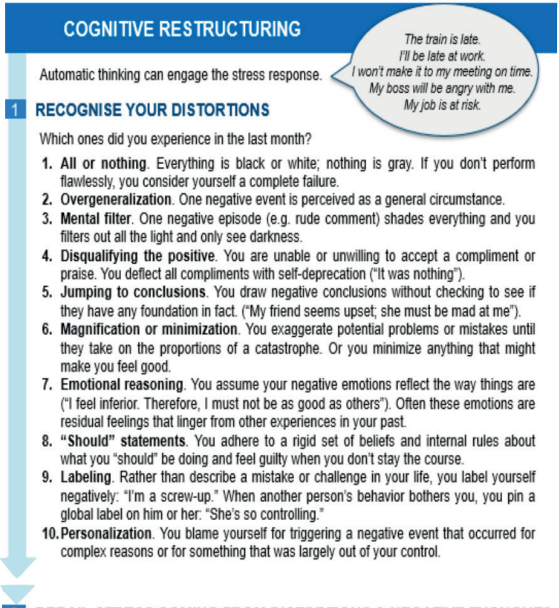
- how you realise that you are under stress;
- what the effects are on your health and private/work life;
- what is causing you stress;
- which strategies you tend to apply;
- which strategies may prove more effective in the future.

You can use the map provided below **to define the elements of a stressful experience which you have encountered**. Start from the signals (how did you realise you were under stress?), then fill in the "stress effects on you" column (did your stress have an effect on your professional or private life, or on your health?).

After that, identify the stressors which triggered your stress, and then focus on the strategies you applied to cope with them. In the planning section, include alternative coping strategies you might wish to apply in the future in order to optimise management of similar situations.

Cognitive restructuring card

Automatic thinking can trigger a stress response. The card below explains possible cognitive distortions and suggests ways of deflecting the stress resulting from them.



2.2 Organisational dimensions

Every employer has a role to play in moderating the effects of other life stressors. Stress degrades performance and health. It is in the interest of every organisation to assist its employees in dealing with their problems, particularly those affecting health.

To promote employees' health, an organisation should be proactive in ensuring that employees are not exposed to poor/unhealthy working conditions. This has been confirmed by studies which estimate the hidden costs of occupational stress at between $50 and $150 billion annually in the United States. The importance of optimising workplace health is especially true for safety-critical systems such as ATM.

Key takeaway

The cost of occupational stress in the US is between $50 and $150 billion annually.

It is it important to consider the organisational dimension for four key reasons:

1. individuals are not always able to recognise/manage stress on their own;
2. an organisation can generate, reduce and eliminate stressors;
3. an organisation can implement barriers and mitigation measures (social support, reorientation processes, training, networking with professionals, etc.);
4. an organisation has a lot to lose if its employees are suffering from excessive stress[34], as this is reflected in high rates of absenteeism, high turnover of staff, poor industrial business relations, poor quality control and "presenteeism" (colleagues working excessive hours due to high workload or job insecurity).

[34] Sauter S.L., Murphy L.R., Hurrell J.J. (1990), Prevention of work-related psychological disorders: A national strategy proposed by the National Institute for Occupational Safety and Health (NIOSH), American Psychologist
Arnold J., Silvester J., Patterson F., Robertson I., Cooper C., Burnes B. (2005) Work Psychology: Understanding Human Behavior in workplace, Prentice Hall, Essex

Stress is also a psychosocial risk factor at work and so organisations should recognise and promote mitigation measures.

In order to manage psycho-social risks at work and ensure health and safety in an organisation, there is increasing pressure to implement management processes and control the impact of an organisation's culture, structure and functioning on the associated risks to the health and well-being of its workers.

A European framework agreement was signed in 2004[35] on the subject and many European states are adapting their national legal framework to better protect workers from psycho-social risks. Many of these risks concern stress management linked to work harassment, especially in the light of events such as those which occurred at France Télécom[36].

The target of stress management in the field of psycho-social risk is stress; but in stress management, the idea is to work on factors which can be changed or adapted in an organisation. The intervention approach developed covers three hierarchical levels.

Three levels of intervention:

1. Primary level

The first level is based on a logic of prevention: The organisation should define risks to be eliminated and suppress them proactively on an organisational level. The associated strategy is to target the problem at the source. In other words, the exposure to the stressor must be changed by the organisation. Just Culture is part of this primary level. One factor often faced in companies is conflicting goals and ambiguous roles. Primary level interventions have proven to be efficient in the long-term.

[35] https://osha.europa.eu/en/legislation/guidelines/framework-agreement-on-work-related-stress
[36] https://www.eurofound.europa.eu/publications/article/2010/wave-of-employee-suicides-sweep-france-telecom

2. Secondary level

The secondary level is based on a logic of improvement. The organisation tries to increase the perception and awareness of groups and individuals exposed to risk. The underlying strategy is to identify problems and try to manage them or limit damage. This secondary level intervention is about raising more awareness. It includes training and education about multiple aspects of stress in the workplace.

3. Tertiary level

The tertiary level aims at minimising effects from exposure to psycho-social hazards. The strategy is to treat symptoms of occupational diseases. The tertiary level is about minimising the effects, treating the person concerned, and remedying the problem after exposure, based on a logic of reaction – from suffering to return to work and participation in a rehabilitation programme.

In this framework, the levels of intervention need to work together. An organisation should not wait for problems to surface before dealing with them. Rather, they are encouraged to be proactive. Nevertheless, level 3 is still the most common.

2.2.1 The Talking Toolkit

The Talking Toolkit[37] has been designed to offer a series of tips on how to organise communication around the theme of work-related stress in order to collect useful information from operational staff. It proposes an approach that identifies six main sources of stress: requests, control, support, relations, roles and change. For each area, specific guidelines are identified and proposed, including suggestions on which questions to ask and how to guide the conversation.

[37] http://www.hse.gov.uk/stress/assets/docs/stress-talking-toolkit.pdf

2.2.2 Training and coaching

Stress-training programmes are important for transferring skills on how to recognise and manage stress.

As part of the continuum from awareness to management, training sessions are conducted in groups and are aimed at describing stress and providing information on how people can recognise signals of stress in themselves and in others. They may also include an introduction to stress management, providing useful insights on identifying management strategies for individuals and organisations.

Coaching can complement training, as it provides personalised support to identify the most effective coping strategies for individuals.

2.2.3 Peer support and CISM (critical incident stress management)

In the air traffic control environment, the figure of the "peer" is specifically dedicated to helping other colleagues to manage acute stress following a critical incident, as part of CISM. The peer support function can also be extended to chronic stress.

Therefore, this peer should be a colleague who can draw from his/her operational experience and added value, and who can provide a different perspective to other colleagues dealing with moments of stress.

A peer receives training in communication and interpersonal skills related to active and empathetic listening. In this light, the peer does not replace the role of specialists in psychological health, but rather supports and cooperates with them, offering a greater relational impact, based on an "equal" perspective.

In addition to helping prevent work-related stress, the peer can act as a facilitator in the event of subsequent professional intervention by psychological health professionals. This can be arranged in the framework of second-level interventions.

2.2.4 Communication campaigns

The distribution of information and materials on stress awareness can be useful in influencing staff behaviour in the direction of more effective management of work-related stress. Such materials can be distributed in the form of booklets, leaflets, newsletters, video campaigns, etc.

These campaigns are important because they explicitly recognise the existence of work-related stress, reducing the culture of stigma surrounding stress-related discomfort, and also because they provide up-to-date material on the subject.

2.2.5 Surveys about work-related stress

Surveys can be used to conduct a quantitative analysis of the impact of the working environment and work activities on staff's stress.

The main objective of conducting stress surveys is to identify any critical problems relating to work content (workload, time, task planning, etc.) and the work context (decision-making, interpersonal relationships, etc.), and can be applied to all types of organisations.

After a detailed analysis of the problems which emerge, adequate risk management policies can be implemented to improve working conditions and the level of protection of workers' health and safety. This has a positive impact on the health and safety of workers, the competitiveness of companies, and the quality of the products and services provided to customers.

One of the most widely used tools is the General Health Questionnaire (GHQ), available via this link: http://2007study.sphsu.mrc.ac.uk/W1-30-R-and-L-GHQ_2012_08.pdf.

Key takeaway

Everyone has a role to play in creating a mentally healthy workplace - it is a shared responsibility.

2.2.6 Self-reporting

Electronic self-reporting applications for work-related stress can complement the incident reporting process.

A list of stressors in safety-critical environments

Temporal aspects:

- shift work, in particular rotating shifts;
- unwanted overtime or "excessive" number of hours;
- accelerated pace of work, especially in the face of pressing demands;
- insufficient time to carry out tasks;
- poor planning of work and rest cycles;
- changes in the amount of work assigned;
- interruptions;
- unbroken duty periods;
- night work.

Work environment:

- poor or excessive lighting, optical reflections;
- noise/distracters;
- bad quality of microclimate;
- bad posture;
- lack of rest and canteen facilities.

Systems and tools:

- integration of new tools requiring changes in working methods;
- system failures;

- unreliable equipment;
- communications tools (radio, telephone, internet, etc.) of poor quality.

Work content (regardless of temporal aspects):

- fragmentary, repetitive, monotonous work involving the same tasks and skills;
- excessive workload;
- failure to use available skills;
- lack of opportunities to acquire new skills;
- insufficient or excessive need of mental alertness and concentration;
- uncertainty of tasks or requests;
- competing tasks or requests;
- no opportunities to use personal skills;
- a mismatch between workers' skills and professional qualifications and the requirements of the job;
- insufficient human, software and hardware resources for the tasks required;
- unfamiliar and/or unforeseeable events;
- emergencies;

- incidents;
- accidents;
- errors.

Interpersonal relationships in the working group:

- lack of opportunities to interact with colleagues (during work, breaks, after work);
- poor cohesion of the primary working group;
- little recognition of work performance;
- little social support;
- unequal distribution of work;
- harassment;
- excessive social density;
- colleagues' unrealistic expectations.

Interpersonal relationships with supervisors/superiors:

- low participation in decision-making;
- poor feedback and recognition from supervisors/superiors;
- little chance of receiving feedback from the supervisor/superiors;
- insufficient or excessive rigour of supervision;
- little social support;
- poor instrumental support;
- uncertainty or contradictory requests;
- ineffective leadership style;
- pressures of the evaluator group.

Organisational conditions:

- prestige given to the tasks performed;
- poor definition of organisational structure (e.g. unclear allocation of task and duties);
- excessive organisational bureaucracy (administrative);
- inconsistency between procedures and task requirements;
- discriminatory policies (e.g. in decisions on dismissals or promotions).

Decision latitude:

- insufficient or excessive autonomy;
- insufficient or excessive control.

Pressure factors:

- time pressure;
- having to bend the rules;
- feeling that there has been a loss of control;
- fear of consequences of errors;
- potential for serious injuries;
- potential for financial increase/loss;
- public opinion.

Career development:

- lack of career chances;
- over-promotion;
- demotion;
- deskilling;
- lack of job safety;
- failed ambitions.

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