



## Stress Affects the Working of An Employee in An Organization

**Kanika Maheshwari\***

Department of Commerce Meerut College, Meerut (U.P.) India  
Email Id: kanika.mh31@gmail.com

### Abstract

Workplace stress derives from many sources. It comes through a demanding boss, annoying co-workers, rebellious students, angry customers, hazardous conditions, long commutes and a never-ending workload. Our work performance is also affected by stressors such as family relationships, finances and a lack of sleep stemming from fears and anxieties about the future. How we handle the effects of stress depends on whether it is easier to change the situation or change our attitude toward it.

Although there is not convincing evidence that job stressors cause health effects, the indirect evidence is strongly suggestive of a work stress effect. This evidence comes from occupational studies that show differences in health and mortality that are not easily explained by other factors and within-subject studies that demonstrate a causal effect of work experiences on physiological and emotional responses. We argue that studies relying on self-reports of working conditions and outcomes, whether cross-sectional or longitudinal, are unlikely to add significantly to the accumulated evidence.

**Key words:** Eustress, Grief, Heuristics, Cortisol.

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## **1. INTRODUCTION**

Stress is actually a normal part of life. At times, it serves a useful purpose. Stress can motivate we to get that promotion at work, or run the last mile of a marathon. But if we don't get a handle on our stress and it becomes long-term, it can seriously interfere with our job, family life, and health.

The term "stress" was coined in the 1930s by the endocrinologist Hans Selye. After exposing animals to various noxious stimuli, he found that they all showed a similar reaction that he labelled the General Adaptation Syndrome (GAS). The GAS contains three phases: an alarm phase in which an organism identifies a stressor or a threat and the body mounts an alarm response, a resistance phase in which the body attempts to adapt and cope with the stressor, and an exhaustion phase in which the resources are eventually depleted in the face of sustained stress and the body is unable to maintain normal function. The exhaustion phase can lead to long-term damage to the adrenal glands and the immune system, leading to depression, cardiovascular problems, and other mental issues. While the latter two stages of the GAS have been instrumental in understanding the effects of chronic stress, the first stage (the alarm phase) is most pertinent to the study of performance under acute stressors and will be the main focus of this review.

The initial stress response is theorized to result from the interaction of the demands placed by an individual's environment and that person's resources to meet the demands. It is heavily influenced by a person's assessment of the situation. When individuals perceive a real or anticipated challenge to their primary goals (i.e., passing a licensing exam, keeping a patient stable during surgery), they appraise the situation in a two-stage process. In a first stage of appraisal, they assess the demands required of the situation to reach or maintain the desirable goal. In a second stage of appraisal, they assess the resources—personal and environmental—available to meet the perceived demands of the situation. When the resources are assessed as being sufficient to meet the demands, the situation is assessed as a challenge and a positive psychological state of "eustress" ensues. When the demands are assessed as outweighing the resources of the individual, the situation is assessed as a threat. A negative psychological response of "distress" ensues, including a variety of affective states (the most common being anxiety).

After either a challenge or threat appraisal, the sympathetic nervous system (SNS) will be activated if an active response is required. This results in the very rapid increase, over a period of seconds, of heart and respiration rates. In addition to the SNS response, a threat appraisal leads to the activation of the hypothalamic-pituitary-adrenal (HPA) axis. The activation of the HPA axis results in the increased release of the hormone cortisol in the blood which is then diffused to the saliva over a period of minutes. This increase in cortisol levels influences areas of the brain that are heavily involved in cognitive processes: the amygdala, hippocampus, and prefrontal cortex.

Thus, an individual's response (subjective and physiological) to demands that threaten an important goal is highly dependent on that individual's perception of the demands and of his or her resources available to meet those demands. Any factor that increases the perceived demands of a task or decreases the perceived resources to meet those demands increases the likelihood of a distress response. Socio-evaluative stressors (where others could negatively judge performance) and uncontrollable stressors are the most likely to provoke a distress response. In the context of

this paper, the terms “stress” and “stress response” will be used when referring to the distress response that ensues once a situation is assessed as a threat to maintaining or achieving a primary goal.

**1.1 Causes of work stress include:**

- Being unhappy from our job
- Having a heavy workload or too much responsibility
- Working long hours
- Having poor management, unclear expectations of our work, or no say in the decision-making process
- Working under dangerous conditions
- Being insecure about our chance for advancement or risk of termination
- Having to give speeches in front of colleagues
- Facing discrimination or harassment at work, especially if our company isn't supportive

**1.2 Life stresses can also have a big impact**

Examples of life stresses are:

- The death of a loved one
- Divorce
- Loss of a job
- Increase in financial obligations
- Getting married
- Moving to a new home
- Chronic illness or injury
- Emotional problems (depression, anxiety, anger, grief, guilt, low self-esteem)
- Taking care of an elderly or sick family member,
- Traumatic event, such as a natural disaster, theft, rape, or violence against you or a loved one

Sometimes the stress comes from inside, rather than outside. We can stress ourselves out just by worrying about things. All of these factors can lead to stress:

- **Fear and uncertainty:** When we regularly hear about the threat of terrorist attacks, global warming, and toxic chemicals on the news, it can cause us to feel stressed, especially because we feel like we have no control over those events. And even though disasters are typically very rare events, their vivid coverage in the media may make them seem as if they are more likely to occur than they really are. Fears can also hit closer to home, such as being worried that we won't finish a project at work or won't have enough money to pay our bills this month.
- **Attitudes and perceptions:** How we view the world or a particular situation can determine whether it causes stress.
- **Unrealistic expectations:** No one is perfect. If we expect to do everything right all the time, we are destined to feel stressed when things don't go as expected.
- **Change:** Any major life change can be stressful -- even a happy event like a wedding or a job promotion. More unpleasant events, such as a divorce, major financial setback, or death in the family can be significant sources of stress.

## **2. EFFECTS OF STRESS ON PERFORMANCE**

To date, there has been relatively little research looking at the specific effects of stress on the performance of health professionals. Of the research that does exist, the findings are ambiguous. Some studies have shown impaired performance under acutely stressful conditions, while others have shown improved performance. The paucity of research and seemingly conflicting results have allowed the development of somewhat naïve perceptions by health professionals and educators regarding the effects of stress on performance. Beliefs that stress can enhance learning (“we learn better under the gun”) coexist closely with beliefs that learning is optimized in conditions that are free of anxiety and stress. As a community, the risk we face by not fully understanding the effect of stress is that we could fail to adequately prepare individuals to function in emergency or crisis situations or, even worse, impair learning and acquisition of these skills.

The effects of stress on performance have been investigated quite extensively in domains such as psychology, high-risk industries (nuclear power plants, aviation, law enforcement), and psycho neuro-endo crinology. In all of these domains, research into the effect of stress presents many challenges. Most important, it is difficult to predict when acutely stressful events (crises, emergencies) will occur in real life, and it is unethical to manipulate stressors during real-world events. As such, researchers have developed various approaches to investigate the effects of stress, from retrospective reviews of critical nuclear or aviation incidents, to high-fidelity simulations of military, nuclear, and aviation operations, to interventional studies in which the physiological processes of stress responses (elevated heart rate and cortisol levels) are recreated with the administration of pharmacological agents. Although each particular method has recognized limitations in the conclusions that can be drawn from its results, these various methods converge to allow us to draw some conclusions regarding the effects of stress on attention, memory, decision making, and, to some extent, group performance.

## **3. EFFECTS OF STRESS ON ATTENTION**

In their everyday activities, individuals are bombarded with all sorts of perceptual information. However, our ability to process this information is limited. Under stressful conditions, the cognitive system becomes overloaded, decreasing a person’s attentional resources.

The effects of this stress-related reduction in attentional resources on selective attention remain unclear. *Selective attention* is the process that allows us to focus on those stimuli that are relevant to us, preventing the cognitive processes from becoming overloaded with information. It is the filter that determines what information is processed and what is ignored. Some researchers argue that selective attention is facilitated under stressful conditions and that the limited resources are allocated to information that is relevant to the task being completed rather than to information that is irrelevant. As stress increases and attention becomes more selective, there is a growing exclusion of information that is irrelevant to the task at hand, a process called cue utilization reduction. As such, stress will be beneficial when a task requires the exclusive focusing on target information. Alternatively, there is also some evidence that the reduction of attentional resources under stress may result in a decreased ability to filter out irrelevant information from relevant information. Hence, stress can also lead to increased distractibility of the individual.

An explanation of the conflicting findings regarding the effects of stress on selective attention may lie in the relationship between a stressor and the task being performed. When feeling anxious, people's attention is biased towards threat-related information. Selective attention will be focused on those aspects of a stressful situation that induce the stress response. As such, if the task being performed is integrally related to the source of the stress (resuscitating a patient), then selective attention should be narrowed towards the task itself. However, if the source of stress is peripheral to the task being performed (i.e., loud noises, disruptive team members), then attention will be focused on the source of the stress, to the increasing exclusion of information related to the task itself. As such, the restriction in selective attention may be disruptive to performance when the stress results from factors peripheral to the task and may facilitate performance when the task being performed is the source of the stress response.

Although there are conflicting findings regarding the effects of stress on selective attention, there is consistent evidence that divided attention tasks, those that require the integration of information from several sources, are vulnerable to the effects of stress and elevated cortisol levels. For the emergency medicine trainee who is leading a cardiac arrest team, and who must process information from multiple sources, performance is likely to be impaired under stress. In these conditions, in which there are multiple targets, performance will be impaired because one target will be selectively attended, to the exclusion of other relevant targets. Tunnel vision (extremely narrow perspective) and premature closure (tendency to stop considering other possible diagnoses after a diagnosis is reached) are more likely to occur.

#### **4. EFFECTS OF STRESS ON MEMORY**

Memory—the ability to store, retain, and subsequently retrieve information—is critical to every aspect of medical training and clinical practice. There is a general belief, based on subjective experience, that stress influences memory. Many clinicians anecdotally report that some experiences during their training or clinical practice seem as if they will be remembered for a lifetime, whereas other events seem to have been forgotten (or never encoded) because of the stress surrounding the event. A brief survey of the literature can also be confusing, with some studies showing that stress impairs memory and others showing that stress enhances memory. However, a close review of the literature reveals that the effects of stress depend on the memory phase that is activated during stressful situations. Stress responses and increases in cortisol levels differentially influence three components of memory: working memory, memory consolidation, and the retrieval of information from memory.

#### **5. EFFECTS OF STRESS ON DECISION-MAKING**

When stressed or anxious, individuals demonstrate an increased use of cognitive heuristics and of decision-making strategies that are considered suboptimal. Vigilant decision-making, considered optimal by many, consists of a systematic and organized information search, a thorough consideration of all available alternatives, the devotion of sufficient time to evaluate each alternative and the review of data before making a decision. In contrast, hyper vigilant decision-making is considered an impulsive and disorganized pattern of decision-making. It consists of a non systematic or selective search for information, the consideration of only a limited set of alternatives, the rapid evaluation of the data, and the selection of a solution without reappraisal.

The use of hyper vigilant decision-making when stressed has been associated with poor performance on laboratory-based tasks.

However, hyper vigilant decision-making strategies may represent adaptive responses to naturalistic task demands. In naturalistic tasks, decisions need to be made under time pressure, the data are ambiguous and/or conflicting, and decision makers are likely familiar with the tasks. In such conditions, it is argued that decision makers can use their experience to identify meaningful data and to generate reasonable options. In one of the few studies looking at decision-making on naturalistic tasks under stress, researchers had participants identify unknown contacts that appeared on naval radar screens. These participants were familiar with the task. The results demonstrated that experienced participants who used hyper vigilant decision-making strategies made a greater number of accurate identifications than those who used vigilant decision-making strategies. More research is required to compare vigilant and hyper vigilant decision-making in novices exposed to stressful situations.

## **6. EFFECTS OF STRESS ON GROUP PERFORMANCE**

The complex and dynamic nature of the medical environment often requires teamwork. In crisis or emergency situations, individuals are required to work together in a coordinated fashion to make decisions about patient care. Surprisingly, relatively little is known regarding the effects of stress on team work, group decision-making, or performance. Much of the research on team performance under stress is based on retrospective reviews of aviation incidents or on observations of team work solely during crises or acute events.

The specific effects of stress on teams have been investigated with respect to two aspects of performance: team perspective and centrality of authority. Two groups of researchers have observed that increased stress leads to a loss of team perspective and decreased team performance on military decision-making tasks. This decrease in team perspective is thought to result from the attentional narrowing that occurs in individuals under stress. Although these two studies provide some insights into the effects of stress and team performance, these findings have not been confirmed or replicated with studies looking at different tasks, group composition, or stressors.

The large part of research looking at stress and team performance has been aimed towards understanding what characteristics of the team lead to optimal performance during high-demand situations. A number of characteristics of effective team performance in stressful events have been identified, such as the ability to adapt to changing situations, effective communication, and effective resource allocation, as well as the presence of situation awareness and clear leadership. These characteristics seem to depend on the presence of implicit coordination. Implicit coordination occurs when teams are able to predict the needs of the task at hand and anticipate the actions of other team members in order to adjust their behaviour accordingly. This implicit coordination depends on a shared mental model, a common understanding of the situation and tasks at hand. These mental models, when accurate, allow people to appropriately understand phenomena, draw inferences, make predictions, and decide what actions to take. Shared mental models are essential to implicit coordination because they allow members of a team to generate predictions about tasks and team demands in the absence of communication between team members.

Although this body of research describes the underlying processes of effective teams, it does not shed light into such things as the factors that enhance or impair the development of shared mental models or of the forces that influence or shape a team's coordination during high-acuity events. As such, substantially more research is required to understand how stress affects team interactions and how team dynamics adapt to stressful events, as well as to identify the factors of the environment that erode team coordination.

## **7. FACTORS THAT AFFECT STRESS RESPONSE AND PERFORMANCE**

While the review of the literature above presents some general trends and patterns regarding the effects of stress on performance, researchers have observed significant individual differences in stress responses and performance. The most important moderators of stress responses and performance under stress are reviewed hereunder :

### **7.1 Stress Coping Styles**

A potentially important mediating factor in the appraisal of a situation as a challenge or a threat is an individual's coping style: the thoughts and behaviours used to manage both the internal and external demands of situations that are appraised as stressful. Although there is some debate regarding the classification of coping strategies, there are three main categories of coping styles. Problem-focused coping consists of addressing the problem causing the distress (i.e., having a plan of action, concentrating on the next step). Emotion-focused coping is aimed at reducing or managing the emotional distress that is associated with the situation (i.e., seeking emotional support, focusing on and venting of emotions). Avoidance coping is aimed at seeking to avoid or distract oneself from the situation (i.e., seeking out social diversion, engaging in distracting tasks). Problem-focused coping styles seem to be more effective in controllable situations in which individuals can manipulate the stressors, and emotion-focused coping styles seem to be effective when dealing with stressors that are of brief duration and that cannot be controlled. Avoidance coping styles, although associated with decreased subjective stress levels, have been associated with increased cortisol responses. As such, they may be detrimental to performance under stressful circumstances.

### **7.2 Control**

A second potentially important mediating factor is an individual's locus of control: the extent to which that individual perceives that he or she has control over a given situation. Individuals with an internal locus of control are those individuals with the perceived feeling of being able to control events in their lives. These individuals are likely to develop a positive outcome expectancy and, consequently, lessened stress responses and performance impairments in acutely stressful situations. Individuals who, in the face of crisis, manage to retain a belief that they can control outcomes have been found to manage the experience far more effectively than individuals who believe they are controlled by external forces. For example, higher levels of external control are associated with depression in paramedics. Ambulance personnel reveal significantly more externality, thus less perceived control over what happens in their lives, which may make them more predisposed to the effects of stress.

### **7.3 Social Support**

There is a substantial body of literature showing that individuals who have access to psychological support in demanding situations such as stressful employment or facing chronic stressors seem to be in better health compared with individuals without significant support. There is co-relational evidence for beneficial effects of social support on endocrine and immune system parameters during stressful periods of life. During acute stressors, the presence of social support is associated with decreased cortisol responses, cardiovascular responses, and subjective stress responses.

## **8. TRAINING FOR PERFORMANCE DURING STRESSFUL EVENTS**

A number of approaches have been developed in an attempt to optimize performance during stressful events. These approaches can be categorized as either skills-based training or as stress management interventions. In skills-based training, the emphasis is on providing individuals or teams with the specific skills required during a crisis. In stress management interventions, the emphasis is placed on modifying the individual's appraisal of a potentially stressful situation. Promising examples of each approach are described in this section.

### **8.1 Skills-based Training**

**(a) Over-learning:** Over-learning training consists of requiring trainees to keep practicing newly acquired skills after the skill has been acquired to a level of proficiency. Over-learning can be effective in preparing trainees for performance under stressful conditions because of several factors. First, complex tasks are more likely to be impaired under stressful conditions than simple tasks. Over-learning can contribute to the simplification of complex task and can thus make them less vulnerable to stress. Second, over-learning can lead to the automatization of skills so that they can be performed with little demand on cognitive processes. This frees up cognitive resources that can then be applied to coping with the stress response or with other aspects of performance. Finally, when tasks are over-learned and well drilled into trainees' repertoire, this can increase their sense of control in performing the task.

Although over-learning has the potential to be an effective method of preparing trainees for performance under acutely stressful conditions, its application can have significant drawbacks if it is not carefully designed and executed. One of the more important drawbacks is that over-learning can limit the individual's ability to demonstrate flexibility in his or her response and to adapt to changing conditions.

**(b) Team training:** Recognizing that sound medical and technical abilities, although necessary, are not sufficient to ensure competent team performance in crises, many educators have developed team training interventions. The overall goal of team training is to foster the development of accurate shared mental models of patient care in high-stress situations. Several models of team training have been developed and applied in the aviation and military environments, such as cross-training, perceptual contrast training, team coordination training, team self-correction training, and guided error training. The model most widely applied in health professions is team coordination training, such as crisis resource management (CRM) training and medical emergency team (MET) training. Originating in the field of aviation, CRM training recognizes that individual and team performance can be

significantly degraded in crisis situations. Although approaches vary, they are typically tailored to anesthesia crises or cardiac arrests, and they generally center on the principles of situation awareness, establishment of leadership, clarity of roles, and personnel and resource management. Similarly, MET training focuses on improving the organization, efficiency, and reliability of crises team responses by emphasizing the reinforcement of organizational aspects of team performance, such as assuming designated roles independently, completing tasks or goals assigned to each role, and directed communication. In the majority of cases, this form of training consists of didactic lectures, followed by hands-on practice at resolving medical crises with feedback. Although the bulk of team training is conducted with high-fidelity computerized mannequins placed in realistic clinical scenarios, some groups use vignettes, role modelling of ideal behaviours by video, and role playing. There is accumulating evidence indicating that this type of training improves team performance in simulated crises, and there is some preliminary research indicating that team training can improve team performance at the bedside.

## **8.2 Stress Management Interventions**

**(a) Preparatory information:** Based on the findings from medical studies that preparatory information can lessen negative reactions in patients about to undergo stressful clinical procedures, there is growing interest in the use of preparatory information for reducing stress reactions and enhancing performance in nonclinical settings. Preparatory information is hypothesized to be effective by rendering the stressor and the task less novel and more familiar, and by enhancing the sense of behavioural or cognitive control over an aversive event. The effectiveness of preparatory information lies not solely on a detailed description of an upcoming stressful event but also in providing information about prescriptive ways in which individuals can cope with the stressor and its effects. A comprehensive preparatory information strategy addresses how the person is likely to feel in a stressful setting (sensory information), describes the events that are likely to occur during the transition from normal to stressful conditions (procedural information), and provides information on how the person can counter the undesired effects of stress (instrumental information).

Although the research looking into the effectiveness of this approach to enhance performance in stressful environments is limited, the early findings are promising. In a study with military personnel, Inzana and colleagues observed that presentation of preparatory information reduced subjective anxiety and improved performance accuracy on naval decision-making tasks. The beneficial effects of the intervention were observed in both a high stress and a normal stress condition.

Although the effectiveness of preparatory information on team performance has yet to be investigated, a promising platform is brought to mind with the recent work in the area of team communication. Lingard and colleagues have shown that a preoperative briefing with completion of a checklist led to a reduction in communication failures, an increase in the identification of problems and ambiguities, and modifications in the plan of how the case would proceed. Although this intervention did not specifically target team performance during high-stress situations, this sort of intervention holds promise. It could be further examined to determine whether its implementation reduces stress levels, increases shared

understanding of the case, and, in doing so, enhances the implicit coordination and team performance during crisis situations.

**(b) Stress inoculation training:** One promising method of reducing stress responses and performance impairments under acutely stressful conditions is stress inoculation training.

This three-phase cognitive-behavioural approach to stress management has proven effective in a variety of settings. By training effective coping skills before stress exposure, the objective of stress inoculation training is to prepare individuals to respond more favourably to stressful events. The first phase of the training is the conceptual/education phase, in which the goal is to help individuals gain a better understanding of the nature of stress and its effects. The second phase consists of the skill acquisition and rehearsal phase. The objective of this phase is the development and practice of coping skills to reduce anxiety and enhance the individual's capacity to respond effectively to stressful situations. This phase is focused on training the individual to maintain an awareness of stress reactions and to invoke appropriate skills to reduce stress. These skills consist of cognitive restructuring techniques aimed at regulating negative emotions and thoughts and of relaxation techniques to increase control over physiological responses. The third and final phase consists of the application phase. The coping skills are applied in increasingly stressful conditions that approximate the real-world stressor environment.

Stress inoculation training has been found to be effective in reducing general state anxiety and performance anxiety (anxiety specific to the skills being addressed in the training) and in enhancing performance under stress. Stress inoculation training seems to be effective when run with groups of 8 to 10 participants, and it can be implemented successfully without an inordinate number of training sessions. Its effectiveness does not seem to be restricted to the laboratory setting, suggesting that it can be effective in applied settings such as health professions education. Finally, the beneficial effects of stress inoculation training can generalize to novel stress conditions and novel tasks, which is crucial for any applied area in which the conditions of real-life environments are often dynamic, ambiguous, and emergent. It should be noted, however, that further research needs to be conducted regarding the extent to which the benefits of stress training will generalize across different stressors and different tasks.

## 9. CONCLUSION

Although this critical review brings to light the fact that substantially more research needs to be conducted to gain a deeper understanding of stress responses and their impact on the performance of individuals and teams, some general patterns are emerging from the literature. First, stress is highly subjective. What is distress for one is eustress for another and a non-event for a third. Second, it seems that the relationship between a stressor and a task is important in determining whether performance will be enhanced or impaired. When a stressor is contingent to the task being performed, a person's cognitive resources will be focused on that task, and certain aspects of performance may be facilitated. In contrast, stressors that are peripheral to a task seem to draw cognitive resources away from the task being performed, and performance is more likely to be impaired. These have important implications for health professions education and for how we prepare trainees to perform tasks under stressful conditions.

The findings in this review bring to light the fact that more research is needed to gain a deeper understanding of the effects of stress, particularly in terms of attentional processes, decision making, and group performance. Furthermore, research looking at reactions to stress requires careful measurements to determine the level of stress, in particular distress that is present in each individual participant. Mere immersion in a situation is insufficient because some are not stressed by that situation. Further, surface behavioural characteristics are insufficient; autonomic reactivity in the absence of cortisol elevations would imply eustress, not distress, and seems to have a decidedly different impact on the individual's performance.

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